

WP

D.T.1.2

Inventory of existing approaches to support value chain innovation
(capitalisation)

Version 1
02.2020





Project information	
Project Index Number:	CE1519
Project Acronym:	CHAIN REACTIONS
Project Title:	Driving smart industrial growth through value chain innovation
Website:	https://www.interreg-central.eu/Content.Node/CHAIN-REACTIONS.html
Start Date of the Project:	01.04.2019
Duration:	36 Months
Document Control page	
Deliverable Title:	DT.1.2 – Inventory of existing approaches to support value chain innovation (capitalisation)
Lead Contractor of the Deliverable:	BWCON
Authors:	BWCON
Contractual Delivery Date:	30.10.2019
Actual Delivery Date:	28.02.2020



Table of content

1	Executive summary	3
2	Approaches to value chain innovation	4
3	Innovation drivers.....	12
3.1	Advanced Manufacturing Technologies – Industry 4.0.....	12
3.2	Digital transformation of specific sectors.....	22
3.3	Circular transformation	24



1 EXECUTIVE SUMMARY

In order to benefit from the experiences made by previous and running projects, a desk research was performed in order to identify suitable projects for capitalisation. This research was done according to the following guidelines:

Programmes / geographical scope

The following transnational programmes were included in the scope of the research:

- Interreg Central Europe
- Interreg Danube Transnational Programme

Those programmes appear to be by nature the most compatible ones with CHAIN REACTIONS in terms of activities, outputs and nature of partners. They also provide a large base for capitalisation purposes.

A few projects from the Interreg Alpine Space were considered due to their strong relevance.

Thematic scope

The research focused on projects addressing the following topics:

- Innovation-based transformation processes of businesses, with a focus on the key innovation drivers considered in CHAIN REACTIONS:
 - o Key Enabling Technologies
 - o Digitalisation
 - o Service innovation
 - o Resource efficiency (circular economy)
- Access and knowledge on key technologies, with a focus on advanced manufacturing technologies (3d printing, Industry 4.0).

Scope of capitalisation

The aim of the research was to identify results and outputs, which could be:

- Taken-up (almost) directly by CHAIN REACTIONS
- Further developed jointly

For each relevant project identified, assets with a significant potential for capitalisation (e.g. documents, online training offers...) were listed and shortly described. A capitalisation path was developed for each relevant asset.

This document provides the results of the research performed:

- Relevant projects and their assets,
- Capitalisation path for each relevant asset.

2 APPROACHES TO VALUE CHAIN INNOVATION

Two projects addressing industrial transformation processes with a similar understanding as CHAIN REACTIONS intends to do were identified. They are displayed – as well as their capitalization assets – in the following tables.

Project	THINGS+		
	<p>Introducing service innovation into product-based manufacturing companies https://www.interreg-central.eu/Content.Node/THINGS-.html</p> <p>THINGS+ project aims to enrich portfolio of companies with additional services that can increase value delivered to customers and improve their position on the market, by strengthening entrepreneurs' skills in service innovation management.</p> <p>THINGS+ project is focused in transformation of traditional companies into regional innovation motors, with no excessive investments. Key output will be a new approach to improve entrepreneurs' skills that help them introduce service innovation into manufacturing companies and increase prosperity on changing markets."</p>		
Relevance	<p>THINGS+ addresses the innovation driver "service innovation" or servitization and uses tool to foster and support the transformation processes of business which are similar to the ones planned by CHAIN REACTIONS.</p>		
Asset #1	Internationalisation guidelines for services internationalisation support		
	<p>Service Innovation Methodology (SIM) is a structured business development methodology tailored to capabilities of micro, small and medium sized enterprises (mSMEs) in order to assist them with design, integration and delivery of new services that would improve their offer and competitiveness. The methodology is most efficiently delivered as a knowledge-intensive business service (KIBS) offered by the Business Support Organizations (BSOs) that guide SMEs through the process of exploring new business opportunities and improving their offer with additional services.</p> <p>THINGS+ consortium is formed by 8 BSOs which will follow the action plan that ensures:</p> <ul style="list-style-type: none"> - adoption of the SIM among THINGS+ consortium - feasibility and viability of the SIM in a KIBS portfolio - replicability of the SIM beyond the THINGS+ consortium and even beyond the CE regions - For successful transfer and replicability of SIM across the Central Europe and beyond, its value needs to be promoted towards two segments: <ul style="list-style-type: none"> - as a knowledge-intensive business service to be adopted by BSOs; - as a servitization program applicable for manufacturing SMEs. <p>This document presents the concise guidelines for adoption and key value proposition elements that should be communicated during the efforts for internationalization of SIM and adoption by BSOs outside of the THINGS+ consortium.</p> <p>Resources: Digital library on project website: https://www.interreg-central.eu/Content.Node/THINGS-.html</p>		
Capitalisation	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/> Joint development – co-creation



