D.T2.2.4

FINAL HOCARE2.0 CO-CREATION TOOL FOR DELIVERY OF INNOVATIVE HOME CARE SOLUTIONS (SME TOOL)

03.2020

https://www.interreg-central.eu/Content.Node/HoCare2.0.html

Central Transdanubian Regional Innovation Agency Ltd. 03.2020

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Executive summary

The HoCare2.0 project, funded by the INTERREG CENTRAL EUROPE Programme aims to deliver highly innovative, digital based, customer-centered home care solutions for the elderly. The project targets this area for innovation due to the aging of European society. This porcess opens up a significant market – the Silver Economy – which still lacks of solutions that are designed with the elderly.

The success of newly delivered ICT based solutions and products depend largely on few factors. One must realize, the solution must meet with real needs of end-users and it should be also accepted by them. Regarding the target group, it often happens that one might have a fitting solution, but it is not used by the eldery as they are not comfortable with the technology or just simple do not trust the developers. Therefore, we suggest to involve the elderly into the design process.

One of the most promising ways for involvement of end-users into the development is co-creation. Co-creation is a process that utilizes the knowledge and experiences of end-users in every stage of the development process. This results in better fitting solutions and involvement also promotes the usability of the technology. Therefore, increases its acceptance on the market. The present guidebook provides the reader with the measures for meaningful involvement of the elderly into the design process.

The Tool comprise of four parts with each having a different purpose. *Part One* aims to raise awareness about the co-creation process, details its advantages and disadvantages and for what is it good for. *Part Two* focuses the readers attention on the possibilities of co-creation in healthcare and brings closer the reader towards home care. *Part Three* provides the measures for readers on how to receive the required feedbacks from the elderly in different stages of the development process. *Part Four* details best practices. The Tool closes wiht a *Checklist* of what to do.

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0. The HoCare2.0 project and context of the Tool

The present guidebook was prepared within the HoCare2.0 project funded by the Interreg CENTRAL EUROPE Programme. The project is lead by a partnership of 11 partners from 6 different Central European countries, including partners from the Czech Republic, Germany, Hungary, Italy, Poland and Slovenia (Figure 1). With funding from the European Regional Development Fund, the programme supports various institutions from public administration and service providers to business support organization to work together and improve innovation in Central Europe.

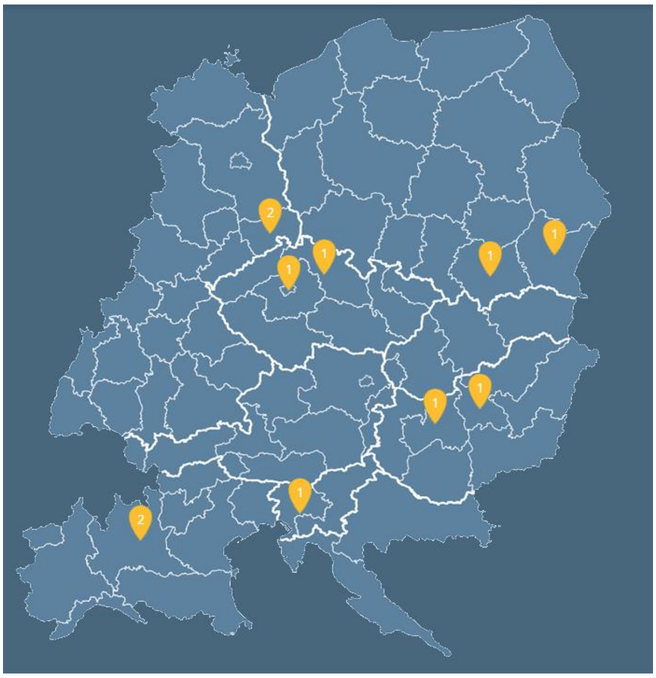

Figure 1 The HoCare2.0 project partners from the Central Europe Programme area

Our mission is to provide customer-centered home care solutions by the use of co-creation method. We intend to engage SMEs, public institutions, research institutions and the citizens in the development of new innovative health and social services or products.

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But why do we do that? One of the key challenges for Europe is aging. By 2060 every third European will be older than 65 years which makes the “Silver Economy” one of the fastest-growing economic domains. Because many solutions for the elderly are digitalbased and not well accepted, there is a growing need to involve them in the product design process to ensure it is designed for their needs and they will use it.

