ACTION PLAN FOR CAMI4.0 EXCELLENCE IN CE/EU COOPERATION

D.T1.3.3 – A Report on the CEUP 2030 Strategy Implementation Blueprint

Version 1.01

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PP	Restricted to other programme participants	
RE	Restricted to a group specified by the consortium	RE
CO	Confidential, only for members of the consortium	

Document History			
Date	Version	Issuer	Description of Changes
24.03.2021	1.00	MCR	Base draft, for development
08.04.2021	1.01	MCR	Draft with 39 Use Cases and all Action Plans (S&AM exception) complete. Issued to KPT for Review.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

Executive Summary

Project Overview

CEUP 2030 aims to generate stable innovation networks which foster better understanding on **C**entral Europe **A**dvanced **M**anufacturing and **I**ndustry **4.0** ("**CAMI4.0**") topics, to generate improved knowledge resource exchange on these technologies leading to an upgraded framework for policy-making and implementation.

Ultimately CEUP 2030 creates and tests a common method to promote improved knowledge dissemination to policy-making stakeholders using a collaborative exchange framework based in physical and digital-methods. These methods and the technology use-cases disseminated within the project, are harvested from existing, high-quality innovation know-how in the CE area. The project focuses on:

- Identifying the highest-quality innovation know-how in the CE Area, on the CAMI4.0 Topics.
- Enhancing skills capabilities and knowledge of people in charge of local, regional, and (trans)national RTI Policies, associated to the CAMI4.0 Topics.
- Creating a sustainable structure for awareness-raising and shared, sustainable RTI knowledge resource use to enhance policy decision support.
- Anticipating and fast-tracking policy / strategy pilot actions to promote a joint RIS3 for CAMI4.0 Excellence in CE/EU.

Report Context

The Action Plan for CAMI4.0 Excellence in CE-EU Cooperation should be read in conjunction with the Joint Strategy for CAMI4.0 Excellence in CE-EU Cooperation, both available on the project's website at the Key Output section.

The overall objective of the first work package of the project is to enhance skills, capabilities and knowledge of people in charge of local, regional and (trans)national Research, Technology and Innovation policies within the triple-helix context.

The challenge manifests in two sub-objectives which are:

(1) To train and empower people to work in the environment of new technologies (strategically and operatively) regarding policy-relevant decisions

(2) To pool a critical mass of trained stakeholders to generate sufficient power for policy-making and appropriate selection, adaption and fine-tuning of already proven tools, instruments and methodologies.

In order to harness the power of the pooled critical mass of trained stakeholders, and effectively empower people to work together to improve sustainable linkages among actors of the innovation systems for strengthening regional innovation capacity in Central Europe, the partners have endeavoured to create a vision and mission for the CEUP 2030 consortium. This initial strategic step, is known as the Strategic Implementation Blueprint. This report represents the second half of the Strategic Implementation Blueprint, called the Action Plan for CAMI4.0 Excellence in CE-EU Cooperation.

This report is structured in four clear workable modules for the four CAMI4.0 Topics. The Partners draw inspiration from the work they have been involved in over the past programming period, in keeping with the vision of the Interreg Central Europe's experimental call on result capitalisation. The Partner's also took an opportunity to benchmark to the development of future programmes and strategies from the European

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Commission associated to the topic of Advanced Manufacturing, pulling inspiration from the European Green Deal, the Digital Skills Agenda and the Digital Europe Programme.

From this starting point, the Partners built 40 policy pilot action use-cases, 10 for each CAMI4.0 topic, which will be tested, debated and upgraded during the WPT3 RIS3 Round Tables. The report describes the 40 use-cases, and the processes the Partners have worked on together to develop the Action Plan for CAMI4.0 Excellence in CE/EU Cooperation. Action Plans are designed for a quick start of cooperation in the project on the CAMI4.0 topics, along with a future-robust approach which can develop into the Policy Implementation Framework for CAMI4.0 (WPT3). The Action plan is based on a set of use-case pitched by each Partner to meet the specific objectives for the Trend and Innovation Networks, and overall anticipate and fast-track policy strategies to promote aligned S3/RIS3 for CAMI4.0 Excellence.

Within each of the four CAMI4.0 topic modules contained in the report, a reader can find the following information:

- The CEUP 2030 Consortium's analysis of key challenges facing Central Europe's manufacturing eco-system, at sector, value chain and target group-level which are relevant to the CAMI4.0 topic area;
- The CEUP 2030 Consortium's key capabilities and competencies which can be deployed to help address the challenges and enable growth of the CAMI4.0 topic area;
- Summary description and action-oriented timeline of the 10 use-cases for each CAMI4.0 topic.

Within the Annex of this document a reader can find the detailed description of all 40 use-cases, divided into each Partner's policy pilot action use case portfolio.

Audience

This document is directed at all stakeholders of the CEUP 2030 Partnership, and provides detailed insights on how the Partners plan their strategic action for the project. The appropriate status of this deliverable is reflected in the "Dissemination Level" table, on the Document Control page of this report.

The CEUP 2030 Partnership would like to invite all interested stakeholders to join in the project's extensive workshop series to continue discussions on the topics highlighted within this report. More detail can be found on the project's website, by contacting the Lead Partner, Krakow Technology Park, or by contacting the Partner operating in the region or country of your interest.

Change Control Procedure & Structure

The Deliverable Responsible: Krakow Technology Park **(PP01)** created this report, which is hosted on the Project's common repository and on the Partnership's public website. The document is under standard change control protocols whereby Partners are requested to give feedback on the draft version within five working days. Feedback will be incorporated and final version will be issued by KPT. Thereafter the PPs have five additional working days for any final comments. At any time, partners believe a project methodology should change, the request should be brought to the Deliverable Responsible (KPT/PP01) and the Work Package Leader (PTP/PP8) to consolidate feedback from other partners, and then further integrate and disseminate the final agreed changes. A new version of the document should be created, and recorded in the document's "Document History" table.

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1. Introduction

The European Union is the world's biggest exporter of manufactured goods, and is a global market leader for high-quality products (ManuFUTURE, 2019: 10). In an analysis of the economy of 45 regions in the European Union, manufacturing contributed more than 30.0 % of the non-financial business economy employment, largely concentrated in central Europe (Eurostat, 2020:12). Central Europe's manufacturing sector is a fundamental component of the EU economy with a large amount of high-value innovation know-how in the area of advanced manufacturing and industry 4.0. These two areas are critical for maintaining Central Europe's competitive edge and high employment rate in this economic sector. However, organisations within this eco-system lack sufficient cooperation & structure to really add-value; limiting the competitive potential of connected regions. Though RIS3 sets strong signals: (1) the lack of transparency in access to knowledge and markets, (2) insufficient cooperation and linkages between the innovation actors in and between regions / countries, (3) missing policy alignments & cooperation; continues to create real challenges in the CE innovation eco-system.

CEUP 2030 aims to generate stable innovation networks which foster better understanding on **C**entral Europe **A**dvanced **M**anufacturing and **I**ndustry **4.0** ("**CAMI4.0**") topics, to generate improved knowledge and resource exchange on these technologies leading to an upgraded framework for policy-making and implementation. The purpose of CEUP 2030 is to improve policy-making, by exploiting and upstreaming available outputs and results from excellent work delivered in the programming period 2014 to 2020, to create new recommendations for policies and strategies to enhance Central Europe's Advanced Manufacturing and Industry 4.0 capacities. Six of these excellent projects are highlighted in Figure 1

Figure 1 Overview of the Six Projects Capitalized during CEUP 2030 (Source: Consortium Generated)

Ultimately CEUP 2030 creates and tests a common method to promote improved knowledge dissemination to policy-making stakeholders using a collaborative exchange framework based in physical and digital-methods. Through these methods, Partners build action-oriented pilot projects to promote and capitalize on cross-regional collaboration good practice to promote regional innovation smart-specialisation added value in key technology areas: Intelligent Production Systems, Smart Materials, Robotics and Automation, and finally Artificial Intelligence. These action-oriented pilot projects or "RIS3 alignment Instruments" are used as a basis of providing evidenced-based recommendations to policy-makers, who are interested in ensuring that long-term development fit of policy-instruments sustainably meet the challenges and opportunities facing Central European manufacturing.

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1.1. Output and Project Context

In an effort to reach these objectives, the consortium built a Strategy Implementation Blueprint. The blueprint guides the Partner's efforts to develop meaningful action and exchange on the challenges facing Central Europe's manufacturing sector, with a focus on leveraging opportunities within the discipline of advanced manufacturing and industry 4.0.

Fundamentally the Blueprint has two parts, a joint strategy and dedicated use-case oriented action plans. Within the pages of this document sits the use-case oriented Action Plan, setting the information base about the competencies and Trend and Innovation Networks ("TIN"). The action plans provide the Consortium's steps, formulated in use-cases, to improve, upgrade and implement their strategy.

Across the project, the validation process takes place refining and integrating the partner's vision with the needs, concerns and future foresight knowledge of various stakeholders. Through this process, each partner develops two RIS3 Alignment Instrument Pilot Projects (Twenty total). These pilot projects act as optimal models to promote cross-regional development and transnational collaboration in the area of Advanced Manufacturing and Industry 4.0. With these models the Partners move their reflections on excellent outcomes from the previous programming period, to a series of action-oriented pilots which engage with critical development. Together the Partners and their stakeholder network generate a sustainable transnational RIS3 ecosystem, aligned for action in the coming programming period. A visualisation of this process can be seen in Figure 2.

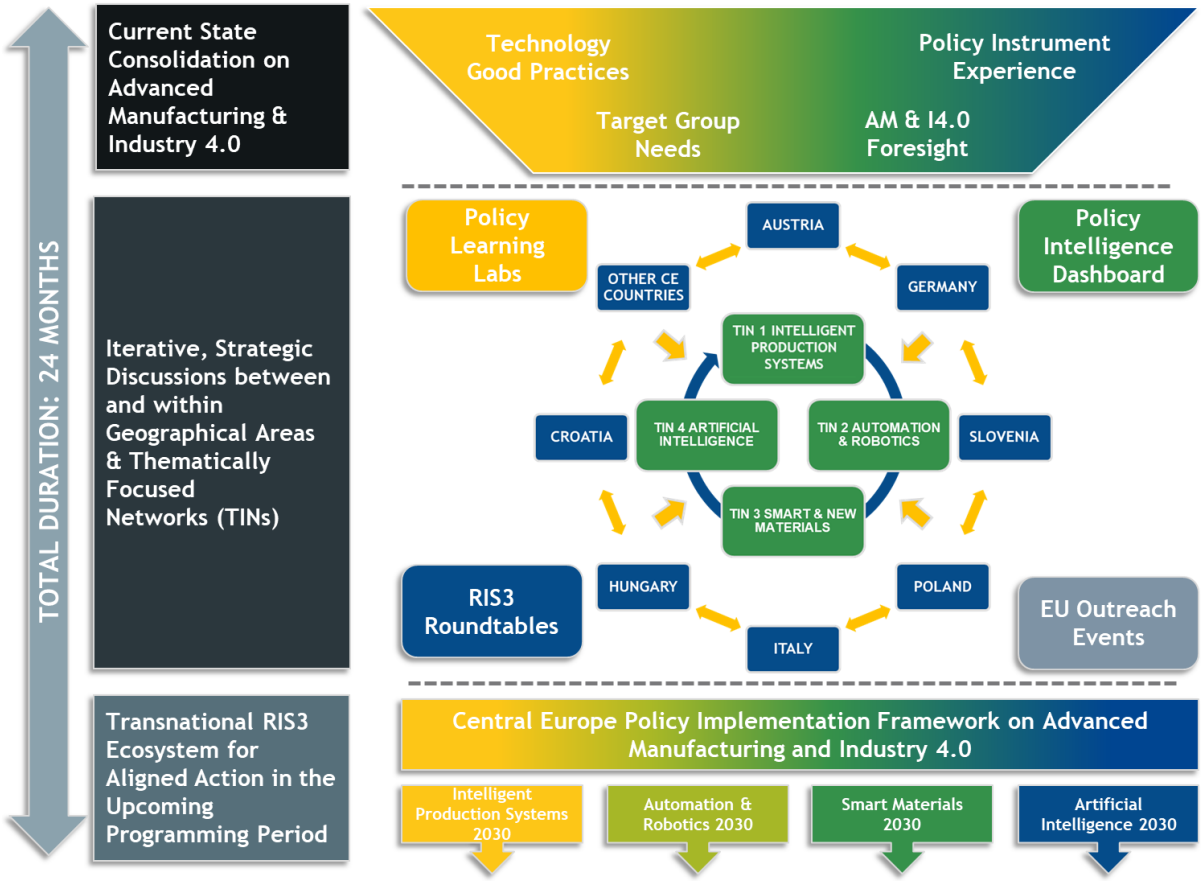

Figure 2 Project Design and Focus (Source: Author Generated)

1.2. Key Definitions for Action Plan Building in CEUP 2030

This section provides users of this Action Plan report, some key definitions which are useful for understanding the development of CEUP 2030's structure and use-case oriented intent:

I. **CAMI4.0:** This acronym stands for "Central Europe Advanced Manufacturing and Industry 4.0", and is a short hand reference for all of the thematic topics and sub-topics which the Partnership have used to frame the technology / content discussions within the project.

II. **Trend & Innovation Networks:** The Trend & Innovation Networks (TINs) are thematically focused working groups, comprised of the Partners and their key regional stakeholders. Together this innovation network is used to gather foresight on challenges and opportunities which emerge in the chosen technology areas, and across the territorial area's manufacturing sector. Together this network should be ideating on, developing, and then implementing a number of models to promote transnational cooperation (in the form of use-cases, see below).

III. **Strategy Implementation Blueprint**: This is a named output of the project, also called "CEUP 2030 Strategy Upgrade and Boost" (O.T1.2), which connects lessons learnt from stakeholder engagement discussions with a joint strategy built from PP experiences and insight across other initiatives (projects / regional actions). This strategy will be supported by 10 practical use-cases.

IV. **RIS3 Alignment Instrument Pilot Projects:** By WPT3 PPs should have evidence of starting/enabling 20 new regional RIS3 Alignment Instrument Pilot Projects (2/PP) **(by September 2021),** where they aim to showcase how specific policy instrument action can improve regional S3 support for chosen CAMI4.0 topics. These pilot projects should be built from the "Policy Instrument Use Cases" identified at the end of WPT1. They also are the project's primary tool to demonstrate sustainability of idea, and ongoing monitoring for the achievement of the CAMI4.0 vision & objectives.

V. **Common Policy Use Cases:** In WPT2 and WPT3 emerges the idea of the coordinated "alignment" of policy instruments. This is a key area of discussion which should occur between PPs (in CAMI4.0 Working Groups, aka TINs in WPT2) and their stakeholders (In RIS3 Round Tables, in WPT3). By the end of the project PPs operating across the 4 CAMI4.0 Topics create 4 common policy use-cases **(By February 2022),** where the stakeholders involved in each CAMI4.0 working group (TIN) agree a plan to align activities for the coming programming period.

VI. **Policy Implementation Framework:** This is a named project output, also called "CEUP 2030 Policy Framework – Synergising CE/EU Policies and Strategies for CAMI4.0 Excellence" (O.T3.2), which is the final strategic output of the project. It presents a combined view of the project's results – specifically a vision and objectives for each CAMI4.0 topic, with a signed capitalisation agenda showing the support of a diverse group of stakeholders (including Policy-Relevant stakeholders), and implemented through the formation and initiation of RIS3 Alignment Instrument Pilot Projects (See definition above). This should be achieved by February 2022, and must showcase the pilot projects and common policy use-cases.

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1.3. Methodology for the Strategy Implementation Blueprint

The Strategy Implementation Blueprint, developed in CEUP 2030, acts as an input and impulse into a series of iterative, strategic discussions within thematically focused working groups (Trend and Innovation Networks), and within geographical areas. The strategic discussions occur across the full project, and therefore the blueprint acts as a guide. The guide essentially leads the Partners towards the creation and presentation of the CEUP 2030 Policy Implementation Framework, the project's strategic output, which is the culmination of the work fostered by the partners across the full project.

The project follows and incorporated the following strategy building principal phases across the project:

- **Phase 1 – Building a Common Understanding** – this is characterised by a trust building and learning exchange process between the Partners and their stakeholder networks. Whereby each Partner explains their regional and national vision, along with the mission of their organisation to help deliver this vision.
- **Phase 2 – Strategy & Action Plan Formulation** – this phase is characterised by multi-lateral and bi-lateral discussions between the partners, and those defined as "TIN" Leaders, who will help facilitate cooperation in the project's key thematic focus areas. These discussions act as "Pre-TIN" activities, which allow each Partner to set their role associated to each working group, along with build their views into the objective setting for each thematic area.
- It is both expected and assumed in the project structure that these objectives and the associated action plans which are used to guide implementation of the objectives are working documents. With this status, they can be refined from the iterative discussions expected to emerge from November 2020 to November 2021.
- **Phase 3 – Strategy & Action Plan Implementation** – this phase has not begun, but will be embedded in the work of the TINs and the functional role of each Partner, whereby the Consortium builds and delivers on its objectives by taking meaningful steps towards the implementation of dedicated use-cases on the topics of advanced manufacturing and industry 4.0.
- **Phase 4 – Strategy & Action Plan Evaluation** – this phase is ongoing, and occurs as a by-product of consistent stakeholder dialogue. Within the final phases of the project, a dedicated recommendations document with evaluated use-cases will be produced.

The Strategy Implementation Blueprint ("Blueprint") sets a basis of common understanding between the partner regions involved in the project, on the four CAMI4.0 focus areas. It carries two aspects, (1) Joint Strategy and (2) Action Plans, containing PP use-cases for the four CAMI4.0 Topics. As previously described, the Blueprint sets a baseline for cooperation between partners, and will evolve through iterative discussions across the project.

Through these discussions, use-case ideas are formalised with the development & implementation (in certain cases) of two RIS3 Alignment projects, which are used to monitor the sustainable development of the common model for each CAMI4.0 Topic. These projects will be marketed under the Policy Implementation Framework, which ultimately represents a strategy and action plan which have gained support and buy-in from policy-relevant stakeholders.

A visualization of the strategy building process described above can be found in Figure 3.

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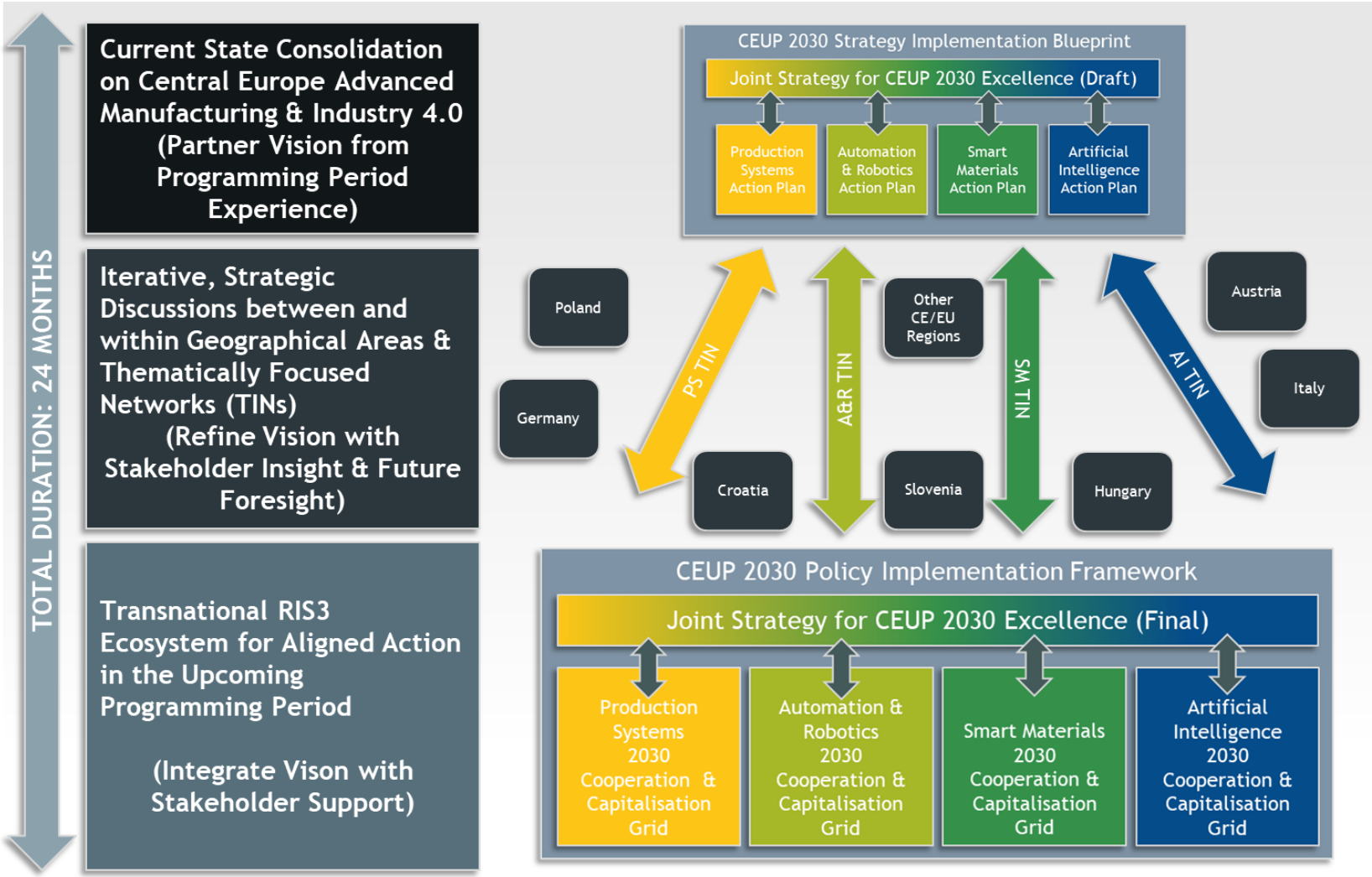

Figure 3 Strategy Building Process within CEUP 2030
(Source: Author Generated)

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1.4. Methodology for the Use-Case Oriented Action Plan

This section of the report provides an overview of the methodology which Partners followed when determining their policy instrument use-case development. Policy Instrument Use-Cases & the Use-Case Portfolio are the project terms used to represent the 10 Use Cases (10 portfolios, 4 actions per project partner), which the Partners have planned to develop their engagement with the CAMI4.0 topic for this programming period. Each use-case should be based on good practice experiences from each PPs in this programming period. Each use-case showcases a model of how to use policy instruments to create specific, positive motion to support organisations in engaging with the CAMI4.0 topics to promote adoption and development of advanced manufacturing and Industry 4.0.

The partners jointly harvested, and then developed a detailed action plan development process, working from June 2020 until September 2020. This occurred by balancing expectations from the application form, and building on good practice gained from PPs across multiple regional, national and transnational projects. A simplified version of this process can be found in Figure 4.

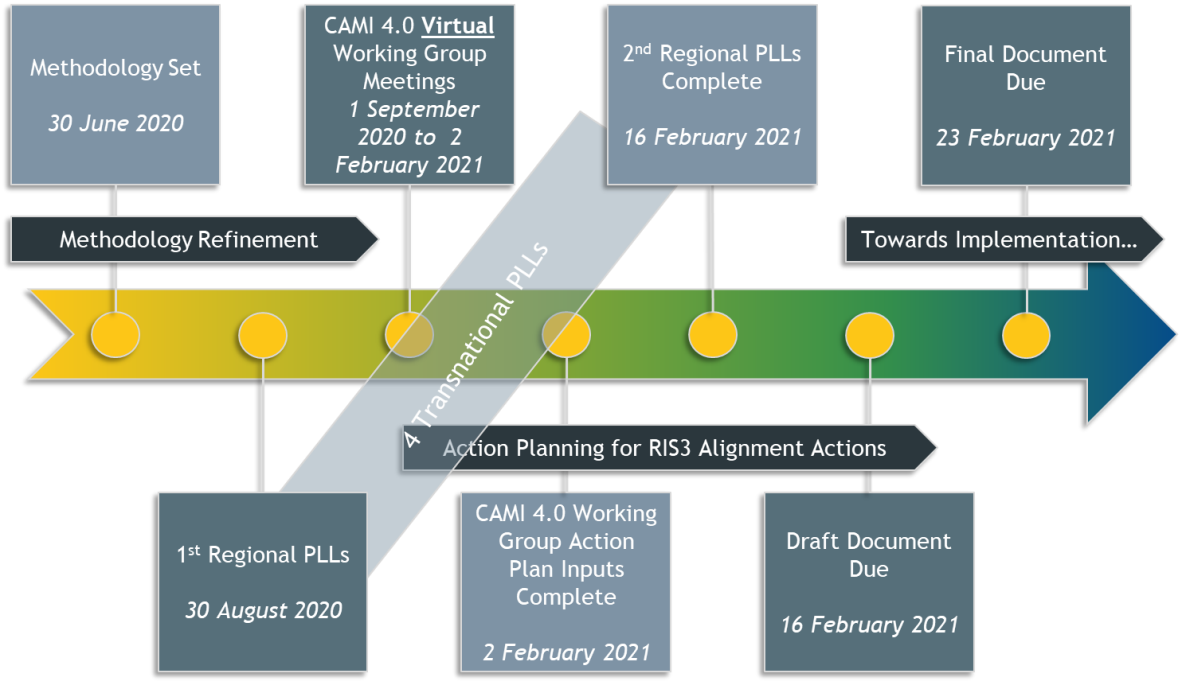

Figure 4 Simplified Action Plan Development Process (Source: Author Generated)

The Partners worked together in the CAMI4.0 internal working groups, the Trend & Innovation Networks (TINs), to share experiences, exchange on their capabilities and competencies, and engage in future-foresight orientated discussion on the future of central European advanced manufacturing. Furthermore, within a series of public policy-learning labs taking place at regional and transnational level, stakeholders were engaged on the issues facing Central Europe's manufacturing future. From these impulses, each PP project team developed their use case-oriented portfolio of actions, which underpin engagement with the topic of advanced manufacturing futures for the coming programming period.

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1.4.1. Framing the Policy Instrument Use-Case

As explained earlier, each use-case creates a model of how to utilise policy instruments to create specific, positive motion to support organisations engaging in CAMI4.0 topics. Each use-case addresses a clear challenge existing in the central Europe manufacturing eco-system, then matches it with a known or developing solution to support target groups engage with CAMI4.0, and finally selects an appropriate good-fit policy instrument which can support and target the development opportunity. All use-cases are connected to key EU and territorial area strategies for advanced manufacturing and intend to deliver long-term impact to EU policy and strategy development. Furthermore, the use cases have been built to capitalise existing results and promote cross programme collaboration.

This three-component use-case framework is visualised in Figure 5. In this figure, one can see that every use-case has a challenge-view and a technology-view, and it is the policy instrument, which acts a glue to link these components. The challenge view is characterised by the complexities of central Europe's manufacturing eco-system. The technology-view provides a reminder to all use-case users that it is rare that a solution is formed of a single technology and a single-actor. It is through technology-oriented cooperation (knowledge creation, transfer management and innovation management), and the acquiescence of actors into the role of knowledge supplier, knowledge facilitator and knowledge receiver for a solution to be fully, and successfully adopted.

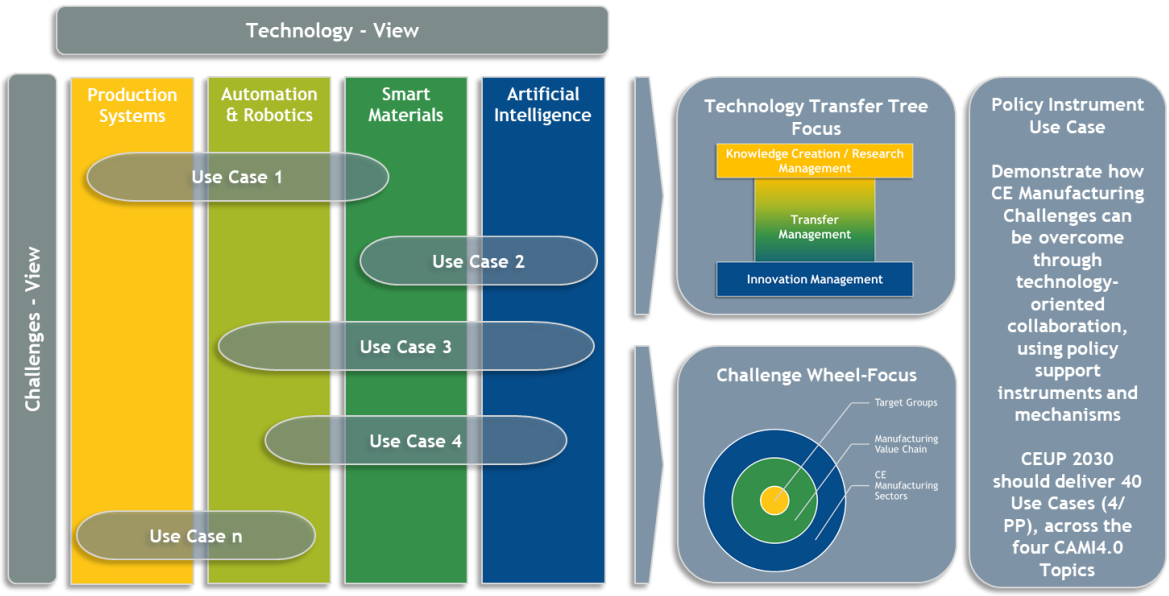

Figure 5 Use-Case Development Model
(Source: Author Generated)

This use case is ultimately a test model to showcase from the Partner's experience and the experience of their stakeholders, where future support is required, and tries to bridge between the two programming periods to set the correct trajectory for central Europe's manufacturing future using the mantra of "learning by doing". The test of this model comes across the project's next year, as the Partner's work to move the model towards financed support with existing and emerging policy instruments. Success, especially common success on jointly developed ideas, shows that the policy instrument landscape is developing in a way that complements the challenges and solutions of central Europe's manufacturing community.

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1.4.1.1. *Challenge View*

As raised in the previous section, the challenge-view is the first component which is assessed by the Partnership, when ideating on the use-case design. Challenges faced by the manufacturing community are multi-faceted, and exist in a complex world of differing needs at the target group, value-chain and sector-level. The Challenge Wheel, visualised in Figure 6, provides a methodology through which to view problems, and was developed by the Partnership as a means of creating a common nomenclature for discussing the issues faced by central Europe's manufacturing eco-system.

By spinning any one of the concentric circles, one is able to generate a new focus lens through which to view a specific challenge. By becoming more concrete about the challenges that we and our stakeholders face, we are able to better pinpoint and match solutions which can help us overcome our challenges.

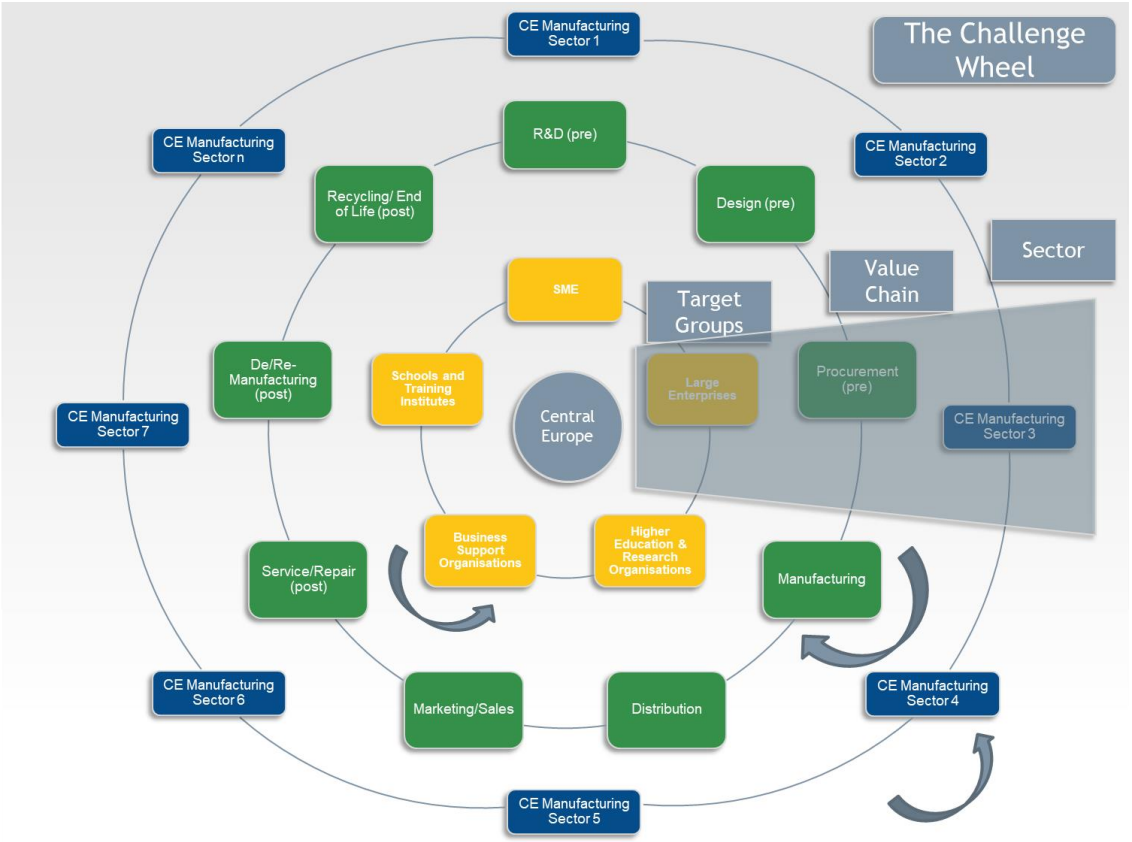

Figure 6 The Challenge Wheel (Source: Author Generated)

1.4.1.2. *Technology View*

As highlighted within the overarching section head, the technology-view was the second perspective by which to analyze a use-case. With this view, the partnership reached to a complementary project from the past programming period – 3DCentral, to present again in a remastered format, the Technology Transfer Tree. This methodology enables three disciplines of technology transfer to be visualized in one format, showcasing the significant number of value-chain steps which exist in the process of developing knowledge and embedding knowledge. It also showcases the important middle role, of the brokerage actors who facilitate the knowledge transfer process. It is also important to note that this process of facilitation can occur at and between any stage of the knowledge creation or knowledge receiving process.

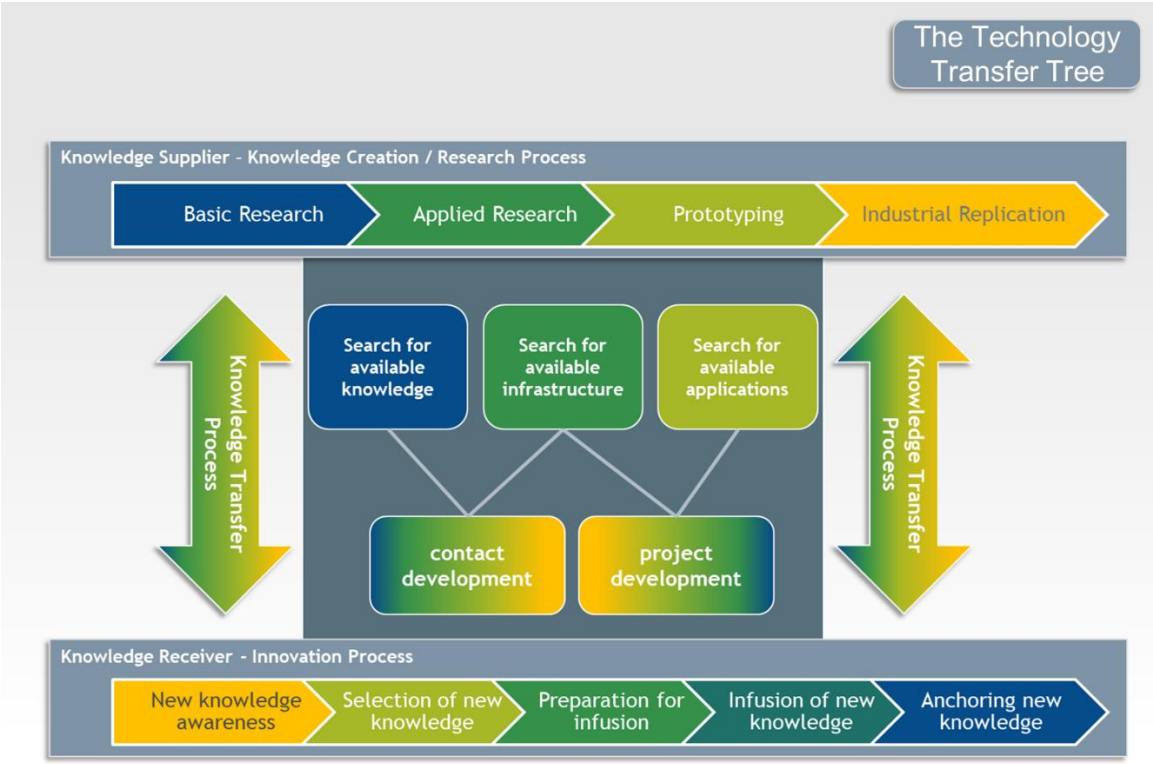

Figure 7 The Technology Transfer Tree
(Source: Adapted from Interreg 3DCentral)

1.4.1.3. *Policy Instrument Focus*

The final angle which is used to build the use-case is the policy instrument, which essentially links the technology-oriented solution to the specifically raised central Europe eco-system challenge. A policy instruments is the subsidy and or support tools and structures which exist to promote advanced manufacturing or industry 4.0. This can be a funding scheme, a subsidized service, equipment or infrastructure finance program, or another form of support tool looking to promote advanced manufacturing. These can exist at different territorial levels, but are usually promoted by a government / policy making organisation, or an organisation which has a mandate to deliver an instrument.

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1.4.2. Building the Use-Case and the Use-Case Portfolio

Once the Partners had engaged themselves and their stakeholders on the challenges and solutions which potentially exist in their eco-system associated to the adoption and uptake of advanced manufacturing and industry 4.0, the project partners began to develop together their specific use-case template. This template builds on the project partner's capabilities and competencies, along with the strategic intent of their organisation and the strategic intent of their regional and nation. The strategic intent of the partner's and their CEUP 2030 eco-system was detailed in the Joint Strategy for CAMI4.0 Excellence in CE/EU Cooperation.

A snapshot of the use-case template can be found below in Figure 8 and Figure 9. All completed templates can be found in the Annex of this document.

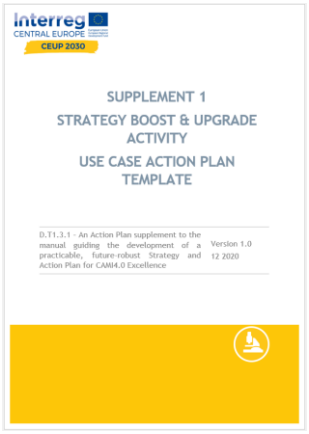

Figure 8 Use-Case Template Cover Page (Source: Project Group)

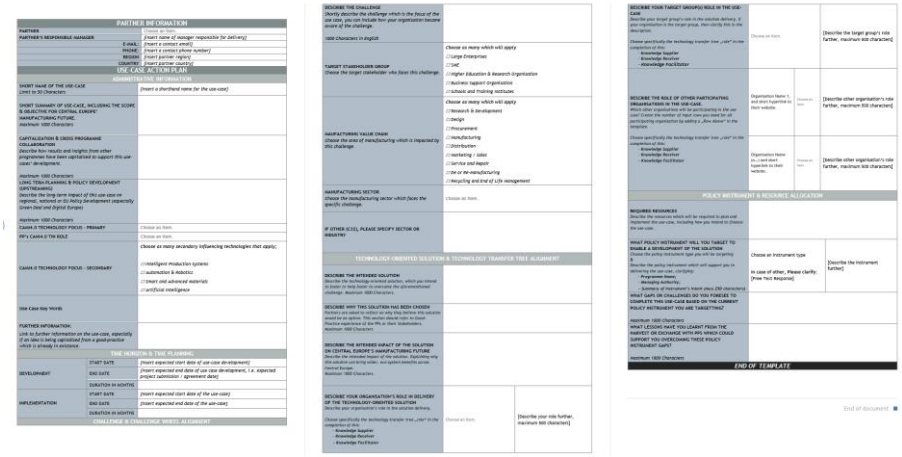

Figure 9 Use-Case Template Contents (Source: Project Group)

With the completion of each use-case template, the Partners begin to build their use-case portfolio. The development of this portfolio will occur across the next year of the project, as the Partners engage with their stakeholders to move the words of their strategy to action, using the plan and its contents as a guideline for their actions.

The use-case portfolio will be tested in the RIS3 Round Tables, with stakeholders from the Partner's regional eco-system, and will be optimised in coordination with key ministries responsible for research & innovation (or regional smart specialisation strategies). The Partners will also work within the Consortium, especially through the Trend & Innovation

Networks where the Partner is a core member, to exchange knowledge and build transnational understanding and cooperation within and between the use-case ideas.

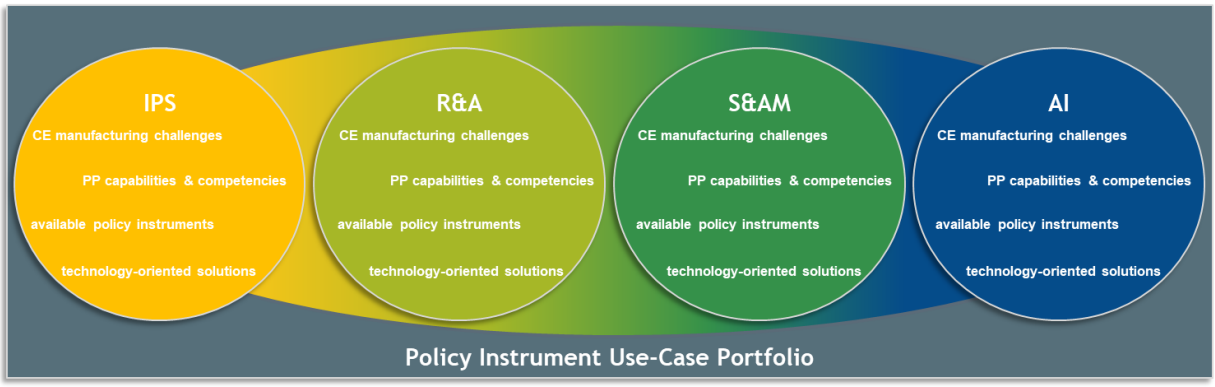

Figure 10 Policy Instrument Use-Case Portfolio Components, detailed (Source: Author Generated)

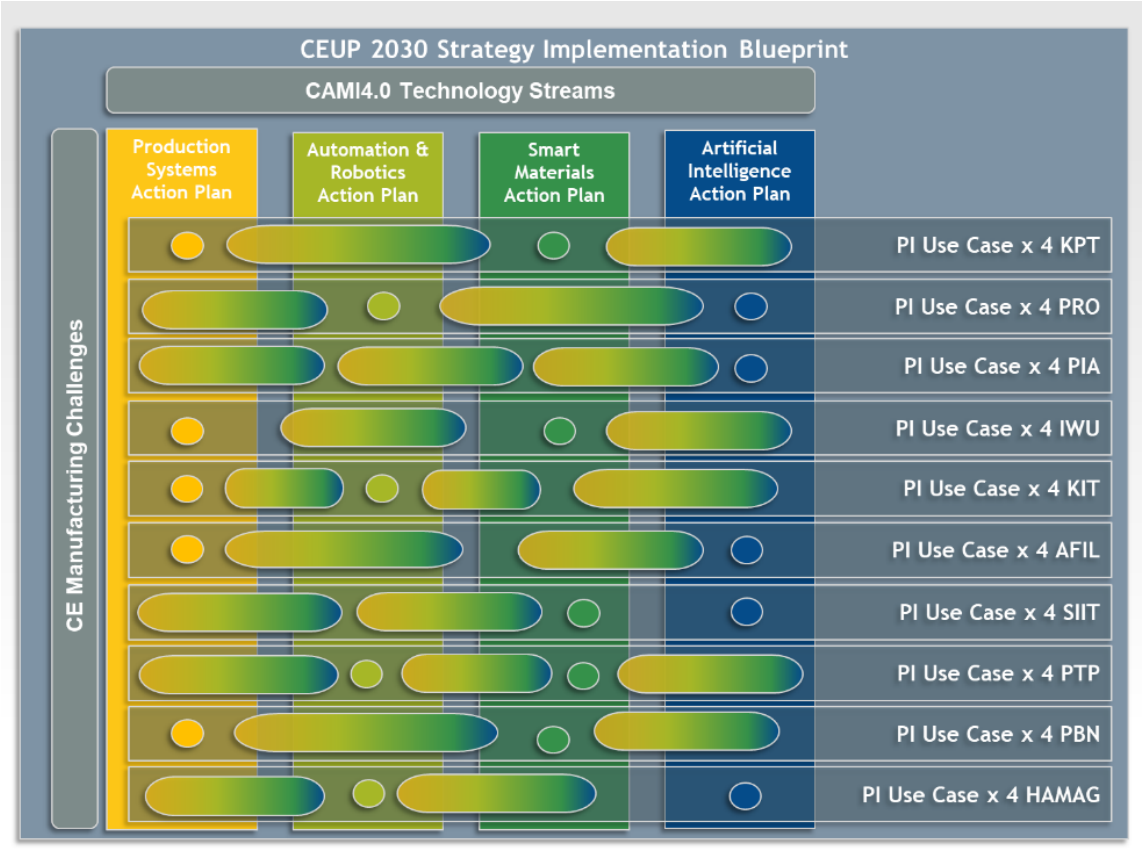

Figure 11 Action Plan Use-Case Portfolio Visualisation (Source: Author Generated)

Within the remaining pages of this document one can find the results of the strategic partnership analysis of key central Europe manufacturing eco-system challenges, and the resulting Action Plan which is being used to target support and evidence gathering for promoting the uptake and adoption of the four CAMI4.0 Topics.

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2. Intelligent Production Systems

As highlighted in the Consortium's Joint Strategy for CAMI4.0 Excellence, an intelligent production system (IPS) is a system with the cognitive ability to deliver efficient interaction within a distributed industrial production environment, where humans and objectives collaborate in complex processes along the entire value-creation chain (Uhlmann, Hohwieler, Geistert, 2017: 1). The Intelligent Production Systems TIN aims to include different interconnected topics that require to be investigated together in order to achieve a holistic development of the entire production system.

The IPS module of this Action Plan starts with an overview of the manufacturing eco-system challenges which exist in Central Europe, these challenges are broken down into specific needs-related statements at the sector-level, the value-chain level and the target-group level.

The second section of this module details the Intelligent Production Systems-oriented capabilities and competencies of the CEUP 2030 Partnership in tackling these challenges.

The third and final part of the IPS Action Plan module details the 10 use-cases developed by the Partnership in association to the topic of Intelligent Production Systems.

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2.1. Challenges and Needs for Intelligent Production Systems

The challenges facing the manufacturing eco-system in Central Europe vary across geographical area. Within this section, the members of the CEUP 2030 Consortium have captured some of the key needs which exist at three levels: Sector, Value-Chain, Actor/Target Group. The challenges are detailed within Table 1, Table 2, and Table 3.

Table 1 Manufacturing Sector Needs Associated to Intelligent Production Systems

Manufacturing Sector Needs
Austria ➢ Enhancing manufacturing in SME ➢ Flexible Manufacturing (Mass customization ➢ Manufacturing in short time ➢ Sustainable and green manufacturing ➢ Digital transformation of SMEs ➢ Brownfield equipment in usage, need for a technology upgrade ➢ Lack of (open) technological standards regarding Industry 4.0
Germany ➢ Enhanced cooperation among innovation actors in Europe. ➢ Shifting from production culture of mass production to mass customisation ➢ Larger cooperation of society and industry for the envisioned smart cities of the future. ➢ Establishing an open innovation and venture culture ➢ Capacity to quickly adapt to demand and production changes ➢ Ensure high quality of production and the associated processes by focussing on longevity and robustness as well as accessibility of the components ➢ Guarantee cybersecurity and data protection against misuse
Poland ➢ Awareness of existing modern tools that foster standards implementation (showcasing solutions) ➢ Lack of expertise/specialized knowledge at factory level and access to well-trained specialists to work in the field ➢ Data security problem – the need for risk management ➢ Data integration at factory level (Chief Data Officer - CDO) ➢ Cybersecurity – ensuring security against cyberterrorism ➢ Funding scheme to introduce new production system solutions ➢ Customer experience & customer journey analysis
Italy ➢ Upgrade Employee Skillset and Training. ➢ Improve cybersecurity ➢ Develop standardized Ethical and moral guidelines ➢ Develop standardized Privacy regulations ➢ Upgrade ICT infrastructures and collect high-quality data. Actually, companies' infrastructures and computing are not advanced enough to enhance AI. ➢ Identify appropriate business use-cases to show AI effectiveness ➢ Enhancing the autonomy and changeability of the production system
Hungary ➢ Automotive production is dependent on the ownership: o Large multinationals – cheap labour-force oriented mass productions, with limited customization and added value. Due to increasing costs, constant loss of competitive advantage.

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○ Local companies – wide range of manufacturing tools, to provide flexible, agile, small batch production, yet with strongly limited added value and low level of digitalization ➢ Wood and Furniture industry: ○ Cost pressure due to concentration of retail sales and raw material distributors. ○ Need for co-design, unique solutions and high level of customization.
Slovenia ➢ Cloud computing & HPC ➢ Computer infrastructure (e.g. software, storage space, etc.) ➢ The need for major capital investment ➢ In 2018, 26% of companies with at least 10 employees hired cloud computing services (in 2017: 22%). The hiring of these services is growing among companies of all sizes (according to the number of employees). These services are hired by 23% of small (in 2017: 18%), 37% of medium-sized (in 2017: 34%) and 64% of large companies (in 2017: 54%). ➢ A need of establishing a comprehensive cyber security system as an important integral factor of national security, that will contribute to the provision of open, safe and secure cyberspace for the smooth operation of both infrastructure important for government and the industry, as well as for the life of each individual. ➢ Also adaptation of the legal framework / development of policies for data-driven economy (interoperability, data protection, consumer protection, network security, intellectual property, regulatory stability, building consumer confidence into data technologies) ➢ Harmonization with digitization of the economy, entrepreneurship, enterprises and factories (Industry 4.0), public research and innovation on technological, legal and other bottlenecks.
Croatia ➢ Less taxes on highly qualified and skilled workforce ➢ Financial and expert support in projects of modernization of Production Systems ➢ Regional competence centers on advance production systems

Table 2 Manufacturing Value Chain Needs Associated to Intelligent Production Systems

Manufacturing Value Chain Needs
Austria ➢ Green and circular economy for a sustainable manufacturing value chain ➢ Energy efficient manufacturing chains ➢ Regional Manufacturing chains ➢ CO2 Footprint management ➢ Make or buy decision support
Germany ➢ The need for a circular economy for a greener manufacturing value chain ➢ Energy efficient value chains with energy optimised production planning using renewable energy from the grid ➢ Europe-wide connection to ensure a common knowledge base ➢ More technology - push activities needed ➢ Increase research activities to deepen knowledge base about consumer trends and customer wishes ➢ Flexibility to cope with unforeseen situations ➢ Data management techniques and systems

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Poland

- To increase productivity and adapt to market changes
- Access to knowledge about new business trends
- Access to data in real time
- Access to consulting services at reasonalbe price level
- Access to credible digital services providers (as a rule they are all connected to suppliers of specific solutions)
- Think out of the box – solve the problem of silo quality of individual departments in the company
- Appropriate data protection and standardisation of data exchange formats
- Faster/real time decision making process

Italy

- Create trust and companies' culture.
- Allow data explainability
- Integrated common digital platforms.
- Develop a common machine language, to allow operating with standardized interfaces between machines.
- Align business not only within the company, but with the whole supply chain: AI implementation requires a strategic approach, setting objectives, identifying KPIs, and tracking ROI.
- Integrate AI into existing systems, also within customers and suppliers.
- Technologies need to be implemented for the enhancement of the conceptual framework.
- Stronger interdisciplinary

Hungary

- Supply chain is driven by international players with strong bargaining position
- Education is dominated by the short-term demand of large multinationals, while universities can provide labour force only with 4-5 years planning
- Sales is characterized by pull approach; manufacturers typically wait for the orders in a passive way.

Slovenia

- Daily use of information and communication technologies produces very large amounts of different data. Additionaly the growing number of smart devices connected to IT infrastructure with different formats, structure are quickly created and are quickly available for use (mass data=big data). Main advantage of analyzing such data is quick provision of important information crucial for decision making.
- In 2017, 10% of companies with at least 10 employees (8% of small companies, 17% of medium-sized companies and 38% of large companies) analyzed mass data.Most of the companies mentioned, 65%, analyzed their own mass data from smart devices or sensors (e.g. data generated by device communication with devices, data from smart meters, car sensors, data from radio identification marks); 40% analyzed geolocation data generated by the use of mobile devices (e.g. portable devices using mobile telephone networks, wireless connections or GPS); 31% of data generated by the use of social media (e.g. the use of social networks, blogs, multimedia sharing websites) and 14% of other mass data sources. In 91% of companies, mass data were analyzed by employees in

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the company (including employees in the parent company or in related companies), and in 24% of companies by external service providers.

- Value chain is seen in development of own enabling technologies, digital infrastructure and knowledge, public data sources, the infrastructure for their exchange and use and infrastructure to facilitate development, the national cloud computing, the Arnes cloud computing and high-performance computing cluster for SLING research institutions, data-driven innovation in the public sector and the economy, and in use of open standards and personal data protection.

Croatia

- Finance and expert resources in SMEs for improvement of productions systems
- Support for more high technology products for exports (in 2017 it was only 9.3% of total exports (EU average 17.8%)
- Support in lifelong learning programs (in 2017 only 2.3% of the population aged 25-64 were included in lifelong learning programs (EU average 5 times bigger)
- Easier approach to knowledge and expertise in the field (conferences, workshops, fairs)

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Table 3 Manufacturing Target Group Needs Associated to Intelligent Production Systems

Manufacturing Target Group Needs				
SMEs	***Large Enterprises***	***Higher Education & Research Institutions***	***Schools & Training Organisations***	***BSO & Others***
Germany Needs better knowledge transfer from research to SME for their empowerment and creation of new innovative products. funding mechanisms, agile product development processes, develop crisis management strategies **Austria** Digital Transformation, digital assistance systems, lack of skilled personal technological development paths unclear, lack of neutral knowledge, need for use cases, lack of "Culture of innovation", need for financial support **Poland** more public financial instruments for the development of R&D area **Italy**	**Germany** Focus on greener manufacturing and circular economies expand the attention on R&D topics, proper data management **Austria** less profit, more work life balance lack of human resources, need for technological standards **Poland** specialists, trainings **Italy** Need to integrate/align the whole supply and value chain. Need to translate their current as well as future needs and trends to policymakers, that can thus develop innovation strategies accordingly. more investment in the field. Bigger focus on research and development	**Germany** More interdepartmental cooperation required and focus on sustainability and mobility; knowledge & technology transfer between research, intermediaries and industry needs to be enhanced, better structured and professionalised conduct research based on current market needs **Austria** too far from market, too much specialists, too much research without goals **Poland** scholarship programmes, networks and connections with business **Italy** Need to be closer to companies, in order to better understand their needs and future trends, as well to have the possibility to	**Germany** focus on strengthening future competencies connect theoretical and practical knowledge **Austria** No training for workers, further education **Poland** raising awareness, dedicated educational programmes for yout **Italy** Scouting and interaction with companies to develop ad-hoc trainings. **Hungary** practice-oriented training **Slovenia**	**Austria** Too many different organizations without collaboration Policymaker's lack of systemic collaboration/communication with industry **Poland** financial resources and instruments to support the business development **Italy** Need to be skilled enough and have a general mindset to support and guide companies in undertaking innovation changes. Need to be part of a comprehensive network with all key stakeholders on the topic. **Slovenia** looking for policy level S4 supporting documents in order to help industry at EU R&D project funding/tenders and/or to

Need to receive Technological support from the right expert, able to identify the right solution for the company since most of the solutions are not ready to market bus must be tailored according to the specific company, Financial instruments to support the introduction of AI solutions and Training to skill operators. Policy maker support, funding instruments, training **Hungary** co-design and agile production **Slovenia** access to solution providers for applicative tailor-made solutions and co-funding opportunities; **Croatia** **Need time to look for possible solutions, finances, skilled workforce**	**Hungary** data-driven decision making **Slovenia** scouting for SMEs/Start-ups with disruptive technologies and potential inclusion into vertical value chains; **Croatia** High-Mix/Low-Volume Production or Production of products with low Added Value	concretely test and adjust their researches and applications. **Hungary** flexible and business-oriented curriculum development **Slovenia** to develop a digital infrastructure for open research and public data, networking the HPC infrastructure and cooperation with SMEs in applicative research; also, to encourage the transition of R&D results as soon as possible through the use of pre-commercial public procurement data technologies on the market; **Croatia** better connection to the private sector, still limited availability of financing instruments available to finance research and development projects in cooperation between industry and HE&R institutions, support to student projects in the field, support of technology transfer offices, new joint study programs	In the field of education, open learning environments must be designed in such a way that innovative pedagogical approaches make full use of the possibilities of using ICT in learning and teaching processes; **Croatia** modern equipment, curriculum with significant hands-on training on the most advance technology	design favorable ecosystem with support; to develop a national development and innovation cloud, increase efficiency by digitizing companies, public administration and the non-governmental sector, competitiveness, accessibility and transparency **Croatia** finance and expertise to form high value support mechanisms in production systems for manufacturing organizations

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2.2. Capabilities and Competencies from IPS Members

The Partners were asked to describe their capabilities and resources, and strengths and competencies associated to the topic of Intelligent Production Systems. In this exercise the Partners build trust amongst each other. The core members are able to demonstrate and exchange on the infrastructure, network and in-house knowledge that is possessed. The learners are able to showcase their perspective on the topic of IPS, and demonstrate from which perspective they plan to build their learning-oriented use-case.