path	<input type="checkbox"/> Capacity building	<input type="checkbox"/> Others
	Capitalisation approach <p>The methodology as it is described by THINGS+ does not provide a deep potential for capitalisation, contrary to the tools which are part of the methodology (see Asset #2). The methodology raises the idea of a certification of business support providers. This might be considered as a possible valorisation of the CHAIN REACTIONS outputs.</p>	
	Next steps <ul style="list-style-type: none"> - No specific activity at this first stage of capitalisation analysis. 	
Asset #2	Key tools portfolio for servitization of CE product-based manufacturing companies	
	<p>Phase 1- Opportunities based on existing capabilities and knowledge</p> <p>The first phase deals with assessment of the company capabilities, existing products and services features and opportunities for modifying the offering. During this first phase the company will start to conceptualise its opportunities for servitization based on the capabilities and knowledge that are concentrated within the organisation itself.</p> <p>The following tools are listed - simple templates are provided:</p> <ul style="list-style-type: none"> - Product and service list - RPV framework - Past strategies list - Product attributes map - Value Map (Value Proposition Canvas) - Main customer problem “as is” – main customer jobs (JTBD - job to be done) - Customer Profile – profile of the customer segment (Value Proposition Canvas) - List of alternatives (competitors, substitutes, workarounds) - Strategy canvas for „the problem” - Opportunities brainstormed (Four actions framework) - Environment and influencing forces - List of relevant services on the market - Servitization level self-assessment <p>Phase 2 - Opportunities based on external developments and new insights</p> <p>This second phase of implementation engages more in-depth analysis of the targeted customer and the problem they are trying to solve. The aim is to introduce companies with as much “outside” knowledge and customer centric perspective possible, so the most valuable servitization opportunities can be recognized. For this purpose, after the workshop companies will be assigned with using tools to document and assess new insights based on direct interaction with their customer segment.</p> <p>The following tools are listed - simple templates are provided:</p> <ul style="list-style-type: none"> - Customer segments list & description(s) - Customer Persona (per segment) - Customer Journey(s) (per segment) - Buyer utility map (Blue Ocean Strategy) - Servitization opportunities - Prioritized Opportunities (Company Perspective) 	



	<ul style="list-style-type: none">- Servitization concept <p>Phase 3: Change and implementation design</p> <p>Third phase tools should support companies during the process of designing the servitization project and understanding the changes that the company (business model, organization and capabilities in general) will face.</p> <p>The following tools are listed - simple templates are provided:</p> <ul style="list-style-type: none">- Business Model Canvas- Resources Processes and Values Framework – extended with trends, change requirements and expected results- Culture Map <p>Phase 4: Product servitization implementation and commercialisation</p> <p>Based on the results of previous activities and the elaborated servitization concept, the implementation strategy will be formulated and elements of the servitization initiative should be incorporated into the company’s strategic management activities. The following tools are listed - simple templates are provided:</p> <ul style="list-style-type: none">- One Page Strategy- List of Assumptions- Implementation activities <p>Resources:</p> <p>Digital library on project website: https://www.interreg-central.eu/Content.Node/THINGS-.html</p>			
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation
	<input checked="" type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	<p>Capitalisation approach</p> <p>The templates and tools delivered by THINGS+ will be added to the advanced version of the CHAIN reactions innovation toolbox. Together with the templates of DIGITRANS and the resources both projects built upon (authors of the tools) they will avoid CHAIN REACTIONS developing own templates. An adaptation towards an online use might be considered in the advanced version of the value chain innovation toolbox.</p>			
	<p>Next steps</p> <ul style="list-style-type: none">- The adaptation of the templates will start after the delivery of the value chain innovation toolbox and be provided to the partners in parallel to the trainings for stakeholders.- An adaptation towards an online version will be explored in the framework of the overall considerations on a CHAIN REACTIONS online platform.			



Project	<p>DIGITTRANS</p> <p>Digital Transformation in the Danube Region</p> <p>http://www.interreg-danube.eu/approved-projects/digitrans</p> <p>“The increasing digitisation of business processes by e.g. the Internet of Things or Industry 4.0 requires developing new business models for companies to remain competitive on global markets. There is no digital transformation without appropriate business transformation. Mainly SMEs from less developed Danube regions but also from strong regions such as Baden-Württemberg (DE) are suffering from the digital revolution as they still do not have enough competencies to cope with digital transformation’s challenges. Therefore, DIGITTRANS aims at developing a SME appropriate innovation method enabling SME to create competitive digital business models within a specifically setup incubator space.”</p>
	<p>DIGITTRANS addresses the innovation driver “digital transformation” and uses tool to foster and support the transformation processes of business which are similar to the ones planned by CHAIN REACTIONS.</p>
Asset #3	<p>DIGITTRANS.me e-learning platform</p> <p>DIGITTRANS.me is an e-learning platform that provides SMEs with an opportunity to learn about digital transformation process and to develop their new business models. It has been developed as a part of the DIGITTRANS project by a team from University of Vienna with support from other project partners.</p> <p>SMEs can expect to gain access to quality learning materials such as studies and publications on innovation and entrepreneurship especially in areas such as creative industries, green economy or green ICT. Users can give their feedback on the platform and the content, which will be taken into account in future upgrades.</p>



Home

Introduction

Preparation

INNOVATION

Transformation

Incubation Spaces

Templates

Community

INNOVATION PHASE

PHASE DESCRIPTION

During the innovation phase, you and your team start to develop and prototype a new digital business model idea. As you will see, this will be quite an interactive and interdisciplinary team work. Although it will be work, it will be also fun for you and your colleagues to create new ideas and concepts throughout this process.

The innovation phase is divided into two sub-phases: the **Analysis phase** - in which you analyse your own, your customers' and your competitors' situation; and the **Design phase** - in which you create new digital ideas based on the findings of the analysis phase.

After having completed the whole innovation phase, you will have developed a new digital business model idea by having created and tested a first prototype of your digital business model idea and completed a business model canvas to outline the additional value of the new digital business model idea. You will also get to know different tools and methods supporting you in developing innovative digital business model ideas in your daily work. Before entering the innovation phase with your team, it would be good to reflect on issues like:

1. Who should be a member of your interdisciplinary team? We recommend having a team of 3-7 members.
2. Where will you have space to meet on a regular basis and to work interactively together? As you will see when going through the different methods and activities, you will need some space in your office where you can visualise your ideas, collect your findings or complete templates. Ideally, you can keep these results visual for the whole development process.

Analysis Phase

Insight

Customer & Value Definition

QUIZ for the Analysis Phase

Design Phase

Ideation

Prototyping

Testing

QUIZ for the Design Phase

The platform can also be used as a tool for entrepreneurs going through a digital transformation process using DIGITRANS methodology as well as participants of DIGITRANS trainings.