We approach the challenge from the perspective of the healthcare system and see info-communication technologies as usefull tools to improve the home care possiblities of the elderly. Therefore, our primary goal is to develop an ecosystem in which we will closely work with quadruple helix actors. The quadruple helix refers to the involvement of the SMEs, Research organizations or the academia, Providers of public health or social services, Representatives of elderly care recipients and their family members. Therefore, all key actors of home care is targeted.

The project fosters the delivery and deployment of highly innovative solutions for social and health home care through co-creation approaches. It means that end-users are able to influence the functions the product will have, its look and other features.

In practice we will:

- provide 2 innovative Tools for application of the co-creation method among SMEs and public providers of home care.
- build knowledge in co-creation for 285 employees of SMEs or public service providers.
- demonstrate an impact by running 6 pilots with public providers and 12 pilots with SMEs.
- aim to do a systematic change in the territorial ecosystems.

The increased knowledge, good-practices and impact of 18 pilots, together with facilitated Co-creation Labs in every territory, will create the critical mass for further and sustainable shift towards Open Innovation 2.0 ecosystems.

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What are our key steps?

First, we have experienced that the linkages among differnet participants of the innovation system are week or not existing. Therefore we have already facilitated an informal transregional network of Co-creation Labs to connect all actors and increase common learning during and after the project. The aim of this network is to raise awareness and increase knowledge of all relevant quadruple helix actors.

Second, the partnership develops and designs the HoCare 2.0 SME and POLICY TOOLS (the present guidebooks). The SME Tool for delivery of innovative home care solutions will build on best industrial praxis for ICT in health and social solutions and follow good practice methodological steps in industrial co-creation, together with the application of Lean Start-up methodology. The Policy Tool for co-creation of public health or social home care services will build on the method for involving citizens and civil servants in the development of government services. Both Tools will enable the involvement of end-users to the co-creation process in order to boost creation of digital-based health and social home care solutions.

Third, during the project duration, 285 people will be trained in using co-creation principles. To share a high-quality knowledge, we develop a Knowledge pack that will serve as a core education Tool for the individual, institutional and stakeholder knowledge advancement about adapting of co-creation approaches.

Fourth, 12 SMEs and 6 Providers of public health and social care services will participate in pilot testing. In total, 18 institutions in all territories are going to demonstrate the usability and impact of developed Tools at the delivery of innovative health of social home care solutions by co-creation with involving the elderly care recipients, the elderly and their family members.

Cooperation with the Territorial Co-creation Labs is detailed in (O.T1.1).

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PART ONE – CO-CREATION

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1. What is co-creation?

Co-creation is an often used term and gathered special attention from companies that aim to bring better solutions for customers. These companies have realized that in today's business ecosystem, a company can not stay still because competition is bigger than ever and played on a global scale. This forces organizations to give more attention to product or service development and are under constant pressure to innovate in order to survive and grow on the market. The reciepe is simple, "innovate or die". Altough, many co-creation initiatives have been launched to deal with the changed world, some have been successful with doing so, but for most companies, especially in Central Europe, co-creation is a pretty new phenomena.

Co-creation is a novel way of innovation management, a process which is characterized by the involvement of people into decisions related to the innovations. Rill and Hamalainen (2018) define it as a creative process that taps into the collective potential of groups to generate innovation. It is:

- a process in which
- teams of diverse stakeholders are
- actively engaged in a
- mutually empowering act of
- collective creativity with
- experimental and
- practical outcomes.

Furthermore, it requires presense in the physical sphere, joint work and there must be a practical outcome. Mutual empowement is a success criterion. It is most common in three areas, organizational development, product design and marketing.

Co-creation is seen as a form of Open Innovation: ideas are shared, rather than kept to oneself. It is closely connected to other buzz-word like ‘user-generated content’ and ‘mass-customisation’. The development of co-creation approaches was also supported by the changed behaviour of customers, who demand more involvement into product development. Altough, opening up the innovation process of a company can be scary. Most companies hesitate to share ideas and strategies with people that are externals to the organization. It is a natural reaction, but in the end it’s the results that count: new products, new profit pools, new ways of thinking, new energy.

Open Innovation is a counterpoint to the traditional, closed innovation system. The open innovation approach is based on the generation of innovative outputs as a result of inter-firm cooperation, R&D externalization, outsourcing and the interaction between the companies and their environment, and with the customers. In this sense, a company sees the external environment as a source of knowledge, innovative ideas and solutions. Examples for Open Innovation – among others – are the above mentioned user-generated content and mass customisation.