Table 4 Intelligent Production System TIN Working Group Members

Working Group Members	
Leader	**Karlsruhe Institute of Technology**
Core Member	**Learner**
☒ Krakow Technology Park (KPT) ☒ PROFACTOR (PRO) ☒ Lombardy Intelligent Factory Association (AFIL) ☒ Pannon Business Network Association (PBN)	☒ Association Industry 4.0 Austria (PIA) ☒ Fraunhofer Institute for Machine Tools and Forming Technology (IWU) ☒ Intelligent Integrated Systems Technology (SIIT) ☒ Pomurje Technology Park (PTP) ☒ Croatian Agency for SMEs, Innovations and Investments (HAMAG)

Table 5 Capabilities and Competencies of the CEUP 2030 Partnership Associated to IPS

Partner Name	Role	Resources & Capabilities for IPS	Strengths & Competencies for IPS
KIT	**Lead**	➢ Large advanced manufacturing laboratories ➢ Hybrid process chain development pilot lines including 3d printed, robots control systems etc. ➢ Large scale energy infrastructure in the form of ENERGY LAB 2.0 ➢ Large part and process characterisation facilities	➢ Process optimisation ➢ Information Management ➢ Additive manufacturing and functional 3D printing ➢ Database management ➢ Part and process characterisation ➢ Precision Process development for metal additive manufacturing
KTP	**Core**	➢ DIH specialists team ➢ Access to expertise and know-how (research & business through DIH partners) ➢ Strong regional ecosystem ➢ Client network (200 SMEs and LE) ➢ Training facilities ➢ Dedicated robotic centre (Astor showroom)	➢ Regional, national and international partner network ➢ Experience to connect tech suppliers/ providers with tech receivers ➢ Matchmaking and partners search
PRO	**Core**	➢ App. 50 high skilled researchers in production research	➢ 25-year experience in production research

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		➢ App. 100 Industrial partners ➢ App 25 research partners	➢ ~130 EU projects in production research, ~app 300 national funded projects
AFIL	**Core**	➢ **Awareness creation and innovation scouting:** organization of meetings and events in the field of Production System, mainly thematic workshops for increasing awareness on the topics involving key players of the network. ➢ **Road mapping:** identification of stakeholders needs and priorities in the field of Production System ➢ Regional and Interregional ecosystem Building and networking on the topic. ➢ Facilitate access and connection with innovation infrastructures, mainly from core players in the regional and interregional AFIL network, both industrials and academia.	➢ Consolidated network of expert from different fields that offer their knowledge and competences in an open innovation environment ➢ Direct or indirect dialogue with institutions of different levels. ➢ Experience in many cooperation projects addressing this topic, generating new insights for the regional network ➢ Foster the dialogue and interaction between SMEs and large enterprises, creating mutual benefit
PBN	**Core**	➢ For 3D polymer and resin-based printing available technologies at am-LAB: ▪ Ultimaker 3 Extended ▪ Extreme Builder 1000 ▪ Prusa i3 MK2 ▪ Formlabs Form 2	➢ 3D polymer and resin -based printing ➢ Cooperation in flexible, agile short supply chain management ➢ Research on re-used filament technology together with university laboratory
PIA	**Learner**	➢ 4,8 FTEs working towards enhancement of Industry 4.0 in Austria ➢ Well established structures and different formats ➢ Pool of 700 experts to be involved in work regarding the topic	➢ High level of expertise through members ➢ Functioning system regarding the exchange of good practices and experiences ➢ R&D Roadmap, created collaboratively with industry & science partners
IWU	**Learner**	➢ E^3 research factory for resource-efficient production ➢ Applied expertise in embedded sensors and actuators through industry-relevant projects ➢ 3D printing ➢ Good regional involvement in research and industry	➢ Skills in topics related to I4.0 and mechatronics ➢ Offer workshops and project pitches for ideas on smart production ➢ Testing components for I4.0 solutions ➢ Possibility of close partnership with industrial partners and joint research
SIIT	**Learner**	➢ Experience in adjusting the manufacturing process in real time, introducing smart decisions based on the forecast of the models, thus reducing the product	➢ Activities performed in different research project ➢ SIIT is part of technological cluster FABBRICA Intelligente which strengthen the partner's

		variability, increasing the efficiency, saving time and costs and reducing the number of rejected units or discarded material. ➢ Experience in improving the performance of the production processes through a strong integration and interaction with the measurement systems	knowledge and potential impact
PTP	**Learner**	➢ None „in-house“ ➢ PTP acts as intermediate and links SMEs with needs with most competent solution providers and strives to find funding options (no fixed cost of staff or infrastructure); ➢ networks of partners and competences: • DIHs-international, • SRIPs-national, • Tech parks networks) ➢ Trainings in soft skills like LEAN / coaching & Tailor-made solutions for SMEs ➢ Consulting management and help at tender applications for SMEs	➢ Versatile and transnational networks with partnering institutions ➢ Various trainings (where & when needed external competent lecturers on contract) ➢ We strive to find funding options for both parties (SME with need and solution provider) ➢ Wide network of production companies (target market to implement big data analytics and sensors)
HAMAG	**Learner**	• Connection with all the relevant stakeholders who are in charge of Production Systems in Croatia • Experience in executing programs and projects from the field • Regional ecosystem building and networking on the topic	• Transnational networks with partnering institutions

2.3. Intelligent Production Systems Action Plan

Within the module of Intelligent Production Systems, the CEUP 2030 Consortium developed 10 Use-Cases, to demonstrate each Partner's plan for the coming years to promote the adoption and uptake of IPS. The Use-Cases build on each Partner's competencies and eco-system needs, and emerged from the activity within each Partner network and across the opportunities developing in the new programming period. The full and detailed use-case description can be found in the Annex of this document, divided on a partner-by-partner basis. We highly recommend that stakeholders interested in learning more about a specific developing case reach out to the named Partner leading the use-case, and find out how you can get involved.

Within this section one can find a summary of each Partner's use-case, and the timeline for the delivery of the two key action stages.

2.3.1. Intelligent Production System Use-Case Summaries

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
KPT	Evaluation and redefinition of KPT ScaleUP programme	KPT ScaleUP is a dedicated tool and programme, which connects and triggers the development of start-ups who develop and test their technological solutions in the industrial environment of big and significant regional enterprises. It consists of an accelerator focused on start-ups offering products and services in the area of Industry 4.0, the industrial Internet of Things and smart city. It allows to establish real cooperation with large industrial partners who, as part of the program, share their know-how, expert knowledge and enable the test implementation of a start-up solution and offers an extensive training program, practical workshops, individual mentoring and extensive networking. The acceleration program is a 6-month program, carried out in Krakow (excluding visits to industrial plants or trips to international start-up communities). Acceleration is based on a series of exclusive internal events, reasonably spread over a period of 6 months: workshops, consulting, mentoring and networking. One of the basic elements of the program are meetings with Technology Recipients - industrial partners carefully selected for each round of the accelerator. Mentoring and counseling are determined individually - representatives of the start-up decide about the selection of people from the list provided by KPT ScaleUP. Group workshops complement the individual forms and the program ends with Demo Day - an event during which accelerated start-ups boast about their solutions in front of the audience	TBD	European Development Fund

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PP	Use Case Name	Short Summary	PP Role	Policy Instrument
PRO	EDIH - ASSIST4SME	A European Digital Innovation Hub (EDIH)2 is a single organization or a coordinated group of organizations with complementary expertise, with a not-for-profit objective3 that support companies – especially SMEs and mid-caps – and/or the public sector in their digital transformation. EDIHs offer services such as): Test before invest, Skills and training, Support to find investment, innovation ecosystem and networking. The services of the EDIHs should be complementary to and not replace existing (commercial) services of e.g., training suppliers or ICT companies. EDIHs are a strategic instrument of the commission which will become more and more important for the European (and therefore also for the Central Europe) Manufacturing future	Knowledge Supplier	Part National Financing/ Part European Financing via the Digital Europe Programme
PIA	Share4.0 – SK-AT	The project goal is to establish a strategically sustainable, result-oriented cooperation of the key actors from all participating regions for a Smart Industry Network SK-AT. This is done by establishing a practicable, coordinated working basis regulated by a cross-border governance model for research and innovation. This will be tested in the project through pilot projects, involving decision-makers, multipliers, target groups from administration and politics, research, economy. The results are a 1) close, practicable cooperation of institutions in the field of research, innovation on Industry 4.0, which includes the 8 partners and at least another 8 organizations in the SK-AT region and exceeds the project duration, 2) the targeted development and implementation of pilot projects with topics relevant to SK-AT, e.g., robotics, sustainable production and 3) the organizational anchoring supported by a strategy and action plan.	Knowledge Facilitator	Interreg V-A Slowakei – Österreich 2014-2020; Ministry of Agriculture and Rural Development of the Slovak Republic
IWU	PRO Future	Submission of a project sketch under the BMBF funded program Clusters4future for a cluster concept combining materials science and manufacturing technologies with social science and open innovation concepts. The cluster project aims to foster digitalization of industrial production (Industry4.0), target the whole value chain and company processes focusing locally on the new German federal states (Saxony, Saxony-Anhalt, Brandenburg) and SMEs in the region. Novel influences from urban areas should be transferred to rural areas. Technologically, materials science and production technologies like additive manufacturing should be brought into connection with societal dynamics, mutual learning and knowledge transfer.	Knowledge Supplier	Clusters4future of the BMBF (German Federal Ministry of Education and Research)

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
KIT	Next Generation Factory Pilot Lines	Scalable Flexible Manufacturing is the realization of implementing a manufacturing process chain that is capable of achieving production of products with a lot size of 'one' while still using mass production methodologies. The objective of the use-case solution is to showcase a pilot line for next generation manufacturing that comprises of hybrid manufacturing technologies, as well as conduct sustainability studies on the proposed solution through life cycle assessment, and by identifying the reduction reuse of waste in the process chain.	Knowledge Supplier	Horizon Europe (No call specified)
AFIL	Strategic Community on Additive Manufacturing	Although many research and innovation activities are implemented around the topic of Additive Manufacturing, some challenges are still in place when it comes to the integration of additive manufacturing technologies in high volume production processes. Companies who want to benefit from additive manufacturing should be supported by academics and technology providers, in a logic of Open Innovation, to design and uptake the most efficient solutions both in terms of costs and resources.	Knowledge Facilitator	Private and Public Funding
SIIT	SAFE - Physical safety of people in high-tech work environments through innovative sensors and IoT	The purpose of the SAFE use-case is the protection of operators at the shop-floor level by ensuring the uniformity of safety conditions, regardless of the particular site in which they operate. The system that will be implemented has the objective of being usable both in a factory with permanent installations and in temporary situations, ensuring the same protection for all workers.	Knowledge Facilitator	Regional/ National Funding Program, specifically the "Notice for the distribution of contributions to industrial research and experimental development use cases on the topic of enabling technologies 4.0 for the security of critical infrastructures"
PTP	Smart Factory Demonstration Center	Slovenia is slowly catching on more developed countries with established demo/pilot plants or centers. Currently there are only 2 known in Slovenia and new initiatives are popping up, aside of already small lab unit in public and private institutions and companies. However, high infrastructure costs (at setting up and maintenance) force actors to join forces and with such critical mass of interest and competences ask governments for certain financial assistance. Especially international community with its specialization (digital transition also as per CAMI 4.0) has forced also Slovene ecosystem into special strategic instruments that will enable all companies, especially SMEs, effective access to new technologies, practical training and	Knowledge Facilitator	Multiple: National funds such as (LEARNING MANUFACTURING LABORATORIES (1,5 m€ from March 2021 on) SIO (2020-2022))

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
		knowledge transfer from scientific-scientific-development environments to the real industrial environment. For knowledge transfer, it would make sense to establish links between similar centers in CE (test before invest physical plant).		+ ERDF Funds, such as (HORIZON-CL4-2021-TWIN-TRANSITION-01-07: Artificial Intelligence for sustainable, agile manufacturing (IA) HORIZON-CL4-2021-DATA-01-03: Technologies for data management (IA) HORIZON-CL4-2022-DATA-01-04: Technologies and solutions for data trading, monetizing, exchange and interoperability (IA) 184)
PBN	Digital twin of the demo production line	PBN's 4 use-cases are strongly connected with each other. Basically, the Demo production line would be the first necessary development in order to continue the process with the use cases defined at the 3 other topics (Intelligent production Systems, AI and Smart Materials). The demo production line establishment is described under the use case for Automation and Robotics. The digital twin of the demo production line will be established. The digital twin can be defined simply: "…a digital twin is a virtual model of a process, product or service. This pairing of the virtual and physical worlds allows analysis of data and monitoring of systems to head off problems before they even occur, prevent downtime, develop new opportunities and even plan for the future by using simulations." (Forbes, 2017) Creating the digital twin and supplementing the demo production unit with it would be a great contribution to the development of Central European innovation capacity. The digital twin enables several virtual testing opportunities for the production process. Several simulations can be created, tested, customized with the aim of optimizing the production. Meanwhile, the physical unit doesn't work: row material remains, waste isn't	Knowledge Facilitator and Knowledge Supplier	Multiple: Horizon Europe Program; Digital Europe Program; Interreg Europe Program; Interreg Central Europe Program Danube Transnational Program; Cross-border cooperation

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
		generated. The real production starts only when the virtual test is successful. Possible functions: - forecast based on the virtual simulations, - suggestions to the real production, - testing virtually the effectiveness of the production components – how does the production go with or without a component? - it can be used for budget estimations – it can clearly show the need for energy resources, raw material etc. - any other customized functions		opportunities Region
HAMAG	KPIs to improve quality of Smart Materials and Intelligent Production System calls	Based on the output and result indicators for ERDF (Investment for jobs and growth and Interreg) RCO (Reggio Common Output Indicator) and RCR (Reggio Common Result Indicator) stated in the Cohesion Fund , Policy Objective 1 – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity, we are aiming to find out the most appropriate key performance indicators KPIs which will be used to design efficient call and to monitor its implementation in the fields of Smart Materials and Intelligent Production Systems.	Knowledge Facilitator	INNOSUP 2021-2027

2.3.2. Intelligent Production System Use Case Time Horizon

Within this section one can find an overview of the Partner's intended timeline for developing and implementing the use-case. The use-cases which the Partners are developing span over a decade. However, most of use-cases are developed and implemented within the next 48 months.

PP	Use-Case Name	Action Phase	2020	2021	2022	2023	2024	2025	2026	2027	Beyond+
KPT	Evaluation and redefinition of KPT ScaleUP programme	Development		01/01/2021 - 01/06/2021							
		Implementation		01.06.2021	01.06.2022						
PRO	ASSIST4SME	Development									
		Implementation			01.01.2022			31.12.2025			
PIA	Share4.0 – SK-AT	Development		01.04.2021	31.08.2022						
		Implementation		01.06.2021	30.11.2022						
IWU	PRO Future	Development	16.11.2020	16.02.2021							
		Implementation		01.08.2021							To 01.01.2032
KIT	Next Generation Factory Pilot Lines	Development		01.02.2021	30.04.2022						
		Implementation			01.05.2022			30.04.2025			
AFIL	Strategic Community on Additive Manufacturing	Development		01/03/2021 - 30/06/2021							
		Implementation		01/09/2021 to End TBD							
SIIT	SAFE - Physical safety of people in high-tech	Development	06.07.2020	01.02.2021							

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PP	Use-Case Name	Action Phase	2020	2021	2022	2023	2024	2025	2026	2027	Beyond+
	work environments through innovative sensors and IoT	Implementation		01.02.2021		01.02.2023					
PTP	Smart Factory Demonstration Center	Development	01.10.2020	31.03.2021							
		Implementation		01.04.2021							28.02.2031
PBN	Digital twin of the demo production line	Development				01/01/2023 - 31/12/2023					
		Implementation					01/01/2024 to End TBD				
HAMAG	KPIs to improve quality of Smart Materials and Intelligent Production System calls	Development	01.10.2020	31.03.2021							
		Implementation			01/04/2022 - 01/10/2022						

3. Automation and Robotics

As described within the Joint Strategy for CAMI4.0 Excellence report, **Automation and Robotics (A&R)** support the "Factory of the Future" and enables realising efficient, effective production processes ranging from nano scale processes over collaborative robotic systems to complex adaptive production systems. The CEUP 2030 TIN objectives for A&R is to promote dialogue and exchange with policy makers, and enable network sustainability. Furthermore, the working group will support a series of technical objectives including: (1) Training for Stakeholder Knowledge & Upskilling, (2) Technology Network Connection for Enhanced Future Foresight, (3) Research and Development on the identified sub-topics, (4) Technology Transfer to Non-Industrial Applications, and (5) Pilot Actions for Infrastructure and Knowledge sharing. These principles and the need for them will be further elaborated.

The A&R module is similarly structured to that of IPS, and begins with an overview of the manufacturing eco-system challenges which exist in Central Europe, these challenges are broken down into specific needs-related statements at the sector-level, the value-chain level and the target-group level. The goal of this section is to provide detailed context for the issues facing the central Europe manufacturing eco-system, with regards to automation and robotics.

The second section of this module details the A&R-oriented capabilities and competencies of the CEUP 2030 Partnership in tackling these challenges. This can be both technical and cooperation-oriented, and provides important background as to why the Partner is developing their use-case in a specific direction.

The third and final part of the A&R Action Plan module details the 10 Use Cases developed by the Partnership.

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3.1. Challenges and Needs for Automation & Robotics

The challenges facing the manufacturing eco-system in Central Europe vary across geographical area. Within this section, the members of the CEUP 2030 Consortium have captured some of the key needs which exist at three levels: Sector, Value-Chain, Actor/Target Group. The challenges are detailed within Table 1, Table 2, and Table 3.

Table 6 Manufacturing Sector Needs Associated to Automation and Robotics

Manufacturing Sector Needs
Austria ➢ Need for education and up-skilling for workers ➢ Implementation-support for cooperative and collaborative robots including safety aspects ➢ Further support regarding remote maintenance/operation support and regarding self-driving support vehicles ➢ Collaborative robots, teams of robots and human ➢ Easy to program and flexible to adjust ➢ Assistance systems (cognitive and physical) ➢ Safety and security aspects ➢ AI for automation
Germany ➢ Collaborative Robots ➢ Promoting Human-Robot collaboration and exoskeletons to support employees in physical work. ➢ AI based automated production cells as well as automated robotics with focus on energy efficient path planning. ➢ Agility ➢ Ensure SME competitiveness on a global scale
Poland ➢ agile production systems ➢ platforming and integration ➢ bridging automation strategy with business and operations strategy ➢ tailored tools and financial instruments at regional and national level to support SMEs in implementing factory and process automation (common platform with best practises, statistics data, reports)
Italy ➢ the improvement of competitiveness of Europe's manufacturing sector, in particular SMEs ➢ deeper understanding of political and economic preconditions and barriers to innovation in leading European Stakeholders a ➢ understanding market needs ➢ Upgrade Employee Skillset and Training. ➢ Smart human-machine Interaction: develop technologies so that the machine can learn, guided by the user. In this way, the non-expert user will be able to program the machine, that will be able to evolve to carry out complex functions and processes without reprogramming. ➢ Safety Measures, to enhance Human-robot co-working ➢ Development of advanced planning algorithms (e.g., machine learning algorithms) for the management of industrial robots. ➢ Improve cybersecurity
Hungary ➢ Automotive production is dependent on the ownership:

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○ Large multinationals – high level automation is the mid-term target. Strong need for industrial robots, automation of QA and internal logistics. ○ Local companies – limited automation, mostly not in manufacturing but in logistics and in sales ➢ Wood and Furniture industry: ○ Limited possibility for automation due to small batch sizes for the Hungarian companies ○ For large companies – Ikea and Kronospan – highly automated operation is solved.
Slovenia ➢ automation & digital transformation of work processes ➢ replacing workers in more difficult, repetitive work processes ➢ higher productivity, lower production costs ➢ constant product quality. ➢ Robots (industrial or service) are used by 7% of all companies with at least 10 employees. The size of company & use of robots shows: in 4% of small-, in 16% of medium and in 34% of large companies. ➢ Automotive & metal industry, home appliances, logistics ➢ In Slovenia, the number of robots per 10,000 employees is about 4x less than in the most developed countries of Japan, Korea and Germany, but in the automotive industry the level of robotization is already relatively high compared to other developed countries. after a higher degree of robotization
Croatia ➢ Financial support for implementation of projects ➢ Expert support in development and implementation of automation and robotics systems ➢ Less taxes on highly qualified and skilled workforce ➢ Regional competence centers on Automation & Robotics

Table 7 Manufacturing Value Chain Needs Associated to Automation and Robotics

Manufacturing Value Chain Needs
Austria ➢ Manufacturing: Fear of losing jobs ➢ Discreet manufacturing ➢ Trust in Robotics
Germany ➢ Automated vehicles for external logistics, private transport, public transport, freight transport, on land, water and in aviation and aerospace. ➢ Automated value chains ➢ Integration of processes along the value chain ➢ Placing the focus on price or differentiation strategy ➢ Diversify solution approaches
Poland ➢ to ensure automation and integration of the factory, production, commercial and logistic processes ➢ to improve production process quality and standardization in inbound logistics, operations, distribution (outbound logistics), marketing & sales and services ➢ to improve the flexibility of process efficiency ➢ to ensure cost leadership and differentiation strategy ➢ to ensure cybersecurity & data integration

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Italy

- Technological development
- More convenient prices
- Managing Product Workflow: accurate analysis on how to reconfigure the whole flow must be done before introducing automation solutions, to balance the entire supply chain.
- Budgeting for the Cost of the System: there's usually a large upfront investment associated with industrial robots. Sales levels and production volumes need to compensate for the initial investment.
- Integrated digital platforms for the configuration of production systems.
- Develop a common machine language, to allow operating with standardized interfaces between machines.

Hungary

- Automation solutions are provided by system integrators. There are 3-4 larger solution providers, using various robotics and automation products.
- Typically, they focus on large companies and less on smaller ones, and lack unique problem-solving skills.

Slovenia

- The enabling technologies are necessary for the efficient operation of Vertical Value Chains (VVVs) and for SRIP ToP they represent the knowledge base in Horizontal Networks (HOM) within which Slovenian stakeholders with competencies in the field of robotics, control technology, and modern production technologies for materials participate in R&D activities, sharing of capacities, knowledge and experience, development of human resources, networking and joint representation of interests abroad.
- Industrial robots - automatically controlled, programmed, multi-purpose manipulators that can be reprogrammed in three or more axes (e.g., robots for welding, laser cutting, painting, assembly) are used by 6% of companies with at least 10 employees. In manufacturing (petroleum, chemical products, pharmaceutical raw materials, rubber products, plastics, non-metallic mineral products), 12% use industrial robots, and 1% among those are engaged in service activities, companies engaged in the production of metals, metal products (22%) and in the production of computers, electronic products, machinery, vehicles, electrical appliances, furniture (20%), Service robots, i.e. machines with a certain degree of autonomy, capable of operating in a complex and dynamic environment that requires interaction with people, facilities or other devices, are used by 1% of companies. Most of these companies use service robots to manage warehouses, e.g., for palletizing, product management, etc., for assembly, assembly and waste cleaning or disposal.

Croatia

- Financial support for implementation of projects
- Expert support in development and implementation of automation and robotics systems
- Less taxes on highly qualified and skilled workforce
- Regional competence centers on Automation & Robotics

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Table 8 Manufacturing Target Group Needs Associated to Automation & Robotics

Manufacturing Target Group Needs				
SMEs	***Large Enterprises***	***Higher Education & Research Institutions***	***Schools & Training Organisations***	***BSO & Others***
Germany Needs funding and infrastructural support to undertake projects in Robotics digitalization improvements to face future pandemics or societal developments, automating processes **Austria** Skills Gap; dealing with strict regulation Digital Transformation, digital assistance systems, lack of skilled personal **Poland** in SMEs automation has potential both in manufacturing, services and business processes. SMEs are focused on increasing the digitalization and automation in their companies, by introducing new processes, competences and skills in areas as automation in production & logistics, automation in finance,	**Germany** cost reduction, efficiency gains **Austria** dealing with strict regulation less profit, more work life balance **Poland** focused on complete visibility for increased profitability and productivity. Target: Cost reduction, reliability, availability, optimization, lean management **Italy** more investment in the field. Bigger focus on research and development Need to integrate/align the whole supply and value chain. Need to translate their current as well as future needs and trends to policymakers, that can thus develop innovation strategies accordingly.	**Germany** Needs funding and infrastructural support to undertake projects in Robotics research enhancing market-driven fields **Austria** need for common and collaborative infrastructure, high cost for equipment too far from market, too much specialists, too much research without goals **Poland** digitalization oriented research, increase linkages with innovators originating from HE, accelerate (spin-off) the time-to-market of R&D concepts **Italy** Need to be closer to companies, in order to better understand their needs and future trends, as well to have the possibility to	**Germany** education in the merge between theory and practice **Austria** No training for workers, further education **Poland** relevant education based on requirements and expectations of the production market **Italy** Scouting and interaction with companies to develop ad-hoc trainings. **Hungary** skills and orientation are implemented on an ad-hoc basis mostly **Slovenia** - **Croatia**	**Germany** All: knowledge & technology transfer between research, intermediaries and industry needs to be enhanced, better structured and professionalised **Austria** Policymakers: designing safety regulations, provide funding; lack of systemic collaboration/communication with industry too much different organizations without collaboration **Poland** active partner in stimulation the process of digital transformation in region, interested in joint Projects and initiatives aimed to support regional stakeholders (SMEs, LE, administration, HE) in creating the fundaments for implementing factory and process automation **Italy**

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automation in marketing, automation in HR. **Italy** Policy maker support, funding instruments, training Need to receive Technological support from the right expert, able to identify the right solution for the company since most of the solutions are not ready to market bus must be tailored according to the specific company, Financial instruments to support the introduction of automation & Robotics solutions and Training to skill operators. **Hungary** limited application possibility, mostly in internal logistics **Slovenia** - **Croatia** financial and expert support in development and implementation of automatization and robotization projects as well as larger pool of high-quality integrators of Automation and Robotics solutions	**Hungary** most of the cases managed individually, yet supplier automation is always supported by them **Slovenia** - **Croatia** financial support for joint research and development projects with research institutions	concretely test and adjust their researches and applications. **Hungary** limited competent education is available on MSc level **Slovenia** - **Croatia** financial support for independent and joint research projects with industry partners, support to student projects in the field, startup competitions, support of technology transfer offices, new joint study programs	modernized equipment, curriculums with more hands-on training in manufacturing environment on automation and robotics projects, competitions for students	Need to be skilled enough and have a general mindset to support and guide companies in undertaking innovation changes. Need to be part of a comprehensive network with all key stakeholders on the topic. **Hungary** unique solutions are hardly managed by them, focusing mostly on easy large-scale projects **Slovenia** - **Croatia** finance and expertise to form high value support mechanisms in Automation & Robotics for manufacturing organizations

3.2. Capabilities and Competencies from A&R Members

The Partners were asked to describe their capabilities and resources, and strengths and competencies associated to the topic of A&R. In this exercise the Partners build trust amongst each other. The core members are able to demonstrate and exchange on the infrastructure, network and in-house knowledge that is possessed. The learners are able to showcase their perspective on the topic of A&R, and demonstrate from which perspective they plan to build their learning-oriented use-case.

Table 9 Automation & Robotics TIN Working Group Structure

Working Group Members	
Leader	**PROFACTOR**
Core Member	**Learner**
☒ Krakow Technology Park (KPT) ☒ Karlsruhe Institute of Technology (KIT ☒ Intelligent Integrated Systems Technology (SIIT) ☒ Lombardy Intelligent Factory Association (AFIL) ☒ Pannon Business Network Association (PBN)	☒ Association Industry 4.0 Austria (PIA) ☒ Fraunhofer Institute for Machine Tools and Forming Technology (IWU) ☒ Pomurje Technology Park (PTP) ☒ Croatian Agency for SMEs, Innovations and Investments (HAMAG)

Table 10 Capabilities and Competencies of the CEUP 2030 Partnership Associated to A&R

Partner Name	Role	Resources & Capabilities for A&R	Strengths & Competencies for A&R
PRO	**Lead**	➢ Robotic Lab ➢ 3d printing Lab using robots ➢ Various robots and test facilities ➢ DIH for robotics	➢ Human Robot collaboration ➢ Physical assistance using robots ➢ X ROB – Robot programming without deeper knowledge ➢ Implementation of Robotics into Factories
KTP	**Core**	➢ Orchestrator on the national and regional level to drive digital transformation in automation and robotics ➢ Ecosystem of SMEs, LE, HE and Research, BSO – both on regional and national level ➢ Access to expertise and know-how (HE and Research institutions) ➢ Dedicated robotic centre (Astor showroom)	➢ Knowledge and familiarity ➢ Expertise in Industry 4.0 ➢ DIH infrastructure and competences ➢ Good institutional and political connections (nationally and EU-wide) ➢ Differentiated catalogue of expertise and know-how gained on case studies and successfully executed technological projects and acceleration ➢ Good and ongoing connections with academic institutions (generating knowledge transfer etc.)
KIT	**Core**	➢ Multiple Industrial KUKA Robots in our printing labs	➢ Energy Efficient Robotic Path planning

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		➢ Multiple Franka Emika Collaborative Robots in our I4.0 3D Printing pilot line ➢ Larger KIT infrastructures include numerous Industrial robots of various sizes	
SIIT	**Core**	➢ Robotic and Assistive Systems ➢ Machine Vision – Zero Defect Manufacturing for Automation ➢ Simulation and modelling, Flexible Production Systems ➢ Robots for non-Industrial Applications	➢ SIIT has been deeply involved in automation, robotics and new product development in several industrial fields. ➢ Knowledge and development of IIot platforms
AFIL	**Core**	➢ Awareness creation and innovation scouting: organization of meetings and events in the field of Automation & Robotics, mainly thematic workshops for increasing awareness on the topics involving key players of the network. ➢ Support in project ideas generation and funding opportunity monitoring: e.g., SMART4CPPS Project (dealing with Cyber Physical Systems in Production) has been created within an AFIL working Group, supported by regional funding. ➢ Road mapping: identification of stakeholders needs and priorities in the field of Automation & Robotics. ➢ Regional and Interregional ecosystem Building and networking on the topic. ➢ Facilitate access and connection with innovation infrastructures, mainly from core players in the AFIL network, both industrials and academia	➢ Wide consolidated network. In particular, many AFIL members are leaders in Automation and Robotics field, both from the industrial side (e.g., ABB, Smart Robots, Scaglia Indeva, Cosberg) as well as from the academia (e.g., Politecnico of Milan, STIIMA-CNR, University of Bergamo, University of Brescia). ➢ In addition, AFIL has many links with interregional partners and initiatives dealing with Automation & Robotics, at a national and European levels (e.g., Vanguard Initiative, ADMA Initiative, S3Platforms, I4MS). ➢ AFIL has been involved in some projects (Interregional and regional) addressing Automation & Robotics solutions, where its main goal was focused on disseminating the developed solutions. In particular: ▪ BEinCPPS – Business Experiments in Cyber Physical Production Systems ▪ SMART4CPPS – Smart Solutions for Cyber Physical Production Systems
PBN	**Core**	➢ Available technologies for Robotics and autonomous systems at am-LAB: ▪ MiR 100 ▪ UR 3 ▪ Panda Robot	➢ 3D Modelling ➢ Industrial robotic solutions and demonstration applications ➢ Collaborative robotic solutions and demonstration applications, Human-Machine Interaction

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		➢ Available technologies for augmented and virtual reality, visualization: ▪ Microsoft Hololens ▪ Microsoft Hololens 2 ➢ Available technologies for indoor logistic services with drone: ▪ DJI Mavic 2 Pro	➢ Unique gripper and equipment development processes ➢ Vision and sensor based robotic solutions and demonstration applications ➢ Indoor logistic services with unique drone applications ➢ AMR – Automated Logistic solutions and demonstration applications ➢ Industrial Robotic applications ➢ Extended reality: ▪ Mobile device applications IOS and Android ▪ Extended reality marketing applications ▪ Gamification ▪ Hololens 1 and Hololens 2 applications
PIA	**Learner**	➢ 4,8 FTEs working towards enhancement of Industry 4.0 in Austria ➢ Well established structures and different formats ➢ Pool of 700 experts to be involved in work regarding the topic	➢ High level of expertise through members ➢ Functioning system regarding the exchange of good practices and experiences ➢ R&D Roadmap, created collaboratively with industry & science partners
IWU	**Learner**	➢ E^3-Research Factory for Resource Efficient Production containing among other things: ▪ Sensitive robotics for complex assembly tasks ▪ Human-robot interaction systems ▪ Knowledge-based process control based on artificial intelligence ▪ Flexible technologies for handling, fixtures and joining ▪ Application-specific and cost optimized robot systems ▪ Software for intelligent automation of planning and developing tasks, including their optimization	➢ In assembly engineering we react to the increasing number of variants by investigating novel and economically efficient technologies. One main research topic comprises the development of production systems with a high degree of flexibility and autonomy. In our research factory “Resource-Efficient Production” we represent essential manufacturing stages of car body production. Furthermore, we thoroughly analyze complete solutions for future automotive applications and test them under realistic conditions of production.

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		▪ Bionic lightweight construction of joining systems	
PTP	**Learner**	➢ Tenant companies of PTP e.g., conditionally „in-house “, but on contract can be offered to 3rd parties to work on specific projects ➢ Over 40 concrete (pilot-/use-) cases implemented, either in complete or just some phases, always final beneficiaries were SMEs ➢ Faculty of mechanical engineering Maribor with its Robotic Lab (KUKA, ABB, ACMA) and competent HR	➢ Tenant companies Vermis, MATT jp, … ➢ Network of competent resources ready in form of contracts on applicative projects for SMEs (for example VIRS robot cell real time data for monitoring of quality and capacity)
HAMAG	**Learner**	➢ Connection with all the relevant stakeholders who are in charge of Automation & Robotics in Croatia as Faculty of Mechanical Engineering and Naval Architecture ➢ Cooperation with successful SMEs ➢ Regional ecosystem building and networking on the topic	➢ Transnational networks with partnering institutions - EEN partner

3.3. Automation and Robotics Action Plan

Within the module of Automation and Robotics, the CEUP 2030 Consortium developed 10 Use-Cases, to demonstrate each Partner's plan for the coming years to promote the adoption and uptake of A&R. The Use-Cases build on each Partner's competencies and eco-system needs, and emerged from the activity within each Partner network and across the opportunities developing in the new programming period. The full and detailed use-case description can be found in the Annex of this document, divided on a partner-by-partner basis. We highly recommend that stakeholders interested in learning more about a specific developing case reach out to the named Partner leading the use-case, and find out how you can get involved.

This section one can find a summary of each Partner's use-case, and the timeline for the delivery of the two key action stages.

3.3.1. Automation and Robotics Use-Case Summaries

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
KPT	Use case within the KTP Digital Innovation Hub Optimization of the welding process - checking the possibility of generating a trajectory and correcting it in real time, modification a real detail in real production environment based on its digital twin. Preparation of Proof of concept.	The presented use case is developed by Astor and Factory4x4. It was mentored and monitored by KTP DIH (hub4industry). The companies involved in use case development: Astor (part of KTP DIH consortium) & Factory4x4. Astor sp. z o.o. - is one of the leading providers of solutions in the fields of automation, robotisation, and digital transformation of production processes in Poland. They implement their solutions in a number of industries, including furniture manufacturing, automotive, FMCG, metal processing, electronics manufacturing. In 2019, ASTOR has become an ADMA (ADvanced MAnufacturing, www.adma.ec) supporting organisation and is authorised to provide advice in the process of transforming enterprises into Factories of the Future. The company has two showrooms, both based in Kraków: Astor Technology Park and Astor Robotics Center. The second one was built within KTP DIH (Astor & KTP & T-Mobile). KTP was accredited as ADMA supporting organization in 2020. Factory 4x4 is a leading Polish manufacturer of off-road equipment. The company is producing such elements as: bumpers, cover plates, wheel mounts, handles, expedition structures, thresholds, racks and ladders for automotive sector. Factory 4x4 provides precision metal processing services such as laser cutting, bending on a press brake, drilling, threading, MIG, TIG and MAG welding. The use case is on PoC on optimization of the welding process - checking the possibility of generating a trajectory and correcting in real production environment. The aim of the test was to generate the welding trajectory in K-Virtual environment, and after	Knowledge Faciliator	Subsidised Service Funding opportunities in Horizon Europe - Innovative Europe (HORIZON-CL4-2021-TWIN-TRANSITION-01-05: Manufacturing technologies for bio-based materials (RIA), HORIZON-CL4-2021-TWIN-TRANSITION-01-07: Artificial Intelligence for sustainable, agile manufacturing (IA), HORIZON-CL4-2021-TWIN-TRANSITION-01-08: Data-driven Distributed Industrial

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PP	Use Case Name	Short Summary	PP Role	Policy Instrument
		that to correct the path in real time with the Scansonic tool. The use case is based on Kawasaki Robot RA010L.		Environments (IA)) Cascade Funding
PRO	From Existing H2020 Projects to HEU Projects	HEU (Horizon Europe) is the research programme of the EU member states. The Work Programme 2021-2022, 7th Digital, Industry and Space lists the future topics concerning robotics, AI and automation. From the many existing projects and competences of the CEUP partners and its network, project ideas and new projects should emerge which can then be successfully submitted. The creation of the application is not included in the CEUP 2030 project. For the future of the European manufacturing industry, the topics for calculating the goals that are presented in the draft from page 7 onwards are very important).	All	Multiple: Horizon Europe.
PIA	Central European Pilot Factories	Over the last couple of years, pilot factories have been established in many CE countries over the last couple of years. Equipment was purchased, human resources were developed and specific competences have been built in various regions. To our knowledge, there is no central overview of the different facilities that could count as pilot factories in CE. The objective of this use case would be to develop such an overview – in order to make facilities accessible to companies from different CE regions.	Knowledge Facilitator	The Co-Location-Center East of the EIT Manufacturing was established recently in Vienna, Austria. Strengthening their position and activities would be a goal of this project, support from their side in the form of financial or human resources would be helpful for the project.
IWU	SmartTool.connect Phase 2	The main capability of the system is the smart tool holder, which recognizes the wear progress of the tool and predicts exactly the required set-up time for a new tool. One main advantage is the complete functional integration of all components (actuators, sensors, data processing and connection) into the tool holder, so that the space-saving system does not require complex installations and allows a fast setup. The system will be an all-rounder, universal for all commercially available tool holders and easily being integrated into existing machines. It connects through wireless, low latency real-time transmission. Based on this basic actuator concept, a variant construction kit for	Knowledge Supplier	Institutional Financing via the Fraunhofer Cluster of Excellence Cognitive Internet Technologies.

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PP	Use Case Name	Short Summary	PP Role	Policy Instrument
		customer-specific and market-relevant solutions should be created. Furthermore, a solution is to be developed that enables the energy-autonomous operation of sensors without modifying the actual machine tool.		
KIT	Stable Connected and Collaborative Robotics	Assembly using robotics has reached a level of automation, such as in the body shop in automotive manufacturing. However, precision assembly of bespoke parts of small sizes or of different shapes is still a difficulty. The idea for this use case is the development of a production cell of interlinked robotic teams that are able to collaborate and are force sensitive. This should allow for a new level on robot-robot as well as robot-human collaboration in production lines.	Knowledge Supplier	Horizon Europe (No call specified)
AFIL	Innovation Days on Robotics and Automation	This use-case is focusing on raising awareness on key aspects and sub-topics related to Robotics and Automations among companies and their employees. Indeed, besides many opportunities, emerged in the latest period, connected to I4.0 topics there is still the need of boosting the competences and the knowledge on these technologies to allow companies grasping their full potential. Accordingly, we would like to plan a series of Innovation Days, namely events/workshops/lessons with the support of key experts targeting: • Upgrade Employee Skillset and Training • Awareness creation and innovation scouting • Sharing good practices and favouring cross-fertilisation • Support in project ideas generation For the implementation of this use-case synergies and collaboration might be established with other partners interested in participating/contributing/hosting some sessions of Innovation Days	Knowledge Facilitator	Private & Public (some EU project subsidy could support the use-case's implementation)
SIIT	Automation Research Infrastructure	The Automation Research Infrastructure will operate with reference to the development of studies and specific R&D activities, specifically: • sensory area (e.g. image processing, pattern recognition and in general on the topic of "intelligent sensors" • system computational area: advanced supports for design and validation, real time problems ", easy technological upgrade, scalability of supervision, control and maintenance interoperability, human-machine interactions, reconfigurability of AI and support techniques to the decision, diagnostics "on line etc." • actuation area ("robotics, micromechanics actuators)	Knowledge Facilitator	FILSE (Regional instrument)
PTP	NDC & Automated welding robot cell	The challenge of manufacturers using welding robots is the control of production process with immediate control of quality assuring less false/damaged products. Integration of various mechanisms is desired to prevent such events...various challenges	Knowledge Facilitator	Multiple: National LEARNING MANUFACTURING

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PP	Use Case Name	Short Summary	PP Role	Policy Instrument
		also interaction between robots and human. To understand even bigger challenge is necessary to consider the evolution stage of metal industry in Slovenia – a lot of still working machines of older dates (CNC, lathe, drilling and welding machines). In order not to waste accurate machinery working it is reasonable to "upgrade" these so sensors can obtain various data that can be used for more efficient production. Linking such machines in back-bone IT infrastructure where machines can communicate among each-other is a step of getting digitized or even digitalized. This is again a story of national scale merged in Smart Factory Demo Center (NDC) where test before invest can be performed!		LABORATORIES (1,5 m€ from March 2021 on) P4D / Incentives for the digital transformation of SMEs and European (H2020-DT-2018-2020; HORIZON-CL4-2021-TWIN-TRANSITION-01-07 and HORIZON-CL4-2021-DATA-01-03: Technologies for data management)
PBN	Demo production line	A demo production line will be established at am-LAB (the digital innovation hub connected to PBN). It is a manufacturing unit with online, remote access to broaden our services related to SME-development; trainings; development of digital competencies. The aim would be to have a fully automatic demo factory to which physical manufacturing components with cyber-physical features can be installed. The solution contributes to make Central European regions more competitive. PBN's 4 use cases are ideas which are based on each other. Basically, the Demo production line would be the first necessary development in order to continue the process with the use cases defined at the 3 other topics: • Intelligent production Systems: Digital twin of the demo production line • AI: Demo production line upgraded with predictive functions • Smart Materials: Demo production line upgraded with smart materials	Knowledge Facilitator	Horizon Europe Program European Institute of Technology – Innovation Action calls Digital Europe Program – Digital skills development Interreg Europe Program, Interreg Central Europe Program, Danube Transnational Program Cross-border cooperation opportunities -
HAMAG	Adriatic multifunctional smart buoys	Our use case Robots clean Adriatic seafloor / or fits to the pilot project under the axis one – Blue Innovation. The aim is to fully recover sea flora and fauna as well as to maintain clean and healthy environment necessary for the fishery and tourism.	Knowledge Facilitator	by INTERREG Europe Italy Croatia

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
	INTERREG Italy - Croatia HUB	Advanced technologies in the areas of underwater communication and aquatic robotics are necessary to achieve this goal. This project aims to clean the seafloor in the Adriatic and preserve health flora and fauna which are necessary for the fishery and tourism. In terms of technologies, the focus will be on the application of aqua robotics to preserve marine environment, fishery and enhance tourism. Also, it will use wind and solar energy, i.e., green energy solutions		program and by own funding

3.3.2. Automation & Robotics Use-Case Time Horizon

Within this section one can find an overview of the Partner's intended timeline for developing and implementing the use-case. The use-cases which the Partners are developing span over a decade. However, as with the use-cases presented in IPS, most A&R use-cases are developed and implemented within the next 48 months.

PP	Use-Case Name	Action Phase	2020	2021	2022	2023	2024	2025	2026	2027	Beyond+
KPT	Digital Innovation Hub Use Case: Optimization of the welding process	Development	03/09/2020 - 25/09/2020								
		Implementation		12.04.2021	12.04.2022						
PRO	From Existing H2020 Projects to HEU Projects	Development		30/04/2021	31/03/2022						
		Implementation			01/04/2022	31/03/2024					
PIA	Central European Pilot Factories	Development		13.09.2021	15.04.2022						
		Implementation			18/04/2022-17/06/2022						
IWU	SmartTool.connect Phase 2	Development	01/08/2020 - 09/09/2020								
		Implementation	06.10.2020	31.05.2021							
KIT	Stable Connected and Collaborative Robotics	Development		01.02.2021	30.04.2022						
		Implementation			01.05.2022	30.04.2025					
AFIL	Innovation Days on Robotics and Automation	Development		01/03/2021 - 30/06/2021							
		Implementation		01.10.2021	31.03.2022						

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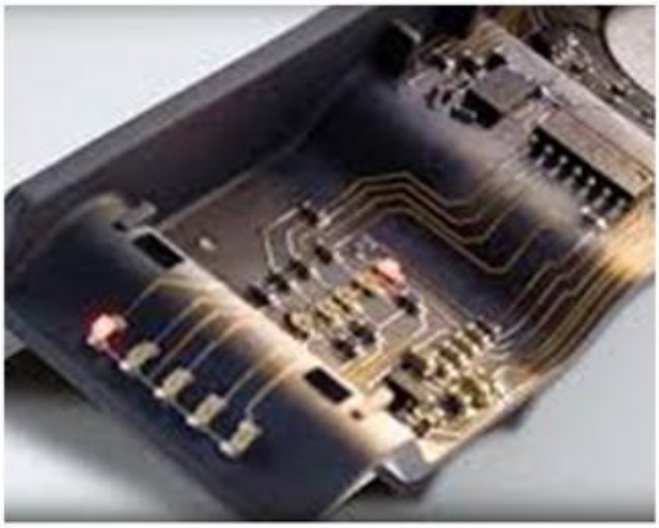
PP	Use-Case Name	Action Phase	2020	2021	2022	2023	2024	2025	2026	2027	Beyond+
SIIT	Automation Research Infrastructure	Development	01.07.2020	30.04.2021							
		Implementation		03.05.2021		28.04.2023					
PTP	NDC & Automated welding robot cell	Development	01/02/20202	31.03.2021							
		Implementation			25.03.2022						24.03.2032
PBN	Demo production line	Development			01/01/2022 - 31/12/2022						
		Implementation				01/01/2023 - 31/12/2023					
HAMAG	Adriatic multifunctional smart buoys INTERREG Italy - Croatia HUB	Development		01.10.2021			10.01.2024				
		Implementation			01.10.2022		01.10.2024				

4. Smart and Advanced Materials

As described in the Joint Strategy for CAMI4.0 Excellence, Smart and Advanced Materials (S&AM), also called intelligent or responsive materials, refers to designed materials that have one or more properties that can be significantly changed in a controlled fashion by external stimuli, such as stress, moisture, electric or magnetic fields, light, temperature, pH, or chemical compounds. Smart materials are the basis of many applications, including sensors and actuators, or artificial muscles, particularly as electroactive polymers (EAPs). Smart materials are understood to show interaction with the environment. They are innovative and functional materials for industry 4.0. The CEUP 2030 TIN for S&AM has a key focus on the topic of learning, knowledge transfer and exchange and set impulses on creating development corridors, this is especially because most of the actors in the Consortium are learners with regards to the topic.



The S&AM module is similarly structured to that of IPS and A&R, and begins with an overview of the manufacturing eco-system challenges which exist in Central Europe, these challenges are broken down into specific needs-related statements at the sector-level, the value-chain level and the target-group level. The goal of this section is to provide detailed context for the issues facing the central Europe manufacturing eco-system, with regards to smart and advanced materials.

The second section of this module details the S&AM-oriented capabilities and competencies of the CEUP 2030 Partnership in tackling these challenges. This is especially interesting in the case of S&AM, as the Partnership will be looking to their network partners and within their wider stakeholder network to wield and enable expertise associated to this topic.

The third and final part of the S&AM Action Plan module details the 9 Use Cases developed by the Partnership.

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4.1. Challenges and Needs for Smart & Advanced Materials

The challenges facing the manufacturing eco-system in Central Europe vary across geographical area. Within this section, the members of the CEUP 2030 Consortium have captured some of the key needs which exist at three levels: Sector, Value-Chain, Actor/Target Group. The challenges are detailed within Table 1, Table 2, and Table 3.

Table 11 Manufacturing Sector Needs Associated to Smart & Advanced Materials

Manufacturing Sector Needs
Austria ➢ Connection between R&D community and businesses ➢ Easy to manufacture ➢ Materials for Additive manufacturing ➢ Green materials ➢ Reusable materials
Germany ➢ Usage of smart material is more common in research, needs more penetration into industry and society ➢ Case studies for usage of smart materials are limited and more concrete demonstrators, pilot lines or products need to be developed. ➢ Commercialization strategies to fully exploit new products economically ➢ Financial resource intensive field ➢ Increase cooperation and interdisciplinary working culture ➢ Dialogue aid to ensure transparency and customer integration to increase product acceptance rate and market breakthrough ➢ Innovative product design
Poland ➢ Not sufficient resources for R&D ➢ Lack of detailed, comprehensive analysis and expertise on the sectoral environment ➢ Insufficient administrative focus on this sector; ➢ Not well developed cooperation between business and policy makers in the priorities definition and adressing resources ➢ Not well developed cooperation between business and scientific centres in this area
Italy ➢ Strengthen the link among design practices and technical knowledge ➢ Significant research effort ➢ Standardization of the Materials ➢ Technologies and processes for the production of innovative materials with both high mechanical and functional characteristics (e.g., materials for extreme environments, display materials, micro- and nano- materials, multifunctional textile materials, materials for the collection and conversion of energy, high-performance renewable materials, composite materials, cellular materials, biomimetic materials, senor-based materials) ➢ New materials and new technologies for safety in the workplace based on interaction between the operator and the working environment in which he is called to operate can be developed to improve the quality of work and ease its conditions ➢ New materials for additive manufacturing
Hungary ➢ Automotive production is dependent on the ownership: o Large multinationals – relatively limited openness. o Local companies – it would be relevant and important, yet training is needed in application

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➢ Wood and Furniture industry: o Relevant and interesting both for the larger and small companies of the sector.
Slovenia ➢ 1.raise value added per employee in companies manufacturing alloys by 25% by 2023 ➢ 2.increase exports and value added per employee in the field of smart coatings by 20% ➢ 3.increase investment in development by15%, value added by 5% and exports of multi-component smart materials by 10% Focus areas and technologies ➢ 1.Sustainable production technologies in metallurgy ➢ 2.Multi-component smart materials and coatings
Croatia ➢ Less taxes on highly qualified and skilled workforce ➢ Expert knowledge available on demand and on competitive price ➢ Finance instruments to support research, development and implementation of smart new materials ➢ Competence centers for smart and new materials

Table 12 Manufacturing Value Chain Needs Associated to Smart & Advanced Materials

Manufacturing Value Chain Needs
Austria ➢ production chain ➢ CO2 Footprint
Germany ➢ Larger integration of smart materials in Industrial process chains is required. ➢ International connectedness ➢ Close holes in the international production chain for smart materials-based products; increase technological maturity in this field ➢ Quick and efficient coordination systems to ensure working with new materials
Poland ➢ creating conditions for a substantial increase in scope ➢ cooperation of scientific and technical units with the industry ➢ the continuation of research work in selected, well-defined and perspective directions. It is important to develop the implementation base, including scientific and research infrastructure ➢ development of innovative companies
Italy ➢ Lower the expenses ➢ Dynamics supply chain for the production of personalized products ➢ Resilient SC to reduce/limit the consequences of global emergencies (i.e., pandemic…) ➢ Establishment of interregional cooperation to enhance the development of EU value chain exploiting the competences and excellence of the different EU Regions
Hungary ➢ Education is essential for smart and new materials, just like the research area. ➢ In sales it could be a strong point of difference, when applied properly ➢ In procurement it is accessible only internationally, no regional competency is realistic in this field
Slovenia ➢ SRIP MATPRO supports the internationalization of activities, which has three objectives: 1) integration into European initiatives (S3 thematic platforms with pilot projects

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2) integration with foreign partners in development of development value checks, whereby the starting point is the existing connections of Slovenian companies, 3) the promotion of Slovenian industry abroad through events or visits.
Croatia ➢ Financial support for better collaboration between companies and research institutions ➢ Training facilities for experts in the fields ➢ Mechanisms for more EU wide collaboration between companies working on Smart and New materials ➢ Easier approach to knowledge and expertise in the field (conferences, workshops, fairs)

Table 13 Manufacturing Target Group Needs Associated to Smart & Advanced Materials

Manufacturing Target Group Needs				
SMEs	***Large Enterprises***	***Higher Education & Research Institutions***	***Schools & Training Organisations***	***BSO & Others***
Germany More training and education on the application and smart materials Up-scale the R&D capacities, need for funding to ensure research activities **Austria** Knowledge about new materials, Training **Poland** more public financial instruments for the development of R&D area **Italy** Policy maker support, funding instruments, training, clearer road to market Need to receive technological support from the right expert based on the specific need of the company. Support in the identification of the proper	**Germany** More training and education on the application of smart materials provide trainings and workshops to keep track on current developments in the field and stay actionable **Austria** high risk for deployment of new materials Knowledge about new materials, Training **Poland** specialists, trainings **Italy** Funding for research in this field Need to integrate/align the whole supply chain. Need to translate their current as well as future needs and trends to policymakers, that can thus develop innovation strategies	**Germany** knowledge & technology transfer between research, intermediaries and industry needs to be enhanced, better structured and professionalised; importance on including the public within the knowledge transfer (potential risks of novel materials.) advance application variations/possibilities and technical know-how, develop mitigation ideas for material limitations **Austria** Not pure material science, education also on production of materials and reuse **Poland** scholarship programmes, networks and connections with business **Italy**	**Germany** raise awareness, implement new materials amongst the general public to decrease future consumer caution **Austria** - **Poland** raising awareness, dedicated educational programmes for youth **Italy** Interaction with companies to develop ad-hoc training programs for students. **Hungary** for dedicated training courses, smart and new materials are attractive and important topics **Slovenia** - **Croatia**	**Germany** - **Austria** Policymakers: lack of systemic collaboration/communication with industry **Poland** financial resources and instruments to support the business development **Italy** Need to be skilled enough and have a general mindset to support and guide companies in undertaking innovation changes. Need to be part of a comprehensive network with all key stakeholders on the topic. **Hungary** the relevance and application fields by case studies should be applied **Slovenia**

funding instrument and/or the technological partner to develop the solution. Need to keep the track on latest innovations/solutions. **Hungary** in production and in final products, both for manufacturing and product smartification a progressive tool. **Slovenia** - **Croatia** financial and expert support in development and implementation of smart and new material	accordingly. Identification of extremely innovative technological partners (i.e., start-ups) to integrate new solutions in the process and trigger new trends. **Hungary** in case of production, it can play an important role. **Slovenia** - **Croatia** financial support in research and development projects, support in joint projects with research organizations	Need to be closer to companies, in order to better understand their needs and future trends, as well to have the possibility to concretely test and adjust their researches and applications. **Hungary** educating the concept, the components and technical parameters, is essential **Slovenia** - **Croatia** competitive funds available for the competitive research in the field, formation of competence centers, support to student projects in the field, startup competitions, support of technology transfer offices, new joint study programs	modernized equipment, curriculums with more hands-on training	- **Croatia** finance and expertise to form high value support mechanisms in smart and new materials for manufacturing organizations

4.2. Capabilities and Competencies from S&AM Members

The Partners were asked to describe their capabilities and resources, and strengths and competencies associated to the topic of S&AM. In this exercise the Partners build trust amongst each other. The core members are able to demonstrate and exchange on the infrastructure, network and in-house knowledge that is possessed. The learners are able to showcase their perspective on the topic of S&AM, and demonstrate from which perspective they plan to build their learning-oriented use-case.

Table 14 Smart & Advanced Materials TIN Working Group Structure

Working Group Members	
Leader	**Fraunhofer Institute for Machine Tools and Forming Technology**
Core Member **No Core Member Partners**	**Learner** ☒ Krakow Technology Park (KPT) ☒ Association Industry 4.0 Austria (PIA) ☒ PROFACTOR (PRO) ☒ Karlsruhe Institute of Technology (KIT ☒ Intelligent Integrated Systems Technology (SIIT) ☒ Lombardy Intelligent Factory Association (AFIL) ☒ Pannon Business Network Association (PBN) ☒ Pomurje Technology Park (PTP) ☒ Croatian Agency for SMEs, Innovations and Investments (HAMAG)

Table 15 Capabilities and Competencies of the CEUP 2030 Partnership Associated to S&AM

Partner Name	Role	Resources & Capabilities for IPS	Strengths & Competencies for IPS
IWU	**Core**	➢ Broad offers and project activities in the smart[3] network focussing on interdisciplinary co-working and deep dive into smart structures and application possibilities: ▪ 19 finished network projects ▪ 23 approved network projects ▪ 12 new projects in the application process ➢ Connecting experts with specific know-how and offering workshops and advanced trainings for network partners and externals	➢ Connecting network partners, matchmaking and acquisition competence ➢ Analysis of technological trends ➢ Industry & Research Project Weeks and other educational and communicative offerings ➢ Organisation and content-related enrichment of national and international workshops, presentations and forum participations

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		➢ Conception of a smart materials lab	
PRO	**Lead**	➢ Few people for special designed materials for AM	➢ Materials for Additive Manufacturing
KTP	**Core**	➢ DIH KPT – hub4industry ➢ ScaleUp accelleration programme ➢ Network and ecosystem at the regional and transnational level ➢ Connection with experts, scientists, innovative startups, large enterprises	➢ Expertise in Industry 4.0 topics ➢ Project management competencies ➢ Experience in supporting the development of innovative technologies
KIT	**Core**	➢ Material Development Laboratories at KIT ➢ Material science laboratories with extensive materials characterisation facilities. Including optical microscopy, electron microscopy and even synchrotrons.	➢ Material development for inkjet printing ➢ Functional ink development with conductive or other functional characteristics
AFIL	**Core**	➢ Awareness creation and innovation scouting: organization of meetings and events in the field of Production System, mainly thematic workshops for increasing awareness on the topics involving key players of the network. ➢ Road mapping: identification of stakeholders needs and priorities in the field of Production System ➢ Regional and Interregional ecosystem Building and networking on the topic. ➢ Facilitate access and connection with innovation infrastructures, mainly from core players in the regional and interregional AFIL network, both industrials and academia.	➢ Consolidated network of expert from different fields that offer their knowledge and competences in an open innovation environment ➢ Direct or indirect dialogue with institutions of different levels. ➢ Experience in many cooperation projects addressing this topic, generating new insights for the regional network ➢ Foster the dialogue and interaction between SMEs and large enterprises, creating mutual benefit
PBN	**Core**	➢ PBN has no internal resources currently focusing on smart and new materials	➢ PBN has no internal resources currently focusing on smart and new materials
PIA	**Learner**	➢ Not in focus of PIA	➢ Not in focus of PIA
SIIT	**Learner**	➢ Many connections with French and Italian stakeholders whom might be interested	➢ SIIT is part of ALLIANCE project which focus on textile application connected to the defence sector
PTP	**Learner**	➢ None „in-house“ ➢ past pilot projects partnerships ➢ various industry sectors R&D (public & private) ➢ Institute Jožef Stefan,	➢ Transnational Projects of involved institutions and actors resulted: ▪ in patents (cold plasma applications in food industry

		➢ Faculty of Mechanical Engineering at University of Maribor – Chemistry lab) ➢ IOS institute of Environmental protection and sensors (demo plant for De-manufacturing of textile wastes to original plastic components)! ➢ SRIP Food (network with lab and large industry membership)	packaging (Plasmadis Ltd) ▪ detection of meat freshness via optical (light) application in covering (single or multilayer) plastic foil, built in-sensors, applications of antibacterial or anti-oxidative components and/or sensors into materials
HAMAG	**Learner**	➢ **Connection with all the relevant stakeholders who are in charge of Smart & New Materials in Croatia** ➢ **Regional ecosystem building and networking on the topic**	➢ Transnational networks with partnering institutions - EEN partner

4.3. Smart and Advanced Materials Action Plan

Within the module of Smart and Advanced Materials, the CEUP 2030 Consortium developed 9 Use-Cases, to demonstrate each Partner's plan for the coming years to promote the adoption and uptake of S&AM. The Use-Cases build on each Partner's competencies and eco-system needs, and emerged from the activity within each Partner network and across the opportunities developing in the new programming period. The full and detailed use-case description can be found in the Annex of this document, divided on a partner-by-partner basis. We highly recommend that stakeholders interested in learning more about a specific developing case reach out to the named Partner leading the use-case, and find out how you can get involved.