The platform is available free-of-charge at DIGITRANS.me and can be downloaded and installed under the following link: <https://digitrans.me/downloads/app/>. There you also find the documentation and different guidelines on how you start and use your own platform. The guides contain how the environment can be set up, how it can be configured by administrators and how trainers of the e-learning platform can work with it. The link also contains all the files you need for the installation.

Online learning module and templates are available in different languages: EN, BG, HR, DE, HU, RO, SI

Resources:
<https://digitrans.me/psm/home>

Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation
	<input checked="" type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others



	Capitalisation approach		
	<p>The Digitrans.me e-learning platform for SMEs provides a possible blueprint for a CHAIN REACTIONS e-learning platform, as the CHAIN REACTIONS tools need to be made available to the public and remain available after the end of the project</p>		
	Next steps		
	<ul style="list-style-type: none"> Discussions with the DIGITRANS LP shall be engaged during the second part of the project with respect to the integration of the DIGITRANS e-learning platform to the online platform to be likely developed by PBN for hosting the CHAIN REACTIONS materials. An exchange of experiences with the DIGITRANS partners with the CHAIN REATIONS partners and/or their regional stakeholders might be useful once the Innovation and Growth Alliances (IGAs) have been established and the transnational pilots are being drafted. This exchange might help the partners to define how the tools can be best implemented within the pilots. 		
Asset #4	Tools for innovation processes		
	<p>Phase 1 - Analysis The following tools are listed - simple templates are provided:</p> <ul style="list-style-type: none"> - Strategic landscape map - Stakeholder map - Strategy canvas - Competence analysis - Desk research - Interview - Value proposition canvas - Persona - Customer journey <p>Phase 2 – Design phase The following tools are listed - simple templates are provided:</p> <ul style="list-style-type: none"> - Brainstorming - Brainwriting - Idea selection - Handcrafted prototypes - SAP scene - Mock-up - Scen2Model - Business model canvas - Testing - Minimum viable product <p>Resources: https://digitrans.me/psm/home</p>		
Capitalisation	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/> Joint development – co-creation



path	<input checked="" type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	Capitalisation approach			
	<p>The templates and guides for the innovation tools delivered by DIGITRANS will be added to the advanced version of the CHAIN reactions innovation toolbox. Together with the templates of THINGS+ and the resources both projects built upon (authors of the tools) they will avoid CHAIN REACTIONS developing own templates. An adaptation towards an online use might be considered in the advanced version of the value chain innovation toolbox.</p>			
Asset 5	Next steps			
	<ul style="list-style-type: none"> - The adaptation of the templates will start after the delivery of the value chain innovation toolbox and be provided to the partners in parallel to the trainings for stakeholders. - An adaptation towards an online version will be explored in the framework of the overall considerations on a CHAIN REACTIONS online platform. 			
	Tools for digital transformation processes			
Capitalisation path	<p>Digitrans provides guidance addressing the following steps:</p> <ul style="list-style-type: none"> - Digital Roadmap - Team Involvement - New Working Style - Constant Improvement <p>The content provides recommendations for businesses how to go through the steps as well as templates.</p> <p>Resources: https://digitrans.me/psm/home</p>			
	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation
	<input checked="" type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	Capitalisation approach			
	<p>The tools provided by DIGITRANS for accompanying the digital transformation can be seen as a supplement to the CHAIN REACTIONS toolbox. Those tools enter into play when the changes initiated by the CHAIN REACTION value chain innovation process imply specifically for a business to go strongly digital. It is already part of the implementation of the innovation. It is a useful add-on to the project.</p> <p>An integration to the online tools provided by CHAIN REACTIONS will be considered.</p>			
	Next steps			
	<ul style="list-style-type: none"> - Validate the possible inclusion of the tools to the advanced version of the value chain innovation toolbox. 			

Digital maturity assessment questionnaire

Digitrans provides a self-assessment for digital maturity:

Resources:

<https://digitrans.me/psm/home>

<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation
<input type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others

Capitalisation approach

The maturity assessment tool expected to be delivered in CHAIN REACTIONS shall cover a broader range of topics than the one used by Digitrans, and also provide some deeper level of analysis. It is meant to be used by business support consultants in the framework of semi-structured interviews with businesses as well as possibly by SMEs themselves.

The tool developed by Digitrans will be considered as an example for a simplified questionnaire accessible online for businesses. The necessity of such a tool will be discussed with the CHAIN REACTIONS partners, taking into account the feedback of their regional stakeholders. This shall be done earliest after the first round of training of the stakeholders, in connection with the application of the CHAIN REACTIONS value chain innovation model in the transnational pilots.

This action needs also to be connected with the online delivery of the CHAIN REACTIONS tools.

Asset 6

Capitalisation path



Next steps

- Add the tools to the upgraded version of the CHAIN REACTIONS value chain innovation toolbox.

Conclusion

Besides capitalising on the single assets listed above, a transversal recommendation is to organise an experience exchange between representatives of the THINGS+ and DIGITRANS partnerships with the CHAIN REACTIONS project partners and possibly their regional stakeholders. This can be organised as an online meeting taking place after the establishment of the IGAs in the CHAIN REACTIONS partner regions and the beginning of the implementation of the transnational pilots.