In the present HoCare2.0 project we claim that the advanced way of innovating – Open Innovation 2.0 – is the most beneficial for any company. It is based on the involvement of the Quadruple Helix Actors to the innovation process. Quadruple Helix Actors are the public service providers, the industry, the academia and civil participants. In Open Innovation 2.0 these actors work together to co-create the future and drive structural changes far beyond the scope of what one organization or a person could do alone. This model take full advantage of ideas' cross-fertilisation leading to experimentation and prototyping in real world setting.

The present HoCare 2.0 SME Tool aims to provide the measures for SMEs to create strategic innovations with the use of co-creation process and the involvement of QH actors. Strategic innovations mean brand new solutions to existing complex problems, or refer to ideas that chart entirely new territories. In other words, we aim to give the support for unique innovations that noone has ever delivered before.

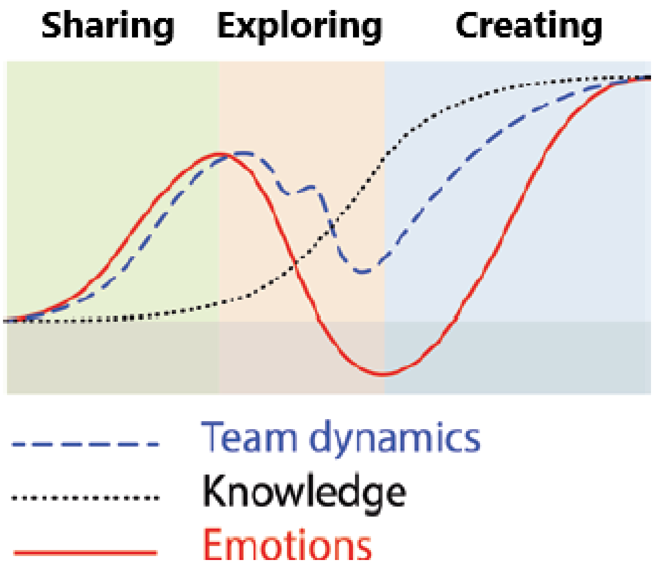

Figure x

According to Rill and Hamalinen (2018) co-creation is a journey between the known and the unknown. To be able to innovate, we have to gather what is known and discover what is unknown. Furthermore, a creative process always has an emotional and an interpersonal aspect which can change rapidly during the process. Every co-creation process starts with **preliminary activities**. Once the preparations are done the first stage of co-creation, **sharing** starts, in which the interpersonal links of the team are created and their knowledge is gathered together to solve a problem. The second stage is **exploration**, when the team starts to discover unknown territories and different techniques are used to shift the understanding of the problem. Here the first ideas occur and real collaboration happens. The last stage is **creation**, which is the realization of the idea. This mean the designing of a prototype or the real manifestation of the ideas. The process is closed by **follow-up acitivites**, when

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experiences and thoughts are collected. In the present project, we follow the above structure but adjusted to our specifc needs.

2. Why to co-create?

We believe that co-creation can help SMEs to:

- Create better products and services
- Ensure your work is valued by and valuable for customers
- Help partners work with you more easily
- Increase participation of end users in the creation of products and services
- Become more transparent about roles, direction and progress
- Increase the speed of response and delivery
- Tackle your toughest strategic challenges
- Get a fresh perspective on your business
- Get in touch with key trends and business drivers
- Unlock the world outside and bring it inside
- Connect and bond with partners, customers, consumers
- Develop breakthrough new ideas
- Reduce risks; test products while developing them
- Bring excitement to the floor and work with creative people
- Bring cultural change within the organization

3. When to co-create?

Altough, above we presented some really convincing reasons why to decide on starting a co-creation process with QH actors, we suggest some further points to consider before actually initiating a co-creation process.