This section one can find a summary of each Partner's use-case, and the timeline for the delivery of the two key action stages.

4.3.1. Smart and Advanced Materials Use-Case Summaries

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
KPT	The Vanguard Initiative Use Case: Production and application of biodegradable polymers produced by bacteria from bioresources.	It is a show case on production and application of biodegradable polymers produced by bacteria – polyhydroxyalkanoates (PHAs) – from bioresources. The solution is applicable for two main sectors: a) life-science b) industry. Industrial perspective will be a point of focus here. These biopolymers have a wide range of applications in different industries thanks to their broad physicochemical characteristics. The Leader on this demo-case, J. Haber Institute of Catalysis and Surface Chemistry of Polish Academy of Sciences (ICSC PAS), has already secured funds (€3.7 mln) that will allow for construction of a demo plant for PHA production. It is envisaged that in 2021 a facility capable of carrying out 200L PHA fermentations, with up- and down-stream facilities, will be placed in a rented industrial hall. A dedicated building will be constructed in the coming years. The nearest plans for the development of the use – case it to open the testing fabric, where the production of polymers can be higher than already in the rooms of university and also the testing of application of the materials in different circumstances can be conducted. The use of these kind of materials is very in line with the future processes of development of the industry, as these materials are very resistant, effective and in the end its reproduction is ecological, safe and efficient.	Knowledge Faciliator	Subsidised Service Funding opportunities in Horizon Europe - Innovative Europe Cascade Funding – to be defined
PRO				

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PP	Use Case Name	Short Summary	PP Role	Policy Instrument
PIA	Smart Materials and AI: Use Case Data Base	Creation of a database that analyzes, showcases and categorizes examples of the deployment of CAMI 4.0 topics (especially Smart Materials and Artificial Intelligence, AI) in the manufacturing sector. The goal is to: 1) break down the topic into different components (e.g. machine learning, natural language processing…) and different application areas (e.g. procurement, assistive systems…) 2) find use cases that for the different areas from Central Europe (CE) and showcase them in the database 3) make the database accessible for SMEs in Central Europe and for business support organizations (BSOs) working with SME The data base should help European SMEs to understand what Smart Materials are and what AI is and to reduce the barriers for starting AI projects and for applying the knowledge in their companies.	Knowledge Facilitator	Not yet defined.
IWU	Piezoelectric process monitoring for end milling cutters (PieMontE)	A further increase in productivity and thus in the metal removal rate beyond the potentials of today's high-performance machining (HPC) can only be achieved with tool technologies that guarantee the required accuracies, tool life and machining times even close to the limits. Approaching the physical process limits in production requires novel process control and monitoring strategies which permanently optimize the machining parameters and thus avoid leaving the stable process window. The necessary input data must be provided by appropriate sensors, whereby the proximity to the process is of crucial importance in order to acquire signals of sufficient quality. One approach to obtain effective information is the use of too integrated sensors with a piezoelectric layer close to the process. This is what the project aims to achieve and for this purpose the learnings from a previous project “SensoTool” were used. The further development will happen in the areas of transfer to further application areas, proof of profitability and improvement of the technology readiness level (TRL).	Knowledge Supplier	Zwanzig20 program/initiative smart³ -BMBF (German Federal Ministry of Education and Research)
KIT	Biodegradable Polymers for 3D FFF and Inkjet Printing	One of the growing issues with 3D Printing is the continuous accumulation of polymer material, thus an increased waste generation and there is a lack of biodegradable polymers available commercially. Therefore, we propose this solution to jointly develop materials for 3D Printing that are biodegradable. As experts in 3D Printing, we are happy to provide any and all knowledge on process requirements, specifications, parameters etc. and to also conduct testing and validation of parameters in our large-scale 3D Printing facilities.	Knowledge Supplier	Horizon Europe (No call specified)

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
AFIL	Strategic Community on Smart Materials	Plastic sector is one of the most relevant area for Lombardy economy and AFIL constituency involves a good number of stakeholders operating in this field. However, the activities in this context were mainly associated to sustainability and Circular Economy rather than on innovative materials. Since this is a key aspect for the future development of this sector, AFIL wants to foster the creation of a new Strategic Community focused on functional plastics.	Knowledge Facilitator	Multiple: Private & Public
SIIT	EU-ALLIANCE	EUropean ALLiance for International business development on Advanced materials and coNnectivity for defenCe and sEcurity markets	Knowledge Facilitator	COSME call COS-CLUSINT-2020-3-01 The main objective of this action is to intensify cluster and business network collaboration across borders and also across sectorial boundaries and to support the establishment of European Strategic Cluster Partnerships.
PTP	Smart Material Demo Center	PTP together with investors (public & private) has the opportunity to realize a long-term planned project of new materials competence center. Objective: support of novel processes in preparation of rare-metal alloy/coatings & development of new bio-based materials & contributing to higher value-added products in region. Demo center is based on applicative cases from R&D sphere and private initiators as well as with public owner of PTP. Covid-19 boosts online selling/packaging and thus market opportunities. In both cases lab infrastructure is needed for further testing & development (IPR-patent in progress). All 3 parties are interested to monetize current funding opportunities & knowledge gathered to jointly create regional central testing facility. Case1: focused on technologies of purification of (rare) materials by liophylization; 2nd is towards bio-based resources (wastes) used as inputs in components with plastic (challenge: price, reach, storage, recycling) =the future! Tech processes will improve ROI, analyzing the entire value chain &circular economy model	Knowledge Facilitator	Multiple: LEARNING MANUFACTURING LABORATORIES /national call HORIZON-CL4-2021-RESILIENCE-01-07: Building innovative value chains from raw materials to sustainable products (IA) HORIZON-CL4-2022-RESILIENCE-01-10: Innovative materials for advanced (nano)electronic components and systems (RIA) HORIZON-CL4-2022-RESILIENCE-01-13: Smart and multifunctional

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
				biomaterials for health innovations (RIA) EUREKA 2021
PBN	Demo production line upgraded with smart material board and/or with built-in smart materials	PBN's 4 use cases are strongly connected with each other. Basically, the Demo production line would be the first necessary development in order to continue the process with the use cases defined at the 3 other topics (Intelligent production Systems, AI and Smart Materials). The demo production line establishment is described under the use case for Automation and Robotics. Smart materials are the only one from the 4 CAMI4.0 topics, where PBN strengthens the learners' team. Accordingly, this use case is based on plans, ideas which should be further developed by members who are experts on the topic. The idea would be to apply smart material(s) into the demo production line, or into specific parts of it. The activity would have a strong innovative effect across Central Europe, however only a few actors own the required expertise.	Knowledge Receiver	Multiple: Horizon Europe Program Digital Europe Program Interreg Europe Program Interreg Central Europe Danube Transnational Program Cross-border cooperation opportunities
HAMAG	KPIs to improve quality of Smart Materials and Intelligent Production System calls	Based on the output and result indicators for ERDF (Investment for jobs and growth and Interreg) RCO (Reggio Common Output Indicator) and RCR (Reggio Common Result Indicator) stated in the Cohesion Fund , Policy Objective 1 – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity, we are aiming to find out the most appropriate key performance indicators KPIs which will be used to design efficient call and to monitor its implementation in the fields of Smart Materials and Intelligent Production Systems.	Knowledge Facilitator	INNOSUP 2021-2027

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4.3.2. Smart and Advanced Materials Use Case Time Horizon

Within this section one can find an overview of the Partner's intended timeline for developing and implementing the use-case. The use-cases which the Partners have pitched are primarily developed and implemented within the next 36 months, with a shorter time-horizon than that of the two previous CAMI4.0 topics.

PP	Use-Case Name	Action Phase	Earlier	2020	2021	2022	2023	2024	2025
KPT	The Vanguard Initiative Use Case: Production and application of biodegradable polymers produced by bacteria from bioresources."	Development		01.09.2020	01.05.2021				
		Implementation			01.05.2021		31.10.2023		
PRO		Development							
		Implementation							
PIA	Smart Materials & AI Use Case Data Base	Development			01.10.2021	28.02.2022			
		Implementation			01.10.2021	28.02.2022			
IWU	Piezoelectric process monitoring for end milling cutters	Development	01/11/2015 - 31/01/2018						
		Implementation		01.03.2020	31.12.2021				
KIT	Biodegradable Polymers for 3D FFF and Inkjet Printing	Development			01.02.2021	30.04.2022			
		Implementation				01.05.2022			30.04.2025
AFIL	Strategic Community on Smart Materials	Development			01/03/2021 - 30/06/2021				
		Implementation			01/09/2021 to End TBD				
SIIT	EU-ALLIANCE	Development		01/10/2020 - 31/12/2020					
		Implementation			01.12.2021		30.11.2023		
PTP	Smart Material Demo Center	Development		02.06.2020	30.04.2021				
		Implementation			01.06.2021	31.05.2022			

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PP	Use-Case Name	Action Phase	Earlier	2020	2021	2022	2023	2024	2025
PBN	Demo production line upgraded with smart material board and/or with built-in smart materials	Development					01/01/2023 - 31/12/2023		
		Implementation						01/01/2024 to End TBD	
HAMAG	KPIs to improve quality of Smart Materials and Intelligent Production System calls	Development		01.10.2020	31.03.2021				
		Implementation				01/04/2022 - 01/10/2022			

5. Artificial Intelligence

As described in the Joint Strategy for CAMI4.0 Excellence, Artificial intelligence (AI) refers to systems that display intelligent behaviour by analysing their environment and taking actions with some degree of autonomy to achieve specific goals. *(European Commission)*

AI-based systems can be:

- Software based, acting in the virtual world (e.g., voice assistants, image analysis software, search engines, speech and face recognition systems)
- AI can be embedded in hardware devices (e.g., advanced robots, autonomous cars, drones or Internet of Things applications).

The CEUP 2030 TIN has determined to focus mainly on building a strong network and highlighting key challenges and solutions for industrial stakeholders within the manufacturing sector.

The AI module is similarly structured to that of the other CAMI4.0 topics, and begins with an overview of the manufacturing eco-system challenges which exist in Central Europe, these challenges are broken down into specific needs-related statements at the sector-level, the value-chain level and the target-group level. The goal of this section is to provide detailed context for the issues facing the central Europe manufacturing eco-system, with regards to the uptake and adoption of artificial intelligence.

The second section of this module details the AI-oriented capabilities and competencies of the CEUP 2030 Partnership in tackling these challenges.

The third and final part of the AI Action Plan module details the 10 Use Cases developed by the Partnership.

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5.1. Challenges and Needs for Smart & Advanced Materials

The challenges facing the manufacturing eco-system in Central Europe vary across geographical area. Within this section, the members of the CEUP 2030 Consortium have captured some of the key needs which exist at three levels: Sector, Value-Chain, Actor/Target Group. The challenges are detailed within Table 1, Table 2, and Table 3.

Table 16 Manufacturing Sector Needs Associated to Artificial Intelligence

Manufacturing Sector Needs
Austria ➢ Lack of high-quality data (ground truth data) ➢ Lack of trust regarding sharing of data ➢ Comparable cloud services/digital infrastructure ➢ Skills shortage ➢ AI is a tool and not the solution ➢ Understandable AI ➢ Human centred AI ➢ Symbiose AI and mechanic
Germany ➢ More integration of AI within production systems as well as robotics ➢ Harnessing AI prowess for big data analytics and applications. ➢ Machine learning for improving process understanding and design of complex hybrid production systems ➢ Germany is at the forefront of AI with initiatives linking universities and multinationals, especially in the Stuttgart-Tübingen region ➢ Half of Saxony's SMEs are not yet involved in AI, if they do through networking (3 main players) -> broaden access to technologies ➢ Transparency is needed in terms of the decision-making process of the AI systems (black box) ➢ Insufficient access to relevant data sets and lack of application knowledge
Poland ➢ Access to structured data to implement AI solutions ➢ Existing hardware: problems with integrating data from the systems ➢ Challenges concerning appropriate data protection ➢ The need to create the institution to standardize data exchange formats (what is perhaps necessary in an EU directive) ➢ Demand for AI services in Poland is limited and this creates a natural tendency to reach for clients abroad.
Italy ➢ Technology readiness ➢ Upgrade Employee Skillset and Training. ➢ Improve cybersecurity ➢ Develop standardized Ethical and moral guidelines ➢ Develop standardized Privacy regulations ➢ Upgrade ICT infrastructures and collect high-quality data. Actually, companies' infrastructures and computing are not advanced enough to enhance AI. ➢ Identify appropriate business use-cases to show AI effectiveness
Hungary ➢ Automotive production is dependent on the ownership: o Large multinationals – predictive maintenance, quality assurance and controlling are the mostly demanded areas

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○ Local companies – predictive maintenance, machine vision and sales support are the key areas ➢ Wood and Furniture industry: ○ The same areas are above, predictive maintenance, controlling, quality assurance and sales support are dominating
Slovenia ➢ SRIP Smart Cities and Communities (cluster) identified: 6 industrial vertical (Health, Energy and utilities, Mobility, transport and logistics, Security, Smart city ecosystem and Urban life quality) for 6 different technology areas: Cybersecurity, Digital transformation, GIS-T, HPC and big data, IoS and IoT) ➢ Challenge: to bring together representatives of R&D organizations, the economy & stakeholders in the ecosystem into closer cooperation, to put AI into practice. ➢ **Health**: Smart devices, sensors and tele-healthcare ➢ **Energy and other supply**: Energy transformation, distribution and management / ➢ **Mobility, transport and logistics**: Infrastructure, smart algorithms, integration with ICT/ Building blocks of digitalized mobility / Business models, platforms, sharing economy, shared rides ➢ **Security**: Next generation operations center systems and call centres / Smart security surveillance systems ➢ **Business development**: Cradle to cradle design –transition from linear to circular economy, services for managing and terminating digital transactions compliant to eIDAS, robotization in the architecture and treatment of green surfaces
Croatia ➢ Infrastructure projects that will allow collection, storage, analysis of data in a fast, safe and secure way ➢ Legal framework for artificial intelligence ➢ Financial funds for research and development projects ➢ Development of new talent ➢ Less taxes on highly qualified and skilled workforce

Table 17 Manufacturing Value Chain Needs Associated to Artificial Intelligence

Manufacturing Value Chain Needs
Austria ➢ Make or buy decision support ➢ Interoperability of different approaches ➢ research focus in developing AI based solutions for both large and small industries which industry really needs
Germany ➢ AI for automated production forecasting, planning and control ➢ Need for sufficient resources for intensive development work ➢ Investment in necessary infrastructure ➢ Guidelines to eliminate obstacles to developing AI offerings ➢ Development with technologies in line with national interests and laws
Poland ➢ Education, including both specialists implementing the technology, as well as potential clients and consumers. ➢ To increase knowledge about AI understanding at the managerial level and poor general preparedness for implementation of AI solutions

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- Lack of understanding of the company's own needs, so it cannot see the potential benefit arising from AI
- Very limited demand for solutions based on AI. B2B market dominated by state-owned enterprises which function in a conservative, quasi-market logic, and on the other hand, the sector of small and medium-sized enterprises still lags in the process of digital transformation

Italy

- Integration of technology, software and robotic
- Create trust and companies' culture.
- Allow data explainability
- Integrated common digital platforms.
- Develop a common machine language, to allow operating with standardized interfaces between machines.
- Align business not only within the company, but with the whole supply chain: AI implementation requires a strategic approach, setting objectives, identifying KPIs, and tracking ROI.
- Integrate AI into existing systems, also within customers and suppliers.

Hungary

- Education is important for AI, covering areas from statistics to programming.
- In sales support AI can play a central role, from data interpretation and forecasting through segmentation to customer relationship
- In procurement through the predictive functionality AI can be a gamechanger, impacting business models.

Slovenia

- There are good examples in the field of the financial sector and in use machine vision for the needs of production quality control. Most examples are in the field of big data editing and analytics (logical step in the development of an organization).
- Food industry sees opportunities in use of AI in improvement of farming efficiency/ yield; rising demand for quantity and quality, for better food harvesting and transportation logistics technologies.
- Financial services: industry-wide focus on reducing costs, and more data-driven planning; costumers preference for more on-demand, automated processes; improved analytics and database softer make large legacy data sets more actionable.
- Information technology; natural evaluation of IT toward more automated processes and optimized workflow; continued shift to cloud infrastructure, requiring automated network optimization; Enterprise need to unities internal data and extract valuable insights
- Consumers: Demand for personalized technology solutions: continued use of personal AI tools, such as voice assistants and chat bots; demand for more augmented reality and recommendation services

Croatia

- Infrastructure that will allow collaboration between industry and research organizations
- Training facilities for experts in the fields
- Financial support for collaboration between research institutions and industry
- Mechanisms for more EU wide collaboration between companies working on Artificial Intelligence
- Easier approach to knowledge and expertise in the field (conferences, workshops, fairs)

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Table 18 Manufacturing Target Group Needs Associated to Artificial Intelligence

Manufacturing Target Group Needs				
SMEs	***Large Enterprises***	***Higher Education & Research Institutions***	***Schools & Training Organisations***	***BSO & Others***
Germany Great support required to implement AI solutions for their process chains as well communication on technical and commercial benefits of AI solutions, funding programs with low thresholds for SMEs **Austria** tangible use cases needed with examples specific for SMEs Understanding what AI is good for **Poland** Frequent changes to the law, making it difficult for entrepreneurs to assess the legal risk of new projects and limiting innovation, Gaps in knowledge about access regulations and the use of non-enterprise data lack of established international connections in the field of AI	**Germany** AI based big data analytics, production planning. skilled professionals and provide expertise **Austria** AI understanding as a tool for workers and not for the management **Poland** Frequent changes to the law, making it difficult for entrepreneurs to assess the legal risk of new projects and limiting innovation, Gaps in knowledge about access regulations and the use of non-enterprise data lack of established international connections in the field of AI insufficient common structure (still in progress) at regional and national level to support SMEs in implementing AI (common	**Germany** research focus in developing AI based solutions for both large and small industries broaden qualification opportunities to mitigate the shortage of employee expertise in the field, increase expertise growth, establish additional AI professorships and offerings **Austria** AI and mechanic must be learned together, pure IT is useless **Poland** Lack of structures in Poland addressing the development and management of AI. **Italy** Need to be closer to companies, in order to better understand their needs and future trends, as well to have the possibility to concretely test and adjust their researches and applications.	**Germany** broaden information on benefits and transparency of AI solutions, awareness-raising and informational campaigns needed to extend dialogue between all actors **Austria** AI and mechanic must be learned together, pure IT is useless **Poland** Need to raise the awareness of AI by educating non-experts in order to improve the implementation of the technology **Italy** Scouting and interaction with companies to develop ad-hoc trainings. **Hungary** orientation, explanation, applicability	**Germany** All: knowledge & technology transfer between research, intermediaries and industry needs to be enhanced, better structured and professionalized **Austria** Policymakers: lack of systemic collaboration/communication with industry **Poland** A small number of pilot programs, aimed at supporting start-ups and SMEs from regional ecosystem in implementing AI in their businesses **Italy** d to be skilled enough and have a general mindset to support and guide companies in undertaking innovation changes. Need to be part of a comprehensive network with all key stakeholders on the topic. **Hungary**

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insufficient common structure (still in progress) at regional and national level to support SMEs in implementing AI (common platform with best practices, statistics data, reports) **Italy** Policy maker support, funding instruments, training, clearer road to market Need to receive Technological support from the right expert, able to identify the right solution for the company since most of the solutions are not ready to market bus must be tailored according to the specific company, Financial instruments to support the introduction of AI solutions and Training to skill operators. **Hungary** predictive maintenance, machine vision, sales support **Slovenia** link to R&D for applicative solutions; funding sources; raised awareness on potential transfer from R&D/ How to introduce UI in business process/ Transfer of good practices	platform with best practices, statistics data, reports) **Italy** Funding for research in this field Need to integrate/align the whole supply and value chain. Need to translate their current as well as future needs and trends to policymakers, that can thus develop innovation strategies accordingly. **Hungary** predictive maintenance, quality assurance and controlling **Slovenia** search for disruptive tech from Start-ups and vertical integration of these into value chains / good practices for implementation **Croatia** financial support in research and development projects, support in joint projects with research organizations	**Hungary** from theoretical basics to applications, algorithms writing and coding **Slovenia** faster Introduction of AI both in support of business processes and in upgrading the products and services for SMEs / to move from basic towards applicative research – commercialization issue / need for infrastructure **Croatia** competitive funds available for the competitive research in the field, formation of competence centers, support to student projects in the field, startup competitions, support of technology transfer offices, new joint study programs	**Slovenia** Learning new skills and knowledge / How to integrate into business services **Croatia** modernized equipment, access to AI knowledge and infrastructure, competitions for students	application case studies with ROI explanations to be disseminated **Slovenia** to change the mindset of managers in the introduction of artificial intelligence / proposing foreign good practices on ecosystems towards Slovenian policy stakeholders introduction and adaptation of new ethical principles and new legislation **Croatia** finance and expertise to form high value support mechanisms in Artificial Intelligence for manufacturing

Croatia financial and expert support in development and implementation of Artificial Intelligence projects, possibility to use shared infrastructure (supper computers etc.)				

5.2. Capabilities and Competencies from AI Members

The Partners were asked to describe their capabilities and resources, and strengths and competencies associated to the topic of S&AM. In this exercise the Partners build trust amongst each other. The core members are able to demonstrate and exchange on the infrastructure, network and in-house knowledge that is possessed. The learners are able to showcase their perspective on the topic of S&AM, and demonstrate from which perspective they plan to build their learning-oriented use-case.

Table 19 Artificial Intelligence TIN Working Group Structure

Working Group Members	
Leader	**Lombardy Intelligent Factory Association**
Core Member	**Learner**
☒ Association Industry 4.0 Austria (PIA) ☒ Pannon Business Network Association (PBN) ☒ PROFACTOR (PRO) ☒ Krakow Technology Park (KPT)	☒ Karlsruhe Institute of Technology (KIT) ☒ Intelligent Integrated Systems Technology (SIIT) ☒ Fraunhofer Institute for Machine Tools and Forming Technology (IWU) ☒ Pomurje Technology Park (PTP) ☒ Croatian Agency for SMEs, Innovations and Investments (HAMAG)

Table 20 Capabilities and Competencies of the CEUP 2030 Partnership Associated to AI

Partner Name	Role	Resources & Capabilities for IPS	Strengths & Competencies for IPS
AFIL	**Lead**	➢ Road mapping: Ongoing activities for the definition of the regional roadmap for Artificial Intelligence. ➢ Awareness creation and innovation scouting: organization of meetings and events addressing the field of Artificial Intelligence, for increasing awareness on the topic and highlighting the main trends and priorities. ➢ Support in project ideas generation and funding opportunity monitoring: e.g., AIREGIO H2020 project. ➢ Regional and Interregional ecosystem Building and networking on the topic. ➢ Facilitate access and connection with innovation infrastructures, mainly from core players in the AFIL network, both industrials and academia.	➢ Wide consolidated regional network dealing with AI, both industrial and academia. ➢ In addition, AFIL has many links with interregional partners and initiatives active in the topic of AI. ➢ AFIL has been involved in some projects (Interregional and regional) addressing AI, where its main goal was focused on disseminating the developed solutions. In particular: ▪ AIREGIO – Regions and DIHs alliance for AI-driven digital transformation of European Manufacturing SMEs ▪ WATCHMAN – Workload reduction mAchine vision-based TeChnology

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Partner Name	Role	Resources & Capabilities for IPS	Strengths & Competencies for IPS
			Hub for MANufacturing
PIA	**Core**	➢ 4,8 FTEs working towards enhancement of Industry 4.0 in Austria ➢ Well established structures and different formats ➢ Pool of 700 experts to be involved in work regarding the topic ➢ Two running & funded projects regarding AI and its implementation in industrial companies	➢ High level of expertise through members ➢ Functioning system regarding the exchange of good practices and experiences ➢ R&D Roadmap, created collaboratively with industry & science partners ➢ AI as a focus topic of 2020/2021 throughout all expert groups
PBN	**Core**	➢ programming in Python ➢ classification, segmentation, picture recognition algorithm ➢ data collection in real time ➢ Natural language Processing skills ➢ Machine Learning/Artificial Intelligence solutions	➢ practice oriented approach ➢ multidisciplinary team – engineering and economics ➢ customer data analysis processes ➢ unique algorithm solutions in data analysis ➢ classification and segmentation experience ➢ data visualization ➢ NLP experience
PRO	**Core**	➢ Machine learning in quality control (zero defect manufacturing) ➢ Machine learning for process modelling and optimisation	➢ Visualisation ➢ Simulation ➢ Visual Computing ➢ AI not only focused on Production
KTP	**Core**	➢ DIH team – hub4industry ➢ Data Center - Cloud Computing Laboratory: 3 IT specialists (cloud computing, software development, security, IT projects management) ➢ Business development: 7 specialists for business support & development (startups, business models, financing, solutions) ➢ ScaleUp Accelerator: 4 specialists (business models, financing, solutions, cooperation between startups and large enterprises, presentations, negotiations, international expansion) ➢ Moodle platform for on-line trainings within rapid prototyping, smart engineering & technology transfer areas ➢ Dihnet.eu platform for improving digital connectivity and exchange	➢ Existing Network of DIH partners (T-Mobile, ASTOR, University of Science and Technology in Krakow (largest polish technical university), Krakow University of Technology, Kosciuszko Institute (specialized in cybersecurity), BIMKlaster ➢ Ecosystem of AI companies in Krakow area ➢ Synergic projects ➢ 20 external experts and mentors supporting KTP team

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Partner Name	Role	Resources & Capabilities for IPS	Strengths & Competencies for IPS
		between different target groups	
KIT	**Learner**	➢ Artificial Intelligence for mechanical engineering ➢ Usage of Machine learning for process modelling and optimisation ➢ The Steinbuch center for computing (SCC) of the KIT provides access to high performance computing systems, efficient data storage systems as well as large simulation and visualisation laboratories with excellent computing facilities.	➢ Visualisation ➢ Simulation ➢ High performance computing
IWU	**Learner**	➢ DIH "InnoSax" ➢ Expertise in self-regulating systems, intelligent process chains and IIoT ➢ Linked Factory: data and service platform for the implementation of innovative solutions and supporting flexible production structures ➢ Department for Digitization in Production linked to E^3-Factory	➢ Energy and resource efficient production ➢ integration of information and communication technologies ➢ Efficient production systems ➢ Innovative technologies Emissions neutral factory Process monitoring ➢ Energy and material cycles ➢ Energy management ➢ Quality cycles ➢ Embedding of the human factor into the production Knowledge and information ➢ Production assistance I Motivation
SIIT	**Learner**	➢ In research projects and with clients we have developed an in-depth knowledge on Machine learning	➢ Anomaly detection algorithms ➢ Planning and scheduling optimization
PTP	**Learner**	➢ None „in-house" ➢ SRIP Factories of the Future (ext) ➢ DIH Slovenia (ext) ➢ Infrastructure of Faculties, even pilot plant in Ljubljana Faculty of Electronics PTP is using all ext. networks for specific section of AI at this cluster type organization, taking part at events and getting familiar with competent actors to perform as solution providers	➢ "Fast-track" process for PTP getting in network (DIH Slovenia) we have access to all major actors in Slovenia – from academia (University of Ljubljana and Maribor, both with Faculties of electronics, computing and IT) as well as direct access to infrastructure of HPC (either University of Maribor of private actors (XLAB, ARTUR, AVL Maribor and similar companies) ➢ Memorandums signed with R&D through transnational pilot projects

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Partner Name	Role	Resources & Capabilities for IPS	Strengths & Competencies for IPS
HAMAG	**Learner**	➢ Connection with all the relevant stakeholders who are in charge of Artificial Intelligence in Croatia ➢ Regional ecosystem building and networking on the topic	➢ Experience in executing and managing projects related to the thematic area Artificial Intelligence ➢ Transnational networks with partnering institutions - EEN partner

5.3. Artificial Intelligence Action Plan

Within the module of Artificial Intelligence, the CEUP 2030 Consortium developed 10 Use-Cases, to demonstrate each Partner's plan for the coming years to promote the adoption and uptake of AI. The Use-Cases build on each Partner's competencies and eco-system needs, and emerged from the activity within each Partner network and across the opportunities developing in the new programming period. The full and detailed use-case description can be found in the Annex of this document, divided on a partner-by-partner basis. We highly recommend that stakeholders interested in learning more about a specific developing case reach out to the named Partner leading the use-case, and find out how you can get involved.

This section one can find a summary of each Partner's use-case, and the timeline for the delivery of the two key action stages.

5.3.1. Artificial Intelligence Use-Case Summaries

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
KPT	Polish Investment Zone Use Case managed by KPT: SmartWMS development for optimization of warehouse processes	The purpose of this use-case is to optimize warehouse processes in terms of reducing service costs as a result of increasing and improving the organization and quality of work, optimizing the use of available warehouse space through the use of proprietary algorithms for allocating storage places, reducing delivery time and thus improving the quality of customer service final as a result of the elimination of irregularities in the completion of the goods. The subject of the project is the development and implementation of a comprehensive warehouse management system. The new system will be developed as a result of the following research and development tasks: Industrial research: 1. Development of an algorithm to optimize the handling of warehouse processes 2. Development of other system components in a laboratory environment - development of an innovative WMS module (Warehouse Management System, a program for product traffic management in warehouses), used in logistics containing proprietary, innovative algorithms that implement new functionalities compared to those currently available on the market 3. Implementation of optimization algorithms to the WMS system and testing in a laboratory environment and in the real environment 4. Integration of the system with the Microsoft HoloLens product (device mapping the environment and imposing on real digital objects information, i.e., connecting the digital and real world) and testing in simulated operating conditions.	Knowledge Faciliator	Innovation vouchers at the regional/national level and Horizon Innosup Cascade Funding

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
		Development works: 5. Development and optimization of the system communication method with mobile devices. of the prototype of the system and testing it in real conditions and optimization of the system at the customer selected for the testing phase (beta version of the system) The result of the project will be a world-wide groundbreaking WMS system with augmented reality supporting the operation of logistics processes and intended for warehouses and logistics centers		
PRO	AI – BIG DATA in Production	The use case is based on a bilateral submission of a lead project on the topic of BIG DATA in production between AT and D in autumn 2021. This is a lead project with approx. 5 million in funding and a total sum of 8 million €. The project was positively evaluated but not funded due to lack of money. The USE case should enable the topic to be pursued further.	Knowledge Supplier	"Big Data in Production" is an Austrian RTI offensive, promoted by the FFG and financed by the Austria Fund. The first bilateral call for proposals between Austria and Germany is supported on the German side as part of the RTI priority "Development of Digital Technologies" of the Federal Ministry for Economic Affairs and Energy (BMWi). In Austria, the FFG is responsible for implementing the call and managing the project. The BMWi has commissioned the project management organization of the German Aerospace Center (DLR-PT) to implement the call for proposals.

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PP	Use Case Name	Short Summary	PP Role	Policy Instrument
PIA	Digital Transformation Hub Austria (DTHA)	European Digital Innovation Hub focusing on the digital transformation of the Austrian economy along the digital supply chain: Data Spaces, AI, Trust, Ethics & Law The goal of the DTHA is to unite competences to overcome barriers when it comes to the usage of AI. It wants to do so through a holistic approach including a focus on ethics and legal aspects. The DTHA aims to address the practical relevance of the results of research projects. The services of the DTHA focus on conceptional work (including pilot-projects and innovation support), on the usage of infrastructure and on a European network regarding science & economy.	Knowledge Facilitator	European Digital Innovation Hubs Scheme
IWU	MIFU.CONNECT	For indirect process monitoring, the interface between the forming machine and the die is of particular importance, since it is a surface that transmits process forces and is therefore close to the active surface, yet inherent to the machine. Sensor integration at and in this die interface for indirect process monitoring offers the possibility of recording a large number of process inherent parameters. Within a preliminary project, a sensor system was developed which can be integrated particularly simply into this interface and with which the elasto-mechanical deformation of these interfaces can be recorded during the forming process. This information can be used to detect trends in process control or ad-hoc parameter variations. Communication between the sensor points and the evaluation unit was implemented using UWIN radio technology. Within the MIFU.connect project, this system will be further developed in order to realize a roadshow demonstrator, with which the functionality and the advantages of using the system in customer applications can be demonstrated and tested. In order to ensure an industry-oriented use, the system is to be further developed with regard to robustness at the communication and sensor point. First test parameters can be established to set empirical values for later machine learning attempts.	Knowledge Supplier	Institutional Financing - The Fraunhofer Cluster of Excellence Cognitive Internet Technologies CCIT researches cognitive technologies for the industrial internet. In 3 research centers Fraunhofer CCIT develops key technologies necessary for a cognitive internet. The IoT-COMM (FIOT) Research Center advances research into the basic technologies of networking, localization and information security and combines them in terms of IoT communication.
KIT	AI Based Camera System for Real Time Image Processing	An AI based camera system represents a use case with a wide scope. There exist numerous potential applications in the futures of Manufacturing such as for enabling real time process monitoring & control, quality control or for detection, processing and detection of polymer microparticles present in our rivers, lakes and the ocean.	Knowledge Supplier	Horizon Europe (No call specified)

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
AFIL	Fostering AI experiments development	The use-case will focus on the identification and development of AI experiments. AFIL will promote and support companies in the application of technologies for the realisation of AI solutions, fostering the exchange of good practices and the matching between technology providers and end-users. Local ecosystem will periodically meet to favour the realisation of experiments starting from specific companies' needs. Moreover, leveraging on its interregional network, AFIL will ensure the connection of local stakeholders with key partners in other regions, thus favouring cross-fertilisation. The cluster, through its scouting activities, will also ensure the identification of proper funding opportunities which may expand the experimentation, supporting the realisation of AI trials either at regional or EU level.	Knowledge Facilitator	Multiple: Private & Public (open calls and vouchers, for example the AIREGIO Open Call from September 2021)
SIIT	NECSTEPS	Networking European hubs against Covid-19 criSis To accElerate Use cases by high-tech Smes	Knowledge Facilitator	Horizon Europe HORIZON-HLTH-2021-STAYHLTH
PTP	Smart Factory Demonstration Center - NDC	Pomurje Technology Park has a specific role in Slovene innovation support ecosystem. It is among few Technology Parks in Slovenia and the only one to be focused on manufacturing industry and as such is a member for a so called SRIP TOP (Tovarne prihodnosti=> Eng. Strategic Development Innovation Partnership Factories of the Future. The reason for that is focus on Industry 4.0 technologies and lack of own resources, so we a s a bridge between R&D and industry need competent partners to jointly provide solutions industry needs, whether we talk about soft skills and related LEAN or hardware needs of the production. Therefore, we are a part of a huge national project were funding to certain extend is assured and more is expected and it is about national demonstration center where whole Industry 4.0 topics are going to be covered to the "test before invest" stage. With partners we will search for opportunities within for topics of artificial intelligence (solutions, funding, testing…).	Knowledge Receiver	Multiple: H2020-DT-2018-2020 Digitising and transforming European industry and services: digital innovation hubs and platforms HORIZON-CL4-2021-TWIN-TRANSITION-01-01: AI enhanced robotics systems for smart manufacturing (IA) DT-ICT-03-2020 - I4MS (phase 4) - uptake of digital game changers :EUREKA 2021 :EUROSTARS 2021 National: SPIRIT/MinEconDev&Tech SEF(SPS): Digital Voucher P4D
PBN	Demo production line upgraded	**PBN's 4 use cases are strongly connected with each other.** Basically, the Demo production line would be the first necessary development in order to continue the process with the use cases defined at the 3 other topics (Intelligent production Systems, AI and Smart Materials). The	Knowledge Facilitator	Multiple: Horizon Europe Program Digital Europe Program

PP	Use Case Name	Short Summary	PP Role	Policy Instrument
	with predictive functions	demo production line establishment is described under the use case for Automation and Robotics. The production line upgraded by predictive functions should be treated as a separate use case, because upgrading the unit with artificial intelligence can contain lot of possibilities. According to that, members of the project /use case/ consortium, target groups and achievable goals are different. The production line upgraded by predictive functions can give information about the followings: - it predicts the possible errors, - estimates the remaining time for getting the finished product, - predicts the expected energy consumption, - provides suggestions, etc.		Interreg Europe Program Interreg Central Europe Program Danube Transnational Program Cross-border cooperation opportunities
HAMAG	CROBOHUB++: CROatian Industry and Society Boosting – European Digital Innovation HUB	In align to the Digital Europe Program, Croatian Ministry of Economy released the call in November 2020 to elect the best consortium which will be established as a digital hub for the North Croatia region. CROBOHUB++ consortia applied for the call proposing a project to meet the challenge. Its vision is to act as a major digital innovation center in the North Croatia. The hub will offer one stop shop services such as: testing new technologies before investing into them; education on cut edge technologies; networking between technology services' providers and their users; financial consultations and development of all skills needed in the process of digital transformation. The CROBOHUB++ consortium gathers all key triple helix eco innovation system stakeholders in Croatia. Namely they are: University of Zagreb, Faculty of Electrical Engineering and Computing (FER) which is a leading partner; Innovation center Nikola Tesla; ZICER (Zagreb Innovation Center); SRCE (University Computing Centre); HAMAG-BICRO and Croatian Chamber of Economy (HGK). It is specialized in three key areas: 1) Artificial intelligence, 2) High Performance Computing, 3) Cyber security and robotics, and their application in the fields of agriculture, manufacturing and green energy.	Knowledge Facilitator	Digital Europe 2021-2027

5.3.2. Artificial Intelligence Use Case Time Horizon

Within this section one can find an overview of the Partner's intended timeline for developing and implementing the use-case. The use-cases which the Partners are developing span over a decade. However, most of use-cases are developed and implemented within the next 48 months.

PP	Use-Case Name	Action Phase	2020	2021	2022	2023	2024	2025	2026	2027	Beyond+
KPT	Polish Investment Zone Use-Case managed by KPT: SmartWMS development for optimization of warehouse processes	Development	01.02.2020								
		Implementation		01.01.2021	30.06.2022						
PRO	AI – BIG DATA in Production	Development		01.06.2021 - 31.12.2021							
		Implementation			01.01.2022	31.12.2023					
PIA	Digital Transformation Hub Austria (DTHA)	Development		02.11.2021	28.02.2022						
		Implementation			01.03.2022		01.03.2024				
IWU	MIFU.CONNECT	Development	01/08/2020 - 09/09/2020								
		Implementation	16.10.2020	30.06.2021							
KIT	AI Based Camera System for Real Time Image Processing	Development		01.02.2021	30.04.2022						
		Implementation			01.05.2022			30.04.2025			
AFIL	Fostering AI experiments development	Development		01/03/2021 - 31/05/2021							
		Implementation		30/06/2021 to TBD							
SIIT	NECSTEPS	Development		21/04/2021 - 21/09/2021							

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PP	Use-Case Name	Action Phase	2020	2021	2022	2023	2024	2025	2026	2027	Beyond+
		Implementation			01.01.2022	31.12.2023					
PTP	Smart Factory Demonstration Center - NDC	Development	01.09.2020		24.03.2022						
		Implementation			25.03.2022						24.03.2032
PBN	Demo production line upgraded with predictive functions	Development				01/01/2023 - 31/12/2023					
		Implementation					01/01/2024 to End TBD				
HAMAG	CROBOHUB++: CROatian Industry and Society Boosting – European Digital Innovation HUB	Development		01.10.2021			10.01.2024				
		Implementation			01.10.2022		01.10.2024				

6. Conclusions

The purpose of CEUP 2030 is to improve policy-making, by exploiting and upstreaming available outputs and results from excellent work delivered in the programming period 2014 to 2020, to create new recommendations for policies and strategies to enhance Central Europe's Advanced Manufacturing and Industry 4.0 capacities. In order to harness the power of the pooled critical mass of trained stakeholders, and effectively empower people to work together to improve sustainable linkages among actors of the innovation systems for strengthening regional innovation capacity in Central Europe, the partners have endeavoured to create strategic action plan for the CEUP 2030 consortium. This initial step, is known as the Strategic Implementation Blueprint. This report, the Action Plan for CAMI4.0 Excellence, represents the second half of the Strategic Implementation Blueprint, and should be read in association with the Joint Strategy for CAMI4.0 Excellence in CE-EU Cooperation.

To develop the Action Plan, Partners drew inspiration from the work they have been involved in over the past programming period, in keeping with the vision of the Interreg Central Europe's experimental call on result capitalisation. The Partner's also took an opportunity to benchmark to the development of future programmes and strategies from the European Commission associated to the topic of Advanced Manufacturing, pulling inspiration from the European Green Deal, the Digital Skills Agenda and the Digital Europe Programme.

From this starting point, the Partners built 40 policy pilot action use-cases, 10 for each CAMI4.0 topic, which will be tested, debated and upgraded during the WPT3 RIS3 Round Tables. This report is structured in four clear workable modules for the four CAMI4.0 Topics and explains the processes the Partners have worked on together to develop the Action Plan for CAMI4.0 Excellence in CE/EU Cooperation. Action Plans are designed for a quick start of cooperation in the project on the CAMI4.0 topics, along with a future-robust approach which can develop into the Policy Implementation Framework for CAMI4.0 (WPT3). The Action Plan is based a portfolio of policy-oriented use-cases pitched by each Partner to meet the specific objectives for the Trend and Innovation Networks, and overall anticipate and fast-track policy strategies to promote aligned S3/RIS3 for CAMI4.0 Excellence.

Within each of the four CAMI4.0 topic modules, one has been able to understand:

- The CEUP 2030 Consortium's analysis of key challenges facing Central Europe's manufacturing eco-system, at sector, value chain and target group-level which are relevant to the CAMI4.0 topic area;
- The CEUP 2030 Consortium's key capabilities and competencies which can be deployed to help address the challenges and enable growth of the CAMI4.0 topic area;
- Summary description and action-oriented timeline of the 10 use-cases for each CAMI4.0 topic.

The Consortium has made the effort to build a diverse portfolio of use-cases which are an accurate reflection of the needs of the CEUP 2030 stakeholders. By deriving a fine balance between technology-oriented cooperation and policy-making, the stakeholders capitalize on good practice and upgrade knowledge. The Consortium aims to support policy-oriented stakeholders utilize the derived knowledge from the use-case development, to promote policy which enables the uptake and adoption of advanced manufacturing and industry 4.0 technology across the central Europe manufacturing eco-system.

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6.1. Next Steps

With the publication of this report, the Strategic Implementation Blueprint, is finalised. However, this Blueprint exists as a living paper across the next year of the project. The Action Plans have been designed for a quick start of cooperation in the project on the CAMI4.0 topics, and exist as a reflection of the project's joint strategy in action.

As highlighted in the start of this report, the next step is to build these use-cases into sustainable, pilot projects that give the Consortium a future-robust approach, which can be used as the basis to develop the Policy Implementation Framework for CAMI4.0 (WPT3). This process begins by promoting detailed discussion and debate with stakeholders of central Europe's manufacturing eco-system at a technical and policy-level about the specifics of the use-cases. Through the Tech Trend Dialogue Meetings and the RIS3 Round Table Meetings, the Partners create sustainable structures for awareness-raising and sustainable use of RTI knowledge to enhance policy-decision support. In addition to creating a critical mass of "learning-by-doing" opportunities, the activity aims to generate a series of recommendations on how to improve and deliver a common framework for improving the uptake and adoption of advanced manufacturing and industry 4.0 technologies. Through this work, the Partner's aim to anticipate and fast-track policy and strategy pilot actions to promote a joint RIS3 for CAMI4.0 Excellence in CE/EU.

The CEUP 2030 Partnership would like to invite all interested stakeholders to join in the project's extensive workshop series to continue discussions on the topics highlighted within this report. More detail can be found on the project's website, by contacting the Lead Partner, Krakow Technology Park, or by contacting the Partner operating in the region or country of your interest.

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7. Abbreviations

Abbreviation	Explanation
AF	Application Form
ASP	Associated Partner (i.e., Strategic Partner)
IPS	Intelligent Production Systems
AI	Artificial Intelligence
R&A	Robotics and Automation
CAMI4.0	Central European Advance Manufacturing and Industry 4.0
PI	Policy Instrument
PIF	Policy Implementation Framework
PLL	Policy Learning Lab
PP	Project Partner
RIS3	Regional Innovation Strategy for Smart Specialisation
S3	Smart Specialisation Strategy
SBU	Strategy Boost & Upgrade
TGP	Technology Good Practice
TIN	Trend & Innovation Networks
IWU	Fraunhofer Institute of Machine Tools and Forming Technology
KIT	Karlsruhe Institute of Technology
PBN	Pannon Business Network Associations
PTP	Pomurje Technology Park
HAMAG	Croatian Agency for SMEs, Innovations and Investments
AFIL	Lombardy Intelligent Factory Association
SIIT	Intelligent Integrated Systems Technology SIIT
PIA	Association Industry 4.0 Austria
KPT	Krakow Technology Park
PRO	PROFACTOR GmbH
TTTDM	TIN Tech and Trend Dialogue Meetings

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8. Use Case Annex

The Annex of this document provides the detailed description of each Partner's Use-Case. A significant amount of work has been put into the development of these ideas, and the connection of this work to existing and emerging strategies and programmes for advanced manufacturing and industry 4.0 in Central Europe and within the wider European Union context.

8.1. Krakow Technology Park

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USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Use case within the Polish Investment Zone managed by KPT: SmartWMS development for optimization of warehouse processes
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	The purpose of this use-case is to optimize warehouse processes in terms of reducing service costs as a result of increasing and improving the organization and quality of work, optimizing the use of available warehouse space through the use of proprietary algorithms for allocating storage places, reducing delivery time and thus improving the quality of customer service final as a result of the elimination of irregularities in the completion of the goods. The subject of the project is the development and implementation of a comprehensive warehouse management system. The new system will be developed as a result of the following research and development tasks: Industrial research: 1. Development of an algorithm to optimize the handling of warehouse processes 2. Development of other system components in a laboratory environment - development of an innovative WMS module (Warehouse Management System, a program for product traffic management in warehouses), used in logistics) containing proprietary, innovative algorithms that implement new functionalities compared to those currently available on the market 3. Implementation of optimization algorithms to the WMS system and testing in a laboratory environment and in the real environment 4. Integration of the system with the Microsoft HoloLens product (device mapping the environment and imposing on real digital objects information, i.e., connecting the digital and real

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	world) and testing in simulated operating conditions. Development works: 5. Development and optimization of the system communication method with mobile devices. of the prototype of the system and testing it in real conditions and optimization of the system at the customer selected for the testing phase (beta version of the system) The result of the project will be a world-wide ground-breaking WMS system with augmented reality supporting the operation of logistics processes and intended for warehouses and logistics centers
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Maximum 1000 Characters*	Warehousing is a rapidly changing industry that requires ongoing investment in increasingly advanced IT systems. One of the companies in the KPT ecosystem, Navigal develop smart solutions and innovative tools which will assist in managing business and process optimization. The clue of the SmartWMS is to generate 3d holograms which helps to organise the storage of products. It is possible to configure the software so that it works in tune with particular warehouse and production processes. SmartWMS will also take on production management process The operating system is equipped with intelligent algorithms, including augmented reality solutions. It's also fully integrated with ERP, which allows to automate numerous storage management processes. By employing SmartWMS it is possible to create new, more efficient ways to run production business and make them more cost effective. The SmartWMS solution has been already initially tested in few factories, where it significantly improved the effectiveness of logistics in the warehouses. It is applicable and scalable for new production venues; however, it is necessary to adapt the software every time to the particular circumstances, The optimization of production and logistics is one of the core need and goal where the production companies can benefit from the AI solutions.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The presented use-case has a huge potential for development and possible capitalization and inclusion of best practices and lessons learnt in different industrial sectors. The result of the project will be a world-wide ground-breaking WMS system with augmented reality supporting the operation of logistics processes and intended for warehouses and logistics centers.

		In order to implement the solution, it is necessary to organize the ecosystem of companies willing to adapt and test the solution in their warehouses and factories. It is crucial to test it in the real environment, as it requires the adaptation to particular circumstances, and each time the algorithm has to be modified. The solution is able to meet the needs of both large enterprises as well as small business, therefore it has a huge potential for to be implemented at every level. It is also in line with the priorities of the EU Policy Development, as it directly brings the technology and business together
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY		*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE		*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY		***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence*
Use-Case Key Words		Artificial intelligence, augmented reality, smart technology
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*31/12/2019*
	END DATE	*01/02/2020*
	DURATION IN MONTHS	*2 months*
IMPLEMENTATION	START DATE	*01/01/2021*
	END DATE	*30/06/2022*
	DURATION IN MONTHS	*18 months*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

CHALLENGE & CHALLENGE WHEEL ALIGNMENT	
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	To boost digital transformation there is the huge need to bottom-up activities that support SMEs in digital transformation, otherwise all top-down programmes to boost economy and push competitiveness of companies will fail. More and more entrepreneurs are getting ready for transformation and introduction of innovative technological solutions of Industry 4.0 to their companies The technology suppliers, such as Navigal, the author of SmartWMS solution, has experts who design the algorithms and software, but testing and implementing solutions requires first the awareness, then the will and courage and last but not the least most important resources invested by the representatives of industrial sector companies. The biggest challenge is to provide resources and conditions to matchmake and test the SmartWMS technologies in the real live environment of factories and warehouses which will be able to benefit from implementing this solution.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☐ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C29 - Manufacturing of Motor Vehicles, Trailers and Semi-Trailers***

IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge.* *Maximum 1000 Characters.*	The successful implementation of the solution assumes creating a space for raising awareness on the potential of the new technology and encourage the ecosystem to use it. In order to do this a cooperation between technology supplier and industrial enterprises, with the support of public administration is required. The testing processes require an infrastructure and resources. Test before invest study brings a lot of insights how to organize and conduct the upgraded production due to using specific equipment in the production hall. The solution is to create a matchmaking possibilities for the testing the SmartWMS in the companies which can later on adapt it and provide resources for the initial investment. Moreover, it is necessary to influence the policy makers to support such projects on a wider scale.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	KPT's mission is to support the development of business and technologies, with its main focus on the industry 4.0. SmartWMS is the solution presented by one of the companies belonging to KPT's ecosystem, with very strong proof of concept and already existing implementations. Also, we have access in our ecosystem to the companies who can benefit from implementation of this solution in their factories and warehouses. Moreover, the solution presented is very scalable and applicable in the industrial sector among EU. KPT acts as a platform for matching the technologies suppliers and possible receivers, so has experience in the such processes.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	The production enterprises seek for optimization of their production and storage systems. Every technology, tool, process that increase the effectiveness and decrease the costs is very valuable. SmartWMS is such solution, which can be wider developed and adapted to many different areas of production and storage. So, the use-case can be very beneficial for industrial ecosystem, not only in the region.

	The process of matchmaking, testing and implementing of the solution is also very valuable for the future development of technologies.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	KTP acts as a facilitator and initiator of the relations between technology suppliers (provider of the solution) and business who will test and implement the solution. KTP has access to wide ecosystem of companies who can be interested in developing and applying the solution in their systems.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	The enterprises in the ecosystem of KTP can be a receiver of the knowledge, tester and applier of the technology

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DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***		Choose an item.	
		Choose an item.	
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	As already mentioned, the financial resources for the testing and adapting the solution in particular enterprises are crucial. It is important to provide the resources for the whole process, so that the enterprises do not risk investment in the long-term testing phase, when the prototype needs to be adapted and modified. It also crucial to provide resources for developing and testing new AI technologies in the similar process. Of course, the technology receiver can invest their private funds, however it would be beneficial to have some systematic support, such as innovation vouchers, internationalization funds, support for further R&D		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Innovation vouchers at the regional/national level Horizon Innosup Cascade Funding	Horizon Europe is the research and innovation framework programme running from 2021-2027. As far as cascade funding is concerned:	

		Trinity & Pulsate.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Not available funding for big scale tests and full deployment.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	The joint lesson learnt from harvesting task and discussion with PPs is that the process of testing and implementing of new technologies is critical. It requires financial resources, but what is more it requires also the support in matchmaking and facilitating of the process. It could be conducted at the regional but also at the transnational level, where the technologies suppliers and receivers from different countries/regions could catch up.	
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**KPT**
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COUNTRY	*Poland*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Use case within the KTP Digital Innovation Hub Optimization of the welding process - checking the possibility of generating a trajectory and correcting it in real time, modification a real detail in real production environment based on its digital twin. Preparation of Proof of concept.
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	The presented use case is developed by Astor and Factory4x4. It was mentored and monitored by KTP DIH (hub4industry). The companies involved in use case development: Astor (part of KTP DIH consortium) & Factory4x4. Astor sp. z o.o. - is one of the leading providers of solutions in the fields of automation, robotisation, and digital transformation of production processes in Poland. They implement their solutions in a number of industries, including furniture manufacturing, automotive, FMCG, metal processing, electronics manufacturing. In 2019, ASTOR has become an ADMA (ADvanced MAnufacturing, www.adma.ec) supporting

	organisation and is authorised to provide advice in the process of transforming enterprises into Factories of the Future. The company has two showrooms, both based in Kraków: Astor Technology Park and Astor Robotics Center. The second one was built within KTP DIH (Astor & KTP & T-Mobile). KTP was accredited as ADMA supporting organization in 2020. Factory 4x4 is a leading Polish manufacturer of off-road equipment. The company is producing such elements as: bumpers, cover plates, wheel mounts, handles, expedition structures, thresholds, racks and ladders for automotive sector. Factory 4x4 provides precision metal processing services such as laser cutting, bending on a press brake, drilling, threading, MIG, TIG and MAG welding. The use case is on PoC on optimization of the welding process - checking the possibility of generating a trajectory and correcting in real production environment. The aim of the test was to generate the welding trajectory in K-Virtual environment, and after that to correct the path in real time with the Scansonic tool. The use case is based on Kawasaki Robot RA010L.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Maximum 1000 Characters*	In order to develop the use-case the consortium of KTP DIH, under lead of Astor the provider of the technology, have established regular meetings and onsite visits to monitor & validate the use case deployment. Welding has always been one of the main applications of industrial robots. Their use in the production process made it possible to obtain elements that meet the highest quality requirements, while guaranteeing very high efficiency. In the past, due to their high cost and complicated service, they were mainly used by mass productive automotive factories. PoC confirmed that welding robots can be used in flexible low-scale production of complex elements with high mix low volume. Using Kawasaki robot lets to include a series dedicated to welding applications - the RA and BA series. Additionally, thanks to special software and dedicated functions, they can be used in various welding techniques (including MIG/MAG, TIG, ColdArc, CMT). All partners have wide experience of relevant projects implementations https://hub4industry.pl/en/ The KTP DIH consortium is created by top leading academia, companies and BSO dealing with digitalization.hub4industry consists of a coordinating orchestrator (the Krakow Technology Park) and consortium partners: technology companies T-Mobile and ASTOR; AGH University of Science and Technology and the Krakow University of Technology; and specialists from the

	Building Information Modelling Cluster (BIM Klaster) as well as the Kosciuszko Institute. As a one-stop-shop, it is a reference point of integration and standardisation of multiple competencies in the industry of the future.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The improvement of welding services requires detailed programming and precision. The provided services were based on using the MIG/MAG and TIG technology, which allows the processing of thin sheets, guarantees clean welds and high quality of the weld. The use of these methods allows to weld metals, but also all unalloyed, low-alloy and high-alloy structures. The presented use-case has a huge potential for development and possible capitalization and inclusion of best practices and lessons learnt in different industrial sectors. Despite the fact the PoC was realized using specific robot and tools and for specific company, the general conclusions and recommendation might be applicable for other companies. There is already a high interest for such expertise and support the KTP hub4 industry is delivering. The KTPs DIH programme is tailored to needs and expectations of companies taking part in the programme, each time it is verified and agreed with company to meet the challenge they are addressing in the area of digital transformation. The digital transformation and optimisation of production processes and limitation of energy & water waste is very much in line with the EU priorities especially in terms of the Green Deal, where the main priorities are: boost the efficient use of resources by moving to a clean, circular economy & cut pollution. The use-case presented fits exactly to the priorities and has a huge relevance with the planning programmes in the next period. It also strengthens the strong points of the EDiH vision which play a central role in the Digital Europe Programme to stimulate the broad uptake of Artificial Intelligence, High Performance Computing (HPC) and Cybersecurity as well as other digital technologies by industry (in particular SMEs and midcaps) and public sector organisations in Europe. The Digital Europe Programme will invest €9.2 billion to align the next long-term EU budget 2021-2027 with increasing digital challenges. In this frame. European Digital Innovation Hubs (EDIHs) function as one-stop shops that help companies dynamically respond to these challenges and become more competitive.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Automation & Robotics*

PP's CAMI4.0 TIN ROLE		*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY		***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☒ *Smart and Advanced Materials* ☒ *Artificial Intelligence*
Use-Case Key Words		Automation, welding trajectory, Proof of concept, test before invest
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		https://hub4industry.pl/en/ https://www.youtube.com/watch?v=hhuCGceqjus https://www.astor.com.pl/produkty/producenci/kawasaki.html
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*03/09/2020*
	END DATE	*25/09/2020*
	DURATION IN MONTHS	*1 month*
IMPLEMENTATION	START DATE	*12/04/2021*
	END DATE	*12/04/2022*
	DURATION IN MONTHS	*From 6-12 months (The agreement between Astor & Factory 4x4 for new robots is being prepared)*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		To boost digital transformation there is the huge need to bottom-up activities that support SMEs in digital transformation, otherwise all top-down programmes to boost economy and push competitiveness of companies will fail. More and more entrepreneurs are getting ready for transformation and introduction of innovative technological solutions of Industry 4.0 to their companies but without determined support, education, advice and financial instruments they will not manage that. Hub4industry offers to the companies: • scanning (analysis of the company's potential) and benchmarking • free training and workshops • implementation strategy

	• mentoring and consulting from the concept stage to implementation • test before invest - i.e., pilot implementation projects • showrooms of Factory of the Future in Kraków • consultancy in obtaining financing for new technologies. The activities undertaken by KTP's DIH are the respond to the needs and expectations of the companies which are not able to undertake modernization and automation of their factories without mentoring and technical advisory and support. Being validated, tested, improved (PoC) they are ready for full market deployment and commercialization within maximum 6 months.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☐ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C29 - Manufacturing of Motor Vehicles, Trailers and Semi-Trailers***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	

DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The improvement of welding services requires detailed programming and precision. The presented use-case has a huge potential for development and possible capitalization and inclusion of best practices and lessons learnt in different industrial sectors. Despite the fact the PoC was realized using specific robot and tools and for specific company, the general conclusions and recommendation might be applicable for other companies. The successful implementation of the solution assumes creating a space for raising awareness on the potential of the new technology and encourage the ecosystem to use it. In order to do this a cooperation between researchers and business, with the support of public administration is required. The testing processes require an infrastructure and resources. Test before invest study brings a lot of insights how to organize and conduct the upgraded production due to using specific equipment in the production hall. For KTP's DIH basing on the realized PoC it is possible now to run tests on the bigger scale and get ready to undertake a full market deployment. The presented use case supported validation of the project and preparation of the implementation strategy. For Factory4x4 it led to optimization of purchase processes and implementation on production lines.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	It is the most reference mature use case being developed with Digital Innovation Hub run by KTP. It comes from the real need to strengthen the regional aspirations to make the traditional companies and businesses towards Industry 4.0. It may only be achieved by presenting relevant use cases and running the tests first in professional showroom and with support with experts and specialists in order to adjust the process to specific technological requirements and then in real environment, in industries.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.*	There is huge need for introduction and maintenance of the sustainability and innovation in the automotive sector. Anything that makes the technology processes work smarter and more efficient, consuming less energy and water and producing less waste will have a huge impact how manufacturing of the future will look like. The automotive sector is well structured and open for innovation. The innovation there is a key factor due to the lower risk, lower costs and less complexity. Moreover, the radical innovations are needed in order to fit the prevailing environmental standards. There is space for: the minimization of greenhouse gas emissions, life-cycle assessment, cleaner production, reverse logistics and eco-innovation (smart materials, optimization).