3 INNOVATION DRIVERS

When considering the innovation drivers for the CHAIN REACTIONS project:

- Key Enabling Technologies
- Digitalisation
- Service innovation
- Resource efficiency (circular economy)

The following initial conclusions of the performed desk research was made:

- With respect to the innovation drivers digitalization and service innovation, the above-mentioned projects Digitrans and THINGS+ provide the best matching and potential for capitalization. Further projects deal mostly with the digital transformation of specific sectors. They can provide useful insights on specific value chains.
- A significant number of projects deal with the most important KETs for the CHAIN REACTIONS project, i.e. Advanced Manufacturing Technologies, mainly 3D printing, and Industry 4.0 related technologies. We have focused on those projects in our research. They provide mainly capitalization opportunities with respect to technology-related information, which can be relevant for the partners especially when working on the transnational pilots in the priority sectors of the project.
- As far as resource efficiency is considered, CHAIN REACTIONS is not addressing specific energy technologies but much more the innovation drive coming from the circular economy and which aims at having a more efficient use of almost any kind of resources (materials, time, ...). Resource efficiency is not considered as a technology issue but as a transformation process of business models and value chains for potentially any company. This was the guideline for our research.

In the following, the relevant projects and their assets for capitalization are listed.

3.1 Advanced Manufacturing Technologies – Industry 4.0

A large number of projects, mainly from the Interreg Central Europe programme are addressing this large topic.



	3DCentral			
Project	Catalysing Smart Engineering and Rapid Prototyping https://www.interreg-central.eu/Content.Node/3DCentral.html			
Relevance	The 3DCentral projects focused on advanced manufacturing techniques such as smart engineering and rapid prototyping, creating a wealth of knowledge on the relevant technologies and exploring potential application areas. PBN, the LP of CHAIN REACTIONS, was a partner of the 3DCentral project.			
Asset #7	3D central online learning platform (moodle) The 3D central online learning platform provides a series of thematic and methodological courses. Each of the ten thematic courses is devoted to a specific technology: additive manufacturing, 3D design, engineering, scanning, and simulation, smart and functional materials, digital life, technologies for sustainable manufacturing, virtual and augmented reality for manufacturing, value-added virtual supply chains, smart services, robotics (components, machines and intelligent robots), mechatronics (sensor, monitoring and control). All the thematic courses are focused on practice. Each course resembles an interactive textbook, with pre-recorded videos, quizzes, and project description. You are guided through the whole course and you can discuss further subjects or critical issues with the teacher at any time. The thematic courses could especially be relevant for deepening the knowledge of the CHAIN REACTIONS partners in the areas covered by the online learning platform. Resources: https://trainingtool.3dcentral-interreg.eu/moodle/			
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation
	<input checked="" type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	Capitalisation approach			
	The capitalisation on 3DCentral shall mainly take place through the integration of the online learning programme in the CHAIN REACTIONS advanced version of the value chain innovation toolbox. PBN, the LP of CHAIN REACTIONS, is a partner of the InnoPeer AVM project. Thus, the transfer of knowledge between InnoPeer AVM and CHAIN REACTIONS can be ensured smoothly.			
	Next steps			
	<ul style="list-style-type: none">- The learning module will be integrated to the advanced version of the CHAIN REACTIONS toolbox.- An adaptation towards an online version will be explored in the framework of the overall considerations on a CHAIN REACTIONS online platform.			



Project	4STEPS			
	https://www.interreg-central.eu/Content.Node/4STEPS.html Started 01.04.2019			
Relevance	<p>The 4STEPS project is addressing the main challenge of Industry 4.0 as a tool towards a new, digital industrial revolution holding the promise of increased flexibility in manufacturing, mass customisation, increased speed, better quality and improved productivity.</p> <p>The knowledge developed by 4STEPS will be potentially relevant to the CHAIN REACTIONS partners dealing more specifically, e.g. in the transnational pilots with the transformation processes driven by Industry 4.0 technologies.</p> <p>As 4STEPS started at the same date as CHAIN REACTIONS, this will be evaluated more specifically after the first year of the projects.</p>			
Asset #8	Technology Maturity Level Index			
	<p>A specific expected result of 4STEPS is the development of a Technology Maturity Level Index related to Industry 4.0.</p> <p>Resources:</p> https://www.interreg-central.eu/Content.Node/4STEPS.html			
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input checked="" type="checkbox"/>	Joint development – co-creation
	<input type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	Capitalisation approach <p>The CHAIN REACTIONS value chain innovation toolbox encompasses a maturity level index for the innovation drivers, including digital maturity and maturity level with respect to the use of advanced manufacturing technologies.</p> <p>In this respect, a co-development process for a maturity index on Industry 4.0 will be considered.</p> <p>PBN, the LP of CHAIN REACTIONS, is a partner of the 4STEPS project. Thus, the transfer of knowledge between 4STEPS and CHAIN REACTIONS can be ensured smoothly.</p>			
	Next steps <p>- Organize a joint capitalisation workshop with members of the 4STEPS partnership</p>			

Project	AMiCE			
	Advanced Manufacturing in Central Europe https://www.interreg-central.eu/Content.Node/AMiCE.html			
Relevance	<p>“Advanced manufacturing technologies are a key driver of competitiveness in many industries, which contributes to keeping skills and jobs in central Europe. The AMiCE project will tackle three major challenges faced by SMEs when adopting advanced manufacturing technologies: access to knowledge; promotion of investments; and competitiveness of these projects. AMiCE will promote advanced manufacturing technologies especially focusing on 3D printing [...] AMiCE will also</p>			



CHAIN REACTIONS

	<p>develop a knowledge platform, a network of shared demonstrators and pilot lines highlighting proven benefits of 3D print to new end-users. It will also set up a training and advisory programme to support the development of concepts and projects conceived by SMEs.”</p> <p>All the topics mentioned in the project description above are potentially relevant to complement the knowledge-base of the CHAIN REACTIONS project, especially in the framework of the transnational pilots and the development of transnational roadmaps for the are Advanced Manufacturing.</p>
Capitalisation potential	<p>By the time of our desk research, no public outputs of the project were available from the project’s website. Thus, a more specified approach to capitalisation is not requires further investigation.</p> <p>However, considering that there is already a significant amount of knowledge available in the consortium and further projects identified for capitalisation, it was decided not to prioritise AM-ICE for capitalisation purposes.</p>