A very simple approach to decide on the involvement of external actors to the innovation development process is based on the complexity of the product. Almirall

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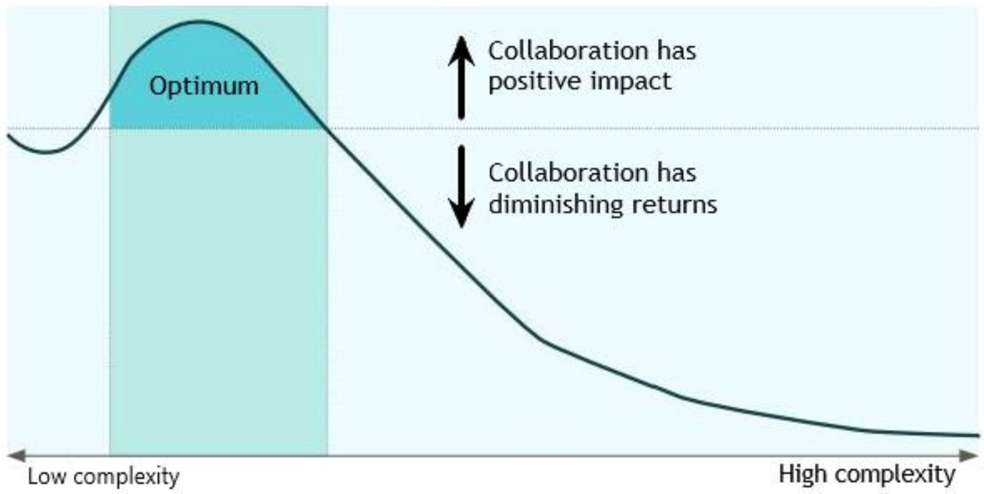
– Casadeus-Masanell (2010) developed a modell and claim that if the desired product is too complex or too simple it is not beneficial at all to co-create it.



For example for simple products as calculators or anything, it is more than likely that a company can find the best solution on its own and there is no need to expose itself to potential conflicts related to development and marketing. On the other hand, when the products are too complex, there are many features on which decisions need to be made, and the large number of players involved can lead again to conflicts. Therefore, they suggest to carry out co-creation when the complexity of the product is somewhere in the middle. In this cases, collaboration tends to outperform closed innovation and outweighs the negativities arising from development and marketing.

However, to have a more grounded decision on initiating a co-creation process or not, there are many other factors to consider. The starting point is that if a company already has a product and it aims to do only minor changes or improvements on it, collaboration is not necessary (explained above). In this cases, it is better if they just simply do it.

To justify a project's more collaborative approach one must measure the project's distance from the company's sweet spot. Sweet spot refers to the well-defined scope of a company's operation and the normal business routine. Six key areas can be evaluated to see whether or not a project fits within an organization's sweet spot:

- **Strategic domain:** Is the project's outcome is in your company's current or future strategic domain? Is the project within your organization's comfort zone?
- **Core competencies:** Does your company has more expertise or less than your competitors? Can you hire a new expert quickly enough to start the project?
- **Budget focus:** Does the project has enough support from the management to back it financially? Do you have enough founding to bring the project to the end?
- **Existing organizational structure:** Do you have existing teams that focus on this market or technology?
- **Investment magnitude:** Can your organization suffer the consequences of failure? Can you inest in this project without burdening other projects?
- **Access to the distribution channel:** Is your organization ready to distribute the project's outcome? Can you do it in a pace that will give you market advantage?

The further the project goes from the organization's sweet spot, the better it is to involve external players to it (Roser, n.d.).

4. Who is involved?

The present HoCare2.0 project approaches co-creation with the involvement of Quadruple Helix actors. Therefore, it is predefined who should be involved in the process, the public service providers, the academia, the industry, and end-users. This last one can be divided into two categories because of project focus, the elderly and the elderly care recipients.

However, it is worthy to note what are the roles of the four different actors in general.

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Public service providers:

- Refer to those who are implementing the services or products developed within the project. They are the most important buyers of the innovation.
- *Key responsibilties:*
    - Provision of access to the public market – as public procurement has a significant share on the market
    - Setting high level success criteria for suppliers to ensure the innovation will be also accepted by other actors of the demand side.
- *Key engagement factors:*
    - Proving the benefits of the outcome product or services – for example better and more cost-effective service provision - can motivate them to engage with the project

Industry or SMEs:

- Refer to those who will eventually develop the product and will be responsible for supplying the market
- The industry has important role in innovation distribution, and meeting customers of the market
- *Key responsibilties:*
    - Delivering a product that fits to the needs of the market and service providers
    - Ensuring the transferibility of the innovation to other segment of the market
- *Key engagement factors:*
    - Providing access to market, for example through public procurement of innovation approaches
    - Ensuring the intellectual property rights