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	It is also in line with the EU priorities especially in terms of the Green Deal, where the main priorities are: boost the efficient use of resources by moving to a clean, circular economy &restore biodiversity and cut pollution. In the nearest future more and more companies will turn in the direction of circular economy, also the authorities at the national, regional level indicate the need to focus on these issues. The use-case presented fits exactly to the priorities and has a huge relevance with the planning programmes in the next period.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	KTP acts as a facilitator and initiator of the relations between research consortium (provider of the solution) and business who will test and implement the solution. KTP has access to wide ecosystem of companies who can be interested in developing and applying the solution in their systems.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	The enterprises in the ecosystem of KTP can be a receiver of the knowledge, tester and applier of the technology

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Astor, T Mobile, Building Information Modelling Klaster, Kosciuszko Institute. https://www.astor.com.pl/en.html, https://www.bimklaster.org.pl/en/ https://ik.org.pl/	Knowledge Supplier	The consortium members, companies which are top leading experts on technologies (5G network connectivity, automation and robotization, IIoT, AI, augmented and virtual reality (AR and VR), cloud computing, BIM technology, 3D printing, cybersecurity). They are providers of know-how and testing playground
	AGH University of Science and Technology and the Krakow University of Technology. https://www.agh.edu.pl/en/ https://www.pk.edu.pl	Knowledge Supplier	Through cooperation with Universities, KTP will get know how, expertise in areas of Additive Manufacturing, Metrology, Quality management & certification, AI/ML, IIoT, cybersecurity, contacts and inspiration to strengthen the cooperation and use case dissemination.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The financial resources are needed for development of hub4industry to extend its operation and increase the number of companies in Malopolska region that are offered valuable services such as technological audits, test before invest study, identification of funding opportunities for SMEs, access to a network of technology providers and robotic related researchers, and support in internationalization. To stay on track, it is really important to guarantee the continuation of the activities initiated by DIH on a large scale and in a structured and comprehensive manner. It will be possible thanks to new competition of EU addressed to select the most mature and successful national DIH to be the orchestrators of digital		

	transformation and stimulators of introducing Artificial Intelligence, AR/VR, 5G, High Performance Computing (HPC) and Cybersecurity in Industry. It is important that wide range of activities offered by DIHs is in line with spectrum of DIHs build on the strength and specialisation of the regions, in line with Regional Innovation Strategy newly accepted and introduced by Malopolska regional authorities. The DIH instrument itself does not guarantee for full market deployment of the use case. The DIH instrument has completely different role and function. Its main mission is to deliver to local businesses know-how and trainings on newest digital technologies and to support them in the digital transformation to let them understand how digital technologies can improve their efficiency, effectiveness and product or service quality and let them validate the business plan (test before invest). Building synergies between EU and regional policies, joining top down and bottom-up activities results from focused on digitization of industry and data-driven services will strengthen the Regional Innovation Strategy. **To guarantee the continuation of DIH activities KTP submitted on 1st March 2021 the project proposal for EDIH.**	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Subsidised Service Funding opportunities in Horizon Europe - Innovative Europe Cascade Funding	Horizon Europe is the research and innovation framework programme running from 2021-2027. The first work programmes are expected to be published by April 2021. The development of the solution can be financed through programs implementing Horizon Europe: 2nd pillar: Global challenges & European Industrial competitiveness and/or 3rd pillar: Innovative Europe. Some of initially

		defined calls of interest: HORIZON-CL4-2021-TWIN-TRANSITION-01-05: Manufacturing technologies for bio-based materials (RIA), HORIZON-CL4-2021-TWIN-TRANSITION-01-07: Artificial Intelligence for sustainable, agile manufacturing (IA), HORIZON-CL4-2021-TWIN-TRANSITION-01-08: Data-driven Distributed Industrial Environments (IA) As far as cascade funding is concerned: Trinity & Pulsate.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Not available funding for big scale tests and full deployment.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	The joint lesson learnt from harvesting task and discussion with PPs is that the Digital Innovation Hub is well positioned initiative to boost new growth of smart specializations through bottom-up entrepreneurial innovation and industrial cooperation between regions of Europe. The most reference solutions based on deep scientific research are tested in cooperation between researchers and businesses to end with full deployment. The access to know how and lesson learnt is open and can be further developed. It all leads to boost the bottom-up growth for traditional industry transformation towards Industry 4.0. Thanks to concentrating on the synergies and complementarities as joint know-how, scientific data, technological resources in smart specialisations area as well as intangible assets	

	participating regions aim to build world-class clusters and cluster networks, in particular through pilots and large-scale demonstrators. In order to fully implement pilots and large-scale demonstrators there is a need for additional financing.

END OF TEMPLATE

PARTNER INFORMATION	
PARTNER	**KPT**
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COUNTRY	*Poland*

USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Evaluation and redefinition of KPT ScaleUP programme
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	KPT ScaleUP is a dedicated tool and programme, which connects and triggers the development of start-ups who develop and test their technological solutions in the industrial environment of big and significant regional enterprises. It consists of an accelerator focused on start-ups offering products and services in the area of Industry 4.0, the industrial Internet of Things and smart city. It allows to establish real cooperation with large industrial partners who, as part of the program, share their know-how, expert knowledge and enable the test implementation of a start-up solution and offers an extensive training program, practical workshops, individual mentoring and extensive networking. The acceleration program is a 6-month program, carried out in Krakow (excluding visits to industrial plants or trips to international start-up communities). Acceleration is based on a series of exclusive internal events, reasonably spread over a period of 6 months: workshops, consulting, mentoring and networking. One of the basic elements of the program are meetings with Technology Recipients - industrial partners carefully selected for each round of the accelerator. Mentoring and counselling are determined individually - representatives of the start-up decide about the selection of people from the list provided by KPT ScaleUP. Group workshops complement the individual forms and the program

	ends with Demo Day - an event during which accelerated start-ups boast about their solutions in front of the audience The promotion of participating start-ups is carried out throughout the program, starting from ongoing communication in social media (i.e., Facebook and LinkedIn), through contacts with the media, ending with organized events and promoting start-ups in printed promotional materials.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Maximum 1000 Characters*	KPT ScaleUP is already existing and proven effective programme supporting the acceleration of start-ups and providing resources and support in the development, testing and implementing of technologies in the industrial enterprises. It is already run by KPT since 2017 and at the moment the 6th edition kicks off. The programme is financed mostly from the European Development Fund through Operational Programme Intelligent Development 2014 -2020. The results and outputs coming from five editions of the ScaleUP programme shows the effectiveness and value of the process. Many of the start-ups, finishing the programme apply for funding in frame of other dedicated calls for proposals both at the national level (National Centre for Research and Development) or at the international level (Horizon 2020).
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	Impact of the KPT ScaleUP programme on the regional and national level is very significant, as it effectively introduces the technologies in the industrial sector, by initiating collaboration and guiding the processes of implementation of the technologies in the factories. IT shows how complex the process is, and how necessary it is to have mentoring support. The use-case is very scalable in different sectors, the process offered by KPT ScaleUP can be replicated in various areas, taking into consideration various technologies and industrial sectors. It has also big potential to be developed further at the transnational level, by matching the start-ups and factories from different regions.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Intelligent Production Systems*
PP's CAMI4.0 TIN ROLE	*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics*

		☒ *Smart and Advanced Materials* ☒ *Artificial Intelligence*
Use-Case Key Words		Acceleration, cooperation, testing
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		http://scaleup.kpt.krakow.pl/
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/01/2021*
	END DATE	*01/06/2021*
	DURATION IN MONTHS	*5month*
IMPLEMENTATION	START DATE	*01/06/2021*
	END DATE	*01/06/2022*
	DURATION IN MONTHS	*13months*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Analysing the results and impact of the KPT ScaleUP programme until now, there are two biggest challenges which should be addressed: - Providing the possibility of further development of the prototypes delivered by the start-ups during the programme. Many of them have been tested and implemented in the particular context of the company, which ordered the solution, but more research and development work is need to be done, to provide the scalability of the technologies in different industrial contexts - Continuity of the KPT ScaleUP programme, organization of new rounds of acceleration and development of the programme with reference to trends and potentials of the technologies (taking into consideration circular economy etc) at the regional and even transnational level. The biggest issue at the moment is to continue and develop already undertaken actions, looking for new funding possibilities and scale up the programme. It is especially

	important as the current financing period of the EU funds has been finalized and the new one is defined.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☐ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	Choose an item.
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	In order to continue the development of the programme and overcome the challenges specified above it is necessary to identify its biggest strengths and potential, especially with the participation of those who already benefitted in the programme and potential interested. In order to do this, it is

	necessary to organize a complex evaluation process where on one side the results and outputs will be analysed and on the other the needs and expectations for the future will be presented. This will help to design a new edition of the KPT ScaleUP programme which will address the current context. It is also necessary to analyse the relevance of the programme with the priorities and objectives of the regional innovation strategies. So, in the evaluation and planning process the representatives of administration, research and thematic NGOs should be involved.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	The solution has been proposed as it is necessary to continue and permanently upgrade the effective tools and processes. The presented use-case has already proven a huge potential and effectiveness, as many of the startups participating in the process has already scaled their technologies on a wide scope. It is necessary to adjust the use-case to the new programming period with new key objectives and develop its scope to provide bigger opportunities for the participating in the programme partners.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	As already mentioned, the impact of the KTP ScaleUp programme has been already proven by number of effective implementations of the prototypes in the industrial enterprises. The scaling up of the programme itself, adjusting it to the new priorities and challenges definitely brings benefits for the development and implementation of the new technologies. It provides resources and what is even more important expertise for new actors among start-ups and it encourages big enterprises to test and adapt technologies. These kinds of instruments are necessary to be permanently developed across Central Europe. Also, the transitional dimension of these kind of processes is very significant, as all the actors can learn from each other, so redefinition and upgrading of the KPT ScaleUP programme can be beneficial for the transnational partners as well.

DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier		
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***		Knowledge Supplier	
		Knowledge Supplier	
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The financial resources are needed for the development and upgrading of the KPT ScaleUP programme. Each edition of the programme means providing mentor, expertise support as well as direct financial support for the technology suppliers.		

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

	To guarantee continuation of KTPScale up acceleration programme and to disseminate best practices, KTP submitted Feb/March 2021 the project proposal for Poland Prize call for financing the foreign start-ups in Poland.
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	European Development Fund
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	The joint lesson learnt from harvesting task and discussion with PPs is that the KPT ScaleUP should be continued and developed at the regional level. It has also a huge potential to be further developed at the transnational dimension, with exchange of technology suppliers and receivers among the boarder. It has a huge potential to be further developed however in order to fully implement pilots and large-scale demonstrators there is a need for additional financing.
END OF TEMPLATE	

PARTNER INFORMATION	
PARTNER	**KPT**
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REGION	*Malopolska*
COUNTRY	*Poland*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Use case within the Vanguard Initiative.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

	Production and application of biodegradable polymers produced by bacteria from bioresources.
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	It is a show case on production and application of biodegradable polymers produced by bacteria – polyhydroxyalkanoates (PHAs) – from bioresources. The solution is applicable for two main sectors: a) life-science b) industry. Industrial perspective will be a point of focus here. These biopolymers have a wide range of applications in different industries thanks to their broad physicochemical characteristics. The Leader on this demo-case, J. Haber Institute of Catalysis and Surface Chemistry of Polish Academy of Sciences (ICSC PAS), has already secured funds (**€3.7 mln**) that will allow for construction of a demo plant for PHA production. It is envisaged that in 2021 a facility capable of carrying out 200L PHA fermentations, with up- and down-stream facilities, will be placed in a rented industrial hall. A dedicated building will be constructed in the coming years. The nearest plans for the development of the use – case it to open the testing fabric, where the production of polymers can be higher than already in the rooms of university and also the testing of application of the materials in different circumstances can be conducted. The use of these kind of materials is very in line with the future processes of development of the industry, as these materials are very resistant, effective and in the end its reproduction is ecological, safe and efficient.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Maximum 1000 Characters*	In order to develop the use-case the consortium of scientific organisations and labs has been established. The consortium consists of Polish Academy of Sciences (ICSC PAS), Faculty of Materials Science and Ceramics at AGH University of Science and Technology, Cracow University of Technology, Warsaw Medical Univeristy and Smart Lab. The main financing is currently guaranteed with a grant coming from The National Centre for Research and Development in frame of "TechMat Strategy" project. The funding has enabled the rent and purchase of equipment and opening the first production spaces in Krakow. However new sources of funding are required, this why the consortium seeks for cooperation with the Regional Authorities. The use-case gained the interest of Marshal Office of the Małopolska Region, which invited the consortium to the Vanguard Initiative, where the solution is being presented and discussed at the transnational level.

LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The use-case has a huge potential for development and possible capitalization and inclusion in different industrial sectors. There is already a high interest on the testing and implementing of these materials in the production systems in different companies. The use of recyclable smart polymers is very much in line with the EU priorities especially in terms of the Green Deal, where the main priorities are: boost the efficient use of resources by moving to a clean, circular economy & restore biodiversity and cut pollution. In the nearest future more and more companies will turn in the direction of circular economy, also the authorities at the national, regional level indicate the need to focus on these issues. The use-case presented fits exactly to the priorities and has a huge relevance with the planning programmes in the next period. It also strengthens the strong points of the Vanguard Initiative which pioneers a new approach to support EU industry by bringing regions closer and lays a playground for establishing international cooperation focused on further developing and testing joint pilots and demonstrators for digitalized and more competitive manufacturing. It plays a crucial role to support further the uptake and deployment of smart and sustainable industrial projects. The Vanguard Initiative instrument has been inspired by the conceptualization, connection, demonstration and first pilot testing of using biodegradable polymers from bioresources in internal laboratories based at the University. The consortium is now refurbishing the demonstration hall with laboratories with technical start-up phase (commissioning) in March 2021. One month is planned for calibration of the instruments, setting the technology lines and testing the fermentation processes. The official operational opening is planned for May 2021.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Smart and Advanced Materials*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence*

Use-Case Key Words		Polymers, bioplastics, process, prototypes. Industry, smart production
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7513618/
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/09/2020*
	END DATE	*01/05/2021*
	DURATION IN MONTHS	*8 months*
IMPLEMENTATION	START DATE	*01/05/2021*
	END DATE	*31/10/2023*
	DURATION IN MONTHS	*24 months (the demonstration hall is rented for 24 months with option to prolongate the deadline).*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The need to turn and focus on the efficient, biodegradable and eco-friendly materials in different areas is obvious. Also, the production and industrial sector has to be opened to these changes as the quality and ecological measures regulated by the national and international public institutions are more and more inflated. It is in the interest of the production companies to modernize their production systems and apply effective, efficient and ecological measure. However still not sufficient resources are dedicated for the internal research and development of this area. The challenge is to create a space for testing and application of the polymers in the manufacturing processes of the regional companies and provide them with tools and competences to transfer it into their production systems. The pilot projects initiated within the Vanguard Initiative are close to the market and therefore have a high commercial potential. Being validated, tested, improved they are with potential for full market deployment and commercialization in a time span of 3 to 5 years. This can be achieved with relevant Cascade Funding opportunities for actors active in the Vanguard Initiative.

TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C22 - Manufacturing of Rubber and Plastic Products***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The solution is based on production and application of biodegradable polymers produced by bacteria - polyhydroxyalkanoates (PHAs) - from bioresources. The research and development phase is very advanced and the effectiveness and efficiency of the polymers has been already proved. The successful implementation of the solution assumes creating a space for raising awareness on the potential of the new technology and encourage the ecosystem to use it. In order to do this a cooperation between researchers and business, with the support of public administration is required. The testing processes require an infrastructure and resources. The hall for testing has been rented and equipped, however the maintenance is generating costs.

	Moreover, the challenge is to interest the representatives of production companies to apply the new product in their premises and audit their capacity to do so. To ensure full market deployment the tests should be run on the bigger scale. That is why the opening of the demonstration hall with laboratories planned for March 2021 is so critical. It will let to validate the project in real life demonstration hall and will give space to develop and adjust the business model. The demonstration hall will be also dedicated to educate and train students, to run joint science projects and to run fully commercial projects, too.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN ***Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.*** *Maximum 1000 Characters*	It is the most reference regional pilot project being developed in Malopolska under the Vanguard Initiative. It comes from the real need to strengthen the region aspirations to make the traditional companies and businesses more CSR and environmental responsible and introduce circular economy concept to their business practise. It may only be achieved by presenting relevant use cases and running the tests first in professional laboratories to adjust the process to specific technological requirements and then in real environment, in industries.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE ***Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.*** *Maximum 1000 Characters.*	Plastics such as PLA, PHA, and starch are the most frequently used biopolymers that have minimum to least effect towards the rising environmental carbon footprint. The application of biodegradable polymers has a huge potential for development and possible capitalization and inclusion in different industrial sectors as food packaging applications, automotive sector, construction and so on. There is already a high interest on the testing and implementing of these materials in the production systems in different companies and countries. The use of recyclable smart polymers is very much in line with the EU priorities especially in terms of the Green Deal, where the main priorities are: boost the efficient use of resources by moving to a clean, circular economy &restore biodiversity and cut pollution. In the nearest future more and more companies will turn in the direction of circular economy, also the authorities at the national, regional level indicate the need to focus on these issues. The use-case presented fits exactly to the priorities and has a huge relevance with the planning programmes in the next period.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION ***Describe your organisation's role in the solution delivery.*** ***Choose specifically the technology transfer tree „role" in the completion of this:*** - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator		KTP can be a facilitator and initiator of the relations between research consortium (provider of the solution) and business who will test and implement the solution. KTP has access to wide ecosystem of companies who can be interested in developing and applying the solution in their systems.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE ***Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.*** ***Choose specifically the technology transfer tree „role" in the completion of this:*** - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		The enterprises in the ecosystem of KTP can be a receiver of the knowledge, tester and applier of the technology
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. ***Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.*** ***Choose specifically the technology transfer tree „role" in the completion of this:*** - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Jerzy Haber Institute of Catalysis and Surface Chemistry Polish Academy of Sciences http://www.ik-pan.krakow.pl/	Knowledge Supplier	The Leader of the consortium, a group of researchers, who developed the polymers.
	Poznan Science & Technology Park – Waste Cluster. https://waste-klaster.pl/	Knowledge Supplier	Through network of Technology Parks in Poland, KTP will get know how, contacts and inspiration to strengthen the cooperation and use case dissemination.
POLICY INSTRUMENT & RESOURCE ALLOCATION			

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The resources are needed for scaling up application of biodegradable polymers from testbeds in laboratories to real deployment and transferring them into fully commercial projects. It can be achieved by generating additional funding as for example cascade funding opportunities for real life and big scale deployments.	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* *&* *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Subsidised Service Funding opportunities in Horizon Europe - Innovative Europe Cascade Funding – to be defined	Horizon Europe is the research and innovation framework programme running from 2021-2027. The first work programmes are expected to be published by April 2021. The development of the solution can be financed through programs implementing Horizon Europe: 2nd pillar: Global challenges & European Industrial competitiveness and/or 3rd pillar: Innovative Europe
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Not available funding for big scale tests and full deployment.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	The joint lesson learnt from harvesting task and discussion with PPs is that the Vanguard Initiative is well positioned initiative to boost new growth of smart specializations through bottom-up entrepreneurial innovation and industrial cooperation between regions of Europe. The most reference solutions based on deep scientific research are tested in cooperation between researchers and businesses to end with full deployment. The access to know how and lesson learnt is open for all regions that signed into the Vanguard Initiative for solutions to be upscaled into European level. It all leads to boost the bottom-up growth for traditional industry transformation towards Industry 4.0. Thanks to concentrating on the synergies and complementarities as joint know-how, scientific data, technological resources in smart specialisations area as well as intangible assets participating regions aim to build world-class clusters and cluster networks, in particular through pilots and large-scale demonstrators. In order to fully implement pilots and large-scale demonstrators there is a need for additional financing.	
END OF TEMPLATE		

8.2. PROFACTOR (3/4)

PARTNER INFORMATION	
PARTNER	**PRO**
PARTNER'S RESPONSIBLE MANAGER	*Dipl. Ing. Christian Wögerer, MAS MSc*
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REGION	*Upper Austria*
COUNTRY	*AUSTRIA*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	EDIH - ASSIST4SME
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	A European Digital Innovation Hub (EDIH)2 is a single organization or a coordinated group of organizations with complementary expertise, with a not-for-profit objective3 that support companies – especially SMEs and mid-caps – and/or the public sector in their digital transformation. EDIHs offer services such as): Test before invest, Skills and training, Support to find investment, innovation ecosystem and networking. The services of the EDIHs should be complementary to and not replace existing (commercial) services of e.g., training suppliers or ICT companies. EDIHs are a strategic instrument of the commission which will become more and more important for the European (and therefore also for the Central Europe) Manufacturing future
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	The idea of the EDIH is not such a new idea. It is an attempt to implement networks for the digitalisation of companies (especially SMEs and MidCaps) as independent service HUBs (One Stop Shop) and to cover Europe with a network of approx. 240 HUBs on various topics. These complement each other and form a comprehensive service network for the industry. This idea has already been implemented by PP PRO, but also by other partners in various activities (Cas in FP7, H2020, Interreg projects, etc.). Since these EDIHs have a very high international visibility and many funding activities run through them, it is extremely important to position oneself here regionally (and also nationally).
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)*	Regional: Upper Austria as high industrial region needs such HUBs to service also SMEs and closing the gap of still existing instruments.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

Maximum 1000 Characters	National: As EDIHs are Co-financed by national bodies the impact on a national level is, besides strengthening the Industry also the finding of future topics for R&D EU Policy: The EDIH instrument will replace some or more Services of the Commission and bring them near to SMEs and other industry. Green Deal and Digital Europe: This are Digital Innovation HUBs and therefore they will bring Europe a step forward to a Digitalized Area. Green Deal is covered as there are HUBs which are working only on this topic.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Intelligent Production Systems*
PP's CAMI4.0 TIN ROLE	*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	Assistive systems, Robotic, Digital HUB
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	The EDIH has a focus to Sustainable Production using AI enabled Assistive Technologies and Robotics and is targeted to the sector Production (Automotive, Machinery, Aerospace, extendable to other Sectors)

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/01/2022*
	END DATE	*31/12/2025*
	DURATION IN MONTHS	*48*
IMPLEMENTATION	START DATE	*[Insert expected start date of the use-case]*
	END DATE	*[insert expected end date of the use-case]*
	DURATION IN MONTHS	*48*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		

DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	Industry with a focus on SMEs and Midcaps urgently needs support in digitization and suitable instruments are needed to ensure that the services offered in the EDIH reach industry quickly. The greatest challenge for an EDIH (apart from excellent services) is the speed of implementation and, above all, a concept that also offers convincing commercial services in addition to the promoted services. This is a prerequisite for a sustainable HUB that is also viable after the funding period.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☒ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The EDIH is targeted to the sector Production (Automotive, Machinery, Aerospace, extendable to other Sectors)
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	

DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The solution is an EDIH. European Digital Innovation Hubs provide technological expertise and experimentation facilities to enable the digital transformation of the industry and the public sector. **EDIH** • Help SMEs with expertise and facilities not locally available • Help SME stap into other markets, develop EU value chains **EDIH capacity building:** • Exchange of experience and good practices. • A more mature DIH helps a less mature. • Learning from specialists in HPC, Cy, AI. • Advanced training, train-the-trainer. • Use new solutions developed by the HPC, Cy Competence Centres and AI world class reference sites	
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	The partners have been running a network registered as DIH for several years and work together intensively. So far, it has been more of a loose network that has been financed again and again through various projects and with its own funds. The previous DIH calls for proposals were not so suitable for this topic, as these are international HUBs. The EDIH is the ideal instrument to instrumentalise this network, as the regional factor and networking with other HUBs is required here.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	European Digital Innovation Hubs will have both local and European functions. EU funding will be made available for hubs that are already (or will be) supported by their Member States (or regions), so as to increase the impact of public funding. The Digital Europe Programme will increase the capacities of the selected hubs to cover activities with a clear European added value, based on networking the hubs and promoting transfer of expertise. Member States have an essential role in the selection process of the EDIHs; the initial network of EDIHs will be established from a list of hubs designated by Member States.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.*	Knowledge Supplier	PROFACTOR has 25 years of experience in the research and development of robotic

Choose specifically the technology transfer tree „role“ in the completion of this: - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***		systems and automation solutions. In addition, PRO can transfer prototype solutions to industry and has an extensive network in the industry. PRO has been active in various networks for 20 years and is therefore ideally placed to install such a HUB together with other partners. The test facilities in the laboratories are available in addition to the developmental KNOW HOW. **Coordinator** PROFACTOR has been a leading contact point for industry for production research in Austria since 1995. PROFACTOR sees itself as a link between science and industry and documents this through seamless value creation from basic research to industrial implementation.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	The EDIH is aimed at SMEs and MidCaps that act as recipients of the services offered. These institutions can apply for these services and the HUB acts as a funding organisation, so to speak. This is how joint solutions are realized

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Austrian Institute of Technology.	Knowledge Supplier	The AIT is Austria's largest research and technology organisation (RTO) and is in the top league worldwide in many of our research areas. AIT is a strong development partner for industry and the top employer on the international science scene. The Center for Vision, Automation & Control (Univ.-Prof. DI Dr. Andreas Kugi) and the Center for Technology Experience (Univ.-Prof. Dr. Manfred Tscheligi) are involved in the HUB.
	Vienna University of Technology:	Knowledge Supplier	TU Vienna is Austria's largest scientific and technical research and educational institution with eight faculties and around 30,000 students. Among them are 2,700 students of electrical engineering. The TU Vienna has a large pool of specialists who are active in research, teaching and as partners of industry in a wide range of subject areas. The EDIH will cooperate with the TU Vienna mainly with the Complex Dynamic Systems group of the Institute of Automation and Control Engineering (ACIN), which is headed by Prof. Andreas Kugi and is divided into the

			research areas Industrial Automation and Complex Dynamic Systems. Depending on the requirements, other institutes and the TU's own pilot factory are of course also available.
	University of Salzburg:	Knowledge Supplier	The Center for Human-Computer Interaction is an interdisciplinary research group at the University of Salzburg. Founded in 2005 as a research unit at the former ICT&S Center, about 40 researchers are currently investigating the interaction between humans and computers to enable desired interactions and to explore desirable futures. The group is headed by Univ.-Prof. Dr. Manfred Tscheligi.
	Business Upper Austria-OÖ Wirtschaftsagentur GmbH (Biz-Up).	Knowledge Supplier	The Upper Austrian business support organization, promotes reg. innovation through strategies, investment, cluster/network management and funding. The dept. Clusterland, BIZ-UP's centre of competence for cross-company cooperation in Upper Austria, is well connected both on national and international level (e.g., member of Austrian Platform Industrie 4.0, ECCP, EEN, EDM). Biz-Up is a

			non-profit organisation, performing economic activities on the market to a small extent, such as organisation of networking events, qualification and internationalisation and provides well experienced employees on management and technical level.
	MIND CONSULT & RESEARCH (MCR).	Knowledge Supplier	Since 2001 the MCR team stands out for excellence in management services and consulting for (inter)national project systems on business development, tailor-made trainings, research and innovation. Furthermore, MCR is embedded in a European pool of knowledge experts to ensure a durable competitive advantage
	RIC (Regional Innovation Centre):	Knowledge Facilitator	RIC (a subsidiary of BRP-Rotax) as an industrial innovation centre has been in existence since 2007 in Gunskirchen, Upper Austria. BRP-Rotax GmbH Co KG sees the EDIH as the establishment of a next generation innovation centre with a focus on specialised innovation and competence development.
POLICY INSTRUMENT & RESOURCE ALLOCATION			

REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The EDIHs are notified to Brussels by the national ministries. The notified EDIHs are then entitled to submit an application to the Commission. ASSIST4SME has already been notified by the Austrian Ministry and is therefore eligible to apply. 50% of the funding is provided by the EU and 50% by national funds. However, only for the defined eligible services. Additional services that are not eligible for funding must be commissioned directly. In the application phase (deadline 9/2021), the resources and financial planning takes place.	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* *&* *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	[Grants with a co funding of 50 Other 50 from MS, private contributions are also allowed Can be in kind or in cash]
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The instrument of the EDIH is new in this form, it has not yet been tendered by the Commission. Therefore, some rules, such as the national CO funding and the de minimis rules, are not yet clear. Another challenge is that there is enormous competition (3-4 out of 15 candidates are funded) and the evaluation rules are very complex. Therefore, in addition to the requirements of the industry, the requirements of the international and national funding agencies must also be considered.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	The lessons learned for the EDIH are mainly that it is important to focus on one's own strengths and that an extensive network and strategic networking is needed to offer solutions that are in demand in the industry. CEUP2030 is nothing else than a small EDIH.	
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**PRO**
PARTNER'S RESPONSIBLE MANAGER	*Dipl. Ing. Christian Wögerer, MAS MSc*
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REGION	*Upper Austria*
COUNTRY	*AUSTRIA*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	USE CASE AI – BIG DATA in Production
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	The use case is based on a bilateral submission of a lead project on the topic of BIG DATA in production between AT and D in autumn 2021. This is a *lead project* with approx. 5 million in funding and a total sum of 8 million €. The project was positively evaluated but not funded due to lack of money. The USE case should enable the topic to be pursued further.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	"Big Data in Production" is an Austrian RTI offensive, promoted by the FFG and financed by the Austria Fund. The first bilateral call for proposals between Austria and Germany is supported on the German side as part of the RTI priority "Development of Digital Technologies" of the Federal Ministry for Economic Affairs and Energy (BMWi). In Austria, the FFG is responsible for implementing the call and managing the project. The BMWi has commissioned the project management agency of the German Aerospace Center (DLR-PT) to implement the call for proposals. The common goal is to work on central questions on the topic of "Smart and Sovereign Use of Data for Production" within the framework of a bilateral lead project. A total of 5 million euros in funding is available for the project. Of this, 2.5 million euros each have been allocated for Austrian and German applicants.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The USE CASE Big Data and the associated policy instrument of a joint tender between AT and DE can be forward-looking for cross-border cooperation. The solution of "BIG DATA" and human-centred AI is the basis for the implementation of I5.0 in Europe.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE	*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems*

		☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words		AI-based data analysis and recommendation system, BIG Data, process optimization
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		Ausschreibung: Projektleitfaden: Instrumentenleitfaden:
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/06/2021*
	END DATE	*31/12/2021*
	DURATION IN MONTHS	*7*
IMPLEMENTATION	START DATE	*01/01/2022*
	END DATE	*31/12/2023*
	DURATION IN MONTHS	*36*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The central challenges are: • Heterogeneous standards and technology for the structured collection and organisation of relevant production data. • Lack of data science or data-driven analytics methods for personalised and context-aware processing of production-relevant data to adapt human-machine interaction while taking data protection into account. • Lack of technology for horizontal and vertical process optimisation or for the secure exchange of data across companies. • Broad applicability of the developed methods in different industrial use cases along the value chain.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*

MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☐ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	n.a.
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	• Implement prototype data and technology layers for the purpose of researching and implementing human-centred AI for Big Data-driven process optimisation in production environments. • Address reservations regarding privacy aspects as best as possible by using data science and data-driven analytics methods in order to increase the willingness to provide data across companies and thus enable the wider use of AI methods. • Use persuasive and gamification-based methods to ensure that employees are willing to generate data for transfer learning. • Offer high-performance and flexible data in the GAIA-X ecosystem or consume data from the GAIA-X system during vertical or horizontal process optimisation, thereby methodically and technically ensuring the desired loose coupling while maintaining interoperability despite decentralised data management.

	• Implement the developed technology close to the application at the industrial partners and evaluate it with regard to work experience, acceptance, safety, security and privacy with employees.	
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	The funding instrument was chosen because it represented a unique opportunity to address this issue together with leading German and Austrian partners. It was also a pilot project to test how this PI could work.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	The project goal is to address and cover the entire process chain of the technologies in question, from software and process development to concrete end applications, in order to generate added value both for individual partners and for all organisations involved in the process chain together. The industrial partners already have an existing sales structure for their field, which is used to exploit the results following the product development phase. The partner companies include innovative SMEs as service providers as well as leading production companies. In addition to the growing economic importance of joint development with other company partners, the generation of new or the consolidation of existing research partnerships is an intended effect for all consortium partners. The effect and significance of the results for the scientific partners lie primarily in the generation of intellectual property, which can later be used for licensing and spin-offs, as well as in the formation of stable development partnerships with existing and new partner companies.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier	Acting as Coordinator for the Austrian part, Process optimization, Assistive Technologies

DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Other (please clarify)		Target group is the industry, both – research and Industry act as Knowledge Supplier and Knowledge Receiver
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	KIT – Karlsruhe Institute of Technology.	Knowledge Supplier	Acting as Coordinator for the German part, Intelligent Production Systems
	Austrian and German project partners from Research and Industry	Other (please clarify)	Different project partners along the value chain, research, Service Providers, IT Companies and End Users
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	Approximately 1 PJ foe all partners • The following funding options are available • Start-up funding (in some countries) • Use of core funding (if available) • Funding from contract research profits • Out-funding by industry		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]		"Big Data in Production" is an Austrian RTI offensive, promoted by the FFG and financed by the Austria Fund. The first bilateral call for proposals between Austria and Germany is supported on the German side as part of the RTI priority "Development of Digital

		Technologies" of the Federal Ministry for Economic Affairs and Energy (BMWi). In Austria, the FFG is responsible for implementing the call and managing the project. The BMWi has commissioned the project management organization of the German Aerospace Center (DLR-PT) to implement the call for proposals.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Gap is that we need a funding instrument for a resubmission, another Gap are different funding rates and different instruments for both partner (AT, DE)	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	Simplification like in Horizon Europe, common rules	
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**PRO**
PARTNER'S RESPONSIBLE MANAGER	*Dipl. Ing. Christian Wögerer, MAS MSc*
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REGION	*Upper Austria*
COUNTRY	*AUSTRIA*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	From existing H2020 Projects to HEU projects
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	HEU (Horizon Europe) is the research programme of the EU member states. The Work Programme 2021-2022, 7th Digital, Industry and Space lists the future topics concerning robotics, AI and automation. From the many existing projects and competences of the CEUP partners and its network, project ideas and new projects should emerge which can then be successfully submitted. The

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

	creation of the application is not included in the CEUP 2030 project. For the future of the European manufacturing industry, the topics for calculating the goals that are presented in the draft from page 7 onwards are very important).
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	CEUP2030 has 6 international reference projects to learn from. Some of them are related to the topic of the USE case. The results of these and many other projects are therefore used to develop new topics in HEU. However, the USE CASE also draws on other projects of the partners. This creates a continuous development chain. The results that have already been prepared in CEUP 2030 (PI [Policy Instruments] and TGPs [Technological Good Practices]) will also be used for the development of new topics. At national and regional level, PP PROFACTOR is the leading institution in the fields of robotics, AI and automation in the production sector. Therefore, it also has access to national and regional project partners. In addition, this topic is a priority theme in the Upper Austria 2030 strategy, which was defined as one of the PIs.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The green transition and digital transformation are just at their beginning. Major opportunities lie ahead to position Europe as a technology and industrial leader of this transition. The overarching vision behind the proposed investments under Cluster 4 is that of Europe shaping competitive and trusted technologies for a European industry with global leadership in key areas, enabling production and consumption to respect the boundaries of our planet, and maximising the benefits for all parts of society in the variety of social, economic and territorial contexts in Europe. T This USE CASE provides a long-term, sustainable contribution to these issues
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Automation & Robotics*
PP's CAMI4.0 TIN ROLE	*Lead*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;***

	☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	Robotics, Automation, Horizon Europe, R&D Projects
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	Link to some existing projects: *https://www.felice-project.eu/*; *https://cordis.europa.eu/project/id/101016007*; *https://cordis.europa.eu/project/id/101006732*

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*30/04/2021*
	END DATE	*31/03/2022*
	DURATION IN MONTHS	*12*
IMPLEMENTATION	START DATE	*01/04/2022*
	END DATE	*31/03/2024*
	DURATION IN MONTHS	*36*

CHALLENGE & CHALLENGE WHEEL ALIGNMENT	
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	The challenge of good proposals that are then also funded in HEU is very diverse. Especially since it is the first call in HEU, the unknown factors are greater than in the last H2020 calls. To name the most important challenges: • Starting, you will need to make sure that Horizon 2020 is the right program for you. • Understand the research agenda. ... • Make sure that you will follow some of the commission's most important requirements. • Creating the consortium • Try to think as the evaluator. ... • Take the time to write a proposal.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation*

	☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☐ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C32 - Other (please clarify below)***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The Use Case is not focused on a specific manufacturing sector, but more or less limited to discrete manufacturing (les to the process Industry)
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The indented solution is related to the call texts and is a Proposal facing the Call: Possibly Calls in the first round are: • HORIZON-CL4-2021-TWIN-TRANSITION-01-01: AI enhanced robotics systems for smart manufacturing (IA) • HORIZON-CL4-2021-TWIN-TRANSITION-01-02: Zero-defect manufacturing towards zero-waste (IA) • HORIZON-CL4-2021-TWIN-TRANSITION-01-07: Artificial Intelligence for sustainable, agile manufacturing (IA) • HORIZON-CL4-2021-TWIN-TRANSITION-01-12: New breakthrough technologies for technological sovereignty in construction (IA) • HORIZON-CL4-2021-DIGITAL-EMERGING-01-09: AI, data and Robotics for the Green Deal (IA) • HORIZON-CL4-2021-DIGITAL-EMERGING-01-10: AI, data and Robotics at work (IA)

	• HORIZON-CL4-2021-DIGITAL-EMERGING-01-11: Pushing the limit of robotics cognition (RIA) • HORIZON-CL4-2021-DIGITAL-EMERGING-01-12: European Network of Excellence Centres in Robotics (RIA) • HORIZON-CL4-2022-DIGITAL-EMERGING-01-05: AI, data and robotics for Industry optimisation (including production and services) (IA) • HORIZON-CL4-2022-DIGITAL-EMERGING-01-06: Pushing the limit of physical intelligence and performance (RIA) • HORIZON-CL4-2022-DIGITAL-EMERGING-01-07: Increased robotics capabilities demonstrated in key sectors (IA) • HORIZON-CL4-2021-HUMAN-01-13: eXtended Reality Modelling (RIA) • HORIZON-CL4-2021-HUMAN-01-11: eXtended Reality Technologies (RIA) • HORIZON-CL4-2021-HUMAN-01-15: eXtended Reality Learning - Engage and Interact (IA)
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	HEU is the only instrument with which research projects of this size can be carried out internationally with a complementary consortium. There is no alternative to HEU for joint research and development.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	Horizon Europe is now going to bring more budget to the research and innovation process than any other program before. Now, the research and innovation that will be taking place during Horizon Europe will of course aim to sustainable development to meet the goals of the United Nations. The impact appears to be great. It will help increase the speed of the transition that we are currently facing and it will help develop business faster, scale-up, and commercialise innovative solutions and most importantly, enhance the labour market to increase employability. The impact for the CENTRAL EUROPE'S MANUFACTURING FUTURE is also congruent with the above-described impact.

DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Other (please clarify)		In a HEU Proposal each partner is Knowledge Receiver and Knowledge Supplier and mostly also Knowledge Facilitators. Pure Knowledge Facilitators are including in special cases
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		Target group is more or less European Industry; they are main Knowledge Receiver.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Research partners	Knowledge Supplier	Research partner provides research and development, their benefit is on the scientific side publications and new know How. The commercial Input is manly given by licensing and by new projects.
	Industrial partners	Knowledge Receiver	Industrial partner are mainly Knowledge Receiver. Their commercial benefit are new products, new technology's
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The resources for the USE CASE for the coordinator approx. 3 -4 person-months per project, for the project partner (depending on the assignment) between 0.5 and 2 person-months. These project initiation costs cannot be claimed in the application. The following funding options are available • Start-up funding (in some countries)		

	• Use of core funding (if available) • Funding from contract research profits • Out-funding by industry	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	Horizon Europe is the EU's key funding programme for research and innovation with a budget of €95.5 billion. It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth. The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The successful implementation of the USE case is above all a resource problem. In order to write a successful proposal and to create new projects from the existing ones, several person-months of work are required, which must also be financed. These costs are not chargeable to the project. In addition, it requires excellent research and top-class industrial partners to be successful.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	HEU is an excellent programme that is well structured and has clear rules. The process from idea generation to submission, awarding and handling is transparent and comprehensible. In addition, the HEU focuses on the results and less on the administrative requirements, which are kept relatively lean. A big advantage is that the rules are the same for all project partners. This distinguishes HEU from other funding instruments such as Interreg, where national requirements must also be taken into account.	
END OF TEMPLATE		

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

8.3. Platform Industry 4.0

PARTNER INFORMATION	
PARTNER	**PIA**
PARTNER'S RESPONSIBLE MANAGER	*Michael Fellner*
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REGION	*Austria*
COUNTRY	*Austria*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Digital Transformation Hub Austria (DTHA)
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	European Digital Innovation Hub focusing on the digital transformation of the Austrian economy along the digital supply chain: Data Spaces, AI, Trust, Ethics & Law The goal of the DTHA is to unite competences to overcome barriers when it comes to the usage of AI. It wants to do so through a holistic approach including a focus on ethics and legal aspects. The DTHA aims to address the practical relevance of the results of research projects. The services of the DTHA focus on conceptional work (including pilot-projects and innovation support), on the usage of infrastructure and on a European network regarding science & economy.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	The DTHA focuses on capitalizing the results of research projects (e.g., national projects funded through FFG or European projects in the realm of Horizon2020) and on making those accessible.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	*The European Digital Innovation Hubs are an important instrument in the Digital Europe program. Therefore, creating a DIH that connects to CEUP 2030 is highly relevant.*
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE	*Core*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

CAMI4.0 TECHNOLOGY FOCUS - SECONDARY		***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words		EDIH, AI, Data, Ethics
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		Presentation of the *DTHA* in the FFG call for interest for EDIH
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*02/11/2021*
	END DATE	*28/02/2022*
	DURATION IN MONTHS	*4*
IMPLEMENTATION	START DATE	*01/03/2022*
	END DATE	*01/03/2024*
	DURATION IN MONTHS	*24*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Very often, the results of research projects, regional infrastructure and existing networks are not used and capitalized to its full potential, especially when it comes to emerging technologies like AI. Although there are many institutions interacting with the topics mentioned, there is not one institution that focuses on maximising the impact of the output.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☐ *Schools and Training Institutes*

MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C32 - Other (please clarify below)***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	Different manufacturing sectors
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The DTHA will be an institution focusing on the dissemination and the impact maximization of research projects, of existing infrastructure and networks.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	The European Commission wants to establish EDIH throughout the continent. In PIAs understanding, EDIH should not create new infrastructure/measures but connect existing initiatives and upstreaming them. DTHA wants to do that.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	The DTHA will focus on uniting different Austrian networks and research institutions under one common roof making all their work accessible for the manufacturing sector – in Austria and beyond, especially in Central Europe.

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DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator		PIA will support the participating organizations through connecting them to PIAs industrial network and through using its expertise in the dissemination of Industry 4.0.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Other (please clarify)		Each and every knot in the network is a knowledge supplier and receiver at the same time – the project management (AIT et al) focuses on the facilitation.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	AIT, ait.ac.at/	Knowledge Facilitator	AIT is one of the two parties who are the lead partners regarding the DTHA. They will use their expertise and vast know-how in order to create adequate content and kickstart activities.
	SSCH, scch.at/	Knowledge Facilitator	SCCH is one of the two parties who are the lead partners regarding the DTHA. They will use their expertise and vast know-how in order to create adequate content and kickstart activities.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	EDIH funding, project plan to be created		

WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	European Digital Innovation Hubs Scheme
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Currently, there are 15 applicants in the race for becoming an EDIH, so it is possible that DTHA will not receive funding from the call.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*		

END OF TEMPLATE

PARTNER INFORMATION	
PARTNER	**PIA**
PARTNER'S RESPONSIBLE MANAGER	*Michael Fellner*
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REGION	*Austria*
COUNTRY	*Austria*

USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Smart Materials and AI: Use Case Data Base
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Creation of a database that analyzes, showcases and categorizes examples of the deployment of CAMI 4.0 topics (especially Smart Materials and Artificial Intelligence, AI) in the manufacturing sector: The goal is to 1) break down the topic into different components (e.g., machine learning, natural language processing…) and different application areas (e.g., procurement, assistive systems…) 2) find use cases that for the different areas from Central Europe (CE) and showcase them in the database

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	3) make the database accessible for SMEs in Central Europe and for business support organizations (BSOs) working with SMEs The data base should help European SMEs to understand what Smart Materials are and what AI is and to reduce the barriers for starting AI projects and for applying the knowledge in their companies.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	Good practices and examples from other (EU) projects can be capitalized for the Use Case Data Base. In most projects PPs were involved, there will be examples that can be capitalized for the Use Case Data Base. PIA is currently planning to start it's so called "Mittelstandsinitiative", which means that PIA will further target manufacturing SMEs with its activities. For SMEs, tangible and concrete projects in the area of Industry 4.0 are necessary and important to invest time or capital for starting their own projects. The Use Case Data Base should help to show relevant examples.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	Many regional, national and EU policies aim for the digital transformation of SMEs. Both, within the Green Deal and within Digital Europe there are approaches that focus on getting SMEs to adopt certain technologies/organizational practices… In PIAs experience, companies learn and engage the most around a subject, if they can relate to it. Therefore, the stories and positive examples collected in the Use Case Data Base can help to reach current and future goals through creating awareness and motivation among SMEs. Ideally the Use Case Data Base incentivizes them to apply e.g., for cascading funding or for other projects.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Smart and Advanced Materials*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;***

	☐ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	Industry 4.0 Use Cases, Best Practices, Learning from doing
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	*Examples for sources:* • *German Plattform Lernende Systeme* • *German Plattform Industrie 4.0* • *Swisscom examples*

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/10/2021*
	END DATE	*28/02/2022*
	DURATION IN MONTHS	*5*
IMPLEMENTATION	START DATE	*01/10/2021*
	END DATE	*28/02/2022*
	DURATION IN MONTHS	*5*

CHALLENGE & CHALLENGE WHEEL ALIGNMENT	
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	While large enterprises employ qualified human resources, have larger R&D and IT departments and financial resources, SMEs often do neither have the time, the know-how nor the money needed to start projects in the area of Industry 4.0. Very often, they also do not see the need for starting projects or activities. In the long term, this leads to a loss in competitiveness for European SMEs.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☐ *Large Enterprises* ☒ *SME* ☐ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☐ *Research & Development*

	☒ *Design* ☒ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C32 - Other (please clarify below)***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	No specific sector, but technology specific use cases and application areas that companies from different manufacturing sectors can relate to
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	Development of a Use Case Data Base in form of an easily accessible web page or easily searchable document for finding use cases in the area of Smart Materials and AI
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	Currently, there is no such data base that breaks down the application of technology (not the research and development, but the actual application) for SMEs in Central Europe – CEUP 2030 with the project that already happened in advance could be the ideal start for creating such a database.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.*	The intended impact would be the increased number of SMEs adopting AI technologies, therefore, the increased competitiveness of Central Europe manufacturing SMEs.

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DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator		PIA helps to collect and to further develop and showcase the use cases for the database. PIA creates the adequate structure and supports the focus on the stories behind the use cases so SMEs can relate to them.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		SMEs should be the beneficiaries of the data base and should be able to look for interesting examples of the deployment of AI technology in a relevant setting. BSOs should be able to use the use case data base in their projects and to engage SMEs in their area of influence regarding the start of Smart Materials/AI related projects and/or activities.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website.	Choose an item.	[Describe other organisation's role further, maximum 500 characters]
	Organisation Name (n…) and short hyperlink to their website.	Choose an item.	[Describe other organisation's role further, maximum 500 characters]
POLICY INSTRUMENT & RESOURCE ALLOCATION			

REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	30.000-40.000 Euro would be required to create an adequate amount of use cases and a website that makes them accessible. Furthermore, if the use cases should be translated into local languages (which would be ideal in order to reach SMEs) further resources are needed.	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	NOT YET DEFINED, which funding instrument could be used
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*		
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*		
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**PIA**
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COUNTRY	*Austria*

USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Share4.0 – SK-AT
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	The project goal is to establish a strategically sustainable, result-oriented cooperation of the key actors from all participating regions for a Smart Industry Network SK-AT. This is done by establishing a practicable, coordinated working basis regulated by a cross-border governance model for research and innovation. This will be tested in the project through

	pilot projects, involving decision-makers, multipliers, target groups from administration and politics, research, economy. The results are a 1) close, practicable cooperation of institutions in the field of research, innovation on Industry 4.0, which includes the 8 partners and at least another 8 organizations in the SK-AT region and exceeds the project duration, 2) the targeted development and implementation of pilot projects with topics relevant to SK-AT, e.g., robotics, sustainable production and 3) the organizational anchoring supported by a strategy and action plan.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	CEUP 2030 is PIAs first international Interreg cooperation. The project has showcased the value of international cooperation and that cross-border partnerships can be very helpful when it comes to Industry 4.0 and emerging technologies. With Slovakia, Austria does not only share a boarder, there are also strong relationships by industrial partners, for instance, in the area of the automotive industry. PIAs activities can, therefore, be very well connected to activities in Slovakia. Through a partnership, both sides hope to gain new insights and foster further cooperation.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	This project will enable efficient, effective cooperation between the relevant decision-makers and multipliers for Industry 4.0 and anchor it substantially and permanently. Cooperation between many decision-makers from administration & politics, research & innovation, and industry will be established beyond the project term in the program area. This is supported by a practicable governance model. This is also favored by the strategic European partnerships developed in the project. The focus will be on networking the key players for research, technology, innovation, and thematically in the fields of industrial assistance systems and resilient sustainable production systems. Results will be used strategically and operationally. Many regional, national and EU policies aim for the digital transformation of SMEs. Both, within the Green Deal and within Digital Europe there are approaches that focus on getting SMEs to adopt certain technologies/organizational practices.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Intelligent Production Systems*
PP's CAMI4.0 TIN ROLE	*Learner*

CAMI4.0 TECHNOLOGY FOCUS - SECONDARY		***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☒ *Automation & Robotics* ☒ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words		Cross-country collaboration, Share4.0, Industry 4.0 Community Building, Network and Working Group Establishment
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		No further information available at this point.
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/04/2021*
	END DATE	*31/08/2022*
	DURATION IN MONTHS	*16*
IMPLEMENTATION	START DATE	*01/06/2021*
	END DATE	*30/11/2022*
	DURATION IN MONTHS	*17*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Digitisation is filling all areas of life at great speed and its effects are felt by almost everyone. This change is so rapid and all-encompassing that there is talk of a digital transformation. In fact, fields of employment and working environments are changing massively within just one generation, driven by different use of ICT technologies. Industry 4.0 is the effort to integrate the state of the art from the ICT sector as efficiently as possible into the industry. To generate progress national and international networks and communities with different players administration & politics, research & innovation, and industry need to be established. This project shall be the start of a long-lasting cross-border collaboration network to foster close, practicable cooperation of institutions in the field of research, innovation on Industry 4.0.

TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C32 - Other (please clarify below)***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	Variety of manufacturing sectors will be affected.
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The Share4.0 network will be a cross-border network and community focusing on close, practicable cooperation of institutions in the field of research, innovation on Industry 4.0 within the SK-AT region and on targeting development and implementation of pilot projects with topics relevant to SK-AT, e.g., robotics, sustainable production.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	For cross-border cooperation a stable network is a necessity. In the area of Industry 4.0, this network is not yet existing, which is why the solution is chosen as the preferred approach Good practices for international networks can be seen throughout the project partners through other Interreg

	projects or through initiatives like Vanguard, for instance.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	Through close, practicable cooperation of institutions in the field of research, innovation on Industry 4.0 regional and national knowledge shall be made accessible within the network. By doing so know-how is transferred more efficiently between member states. This may lead to more progress and generate value for all players from administration & politics, research & innovation, and industry. A successful collaboration will strengthen the manufacturing sector of Central-Eastern Europe.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	As well-established player in the Austrian industry 4.0 landscape PIA will support the project team and other participating organizations through connecting them to the industrial network, decision-makers and multipliers relevant for industry 4.0. Furthermore, PIA will provide its extensive knowledge about working schemes and instruments for establishing a cross-border governance model. PIA will be the lead partner and project manager.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Other (please clarify)	To create a strategically sustainable, result-oriented cross-border network for the Slovakian and Austrian industry, every member is required to provide and receive knowledge at the same time. Hence, every member of the network is a knowledge supplier and receiver.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Slovenská inovačná a energetická agentúra (SIEA)	Knowledge Facilitator	SIEA is the lead partner for the Slovakian project consortium. SIEA will take over comparable tasks to those of PIA and is considered as its the Slovakian pendant for the purpose of this project. Furthermore, SIEA will be responsible to orchestrate Slovakian national activities related to Share4.0. In addition, SIEA will play a major role in anchoring the project and securing the sustainability of the Smart Industry Network SK-AT.
	Združenie inteligentného priemyslu - Industry4UM (Industry4UM)	Knowledge Supplier	Industry4UM is an initiative of industry representatives under the auspices of the Ministry of Economy of the Slovak Republic. Industry4UM seeks to be an independent, expert, opinion-making authority in the field of company transformations and to bring industries together for common goals in the field of Industry 4.0. For the purpose of this project Industry4UM will provide access to their network.
	Národné centrum robotiky, o.z. (NACERO)	Knowledge Supplier	National Centre of Robotics is association established under the patronage of Faculty of electrical engineering and information technology, Slovak technical university in Bratislava. The establishment of National Centre of Robotics had several reasons – research, support and development

			of robotics in university and society-wide environment. NACERO will be a major technology knowledge supplier.
	Ústav materiálov a mechaniky strojov Slovenskej akadémie vied (ÚMMS SAV)	Knowledge Supplier	The mission of the Institute of materials and machine mechanics SAS is the research and development of new advanced materials based on non-ferrous metals and solving of wide range of related issues - from the development of special technology of new materials, through exploring and characterizing their internal structure, to the analytical and numerical modelling a simulation of the properties. UMMS SAV will be a major technology knowledge supplier.
	PROFACTOR GmbH (PRO)	Knowledge Supplier	PRO researches for the competitiveness of the European Industry. Their technological developments strive for efficiency and sustainability, and work to benefit society. PRO will be a major industry and technology knowledge supplier.
	FOTEC Forschungs- und Technologietransfer GmbH (FOTEC)	Knowledge Supplier	FOTEC initiates and implements R&D projects in the area of engineering technologies, innovative software systems and aerospace engineering. FOTEC acts in a highly interdisciplinary

			environment and has access to a network composed of national and international companies, research organisations, universities, intermediary organisations as well as funding agencies and will act as major industry and technology knowledge supplier.
	Forschung Burgenland GmbH (FB)	Knowledge Supplier	FB is a research and development organization in the area of Energy and Environment, Health, Social Work, Didactics and Communications. FB will have the lead in communications.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	All activities and respective personal costs shall be financed by a funding scheme. Besides financial resources, sufficient personal resources, for which each partner is responsible by himself, are required.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme		Interreg V-A Slowakei - Österreich 2014-2020; Ministry of Agriculture and Rural Development of the Slovak Republic; The intent is tackling common challenges identified jointly in the border regions, improvements of institutional frameworks for cooperation, the quality and delivery of policies and solutions through concrete investments and smart pilot action.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE	No gaps or challenges have been foreseen to complete this use case based on the current policy instrument		

CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	that is targeted at this point. The prerequisite for a successful settlement is approval by the administrative authority.
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	When planning activities in a certain area (e.g., around Industry 4.0 technologies) it is important to have a neutral sparring partner. Cross-border collaboration can create the opportunity for such a partnership. A partnership is especially valuable if it starts early when dealing with certain topics, so that no unnecessary efforts are undertaken and "sunk costs" regarding time or financial resources can be avoided.
END OF TEMPLATE	

PARTNER INFORMATION	
PARTNER	**PIA**
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COUNTRY	*Austria*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Central European Pilot Factories
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Over the last couple of years, pilot factories have been established in many CE countries over the last couple of years. Equipment was purchased, human resources were developed and specific competences have been built in various regions. To our knowledge, there is no central overview of the different facilities that could count as pilot factories in CE. The objective of this use case would be to develop such an overview – in order to make facilities accessible to companies from different CE regions.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.*	Many projects funded by states or by the EU have focused on establishing or upgrading pilot factories. This project would help to increase the potential cross-border reach of the different pilot factories and, therefore, would help other projects to capitalize their results. PIA has a strong network and cooperation with the Austrian pilot factories. Getting them in touch with other similar

Maximum 1000 Characters	facilities and with companies from CE would fit perfectly into PIAs activities.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	For a strong European manufacturing sector, cross-border collaboration becomes more and more important. This use case should help to connect industrial facilities in CE. Also, the EDIH and Digital Europe is relying on collaboration between already existing players. This project could help to establish/strengthen this collaboration.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Automation & Robotics*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	Pilot factories, knowledge transfer, cross-border infrastructure usage
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	Examples for Austrian pilot factories: • https://www.pilotfabrik.at/ • https://www.jku.at/lit-factory/ • https://www.smartfactory.tugraz.at/ • https://www.fh-joanneum.at/forschung/forschungszentren/smart-production-lab/das-lab/
TIME HORIZON & TIME PLANNING	
DEVELOPMENT – START DATE	*13/09/2021*
DEVELOPMENT – END DATE	*15/04/2022*
DEVELOPMENT – DURATION IN MONTHS	*7*
IMPLEMENTATION – START DATE	*18/04/2022*
IMPLEMENTATION – END DATE	*17/06/2022*
IMPLEMENTATION – DURATION IN MONTHS	*2*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT	

DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	PIA is constantly interacting with different pilot factories in Austria. They face different challenges: Approaching companies, updating their equipment, specialising in some way – many of those challenges could be addressed through further collaboration with other similar facilities.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C32 - Other (please clarify below)***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	Different manufacturing sectors
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	Using the network of CEUP 2030's project partners, an overview of the different pilot factories in CEU could be created. The different competences and the machinery in use needs to be analysed and mapped. The findings of these process can be put into a document or on a website so that it can be referenced by CEUP 2030's project partners and by other stakeholders in the area of Industry 4.0.

DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	This solution can be seen as a first step for further collaboration between pilot factories. The solution was chosen because an overview like this is not existent in PIA's experience. Also, the solution seems feasible to be developed and implemented.		
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	Establishing new institutions and buying new equipment for every pilot factory in CE every couple of years is expensive and resource-intensive. Further collaboration between the existing facilities could be an efficient and effective alternative to that.		
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator		Facilitation of the process, mapping pilot factories, competences and equipment
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier		Pilot factories would supply the necessary information for the overview. They would need to be willing to cooperate with others and make their resources available and comparable.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.*	CEUP Project Partners	Knowledge Supplier	CEUP project partners would contribute to this project with information of the pilot factories in their regions and countries in order to create the knowledge base necessary for the success of the use case.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

Choose specifically the technology transfer tree „role“ in the completion of this: - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	CEUP Project Partners + further institutions	Knowledge Receiver	The outcome of this project can be used by business support organizations in CE for their work in interacting with companies.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	Primarily, this use case would not be relying on large funds but rather on the willingness of CEUP partners and their networks to collaborate/cooperate.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	OTHER (Please Clarify Below) **In case of other, Please clarify:** EIT Manufacturing CLC East	The Co-Location-Center East of the EIT Manufacturing was established recently in Vienna, Austria. Strengthening their position and activities would be a goal of this project, support from their side in the form of financial or human resources would be helpful for the project.	
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Willingness of somebody (e.g., the EIT Manufacturing) to fund the project		
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*			
END OF TEMPLATE			

8.4. Fraunhofer IWU

PARTNER INFORMATION	
PARTNER	**IWU**
PARTNER'S RESPONSIBLE MANAGER	*Laura Salomon / Holger Kunze*
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COUNTRY	*Germany*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	PRO Future
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Submission of a project sketch under the BMBF funded program Clusters4future for a cluster concept combining materials science and manufacturing technologies with social science and open innovation concepts. The cluster project aims to foster digitalization of industrial production (Industry4.0), target the whole value chain and company processes focusing locally on the new German federal states (Saxony, Saxony-Anhalt, Brandenburg) and SMEs in the region. Novel influences from urban areas should be transferred to rural areas. Technologically, materials science and production technologies like additive manufacturing should be brought into connection with societal dynamics, mutual learning and knowledge transfer.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	Results from the BMBF program Zwanzig20 funded cluster initiative smart^3 are used in the field of materials science and the experience to work with functional materials and apply them in a variety of products. The software system Kyub for modelling and prototyping for laser-cutting was an outstanding research result of the involved Hasso-Plattner-Institut. In terms of additive manufacturing Fraunhofer IWU Dresden can make use of their in previous projects developed and patented procedure "screw extrusion additive manufacturing" (SEAM) to process synthetic granules. Further research findings from the DFG funded excellence cluster MERGE can be also used.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)*	It will target the goals of the national German High Tech Strategy 2025 for Innovation and support the structurally lagging regions systematically by increasing the innovative capacity and attractiveness of the areas. The initiative plans to provide strong incentives for a

Maximum 1000 Characters		regional future perspective. SMEs are especially supported. All of this is in line with the regional and national strategy. One of the supporting actors is the Saxon State Ministry for Justice and for Democracy, Europe and Equality which amongst others implements the European Green Deal in Saxony. At the same time it is the gate to Germany´s European neighbors and offers optimal networking and cooperation structures.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY		*Intelligent Production Systems*
PP's CAMI4.0 TIN ROLE		*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY		***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☐ *Automation & Robotics* ☒ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words		Cluster – cooperation - 3D printing - open innovation – functional materials – participatory design - makerspace
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		https://www.smarthoch3.de/ https://www.clusters4future.de/
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*16/11/2020*
	END DATE	*16/02/2021*
	DURATION IN MONTHS	*3 months*
IMPLEMENTATION	START DATE	*If positive approx. 01/08/2021*
	END DATE	*01/01/2032*
	DURATION IN MONTHS	*6 months for concept development. After the concept phase's final selection, there are 3 consecutive execution phases each 3 years with interim evaluation of results.* *More here*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		

DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	Broad areas of the rural spaces in Saxony, Saxony–Anhalt and Brandenburg are facing loss of young people, aging of the population and the abandoning of infrastructure. The region therefore has the need for offers to co-create increasing future perspectives and the attractiveness of the region. It is key to foster close interconnectedness supporting sustainable access to high technologies and knowledge as well as transfer offers between makerspaces, research centres, SMEs and private actors in non-urban areas.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME (focus)* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☒ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The sketch tries to connect the technological dimensions of manufacturing technologies and material science with societal and organizational dynamics. New forms of mutual knowledge transfer / learning should be developed. The digital integration targets the whole value chain and additionally new models of cooperation. Some of those should be the creation of innovation ecosystems that foster knowledge streams in action, discover potential for a decentralised production, work on the role of social innovation in SMEs as well as the role of open innovation for the use of new technologies and lastly develop an open source platform to connect partners, knowledge and technology on a project base. The subtopic of 3D printing is targeted in the use case in the following way. The granule-based SEAM process has advantages, which are based on a high degree of adaptation to industrial standards. The continuous process allows large series of components with complex geometries and a high degree of functional integration and is suitable for upscaling pre-industrially developed applications. Initially conventionally 3D-printed developments should undergo further industrial iterations and additional functionalization in a single work step without interrupting the digital chain. The question of adapting this process for smaller sociomaterial work units in non-urban areas holds development potential for products and manufacturing plants. Functionalization (printing of sensors, actuators, magnets, conductors) in and on components requires a further development step in the scientific linking of knowledge about functional materials (e.g. from smart^3) with the possibilities of additive manufacturing. With the granulation of raw materials as a starting point, the question of more direct material cycles also arises.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	From experience with approaches like the smart^3 initiative it is known that connecting partners and interdisciplinary solution ideas are highly successful to tackle the aforementioned challenges.

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DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	The approach plans to strengthen local SMEs and support digitalisation. Through the future cluster, cooperation will be possible easier and can be extended to a European scale. Furthermore it helps to achieve a common standard in technology in Central Europe.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier	Fraunhofer IWU Dresden has succeeded in dissolving existing obstacles of conventional 3D printing technologies such as speed or efficiency by developing a highly efficient, granulate-based high-speed 3D printing process. The multiple award-winning technology was patented and prepared for commercial exploitation through a spin-off in April 2020. In addition, work in the Fraunhofer lead project GoBeyond4.0 deals with multifunctional printing and the world's strongest magnets produced in a printing process were realized at Fraunhofer IWU, too.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	Target groups are especially the SMEs in the region benefitting from the network effects and co-creation approaches to spread innovative capacity and digitalisation.

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Johannes Gutenberg Universität Mainz uni-mainz.de	Knowledge Facilitator	The partner at Johannes Gutenberg University deals with the sociological perspective and the social conditions and consequences of digitalization as well as the changes in production and innovation systems. In other research projects, he has particularly researched makerspaces, FabLabs and hackathons and published the results in a treatise.
	Deutsches Forschungszentrum für Künstliche Intelligenz Berlin dfki.de/web/	Knowledge Facilitator	With a large number of locations, the German Research Centre for Artificial Intelligence is the largest international research centre in this field. Here, too, the focus is often on the future of human-technology interaction and the user-centred perspective. The findings from other research are essential building blocks for new concepts for social participation in the development of high technology.
	Freie Universität Berlin https://www.fu-berlin.de/	Knowledge Facilitator	For many years, the research focus of the Chair of Business Cooperation at the Management Department of the School of Business and Economics at Freie Universität Berlin has been the cooperation

			and networking of companies and other organizations in the context of global production networks as well as regional clusters including entrepreneurial ecosystems. Among other things, research is also conducted on the organization of creative processes in innovation networks and the focus is also on the Berlin start-up scene.
	Hasso-Plattner-Institut der Universität Potsdam https://hpi.de/	Knowledge Supplier	The Human Computer Interaction department at the Hasso-Plattner-Institute focuses on the research question of how we will interact with computers in the future. A ground-breaking research result is the web-based software system Kyub. Kyub makes laser cutting technologies available to everyone by providing the necessary modelling and conversion algorithms.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The concept phase (for further development of the project idea and strategy) of the use case will be financed (if approved) by the BMBF Clusters4future funding scheme. After conception the BMBF decides over further funding of the implementation phase.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&**	Funding Scheme **In case of other, Please clarify:** [Free Text Response]		-Clusters4future -BMBF (German Federal Ministry of Education and Research)

Describe the policy instrument which will support you in delivering the use-case, clarifying: - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***		- Germany's universities and research institutions are excellently positioned in the field of basic research. However, it is also crucial that the transfer of promising research results to industry and society is successful. With the future clusters, they attempt to link Germany's top research to questions of applicability at an earlier stage and setting innovation processes in motion more quickly.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	It largely depends on the success in the competition to be able to push the initiative forward. There are competition rounds and before the conception phase starts, a set of 5 to 10 cluster (sketches) are chosen to further develop their strategy and later proceed to execution/implementation. There is a program for the promotion of clusters and networks in the Free State of Saxony (here), where an adapted approach could be placed in case the described sketch proposal is not successful.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	From the harvest of smart[3], some focus points of successful cluster initiative proposals are known. They helped to shape and target the submitted sketch.	
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**IWU**
PARTNER'S RESPONSIBLE MANAGER	*Laura Salomon / Holger Kunze*
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This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

REGION	*NUTS DED2 Dresden Saxony*
COUNTRY	*Germany*

USE-CASE ACTION PLAN

ADMINISTRATIVE INFORMATION

SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Piezoelectric process monitoring for end milling cutters (PieMontE)
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	A further increase in productivity and thus in the metal removal rate beyond the potentials of today's high performance machining (HPC) can only be achieved with tool technologies that guarantee the required accuracies, tool life and machining times even close to the limits. Approaching the physical process limits in production requires novel process control and monitoring strategies which permanently optimize the machining parameters and thus avoid leaving the stable process window. The necessary input data must be provided by appropriate sensors, whereby the proximity to the process is of crucial importance in order to acquire signals of sufficient quality. One approach to obtain effective information is the use of tool-integrated sensors with a piezoelectric layer close to the process. This is what the project aims to achieve and for this purpose the learnings from a previous project "SensoTool" was used. The further development will happen in the areas of transfer to further application areas, proof of profitability and improvement of the technology readiness level (TRL).
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	The use case started off as a follow-up project and further development of the previous project "SensoTool" due to high interest from the industry and is funded under the BMBF Zwanzig20 funded initiative smart³.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The main goal of the BMBF-funded Zwangig20 consortium smart³| materials, solution, growth is a broad market breakthrough of smart materials. The project aims to increase the technology readiness level. The project partners can open up new cooperation possibilities and markets by joining the consortium. The research results will represent a wealth of experience in the region for other application fields, advantages in international competition, and a focus for industrial research and market needs in the

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

	area of process assurance. For Industry 4.0, powerful interfaces between real process and virtual environment are necessary and the project tries to foster that.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Smart and Advanced Materials*
PP's CAMI4.0 TIN ROLE	*Lead*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	Sensor - process data - production of the future - piezoelectric effect
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	https://www.smarthoch3.de/inspiration/projekte/senso-tool/
TIME HORIZON & TIME PLANNING	
DEVELOPMENT – START DATE	*01/11/2015*
DEVELOPMENT – END DATE	*31/01/2018*
DEVELOPMENT – DURATION IN MONTHS	*15 months (previous base project SensoTool)*
IMPLEMENTATION – START DATE	*01/03/2020*
IMPLEMENTATION – END DATE	*31/12/2021*
IMPLEMENTATION – DURATION IN MONTHS	*22 months*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT	
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	The production of the future must be able to cope with increasingly shortened product cycles maintaining the highest quality. This requires an increase in productivity and flexibility of manufacturing companies, while at the same time optimizing the costs of production processes. Innovations in production technology secure locational advantages for survival in international competition. A

	further increase in productivity and thus in the metal removal rate beyond the potentials of today's high performance machining (HPC) can only be achieved with tool technologies that guarantee the required accuracies, tool life and machining times even close to the limits. Approaching the physical process limits requires novel process control and monitoring strategies which permanently optimize the machining parameters and thus avoid leaving the stable process window. Process monitoring systems suitable for series production available on the market are limited to evaluating the motor torques of spindles and feed axes. However, this indirect measurement of cutting forces allows only a rough evaluation of the process condition due to high measurement inaccuracies. Available sensor-based systems such as piezo dynamometers for direct measurement are difficult to apply in industry due to their high costs and integration effort.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☐ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☐ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***

IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The technological basis was laid in the SensoTool project. Using the example of a tool for face milling, a demonstration system was developed to prove the feasibility in principle. An additional sensor plate between the indexable insert and the tool carrier of a modified cutter head tool was provided with a piezoelectric layer in order to record and electronically process the process forces on the cutting edge of the rotating tool. Subsequently, data is transmitted wirelessly to the machine control system via RFID technology. The machine control system evaluates the signal and actively intervenes in the production process if necessary. After testing the individual solutions, PieMontE is now to be used to extend the range of applications, prove economic efficiency and increase the TRL. This will also require further development of the technologies from SensoTool into a technology platform that delivers reliable measurement results in a near-series production process.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	The decision to continue the project principle is based on the promising results from project SensoTool and the industry interest indicated.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.*	It is a technical solution oriented use case and project. In that way it advances production processes and technologies which improve the knowledge base and expertise in CE.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier		Fraunhofer IWU in Chemnitz and Dresden have been working for a long time on the further development of machining technology in connection with the development of the necessary machine technology.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		The target group are mainly companies interested in improving and digitalising their production processes and the producing industry generally.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Fraunhofer IKTS ikts.fraun- hofer.de	Knowledge Supplier	Frauhofer IKTS conducts application-oriented research in the field of advanced ceramics. The Multifunctional Materials and Devices group has extensive experience in the synthesis and device development of piezoceramic or dielectric ceramics, which can be used for sensory, actuator and electronic functions. Special expertise exists in the field of development and characterization of piezoelectric thick film and thin film systems as well as devices derived from them.

	MAPAL (Aalen) mapal.com /de-de/	Knowledge Supplier	MAPAL is the leading specialist for machining in the automotive and mechanical engineering sectors as well as in the aerospace and printing machine industries. As a leading tool manufacturer, MAPAL takes over the production of the tool carriers and can drive the market launch through its sales channels.
	Micro-Sensys micro- sensys.de	Knowledge Supplier	Micro-Sensys has been involved in the development and manufacture of RFID components, in particular transponders and RFID readers, for over 20 years. The developments and products are characterized in particular by their miniaturization, robustness and innovative character. The combination of RFID technology and sensor technology is an essential field of competence. Micro-Sensys supplies the components for data and energy transmission and opens up a field for new growth paths in production technology.
	METROM Mechatronische Maschinen GmbH metrom- mobil.com	Knowledge Facilitator	METROM is an SME in Hartmannsdorf near Chemnitz and market leader in parallel kinematic machine tools. For its developments, METROM received the Innovation Award of the

			Free State of Saxony in 2009 and the INTEC Award of Messe Leipzig in 2011. METROM machines are used for machining but also for other technologies. METROM can facilitate market entry for future machines.
	KEBA Industrial Automation Germany GmbH (former LTI Motion GmbH) keba.com	Knowledge Supplier	Former LTI Motion and now KEBA are manufacturers of automation solutions and market open PC-based CNC controls for high-performance machine tools. Here, the company works on the control adaptation of the machine and on the development of the process-specific control algorithms. The integration of the acquired measurement signals into the machine control is ensured and KEBA profits by marketing the further developed NC control.
	CREAVAC Creative Vakuumbeschichtung GmbH creavac.de	Knowledge Supplier	CREAVAC is an innovative medium-sized company mainly active in the field of plastic contract coating by means of vacuum metallization, painting and laser engraving. It also includes the development of processes and products in almost all areas of PVD processes or in the field of vacuum technology. CREAVAC can expand the customer base and the product range to include coatings for cutting tools.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

	Marposs Monitoring Solutions GmbH (Egestorf) marposs.com/ger/	Knowledge Supplier	Marposs Monitoring Solutions GmbH, as a subsidiary of Marposs SpA Bologna, has 30 years of experience in the field of tool and process monitoring in machining processes. The product range extends from sensors and measuring modules to monitoring components based on PCI plug-in cards and external process computers to monitoring software. As a system provider, Marposs can expand its portfolio of process monitoring systems to include a high-precision process-related measuring system and thus significantly increase its market volume.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The BMBF's Zwanzig20 program funds project consortia, each of which receives up to 45 million euros. One of the 10 Zwanzig20 project consortia is smart³. The use cases are funded within the framework of smart³ and received funding through smart³.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]		-Zwanzig20 program/initiative smart³ -BMBF (German Federal Ministry of Education and Research) - The Zwanzig20 - Partnership for Innovation program, with funding of up to 500 million euros, is designed to systematically expand the outstanding economic and scientific expertise built up in

		eastern Germany for the future through supraregional and interdisciplinary cooperation. Project consortia are funded, each receiving up to 45 million euros. One of the 10 Zwanzig20 project consortia is smart[3].
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*		
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	From a perspective of production the insights are gained in the technical details especially.	
END OF TEMPLATE		

PARTNER INFORMATION	
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COUNTRY	*Germany*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	MIFU.CONNECT
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	For indirect process monitoring, the interface between the forming machine and the die is of particular importance, since it is a surface that transmits process forces and is therefore close to the active surface, yet inherent to the machine. Sensor integration at and in this die interface for indirect process monitoring offers the possibility of recording a large number of process-inherent parameters. Within a preliminary project, a sensor system was developed which can be integrated particularly

	simply into this interface and with which the elasto-mechanical deformation of these interfaces can be recorded during the forming process. This information can be used to detect trends in process control or ad-hoc parameter variations. Communication between the sensor points and the evaluation unit was implemented using UWIN radio technology. Within the MIFU.connect project, this system will be further developed in order to realize a roadshow demonstrator, with which the functionality and the advantages of using the system in customer applications can be demonstrated and tested. In order to ensure an industry-oriented use, the system is to be further developed with regard to robustness at the communication and sensor point. First test parameters can be established to set empirical values for later machine learning attempts.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	As stated above the experience and research results from the previous project CPS.connect were used to further develop the system and to push the use case project MIFU.connect (follow-up project). CPS.connect was also a project from the Fraunhofer IoT.COMM research center.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	Regionally it improves the technology base and knowledge. Therefore it contributes to the automation related project landscape, to the innovation capacity of Saxony and connects the research institutes and interested industry partners in a common undertaking. The use case fits very well into the other research roadmaps and availability of calls of Saxony and Germany as a whole. Some roadmaps or calls are: • BMWi-„PAiCE - Digitale Technologien für die Wirtschaft" Förderprogramm (https://www.digitale-technologien.de/DT/Navigation/DE/ProgrammeProjekte/AktuelleTechnologieprogramme/PAiCE/paice.html) • KMU-Innovativ: Produktionsforschung (https://www.bmbf.de/foerderungen/bekanntmachung-2740.html) • Hightech Strategy 2025 (https://www.bmbf.de/de/hightech-strategie-2025.html)

	• Theses paper and recommendations for action ‚Automation 2025' of the VDI & VDE (https://www.vdi.de/ueber-uns/presse/publikationen/details/automation-2025) • ZIM (https://www.zim.de/ZIM/Navigation/DE/Home/home.html) • Theses paper ‚Zukunftsperspektive deutscher Maschinenbau' of the VDMA (https://vdma.org/documents/256988/38436376/Zukunftsperspektive+deutscher+Maschinenbau.pdf/8eaa0a5b-a54a-635c-770a-a28e24b18786) • BMBF: Zukunft der Arbeit (Wissenssicherung, Assistenzsysteme) (https://www.bmbf.de/foerderungen/bekanntmachung-2662.html) • DFG Focus Program: „Sensorintegrierende Maschinenelemente als Wegbereiter flächendeckender Digitalisierung" (https://www.dfg.de/foerderung/info_wissenschaft/2020/info_wissenschaft_20_59/index.html) The use case outlook will fit in the subtopic of advanced analytics. Alternative funding opportunities especially in KMU innovativ have be evaluated.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other:* _____
Use-Case Key Words	Forming process – sensor – UWIN
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice*	https://www.cit.fraunhofer.de/en/about-us/structure-of-the-cluster.html https://www.cit.fraunhofer.de/en/research-center/iot-comms.html https://www.cit.fraunhofer.de/en/research-center/iot-comms/cps-connect.html

which is already in existance.		
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/08/2020*
	END DATE	*09/09/2020*
	DURATION IN MONTHS	*Approx. 1-2 months (proposal preparation time)*
IMPLEMENTATION	START DATE	*16/10/2020*
	END DATE	*30/06/2021*
	DURATION IN MONTHS	*8 months* In early summer it will be clear how the financing of the CCIT continues and how follow-up projects will start.
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The monitoring of process-inherent parameters during the forming production of sheet metal components is the basis for the objectives regarding transparent and error-free production and corresponding assistance systems. The development of sensor systems and analysis algorithms for indirect process monitoring is indispensable for such an increase in transparency, since direct measurement technology - e.g. for monitoring forming forces - is not feasible or cannot be used economically due to the technological and tooling constraints (e.g. each forming tool would have to be equipped separately with sensors).
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☐ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☐ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	Within a preliminary project, a sensor system was developed with which the elasto-mechanical deformation of these interfaces can be recorded during the forming process. This information can be used to detect trends in process control or ad-hoc parameter variations. Communication between the sensor points and the evaluation unit was implemented using UWIN radio technology. The focal points of MIFU.connect are now the realization of the roadshow demonstrator (consisting of sensor stations, radio interface and visualization unit), the mechanical optimization and miniaturization of the sensor stations, the professionalization of the sensor signal conversion and forwarding via a gateway, consideration of energy harvesting for the supply of the decentralized sensor systems and testing, the optimization and validation of the communication interface by means of radio technology.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	The good practice experience is related to the previous project CPS.connect, the industry partners' interest and the good fit in the strategy innovation roadmaps of Saxony and Germany.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.*	It is a technical solution oriented use case and project. In that way it advances production processes and technologies which improve the knowledge base and expertise in CE.

Maximum 1000 Characters.		
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier	At IWU, the use of knowledge about elasto-mechanical machine deformation during the forming process for tool development, forming simulation and process monitoring has been and is being researched within industrial contract research and publicly funded projects. The roadshow demonstrator can be used within these projects and beyond to verify the research statements and open up new knowledge opportunities and research paths. Furthermore, the demonstrator enables IWU to validate and illustrate the developed core competencies regarding model-based data analysis by integrating them into customer-specific industrial applications. Thus, the realization of the roadshow demonstrator for IWU leads to a direct exploitation strategy of the SmartNotch project, which is currently being developed at IWU on the market side via the Fraunhofer Gesellschaft program Venture AHEAD.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	The target group is toolmakers for forming technology and press shop operators. There are more than 700 participants of this target group in Germany. More than 50% of them are SMEs. To ensure that the project is carried out in a target-oriented manner and to achieve the overriding objective of exploiting the results, contact was made with potential users of the system even before the project began. In particular, the area of car body component production within the automotive industry was addressed.

			Discussions were also held with multipliers, namely system suppliers and sensor providers.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Fraunhofer IIS iis.fraunhofer.de/en.html	Knowledge Supplier	Fraunhofer Institute for Integrated Circuits IIS is global leader in microelectronic and information technology system solutions and services. They especially focus on the further development of the UWIN wireless technology. It is part of the strategic roadmap in the area of communication systems aiming to discover forming technology as a market for the Fraunhofer developed technology UWIN. In MIFU.connect they will transform the previous projects learnings into a system with market readiness.
	Fraunhofer ENAS enas.fraun-hofer.de-/en.html	Knowledge Supplier	Fraunhofer Institute for Electronic Nano Systems ENAS develops single components, technologies for their manufacturing as well as system concepts and system integration technologies and transfers into production. They work on the selection and adaptation of the sensor principle (piezo-electric or resistive) for robust detection of the deformation of the T-slots, miniaturization and packaging of sensor electronics and µC/gateway as well as circuit and concept development for energy harvesters.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	Finance is provided through funding of the Fraunhofer Gesellschaft and the research center. The project finishes with a project report and a roadshow demonstrator.		

WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	OTHER (Please Clarify Below) **In case of other, Please clarify:** Fraunhofer IoT.COMM project	The Fraunhofer Cluster of Excellence Cognitive Internet Technologies CCIT researches cognitive technologies for the industrial internet. In 3 research centers Fraunhofer CCIT develops key technologies necessary for a cognitive internet. The IoT-COMM (FIOT) Research Center advances research into the basic technologies of networking, localization and information security and combines them in terms of IoT communication.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The Fraunhofer Cluster of Excellence Cognitive Internet Technologies CCIT develops the key technologies required for a cognitive Internet in three research centers with different focuses. The competencies united in the Fraunhofer CCIT offer an overall strategic vision that is designed to enable companies to simultaneously strengthen their innovative power and competitiveness while preserving their digital sovereignty. The synergistically utilized competencies of a total of more than 20 Fraunhofer institutes form an alternative to in-house or external innovation hubs that work on isolated solutions for limited application scenarios. A manufacturer-independent research program close to the needs of industry while safeguarding the interests of the population is an essential prerequisite for maintaining the business location and making it fit for the future.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	As this project is funded from the Fraunhofer Society via the CCIT it can still have a lighthouse effect for the development of policy instruments. There is also an application procedure to follow, milestones during research and interim and final proof. From the concept of establishing the CCIT with its research centers, large amount of participating Fraunhofer institutes and research facilities, it can be learnt how to streamline the different foci in terms of a research topic, here cognitive Internet. Furthermore the competences of normally separate units (institutes) are bundled. It can serve as a blueprint to align policy instruments and independent actors to target a holistic innovative approach and outcome. In early summer it will be clear how the financing of the CCIT continues and how follow-up projects will start. However, it could be proofed already that the approach was successful because the invested project money could be outreached by the industry revenues associated to the projects.	

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

END OF TEMPLATE

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REGION	*NUTS DED4 Chemnitz Saxony*
COUNTRY	*Germany*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	SmartTool.connect Phase 2
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	The main capability of the system is the smart tool holder, which recognizes the wear progress of the tool and predicts exactly the required set-up time for a new tool. One main advantage is the complete functional integration of all components (actuators, sensors, data processing and connection) into the tool holder, so that the space-saving system does not require complex installations and allows a fast setup. The system will be an all-rounder, universal for all commercially available tool holders and easily being integrated into existing machines. It connects through wireless, low-latency real-time transmission. Based on this basic actuator concept, a variant construction kit for customer-specific and market-relevant solutions should be created. Furthermore, a solution is to be developed that enables the energy-autonomous operation of sensors without modifying the actual machine tool.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	The experience and research results from the previous project SmartTool.connect Phase 1 were used to further develop the system and to push this use case project (follow-up project). Both are projects from the Fraunhofer IoT.COMM research center.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially*	Regionally it improves the technology base and knowledge. Therefore it contributes to the innovation capacity of Saxony and connects research institutes. The use case fits very well into the other research roadmaps and availability of calls of Saxony and Germany as a whole.

Green Deal and Digital Europe) *Maximum 1000 Characters*		• Hightech-Strategy 2025 (https://www.bmbf.de/de/hightech-strategie-2025.html) • BMBF: Zukunft der Arbeit (Lernende Produktionstechnik-Einsatz künstlicher Intelligenz (https://www.bmbf.de/foerderungen/bekanntmachung-2662.html) • Thesenpapier und Handlungsempfehlung „Automation 2025“ of the VDI & VDE (here) • Thesenpapier „Zukunftsperspektive deutscher Maschinenbau“ of the VDMA It fits into the subtopic of zero-defect manufacturing through providing a contribution to the reduction of production rejects, process control and increase of the availability of equipment.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY		*Automation & Robotics*
PP's CAMI4.0 TIN ROLE		*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY		***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words		Sensor – wireless – radio communication – energy harvesting – rotating objects
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		https://www.cit.fraunhofer.de/en/about-us/structure-of-the-cluster.html https://www.cit.fraunhofer.de/en/research-center/iot-comms.html https://www.cit.fraunhofer.de/en/research-center/iot-comms/smarttool-connect.html
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/08/2020*
	END DATE	*09/09/2020*
	DURATION IN MONTHS	*Approx. 1-2 months (proposal preparation time)*
IMPLEMENTATION	START DATE	*06/10/2020*
	END DATE	*31/05/2021*

	DURATION IN MONTHS	*Approx. 8 months* In early summer it will be clear how the financing of the CCIT continues and how follow-up projects will start.
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		For production planning and work preparation it is elementary important to know the remaining service life of tools, so processes can be effectively scheduled and unplanned down-times can be avoided.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☐ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☐ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*		***C28 - Manufacturing of Machinery and Equipment***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY		
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT		

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	Based on the previously developed basic actuator concept, a variant construction kit for customer-specific and market-relevant solutions should be created. The variants should be economically viable on the market and offer scalable functions. The aim is to create a modular system with different technologies for the individual functional components of mechanics, data transmission, sensors and power supply, from which a suitable system can be built depending on the application. In addition to machine tools, these technologies can also be used to implement in other applications for monitoring rotating components. Tool-integrated radio and sensor technologies are to become energy-autonomous to increase customer benefit and acceptance through maximum flexibility and self-sufficiency of the intelligent tool and minimum necessary intervention in the machine. In the project, a solution is to be developed for a selected application that enables the energy-autonomous operation of sensors without modifying the actual machine tool. The use of rotor motion for energy conversion by electrodynamic generators is to be realized in the project.	
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	The good practice experience is related to the previous project, need for further development considering industry needs and the good fit in the strategy innovation roadmaps of Saxony and Germany.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.*	It is a technical solution oriented use case and project. In that way it advances production processes and technologies which improve the knowledge base and expertise in CE.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier	Fraunhofer IWU as leading institute for resource-efficient production will technologically focus on the development and construction of intelligent machine components, the conception of the overall system, the constructive realization, the application tests and the conception of the modular system. In terms of marketing, a business model and marketing concept will be

			developed. Furthermore, networking and access to potential customers in the field of mechanical engineering, conducting workshops as well as maintaining customer relations will be essential during the project phase.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		The target group are companies in the application area of production. The solution is to be designed in principle for a wide variety of other application areas where sensor integration in and data transmission from rotating components is relevant. Examples are monitoring components in power generation (turbines, wind turbines), monitoring of assemblies in mechanical and plant engineering in general, monitoring of automotive and commercial vehicle drive trains, monitoring components in aircraft construction.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Fraunhofer IIS iis.fraunhofer.de/en.html	Knowledge Supplier	Fraunhofer Institute for Integrated Circuits IIS is global leader in microelectronic and information technology system solutions and services. They especially focus on the development of efficient wireless data transmission, antenna design in metallic environment and the consulting for the modular integration of UWIN wireless radio technology.

POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	Finance is provided through funding of the Fraunhofer Gesellschaft and the research center. The project finishes with a project report and a MVP.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	OTHER (Please Clarify Below) **In case of other, Please clarify:** Fraunhofer IoT.COMM project	The Fraunhofer Cluster of Excellence Cognitive Internet Technologies CCIT researches cognitive technologies for the industrial internet. In 3 research centers Fraunhofer CCIT develops key technologies necessary for a cognitive internet. The IoT-COMM (FIOT) Research Center advances research into the basic technologies of networking, localization and information security and combines them in terms of IoT communication.	
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The Fraunhofer Cluster of Excellence Cognitive Internet Technologies CCIT develops the key technologies required for a cognitive Internet in three research centers with different focuses. The competencies united in the Fraunhofer CCIT offer an overall strategic vision that is designed to enable companies to simultaneously strengthen their innovative power and competitiveness while preserving their digital sovereignty. The synergistically utilized competencies of a total of more than 20 Fraunhofer institutes form an alternative to in-house or external innovation hubs that work on isolated solutions for limited application scenarios. A manufacturer-independent research program close to the needs of industry while safeguarding the interests of the population is an essential prerequisite for maintaining the business location and making it fit for the future.		
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*			

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

	As this project is funded from the Fraunhofer Society via the CCIT it can still have a lighthouse effect for the development of policy instruments. There is also an application procedure to follow, milestones during research and interim and final proof. From the concept of establishing the CCIT with its research centers, large amount of participating Fraunhofer institutes and research facilities, it can be learnt how to streamline the different foci in terms of a research topic, here cognitive Internet. Furthermore the competences of normally separate units (institutes) are bundled. It can serve as a blueprint to align policy instruments and independent actors to target a holistic innovative approach and outcome. In early summer it will be clear how the financing of the CCIT continues. However, it could be proofed already that the approach was successful because the invested project money could be outreached by the industry revenues associated to the projects.
END OF TEMPLATE	

8.5. Karlsruhe Institute of Technology

PARTNER INFORMATION	
PARTNER	**KIT**
PARTNER'S RESPONSIBLE MANAGER	*Dr. Steffen Scholz*
E-MAIL:	*Steffen.scholz@kit.edu*
PHONE:	*+49 721 608 25734*
REGION	*Baden-Württemberg*
COUNTRY	*Germany*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Next Generation Factory Pilot Lines
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Scalable Flexible Manufacturing is the realization of implementing a manufacturing process chain that is capable of achieving production of products with a lot size of 'one' while still using mass production methodologies. The objective of the use case solution is to showcase a pilot line for next generation manufacturing that comprises of hybrid manufacturing technologies, as well as conduct sustainability studies on the proposed solution through life cycle assessment, and by identifying the reduction reuse of waste in the process chain.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	This use case development is a natural successor to a number of projects and programmes that KIT has been involved in during the previous programming periods on an EU level. It also coincides with the Helmholtz associations' current research goals within the Program-Oriented Funding Period (POF IV, 2021-2027) in particular in the programme "Information -Materials Systems Engineering" and is also influenced by previous EU projects within H2020, FP7 and POF III (2015-2019) "Key Technologies – Science & Technologies of Nanosystems" of the Helmholtz programme.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The use case aligns with the long term goals and expected impacts of future regional, national and EU policy development. Integrated within the use case are features such as life cycle assessment, circular economy, safe by design principle etc. Naturally sustainability being a vital topic for the future will be considered in the development of this use case.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

CAMI4.0 TECHNOLOGY FOCUS - PRIMARY		*Intelligent Production Systems*
PP's CAMI4.0 TIN ROLE		*Lead*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY		***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words		*Flexible Manufacturing, mass customisation*
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		No example available at present
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/02/2021*
	END DATE	*30/04/2022*
	DURATION IN MONTHS	*14*
IMPLEMENTATION	START DATE	*01/05/2022*
	END DATE	*30/04/2025*
	DURATION IN MONTHS	*36*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Increased scalability and flexibility of manufacturing systems is a challenge that has blossomed over the last few decades. This is became apparent with the Covid lockdown throughout Europe. Conventional manufacturing processes weren't agile enough to respond to immediate changes in demand and requirement. However, technologies such as 3D Printing were quick to respond to fulfil immediate demands for PPEs. Most industrial equipment are optimised for mass production and therefore incorporating mass customisation requires not just the further development of new and advanced manufacturing methods, but also the training and awareness for a change in mindset on how things can be made

	with improved agility, customisation and sustainability.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C29 - Manufacturing of Motor Vehicles, Trailers and Semi-Trailers***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The above is one example but the use case can still be applied for a range of manufacturing sectors.
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The use case can be realised through the creation of a project that focusses on the realisation of a pilot line geared for lot size one production. The pilot line will focus on integrating aspects of sustainability through energy optimised production planning, life cycle assessment, circular economies, energy conserving logistics and material handling. Lot size one production

	implies mass customisation and that is to be accomplished using hybrid manufacturing techniques combining both additive and subtractive manufacturing techniques.	
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	A solution such as this will act as a good demonstrator capable to showcasing, training, education as well as for implementation in an application industry. The solution is also based on experiences from previous projects and the key competencies as offered by us at KIT.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	The intended impacts of the solution are as follow 1. Help initiate a transition towards a more greener digitalisation of Central European manufacturing. 2. Increase the innovation capabilities of European manufacturing and enable newer, more innovative and efficient products. 3. Act as a training and educational tool to promote efficient change management, to make sure ageing workforces are not left behind while ensuring a progressing state of the art.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier	The Karlsruhe Institute of Technology (KIT) as "The Research University in the Helmholtz Association" is the only German university of excellence with a national large-scale research centre and is one of the leading centres for Knowledge and research in Germany and Europe. This is one of the strengths that KIT can bring into any project. The equipment, expertise, track record and wide network of stakeholders and partners.

DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		The Target groups are actually anyone that can apply, implement, support and commercialise the outputs as envisioned from the joint development of this use case.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website.	Knowledge Facilitator	The Project consortium will need organisations that are willing to implement the developed knowledge within the project and are able to disseminate to others within their sphere of influence.
	Organisation Name (n…) and short hyperlink to their website.	Knowledge Receiver	Same like above, the consortium is not ready yet however it will require the three types of stakeholders (Knowledge receiver, facilitator and Supplier) to be involved in the project to realise this use case.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	KIT as a research institute will require external funding through third part resources for realizing and participating in the project. KIT is able to contribute its own facilities and expert scientific and technical knowledge on the topic.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]		Horizon Europe

WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The challenge is to really find the correct partners who share or are willing to envision a vision on developing the production lines of the future. It needs cross disciplinary expertise in various topics such as in production planning and control, Modelling, simulation, design, data scientists, AI engineering etc. and will therefore involve academic, industrial, knowledge transfer and intermediary organisations across Europe. Thereby addressing different types of problems that occur in different regions and bringing in that regional expertise as well.
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	The CEUP partnership covers a wide range of organization with a large variety of inter-disciplinary expertise. Within the CEUP PP, there already exist the competence to start working on a joint effort to tackle this topic. CEUP PP represent a group that are belonging to the three target groups (Knowledge supplier, facilitator and supplier) and have a combined experience of tackling diverse challenges through different EU and national projects. In addition, many CEUP PP also have large networks as they act as network facilitators and also are able to bring in external experts and organization to join efforts.
END OF TEMPLATE	

PARTNER INFORMATION	
PARTNER	**KIT**
PARTNER'S RESPONSIBLE MANAGER	*Dr. Steffen Scholz*
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REGION	*Baden-Württemberg*
COUNTRY	*Germany*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	AI Based Camera system for real time image processing
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	An AI based camera system represents a use case with a wide scope. There exist numerous potential application in the futures of Manufacturing such as for enabling real time process monitoring & control, quality control or for detection, processing and detection of polymer

	microparticles present in our rivers, lakes and the ocean.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	This use case development is a natural successor to a number of projects and programmes that KIT has been involved in during the previous programming periods on an EU level. It also coincides with the Helmholtz associations' current research goals within the Program-Oriented Funding Period (POF IV, 2021-2027) in particular in the programme "Information -Materials Systems Engineering" and is also influenced by previous EU projects within H2020, FP7 and POF III (2015-2019) "Key Technologies – Science & Technologies of Nanosystems" of the Helmholtz programme.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The use case aligns with the long term goals and expected impacts of future regional, national and EU policy development. It is especially important for enabling closed loop feedback control. The objective of this use case is to use AI technology to solve one of the key issues with enabling mass customization, which is the ability to capture a real time image of a component in production so as to conduct real time quality control and to automatically suggest suggestive action in case of deviations.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*

Use-Case Key Words		*Closed loop feedback control, Machine vision, AI camera*
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/02/2021*
	END DATE	*30/04/2022*
	DURATION IN MONTHS	*14*
IMPLEMENTATION	START DATE	*01/05/2022*
	END DATE	*30/04/2025*
	DURATION IN MONTHS	*36*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The application and implementation of AI efficiently for real applications in manufacturing is a challenge for the current generation manufacturing process chains, largely due to institutional policies, lack of infrastructure or other aspects such as cyber security issues. However, one aspect that is steadily by surely developing is the usage of AI for assisting with image processing. Through using Machine/deep learning algorithms it is possible to train machines and cameras to identify, sort and optimise components so as to achieve their intended dimensions, surface qualities or for optimisation of the whole process chain for improved productivity or throughput. This is to be done by developing AI based camera technology.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development*

	☒ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C29 - Manufacturing of Motor Vehicles, Trailers and Semi-Trailers***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The above is one example but the use case can still be applied for a range of manufacturing sectors.
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The intended solution will need to be jointly developed with CEUP PP that are experts in the field of AI. The solution and its application case is so far flexible and undecided. We are open to ideas.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	A solution such as this will act as a good demonstrator capable to showcasing as well as for implementation in an application industry. We have noticed that when conducting and designing process flows based on Industry 4.0 technologies, one aspect where we need support is within implementing the AI. Our own competencies lay in understanding the process and the physics behind it, which we are always happy to support with. A recent idea we have worked on is to develop an AI based camera that can identify microplastics in the ocean. There are many applications for similar technology and therefore this is a solution we propose for AI with a direct application in Manufacturing.

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	The intended impacts of the solution are as follow 1. AI cameras that can sort, identify, assess situations in manufacturing lines during production, sorting, logistics, quality control etc. are necessary for implementing a vision of the factory of the future. Its impact will therefore be large and definite. 2. This is also interesting in an academic point of view to progress the state of the art of AI implementation in Manufacturing through publications that will bring about larger adoption.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier	The Karlsruhe Institute of Technology (KIT) as "The Research University in the Helmholtz Association" is the only German university of excellence with a national large-scale research centre and is one of the leading centres for Knowledge and research in Germany and Europe. This is one of the strengths that KIT can bring into any project. The equipment, expertise, track record and wide network of stakeholders and partners.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	The Target groups are actually anyone that can apply, implement, support and commercialise the outputs as envisioned from the joint development of this use case.

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website.	Knowledge Supplier	As mentioned earlier, our expertise isn't in the development of AI solutions, and therefore for this use case to be realised we need expert input from AI experts. This use case will requires that the experts in AI take the drivers' seat as compared to the previous example.
	Organisation Name (n…) and short hyperlink to their website.	Knowledge Receiver	Same like above, the consortium is not ready yet however it will require the three types of stakeholders (Knowledge receiver, facilitator and Supplier) to be involved in the project to realise this use case.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	KIT as a research institute will require external funding through third party resources for realizing and participating in the project. KIT is able to contribute its own facilities and expert scientific and technical knowledge on the topic.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	Horizon Europe	
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The challenge is to really finding the correct partners who share or are willing to envision a vision on jointly further developing this idea and solutions. It needs cross disciplinary expertise in various topics within AI such as Computer vision, Deep learning, Natural Language processing etc. as well as expertise in topics of manufacturing such as production, logistics, quality control etc. and will therefore involve academic, industrial, knowledge transfer and intermediary		

	organisations across Europe. KIT as a learner in this TIN and general knowledge supplier on processes can provide as much information as possible to train and test the AI algorithms and devices in-house.
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	The CEUP PP covers a wide range of organization that have wide range of inter-disciplinary expertises. Within the CEUP PP, there already exists the competence to start working on a joint effort to tackle this topic. CEUP PP have expressed expertise in topics within AI where we are learners, and also are part of or coordinate wide networks within AI which can be tapped into for establishing a project team that can tackle this issue.
END OF TEMPLATE	

PARTNER INFORMATION	
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COUNTRY	*Germany*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Biodegradable polymers for 3D FFF and Inkjet Printing
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	One of the growing issues with 3D Printing is the continuous accumulation of polymer material, thus an increased waste generation and there is a lack of biodegradable polymers available commercially. Therefore we propose this solution to jointly develop materials for 3D Printing that are biodegradable. As experts in 3D Printing we are happy to provide any and all knowledge on process requirements, specifications, parameters etc. and to also conduct testing and validation of parameters in our large scale 3D Printing facilities.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.*	This use case development is a natural successor to a number of projects and programmes that KIT has been involved in during the previous programming periods on an EU level. It also coincides with the Helmholtz associations' current research goals within the Program-Oriented Funding Period (POF IV, 2021-2027) in particular in

Maximum 1000 Characters	the programme "Information -Materials Systems Engineering" and is also influenced by previous EU projects within H2020, FP7 and POF III (2015-2019) "Key Technologies – Science & Technologies of Nanosystems" of the Helmholtz programme.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The use case aligns with the long term goals and expected impacts of future regional, national and EU policy development. It is especially important for improving sustainable practices in manufacturing which is one of the important factors for long term green manufacturing planning. When more biodegradable polymers become available, it is going to allow greater capabilities for improved innovative products and applications. As a learner in this field we want to therefore push research and development in this topic and also have a number of application use cases that require using biodegradable polymers due to application area of the final functional device such as floating devices to be deployed in oceans.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Smart and Advanced Materials*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other:* _____
Use-Case Key Words	Biodegradable Materials, 3D Printing,
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/02/2021*
	END DATE	*30/04/2022*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

	DURATION IN MONTHS	*14*
IMPLEMENTATION	START DATE	*01/05/2022*
	END DATE	*30/04/2025*
	DURATION IN MONTHS	*36*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The challenge lies in the fact plastics have always been a big problem to the environment. When 3D Printing technologies saw relatively smaller adoption there wasn't a big issue with regards to wastes generated. However with time as 3D printing technologies saw mainstream adoption, this has started to become an issue. Wastes in 3D Printing largely come from failed builds, defected parts etc. that are disposed. This is the challenge we intend on tackling. Through developing materials that are removing or reducing the impact of printed components we reduce the overall environmental impact of the process.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☒ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*		***C29 - Manufacturing of Motor Vehicles, Trailers and Semi-Trailers***

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The above is one example but the use case can still be applied for a range of manufacturing sectors.
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The intended solution will need to be jointly developed with CEUP PP that are experts in the field of Smart and Advanced Materials. The solution and its application case is so far flexible and undecided. We are open to ideas. However, one solid place that we would like to start with is the joint development of new materials that can be printed using FFF or Inkjet Printing technology, which are chief technologies for polymer printing. These new materials should also possess similar or additional functionalities as offered by commercially available materials such as ABS or PLA. Additional functionalities that increase product innovation are capabilities such as conduction, insulation and even shape memory based actuation.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	A solution such as this will act as a good demonstrator capable to showcasing how green manufacturing can be achieved while also improving product and process innovation. One of the recent issues we are working on is the printing of functional devices that are to be deployed as drifters in oceans, where they have a fixed lifespan of sensing and operation, after which they need to be dissolvable and degradable into the ocean without causing adverse effects. The material(s) for such devices still need to be developed and this is why we propose this use case.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	The intended impacts of the solution are the generation of and access to novel materials / material classes suitable for green manufacturing with a low environmental impact meaning in addition to providing functionality to a part, at the end of their life cycle will disintegrate into their constituents. This creates a whole new range of

	potential applications and innovative products that fit in very well with the goals for sustainable manufacturing in the future.		
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier		The Karlsruhe Institute of Technology (KIT) as "The Research University in the Helmholtz Association" is the only German university of excellence with a national large-scale research centre and is one of the leading centres for Knowledge and research in Germany and Europe. This is one of the strengths that KIT can bring into any project. The equipment, expertise, track record and wide network of stakeholders and partners.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		The Target groups are actually anyone that can apply, implement, support and commercialise the outputs as envisioned from the joint development of this use case.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website.	Knowledge Supplier	As mentioned earlier, our expertise isn't in the area of materials development, and therefore for this use case to be realised we need expert input from smart & advance material experts. This use case will requires that the experts in smart & advanced materials take the drivers' seat.

	Organisation Name (n…) and short hyperlink to their website.	Knowledge Receiver	Same like above, the consortium is not ready yet however it will require the three types of stakeholders (Knowledge receiver, facilitator and Supplier) to be involved in the project to realise this use case.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	KIT as a research institute will require external funding through third party resources for realizing and participating in the project. KIT is able to contribute its own facilities and expert scientific and technical knowledge on the topic. In addition KIT has access to large 3D Printing facilities for testing and validation of materials.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	Horizon Europe	
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The challenge is to really finding the correct partners who share or are willing to envision a vision on jointly further developing this idea and solutions. It needs cross disciplinary expertise in various topics such as in smart material development and validation, material property simulation and modelling etc. as well as experts in 3D Printing process engineering and will therefore involve academic, industrial as well as knowledge transfer and intermediary organisations that span the whole of the EU in order to tap into large skill sets and to ensure that our solutions have a wider impact. KIT as a learner in this TIN and general knowledge supplier on processes can provide as much information as possible.		
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	The CEUP PP covers a wide range of organization that have wide range of inter-disciplinary expertises. Within the CEUP PP, there already exists the competence to start working on a joint effort to tackle this topic. CEUP PP have		

	mentioned expertises and capabilities in smart material development and deployment and are also able to tap in to their own networks of material scientists, therefore this combined with external participation could prove to be a recipe for success.

END OF TEMPLATE

PARTNER INFORMATION	
PARTNER	**KIT**
PARTNER'S RESPONSIBLE MANAGER	*Dr. Steffen Scholz*
E-MAIL:	*Steffen.scholz@kit.edu*
PHONE:	*[insert a contact phone number]*
REGION	*Baden-Württemberg*
COUNTRY	*Germany*

USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Stable Connected and collaborative Robotics
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Assembly using robotics has reached a level of automation, such as in the body shop in automotive manufacturing. However precision assembly of bespoke parts of small sizes or of different shapes is still a difficulty. The idea for this use case is the development of a production cell of interlinked robotic teams that are able to collaborate and are force sensitive. This should allow for a new level on robot-robot as well as robot-human collaboration in production lines.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	This use case development is a natural successor to a number of projects and programmes that KIT has been involved in during the previous programming periods on an EU level. It also coincides with the Helmholtz associations' current research goals within the Program-Oriented Funding Period (POF IV, 2021-2027) in particular in the programme "Information -Materials Systems Engineering" and is also influenced by previous EU projects within H2020, FP7 and POF III (2015-2019) "Key Technologies – Science & Technologies of Nanosystems" of the Helmholtz programme.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The use case aligns with the long term goals and expected impacts of future regional, national and EU policy development. It is especially important for improved digitalization and efficient automation in manufacturing. Within robotics, the efficiency criteria also include topics such energy

	and resource efficient path planning which is one of the important factors for long term green manufacturing planning.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Automation & Robotics*
PP's CAMI4.0 TIN ROLE	*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	*Advanced Automation, Robotics*
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/02/2021*
	END DATE	*30/04/2022*
	DURATION IN MONTHS	*14*
IMPLEMENTATION	START DATE	*01/05/2022*
	END DATE	*30/04/2025*
	DURATION IN MONTHS	*36*

CHALLENGE & CHALLENGE WHEEL ALIGNMENT	
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	The challenge is based on a number of issues that are faced while automating robotics. One of the main barriers with implementing collaborative robotics, is that it's not just a technological challenge but also one that requires a rethink of the Robot's role in a production environment. Though robots are machines, the trends now are focussed in using robots as supporting colleagues

	in a production line so that the best qualities of both a robot and a human being are utilised.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☒ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C29 - Manufacturing of Motor Vehicles, Trailers and Semi-Trailers***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The above is one example but the use case can still be applied for a range of manufacturing sectors.
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The intended solution will need to be jointly developed with CEUP PP that are experts in the field of Robotics and Automation. The solution and its application case is so far flexible and undecided. We are open to ideas, however one of the solid contribution KIT can make is the 3D Printing Industry 4.0 pilot line setup comprising of numerous printers as well as robots (Kuka as well

	as others) that can be dedicated for testing and developing this method.	
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	A solution such as this will act as a good demonstrator capable to showcasing how the next level of automation and collaborative robotics in manufacturing can be achieved.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	The impact of this can be far reaching, by continuing to use humans together with robots, the best qualities of both are brought out, which translates to better efficiency and improved decision making.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Supplier	The Karlsruhe Institute of Technology (KIT) as "The Research University in the Helmholtz Association" is the only German university of excellence with a national large-scale research centre and is one of the leading centres for Knowledge and research in Germany and Europe. This is one of the strengths that KIT can bring into any project. The equipment, expertise, track record and wide network of stakeholders and partners.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	The Target groups are actually anyone that can apply, implement, support and commercialise the outputs as envisioned from the joint development of this use case.

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website.	Knowledge Facilitator	The Project consortium will need organisations that are willing to implement the developed knowledge within the project and are able to disseminate to others within their sphere of influence.
	Organisation Name (n…) and short hyperlink to their website.	Knowledge Receiver	Same like above, the consortium is not ready yet however it will require the three types of stakeholders (Knowledge receiver, facilitator and Supplier) to be involved in the project to realise this use case.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	KIT as a research institute will require external funding through third party resources for realizing and participating in the project. KIT is able to contribute its own facilities and expert scientific and technical knowledge on the topic. In addition KIT can contribute its Industry 4.0 testbed for testing and validating the developments within the use case.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument’s intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	Horizon Europe	
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The challenge is to really finding the correct partners who share or are willing to envision a vision on jointly further developing this idea and solutions. It needs cross disciplinary expertise in various topics within robotics, automation as well as production engineering and will therefore involve academic, industrial as well as knowledge transfer and intermediary organisations that span the whole of the EU. KIT is a core member in this		

	TIN and can provide as much information as possible such as specification and requirements on process requirements and can also contribute our Industry 4.0 pilot line for full testing and validation in a real assembly line scenario.
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	The CEUP PP covers a wide range of organization that have wide range of inter-disciplinary expertises. Within the CEUP PP, there already exists the competence to start working on a joint effort to tackle this topic. CEUP PP have shown expertise in implementing projects that relates to automation and robotics and have wide spheres of influence in this topic and therefore this combined with external participation could prove to be a recipe for success.
END OF TEMPLATE	

8.6. AFIL

PARTNER INFORMATION	
PARTNER	**AFIL**
PARTNER'S RESPONSIBLE MANAGER	*Roberta Curiazzi*
E-MAIL:	*Roberta.curiazzi@afil.it*
PHONE:	*+393452835883*
REGION	*Lombardy*
COUNTRY	*Italy*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Fostering AI experiments development
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	The use-case will focus on the identification and development of AI experiments. AFIL will promote and support companies in the application of technologies for the realisation of AI solutions, fostering the exchange of good practices and the matching between technology providers and end-users. Local ecosystem will periodically meet to favour the realisation of experiments starting from specific companies' needs. Moreover, leveraging on its interregional network, AFIL will ensure the connection of local stakeholders with key partners in other regions, thus favouring cross-fertilisation. The cluster, through its scouting activities, will also ensure the identification of proper funding opportunities which may expand the experimentation, supporting the realisation of AI trials either at regional or EU level.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	AFIL will capitalise opportunities coming from other programmes in order to boost the development of promising AI experiments. More in details, open calls from ongoing projects will be promoted among the ecosystem targeting specifically funding for AI applications (e.g. AIREGIO H2020 Project, MADE Competence Center…).