Project	ECOS4IN Ecosystem for Industry 4.0 http://interreg-central.eu/Content.Node/ECOS4IN.html Started 01.04.2019			
Relevance	<p>“The ECOS4IN project will do so by supporting close cooperation between stakeholders, who are involved in smart specialisation strategies (RIS3) on the implementation of Industry 4.0. It will closely analyse the current situation of Industry 4.0 implementation and create a tool “ECOS4IN Knowledge Base”, which will be tested in pilots as an essential source of information to raise awareness about Industry 4.0.”</p> <p>The topic addressed by ECOSAIN is relevant to the overall objective of CHAIN REACTIONS to promote transformation processes driven by Industry 4.0 (among other drivers).</p>			
Asset #9	ECOS4IN Knowledge Base The knowledge bade to be developed by EOCSAIN is potentially relevant for the development of transnational roadmaps in CHAIN REACTIONS (WPT4) and complement the project’s own knowledge on Industry 4.0. Resources: http://interreg-central.eu/Content.Node/ECOS4IN.html			
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input checked="" type="checkbox"/>	Joint development – co-creation
	<input type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	Capitalisation approach Taking into account that both projects run in parallel, the results of ECOSAIN project will not be available during the first phase of the CHAIN REACTIONS project. In both projects the planned pilots will likely run in parallel.			



	<p>A closer interaction with the ECOSAIN partnership will become more specifically relevant during the third year of the projects. When the CHAIN REACTIONS partners will work on transnational roadmaps in the sector of advanced manufacturing.</p>
	<p>Next steps</p> <ul style="list-style-type: none"> - Invite ECOSAIN partners to join the CHAIN REACTIONS transnational network (WPT4) on advanced manufacturing technologies. - Potentially integrate knowledge from ECOSAIN in the final version of the CHAIN REACTIONS value chain innovation toolbox.

Project	FabLabNet			
	Network of Central Europe FabLab https://www.interreg-central.eu/Content.Node/FabLabNet.html http://www.fablabnet.net/			
Relevance	Although addressing advanced manufacturing technologies such as 3D printing, FabLabs often have a lesser industrial relevance than e.g. Digital Hubs. However, they can be helpful with raising awareness about the possibilities offered by advanced manufacturing.			
Asset #10	FabLabNet: Central European network of innovative and creative labs			
	By the end of the project, the FabLabNet partners have established a network of fablabs welcoming also new members. By the time of our research there was apparently no new member. However, it might become relevant for some CHAIN REACTIONS partners to integrate a fablab in their regional ecosystem. Resources: http://www.fablabnet.net/			
Capitalisation path	<input type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation
	<input type="checkbox"/>	Capacity building	<input checked="" type="checkbox"/>	Others
	Capitalisation approach			
	There is no specific capitalisation approach defined at this stage. In case the topic of FabLabs should become relevant for the CHAIN REACTIONS transnational pilots, a connection with the members of FabLabNet will be established by the most concerned CHAIN REACTIONS partners.			
	Next steps			
	- Possibly initiate bilateral contacts with the FabLabs in the network.			



Asset #11	FabLabNet library			
	<p>The FabLabNet library encompasses a series of publications and tutorials, which can be accessed publicly. They are potentially relevant especially to the planned CHAIN REACTIONS transnational pilots.</p> <p>Resources: http://www.fablabnet.net/</p>			
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation
	<input type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	Capitalisation approach <p>The relevance of the document in the FabLabnet library shall be evaluated once the CHAIN REACTIONS transnational pilots are defined.</p>			
	Next steps <ul style="list-style-type: none"> - Evaluate the relevance of the library for the transnational pilots once they are defined. - Integrate the documents in the library to the advanced version of the CHAIN REACTIONS toolbox. - Possibly initiate bilateral contacts with the FabLabs in the network. 			

Project	InnoPeer AVM			
	https://www.interreg-central.eu/Content.Node/InnoPeerAVM.html			
Relevance	<p>The project focuses on innovative advanced manufacturing processes as a driver for the competitiveness of SMEs in the central European area. It aims at providing them with the knowledge for mastering the transformation implied by the adoption of those technologies. This approach is complementary to the CHAIN REACTIONS's one.</p>			
Asset #12	AVM qualification programme <p>“The InnoPeer AVM project will develop and test a first comprehensive, transnational AVM qualification programme, shaped to the needs of central European companies.</p> <p>The multi-level programme will use a mix of well-proven and novel training formats and methods for basic, advanced and practical trainings. These will include living lab webinars, practical test runs at a model factory and AVM strategy camps.”</p> <p>Whereas the methods proposed by CHAIN REACTIONS focus on the transformation process of innovating companies, InnoPeer AVM's knowledge can complete the offer of CHAIN REACTIONS by providing deep knowledge on advanced manufacturing technologies in a way that makes it accessible to SMEs.</p>			
Capitalisation	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation



path	<input checked="" type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	Capitalisation approach			
	<p>The capitalisation on the InnoPeer AVM shall mainly take place through the integration of the training programme in the CHAIN REACTIONS advanced version of the value chain innovation toolbox.</p> <p>The experiences from the project will also be integrated in the project activities through the LP PBN. PBN, the LP of CHAIN REACTIONS, is a partner of the InnoPeer AVM project. Thus, the transfer of knowledge between InnoPeer AVM and CHAIN REACTIONS can be ensured smoothly.</p>			
	Next steps <ul style="list-style-type: none"> - Integrate the training materials of InnoPeer AVM in the advanced toolbox for CHAIN REACTIONS. - Integrate training modules from InnoPeer AVM in the mentoring activities provided to the actors of the transnational pilots, mainly on advanced manufacturing. - Integrate the experiences made in the project (through PBN) in the activities of CHAIN REACTIONS (e.g. transnational pilots). 			