	Besides concrete opportunities to be grasped from ongoing projects, the link with other relevant initiatives (e.g. Vanguard, S3Platform, EDIH) will be promoted to ensure the strategic positioning of stakeholders in innovation networks that may lead to the establishment of valuable cooperation. This use-case represents an opportunity for the cluster to further expand its roadmapping activities on Artificial Intelligence as well as to further promote the adoption of AI technologies among local SMEs and other stakeholders in its constituency. Indeed, starting from the needs highlighted by companies during focus groups and interviews, the development of dedicated experiments will be fostered capitalising different source of financing and matching the needs with available competences in the region and even outside.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	As mentioned before, the use-case will be fully aligned with the roadmapping activities which is coordinated by AFIL at regional level in order to ensure a value adding loop where companies highlight their innovation needs, the cluster transfers these priorities to the region who elaborates strategies accordingly and, eventually, proper actions are taken by the innovation ecosystem to solve the challenges initially expressed by companies. This loop is further (and constantly) fed with the needs of the companies which are continually evolving.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE	*Lead*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics*

	☐ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other:* _____
Use-Case Key Words	AI Experiments, Open Calls, interregional projects, best practice, cross-fertilisation
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	*N/A*

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/03/2021*
	END DATE	*31/05/2021*
	DURATION IN MONTHS	*3*
IMPLEMENTATION	START DATE	*30/06/2021*
	END DATE	*N/D*
	DURATION IN MONTHS	

CHALLENGE & CHALLENGE WHEEL ALIGNMENT	
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	Although many activities and investments are in place in the area of AI, there are still many companies, especially SMEs, who are struggling with the implementation of AI technologies in their production processes. However, challenges are diverse and every company needs to receive dedicated support and tailored-solutions to be implemented. In addition to workshops, events, courses which are intended to raise awareness on AI topics as well as improve competences and skills of companies, there is the need to promote the development of specific AI experiments, where technology providers are concretely supporting SMEs in the implementation of an AI-related solution, either leveraging on private or public funding.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME*

	☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☒ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	Transversal to all manufacturing sectors.
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	-
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	AFIL will contribute to the creation of a pre-competitive environment where companies and other local stakeholders can exchange their needs and solutions in a logic of open innovation. The establishment of this regional community will contribute to easily match the offer with the demand, thus fostering the definition and implementation of AI experiments. In this context, companies' needs and priorities can be constantly monitored with the twofold aim of delivering guidelines to policy makers and connecting the regional community with interregional networks active on the same topic. Accordingly, the activities in this use-cases may result in: - Definition and implementation of AI experiments leveraging on available

	funds (i.g. EU Open Calls AIREGIO – MADE open calls…) - Definition of use-case projects to be matched with the activities ongoing in ESM Pilot and the new AI Pilot within the Vanguard Initiative - Ensure the connection between the regional community and the EDIH initiatives that will be established in the upcoming months.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	AFIL is not a technical partner and therefore it is focusing on cooperation-oriented solutions, trying to capitalise the activities for its associates. More in details, AFIL will try to capitalise the technical information it is collecting through the AI roadmapping process creating synergies with other projects and initiatives in which it is involved. Thus, at the same time bringing concrete opportunities to its associate and engage them more in relevant interregional networks.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	This use-case aims to further increase the competitiveness of companies allowing them to extract all the potential from AI technologies. Accordingly, it will contribute to increase the competences and the knowledge of CE manufacturing system on AI. The impact will of course be even bigger if exchange of best practices and outcomes from these experiments will be promoted among different regions of CE, allowing to expand cooperation outside the boundaries of the regions leveraging on complementarities and synergies.

DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Knowledge Facilitator	AFIL as a technological cluster and in its role of community manager will promote the exchange of knowledge and competences among the stakeholders involved. Moreover, leveraging on its interregional network, AFIL will ensure the connection of the regional community with Italian, EU and global initiatives ongoing.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Knowledge Supplier Knowledge Receiver	Target group is quite heterogeneous a nd it is composed of companies, both end users as well as technology providers, research centres, universities and intermediaries who are interested in applying AI solutions or are willing to offer their knowledge and competences on AI technologies. While some of them, in particularly companies, will act as end-users, other technology providers, universities and research centres will bring to the table their competences and experiences, being "knowledge suppliers"

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website.	Choose an item.	Not defined yet
	Organisation Name (n…) and short hyperlink to their website.	Choose an item.	Not defined yet
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	This use-case is cooperation-based rather than technology-based, although it is conceived to address specific technical challenges. Therefore, investments are foreseen for human resources who will take care of establishing and animating the community of stakeholders. Financial resources will come either from the private funding of the organizations, or most probably, form public funding sources (i.e. open calls, vouchers…) In alignment with the activities ongoing in Vanguard Initiative and AIREGIO project, we will support companies involvement in these contexts and clearly express their needs in terms of AI solutions. During the “preparation period” we will define a strategy to introduce companies to these initiatives and evaluate their interest in addressing open calls on the topics on AI. During the implementation period, with the companies interested in this path we will guide them in the definition of technical experiments, with the support of technical experts, that might be presented under AIREGIO Open Calls,		

<table>
<tr><td></td><td colspan="2">opening in September 2021, or targeting other Open Calls. Similarly, other funding opportunities might be targeted at regional or national level.

As an output of this use-case we expect to have open calls proposal prepared by the companies and technology providers we supported in matching and finding the most appropriate funding instrument. In parallel, the discussion with regional stakeholders can support us in the definition of the needs and barriers that we can use to further improve the Artificial Intelligence Roadmap we are developing support Lombardy Region in the definition of future policies.</td></tr>
<tr><td>WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION
Choose the policy instrument type you will be targeting
&
Describe the policy instrument which will support you in delivering the use-case, clarifying:
• Programme Name;
• Managing Authority;
• Summary of Instrument’s intent (max 250 characters)</td><td>Funding Scheme

Subsidised Service

In case of other, Please clarify:
[Free Text Response]</td><td>As outlined before, the scouting activities will be the core of this use-case and will be aimed at identifying proper funding opportunities for the implementation of experiments outlined within the community.

In particular,

subsidized services can be useful to test/uptake innovative solutions by companies supported by tech providers. Similarly, funding scheme at regional or EU level could be strategic for the implementation of specific R&I projects.</td></tr>
<tr><td>WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING?

Maximum 1000 Characters</td><td colspan="2">Since no specific policy instrument is targeted, the challenge is to properly match available funding opportunities (both public and private) with the needs</td></tr>
</table>

	and the requirements of the stakeholders involved in the experiments. This use-case will contribute itself in the filling this gap for future policy instrument. Since, learning from the current experience, we can derive guidelines and recommendation for the Region and other policy maker, to better shape future policy.
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	n/a
END OF TEMPLATE	

PARTNER INFORMATION	
PARTNER	**AFIL**
PARTNER'S RESPONSIBLE MANAGER	*Roberta Curiazzi*
E-MAIL:	*Roberta.curiazzi@afil.it*
PHONE:	*+393452835883*
REGION	*Lombardy*
COUNTRY	*Italy*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Strategic Community on Additive Manufacturing
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Although many research and innovation activities are implemented around the topic of Additive Manufacturing, some challenges are still in place when it comes to the integration of additive manufacturing technologies in high volume production processes. Companies who want to benefit from additive manufacturing should be supported by academics and technology providers, in a logic of Open Innovation, to design and uptake the most efficient solutions both in terms of costs and resources.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.*	AFIL has been working for years on the topic of additive manufacturing, gathering a group of regional stakeholders and focusing in particular on materials for additive manufacturing, additive manufacturing technologies and EU value chains. This work contributed to the

Maximum 1000 Characters	development of a demo-case within the Vanguard Initiative targeting in particular "Metal additive manufacturing" and the establishment of an interregional network of infrastructure offering testing and other services to companies. At regional level the group has also been involved in a regional project funded by Lombardy Region ERDF - MADE4LO
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The establishment and development of a Strategic Community of Additive Manufacturing will contribute to the definition of R&I priorities on the topic, gathering the inputs of the regional innovation ecosystem (composed of companies, universities, research centers, intermediaries…) and outlining guidelines useful to support the development of regional policies. These inputs can be also capitalized and revised to support national and EU strategies on Advanced Manufacturing.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Intelligent Production Systems*
PP's CAMI4.0 TIN ROLE	*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☒ *Automation & Robotics* ☒ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	Additive Manufacturing, Open Innovation, R&I Priorities, High-volume production processes
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	*N/A*

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/03/2021*
	END DATE	*30/06/2021*
	DURATION IN MONTHS	*4*
IMPLEMENTATION	START DATE	*01/09/2021*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

	END DATE	*N/D*
	DURATION IN MONTHS	*After the community set-up, its activities will continue over time*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The integration of Additive Manufacturing (AM) technologies in high volume production processes is a challenge that many companies are still trying to overcome. Although this technology is drastically reducing waste and optimising the design and prototyping phases, cost and time are still not competitive to substitute traditional technologies. However, the potential behind additive manufacturing is high and should be properly exploited leveraging on an Open Innovation network in which companies, rather then doing R&I activities by themselves, can benefit from the competences and knowledge of an extended innovation ecosystem. In such a collaborative ecosystem many topics should be discussed leading to innovative solutions and to their integration in production processes. To complement the challenge of integrating AM in high volume production processes, several sub-challenges should be addressed (i.e. reuse of waste powder, material for AM, integration of AM with traditional technologies, data collection and analysis, new business models)
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☒ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C24 - Manufacturing of Basic Metal*** ***C25 - Manufacturing of Fabricated Metal Products*** ***C27 - Manufacture of Electrical Equipment*** ***C28 - Manufacturing of Machinery and Equipment*** Transversal to all manufacturing sectors, although the regional community is particularly focusing on these sectors
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	-
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The solution proposed is more cooperation-oriented rather than technology oriented and it is envisaging the creation of a Strategic Communities of stakeholders around the topic of Additive Manufacturing, with the aim to address the abovementioned challenges and contribute to the development and improvement of competencies in the region. Strategic communities are designed to aggregate and guide their participants in a structured path from raising awareness and knowledge on the topic until the uptake of the technologies, passing through the definition and implementation of R&I projects. The group, with the support of the cluster, will organise its activities considering the interests of the members and the specific development needs. The cluster will also ensure constant strategic alignment and effective connection with its activities, promoting: • Periodic meetings opened to the regional community • Dissemination of the progress achieved to the entire AFIL network, through dedicated events both at regional and interregional level • Definition of innovative projects to be implemented with the support of regional, national or EU instrument (if possible in synergies with ongoing initiative)

DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	AFIL is not a technical partner and therefore it is focusing on cooperation-oriented solutions, trying to capitalise the activities for its associates. While the topics emerged as significant from recent interactions with local stakeholders, the methodology proposed for the establishment of Strategic Communities has been designed by the cluster and will bring a strong value added to AFIL associates as well as to the extended network of EU partners.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	The impact of this solution will be amplified if implemented in synergies in other regions. Indeed, having structured group of stakeholder working on a targeted innovation area will promote the cooperation within the region but it will also facilitate the exchange and the connection among the ecosystems of different regions, thus capitalising complementarities and replicating best practices.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Knowledge Facilitator	AFIL as a technological cluster and in its role of community manager will promote the exchange of knowledge and competences among the stakeholders involved. Moreover, leveraging on its interregional network, AFIL will ensure the connection of the regional community with Italian, EU and global initiatives ongoing.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Knowledge Supplier OBJ Knowledge Receiver	Target group is quite heterogeneous and it is composed of companies, research centres, universities and intermediaries who are involved in R&I on Additive Manufacturing. While some of them, in particularly companies, will act as end-users, other technology providers, universities and research centres will bring to

			the table their competences and experiences, being "knowledge suppliers"
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website.	Choose an item.	Not defined
	Organisation Name (n…) and short hyperlink to their website.	Choose an item.	Not defined
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	This use-case is cooperation-based rather than technology-based, although it is conceived to address a technical challenge. Therefore, investments are foreseen for human resources who will take care of establishing and animating the community of stakeholders. Financial resources will come directly from the private funding of the organization, or, if synergies are envisaged, EU project could support the implementation of this use-case. During the "implementation phase", we will start approaching a small group of local stakeholders interested in joining the community to clearly identify the scope and the potential activities to be implemented. Once completed the implementation phase, the development will focus on the consolidation and		

	expansion of the community of stakeholders. Concretely speaking, this would result in the organization of periodic meeting where the communities will define a set of topics of interest to be addressed and potential innovation project to be implemented with the support of public funding. Therefore at the end of the period the use-case will have formulated a clear value proposition for the community highlighting the priorities to be investigated and the potential connections with stakeholders in other EU Regions (i.e. though the formal inclusion in Vanguard Initiative 3DPPilot)	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* • ***Programme Name;*** • ***Managing Authority;*** • ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme Subsidised Service Equipment/Infrastructure Finance **In case of other, Please clarify:** [Free Text Response]	As already said, this solution is focusing on fostering a cooperation approach to support companies in overcoming a targeted challenge. Therefore, we are not targeting specific policy instruments to foster the creation of a community. However, diverse policy instruments can be used to support potential projects that will emerge from the communities. In particular, **subsidized services** can be useful to test/uptake innovative solution by companies supported by tech providers. **Funding in equipment or infrastructures** could be strategic for research centers and universities to improve their laboratories, thus improving the services offered to companies. Finally, **funding scheme at regional or EU level** could be strategic for the implementation of specific R&I projects.

WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Highlighting the priorities connected to the development and integration of AM technologies, could support policy maker in better shaping all the types of instruments above mentioned, making sure that they are fitting with the needs of the ecosystem and they are designed to overcome specific still existing gaps.
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	n/a
END OF TEMPLATE	

PARTNER INFORMATION	
PARTNER	**AFIL**
PARTNER'S RESPONSIBLE MANAGER	*Roberta Curiazzi*
E-MAIL:	*Roberta.curiazzi@afil.it*
PHONE:	*+393452835883*
REGION	*Lombardy*
COUNTRY	*Italy*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Innovation Days on Robotics and Automation
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	This use-case is focusing on raising awareness on key aspects and sub-topics related to Robotics and Automations among companies and their employees. Indeed, besides many opportunities, emerged in the latest period, connected to I4.0 topics there is still the need of boosting the competences and the knowledge on these technologies to allow companies grasping their full potential. Accordingly, we would like to plan a series of Innovation Days, namely events/workshops/lessons with the support of key experts targeting: • Upgrade Employee Skillset and Training • Awareness creation and innovation scouting • Sharing good practices and favouring cross-fertilisation • Support in project ideas generation

	For the implementation of this use-case synergies and collaboration might be established with other partners interested in participating/contributing/hosting some sessions of Innovation Days
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	The actions envisaged in this use-cases are fully aligned with the activities AFIL is promoting at regional level toward its community of stakeholders. Thanks to the support of CEUP2030 project, there will be the opportunity of enlarging the scope and the outreach of such initiatives. Indeed, exchanges and cross-fertilisation activities are foreseen around the targeted topics. Moreover, considering in particular the scope of "Training and Upgrading employees skills", the outcomes from ERASMUS+ projects in which AFIL is involved can be capitalised. Similarly, with the aim to further support project ideas that might emerge from these Innovation Days, we will promote synergies with other programmes and projects which are offering cascade funding for the realisation of specific applications.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The frequent interactions with companies on the topic of Robotics and Automations will contribute to the identification of remaining gaps between R&I activities and uptake of the technologies in the industrial context. Therefore, we will have the opportunity to continue the roadmapping activities highlighting the R&I priorities connected to the topic, gathering the inputs of the regional innovation ecosystem (composed of companies, universities, research centers, intermediaries…) and outlining useful guidelines to support the development of regional policies. These inputs can be also capitalized and revised to support national and EU strategies on Advanced Manufacturing.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Automation & Robotics*

PP's CAMI4.0 TIN ROLE		*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY		***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words		Robotics, Automation, Cross-fertilisation, Best practice, skills, competences
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised fr om a good practice which is already in existance.*		
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/03/2021*
	END DATE	*30/06/2021*
	DURATION IN MONTHS	*4*
IMPLEMENTATION	START DATE	*01/10/2021*
	END DATE	31/03/2022
	DURATION IN MONTHS	*6*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		One on the biggest barriers to Robotics and Automations technologies uptake is still represented by the reluctancy and the lack of skills of employees and operators, who often are not able to overcome cultural and knowledge gaps. Companies should get their workforce involved in the transformation, in particular if automation and robotics technologies affect traditional employees' operations. Besides raising awareness on changes and their potential and concrete impacts, operators should be supported through dedicated trainings to increase their competences and skills.

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	In addition to this, there are still other (non-technological) barriers that sometimes imped the implementation of these technologies, such as ethical and legal aspects, safety, security and ergonomics, cybersecurity, data management. Also in this case, there is the need to raise awareness among companies on these specific issues.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☐ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☒ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	This use-case is targeting a pool of technologies that can be potentially implemented in different manufacturing sectors to address various challenges
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	-
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	Given the background of AFIL, the solution proposed is more cooperation-oriented rather than technology-oriented and it is envisaging the organisation of a series of events/workshops/ visits/webinars called “Innovation Days” which are mainly targeting companies looking for increasing their

	awareness and competences on Robotics and Automation. These Innovation Days will be organised by AFIL with the support of technical stakeholders (*i.g. experienced companies, technical providers, research centers, universities)* offering their competences, knowledge and experiences to enrich the content of the activities that will be organised. CEUP2030 partners are more than welcome to contribute to this use-cases in case they are sharing the same interests in the proposed methodology. If, potential cooperation will be envisaged in this direction, bilateral exchanges or co-organised workshop should be included in the programme of Innovation Days, ensuring an interregional dimension to the use-case. More in concrete, the Innovation Days programme will target the following aspects: • Upgrade Employee Skillset and Training • Awareness creation and innovation scouting • Sharing good practices and favouring cross-fertilisation • Support in project ideas generation The programme could be also enriched on the basis of a survey that may be designed and circulated among companies with the aim to define needs to be addressed in Innovation Days.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	AFIL is not a technical partner and therefore it is focusing on cooperation-oriented solutions, trying to capitalise the activities for its associates. Considering its mission and scope and the activities already organised in the past on this topic, AFIL proposed this format of "awareness and exchange programme" to offer a structured path for its companies' growth.

DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.*	The impact of this solution will be amplified if implemented in synergies with other regions, even outside CE area. Indeed, it would contribute to share the competences available in different regions and exchange best practice coming form companies, thus favouring cross-fertilisation at territorial and sectoral level.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Knowledge Facilitator	AFIL as a technological cluster and in its role of community manager will promote the exchange of knowledge and competences among the stakeholders involved. More over, leveraging on its interregional network, AFIL will ensure the connection of the regional community with Italian, EU and global initiatives ongoing.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Knowledge Receiver	Target group is quite heterogeneous and it is composed of companies, research centres, universities and intermediaries who are involved in R&I on Smart products. While some of them, in particularly companies, will act as end-users, other technology providers, universities and research centres will bring to the table their competences and experiences, being "knowledge suppliers"

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	TBD	Knowledge Supplier	Not defined yet. Many organisations will be involved in the role of knowledge supplier to contribute with technical content to the Innovation Days
	TBD	Other (please clarify)	We will look for potential partners within CEUP2030 and in other synergic projects in order to bring our programme at interregional level, organising bilateral exchanges among the regions involved
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	This use-case is cooperation-based rather than technology-based, although it is conceived to address a technical challenge. Therefore, investments are foreseen for human resources who will take care of organizing the Innovation Days and eventually to cover costs connected to the successful implementation of the program (i.g catering costs, experts costs…). Financial resources will come directly from the private funding of the organization, or, if synergies are envisaged, EU project could support the implementation of this use-case. In particular, during the development period we will take care of evaluating the feasibility and the interest around the organisation of Innovation Days, especially gathering the interest of other regions/partners. In parallel, we would collect from companies and the so called “knowledge receivers” input on what they need and would prefer to explore during the Innovation Days having different type of experts available. Then in the “implementation phase” we will organise the workshops according to the planning made, that will consist of two or more days of technical		

	laboratories/training on specific aspects connected to Robotics and Automation *(i.e. AI in Robots, Humans-Robot collaboration, Automation and ethical aspects, Safety and ergonomics in the workplace)*	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* • ***Programme Name;*** • ***Managing Authority;*** • ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme Subsidised Service Equipment/Infrastructure Finance **In case of other, Please clarify:** [Free Text Response]	As already said, this solution is focusing on fostering a cooperation approach to support companies in overcoming a targeted challenge. Therefore, policy instruments will not contribute directly on the use-case, which is fostering the creation of a community. However, diverse policy instruments can be used to support potential projects that will emerge. In particular, **subsidized services** can be useful to test/uptake innovative solution by companies supported by tech providers. **Funding in equipment or infrastructures** could be strategic for research centers and universities to improve their laboratories, thus improving the services offered to companies. Finally, **funding scheme at regional or EU level** could be strategic for the implementation of specific R&I projects.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Highlighting the priorities connected to these topics, could support policy maker in better shaping all the types of instruments above mentioned, making sure that they are fitting with the needs of the specific needs detected form the ecosystem and they are designed to	

	overcome specific still existing gaps. These gaps could be both technical and not technical and they are related on one side to the implementation of R&A technologies in the processes and on the other side to improvement of knowledge and skills in companies. Thanks to the information that could be collected to properly shape the innovation days, we could derive guidelines and recommendation for the Region and other policy maker, to better shape future policy.
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	n/a
END OF TEMPLATE	

PARTNER INFORMATION	
PARTNER	**AFIL**
PARTNER'S RESPONSIBLE MANAGER	*Roberta Curiazzi*
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REGION	*Lombardy*
COUNTRY	*Italy*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Strategic Community on Smart Materials
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Plastic sector is one of the most relevant area for Lombardy economy and AFIL constituency involves a good number of stakeholders operating in this field. However, the activities in this context were mainly associated to sustainability and Circular Economy rather than on innovative materials. Since this is a key aspect for the future development of this sector, AFIL wants to foster the creation of a new Strategic Community focused on functional plastics.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.*	AFIL is involved in the Vanguard Initiative since 2013 co-coordinating the Efficient and Sustainable Manufacturing Pilot. In this framework, one of the demo-case, led by Auvergne Rhone Alpes, is focusing on Polymer-

Furthermore, describe how this use case relates to the PP's current activities at regional or national level. *Maximum 1000 Characters*	based functional products. In this context, Lombardy contribution was mainly connected to sustainable coating and surface treatments on polymers, but given the interest of our associates, there will be the opportunity to establish and favor the growth of a community around the topic of functional polymers, with a specific focus on textile applications.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The establishment and development of a Strategic Community on Smart Materials will contribute to the definition of R&I priorities on the topic, gathering the inputs of the regional innovation ecosystem (composed of companies, universities, research centers, intermediaries…) and outlining guidelines useful to support the development of regional policies. These inputs can be also capitalized and revised to support national and EU strategies on Advanced Manufacturing.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	Smart and Advanced Materials
PP's CAMI4.0 TIN ROLE	Learner
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	Functional Polymers, Open Innovation, R&I Priorities, Textile, plastics
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good practice which is already in existance.*	https://s3platform.jrc.ec.europa.eu/efficient-and-sustainable-manufacturing

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/03/2021*
	END DATE	*30/06/2021*
	DURATION IN MONTHS	*4*
IMPLEMENTATION	START DATE	*01/09/2021*

	END DATE	*N/D*
	DURATION IN MONTHS	*After the community set-up, its activities will continue over time*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Integration of functions and added-value products combining electronic, light and/or sensing features into polymeric components are in high demand and rapid development for several markets and applications. The main areas of technological interest and business potential are the following: • Electronics embedded or integrated in plastic components through different process technologies • Development, redesign, testing, validation and scale up for materials, processes and components As said above, this challenge is addressed by one of the demo-case within ESM Vanguard Pilot and AFIL recognised the potential interest for some of its members operating in electronics or plastic sector, but even in textile context considering the specific applications that can be implemented.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☒ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☒ *Service and Repair* ☐ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C22 - Manufacturing of Rubber and Plastic Products*** ***C13 - Manufacturing of Textiles***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	-
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The solution proposed is more cooperation-oriented rather than technology oriented and it is envisaging the creation of a Strategic Communities of stakeholders around the topic of Smart Materials, with the aim to address the above-mentioned challenges and contribute to the development and improvement of competencies in the region. Strategic communities are designed to aggregate and guide their participants in a structured path from raising awareness and knowledge on the topic until the uptake of the technologies, passing through the definition and implementation of R&I projects. The group, with the support of the cluster, will organise its activities considering the interests of the members and the specific development needs. The cluster will also ensure constant strategic alignment and effective connection with its activities, promoting: • Periodic meetings opened to the regional community • Dissemination of the progress achieved to the entire AFIL network, through dedicated events both at regional and interregional level • Definition of innovative projects to be implemented with the support of regional, national or EU instruments (if possible in synergies with ongoing initiative)
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN	AFIL is not a technical partner and therefore it is focusing on cooperation-oriented solutions,

Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. *Maximum 1000 Characters*	trying to capitalise the activities for its associates. While the topics emerged as significant from recent interactions with local stakeholders, the methodology proposed for the establishment of Strategic Communities has been designed by the cluster and will bring a strong value added to AFIL associates as well as to the extended network of EU partners.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.*	The impact of this solution will be amplified if implemented in synergies in other regions, even outside CE area leveraging on the already established network of Vanguard ESM. Indeed, having structured group of stakeholders working on a targeted innovation area will promote the cooperation within the region but it will also facilitate the exchange and the connection among the ecosystems of different regions, thus capitalising complementarities and replicating best practices.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Knowledge Facilitator	AFIL as a technological cluster and in its role of community manager will promote the exchange of knowledge and competences among the stakeholders involved. More over, leveraging on its interregional network, AFIL will ensure the connection of the regional community with Italian, EU and global initiatives ongoing.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Knowledge Supplier Knowledge Receiver	Target group is quite heterogeneous and it is composed of companies, research centres, universities and intermediaries who are involved in R&I on Smart products. While some of them, in particularly companies, will act as end-users, other technology providers, universities and

			research centres will bring to the table their competences and experiences, being "knowledge suppliers"
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* • ***Knowledge Supplier*** • ***Knowledge Receiver*** • ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website.	Choose an item.	Not defined
	Organisation Name (n…) and short hyperlink to their website.	Choose an item.	Not defined
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	This use-case is cooperation-based rather than technology-based, although it is conceived to address a technical challenge. Therefore, investments are foreseen for human resources who will take care of establishing and animating the community of stakeholders. Financial resources will come directly from the private funding of the organization, or, if synergies are envisaged, EU project could support the implementation of this use-case. During the "implementation phase", we will start approaching a small group of local stakeholders interested in joining the community to clearly identify the scope and the potential activities to be implemented. Once completed the implementation phase, the		

	development will focus on the consolidation and expansion of the community of stakeholders. Concretely speaking, this would result in the organization of periodic meeting where the communities will define a set of topics of interest to be addressed and potential innovation project to be implemented with the support of public funding. Therefore at the end of the period the use-case will have formulated a clear value proposition for the community highlighting the priorities to be investigated and the potential connections with stakeholders in other EU Regions (i.e. though the formal inclusion in Vanguard Initiative ESM Pilot)	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* • ***Programme Name;*** • ***Managing Authority;*** • ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme Subsidised Service Equipment/Infrastructure Finance **In case of other, Please clarify:** [Free Text Response]	As already said, this solution is focusing on fostering a cooperation approach to support companies in overcoming a targeted challenge. Therefore, policy instruments will not contribute directly on the use-case, which is fostering the creation of a community. However, diverse policy instruments can be used to support potential projects that will emerge from the communities. In particular, **subsidized services** can be useful to test/uptake innovative solution by companies supported by tech providers. **Funding in equipment or infrastructures** could be strategic for research centers and universities to improve their laboratories, thus improving the services offered to companies.

		Finally, **funding scheme at regional or EU level** could be strategic for the implementation of specific R&I projects.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Highlighting the priorities connected to the design and development of smart materials, could support policy maker in better shaping all the types of instruments above mentioned, making sure that they are fitting with the needs of the ecosystem and they are designed to overcome specific still existing gaps.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	n/a	
END OF TEMPLATE		

8.7. SIIT

PARTNER INFORMATION	
PARTNER	**SIIT**
PARTNER'S RESPONSIBLE MANAGER	Giulia Barbagelata
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REGION	Liguria
COUNTRY	Italy
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE Limit to 50 Characters	Automation Research Infrastructure
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. Maximum 1000 Characters	The Automation Research Infrastructure will operate with reference to the development of studies and specific R&D activities, specifically: • sensory area (e.g. image processing, pattern recognition and in general on the topic of "intelligent sensors" • system computational area: advanced supports for design and validation, real time problems ", easy technological upgrade, scalability of supervision, control and maintenance interoperability, human-machine interactions, reconfigurability of AI and support techniques to the decision, diagnostics "on line etc." • actuation area ("robotics, micromechanics actuators)
CAPITALIZATION & CROSS PROGRAMME COLLABORATION Describe how results and insights from other programmes have been capitalised to support this use-cases' development. Furthermore, describe how this use case relates to the PP's current activities at regional or national level. Maximum 1000 Characters	The Technology District supports the growth of high technology companies by creating a permanent exchange of knowledge between Large Industry, Small and Medium Enterprises, Universities, Research Centers and Institutions. In 2016, SIIT set up SharedLab Liguria, a lab, which is shared, promoted and supported along with the participation of some Ligurian and UNIGE companies, which collaborate on the issues of Industry 4.0. Involving talent, companies, public and private funding, SIIT develops programs and projects with strong repercussions on the Ligurian entrepreneurial fabric. With this action, it aims to the growth in the supply potential of individual SMEs and that of finding financing and activating/increasing business opportunities

LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe) Maximum 1000 Characters	Foster collaboration between industries and groups of SMEs organized in dynamic and competent networks on specific important issues already manned by the SIIT network, in the 2 Poles and in the 4 National Clusters CTN Intelligent Factory, CTN Smart Communities CTN Trasporti, CTN Aerospace). Allow adequate local visibility of these networks to institutions and large companies that are members of SIIT and other large companies accessible through the national cluster networks, to promote further actions at national and International level, also through the Digital Innovation Hub
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	Automation & Robotics
PP's CAMI4.0 TIN ROLE	Core
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	**Choose as many secondary influencing technologies that apply;** ☐ Intelligent Production Systems ☐ Automation & Robotics ☐ Smart and Advanced Materials ☐ Artificial Intelligence ☐ Other: _____
Use-Case Key Words	Automation, Research, Infrastructure, lab
FURTHER INFORMATION: Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.	

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/07/2020*
	END DATE	*30/04/2021*
	DURATION IN MONTHS	*10 months*
IMPLEMENTATION	START DATE	*03/05/2021*
	END DATE	*28/04/2023*

	DURATION IN MONTHS	*24 months*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge. 1000 Characters in English		An increasing critical role of software in the conceptualization, design and development of innovative automation systems has been noted. The distribution of intelligence in various parts of the system, and the emerging need for dynamic access to external data, considerably increases the complexity of definition and systems management, both in terms of R&D and in terms of validation, operational release and maintenance. The distribution of intelligence leads to the definition of new architectures, in which large quantities of heterogeneous systems have to collaborate dynamically, often with the ability to interact through links whose characteristics are not exactly known a priori or in any case whose performance is not guaranteed This requires new definitions of "open standards and interfaces interoperable. It is therefore necessary to design new tools and solutions industrially applicable in critical domains such as system design, distributed architectures computing platforms security, middleware
TARGET STAKEHOLDER GROUP Choose the target stakeholder who faces this challenge.		**Choose as many which will apply** X Large Enterprises X SME ☐ Higher Education & Research Organisation ☐ Business Support Organisation ☐ Schools and Training Institutes
MAUFACTURING VALUE CHAIN Choose the area of manufacturing which is impacted by this challenge.		**Choose as many which will apply** ☒ Research & Development ☐ Design ☐ Procurement ☒ Manufacturing ☐ Distribution ☐ Marketing / Sales ☐ Service and Repair ☐ De or Re-Manufacturing ☐ Recycling and End of Life Management

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

MANUFACTURING SECTOR Choose the manufacturing sector which faces the specific challenge.	**C28 - Manufacturing of Machinery and Equipment**
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.	Key objectives Development of middleware layers for environments "to support" multi-domain "applications Development of architectures and platforms that support the easy scalability and technological evolution of systems Development of SW tools to support rapid design and prototyping
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters	The structure of SIIT and its contacts, in addition with its vast network of technical provider, has given the company the possibility of understanding the challenge and the lack of solutions in today's industry. For this reason, this action is being undertaken.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.	System modeling techniques, with the possibility of being able to effectively define processes and subsystems in the domain applicable to interactions Design methodologies based on reuse through object libraries Management of significant quantities of information, including heterogeneous ones, with extraction of "data of interest and addressing to the various actors of the process (artificial intelligence techniques, decision support systems, ontology agents, knowledge filters

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	Methodologies and techniques for sustainable management systems "" (processes and materials) Advanced software technologies, coexistence with legacy systems (emerging languages and platforms, advanced methods of design, verification and validation in the operating environment, standards Interoperability techniques at the level of the entire "value chain" and of the network of the specific domain	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION Describe your organisation's role in the solution delivery. Choose specifically the technology transfer tree „role" in the completion of this: - **Knowledge Supplier** - **Knowledge Receiver** - **Knowledge Facilitator**	Knowledge Facilitator	SIIT will expand and strengthen the relationships between companies seeking technological innovation and the Departments / Research Bodies, helping to make it faster and more dynamic Organize and coordinate partnerships for participation in national and international research calls Propose and provide associated companies with multidisciplinary solutions of technological innovation (Open innovation approach), acting as a single interlocutor
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description. Choose specifically the technology transfer tree „role" in the completion of this: - **Knowledge Supplier** - **Knowledge Receiver** - **Knowledge Facilitator**	Knowledge Receiver	It should be noted that the initiative aims to be extremely inclusive and potentially extendable progressively to all SMEs registered in the SIIT PMI and Polo SOSIA

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template. Choose specifically the technology transfer tree „role“ in the completion of this: - **Knowledge Supplier** - **Knowledge Receiver** - **Knowledge Facilitator**	Stam Srl	Knowledge Facilitator	Stam will support these activities with its technological team
	DIME	Knowledge Facilitator	DIME is a UNIGE department with competences in the automation field. It will act as knowledge facilitator
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.	Internal personnel will be used. Funding might take advantage from calls from FILSE		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION Choose the policy instrument type you will be targeting **&** Describe the policy instrument which will support you in delivering the use-case, clarifying: - **Programme Name;** - **Managing Authority;** - **Summary of Instrument's intent (max 250 characters)**	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	FILSE (Regional instrument)	
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? Maximum 1000 Characters	Growth of the supply potential of individual SMEs both by finding financing and for activating / increasing business opportunities There are many challenges connected with the lack of funds and the need to improve stakeholder competences. What SIIT is trying to do with this network is spreading knowledge and creating synergies.		

WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? Maximum 1000 Characters	NA
END OF TEMPLATE	

PARTNER INFORMATION	
PARTNER	**SIIT**
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USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	NECSTEPS
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Networking European hubs against Covid-19 criSis To accElerate Use cases by high-tech Smes
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	During the last year, we saw an effective top-down approach with a number of on-going EC funded initiatives redirecting resources to launch specific calls to support COVID-19 use cases. In parallel, many regional Technology and Innovation Hubs across Europe were able, since the coronavirus outbreak, to engage at local scale SMEs, large companies, hospitals and care providers, knowledge providers and hubs, bank foundations and regional development agencies, industrial and third sector associations (e.g. volunteers) as well as a number of public stakeholders to deal with the Coronavirus emergency. The overall goal of the NECSTEPS use case is to bring together Hubs across the EU to accelerate, through their assets and lab to fab services, high TRL SME driven innovation use cases through conformity assessment with large-scale testing, piloting, and deployment in healthcare facilities or similar relevant environments

LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	Conformity assessment is key to guarantee real applications and as such cumulative knowledge, AI-driven self-assessment tool. Data are a valuable resource to enable fast response and deploy solutions, so the NECSTEPS integrated framework will have a central data repository where data flow, storage, analytics, and application will be managed for both solution providers and end users. The goal is also to use the experience gained as a blueprint to further develop HUBs service capacities and for SME innovation support policy setting in case of future emergencies that arise.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☒ *Other: ___Medical*
Use-Case Key Words	COVID-19, Network of European Hubs, photonics, artificial intelligence, med-tech, telemedicine
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*21/05/2021*
	END DATE	*21/09/2021*
	DURATION IN MONTHS	*4*
IMPLEMENTATION	START DATE	*01/01/2022*
	END DATE	*31/12/2023*
	DURATION IN MONTHS	*24*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	The ambition of NECSTEPS is to support fast implementation of high promising use cases by high-tech SMEs with high potential to help dealing with the COVID-19 crisis and possible future emergencies. In order to support a holistic approach at the crossing of Medtech, digital tools, photonics, advanced materials, and artificial intelligence the use case tackles all the five areas l. NECSTEPS will provide a clear and measurable short-term contribution to the development and deployment of innovative, adaptive, resilient solutions that can quickly address immediate needs in the European health and social care provision
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☐ *Large Enterprises* ☒ *SME* ☐ *Higher Education & Research Organisation* ☐ *Business Support Organisation* ☐ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	

DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	To deliver lab to fab and conformity assessment services to the SMEs involved the ultimate goal is to mobilise high TRL innovations as promising solutions to contain and mitigate the outbreak while providing better care for patients, survivors, vulnerable groups, frontline (health) care staff and their communities as main users, with public agencies, care providers and other employers as main procurers.	
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	This solution was chosen to contribute to proposing recommendations for changes that would allow a fast recovery and a better preparedness, including in the health care systems, for future health emergencies.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.*	To accelerate the deployment and market uptake of mature health technologies for the prevention and optimised treatment of the COVID-19 disease, by delivering results within 3-24 months to end-users at scale.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	Will work on involving the SMEs
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver***	Knowledge Receiver	We expect to make an immediate impact in improving the quality of life of the most vulnerable and the well-being and operational capacity of frontline workers as well as those workers involved in manufacturing of the

- ***Knowledge Facilitator***			solutions and their distribution, since the logistics and supply chain is a critical element to guarantee resilience. Indeed, a clear impact of the use case is to foster new effective approaches for multi-level cooperation between, local, regional, national, and EU-levels based on promising initiatives at the core of the use case which proved in the last few months singularly a faster, more impactful, cost-effective and larger scale.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	STAM	Knowledge Supplier	STAM will manage the development of the digital tools and platform to enable the ecosystem, in line with its experience in major EU funded open innovation initiatives. STAM will be involved in delivering system integration as well as business modelling services across the Trailblazer and SME innovation use cases portfolio.
	Eindhoven University of Technology	Knowledge Supplier	TU/e leverages the liaisons among research groups on photonic technologies, Terahertz technologies, AI, and 5G networks and PITC for contributing to the accelerate the response of such technology application to pandemic

			mitigation. Furthermore, TU/e leverage too on its alliance with regional and nation innovation hub such Eindhoven Brainport and PhotonDelta and PITC. TU/e will be involved in the use case as lab to fab service provider and Gate Keeper for Area 1, supporting the scale up of SME use cases and the supervision of the running use cases in the relevant area.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	A tentative budget and action plan for this plan is being developed. What is going to be needed is both human resources and shared infrastructure.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]		Horizon Europe HORIZON-HLTH-2021-STAYHLTH
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	To bring the most promising ideas from lab to real world application and support the most innovative SMEs, including start-ups, to scale up their ideas.		
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS?	N/A		

Maximum 1000 Characters	
END OF TEMPLATE	

PARTNER INFORMATION	
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REGION	Liguria
COUNTRY	Italy
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE Limit to 50 Characters	EU-ALLIANCE
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. Maximum 1000 Characters	EUropean ALLiance for International business development on Advanced materials and coNnectivity for defenCe and sEcurity markets
CAPITALIZATION & CROSS PROGRAMME COLLABORATION Describe how results and insights from other programmes have been capitalised to support this use-cases' development. Furthermore, describe how this use case relates to the PP's current activities at regional or national level. Maximum 1000 Characters	EU-ALLIANCE will aim to support SMEs internationalization of leading European clusters in the fields of technical textile, connectivity, deep tech and advanced materials to address dual-use markets in four targeted countries: The United States, Canada, Japan and Indonesia. The key objective will be to help SMEs in the global competition in providing internationalisation customized services to enter new international markets and in organising a delegation of SMEs supporting by the partners in the four targeted countries. The clusters will capitalise on their existing connections in each country to maximize the benefits for SMEs. The concept will create synergies between cluster and SME policy support programmes from DG GROW and KET's from DG RTD and support regional growth via inclusive S3 strategies.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) Describe the long-term impact of this use-case on regional, national or EU Policy	EU-ALLIANCE is looking at the core technologies priorities defined by the European commission through the establishment of 6 broad Key Enabling Technologies (KETs). Among the six KETs, EU-ALLIANCE addresses one of them: advanced materials. Advanced materials

Development (especially Green Deal and Digital Europe) Maximum 1000 Characters	generally mean materials that have novel or enhanced properties that improve performance over conventional products and processes. Technical textiles are encompassed in this definition because they basically develop and add new capabilities to existing or new materials. In addition, the use case is committed to ensure strong additional cross sectoral synergies with ongoing top European priorities such as the Green Deal.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	Smart and Advanced Materials
PP's CAMI4.0 TIN ROLE	Learner
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	**Choose as many secondary influencing technologies that apply;** ☐ Intelligent Production Systems ☐ Automation & Robotics ☐ Smart and Advanced Materials ☐ Artificial Intelligence ☐ Other: _____Defense_____
Use-Case Key Words	SMEs, B2B, clusters, internationalisation, security, defence, dual use, ICT, textile, advanced materials, photonic, cybersecurity, cross border, cross sectoral, policy makers, smart specialisation
FURTHER INFORMATION: Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.	

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/10/2020*
	END DATE	*31/12/2020*
	DURATION IN MONTHS	*2*
IMPLEMENTATION	START DATE	*01/12/2021*
	END DATE	*30/11/2023*
	DURATION IN MONTHS	*24*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		

DESCRIBE THE CHALLENGE Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge. 1000 Characters in English	The current Covid-19 pandemic has increased the need for a strong and common European defence and security policy. Today, the reinforcement of European capabilities through dedicated actions to sustain and strengthen the European Defence Technology and Industrial Base, EDTIB, is crucial1. In this context, dual-use products are key because it enables companies providing these technologies to target a wide market. It is a win-win situation for large companies and SMEs as well as for those that are active both in the defence and civil sectors, as new opportunities for diversification arise. For the defence industry, new markets can be opened and civil industry can penetrate a rather closed market by adapting their products and services.
TARGET STAKEHOLDER GROUP Choose the target stakeholder who faces this challenge.	**Choose as many which will apply** ☒ Large Enterprises ☒ SME ☐ Higher Education & Research Organisation ☐ Business Support Organisation ☐ Schools and Training Institutes
MAUFACTURING VALUE CHAIN Choose the area of manufacturing which is impacted by this challenge.	**Choose as many which will apply** ☒ Research & Development ☐ Design ☐ Procurement ☒ Manufacturing ☐ Distribution ☐ Marketing / Sales ☐ Service and Repair ☐ De or Re-Manufacturing ☐ Recycling and End of Life Management
MANUFACTURING SECTOR Choose the manufacturing sector which faces the specific challenge.	**C13 - Manufacturing of Textiles**
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	

TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.	The partners will focus on implementing their internationalisation, the key objective is to support SMEs in the global competition in providing SMEs with internationalisation customized services to enter new international markets and in organising a delegation of SMEs supported by the partners in the four targeted countries. They will have the opportunity to meet with the main local actors in their fields thanks to partnerships already and will get the chance to showcase their products and services. EU-ALLIANCE will promote its services offering towards all SMEs and encourage them to participate in the activities, particularly those which have not previously been involved in defence or dual-use programmes. The approach designed by the partners seek to support beginners in the export markets as well as experienced SMEs. The approach designed by the EU-ALLIANCE use case seeks to ensure strong synergies between cluster and SME policy support programmes from DG GROW and KET policies supported by DG Research and Innovation and play a key role in supporting the European growth and competitiveness agenda by providing SMEs with the qualified networks, tools and support to deliver their products and services at an international level. The approach will also build on the interregional innovation collaboration encouraged by DG Regio (S3P Industrial Modernisation, Vanguard etc).
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters	EU-ALLIANCE aims to support SMEs internationalisation in the fields of technical textile, connectivity and advanced materials to address dual use markets in four targeted countries: The United States, Canada, Japan and Indonesia. The different partners are complementary to each other in terms of skills, networks, SME members and international experiences to set up the most efficient partnership possible and demonstrate their abilities to work together in a cross sectoral environment. In this regard, the use case will clearly intensify cluster and business network collaboration across borders and across sectoral boundaries.

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DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.	Achieving the EU's climate and environmental goals requires a new industrial policy based on the circular economy. In this sector, textile and electronics are two major sectors targeted and that we should collectively address, and which are at the heart of our use case targeted markets. EU-ALLIANCE partners will engage its SMEs strategies keeping in mind this objective. The activities will promote the recycling business opportunities our companies could benefit from in addressing this thematic. The transition is an opportunity to foster sustainable and job-intensive economic activity. The recycling possibilities are a way to increase growth and develop a positive brand image, which is vital in our competitive world. At the international level, it can be a topic of innovative and research use cases. At the same time, it will show that our companies offer state of the art of the technologies and address all the challenges related to their production and supply chain valorisation.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION Describe your organisation's role in the solution delivery. Choose specifically the technology transfer tree „role" in the completion of this: - **Knowledge Supplier** - **Knowledge Receiver** - **Knowledge Facilitator**	Knowledge Facilitator	SIIT will coordinate the communication activities and has defined a robust communication plan that principally target SMEs in order to involve them throughout the entire course of the use case. A specific Call for Interest will be publicly published at M2 to identify SMEs interested in joining the partnership during the business missions and all the related activities.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description. Choose specifically the technology transfer tree „role" in the completion of this: - **Knowledge Supplier** - **Knowledge Receiver** - **Knowledge Facilitator**	Knowledge Receiver	SMEs from the clusters at first, then after the first months, enlarge the portfolio.

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template. Choose specifically the technology transfer tree „role“ in the completion of this: - **Knowledge Supplier** - **Knowledge Receiver** - **Knowledge Facilitator**	TECHTERA	Knowledge Facilitator	TECHTERA is the French cluster of competitiveness for the textile and flexible materials industry. The mission of the cluster is to support this industry in the domain of innovation with the tool of collaborative innovation (open innovation). This shall include technological innovation, as well as non-technological innovation (design thinking, societal aspect, new business models, interactions between SMEs and large companies, marketing and exportation of innovative product and service, digitalisation).
	NEXT TECHNOLOGY TECNOTESSILE	Knowledge Facilitator	NEXT principal aims are the operational support in the innovation process and technology transfer in favor of local companies, providing technical assistance and support for the development of new evolutionary patterns. The new network organisation is an initiative of the Region of Tuscany to be one of a center of innovation to support and protect the competitiveness of the manufacturing system in Tuscany.
POLICY INSTRUMENT & RESOURCE ALLOCATION			

REQUIRED RESOURCES Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.	Funding and personnel will be needed to cover these activities. A proposal is currently under evaluation	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION Choose the policy instrument type you will be targeting **&** Describe the policy instrument which will support you in delivering the use-case, clarifying: - **Programme Name;** - **Managing Authority;** - **Summary of Instrument's intent (max 250 characters)**	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	COSME call COS-CLUSINT-2020-3-01 The main objective of this action is to intensify cluster and business network collaboration across borders and also across sectorial boundaries and to support the establishment of European Strategic Cluster Partnerships.
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? Maximum 1000 Characters	The main idea is to foster competitiveness of European SMEs in helping them to develop their export sales and, at the same time, to allow them to conduct international innovative and collaborative use cases. Innovation is critical when addressing dual use markets and to stay in the global competition, you have to adapt quickly, develop new technologies and find international partners to implement various R&D activities. Dual use technologies are very relevant for companies because it permits to address two markets, the civilian and the military market with the same technologies in adapting your products. In times of crisis, this value chain and market position is even more recommended and clusters should be at the state of the art. Clusters are at the right place to deliver that kind of internationalisation services because they represent a wide range of actors, large companies, small and Medium companies, research and innovation laboratories and institutional structures.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? Maximum 1000 Characters	To survive in a global and competitive market, SMEs need to conduct research and development activities and to look at the export to extend their opportunities. But they have to face many barriers as funding issues, lack of human resources, difficulties in analyzing new export markets, large expenses to engage for	

	international travels, assessment of their capabilities compare to the market, competitive analysis, difficulties to identify the entry points in the targeted country: organizations; persons; companies and get local assistance in the country. EU-ALLIANCE will provide key support services to SMEs regarding these issues to remove the entry barriers.
END OF TEMPLATE	

PARTNER INFORMATION	
PARTNER	**SIIT**
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COUNTRY	Italy
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE Limit to 50 Characters	SAFE - Physical safety of people in high-tech work environments through innovative sensors and IoT
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. Maximum 1000 Characters	The purpose of the SAFE use case is the protection of operators at the shop-floor level by ensuring the uniformity of safety conditions, regardless of the particular site in which they operate. The system that will be implemented has the objective of being usable both in a factory with permanent installations and in temporary situations, ensuring the same protection for all workers.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION Describe how results and insights from other programmes have been capitalised to support this use-cases' development. Furthermore, describe how this use case relates to the PP's current activities at regional or national level. Maximum 1000 Characters	The digital transformation underway and the consequent increase in the levels of human-machine-robot interaction increase safety issues. Despite the adaptation of regulations and laws to protect safety in the workplace, the protection of people remains one of the main problems in the path towards Industry 4.0. SIIT has been involved in the security field for many years, also on behalf of its SMEs and have perceived the relevancy of this challenge.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe) Maximum 1000 Characters	The results of this use case will be virtually applicable in any country • Equip the work environment with sensors capable of providing the data necessary to obtain an all-encompassing "photograph" of the controlled environment in real time.

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	• Guarantee the same safety conditions regardless of the working scenario, be it permanent or temporary. • Ensure better safety for the user, observing his position and vital functions in real time while respecting privacy. • Synergistic integration of different vertical technologies, in order to obtain a real improvement in workplace safety and not a simple compliance with regulations.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	Intelligent Production Systems
PP's CAMI4.0 TIN ROLE	Learner
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	**Choose as many secondary influencing technologies that apply;** ☐ Intelligent Production Systems ☐ Automation & Robotics ☐ Smart and Advanced Materials ☐ Artificial Intelligence ☒ Other: Security_____
Use-Case Key Words	safety; high-tech work; sensors; IoT
FURTHER INFORMATION: Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.	https://www.start4-0.it/progetto-safe-4-0/

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*06/07/2020*
	END DATE	*01/02/2021*
	DURATION IN MONTHS	*8*
IMPLEMENTATION	START DATE	*01/02/2021*
	END DATE	*01/02/2023*
	DURATION IN MONTHS	*24*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		

DESCRIBE THE CHALLENGE Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge. 1000 Characters in English	Within the "smart factory" processes, the safety aspect is of great importance. The use case includes the identification of tools for verifying that those who access a certain area are not only authorized, but that they use personal protective equipment. This verification, unlike traditional systems, will be reinforced by dynamic control. To ensure the flexibility of temporary control solutions, IIoT type sensor technologies will be studied for the control of the working environment based on intrinsically versatile operating principles. The expected result is the creation of a prototype of a worker safety management system capable of exploiting new IoT based technologies and demonstrating its applicability, integration and efficiency within Factories 4.0. In particular, the new technological system will be implemented to have high versatility and adaptability to different operating conditions, the purpose of which is to protect and protect workers by ensuring uniformity of safety conditions, regardless of the particular site in which they operate.
TARGET STAKEHOLDER GROUP Choose the target stakeholder who faces this challenge.	**Choose as many which will apply** ☒ Large Enterprises ☒ SME ☐ Higher Education & Research Organisation ☐ Business Support Organisation ☐ Schools and Training Institutes
MAUFACTURING VALUE CHAIN Choose the area of manufacturing which is impacted by this challenge.	**Choose as many which will apply** ☒ Research & Development ☐ Design ☐ Procurement ☒ Manufacturing ☒ Distribution ☐ Marketing / Sales ☐ Service and Repair ☐ De or Re-Manufacturing ☐ Recycling and End of Life Management
MANUFACTURING SECTOR Choose the manufacturing sector which faces the specific challenge.	**C28 - Manufacturing of Machinery and Equipment**

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IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.	• Use of interconnected technologies and sensors, according to the IoT paradigm, while maintaining stability and robustness required in an industrial environment. • Implementation of intelligent and transportable gate technologies • Provision of wearable technologies for workers, capable of continuously verifying safety conditions and generating alarms if abnormal conditions are detected (e.g., falls, collisions with machinery). • Design of a system for collecting information from all integrated systems (e.g., sensors, wearable systems) and behavioural analysis of the worker through Machine Learning techniques.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters	The application of IoT technologies to the field of industry is one of the six main technological pillars identified in the Industry 4.0 macro-theme and is one of the main innovation objectives in the field of smart manufacturing. The Industrial IoT will be declined and also applied to the safety of operators, one of the main themes of smart execution. Current safety systems are based on a static type approach based on areas and systems assumed to be invariable over time. The proposed system will guarantee online and real-time security as it will be adaptive with respect to real operating conditions, reliable with respect to use in hostile environments, operational throughout the working period, and making use of the proposed technological base it will be easily and effectively deployable, allowing its use in both permanent and temporary settings, with equal reliability.

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DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.	The Italian industrial safety market is growing steadily. Current security systems are based on timely checks by the personnel and independent systems checks on the premises (e.g., gas detectors); the proposed system correlates the two aspects by proposing a system capable of adapting to real conditions and following the worker for the entire period of stay. The technologies chosen also introduce a further improvement, allowing the creation of a rapid deployment system, capable of overcoming the installation difficulties of traditional systems based on stable systems. The market incorporates systems based on objective tools that, in addition to safety, verify the compliance of access to the effective use of individual protection systems. For the safety platform and the related devices that compose it, a first phase of product marketing is envisaged, associating the design services of the architectural solution, installation and maintenance according to the needs of the customers, in the second phase the offer will be evaluated of a PaaS type service (Platform -As-A-Service).	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION Describe your organisation's role in the solution delivery. Choose specifically the technology transfer tree „role" in the completion of this: - **Knowledge Supplier** - **Knowledge Receiver** - **Knowledge Facilitator**	Knowledge Facilitator	SIIT has many years of experience in carrying out research use cases with particular reference to IoT and environmental monitoring applications. The company has hardware, firmware and software design skills and will participate with highly qualified technical figures.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description. Choose specifically the technology transfer tree „role" in the completion of this: - **Knowledge Supplier** - **Knowledge Receiver** - **Knowledge Facilitator**	Knowledge Receiver	The application of machine learning techniques to a new context will allow the cluster SMEs to expand their customer portfolios in a new area and to consolidate their relationship with companies in the sector.

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template. Choose specifically the technology transfer tree „role“ in the completion of this: - **Knowledge Supplier** - **Knowledge Receiver** - **Knowledge Facilitator**	Smart Track	Knowledge Supplier	Smart Track is an innovative start up and spinoff of the University of Genoa born after the conclusion of the research grants of the Polo Sosia to complete the technology transfer of research results. The company develops wireless communication systems, indoor tracking / navigation systems and in particular IoT "connected worker" systems for the safety & security of workers in Industry 4.0
	Novigo	Knowledge Supplier	Novigo Technology is a spin-off of the University of Genoa in which university lecturers from the DIBRIS and DIME departments work as operational partners. Novigo has a long experience in the field of machine learning, optimization, simulation techniques and in the analysis of industrial logistics processes. Novigo specializes in the design and use of machine learning algorithms for anomaly detection, regression, classification, clustering and data forecasting.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.	200.000 euros		

WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION Choose the policy instrument type you will be targeting **&** Describe the policy instrument which will support you in delivering the use-case, clarifying: - **Programme Name;** - **Managing Authority;** - **Summary of Instrument's intent (max 250 characters)**	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	Bando per l'erogazione di contributi a progetti di ricerca industriale e sviluppo sperimentale in tema di tecnologie abilitanti 4.0 per la sicurezza delle infrastrutture critiche di START4.0 (Notice for the distribution of contributions to industrial research and experimental development use cases on the topic of enabling technologies 4.0 for the security of critical infrastructures)
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? Maximum 1000 Characters	We think that what we are aiming to reach will be beneficiary to the industries in general. With the necessary grant and effort. The work plan has been designed in order to concentrate the highest risk research activities in the first year, in order to have the possibility to study possible alternative plans. The results of this activity will form the basis for the final realization of the system, its prototyping and tests. For the development of the activities, a period of 24 months was considered, time necessary for the realization of the work, which is ambitious and multidisciplinary.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? Maximum 1000 Characters	SIIT had a conversation on the IPS subject right before defining this use case; the main outcome was the need to really think about something that could benefit all kind of companies	
END OF TEMPLATE		

8.8. Pomourje Technology Park

PARTNER INFORMATION	
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COUNTRY	*Slovenia*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Smart Factory Demonstration Center - NDC
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Pomurje Technology Park has a specific role in Slovene innovation support ecosystem. It is among few Technology Parks in Slovenia and the only one to be focused on manufacturing industry and as such is a member for a so called SRIP TOP (Tovarne prihodnosti=> Eng. Strategic Development Innovation Partnership Factories of the Future. The reason for that is focus on Industry 4.0 technologies and lack of own resources, so we a s a bridge between R&D and industry need competent partners to jointly provide solutions industry needs, whether we talk about soft skills and related LEAN or hardware needs of the production. Therefore, we are a part of a huge national project were funding to certain extend is assured and more is expected and it is about national demonstration center where whole Industry 4.0 topics are going to be covered to the „test before invest" stage. With partners we will search for opportunities within for topics of artificial intelligence (solutions, funding, testing…)
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	PTP contributes inputs from DIH2 (H2020), Greenomed (Interreg Mediterranean), 3DCentral (Interreg CE) & Smart Factory Hub (Interreg Danube) such as tools, platforms, experiences, partnerships & good practices (aligned also with Vanguard initiative). PTP also contributes to NDC LEAN principles, digital audits & digital strategies for industry. Leaning on European Institute of Production Innovation & Technology (EIT Manufacturing) assures access to necessary resources for its successful implementation. Results from our participation in above stated projects we intend to use as inputs to be upgraded in future (follow-up) projects. At the same time, they represent core activities & focuses of DIH Smart manufacturing (headed by PTP) & thus addressing concrete challenges of manufacturing, including provision of

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	soft & hardware skills and equipment for industry accompanied by appropriate trainings for employees in industry. Future cooperation with similar centers (am Lab) is foreseen.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The project of NDC is already placed in National strategy 2030 where Smart production cell (1), Completed production process or line (2) and Completed production or factory (3) is foreseen. It will be based on a distributed segment structure and will be structured by production process technologies and market domains (e.g., food, metal processing industry, polymer processing, electronics…). Such a structure allows for the synergy of geographically diverse NDC locations (network of locations with specialized equipment & infrastructure)
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	Cloud platform; industry & smart communities/ cities; predictive consumption/ predictive maintenance, AI algorithms / visualization of data; sensors / smart metering; Research & development, HR challenges - trainings & education of students; Project work and testing field; Education and workshops for industrial partners. Challenge: lack of awareness by policy stakeholders on AI opportunities
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	Pre-ancestor: stories around LASIM Lab and DIH Trinity Center for Robotic Reconfigurable Concepts for Agile Production (Jožef Stefan Institute - Department of Automation, Biocybernetics and Robotics)
TIME HORIZON & TIME PLANNING	
DEVELOPMENT START DATE	*01/09/2020*

	END DATE	*24/03/2022*
	DURATION IN MONTHS	*6*
IMPLEMENTATION	START DATE	*25/03/2022*
	END DATE	*24/03/2032*
	DURATION IN MONTHS	*120*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		AI challenges arise from daily work with industry players and secondly from owners (Municipalities - smart cities and communities). Industry challenges -plastic packaging industry (moulding, extrusion, blowing, roto), related to production (reduction calibration times of tools for better quality and less waste, where pre-setting upon experiences are possible, however detection and database of possible solutions are needed first – challenge: sensors collect data but visualization of data & automation process of new settings are human manipulated, so AI algorithms could be faster in setting-up machines in more precise way). Also, sensors in tools to be used for predictive maintenance. Smart cities are related to topics of logistics, energy (Lightening upon use-when human approaches) consumption or waste collection from households and pricing upon weight in real time for example / Consumer profiling!
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☐ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*

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MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C22 - Manufacturing of Rubber and Plastic Products***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	Plastic packaging industry – also introduction of new materials (bio-based and/or bio-degradable, suitable for plastic moulding/extrusion processes)
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	In all cases we talk about Cloud platforms for users to have access 24/7 and where data transfer is enabled. This includes security challenges, but not only "known" producers (large, global players) but also crowdsourced open coded solutions are used and applied by SMEs to control their production in real time environments. In case of plastic production this means sending alert from machines to employee and/or owners, visual data readings on gadgets like mobile or tablet device, access to machine data base for preloaded settings or in case of AI suggestions how to set up a machine (times, temperatures on nozzle) according to new readings from sensors. Also, VR/AR can be introduced for employee with a "google" specs or similar to avoid necessity of bringing technician to machine (if not on spot). With interconnectivity and vision this could be early strategy to digital twin.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	We believe future production will more and more be depending on big data and relevant algorithms to help human to interact with machines in a way machines will be more efficient & effective and there will be less "side effects" in form of waste (material and energy) irrespectively to which type of production (other industry sectors for ex. Metal or food processing) we talk. All have similar issues and yet human resources are/will be needed in future too, so how to make co-existence more user- and environment- friendly and safe is where AI can help, especially with HPC and storage capacities growing.

DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	We believe demo center with its "test before invest" and most of all real production machines in testing environments can really save time and money for SMEs (and large players) before investing in solutions for their own. We believe concentrated knowledge and skills will enable better exchange of experience, quicker implementation/transfer of concrete solutions in/-to real industry sector and thus make it more cost efficient, more environmentally friendly and attractive for vertical supply chains as users are getting more aware of CO2 and similar topics integrated in products/services. We believe similar topics are on daily agenda of other project partners topics, especially when referring to new materials for plastic packaging, where additional factors decide upon effectiveness	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	PTPs role is facilitation: - we do audits, prepare cost-benefit analysis guidelines and tools to evaluate the most appropriate approach to upgrade an obsolete machine or plant; - we provide information on technology (overview) that makes it easier to compare and select suitable solutions (preparation of digital strategy, e.g., Roadmap); - we give advice on offers, guidance, and training for implementation (related to internal audit also LEAN principles); - we prepare demo cases in different sectors: also use such in manufacturing and food processing industry.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver***	Knowledge Receiver	We have a number of industry SMEs, coming from various sectors although primarily we talk about plastic packaging industry. In the region of Pomurje there is a large number of workers unskilled to work with more and more sophisticated machines where AI (sensors) and pre-set programs of setting can shorten times of calibration of machines for more

- ***Knowledge Facilitator***			efficient work, however owners would like to have an automated system including AR7VR or XR to assist workers in cases of failure. Here we see huge potential to the whole industry sector in region, the problem is understanding of investors/owners what needs to be done first before this can be implemented and usually, they don't have time…"it is already late" for them. So, demo centers will shorten this time from seeing to implementing, as well as understanding the benefits on working use-cases.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	TECOS	Knowledge Supplier	Plastic processors, deformation analysis, injection moulding optimization (https://www.tecos.si/index.php/en/)
	IJS / Department E3 (AI)	Knowledge Supplier	Data analysis with a focus on textual, web, multimedia and dynamic data; Techniques for analysing large amounts of data in real time; Visualization of complex data; Semantic technologies language technologies https://www.ijs.si/ijsw/E3
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	Transnational National (public & private)		

WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	H2020-DT-2018-2020 Digitising and transforming European industry and services: digital innovation hubs and platforms HORIZON-CL4-2021-TWIN-TRANSITION-01-01: AI enhanced robotics systems for smart manufacturing (IA) DT-ICT-03-2020 - I4MS (phase 4) - uptake of digital game changers : EUREKA 2021 : EUROSTARS 2021 National: SPIRIT/MinEconDev&Tech SEF(SPS): Digital Voucher P4D
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	This project is a strategic one with longevity of 10 years before reaching its full scale so it starts with currently available funding resources and from various programs, financing small stages although quite a lot of equipment already exists. It is however challenging towards which topics and actions future funding opportunities will be directed, therefore CEUP2030 and other similar projects and initiatives are welcome to pave the way to better understanding of the industry needs and good practices quickly to be obtained from other regions, not to lose time and resources on reinventing the wheel.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	International involvement with CEUP2030 partners (KPT, PBN, AFIL, HAMAG…) on concrete tech.-oriented topics in the past and current / ongoing project are a good opportunity to get insights in best practices which could be adapted and adopted in Slovenia, however need to have same specific challenge and competence. We see Slovenia in benchmark has some instruments that are good, but from industry there is a signal it is too bureaucratic and not transparent in selection of projects to be co-financed. Next, our policy needs to be updated with latest trends and for that access to source needs to be presented and again invite them to follow latest technologies in order to see benefits and foster new instruments of support (also by copy-paste	

	transferable good practices from abroad, e.g., countries of CEP2030 partnership).

END OF TEMPLATE

PARTNER INFORMATION	
PARTNER	**PTP**
PARTNER'S RESPONSIBLE MANAGER	*Borut Zrim*
E-MAIL:	*borut@p-tech.si*
PHONE:	*+386 2 530 82 20*
REGION	*Eastern Slovenia (NUTS2) - Pomurska (NUTS3)*
COUNTRY	*Slovenia*

USE-CASE ACTION PLAN

ADMINISTRATIVE INFORMATION

SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	NDC & Automated welding robot cell
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	The challenge of manufacturers using welding robots is the control of production process with immediate control of quality assuring less false/damaged products. Integration of various mechanisms is desired to prevent such events...various challenges also interaction between robots and human. To understand even bigger challenge is necessary to consider the evolution stage of metal industry in Slovenia – a lot of still working machines of older dates (CNC, lathe, drilling and welding machines). In order not to waste accurate machinery working it is reasonable to "upgrade" these so sensors can obtain various data that can be used for more efficient production. Linking such machines in back-bone IT infrastructure where machines can communicate among each-other is a step of getting digitized or even digitalized. This is again a story of national scale merged in Smart Factory Demo Center (NDC) where test before invest can be performed!
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	*Being a part of H2020 DIH2 and follow up possibilities we are targeting regional circumstances in order to reduce the technology level readiness gap between Slovenia and other more developed countries. We are trying to bring good practices via transnational experiments to Slovene environment (open calls for cascade funding) and for those who fail we search other transnational or national funding opportunities, but we always stay in touch with applicants. We*

	tried cases of pick-place robots for plastic producers with PBN's amLAB, but visibility study showed there are better and cheaper industrial solutions over the cobot-use. Now we focus on metal industry welding robots with supplier of that technology. From 3D Central/Smart Factory Hub we made data base of knowledge with trainings and video lectures for employees also for work with robots. We would like to provide more materials for training for robotic welding and close environments as cells for potential and safe interaction between human and robot. Partly this case uses sensors and big data algorithms to provide safety at work.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	Welding will remain a technology process also in the future, it might differentiate on different tech. innovations, but all will be towards automation, real time monitoring, safe cobot-interaction with human in productions cell, so there will be novel sensors applied for more efficient and safe applications as well as new materials use at/for welding. Horizontal challenges of less waste, less energy consumed force welding to be precise (monitoring), optimized (usage of time, temperature, ...) and digitizing Europe open calls also Resilience or thus related green deal will force development of welding into solutions applicable cross-sectoral. Therefore, NDC and its network of lab is a great place for development of welding robotic solutions and integrative, standardized open-coded building bricks (SW) on various platforms (COPRA & OPIL on RAMP).
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Automation & Robotics*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other:* _____

Use-Case Key Words		Robotization of welding, cobots; sensors, Robotic cell; data visualization; monitoring of weld-quality; upgrading old machines to be smart; interconnectivity; big data; algorithms for better visualization of data in real time; platforms(cloud)
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		Partly we co-finance operation (for individual applications of SMEs) from national funds SIO: http://p-tech.si/projekt/p-tech-sio-2020-2022/another example of very applicative and useful Slovene good practice/scheme https://www.podjetniski-portal.si/programi/sio-subjekti-inovativnega-okolja-sio to fund industry at their digital transition process.
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/02/2020*
	END DATE	*31/03/2021*
	DURATION IN MONTHS	*14*
IMPLEMENTATION	START DATE	*25/03/2022*
	END DATE	*24/03/2032*
	DURATION IN MONTHS	*120*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Speed, healthy environments, repetitive moves, shining-health hazardous situations, gases, quality of weld are just few challenges in metal processing industry. Also, digitization level of companies between 1-2 level are the reasons for companies to upgrade ASAP, otherwise competition and labour/energy costs will make them uncompetitive. Technically seen we need to introduce better control of processes. How? By introducing various sensors which will collect data and upon some AI algorithms autonomously act or warn about mistakes (poor quality dimensions, etc.). As there will always be a need for a human to act and correct things, paths of a robot and human can cross and for that we need safety protocols that enable human-cobots interactions. Problem: various types of robots and protocols in same building need to be able to communicate among themselves. A need for systemic integration (open-code). Costs are enormous, so test before invest platforms are welcome.

TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☐ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C25 - Manufacturing of Fabricated Metal Products***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	Multiple challenges – if a robot is welding in existing robot cell and few sensors are already installed, we have aside of robot performance inside the cell (speed, consumption of disposable parts – replacements) or use of part of a machine/robot (predictive maintenance) we would like to have immediate control of the quality of welds - few different solutions are possible like integration of laser or other virtual (mechanic) view for detection of failures in measurements or quality of cut/weld (also ultrasonic or mass spectrographic exam);the problem might occur when robot supplier does not have his own sensors so others are built in and yet

	we need both to understand each other in order to control the process, aside of usual counting of pieces and performance time of machine. Integration on open-code solutions is challenge and where to test is (platforms?)	
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	Simply because it represents a huge market need and potential of improvement at the same time. Test before invest in such cases are reasonable as the cost of robot or software can cost a fortune, which is hard "candy" to be swallowed by SMEs. So, platforms (clouds) to do it before buy it…to see its benefits, what is needed, how it works and even where and how to train personal are "priceless".	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	We believe the CE area is pretty similar by historic developments, even some "historic" equipment; however, there are industries in vertical chains of car industry which are forced to introduce novel digital upgrades, so this price pressure is going down this supply chain and presses on smallest suppliers at the end of this chain. And on one multinational, there are hundreds of small sized (even family based) companies, which still give a lot of "bread" for population in the area. LLL and other trainings are going to be necessary and complementary offer to testing environments, as one without other will not work.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	Digital audit, digital strategy and road mapping (milestones), LEAN, assistance at open call for funding applications, assistance at internationalization (R&D projects as well as selling channels establishing)
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	Welding-robot producer from Slovenia (how to widen his market by adapting his welding robots to open-coded protocols and systemic integration into digital twins)

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	SRIP TOP	Knowledge Facilitator	The offer infrastructure for “test before invest” and/or necessary experts for robotics (standardization issues)
	TECOS	Knowledge Supplier	Expert knowledge from automated process lines in manufacturing industry (especially metal and plastic), also owner of certain assets like laboratory equipment for additional testing)
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	National, private and transnational ERDF		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument’s intent (max 250 characters)***	*Funding Scheme* *In case of other, Please clarify: [Free Text Response]*		National funds: LEARNING MANUFACTURING LABORATORIES (1,5 m€ from March 2021 on) P4D / Incentives for the digital transformation of SMEs / H2020-DT-2018-2020 Digitising and transforming European industry and services: digital innovation hubs and platforms HORIZON-CL4-2021-TWIN-TRANSITION-01-07: Artificial Intelligence for

		sustainable, agile manufacturing (IA) HORIZON-CL4-2021-DATA-01-03: Technologies for data management (IA)
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Success rate at applying for particular H2020 call, transparency at selection process at national funded scheme and the problem of short duration of the funding program (12-24 months); no assurance for long-term planning of development (too risky, too random chances).	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	Similar or same instruments and how they have been successfully used for various other projects/use cases, how they used the methodology in a different way and how they have communicated results to policy stakeholders.	
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**PTP**
PARTNER'S RESPONSIBLE MANAGER	*Borut Zrim*
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PHONE:	*+386 2 530 82 20*
REGION	*Eastern Slovenia (NUTS2) - Pomurska (NUTS3)*
COUNTRY	*Slovenia*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Smart Factory Demonstration Center
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	Slovenia is slowly catching on more developed countries with established demo/pilot plants or centers. Currently there are only 2 known in Slovenia and new initiatives are popping up, aside of already small lab unit in public and private institutions and companies. However, high infrastructure costs (at setting up and maintenance) force actors to join forces and with such critical mass of interest and competences ask governments for certain financial assistance. Especially international community with its specialization (digital transition also as per CAMI 4.0) has forced also Slovene ecosystem into special strategic instruments that will enable all companies, especially SMEs, effective access to new technologies, practical training and knowledge transfer from scientific-scientific-

	development environments to the real industrial environment. For knowledge transfer, it would make sense to establish links between similar centers in CE (test before invest physical plant).
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	Government, Ministry of Economic development and Technology and its implementing body/ agency SPIRIT and Slovene Entrepreneurial Fund complete the picture with funding schemes enabling actors as labs or clusters (SRIPs) to be part of these schemes to organize critical mass of interest and prepare proposals for instruments of support. These are competed by transnational good practices deriving from projects or other types of cooperation, which serve as good practices, lately based on so called technology use-cases, which enable direct analysis of benefits if implemented in industry on big scale (calculation models, exact data from machinery, artificial intelligence algorithms, enable user real time data and cost analysis for better decision making. The problem of Slovene industry technology level is 1-2 on digitization scale, so all efforts have to be focused on this fact not only on high tech industry ("cherry pie"), but due to financial market undeveloped we need to offer SMEs testing environments to do the "test before invest" and instruments like digital transition voucher or similar for quicker implementation of new tech in to industry.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	Having both, infrastructure (demo production line/cell) with latest digital apps and experts to do digital audits (digital roadmap/strategy for SME) and available co-funding we believe industry will pick-up the pace and level of industry readiness to implement novel tech will be higher (absorption capacity). Not only this plant will enable testing, also news apps can be developed and financed through RRI, H2020, ERUREKA transnational funding and again be at disposal for mass implementation. If that is integrated into national RIS3 and communicated transnationally it can be a bottom-up statement for EU Commission and future strategic funding lines (S3, Vanguard…).

CAMI4.0 TECHNOLOGY FOCUS - PRIMARY		*Intelligent Production Systems*
PP's CAMI4.0 TIN ROLE		*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY		***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words		Demo plant; testing; smart production cell; smart production line; smart factory; sensor applications; data collection; big data and AI; production control (processes & speed & quality); technological & business integration (ERP); clustering of SMEs; strategic instrument; knowledge transfer; robotics-grippers; test before invest; digital twins
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		PTP for a long time offers services how to improve production processes in manufacturing companies through various incentives, nationally most effective instrument is SIO, however we managed to build a huge training material data base from various projects (3DCentral, Smart Factory Hub, Smart production and DIH2) with video lessons (Moodle)
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/10/2020*
	END DATE	*31/03/2021*
	DURATION IN MONTHS	*6*
IMPLEMENTATION	START DATE	*01/04/2021*
	END DATE	*28/02/2031*
	DURATION IN MONTHS	*120*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Current digitization level of many Slovene SMEs is low (digitization phase 1-2) and they (still) use machines or installations several decades old. These systems are not yet at the end of their (mechanical) lifespan, but do not offer the functionalities and/or energy efficiency desired

	within the industry 4.0 paradigm. They are often limitedly equipped with sensors and in many cases these machines lack computing power, communication with the network and a good human-machine interface. All this can be overcome with financially affordable apps (open-coded) and/or application developed in demo centers with public co-funding (tailor-made-solutions). Next step is to integrate these machines into ERP and when implemented to push them towards digital twins.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☐ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☐ *Service and Repair* ☒ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C25 - Manufacturing of Fabricated Metal Products***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	

DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	In so call "Testing ground"-demo centers, companies gain access to latest, state-of-the-art solutions, experience with various technological ways to upgrade machines (use of components and SW PLL, synomerics, various open-code interfaces (FIWARE), new hardware/software operational with "vintage" versions. In addition, SMEs experience the impact of the upgrade on various processes, thanks to increased efficiency, productivity and flexibility, and easier maintenance.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	First of all, our region is among less developed industrial regions, where there has been little transition to Industry 4.0 and where SMEs could benefit/profit from a center where they can test and verify the introduction of innovations into their production processes before they develop/buy and adapt this tech in real scale, and next, even more challenging reason is that at the same time we need a center where SMEs can train their workers to be able to use/work with such equipment. Definitely our Moodle base is a complementary tool to achieve real impacts in industry.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	Following the logic, this is a continuous process- also today's novel digital apps will get "older" with time (interestingly, the process of industrial ageing is more exponent than it was in previous times, so trainings and upgrades will not only be a must, but they will occur faster, more frequently. If upgrading machines offers many advantages and is technically easy, the learning process of people can be a bit slower (resistance) so it is important to make this process flexible and specialized. Next, it makes sense, since SMEs in daily fight to be competitive, look for savings where possible and if ROI is acceptable, they will invest/implement this tech as soon as they will see cost savings, longer life of equipment and improved capacity, energy and waste efficiency. In addition, upgraded machines are more agile, flexible to alteration (wider range of products/services/processes they can run on) and are easier to maintain

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	PTP can: - new business models, based on cost-benefit analysis, offer guidelines and tools to evaluate the most appropriate approach to upgrade an obsolete machine or plant; - do technology overviews/digital readiness assessment, digital audit with strategy (easier benchmarking) and selection of most suitable solutions; - offers advice, guidance, and training for implementation, one-on-one mentoring; - prepares demonstration cases in different sectors: manufacturing and food industry. - assist companies at applying for co-funding their digital transition
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	The manufacturing industry, ready to level up their digital competences/readiness and would like to implement CAMI 4.0 apps. Next, we would like to attract tech. solution providers to create a pool of expertise. Last but not least we expect policy stakeholder to help us out with systemic instruments to concretely help SME getting digitize (vouchers for digital transition in form of expert use of deco center facilities or experts there). Next, training programs

			shall be more accessible (vocational schools?)
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	SRIP TOP	Knowledge Supplier	IPS academic sphere with experience in examples of good practice is available among members of SRIP TOP; there are some labs in public (universities) as well in private (TECOS) ownership but all involved in Demo center ready to transfer skills and knowledge to industry/SMEs.
	Robotina	Knowledge Supplier	Concrete industry solutions (30 years tradition) also digital twins - one of concrete implementers of the instrument of digital vouchers for SMEs in IPS
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The costs of setting up and operating for the duration of the instrument can be financed by a combination of different financial sources (industry participation, national and EU tenders, own market activity) and a 50% participation from public funds (up to 150.000€). Different funding intensities are envisaged at different stages of the process, with the greatest intensity in setting up a central location and local centers. Individual applications will be subject to different funding schemes including H2020 calls (DIH2, Trinity, I4MS/Change2twin), as well as national ones (SIO-till 2022)		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]		National funds LEARNING MANUFACTURING LABORATORIES (1,5 m€ from March 2021 on) SIO (2020-2022) + ERDF HORIZON-CL4-2021-TWIN-TRANSITION-01-07:

		Artificial Intelligence for sustainable, agile manufacturing (IA) HORIZON-CL4-2021-DATA-01-03: Technologies for data management (IA) HORIZON-CL4-2022-DATA-01-04: Technologies and solutions for data trading, monetizing, exchange and interoperability (IA) 184
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	To many applications for LEARNING MANUFACTURING LABORATORIES fund (only 1,5mi €) so the budget will be split to 10-15 receivers so each gets 100-150.000€), which is Ok for general costs, but not enough to purchase more serious lab equipment; next people are "scared" about transparency at selection; also, yet unclear policy of programmed financing of that instrument – only 2 years is a very short period and it is difficult for applicants to provide sustainable model so quickly.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	Various business models from CEUP2030 partnership, mainly public (national funding) for the infrastructure w LEARNING MANUFACTURING LABORATORIES while application development is usually part of transnational calls for experiments. Cooperation with complementary centers is a must.	
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**PTP**
PARTNER'S RESPONSIBLE MANAGER	*Borut Zrim*
E-MAIL:	*borut@p-tech.si*
PHONE:	*+386 2 530 82 20*
REGION	*Eastern Slovenia (NUTS2)- Pomurska (NUTS3)*
COUNTRY	*Slovenia*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Smart material demo center

SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	PTP together with investors (public & private) has the opportunity to realize a long-term planned project of new materials competence center. Objective: support of novel processes in preparation of rare-metal alloy/coatings & development of new bio-based materials & contributing to higher value-added products in region. Demo center is based on applicative cases from R&D sphere and private initiators as well as with public owner of PTP. Covid-19 boosts online selling/packaging and thus market opportunities. In both cases lab infrastructure is needed for further testing & development (IPR-patent in progress). All 3 parties are interested to monetize current funding opportunities & knowledge gathered to jointly create regional central testing facility. Case1: focused on technologies of purification of (rare) materials by liophylization; 2nd is towards bio-based resources (wastes) used as inputs in components with plastic (challenge: price, reach, storage, recycling) =the future! Tech processes will improve ROI, analysing the entire value chain &circular economy model.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	Greenomed – re-/de-manufacturing stories related to application of new materials like plastic foil nano-coatings with assistance of cold plasma in food industry (also I-CON, Interreg CE – prevention of food packed getting rot – prolonging shelf life applying anti-oxidative, anti-micro biotic or ozone components), or Demo plant for recycling of PES textiles (institute IOS) "forced" PTP to follow-ups with same and new players, especially due to cooperation with SRIP Circular economy and Chemical Institute of Slovenia. We would like to uptake these stories towards PET and food-packaging waste re-use. PTP "hosts" a private company, with PhDs in charge of R&D focusing on rare materials and technologies we met in pharma and food industry for the purification and preparation of rare metal alloys, Partnerships from above stated projects stayed so we might invite other partners from CEUP2030 to join (KIT, PBN, Profactor).

LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	Topic of new/advanced and smart material is getting more and more on importance; also, tender opportunities follow the developments. Aside of industrial use of rare materials also medicine seems to be interested in rare metals and their applications as their characteristics show similar effect to human body as antibiotics – this is seen as long-term development and there are already funding opportunities to support development towards that goal. With bio-based materials and bio waste we focus on "end" stage which is hydrogen technologies, again circular economy opportunities, yet to both current visions is a long way. PTP will support both stories with assistance at applications and linking with competent players.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Smart and Advanced Materials*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☐ *Automation & Robotics* ☒ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	New alloys; liophylization; rare metals; dental & other medical applications; purification; nano-coatings; bio-components; circular economy; knowledge transfer; tool development; re-/de-manufacturing; value chain improvements; hydrogen production
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*02/06/2020*
	END DATE	*30/04/2021*
	DURATION IN MONTHS	*11*
IMPLEMENTATION	START DATE	*01/06/2021*
	END DATE	*31/05/2022*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

	DURATION IN MONTHS	*12*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The first is the need to keep control over resources. This means that products need to be tracked and the return of products need to be organized. The second challenge is to preserve the value added and optimize the residual value of products after use. To do this, collaboration within the value network is essential. To complete and substantiate the proposed framework business models that are concerned with managing, supporting and connecting circular stand-alone business models need to be further explored.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☐ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☒ *Manufacturing* ☒ *Distribution* ☒ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☒ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*		***C25 - Manufacturing of Fabricated Metal Products***

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	Due to IPR sensitive case we are not in a position to disclose details of first technology that will be supported via this use case, but as already mentioned above, it is about purification and preparation of rare materials for further applications as nano layers on specific applications (dental, medicine, semi-conductors, etc.) As we saw the results of that technology in pharma and food industry and growing market demand for products processed this way, we believe the further development of this (more and more "affordable" technology also to smaller R&D units, SMEs) will enable quicker development and better quality of industrial products (various industries applications). The part of case 2 is to use regional potentials of bio wastes from farming to various purposes (in packaging industry or as mentioned also in hydrogen the price and traceability of new smart materials it is necessary to explore and promote circular business model, that involve smart materials and also providing an easy-to-use tool for entrepreneurs to position themselves and explore gaps in the circular value network related to smart materials.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	In first case there is potential of high value-added products, its multiple applications and thus related market size, and in second we see more potential in "engagement" of mass almost free resources (bio wastes) to serve as surrogate components to environmentally less-friendly packaging materials or as a potential for further processes towards hydrogen production. Naturally both are related to some infrastructure which currently can be financed from national as well as from transnational open calls both horizontally affecting green-deal and making production lines more efficient, using up potential wastes and with other solutions from AI/IPS complete (sensors in moulding

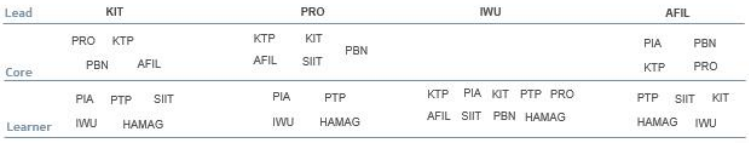
	machines for easier quality settings of mixed plastic and natural/bio-based raw materials (cellulose, sawdust…).	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	Case1-R&D cooperation projects, potential commercial application developments (applying to EU calls for for-profit oriented entities EUROSTRAS, EUREKA, ERASME, RRI…). Case2-same as above plus linking regional players (public & private) in agri-food sector as well as food processing industry, in case of hydrogen also big national energy producers. As both topics are Demo center topics we believe similar facilities and organizations/institutions is charge will see a potential for cooperation as well as co-shaping the policy upon tech developed as bottom-up recommendations to be supported in CE area, as well as going beyond this program area.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	PTP assist partners in application process (searching for funding sources, writing a proposal-not technical part, promotion and linking partners to competent experts if required)
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	Assisting private (case1) and public(case2) entities at "shaping" their interests towards 3rd parties (funding authorities and later to customers) we help them identifying their target markets and potential partners to cooperate in R&D and commercializing phases (after set up of demo center is done)

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	University of Maribor / Faculty of Mechanical Engineering	Knowledge Supplier	Individual employees of Faculty made a spin-off (company is a member of PTP) are knowledge holders and thus suppliers
	XY-want to be kept anonymous	Knowledge Receiver	Private company cooperating with PTP member company in R&D and in market-oriented applications (testing field); at the same time, they have own R&D unit so their role is mixed!
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The costs of setting up can be financed by a combination of different financial sources (industry participation, national and EU tenders, own market activity); 50% participation from national public funds (up to 150.000€) and the rest from H2020+EUREKA		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]		LEARNING MANUFACTURING LABORATORIES /national call HORIZON-CL4-2021-RESILIENCE-01-07: Building innovative value chains from raw materials to sustainable products (IA) HORIZON-CL4-2022-RESILIENCE-01-10: Innovative materials for advanced (nano)electronic components and systems (RIA) HORIZON-CL4-2022-RESILIENCE-01-13: Smart

		and multifunctional biomaterials for health innovations (RIA) EUREKA 2021
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Competition for national funding part: open call for LEARNING MANUFACTURING LABORATORIES /national call; next, only 1.5 mi. € are here available. If the application fails, the process will base on "organic" growth and several project applications where smaller investments are possible. We might refer to Vanguard initiative for cooperation and potential investors to join.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	First of all, there is a potential of cooperation at infrastructure needed but available at CEUP2030 PPs. Next, we might need LoI's form PPs institutions supporting this demo center development as of similar interest in topics. Equipped with "critical mass" of interest and competences we are strong and reliable awareness raising partner, so policy will see on use case examples benefits for the industrial need of developed technological processes and upon formed supply value chains.	
END OF TEMPLATE		

8.9. Pannon Business Network

PARTNER INFORMATION	
PARTNER	**PBN**
PARTNER'S RESPONSIBLE MANAGER	*Ms. Anna Tóth & Mr. Martin Dan*
E-MAIL:	*martin.dan@pbn.hu*
PHONE:	*+3630/619 5554*
REGION	*Western Transdanubia*
COUNTRY	*Hungary*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Demo production line
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	**PBN's 4 use cases are ideas which are based on each other**. Basically, the **Demo production line** would be the first necessary development in order to continue the process with the use cases defined at the 3 other topics: • Intelligent production Systems: Digital twin of the demo production line • AI: Demo production line upgraded with predictive functions Smart Materials: Demo production line upgraded with smart materials A demo production line will be established at am-LAB (the digital innovation hub connected to PBN). It is a manufacturing unit with online, remote access to broaden our services related to SME-development; trainings; development of digital competencies. The aim would be to have a fully automatic demo factory to which physical manufacturing components with cyber-physical features can be installed. The solution contributes to make Central European regions more competitive. It will be operated as a Teaching and Learning Factory platform, enabling demonstration, education and research functionalities. By EIT Manufacturing, Horizon calls collaborative research projects will be generated.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the*	The idea of the solution came up at IMPROVE! AT-HU Interreg project, where the acquisition of the needed assets is planned through a cross-border cooperation. In the implementation of 4STEPS (currently running CE Project) it was concluded (based on Q1 2020 transnational analysis of 350 CE companies) that SMEs need tangible experience to understand the potential and applicability of digitalization, and deployment of automation.

PP's current activities at regional or national level. *Maximum 1000 Characters*	According to the 4STEPS results, there is a relatively high interest in autonomous robots among Austrian and Slovenian companies, since companies in these countries (Austria 32.3%; Slovenia 36.1%) have indicated that they are planning to use this technology at least in a good extent level in the near future. At this point it should be also mentioned that German and Hungarian companies are also contemplating to use autonomous robots for a few usages in the following few years. PBN received insights in connection with the Automation and Robotics topic from the S3HubsinCE project (CE) where so- called Navigation Crews- Thematic Priority Areas have been established- and one area is Factory & Process Automation led by TECOS from Slovenia. In this topic, numerous workshops have been organized where PBN also participated and gained knowledge. In the CEUP2030 partnership there are partners who have professional knowledge about AI, smart materials, automation & robotics, intelligent production. The 4 groups (TINs) have their own leaders and core members - with an advanced level of knowledge- from the partnership, presented on the picture below:   Overall, the knowledge of this partnership can be a good base for future development of the demo production line. The optional cooperation on the demo production line can result - new services supported by industry4.0 solutions, - knowledge base, useful data for the manufacturing sector, - opportunity not just for real-time data but for forecasts, too,

	- training opportunities for manufacturers on local/national/international level, - transfer of knowledge & tutorials for students and interest groups in the form of a new project.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The solution can help - **SMEs & mid-caps**: show them an alternative manufacturing solution, which is useful for testing prototypes, scenarios, new directions; production optimization (in long term) - **Managing authorities /policy level/:** develop their digital skills; the solution fits to the EU-guidelines - **primary school children and pre-career high school students**: experience-based learning, formation of their attitude regarding digitalization - **general public**: introducing digital trends; develop their digital skills In summary, the use-case contributes to the improvement of sustainable linkages among the actors and helps to strengthen innovation capacity in CE regions. The demo production line will be open for the broad ecosystem, including also policy makers. Their personal involvement will be achieved, as well, in the facility visits. Additionally, it will be introduced to companies, who will be more open to integrate such solutions into their production systems. The demo line has two aspects, impacting the policy instruments – educate the ecosystem players about the applicability and generates demand for such policy instruments.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Automation & Robotics*
PP's CAMI4.0 TIN ROLE	*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☐ *Automation & Robotics* ☒ *Smart and Advanced Materials* ☒ *Artificial Intelligence*

	☐ *Other: _____*
Use-Case Key Words	#manufacturing #additivemanufacturing #demofactory #cyberphisicalfactory #production #centraleurope #industry4.0 #productionline #innovation #testing
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/01/2022*
	END DATE	*31/12/2022*
	DURATION IN MONTHS	*12*
IMPLEMENTATION	START DATE	*01/01/2023*
	END DATE	*31/12/2023*
	DURATION IN MONTHS	*12*

CHALLENGE & CHALLENGE WHEEL ALIGNMENT	
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*	Generally, it can be stated that production is growing in complexity and flexibility, where digitalization enabled mass customization. Meanwhile earlier the important feature was to produce at full capacity of the machines, by now it changed to full agility to meet individual customer needs as quickly as possible. From a technical point of view data storage, data transmission and data processing have become significantly cheaper and accessible, enabling broad utilization of smart solutions in the manufacturing process. The main challenge for the companies that they have machine- and investment-oriented approach. They do not

	think in most cases in holistic way, like how digitalization can contribute to the overall value creation. By introducing the demo production line, the businesses will have a concrete example of how elements of digitalization create one integrated application. The challenge is to achieve mindset change rather than new investments. How our organization became aware of the challenge? Firstly, PBN – as a business support organisation – built an extended partner network in the region in the past 15 years. PBN started to gain the first experiences about industry4.0 elements in international expos, and began to develop the employees' digital skills and to follow trends after the impressive experiences. Today, PBN cooperates with a lot of partners from the manufacturing sector (SMEs, mid-caps, clusters etc.), where the first signs of the changing trends can be recognized and new type of needs came to the front.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☐ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	-
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The unit is a complex solution: the whole manufacturing process is integrated into a demo asset, giving the opportunity to test all of the points of the production line / all of the stages of the process. The manufacturing unit consists of physical manufacturing components (which can be developed with cyber-physical features). The model has also experimentation and research modules, enabling concrete services towards the relevant ecosystem members. Moreover, the above-described challenges led to solutions, where sensors are integrated into the production lines, so anything can be measured, customized and optimized. The latter features are targeted altogether with the 4 use cases.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	- It gives opportunity for real-time data measurement and can be updated with the forecast function in the future. - Manufacturers need to overcome the challenge of meeting individual customer needs as quickly as possible. At the same time, not all of them have the knowledge, capacity resource and/or the financial sources to solve the problem in the short run. However, it would be very useful to give them training and testing opportunities – even in the frame of a PILOT program connected to international projects. - The solution can never be called final, it can be figured and developed continuously according to technology trends, which means a lot of opportunities for the future.

DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	In regions, where manufacturers (SMEs, NGOs, mid-caps) or the representatives of higher education and research, training centres, schools etc. don't have knowledge, capacity resource and/or the financial sources for the purchase, development and the continuous operation of such a device – the importance of business support organizations and tech-transfer institutions can grow significantly. The demo production line will be a basis for the 2021-2027 European projects, where partners will be invited to get familiar with this solution, and develop together multiple new services. It will be extended and connected to existing mobile, collaborative and industrial robot applications, and additionally integrated with units abroad (connected or distributed factory concept).	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	Knowledge facilitator and/or knowledge supplier. PBN has extensive partnership with target groups on regional, but even on national level. It means, PBN can have the role of a facilitator when the process comes to the strategy-building phase. At the development phase and during the piloting period, the digital innovation hub (am-LAB) can play the role of a knowledge supplier.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	As it is described above, the target groups would have plenty of benefits from testing and learning opportunities in the short run: They can test an alternative manufacturing solution; their digital skills will be developed through an experience-based learning process. The cooperation can give them valuable connections

			on the field of digitization in the long run.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website. More discussion is needed for writing here concrete names.	Knowledge Supplier	1) Development phase: The exact additional organization(s) should have specifications on the following fields: industry 4.0 IT, programming, mechanical and electrical engineering production and quality management Having an extended network with industry4.0 actors is an advantage for being a part of the use case implementation.
	Organisation Name (n…) and short hyperlink to their website.	Knowledge Receiver	2) Testing phase: - Higher Education and Research - DIHs, EDIHs - Students (from the fields of IT, programming, mechanical and electrical engineering) - pre-high school students - SMEs; mid-caps

		Knowledge Receiver	3) Training and Promotion: - Higher Education and Research - DIHs, EDIHs - Students (from the fields of IT, programming, mechanical and electrical engineering) - pre-high school students - SMEs; mid-caps + policy level!
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	70% of the required resources would come from public funding (a certain proportion of this can come from structural national funding). Additional 20% of the resources would be private or business contribution.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]		Horizon Europe Program European Institute of Technology – Innovation Action calls Digital Europe Program – Digital skills development Interreg Europe Program, Interreg Central Europe Program, Danube Transnational Program – Digital skills development Cross-border cooperation opportunities - Horizon Europe Program Digital Europe Program Interreg Europe Program→ Policy Objective 1: Smarter Europe:

		(i) enhancing research and innovation capacities and the uptake of advanced technologies; (ii) reaping the benefits of digitisation for citizens, companies and governments; (iii) enhancing growth and competitiveness of SMEs and job creation in SMEs; (iv) developing skills for smart specialisation, industrial transition and entrepreneurship; ***Interreg Central Europe Program→*** Priority 1: A smarter central Europe through cooperation: SO 1.1 Strengthening innovation capacities in central Europe SO 1.2 Developing skills for smart specialisation, industrial transition and entrepreneurship in central Europe ***Danube Transnational Program→*** Priority: A Smarter Danube Region: Developing and enhancing research and innovation capacities and the uptake of advanced technologies Developing skills for smart specialization industrial transition and entrepreneurship

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

		Cross-border cooperation opportunities→ Austria-Hungary cross border Priority 3: A competent border region Priority 4: An integrated border region
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The next budget period (2021-2027) gives a very wide range of opportunities in terms of the subject of calls. This can be an advantage but a disadvantage, too: all parts of the applications must fit completely to the aspects of the specific topic. The possibility of errors is quite high. The required budget for purchasing the smart material demo line (IMPROVE! project) + the smart material board (4STEPS project) might not be approved fully or partly→ The full deployment of the demo line+ the smart material board may not be feasible	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	CEUP2030 strives for a more innovative Central Europe. PPs working in the partnership are hard-working, purposeful people, they are up-to date with new digital trends, and they are familiar with the process of the European funding programs. A common way of thinking and action planning can be a solution to overcome the difficulties.	
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**PBN**
PARTNER'S RESPONSIBLE MANAGER	*Ms. Anna Tóth & Mr. Martin Dan*
E-MAIL:	*martin.dan@pbn.hu*
PHONE:	*+3630/619 5554*
REGION	*Western Transdanubia*
COUNTRY	*Hungary*
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Demo production line upgraded with predictive functions

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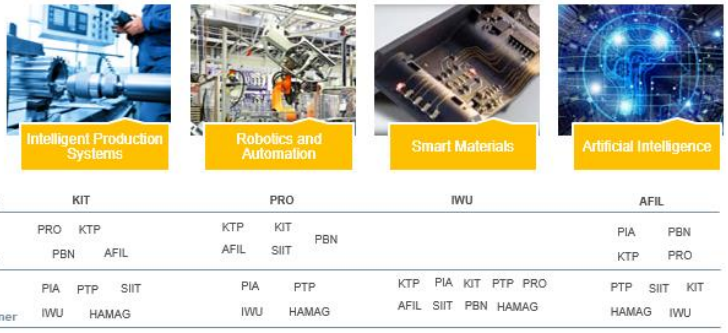
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	PBN's 4 use cases are strongly connected with each other. Basically, the Demo production line would be the first necessary development in order to continue the process with the use cases defined at the 3 other topics (Intelligent production Systems, AI and Smart Materials). The demo production line establishment is described under the use case for Automation and Robotics. The production line upgraded by predictive functions should be treated as a separate use case, because upgrading the unit with artificial intelligence can contain lot of possibilities. According to that, members of the project /use case/ consortium, target groups and achievable goals are different. The production line upgraded by predictive functions can give information about the followings: - it predicts the possible errors, - estimates the remaining time for getting the finished product, - predicts the expected energy consumption, - provides suggestions etc.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	The idea of the demo production line came up at IMPROVE! AT-HU Interreg project, where the acquisition of the needed assets is planned through a cross-border cooperation. In the CEUP2030 partnership there are partners who have professional knowledge about AI, smart materials, automation & robotics, intelligent production. The 4 groups (TINs) have their own leaders and core members - with an advanced level of knowledge- from the partnership, presented on the picture below: Artificial intelligence is an abstract term, and companies struggle with the interpretation to their daily business and benefit. Most often requested functionality is connected

	with predictive support, real-time data visualization. During the 4STEPS (Interreg CE) interviews (conducted in Q4 2019) and the implemented trainings these applications were the mentioned and related to AI. The demo production line will provide the necessary amount and type of data to develop these solutions. PBN received insights in connection with the Artificial Intelligence topic from the S3HubsinCE project (CE) where so- called Navigation Crews- Thematic Priority Areas have been established- and one area is Predictive Maintenance led by Intellimech from Italy. In this topic, numerous workshops have been organized where PBN also participated and gained knowledge.  Overall, the knowledge of this partnership can be a good base for future development of the demo production line. The optional cooperation on the demo production line can result - new services supported by industry4.0 solutions, - knowledge base, useful data for the manufacturing sector, - opportunity not just for real-time data but for forecasts, too, - training opportunities for manufacturers on local/national/international level, - transfer of knowledge & tutorials for students and interest groups in the form of a new project.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The solution can help - SMEs & mid-caps: show them an alternative manufacturing solution, which can be the new generation solution among the production forecast processes. It enables production optimization with less error. - Managing authorities /policy level/: develop their digital skills; the solution fits to the EU-guidelines

	- primary school children and pre-career high school students: experience-based learning, formation of their attitude regarding digitalization - general public: introducing digital trends; develop their digital skills In summary, the use-case contributes to the improvement of sustainable linkages among the actors and helps to strengthen innovation capacity in CE regions. Artificial intelligence is a key topic in all relevant policy documents; however, the training and education component is often missing. Such examples have to be brought to the market that gives tangible advantages. Therefore, the demo line has two aspects, impacting the policy instruments – educate the ecosystem players about the applicability and generates demand for such policy instruments. Additionally, PBN is leader of AI working groups, various national and international platforms, enabling an efficient dissemination of the learning results.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE	*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☒ *Smart and Advanced Materials* ☐ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	#manufacturing #additivemanufacturing #artificialintelligence #predictivefunctions #demofactory #cyberphisicalfactory #production #centraleurope #industry4.0

		#productionline #innovation #testing
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/01/2023*
	END DATE	*31/12/2023*
	DURATION IN MONTHS	*12*
IMPLEMENTATION	START DATE	*01/01/2024*
	END DATE	*The end date depends on the quantity & quality of data that the production line poduces, collects. It needs time to have the database - firstly the unit needs to work and meet challenges, errors, more and more products. It requires continously operational tasks.*
	DURATION IN MONTHS	*as long as it takes*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Generally, it can be stated that production is growing in complexity and flexibility, where digitalization enabled mass customization. Meanwhile earlier the important feature was to produce at full capacity of the machines, by now it changed to full agility to meet individual customer needs as quickly as possible. From a technical point of view data storage, data transmission and data processing have become significantly cheaper and accessible, enabling broad utilization of smart solutions in the manufacturing process. To be able to provide AI-driven functionalities to manufacturing companies, robust datasets are a prerequisite. In the case of SMEs such mass production is rarely present, limiting the utilization of AI. With the help of the demo production line, and the developments built on it, such solution will be trained and showcased, that brings the solution closer to the relevant market players. PBN has a data science team dedicated to small and medium-sized datasets, and how to overcome the challenge of limited elements of database.

	How our organization became aware of the challenge? Firstly, PBN – as a business support organization – built an extended partner network in the region in the past 15 years. PBN started to gain the first experiences about industry4.0 elements in international expos, and began to develop the employees' digital skills and to follow trends after the impressive experiences. Today, PBN cooperates with a lot of partners from the manufacturing sector (SMEs, mid-caps, clusters etc.), where the first signs of the changing trends can be recognized and new type of needs came to the front.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	-
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	

DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The challenges that are described above led to solutions, where sensors are integrated into the production lines, so anything can be measured, customized and optimized. The collected data can be stored on the cloud, a mobile application can be developed for the remote access. The expected functionality is related to utilization and foreseen maintenance of components – like wearing, endurance -, or expected of finish of certain manufactured elements, linked to stocks of raw material. The likelihood of manufacturing error or quality problems. It will be also demonstrated by pre-programmed errors. The unit is a complex solution: the whole manufacturing process is integrated into a demo asset, giving the opportunity to test all of the points of the production line / all of the stages of the process. The manufacturing unit consists of physical manufacturing components (which can be developed with cyber-physical features). The model has also experimentation and research modules, enabling concrete services towards the relevant ecosystem members.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	- It gives opportunity not only for real-time data measurement but also for forecast data. - Manufacturers need to overcome the challenge of meeting individual customer needs as quickly as possible. At the same time, not all of them have the knowledge, capacity resource and/or the financial sources to solve the problem in the short run. However, it would be very useful to give them training and testing opportunities – even in the frame of a PILOT program connected to international projects. - There are two fundamental reasons for choosing these applications for demonstrating the use of AI. First, it is what the most frequently requested by the customers, and secondly, it brings short-term economic benefit to the companies. They can have a quick ROI calculation. - The solution can never be called final, it can be figured and developed continuously according to

	technology trends, which means a lot of opportunities for the future.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	In regions, where manufacturers (SMEs, NGOs, mid-caps) or the representatives of higher education and research, training centres, schools etc. don't have knowledge, capacity resource and/or the financial sources for the purchase, development and the continuous operation of such a device – the importance of business support organizations and tech-transfer institutions can grow significantly. In Central Europe the average companies – especially in the convergent regions like Western Hungary – build their business models on manufacturing excellence. It is less about the product and more about the production. By contributing to more efficient production by helping to apply AI-based solutions into the manufacturing, the entire region's ecosystem will benefit.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	Knowledge facilitator and/or knowledge supplier. PBN has extensive partnership with target groups on regional, but even on national level. It means, PBN can have the role of a facilitator when the process comes to the strategy-building phase. At the development phase and during the piloting period, the digital innovation hub (am-LAB) can play the role of a knowledge supplier.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	The target groups would have plenty of benefits from the upgraded unit: They can test an alternative manufacturing solution; their digital skills will be developed. The cooperation can give them valuable connections

			on the field of digitization in the long run. Manufacturing companies coming mostly from the automotive supply chain, completed with furniture manufacturers to a limited extent. Also, those companies which are working as a supplier for the international value chain, where customers require constant improvement in the manufacturing performance.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website. More discussion is needed for writing here concrete names.	Knowledge Supplier	1) Development phase: The exact additional organization(s) should have specifications on the following fields: - industry 4.0 - IT, programming, mechanical and electrical engineering - production and quality management Having an extended network with industry4.0 actors is an advantage for being a part of the use case implementation. - Universities, that are oriented towards engineering education. They typically have the theoretical basis, yet the business relations are missing. - Policy making institutions that are in business development - it serves as an educational tool towards them,

			showing how AI can be implemented to manufacturing SMEs. - International and national platforms specialized on AI – it can serve as good practices
	Organisation Name (n…) and short hyperlink to their website.	Knowledge Receiver	2) Testing phase: - Higher Education and Research - DIHs, EDIHs - Students (from the fields of IT, programming, mechanical and electrical engineering) - pre-high school students - SMEs; mid-caps - large enterprises
		Knowledge Receiver	3) Training and Promotion: - Higher Education and Research - DIHs, EDIHs - Students (from the fields of IT, programming, mechanical and electrical engineering) - pre-high school students - SMEs; mid-caps - large enterprises **+ policy level!**
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	70% of the required resources would come from public funding (a certain proportion of this can come from structural national funding). Additional 20% of the resources would be private or business contribution.		

	Training and education are typically financed from public resources, while the businesses can order services from specific, dedicated service providers in a next phase. Therefore, the training of AI applications is 100% subsidized by public resources, while the individual developments and 50-100% from private pockets. As far as the required resources are concerned, the demo production line is intended to be purchased in the framework of the IMPROVE! project (Austria-Hungary cross border project). Negotiations with the service (manufacturing line) provider shall be conducted, but the estimated budget for the line is circa 100.000 EUR, which will be financed by the IMPROVE! project In order to apply the predictive function, firstly we will need data from the manufacturing demo line to be analysed, and then predictive functions can be demonstrated.	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	Horizon Europe Program Digital Europe Program Interreg Europe Program Interreg Central Europe Program Danube Transnational Program Cross-border cooperation opportunities Horizon Europe Program Digital Europe Program Interreg Europe Program→ Policy Objective 1: Smarter Europe: (v) enhancing research and innovation capacities and the uptake of advanced technologies;

		(vi) reaping the benefits of digitisation for citizens, companies and governments; (vii) enhancing growth and competitiveness of SMEs and job creation in SMEs; (viii) developing skills for smart specialisation, industrial transition and entrepreneurship; Interreg Central Europe Program→ Priority 1: A smarter central Europe through cooperation: SO 1.1 Strengthening innovation capacities in central Europe SO 1.2 Developing skills for smart specialisation, industrial transition and entrepreneurship in central Europe Danube Transnational Program→ Priority: A Smarter Danube Region: Developing and enhancing research and innovation capacities and the uptake of advanced technologies

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		Developing skills for smart specialization industrial transition and entrepreneurship Cross-border cooperation opportunities→ Austria-Hungary cross border Priority 3: A competent border region Priority 4: An integrated border region
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The next budget period (2021-2027) gives a very wide range of opportunities in terms of the subject of calls. This can't be only an advantage but also a disadvantage: all parts of the applications must fit completely to the aspects of the specific topic. The possibility of errors is quite high. The required budget for purchasing the smart material demo line (IMPROVE! project) + the smart material board (4STEPS project) might not be approved fully or partly→ The full deployment of the demo line+ the smart material board may not be feasible	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	CEUP2030 strives for a more innovative Central Europe. PPs working in the partnership are hard-working, purposeful people, they are up-to date with new digital trends, and they are familiar with the process of the European funding programs. A common way of thinking and action planning can be a solution to overcome the difficulties.	
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**PBN**
PARTNER'S RESPONSIBLE MANAGER	*Ms. Anna Tóth & Mr. Martin Dan*
E-MAIL:	*martin.dan@pbn.hu*
PHONE:	*+3630/619 5554*
REGION	*Western Transdanubia*
COUNTRY	*Hungary*
USE-CASE ACTION PLAN	

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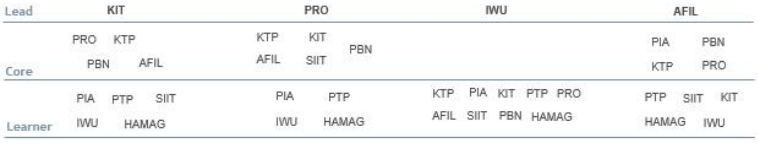
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	**Digital twin** of the demo production line
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	PBN's 4 use cases are strongly connected with each other. Basically, the Demo production line would be the first necessary development in order to continue the process with the use cases defined at the 3 other topics (Intelligent production Systems, AI and Smart Materials). The demo production line establishment is described under the use case for Automation and Robotics. The digital twin of the demo production line will be established. The digital twin can be defined simply: "…a digital twin is a virtual model of a process, product or service. This pairing of the virtual and physical worlds allows analysis of data and monitoring of systems to head off problems before they even occur, prevent downtime, develop new opportunities and even plan for the future by using simulations." (Forbes, 2017)1 Creating the digital twin and supplementing the demo production unit with it would be a great contribution to the development of Central European innovation capacity. The digital twin enables several virtual testing opportunities for the production process. Several simulations can be created, tested, customized with the aim of optimizing the production. Meanwhile, the physical unit doesn't work: row material remains, waste isn't generated. The real production starts only when the virtual test is successful. Possible functions: - forecast based on the virtual simulations, - suggestions to the real production, - testing virtually the effectiveness of the production components – how does the production go with or without a component?

[1] Source: https://www.forbes.com/sites/bernardmarr/2017/03/06/what-is-digital-twin-technology-and-why-is-it-so-important/?sh=560fa3982e2a

	- it can be used for budget estimations – it can clearly show the need for energy resources, raw material etc. - any other customized functions
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	The idea of the demo production line came up at IMPROVE! AT-HU Interreg project, where the acquisition of the needed assets is planned through a cross-border cooperation. The understanding and concept of digital twin originated from a Horizon Europe project, called L4MS, which aimed at manufacturing excellence for production companies. It led to the demand of adaptation, as a complex tool applicable both for optimalization of existing production structure or for improvement via new extensions. It started at large automotive manufacturing companies than cascading down to SMEs. In the CEUP2030 partnership there are partners who have professional knowledge about AI, smart materials, automation & robotics, intelligent production. The 4 groups (TINs) have their own leaders and core members - with an advanced level of knowledge- from the partnership, presented on the picture below:   Overall, the knowledge of this partnership can be a good base for future development of the demo production line. The optional cooperation on the demo production line can result - new services supported by industry4.0 solutions, - knowledge base, useful data for the manufacturing sector, - opportunity not just for real-time data but for forecasts, too, - training opportunities for manufacturers on local/national/international level,

	- transfer of knowledge & tutorials for students and interest groups in the form of a new project.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The solution can help - **SMEs & mid-caps**: show them an alternative manufacturing solution, which can be the new generation solution among the production forecast and testing processes. It enables production optimization with less error. - **Managing authorities /policy level/:** develop their digital skills; the solution fits to the EU-guidelines - **primary school children and pre-career high school students**: experience-based learning, formation of their attitude regarding digitalization - **general public**: introducing digital trends; develop their digital skills In summary, the use-case contributes to the improvement of sustainable linkages among the actors and helps to strengthen innovation capacity in CE regions. Digital twin can be a leading solution in agility feature of the SMEs. It enables flexible production systems, quickly adjustable lines, simulation of new investments, exploitation of sensor-data driven manufacturing. It is a very complex, yet potentially large impact tool. By providing evidence of the utilization, training it to the various companies and stakeholder, the policy instruments can significantly grow the uptake of digital twins.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Intelligent Production Systems*
PP's CAMI4.0 TIN ROLE	*Core*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☒ *Automation & Robotics* ☒ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*

Use-Case Key Words		#manufacturing #additivemanufacturing #digitaltwinning #sensors #demofactory #cyberphisicalfactory #production #centraleurope #industry4.0 #productionline #innovation #testing
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/01/2023*
	END DATE	*31/12/2023*
	DURATION IN MONTHS	*12*
IMPLEMENTATION	START DATE	*01/01/2024*
	END DATE	*The start & end date depend on the successful development of the digital twin, which will be the beginning of the testing phase.*
	DURATION IN MONTHS	*as long as it takes*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Generally, it can be stated that production is growing in complexity and flexibility, where digitalization enabled mass customization. Meanwhile earlier the important feature was to produce at full capacity of the machines, by now it changed to full agility to meet individual customer needs as quickly as possible. From a technical point of view data storage, data transmission and data processing have become significantly cheaper and accessible, enabling broad utilization of smart solutions in the manufacturing process.

	How our organization became aware of the challenge? Firstly, PBN – as a business support organization – built an extended partner network in the region in the past 15 years. PBN started to gain the first experiences about industry4.0 elements in international expos, and began to develop the employees' digital skills and to follow trends after the impressive experiences. Today, PBN cooperates with a lot of partners from the manufacturing sector (SMEs, mid-caps, clusters etc.), where the first signs of the changing trends can be recognized and new type of needs came to the front. The main challenge for the companies that they have machine- and investment-oriented approach. They do not think in most cases in holistic way, like how digitalization can contribute to the overall value creation. By introducing the demo production line with using the digital twin application, the businesses will have a concrete example of how elements of digitalization create one integrated application. The challenge is to achieve mindset change rather than new investments. Stakeholders need to be informed and trained about the utilization of digital twins, and with the help of the demo production line this knowledge transfer might be showcased
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing*

	☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	-
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The challenges that are described above led to solutions, where sensors are integrated into the production lines, so anything can be measured, customized and optimized. The collected data can be stored on the cloud, and the virtual twin or clone of the physical manufacturing unit can be developed. It is called the cyber-physical character of the factory. Once the CF→ cyber-physical factory is created, it enables either simulations on it – like what would happen, when the assembly line is modified, or the flow of manufacturing is changed -, or machine settings can be altered, and then downloaded to the physical unit. It assists manufacturing when the trained staff is not available on site. The final stage is the automated manufacturing, without human intervention. The unit is a complex solution: the whole manufacturing process is integrated into a demo asset, giving the opportunity to test all of the points of the production line / all of the stages of the process.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	- Digital twinning is very effective and innovative solution, which is not a common solution in our region at the moment, a great emphasis should be put on promotion. - It gives opportunity not only for real-time data measurement but also for forecast data. - Manufacturers need to overcome the challenge of meeting individual customer needs as quickly as possible. At the same time, not all of them have the knowledge, capacity resource and/or the financial sources to solve the problem in the short run.