Project	NUCLEI
	Network of Technology Transfer Nodes for Enhanced Open Innovation in the Central European Advanced Manufacturing and Processing Industry https://www.interreg-central.eu/Content.Node/NUCLEI.html
	Although addressing the advanced manufacturing area, NUCLEI focuses on the issues related to technology transfer management, which are not part of the core activities of CHAIN REACTIONS.
Relevance	From the project's website, no results of NUCLEI could be identified, which would be of significant relevance to CHAIN REACTIONS compared to the other projects identified and dealing with advanced manufacturing technologies.
Capitalisation potential	

Project	PropserAMnet
	Progressing Service Performance and Export Results of Advanced Manufacturers Networks https://www.interreg-central.eu/Content.Node/ProsperAMnet.html Started 01.04.2019
	The project focuses on advanced manufacturers and their opportunities to improve service performance and export results.
Relevance	The relevance of the project for CHAIN REACTIONS is therefore indirect. However, the specific aspect of developing new services can be related to the innovation driver servitization.
Capitalisation potential	The project website does not provide further information on specific results yet. A possible cross-fertilization between the two projects will be reevaluated after the first year of activity.



Project	SYNERGY
	https://www.interreg-central.eu/Content.Node/SYNERGY.html
Relevance	Although addressing areas such as manufacturing and 3D printing as well as the industry 4.0 sector, the approach of the SYNERGY project is not directly complementary to the one of CHAIN REACTIONS.
Capitalisation potential	The method used by SYNERGY to generate 'synergic networks' might be useful for the setup of transnational open spaces for collaboration (WPT4). This will require further analysis once WPT4 will start in CHAIN REACTIONS (July 2020).

Project	Smart Factory Hub			
	Improving RD and business policy conditions for transnational cooperation in the manufacturing industry http://www.interreg-danube.eu/approved-projects/smart-factory-hub			
Relevance	Smart Factory Hub addressed the necessity for manufacturers to digitize their production, while taking into consideration also improvement in processes and human resource management. The aim of the project was to develop R&D and business policy conditions for transnational cooperation in the manufacturing industry.			
	The project put a high focus on technologies and their potential contribution to improve the competitiveness of manufacturing businesses. Although the approach is different from the CHAIN REACTIONS' approach, the results can be relevant especially for the transnational pilots on advanced manufacturing and the knowledge-base of CHAIN REACTIONS. PBN, the LP of CHAIN REACTIONS, is a partner of the Smart Factory Hub project. Thus, the transfer of knowledge between Smart Factory Hub and CHAIN REACTIONS can be ensured smoothly.			
Asset #13	E-learning platform			
	The Smart Factory Hub E-Learning Platform features more than 40 courses with training material and interactive sessions: <ul style="list-style-type: none">• Novel technologies for Smart manufacturing• Production process models supporting Smart Manufacturing• HR management systems supporting Smart manufacturing Resources: https://elp.iao.fraunhofer.de/moodle/			
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation
	<input checked="" type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others

	<p>Capitalisation approach</p> <p>The capitalisation on the Smart Factory Hub shall mainly take place through the integration of the training programme in the CHAIN REACTIONS advanced version of the value chain innovation toolbox.</p> <p>The experiences from the project will also be integrated in the project activities through the LP PBN. PBN, the LP of CHAIN REACTIONS, is a partner of the Smart Factory Hub project. Thus, the transfer of knowledge between Smart Factory Hub and CHAIN REACTIONS can be ensured smoothly.</p>
	<p>Next steps</p> <ul style="list-style-type: none"> - Integrate the training materials of Smart Factory Hub in the advanced toolbox for CHAIN REACTIONS. - Integrate training modules from Smart Factory Hub in the mentoring activities provided to the actors of the transnational pilots, mainly on advanced manufacturing. - Integrate the experiences made in the project (through PBN) in the activities of CHAIN REACTIONS (e.g. transnational pilots).
Asset #14	<p>Handbook tool report – Good practices</p> <p>The Smart Factory Hub handbook tool report provides a series of example of smart manufacturing technologies and processes as collected by the project partners.</p> <p>Novel technologies:</p> <ul style="list-style-type: none"> • Smart supply network • Next-gen manufacturing systems • Cloud storage / processing • Data analytics • Cybersecurity • Intelligent sensors/actors • Cyber physical systems • Smart maintenance • Mobile workforce • Self-driving vehicles • Intelligent products • Additive manufacturing • Robotics • Advanced materials • Responsive manufacturing • Physical and cognitive assistance <p>Solutions/methods related to production processes:</p> <ul style="list-style-type: none"> • Design for X • FMEA • 6 SIGMA • SPC • TPM



	<ul style="list-style-type: none">• SMED• KANBAN• KAIZEN or other continuous process improvement method• Jidoka (Poka-Yoke or Andon)• VSM (Value Stream Mapping)• TOC (Theory of Constrains)• Lean manufacturing <p>Solutions/methods related to human resource:</p> <ul style="list-style-type: none">• Ergonomics interventions on workplaces• Digital working instruction via mobile devices• Employee motivation systems• Online labour performance evaluation• Flexible working hours /working time model• Employee self-service and smart scheduling• Optimal HR allocation and balancing• Knowledge sharing and transfer (Knowledge management)• On-line learning management system• Life-long learning – learning on demand• Talent management software• Skill management – skill tree• Strategic personnel development <p>Resources:</p> <p>Handbook tool report (D 4.2.3: Handbook tool report)</p>			
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/>	Joint development – co-creation
	<input checked="" type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	Capitalisation approach			
	<p>The capitalisation on the InnoPeer AVM shall mainly take place through the integration of the training programme in the CHAIN REACTIONS advanced version of the value chain innovation toolbox.</p> <p>The experiences from the project will also be integrated in the project activities through the LP PBN. PBN, the LP of CHAIN REACTIONS, is a partner of the InnoPeer AVM project. Thus, the transfer of knowledge between InnoPeer AVM and CHAIN REACTIONS can be ensured smoothly.</p>			
	Next steps			
	<ul style="list-style-type: none">- Integrate the handbook in the advanced toolbox for CHAIN REACTIONS.- Integrate the experiences made in the project (through PBN) in the activities of CHAIN REACTIONS (e.g. transnational pilots).			