	However, it would be very useful to give them training and testing opportunities – even in the frame of a PILOT program connected to international projects. - The solution can never be called final, it can be figured and developed continuously according to technology trends, which means a lot of opportunities for the future. With the help of the digital twin function- to be integrated into the demo production line- customer will have the possibility to be informed about this technology application Customers might have the opportunity to twin the production line, or some parts of it in a digital form, and using, applying it in their own premises.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	In regions, where manufacturers (SMEs, NGOs, mid-caps) or the representatives of higher education and research, training centres, schools etc. don't have knowledge, capacity resource and/or the financial sources for the purchase, development and the continuous operation of such a device – the importance of business support organizations and tech-transfer institutions can grow significantly. The solution can help - **SMEs & mid-caps**: show them an alternative manufacturing solution, which can be the new generation solution among the production forecast and testing processes. It enables production optimization with less error. - **Managing authorities /policy level/:** develop their digital skills; the solution fits to the EU-guidelines - **primary school children and pre-career high school students**: experience-based learning, formation of their attitude regarding digitalization - **general public**: introducing digital trends; develop their digital skills In summary, the use-case contributes to the improvement of sustainable linkages among the actors and helps to strengthen innovation capacity in CE regions. The demo production line will be a basis for the 2021-2027 European projects, where partners will be invited to get

	familiar with this solution, and develop together multiple new services. It will be extended and connected to existing mobile, collaborative and industrial robot applications, and additionally integrated with units abroad (connected or distributed factory concept). Digital twin can be a leading solution in agility feature of the SMEs. It enables flexible production systems, quickly adjustable lines, simulation of new investments, exploitation of sensor-data driven manufacturing. It is a very complex, yet potentially large impact tool.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	Knowledge facilitator and/or knowledge supplier. PBN has extensive partnership with target groups on regional, but even on national level. It means, PBN can have the role of a facilitator when the process comes to the strategy-building phase. At the development phase and during the piloting period, the digital innovation hub (am-LAB) can play the role of a knowledge supplier. At the moment, a colleague of am-LAB is testing a softver, which controls the digital twin. It requires a lot of time, exactitude, knowledge became an expert on this.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	The target groups would have plenty of benefits: They can test an alternative manufacturing solution; their digital skills will be developed. The cooperation can give them valuable connections

			on the field of digitization in the long run.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above“ in the template.* *Choose specifically the technology transfer tree „role“ in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Organisation Name 1, and short hyperlink to their website.	Knowledge Supplier	1) **Development phase:** The exact additional organization(s) should have specifications on the following fields: - industry 4.0 - IT, programming, mechanical and electrical engineering - production and quality management Having an extended network with industry4.0 actors is an advantage for being a part of the use case implementation. **For digital twinning, contribution for simulation modelling is needed.**
	Organisation Name (n…) and short hyperlink to their website.	Knowledge Receiver	2) **Testing phase:** - Higher Education and Research - DIHs, EDIHs - Students (from the fields of IT, programming, mechanical and electrical engineering) - pre-high school students - SMEs; mid-caps - large enterprises
		Knowledge Receiver	3) **Training and Promotion:** - Higher Education and Research - DIHs, EDIHs - Students (from the fields of IT, programming, mechanical and

			electrical engineering) - pre-high school students - SMEs; mid-caps - large enterprises **+ policy level!**
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	70% of the required resources would come from public funding (a certain proportion of this can come from structural national funding). Additional 20% of the resources would be private or business contribution. Training and education is typically financed from public resources, while the businesses can order services from specific, dedicated service providers in a next phase. Therefore, the training of digital twin applications is 100% subsidized by public resources, while the individual developments 50-100% may come from private pockets. As far as the required resources are concerned, the demo production line is intended to be purchased in the framework of the IMPROVE! project (Austria-Hungary cross border project). Negotiations with the service (manufacturing line) provider shall be conducted, but the estimated budget for the line is circa 100.000 EUR, which will be financed by the IMPROVE! project		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* ***&*** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	Horizon Europe Program Digital Europe Program Interreg Europe Program Interreg Central Europe Program Danube Transnational Program Cross-border cooperation opportunities Horizon Europe Program Digital Europe Program *Interreg Europe Program →* Policy Objective 1: Smarter Europe:	

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		(ix) enhancing research and innovation capacities and the uptake of advanced technologies; (x) reaping the benefits of digitisation for citizens, companies and governments; (xi) enhancing growth and competitiveness of SMEs and job creation in SMEs; (xii) developing skills for smart specialisation, industrial transition and entrepreneurship; *Interreg Central Europe Program →* Priority 1: A smarter central Europe through cooperation: SO 1.1 Strengthening innovation capacities in central Europe SO 1.2 Developing skills for smart specialisation, industrial transition and entrepreneurship in central Europe *Danube Transnational Program →* Priority: A Smarter Danube Region: Developing and enhancing research and innovation

		capacities and the uptake of advanced technologies Developing skills for smart specialization industrial transition and entrepreneurship *Cross-border cooperation opportunities*→ Austria-Hungary cross border Priority 3: A competent border region Priority 4: An integrated border region
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The next budget period (2021-2027) gives a very wide range of opportunities in terms of the subject of calls. This can't be only an advantage but also a disadvantage: all parts of the applications must fit completely to the aspects of the specific topic. The possibility of errors is quite high. The required budget for purchasing the smart material demo line (IMPROVE! project)+ the smart material board (4STEPS project) might not be approved fully or partly→ The full deployment of the demo line+ the smart material board may not be feasible	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	CEUP2030 strives for a more innovative Central Europe. PPs working in the partnership are hard-working, purposeful people, they are up-to date with new digital trends, and they are familiar with the process of the European funding programs. A common way of thinking and action planning can be a solution to overcome the difficulties.	
END OF TEMPLATE		

PARTNER INFORMATION	
PARTNER	**PBN**
PARTNER'S RESPONSIBLE MANAGER	*Ms. Anna Tóth & Mr. Martin Dan*
E-MAIL:	*martin.dan@pbn.hu*
PHONE:	*+3630/619 5554*
REGION	*Western Transdanubia*
COUNTRY	*Hungary*
USE-CASE ACTION PLAN	

ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Demo production line upgraded with smart material board and/or with built-in smart materials
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	PBN's 4 use cases are strongly connected with each other. Basically, the Demo production line would be the first necessary development in order to continue the process with the use cases defined at the 3 other topics (Intelligent production Systems, AI and Smart Materials). The demo production line establishment is described under the use case for Automation and Robotics. Smart materials are the only one from the 4 CAMI4.0 topics, where PBN strengthens the learners' team. Accordingly, this use case is based on plans, ideas which should be further developed by members who are experts on the topic. The idea would be to apply smart material(s) into the demo production line, or into specific parts of it. The activity would have a strong innovative effect across Central Europe, however only a few actors own the required expertise.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Furthermore, describe how this use case relates to the PP's current activities at regional or national level.* *Maximum 1000 Characters*	The idea of the demo production line came up at IMPROVE! AT-HU Interreg project, where the acquisition of the needed assets is planned through a cross-border cooperation. In the CEUP2030 partnership there are partners who have professional knowledge about AI, smart materials, automation & robotics, intelligent production. The 4 groups (TINs) have their own leaders and core members - with an advanced level of knowledge- from the partnership, presented on the picture below:

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	 Lead: KIT — PRO — IWU — AFIL Core: PRO KTP PBN AFIL — KTP KIT AFIL SIIT PBN — PIA PBN KTP PRO Learner: PIA PTP SIIT IWU HAMAG — PIA PTP IWU HAMAG — KTP PIA KIT PTP PRO AFIL SIIT PBN HAMAG — PTP SIIT KIT HAMAG IWU Overall, the knowledge of this partnership can be a good base for future development of the demo production line. The optional cooperation on the demo production line can result - new services supported by industry4.0 solutions, - knowledge base, useful data for the manufacturing sector, - opportunity not just for real-time data but for forecasts, too, - training and testing opportunities for manufacturers on local/national/international level, - transfer of knowledge & tutorials for students and interest groups in the form of a new project. Apart from the IMPROVE project, PBN received insights in connection with the smart material topic from the S3HubsinCE project (CE) where so- called Navigation Crews-Thematic Priority Areas have been established- and one area is Advanced & Smart Materials led by Fraunhofer IWU from Germany. Besides, PBN has been organizing workshops/meetings with regional and national stakeholders (companies, universities) to boost smart material topic and seek cooperation opportunities with relevant stakeholders.
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The solution can help - SMEs & mid-caps: show them an alternative manufacturing solution, - Managing authorities /policy level/: develop their digital skills; the solution fits to the EU-guidelines - primary school children and pre-career high school students: experience-based learning, formation of their attitude regarding digitalization - general public: introducing digital trends; develop their digital skills

	In summary, the use-case contributes to the improvement of sustainable linkages among the actors and helps to strengthen innovation capacity in CE regions. The usage and utilization of smart material components will be playing important role in the next few years in production. The aim is to integrate sensors and smart material applications into the production line, which might communicate with each other. By providing evidence of the utilization, training it to the various companies and stakeholder, the policy instruments can significantly grow the uptake of smart materials.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Smart and Advanced Materials*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☒ *Artificial Intelligence* ☐ *Other: _____*
Use-Case Key Words	#manufacturing #additivemanufacturing #smartmaterials #sensors #demofactory #cyberphisicalfactory #production #centraleurope #industry4.0 #productionline #innovation #testing
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	

TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/01/2023*
	END DATE	*31/12/2023*
	DURATION IN MONTHS	*12*
IMPLEMENTATION	START DATE	*01/01/2024*
	END DATE	*Due to lack of experiences the needed time can't be estimated at this stage.*
	DURATION IN MONTHS	*as long as it takes*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		Generally, it can be stated that production is growing in complexity and flexibility, where digitalization enabled mass customization. Meanwhile earlier the important feature was to produce at full capacity of the machines, by now it changed to full agility to meet individual customer needs as quickly as possible. From a technical point of view data storage, data transmission and data processing have become significantly cheaper and accessible, enabling broad utilization of smart solutions in the manufacturing process. How our organization became aware of the challenge? Firstly, PBN – as a business support organization – built an extended partner network in the region in the past 15 years. PBN started to gain the first experiences about industry4.0 elements in international expos, and began to develop the employees' digital skills and to follow trends after the impressive experiences. Today, PBN cooperates with a lot of partners from the manufacturing sector (SMEs, mid-caps, clusters etc.), where the first signs of the changing trends can be recognized and new type of needs came to the front. The main challenge for the companies that they have machine- and investment-oriented approach. They do not think in most cases in holistic way, like how digitalization can contribute to the overall value creation. By introducing the demo production line with using the smart material board, the businesses will have a concrete example of how elements of digitalization create one integrated application. The challenge is to achieve mindset change

	rather than new investments. Stakeholders need to be informed and trained about the utilization of smart materials, and with the help of the demo production line this knowledge transfer might be showcased.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*	***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*	***Choose as many which will apply*** ☒ *Research & Development* ☒ *Design* ☐ *Procurement* ☒ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☒ *Service and Repair* ☒ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C28 - Manufacturing of Machinery and Equipment***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	-
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The challenges that are described above led to solutions, where sensors are integrated into the production lines, so anything can be measured, customized and optimized. Smart materials would join to this kind of activity, measurement, testing, fine-tuning would be easier with them.

	The demo unit is a complex solution: the whole manufacturing process is integrated into a demo asset, giving the opportunity to test all of the points of the production line / all of the stages of the process. Due to the smart material board- to be integrated into the production line-our technical (engineering staff) will have the possibility to learn about smart materials. (E.g: How their size, shape and temperature changes) This know-how might be showcased and shared with companies. The smart material board- to be purchased- would consist the following elements: It includes a total number of two connectable boards including the installed software and the needed smart material components, which are: - 1 shape memory alloy sensor, - 1 shape memory alloy actuator, - 1 piezoelectric sensor, - 1 piezoelectric actuator, - 1 piezoelectric loudspeaker, - 1 piezoelectric energy harvester, - Transport case. This smart material board will be integrated into the demo production line
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders.* *Maximum 1000 Characters*	- Manufacturers need to overcome the challenge of meeting individual customer needs as quickly as possible. At the same time, not all of them have the knowledge, capacity resource and/or the financial sources to solve the problem in the short run. However, it would be very useful to give them training and testing opportunities – even in the frame of a PILOT program connected to international projects. - The solution can never be called final, it can be figured and developed continuously according to technology trends, which means a lot of opportunities for the future. • The utilization of smart materials will be significant in the next few years/Programming Period

	• We would like to widen our knowledge in connection with smart materials, and this knowledge might be disseminated with our partners (stakeholders: mainly companies, but also policy decision makers and educational players as well)	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	In regions, where manufacturers (SMEs, NGOs, mid-caps) or the representatives of higher education and research, training centres, schools etc. don't have knowledge, capacity resource and/or the financial sources for the purchase, development and the continuous operation of such a device – the importance of business support organizations and tech-transfer institutions can grow significantly. The demo production line will be a basis for the 2021-2027 European projects, where partners will be invited to get familiar with this solution, and develop together multiple new services. It will be extended and connected to existing mobile, collaborative and industrial robot applications, and additionally integrated with units abroad (connected or distributed factory concept). Smart material board application would boost manufacturing support potential. It also supports future material science driven research activities that can be applied by the companies.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	Knowledge receiver The digital innovation hub (am-LAB) can play the role of a knowledge receiver, firstly we have to gain the needed knowledge.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier***	Knowledge Receiver	The target groups would have plenty of benefits: They can test an alternative manufacturing solution; their digital skills will be developed. The cooperation can give them valuable connections

- ***Knowledge Receiver*** - ***Knowledge Facilitator***			on the field of digitization in the long run. The solution can help - SMEs & mid-caps: show them an alternative manufacturing solution, - Managing authorities /policy level/: develop their digital skills; the solution fits to the EU-guidelines - primary school children and pre-career high school students: experience-based learning, formation of their attitude regarding digitalization - general public: introducing digital trends; develop their digital skills In summary, the use-case contributes to the improvement of sustainable linkages among the actors and helps to strengthen innovation capacity in CE regions.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Fraunhofer IWU More discussion is needed for writing here additional names.	Knowledge Supplier	1) Development phase: Fraunhofer IWU is part of the CEUP2030 partnership and is the lead member of the TIN group Smart Materials. Their expertise would be needed to complete this use case. More additional organization(s) should have specifications on the following fields: - industry 4.0

			- IT, programming, mechanical and electrical engineering - production and quality management Having an extended network with industry4.0 actors is an advantage for being a part of the use case implementation.
	Organisation Name (n…) and short hyperlink to their website.	Knowledge Receiver	2) Testing phase: - Higher Education and Research - DIHs, EDIHs - Students (from the fields of IT, programming, mechanical and electrical engineering) - pre-high school students - SMEs; mid-caps - large enterprises
		Knowledge Receiver	3) Training and Promotion: - Higher Education and Research - DIHs, EDIHs - Students (from the fields of IT, programming, mechanical and electrical engineering) - pre-high school students - SMEs; mid-caps - large enterprises + policy level!
POLICY INSTRUMENT & RESOURCE ALLOCATION			

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REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	70% of the required resources would come from public funding (a certain proportion of this can come from structural national funding). Additional 20% of the resources would be private or business contribution. Training and education is typically financed from public resources, while the businesses can order services from specific, dedicated service providers in a next phase. Therefore, the training of smart material applications is 100% subsidized by public resources, while the individual developments in connection with the smart material 50-100% may come from private pockets. As far as the required resources are concerned, the demo production line is intended to be purchased in the framework of the IMPROVE! project (Austria-Hungary cross border project). Negotiations with the service (manufacturing line) provider shall be conducted, but the estimated budget for the line is circa 100.000 EUR, which will be financed by the IMPROVE! project Besides, the smart material board element is planned to be purchased in the framework of the currently running 4STEPS (Interreg CE) project, requiring equipment budget for the purchase. The price of the smart material board would be net. 4500 EUR+ delivery.	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* **&** *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Funding Scheme **In case of other, Please clarify:** [Free Text Response]	**Horizon Europe Program** **Digital Europe Program** **Interreg Europe Program→** Policy Objective 1: Smarter Europe: (xiii) enhancing research and innovation capacities and the uptake of advanced technologies; (xiv) reaping the benefits of digitisation for citizens, companies and governments;

		(xv) enhancing growth and competitiveness of SMEs and job creation in SMEs; (xvi) developing skills for smart specialisation, industrial transition and entrepreneurship; **Interreg Central Europe Program→** Priority 1: A smarter central Europe through cooperation: SO 1.1 Strengthening innovation capacities in central Europe SO 1.2 Developing skills for smart specialisation, industrial transition and entrepreneurship in central Europe **Danube Transnational Program→** Priority: A Smarter Danube Region: Developing and enhancing research and innovation capacities and the uptake of advanced technologies Developing skills for smart specialization industrial transition and entrepreneurship **Cross-border cooperation opportunities→**

		Austria-Hungary cross border Priority 3: A competent border region Priority 4: An integrated border region
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The next budget period (2021-2027) gives a very wide range of opportunities in terms of the subject of calls. This can't be only an advantage but also a disadvantage: all parts of the applications must fit completely to the aspects of the specific topic. The possibility of errors is quite high. The required budget for purchasing the smart material demo line (IMPROVE! project)+ the smart material board (4STEPS project) might not be approved fully or partly→ The full deployment of the demo line+ the smart material board may not be feasible	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	CEUP2030 strives for a more innovative Central Europe. PPs working in the partnership are hard-working, purposeful people, they are up-to date with new digital trends, and they are familiar with the process of the European funding programs. A common way of thinking and action planning can be a solution to overcome the difficulties.	
END OF TEMPLATE		

8.10. HAMAG

HAMAG	
PARTNER	**HAMAG**
PARTNER'S RESPONSIBLE MANAGER	Marija Galeković and Ebonita Ćurković
E-MAIL:	Marija.galekovic@hamagbicro.hr; ebonita.curkovic@hamagbicro.hr
PHONE:	+38514891863, +38515494731
REGION	North Croatia, Zagreb region
COUNTRY	Croatia
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Use case CROBOHUB++: CROatian Industry and Society Boosting – European Digital Innovation HUB
SHORT SUMMARY OF USE-CASE, INCLUDING THE SCOPE & OBJECTIVE FOR CENTRAL EUROPE' MANUFACTURING FUTURE. *Maximum 1000 Characters*	In align to the Digital Europe Program, Croatian Ministry of Economy released the call in November 2020 to elect the best consortium which will be established as a digital hub for the North Croatia region. CROBOHUB++ consortia applied for the call proposing a project to meet the challenge. Its vision is to act as a major digital innovation center in the North Croatia. The hub will offer one stop shop services such as: testing new technologies before investing into them; education on cut edge technologies; networking between technology services' providers and their users; financial consultations and development of all skills needed in the process of digital transformation. The CROBOHUB++ consortium gathers all key triple helix eco innovation system stakeholders in Croatia. Namely they are: University of Zagreb, Faculty of Electrical Engineering and Computing (FER) which is a leading partner; Innovation center Nikola Tesla; ZICER (Zagreb Innovation Center); SRCE (University Computing Centre); HAMAG-BICRO and Croatian Chamber of Economy (HGK). It is specialized in three key areas: 1) Artificial intelligence, 2) High Performance Computing, 3) Cyber security and robotics, and their application in the fields of agriculture, manufacturing and green energy.

CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Maximum 1000 Characters*	The funding from Croatia's national innovation research programs - IRI, HORIZON2020 and INTERREGs has improved scientific research infrastructure in academic institutions and among innovative SMEs. Some national calls for innovative SMEs run by HAMAG-BICRO such as POC Prove of concept) or run by Ministry of Economy and Sustainable Development such as (IRI) have supported startups. Faculty of electrical engineering FER and SRCE (partners on CROBOHUB++) have worked jointly on above mention projects with SMEs. Also, they were solely beneficiary of HAMAG-BICROs program PoC. The project partners have worked on the following HORIZON and INTERREG projects: 1. L4MS - Logistics for Manufacturing SMEs, (www.l4ms.eu/ (HORIZON2020) 2. DIH2 - A Network of Robotics DIHs for Agile Production, (http://www.dih-squared.eu/) 3. KITT4SME - Platform-enabled KITs of arTificial intelligence FOR an easy uptake by SMEs, (https://cordis.europa.eu/project/id/952119 4. I DIH NETWORK, (https://www.ai-dih-network.eu/) 5. ATTEST - Advanced Tools Towards cost-efficient decarbonisation of future reliable Energy SysTems, (https://attest-project.eu/) 6. MEET.IN.G - MEETings for INnovation Growth in SMEs: Enhancing collaboration with innovative start-ups, (https://hamagbicro.hr/medunarodna-suradnja/meet-in-g/ 7. EOSC-hub - Integrating and managing services for the European Open Science Cloud, (https://www.eosc-hub.eu/), 8. National Competence Centres in the framework of EuroHPC (EuroCC), https://www.eurocc-project.eu/, 9. NI4OS-Europe - National Initiatives for Open Science in Europe, (https://ni4os.eu/, https://www.srce.unizg.hr/NI4OS-Europe), 10. nnTense - Development of new approach for supporting the application of the Open Innovation in SMEs through the Peer-to-Peer leering, (http://inntenseproject.eu/), 11. E-FIX - Developing and transferring an innovative Energy FInancing miX in order to activate private sector finance for increased investments in sustainable energy projects, (http://energyfinancing.eu/en/)

	12. 3SMART - Smart Building – Smart Grid – Smart City, (http://www.interregdanube.eu/approved-projects/3smart), 1/2017. – 12/2019. 13. Store4HUC - Integracija i napredno gospodarenje sustavima za pohranu energije na povijesnim lokalitetima u gradovima, (https://www.interregcentral.eu/Content.Node/Store4HUC.html) 14. MELIA OBSERVATORY - Media Literacy Observatory for Active Citizenship and Sustainable Democracy, (http://www.interreg-danube.eu/approved-projects/meliaobservatory) 15. InnovaMare - Blue technology - Developing innovative technologies for sustainability of Adriatic Sea, (https://www.hgk.hr/project-innovamare-online-kick-off-conferencenajava) 16. ODEON - Open Data for European Open iNnovation, (https://odeon.interreg-med.eu/ 17. B-Blue - Building the blue biotechnology community in the Mediterranean, (https://hamagbicro.hr/medunarodna-suradnja/b-blue/) 18. SMART FACTORY HUB - Improving RD and business policy conditions for transnational cooperation in the manufacturing industry, (http://www.interreg-danube.eu/approvedprojects/smart-factory-hub) 19. DanubePeerChains - Integrated capacity building and training programme for DANUBE area labour and business support organisations, local industry and entrepreneurs to enter innovative transnational value CHAINS as PEER-level collaboration partners, (http://www.interreg-danube.eu/approved-projects/danubepeerchains), 20. CE-Connector, (https://www.interreg-central.eu/Content.Node/CE-Connector.html)
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	The CROBOHUB++ will act as a digital innovation center in North Croatia. It will offer expertise in broad spectrum of technologies, financial advisement and networking services to its clients. The key word is holistic approach to the client which means that in one shop the client can get service of testing new technology in order to decide is it worth it to invest in it; financial consultancy about how to get the best funding and help to

	internationalize its business or cooperate with relevant companies across the Europe. In terms of technologies, the focus will be on the application of AI, Robotics and Big data computing in three major areas manufacturing; digitalized agriculture; green energy and digitalization of the governmental public bodies. It corresponds to the following EU strategic programs: 1) European Green Deal 2) Digital Europe Program 3) Horizon Program 4) European Fond for Regional Development In terms to Digital Europe CROBOHUB++ is related to all five pillars: 1) High-performance computing DEP technology; 2) Artificial Intelligence; 3) Cyber security; 4) Digital skills and 5) Digital transformation of public administration and interoperability. Regarding national programs and strategies, it fits to the priorities with: 1) The Strategy of the smart specialization S3 of Croatia; 2) The industry strategy of Croatia 3) The strategy of innovation encouragement of Croatia
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Artificial Intelligence*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence*
Use-Case Key Words	Digitalization, Super computer, Artificial intelligence, Green technologies , Digitalization of agriculture; Technology transfer knowledge; Robotics, Green energy; Low carbon economy; Blockchain, Internet of Things
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from*	http://www.icent.hr/en/crobohub/

a good-practice which is already in existance.		
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/10/2021*
	END DATE	*10/01/2024*
	DURATION IN MONTHS	*36 months*
IMPLEMENTATION	START DATE	*01/10/2022*
	END DATE	*01/10/2024*
	DURATION IN MONTHS	*24 months*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The challenge is to create environment for the SMEs to adopt quickly and successfully new technologies as a primary way to keep position on the market and to expand into new markets. The process of digital transformation of SMEs is slow due to lack of funding and education. The SMEs owners are not clear how the process has to be done, how much it will cost and what technologies to adopt. CROBOHUB++ 's main task is to incorporate into local, national and regional environment in way that it lifts up innovation eco system on the further level and to strongly contributes into digital transformation of the Croatian industry and society. Also, the aim is to improve Croatian industry competitiveness.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement*☐*x Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair*

	☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C32 - Other (please clarify below)***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The use case will be specialized in AI, robotics, Internet of Things, embedded systems and automatization, smart sensors, blockchain, digital twins. In terms of industry sectors it will be specialized in: 1) Manufacturing 2) Digitalization in agriculture 3) Energy and environment *4)* Public administration
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	There are numerous solutions that will use those technologies related to this use case. Some of the solution that will be applicable are: Transition of the public administration and SMS to the digitalization; Improvement in agriculture by usage of AI for various purposes (weather forecast, prevention of the crop diseases based on the collection of related factors such as humidity, temperature etc.) The network of smart sensors in the agriculture or traffic etc.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	The major project partner FER is the leading innovative force in the Croatian innovation eco system. In their labs they have been tested and developed numerous projects in the above mention fields. They have excellent research infrastructure for those technologies and over 200 experts. FER and Innovation Centre Nikola Tesla (ICENT) have been partners on the numerous EU and national projects where they also collaborated with top innovative SMEs or with start-ups. An example of good practice is the prototype of the AGV solution tailor-made for the intra-factory logistics problem of Muraplast company, one of the three Pilot Application Experiments in L4MS project.

DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	CROBOHUB++ major role is to integrate research capacities of North Croatia region with surrounding regions. As it is in align to all major EU strategies, one of the important task is to speed up Croatian digitalization and research capacitates in order to keep up with more develop Central European regions. Another important task is to avoid projects overlapping and to improve cooperation among other CE digital hubs, SMEs and all other stakeholders.	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	HAMAG BICRO will be a facilitator between research consortium (provider of the solution) and business who will test and implement the solution. HAMAG has access to all Croatian innovative SMEs and to other stakeholders of the innovative ecosystem.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	Target group, i.e. the main knowledge receivers are innovative SMEs. The major benefit will be to get in one place top expertise regarding technology they want to buy or develop as well as support for business internalisation and advice on

			how to get money or investments needed to run or expand their businesses.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	/	Knowledge Supplier	The leading project partners FER Zagreb and Innovation Centre Nikola Tesla hold, create and transfer research and technology knowledge. They will share that knowledge to the HAMAGBICRO and other project partners.
		Knowledge Supplier	Through its internal network of SMEs and via EEN projects, HAMAG-BICRO will ensure dissemination of the project results, educational and networking activities.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The financial resources will be provided by Digital Europe program and by own funding. HAMAG-BICRO has experienced staff to ensure implementation of the networking and educational activities. Also, it has strong PR department which will widely promote the project on all media.		

	As HAMAG-BICRO is a partner on other EU projects and initiatives this will be used for the CROBOHUB++ promotion and networking.	
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* *&* *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Subsidised Service Funding opportunities in Horizon Europe - Innovative Europe	Digital Europe 2021-2027
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	Since the policy instrument is already defined and the project proposal is positively evaluated on a national level, the challenge is to get positive evaluation on a program level.	
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	n/a	
END OF TEMPLATE		

HAMAG	
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This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

REGION	Coastal region 4 counties
COUNTRY	Croatia

USE-CASE ACTION PLAN

ADMINISTRATIVE INFORMATION

SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Use case Adriatic multifunctional smart buoys INTERREG Italy - Croatia HUB
	Adriatic sea has been for centuries significant source of income and gate to the central Europe for the Croatia and North-East Italy. The coastal line spreads on over 800 km, covers 25 Italian provinces and 4 Croatian counties with population of 12.5 million people, out of which 1.5 million lives in Croatia). Croatian economy is almost fully depended on the Adriatic sea due to the fact that tourism, shipyard, sea transport and fishery are the most important source of the income. In the past decade one third of the national income has been derived from tourism industry. Apart from mention industries, north part of the Adriatic - Krk island is the major gas pipe line hub linking Central and South Europe, while port of Rijeka is the biggest port in the Adriatic. Italian coast is also oriented towards tourism and fishery. In order to further develop tourism and to protect fishery, keeping Adriatic sea clean and unpolluted is of the greatest importance for both countries. INTERREG Initiative Blue Innovation (2016-2020) as a part of the Program Blue funded blue growth pilot projects between Italy and Croatia which stimulated sustainable development linked to the marine and maritime areas and activities. In the period 2021-2027, the Program continues. Our use case Robots clean Adriatic seafloor / or fits to the pilot project under the axis one – Blue Innovation. The aim is to fully recover sea flora and fauna as well as to maintain clean and healthy environment necessary for the fishery and tourism. Advanced technologies in the areas of underwater communication and aquatic robotics are necessary to achieve this goal.

	This project aims to clean the seafloor in the Adriatic and preserve health flora and fauna which are necessary for the fishery and tourism. Background: In the last decade pollution from the river Po which flows into Adriatic sea, caused environmental problems, particularly in the Istra region which derives most of its income from tourism and fishery. Fifty miles towards south, there are another two hot spots: the island of Krk where major gas pipe is placed and port of Rijeka which is the biggest port in the Adriatic, undermines the prospects of tourism and fishery and affects the whole eco chain in the Adriatic region. One of the way to tackle that issue is deployment of the underwater robots which will clean the seafloor and monitor the level of pollution. The robots can also measure all relevant parameters important for the numerous marine research which is conducted in the research stations on the both side of the Adriatic. One approach to the issue of pollution includes the deployment of multifunctional smart buoys - innovative technology being developed for long-term operation and persistent deployment in marine environments. This use-case features a static buoy gathering, analysing, and storing measurements of various environmental values (for both water and air) using built-in sensors while ensuring long-term autonomy of up to several months by employing energy consumption optimisation algorithms as well as renewable energy sources. Communication-wise, the buoy represents a node in a smart city network with real-time remote access, suggesting application in tourism-heavy areas, providing continuous remote access to water quality, sea state, beach, harbour, and waterway data. Regarding the health of fisheries, the presence of surplus fish feed has many adverse consequences on the fish nets as well as the seafloor below and the seawater around the cages. Firstly, these nutrients abundant in the fish net cage result in biofouling of the nets. This causes a decrease of water flow and oxygen levels inside the cages that could slow down the growth of the fish, increase

	their stress levels and even cause death. Secondly, the surplus nutrient suspension which spreads below the fish cage creates a nitrate-rich sediment at the seafloor that can have negative effects on the ecology of the site. Thirdly, nutrient-rich waters (sometimes 400-500m) around the cages are susceptible to algae blooming. Furthermore, inspecting the aquaculture fish net cages and the seafloor below is performed mostly manually by divers. This task is very time consuming, monotonous, and sometimes even dangerous. In this use case, a heterogeneous marine robotic system consisting of a modular autonomous catamaran coupled with an ROV (remotely operated underwater vehicle) helps solve the above stated issues. This system could be set up on the three nodes: north, middle and south coastline, on the both sides of the Adriatic. The project partners and beneficiaries are: University of Zagreb, Faculty of electrical engineering - Department of Robotics, Innovation Centre Nikola Tesla Zagreb, University of Dubrovnik, and Smart eco d.o.o. Italian partners we suggest are Consiglio Nazionalle delle Ricerche Institute of Marine Engineering (CNR-INM) University of Calabria.- As this is an initial proposal and project concept, we are open to other project partners from Italy and Croatia. Their roles in the project are to set up the nodes on the both sides of the Adriatic from the first to the last step. Academic partners will do research and development process while HAMAG's role will be projects' results dissemination and knowledge transfers among Croatian SMEs and all other stakeholders.

CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Maximum 1000 Characters*	This case is related and follows the INTERREG B-Blue, Smart Factory Hub and CEUP2030. HAMAG has been project partner in all three projects. B- Blue is the project under Blue Med Initiative which promotes coordination among blue economy actors among Mediterranean countries. CEUP2030 aims to integrate innovative policies in the Central Europe and this use case is the output, i.e. one of the delivery from the project. Smart Factory HUB
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	This implements expertise in aqua robotics, intelligent systems and smart city solutions. In terms of technologies, the focus will be on the application of aqua robotics to preserve marine environment, fishery and enhance tourism. Also, it will use wind and solar energy, i.e. green energy solutions It corresponds to the following EU strategic programs: INTERREG Blue Innovation – Clean Adriatic – Usage of robotics in cleaning and protecting undersea area of the Adriatic sea on the both banks.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Automation & Robotics*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence*
Use-Case Key Words	*Marine preservation* The key words related to the case are: remotely operated vehicle; smart city, B-Blue, multifunctional smart buoys, aqua robotics, Adriatic sea, catamaran Korkyra w.r.t, Blueye PRO ROV, solar and wind energy.

FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*		http://ind-eko.hr/o-nama/ https://www.fer.unizg.hr/nikola.miskovic
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/10/2021*
	END DATE	*10/01/2024*
	DURATION IN MONTHS	*36 months*
IMPLEMENTATION	START DATE	*01/10/2022*
	END DATE	*01/10/2024*
	DURATION IN MONTHS	*24 months*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The challenge is to connect all stakeholders in blue ecosystem which will ensure permanently clean and unpolluted sea which is necessary requirement for tourism and fishery, i.e. industries that local communities are depended upon. In addition, this solution improves Smart cities concept, allowing coastal cities to keep clean during the tourism seasons, when number of inhabitants are tripled and which cause challenge for local communities and cities.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☒ *Research & Development* ☐ *Design* ☐ *Procurement* ☐ *Manufacturing* ☐ *Distribution* ☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C32 - Other (please clarify below)***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The use case will be specialized in aqua robotics. In terms of industry sectors it will be bring benefit to: 1) Marine ecology-Clean seafloor 2) Fishery 3) Tourism
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	The buoy concept explores wind and solar energy harvesting methods, anchoring solutions, and a LoRaWAN (Long Range Wide Area Network) connection for long-range connectivity in the desired Internet of Things/smart city context. Operating as a remote marine platform performing water quality measurements, the buoy uses existing in-situ sensors such as those for detecting oils, chlorophyll, green algae, and rhodamine; sensors for measuring water turbidity and conductivity (salinity); as well as Coloured Dissolved Organic Matter (CDOM) and pH sensors. Algorithms based on the buoy's inertial measurements are used to estimate wave height and sea state. -The heterogeneous marine robotic system consists of a modular autonomous catamaran developed at UNIZG-FER coupled with market-available Blueye PRO ROV. The catamaran is able to perform autonomous inspection missions, i.e. follow the ROV that autonomously (visually) inspects the fish net cages for biofouling and defects; the seafloor below the cages for fish feed sediment levels; and the surrounding body of water for algae blooming. The novelty of the autonomous catamaran Korkyra w.r.t. the previous aPad ASV is the 600W Minn Kota motor used as a boost motors together with 4 T200 thrusters used mostly for steering or dynamic positioning and fine position control. The catamaran has the autonomy of over 4h. It is integrated with the Blueye Pro ROV and in unison

	they are used for autonomous inspection of the fish cage nets in aquaculture. The ROV is equipped with an HD camera, has the autonomy of 2h, and depth rating of 300m with a 400m long cable ensuring a wide workspace. The catamaran and the ROV can be controlled manually by a joystick/gamepad over RF and WiFi, or they can be put in the autonomous mode.	
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	This way we can deploy new technologies to improve ecological environment and to increase the level of the industries related or depended on clean and green environment: fishery and tourism.	
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe.* *Maximum 1000 Characters.*	1) The use case can be implemented in similar manner in other aqua environments. 2) Croatia and Italy are Mediterranean but CE countries as well 3) North parts of the Adriatic sea is transit hub for the surrounding countries (Austria, Hungary; Germany , Czech Republic, Slovakia) are linked economically and	
DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator	HAMAG BICRO will be a facilitator between research consortium (provider of the solution) and business who will test and implement the solution. HAMAG has access to all Croatian innovative SMEs and to other stakeholders of the innovative ecosystem.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver	Target group, i.e. the main knowledge receivers are innovative SMEs. The major benefit will be to get in one place top expertise regarding technology they want to buy or develop as well as support for business internalisation and advice on how to get money or investments needed to run or expand their businesses.

DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	/	Knowledge Supplier	The leading project partners FER Zagreb and. They will share that knowledge to the HAMAGBICRO and other project partners.
		Knowledge Supplier	Through its internal network of SMEs and via EEN projects, HAMAG-BICRO will ensure dissemination of the project results, educational and networking activities.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The financial resources will be provided by INTERREG Europe Italy Croatia program and by own funding. HAMAG-BICRO has experienced staff to ensure implementation of the networking and educational activities. Also, it has strong PR department which will widely promote the project on all media.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* *&* *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Subsidised Service Funding opportunities in Horizon Europe - Innovative Europe	INTERREG Europe 2021-2027	
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The instrument is defined, but the potential challenge could be writing a good project proposal that gets a positive evaluation.		
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	n/a		
END OF TEMPLATE			

HAMAG	
PARTNER	**HAMAG**
PARTNER'S RESPONSIBLE MANAGER	Marija Galeković and Ebonita Ćurković
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PHONE:	+38515494731
REGION	Coastal region 4 counties
COUNTRY	Croatia
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Use case: KPIs to improve quality of Smart Materials and Intelligent Production System calls
	Project aim: Based on the output and result indicators for ERDF (Investment for jobs and growth and Interreg) RCO (Reggio Common Output Indicator) and RCR (Reggio Common Result Indicator) stated in the Cohesion Fund , Policy Objective 1 – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity, we are aiming to find out the most appropriate key performance indicators KPIs which will be used to design efficient call and to monitor its implementation in the fields of Smart Materials and Intelligent Production Systems. Background: Monitoring and analysis of the calls targeting innovative SMEs in the field of Smart Materials and Intelligent Production Systems in Croatia, have shown that call tenders could have been better designed in terms of administrative requirements/ resources and timing. For example, it was required to submit many administrative documents and certifications, and it was stated that selection process will be finished within 6 months, so the first payment would be within 6 months of submission day. However, that was not the case, the delay of the promised was over 6 months. That caused problems in cash-flow and in project implementation and was the major feedback complain received from the SMEs (beneficiaries). The evaluation process was slow, some questions were vague due to unwell designed evaluation check list. It was obvious that lack of KPIs required for these calls consequently led to shortfalls in the call tender design. Therefore, appropriate KPIs based on the best EU industry and EC practices can overcome this issue. In Croatia monitoring bodies and statistics for the smart specialization and innovative call tenders and project implementation are based

	only on the small set of the EU KPIs which are designed only for quantitative monitoring (number of implementing projects, number of big RI project etc.). There is no qualitative KPIs and there is no more specific quantitative KPIs. Project partners: There should be minimum three partners from different countries. We are considering similar nationally agencies as HAMAG in Slovenia, Austria, Italy, Poland, Czech Republic, Hungary and Germany. We have no predefined number of partners and we would make consortia based on the expression of interest. All partners who meet required program criteria are welcome to join the project team. Their roles are to provide required KPIs in their countries, related to the calls that targeted smart materials and intelligent production systems and to supply two or three best practices among national SMEs.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Maximum 1000 Characters*	1) Development of a system of common indicators for European Regional Development Fund and Cohesion Fund interventions after 2020 2) Common output and results indicators for ERDF and the Cohesion Fund – Article 8 (1) - https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/indic_post2020/indic_post2020_p1_en.pdf 3) The statistics and projects' implementation and projects results from the IRI national calls from 2016 -2021 which targeted innovative SMEs 4) The calls smart specialization S3 calls launched in Croatia by 2020 https://strukturnifondovi.hr/natjecaji/inovacije-u-s3-podrucjima/ https://strukturnifondovi.hr/en/natjecaji/trajni-otvoreni-poziv-dostavu-projektnih-prijedloga-dodjelu-bespovratnih-sredstava-povecanje-razvoja-novih-proizvoda-usluga-proizlaze-iz-aktivnosti-istrazivanja-razvoja-2/ https://strukturnifondovi.hr/natjecaji/povecanje-razvoja-novih-proizvoda-i-usluga-koji-proizlaze-iz-aktivnosti-istrazivanja-i-razvoja-faza-ii/

	Integrator - https://strukturnifondovi.hr/natjecaji/integrator-2018/
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	This project will offer recommended list of KPIs for smart materials and production intelligent systems which will be valuable input for the call tenders and monitoring of the call and project implementation. Based on the output and result indicators for ERDF (Investment for jobs and growth and Interreg) RCO (Reggio Common Output Indicator) and RCR (Reggio Common Result Indicator) from the Cohesion Fund, Policy Objective 1 – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity - we are aiming to find out the most appropriate key performance indicators KPIs which will be used to design efficient call and to monitor its implementation in the fields of smart materials and intelligent production systems. In a long term it should improve number of enterprises supported by financial instruments; enterprises cooperated with research institutions, new enterprises supported, jobs created; in house innovation etc.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Smart and Advanced Materials*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☒ *Intelligent Production Systems* ☒ *Automation & Robotics* ☐ *Smart and Advanced Materials* ☐ *Artificial Intelligence*
Use-Case Key Words	*KPI, Smart Materials, Intelligent Production Systems, INNOSUP call*
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	https://ec.europa.eu/easme/en/innosup https://ec.europa.eu/regional_policy/sources/docgener /studies/pdf/indic_post2020/indic_post2020_p1_en.pdf European Regional Development Fund and Cohesion Fund (ERDF/CF) Regulation

		- Analysis of the final compromise text with a view to agreement, released by EC in Brussels on 25 February 2021
TIME HORIZON & TIME PLANNING		
DEVELOPMENT	START DATE	*01/10/2021*
	END DATE	*31/03/2021*
	DURATION IN MONTHS	*6 months*
IMPLEMENTATION	START DATE	*01/04/2022*
	END DATE	*01/10/2022*
	DURATION IN MONTHS	*6 months*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The challenge is to connect all stakeholders, in particular the policy makers to improve all steps in project cycle from the call tender to the project implementation. This requires extensive business analysis of each step (design of the call, fiche call design, evaluation sheet design, project implementation, monitoring etc.) and appropriate KPIs which will help to achieve the most suitable call tenders for these two fields. Exchange of the best practices among CE countries or even establishment of the common KPIs if that is possible would help to meet this challenge.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** *☒ Large Enterprises* *☒ SME* *☒ Higher Education & Research Organisation* *☒ Business Support Organisation* *☒ Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** *☐ Research & Development* *☐ Design* *☐ Procurement ☐x Manufacturing* *☐ Distribution* *☐ Marketing / Sales* *☐ Service and Repair*

	☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C32 - Other (please clarify below)***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The use case will be targeting design and monitoring of the quality calls that target smart materials and intelligent production systems.
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	Collecting information based on the new indicator that will result by this project will enable better design of the upcoming calls. It is a policy maker level procedure which will help to select the best innovative projects and to improve absorption capacities of the national and EU programs.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	Countries that have more experience, more advanced industries or technologies can be used as role model or good practice example to Croatia.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.*	It will improve the call tenders across the CE and will improve transfer of good practice between countries. Consequently it will increase the results and outputs defined by ERDF and the Cohesion Fund, under the specific objective 1, from the RCO 1 to RCO08 and RCR001 to RCR008 such are: number of enterprises supported by financial instruments; jobs created; in house innovation etc.

DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator		Every agency, i.e. the project partner will present and describe the calls and KPIs they are using and which are related to the smart materials and intelligent production systems. In addition the best practices examples will be collected and presented on the workshops. From the pool of the best practices will be discussed and assign those considered top ones. Those will be further build up with new key components that would be considered as those important as a key ingredient for the better design of the future calls. HAMAGBICRO will recommend elected KPIs to the Croatian stakeholders.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		Target group, i.e. the main knowledge receivers are ministries and monitoring bodies which are in charge for the EU and national calls on smart materials and intelligent production systems.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.*	/	Knowledge Supplier	The leading project partners will be the most experience partner in these fields. All partners will have same roles and one unique document on maximum 50 pages will be the project result.

Choose specifically the technology transfer tree „role“ in the completion of this: - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***		Knowledge Supplier	Through its Innovation system support Unit and via relevant ministries HAMAG-BICRO will ensure dissemination of the project result and activities.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The financial resources will be provided by INNOSUP 2021-2027 EU program. HAMAG-BICRO has Innovation System Support Unit which monitors and collect statistics regarding implementation of the national smart specialization strategy and related calls. It cooperates with all relevant ministries and it is involved in development of strategic documents. HAMAG-BICRO is also managing authority level2 in Croatia for the implementation of the EU program.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* *&* *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Subsidised Service Funding opportunities in Horizon Europe - Innovative Europe	INNOSUP 2021-2027	
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The instrument is defined, but we are waiting for the call to be opened and the potential challenge could be writing a good project proposal that gets a positive evaluation.		
WHAT LESSONS HAVE YOU LEARNT FROM THE HARVEST OR EXCHANGE WITH PPS WHICH COULD SUPPORT YOU OVERCOMING THESE POLICY INSTRUMENT GAPS? *Maximum 1000 Characters*	n/a		
END OF TEMPLATE			

HAMAG	
PARTNER	**HAMAG**
PARTNER'S RESPONSIBLE MANAGER	Marija Galeković and Ebonita Ćurković
E-MAIL:	Marija.galekovic@hamagbicro.hr; ebonita.curkovic@hamagbicro.hr
PHONE:	+38515494731
REGION	Coastal region 4 counties
COUNTRY	Croatia
USE-CASE ACTION PLAN	
ADMINISTRATIVE INFORMATION	
SHORT NAME OF THE USE-CASE *Limit to 50 Characters*	Use case: KPIs to improve quality of Smart Materials and Intelligent Production System calls
	Project aim: Based on the output and result indicators for ERDF (Investment for jobs and growth and Interreg) RCO (Reggio Common Output Indicator) and RCR (Reggio Common Result Indicator) stated in the Cohesion Fund , Policy Objective 1 – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity, we are aiming to find out the most appropriate key performance indicators KPIs which will be used to design efficient call and to monitor its implementation in the fields of Smart Materials and Intelligent Production Systems. Background: Monitoring and analysis of the calls targeting innovative SMEs in the field of Smart Materials and Intelligent Production Systems in Croatia, have shown that call tenders could have been better designed in terms of administrative requirements/ resources and timing. For example, it was required to submit many administrative documents and certifications, and it was stated that selection process will be finished within 6 months, so the first payment would be within 6 months of submission day. However, that was not the case, the delay of the promised was over 6 months. That caused problems in cash-flow and in project implementation and was the major feedback complain received from the SMEs (beneficiaries). The evaluation process was slow, some questions were vague due to unwell designed evaluation check list. It was obvious that lack of KPIs required for these calls consequently led to shortfalls in the call tender design. Therefore, appropriate KPIs based on the best EU industry and EC practices can overcome this issue. In Croatia monitoring bodies and statistics for the smart specialization and

	innovative call tenders and project implementation are based only on the small set of the EU KPIs which are designed only for quantitative monitoring (number of implementing projects, number of big RI project etc.). There is no qualitative KPIs and there is no more specific quantitative KPIs. Project partners: There should be minimum three partners from different countries. We are considering similar nationally agencies as HAMAG in Slovenia, Austria, Italy, Poland, Czech Republic, Hungary and Germany. We have no predefined number of partners and we would make consortia based on the expression of interest. All partners who meet required program criteria are welcome to join the project team. Their roles are to provide required KPIs in their countries, related to the calls that targeted smart materials and intelligent production systems and to supply two or three best practices among national SMEs.
CAPITALIZATION & CROSS PROGRAMME COLLABORATION *Describe how results and insights from other programmes have been capitalised to support this use-cases' development.* *Maximum 1000 Characters*	1) Development of a system of common indicators for European Regional Development Fund and Cohesion Fund interventions after 2020 2) Common output and results indicators for ERDF and the Cohesion Fund – Article 8 (1) - https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/indic_post2020/indic_post2020_p1_en.pdf 3) The statistics and projects' implementation and projects results from the IRI national calls from 2016 -2021 which targeted innovative SMEs 4) The calls smart specialization S3 calls launched in Croatia by 2020 https://strukturnifondovi.hr/natjecaji/inovacije-u-s3-podrucjima/ https://strukturnifondovi.hr/en/natjecaji/trajni-otvoreni-poziv-dostavu-projektnih-prijedloga-dodjelu-bespovratnih-sredstava-povecanje-razvoja-novih-proizvoda-usluga-proizlaze-iz-aktivnosti-istrazivanja-razvoja-2/

	https://strukturnifondovi.hr/natjecaji/povecanje-razvoja-novih-proizvoda-i-usluga-koji-proizlaze-iz-aktivnosti-istrazivanja-i-razvoja-faza-ii/ Integrator - https://strukturnifondovi.hr/natjecaji/integrator-2018/
LONG TERM PLANNING & POLICY DEVELOPMENT (UPSTREAMING) *Describe the long-term impact of this use-case on regional, national or EU Policy Development (especially Green Deal and Digital Europe)* *Maximum 1000 Characters*	This project will offer recommended list of KPIs for smart materials and production intelligent systems which will be valuable input for the call tenders and monitoring of the call and project implementation. Based on the output and result indicators for ERDF (Investment for jobs and growth and Interreg) RCO (Reggio Common Output Indicator) and RCR (Reggio Common Result Indicator) from the Cohesion Fund, Policy Objective 1 – A more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity - we are aiming to find out the most appropriate key performance indicators KPIs which will be used to design efficient call and to monitor its implementation in the fields of smart materials and intelligent production systems. In a long term it should improve number of enterprises supported by financial instruments; enterprises cooperated with research institutions, new enterprises supported, jobs created; in house innovation etc.
CAMI4.0 TECHNOLOGY FOCUS - PRIMARY	*Intelligent Production Systems*
PP's CAMI4.0 TIN ROLE	*Learner*
CAMI4.0 TECHNOLOGY FOCUS - SECONDARY	***Choose as many secondary influencing technologies that apply;*** ☐ *Intelligent Production Systems* ☒ *Automation & Robotics* ☒ *Smart and Advanced Materials* ☐ *Artificial Intelligence*
Use-Case Key Words	*KPI, Smart Materials, Intelligent Production Systems, INNOSUP call*
FURTHER INFORMATION: *Link to further information on the use-case, especially if an idea is being capitalised from a good-practice which is already in existance.*	https://ec.europa.eu/easme/en/innosup https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/indic_post2020/indic_post2020_p1_en.pdf

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.

		European Regional Development Fund and Cohesion Fund (ERDF/CF) Regulation - Analysis of the final compromise text with a view to agreement, released by EC in Brussels on 25 February 2021
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DEVELOPMENT	START DATE	*01/10/2021*
	END DATE	*31/03/2021*
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IMPLEMENTATION	START DATE	*01/04/2022*
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	DURATION IN MONTHS	*6 months*
CHALLENGE & CHALLENGE WHEEL ALIGNMENT		
DESCRIBE THE CHALLENGE *Shortly describe the challenge which is the focus of the use case, you can include how your organisation became aware of the challenge.* *1000 Characters in English*		The challenge is to connect all stakeholders, in particular the policy makers to improve all steps in project cycle from the call tender to the project implementation. This requires extensive business analysis of each step (design of the call, fiche call design, evaluation sheet design, project implementation, monitoring etc.) and appropriate KPIs which will help to achieve the most suitable call tenders for these two fields. Exchange of the best practices among CE countries or even establishment of the common KPIs if that is possible would help to meet this challenge.
TARGET STAKEHOLDER GROUP *Choose the target stakeholder who faces this challenge.*		***Choose as many which will apply*** ☒ *Large Enterprises* ☒ *SME* ☒ *Higher Education & Research Organisation* ☒ *Business Support Organisation* ☒ *Schools and Training Institutes*
MAUFACTURING VALUE CHAIN *Choose the area of manufacturing which is impacted by this challenge.*		***Choose as many which will apply*** ☐ *Research & Development* ☐ *Design* ☐ *Procurement* ☐x *Manufacturing* ☐ *Distribution*

	☐ *Marketing / Sales* ☐ *Service and Repair* ☐ *De or Re-Manufacturing* ☐ *Recycling and End of Life Management*
MANUFACTURING SECTOR *Choose the manufacturing sector which faces the specific challenge.*	***C32 - Other (please clarify below)***
IF OTHER (C32), PLEASE SPECIFY SECTOR OR INDUSTRY	The use case will be targeting design and monitoring of the quality calls that target smart materials and intelligent production systems.
TECHNOLOGY-ORIENTED SOLUTION & TECHNOLOGY TRANSFER TREE ALIGNMENT	
DESCRIBE THE INTENDED SOLUTION *Describe the technology-oriented solution, which you intend to foster or help foster to overcome the aforementioned challenge. Maximum 1000 Characters.*	Collecting information based on the new indicator that will result by this project will enable better design of the upcoming calls. It is a policy maker level procedure which will help to select the best innovative projects and to improve absorption capacities of the national and EU programs.
DESCRIBE WHY THIS SOLUTION HAS BEEN CHOSEN *Partners are asked to reflect on why they believe this solution would be an option. This section should refer to Good-Practice experience of the PPs or their Stakeholders. Maximum 1000 Characters*	Countries that have more experience, more advanced industries or technologies can be used as role model or good practice example to Croatia.
DESCRIBE THE INTENDED IMPACT OF THE SOLUTION ON CENTRAL EUROPE'S MANUFACTURING FUTURE *Describe the intended impact of the solution. Explaining why this solution can bring wider, eco-system benefits across Central Europe. Maximum 1000 Characters.*	It will improve the call tenders across the CE and will improve transfer of good practice between countries. Consequently it will increase the results and outputs defined by ERDF and the Cohesion Fund, under the specific objective 1, from the RCO 1 to RCO08 and RCR001 to RCR008 such are: number of enterprises supported by financial instruments; jobs created; in house innovation etc.

DESCRIBE YOUR ORGANISATION'S ROLE IN DELIVERY OF THE TECHNOLOGY-ORIENTED SOLUTION *Describe your organisation's role in the solution delivery.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Facilitator		Every agency, i.e. the project partner will present and describe the calls and KPIs they are using and which are related to the smart materials and intelligent production systems. In addition the best practices examples will be collected and presented on the workshops. From the pool of the best practices will be discussed and assign those considered top ones. Those will be further build up with new key components that would be considered as those important as a key ingredient for the better design of the future calls. HAMAGBICRO will recommend elected KPIs to the Croatian stakeholders.
DESCRIBE YOUR TARGET GROUP(s) ROLE IN THE USE-CASE *Describe your target group's role in the solution delivery. If your organisation is the target group, then clarify this in the description.* *Choose specifically the technology transfer tree „role" in the completion of this:* - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***	Knowledge Receiver		Target group, i.e. the main knowledge receivers are ministries and monitoring bodies which are in charge for the EU and national calls on smart materials and intelligent production systems.
DESCRIBE THE ROLE OF OTHER PARTICIPATING ORGANISATIONS IN THE USE-CASE. *Which other organisations will be participating in the use case? Create the number of input rows you need for all participating organisation by adding a „Row Above" in the template.*	/	Knowledge Supplier	The leading project partners will be the most experience partner in these fields. All partners will have same roles and one unique document on maximum 50 pages will be the project result.

Choose specifically the technology transfer tree „role“ in the completion of this: - ***Knowledge Supplier*** - ***Knowledge Receiver*** - ***Knowledge Facilitator***		Knowledge Supplier	Through its Innovation system support Unit and via relevant ministries HAMAG-BICRO will ensure dissemination of the project result and activities.
POLICY INSTRUMENT & RESOURCE ALLOCATION			
REQUIRED RESOURCES *Describe the resources which will be required to plan and implement the use-case, including how you intend to finance the use-case.*	The financial resources will be provided by INNOSUP 2021-2027 EU program. HAMAG-BICRO has Innovation System Support Unit which monitors and collect statistics regarding implementation of the national smart specialization strategy and related calls. It cooperates with all relevant ministries and it is involved in development of strategic documents. HAMAG-BICRO is also managing authority level2 in Croatia for the implementation of the EU program.		
WHAT POLICY INSTRUMENT WILL YOU TARGET TO ENABLE A DEVELOPMENT OF THE SOLUTION *Choose the policy instrument type you will be targeting* *&* *Describe the policy instrument which will support you in delivering the use-case, clarifying:* - ***Programme Name;*** - ***Managing Authority;*** - ***Summary of Instrument's intent (max 250 characters)***	Subsidised Service Funding opportunities in Horizon Europe - Innovative Europe	INNOSUP 2021-2027	
WHAT GAPS OR CHALLENGES DO YOU FORESEE TO COMPLETE THIS USE-CASE BASED ON THE CURRENT POLICY INSTRUMENT YOU ARE TARGETTING? *Maximum 1000 Characters*	The instrument is defined, but we are waiting for the call to be opened and the potential challenge could be writing a good project proposal that gets a positive evaluation.		
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Interreg CENTRAL EUROPE

European Union
European Regional Development Fund

CEUP 2030

KRAKOW TECHNOLOGY PARK

KIT Karlsruhe Institute of Technology

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PROFACTOR®

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INDUSTRIE 4.0 AUSTRIA

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Fraunhofer IWU

HAMAG BIRO

This project is co-financed by the European Regional Development Fund through Interreg Central Europe.