Asset #15	Smart Factory Cooperation Platform			
	<p>The Smart Factory Cooperation Platform is an online mapping tool that was developed within the Smart Factory Hub. Since March 2018, the platform is publicly accessible, contains the data of more than 1200 organizations, 180 projects, 100 funding schemes, 40 good practices regarding the manufactured products and services and 30 facilitators from 10 European countries.</p> <p>Resources: http://www.p-tech.si/sfh-mapping/</p>			
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input checked="" type="checkbox"/>	Joint development – co-creation
	<input type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	<p>Capitalisation approach</p> <p>The CHAIN REACTIONS partners responsible for the setup of the transnational collaboration spaces (WPT4) – among them PBN – will explore the opportunity to build on the mapping tool from Smart Factory Hub for providing an even larger set of entries.</p> <p>Part of the evaluation will relate to the accuracy and validity of the entries after almost two years of online presence.</p>			
	<p>Next steps</p> <ul style="list-style-type: none"> - Evaluate the opportunity of such a database for CHAIN REACTIONS. - In case of positive answer, evaluate the opportunity to capitalise on the existing data-base. 			

3.2 Digital transformation of specific sectors

Two projects dealing specifically with the digital transformation of the farming sector on the one side (focus on Industry 4.0 technologies) and the healthcare sector on the other side have been identified as potentially useful for capitalisation within CHAIN REACTIONS.

Project	<p>digitalLIFE4CE</p> <p>https://www.interreg-central.eu/Content.Node/digitalLIFE4CE.html</p>
Relevance	<p>“The Project established a new framework to provide policy stakeholders with a global picture on available health care solutions and their implications; technology solution providers with options for joint cooperation; and beneficiaries with new applications and technologies. Additionally, the project did research and promoted best practice cases in so called ‘Healthcare Excellence Spots’ and investigated ways to increase investment in digital health start-ups and to boost innovation in healthcare systems with a need for an integrated care coordination.”</p> <p>Both PBN, the LP of CHAIN REACTIONS, and WTP were members of the digitalLIFE4CE. Thus, the transfer of knowledge between digitalLIFE4CE and CHAIN REACTIONS can be ensured smoothly.</p>
Asset #16	Transnational Learning Hub



	<p>As for several of the projects listed in this document, the main output for capitalisation is an online learning platform with relevant materials. In this case, the materials are related to digital healthcare. It consists of following thematic learning modules:</p> <ul style="list-style-type: none">- Digitalisation for Healthcare management,- Connected health and network building,- Digitalisation for health promotion and prevention, digital assistance in health care delivery,- Monitoring & analytics of health care trends,- Technical & organisational infrastructure for integrated digital healthcare,- Data security <p>Resources:</p> <p>https://projects.fh-burgenland.at/moodle/login/index.php?lang=en</p>			
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input checked="" type="checkbox"/>	Joint development – co-creation
	<input type="checkbox"/>	Capacity building	<input type="checkbox"/>	Others
	<p>Capitalisation approach</p>			
	<p>As for the previous projects with an online learning platform,</p> <p>The CHAIN REACTIONS partners responsible for the setup of the transnational collaboration spaces (WPT4) – among them PBN – will explore the opportunity to build on the mapping tool from Smart Factory Hub for providing an even larger set of entries.</p> <p>Part of the evaluation will relate to the accuracy and validity of the entries after almost two years of online presence.</p>			
	<p>Next steps</p>			
<ul style="list-style-type: none">- Evaluate the opportunity of such a database for CHAIN REACTIONS.- In case of positive answer, evaluate the opportunity to capitalise on the existing database.				

Project	<p>Transform 4.0</p> <p>https://www.interreg-central.eu/Content.Node/Transform4.0.html</p> <p>Started 01.04.2019</p>
Relevance	<p>“The project Transform 4.0 aims at increasing the direct participation of farmers in the precision farming sector and boosting the competitiveness of the European precision farming advanced manufacturing supply chains.”</p> <p>The project combines the innovation driver Industry 4.0 with the farming sector: the combination might be relevant for the CHAIN REACTIONS transnational pilot in the Bioeconomy sector. As the project started also in April 2019, there were no results available on the website by the time of our desk research.</p>
Capitalisation potential	<p>The partners involved in the transnational pilot in bioeconomy will evaluate the relevance of establishing bilateral contacts with the partners of the Transform 4.0 project.</p>



3.3 Circular transformation

Two projects were identified, which address the circular economy transformation in a way that is relevant to the CHAIN REACTIONS approach to innovation-driven transformation processes. We have left out in our research projects targeting specifically the energy efficiency topic as they are mostly not looking at a holistic circular transformation.

Project	CIRCULAR 4.0 https://www.alpine-space.eu/projects/circular4_0/en/home Started 01.10.2019
Relevance	<p>“The main objective of the CIRCULAR4.0 project is to strengthen digitalisation processes by SMEs to foster innovation processes and accelerate the transition to the circular economy in Alpine Space.</p> <p>The introduction of new technologies, notably the internet of things and big data tools, is enabling the development and introduction of new circular economy business models, often based on sharing and leasing but also reuse and remanufacturing. New technical systems and tools enable the tracking of products or materials during their life to enable extended use/life and maintaining the highest possible value. Meanwhile, design and manufacturing capabilities are evolving with advances in production, material science and manufacturing, e.g. 3D printing and artificial intelligence.”</p>
Capitalisation potential	<p>According to the description of the project, Circular 4.0 works at the interface of the innovation drivers circular economy, digital transformation and Industry 4.0. The two projects might therefore find a joint interest to collaborate. Considering that Circular 4.0 started 6 months after CHAIN REACTIONS, the connection will be established after the summer 2020, when Circular 4.0 have also first results. This will be the moment when CHAIN REACTIONS starts working on the establishment of transnational open spaces for collaboration.</p> <p>BWCON is a partner in Circular 4.0. Thus, the exchange of knowledge between both projects can be ensured easily.</p>

Project	MOVECO Mobilising Institutional Learning for Better Exploitation of Research and Innovation for the Circular Economy http://www.interreg-danube.eu/approved-projects/moveco
Relevance	MOVECO promotes the transition towards a circular economy according to the motto: "Your trash is my treasure". The project produced a significant amount of materials supporting the circular transition, which can complement the value chain innovation model of CHAIN REACTIONS by providing specific input related to the circular economy as innovation driver, such as e.g. business model categories for the circular economy.
Asset #17	Circular toolbox The Circular Economy Toolbox provides a series of tools promoting the transition towards a circular economy, as described below:



"Information tools

MOVECO's brochure » Your trash is my treasure « displays best practice solutions for the circular economy in the Danube region. Enjoy reading - there is an English, Bulgarian, Croatian, German, Hungarian, Romanian, Serbian, Slovenian and Slovak version! To learn more about best practices in the Danube region countries, visit our section Best practice.

The **checklist and fact sheets** support small and medium-sized enterprises (SMEs) in the transition towards a circular economy. With the checklist, SMEs can figure out their status quo regarding the circular economy. The fact sheets support SMEs in gaining further knowledge about the circular economy. To learn more about the checklist and factsheets, please click here.

- Checklist to support SMEs (English, German, Hungarian, Slovakian)
- Fact Sheet "Information on Circular Economy" (English, German, Hungarian, Slovakian)
- Fact Sheet "Circular Economy: Terms and Definitions" (English, German, Hungarian, Slovakian)
- Fact Sheet "Supporting tools for a Circular Economy" (English, German, Hungarian, Slovakian)

Qualification tools

This qualification programme prepares enterprises and other interested stakeholders for upcoming changes towards a circular economy. The training covers many different aspects with regard to the circular economy: principles, legal background, schools of thought as well as its implementation in businesses and material streams.

- Principles of the circular economy
- Circular economy - schools of thought
- New material pathways
- Business skills for green entrepreneurs
- Business models for the circular economy
- EU legislation

Collaboration tools

- Mapping report on collaboration tools: The mapping. shows virtual and face-to-face examples of best practice collaboration tools, designed to support the transition from a linear to a circular economy.
- Description of cooperation formats: This report describes cooperation formats suitable for the MOVECO project and circular economy projects in general.

Financing tools

In this section, we present different funding possibilities on how to finance circular economy projects in companies, research and development organisations and public institutions. In addition, we provide a concept for an investor day with special focus on crowdfunding, match-making tools in order to support collaborations between science and industry. Moreover, a report informs on public-private partnership investment in the circular economy and we provide some basic information about green (circular) public procurement. To read the full information on financing tools, please click here and find out more.

- Funding instruments for the circular economy
- Interregional match-making tools
- Concept for Investor Day
- Public-private partnership investment opportunities in the circular economy
- About the Circular Economy Toolbox



	Resources: https://danube-goes-circular.eu/		
Capitalisation path	<input checked="" type="checkbox"/>	Toolbox	<input type="checkbox"/> Joint development – co-creation
	<input checked="" type="checkbox"/>	Capacity building	<input type="checkbox"/> Others
	Capitalisation approach <p>The MOVECO Circular Economy Toolbox provides a valuable complement to the CHAIN REACTIONS value chain innovation toolbox. Whereas the latter does focus on the process for generating innovative business ideas, the MOVECO toolbox provides useful input for identifying potential sources of innovation and structuring them for further development.</p> <p>The toolbox also provides materials to be potentials used in the framework of the transnational pilots for promoting more innovation activities linked to the circular economy transition. The materials can be added to the CHAIN REACTIONS toolbox.</p>		
	Next steps <ul style="list-style-type: none"> - Add the materials to the advanced version of the value chain innovation toolbox. - Provide the materials to the partners and their stakeholders as part of the capacity building activities in WPT2 and WPT3. - When relevant 		

Conclusion

The identification of relevant outputs from previous and ongoing projects enabled the CHAIN REACTIONS partnership to identify the following main paths for capitalisation:

- **Take-up and integration of „ready-made” knowledge** (guidelines, templates...) to complement the CHAIN REACTIONS value chain innovation toolbox. This shall happen during the third project period, in parallel with the first capacity building activities for the partners and their regional stakeholders.
- Prepare integration of existing knowledge into an **online learning platform**. This is not formally planned in the AF of CHAIN REACTIONS but is expected to be implemented by PBN and shall enable to maintain the CHAIN REACTIONS outputs available online after the end of the project.
- Initiate direct **exchanges of experiences** with representatives of previous projects in order to integrate their lessons learned. This shall start during the third period of CHAIN REACTIONS, in parallel with the first capacity building activities for the partners and their regional stakeholders. It will go on as relevant until the end of the project.
- **Co-develop outputs** with ongoing projects having started in 2019 as CHAIN REACTIONS. This shall be explored further after the initial project year and depends also strongly on the other projects' interest to work jointly. It will likely be possible for projects having at least one partner in common with CHAIN REACTIONS.