Academia

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- Refers to those who are researchers, engineers and other professionals with high level of specific knowledge in a certain study field or subject area that is relevant for the product development
- *Key responsibilties:*
  - Providing scientific solutions to problems or challenges that the suppliers face with during the development process
  - The academia can be valuable when the impact and effects of the developed solutions needs to be measured objectively, thus supporting the industry in communicating the efficiancy of the new solution
- *Key engagement factors:*
  - Access to each phase of product development

End-users:

- Refers to those who will ultimately use the product or services developed.
- Users are the most important group to engage if we want long term success.
- *Key responsibilities:*
  - Informing the co-creation process of what they, and people like them, need from the products and services developed through co-creation
  - Participation in co-creation workshops, interviews, and others
  - We may identify four different roles of users can that can be utilzied in a co-creation process. End-users may be used as **explorers, ideators, designers,** and **diffusers**.

End-user role	Contribution
Explorer	- Identify and define problems based on citizens' understanding of the context. - Help discover problems by mining open data. - Articulate problems in ways that lead to practical solutions.

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Ideator	- Suggest ideas to improve existing services or to solve defined problems. - Contribute ideas (parts of solutions) to tackle broader problems.
Designer	- Help convert innovative ideas into actual implementable solutions. - Develop "design sketches" for specific features of a larger solution.
Diffuser	- Facilitate the adoption, diffusion, and use of new solutions by citizens. - Serve as innovation evangelists in citizen communities and shape peer citizens' perceptions about the services.

Table x. Summary of roles of citizens in service development (Nambisan – Nambisan, 2013)

- However, end-users may not be equipped to play all the four roles, some may be best at being an ideator while others may contribute as designers
- *Key engagement factors:*
    - Users can be difficult to reach, so engagement will often require collaboration with organizations representing the users ad others
    - Do not expect them to have an understanding of the details of 'backstage' systems, management structures, project processes, etc except where this conflicts on their experience as users

5. Benefits and difficulties of co-creation

The benefits of co-creation process are:

- Some groups and individuals who do not normally have a 'voice' may become included in negotiations and dialogue.

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- Different stakeholders can gain greater responsibility for various stages of a project development process; this increases the motivation and commitment of everyone who participates.
- Greater opportunities for discussion and reflection with different stakeholders.
- Being able to form links and networks more easily, which will allow you to share information better than before.
- Being able to establish a dynamic course design process as new linkages and lines ofcommunication are set up, resulting in greater satisfaction with your training programs (Rauter et al. 2018).

The difficulties of co-creation process are:

- Size complexity: due to the involvement of a large number of stakeholders and other relevant actors. This may negatively influence the controlling and management of the whole innovation procedure.
- The large number of players involved can lead to challenges for the managerial team and for the organizational structure of the company.
- Usually co-creation process is demanding, it needs full transparency and a lot of communication.
- The co-creation process is socially complex: the personal characteristics of stakeholders and their relationships can be quite complex. The social style and the differences of culture and know- ledge can counteract collaboration.
- The skills for managing collaborative design projects are very specific and often actors do not have experience in opening themselves to collaboration.
- Complexity may result in increased costs (Rauter et al. 2018).

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PART TWO – CO-CREATION IN HEALTHCARE SECTOR

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1. Co-creation for better healthcare and home care provision

Healthcare is not a typical place for co-creation and in general considered as less participative. Involvement of patients to service or product development is rare because of the dominance of traditional healthcare model, which is based on professional dominance. However, in recent years, participation-oriented implementation methods were introduced and thought of as a paradigm shift towards a patient-centred approach. This lead to the change in the perception of the patients, the patient became a person, not someone to be treated but recognized with all the socio-economic factors and with their personal knowledge about their health-related needs (Darmer et al. 2015).

Cooperation with patients help to inspire the design and delivery of the patients' specific health needs. A summary is provided here about the advantages and disadvantages of co-creation in healthcare:

Pros and cons about co-creation in healthcare

Disadvantages	Advantages
Patients and professionals are not ready for meaningful involvment. Several institutional and structural barriers exist. Healthcare settings are complex and difficult to navigate in.	Patient involvement improve the quality of health services, increase the effectivity of care, enhance health outcomes and save resources.
Patient empowerment is not included in strategic priorities of healthcare service system	Empowerment creates partnership between patients and professionals.
Patient empowerment initiatives may frustrate individuals, the organizations, professionals or institutions.	Healthcare providers have the opportunity to learn from patients, who provide relevant insights to improve professional practices

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Patient often have inadequate ability to detect and cope with health problems, limited involvement in co-creation of treatments, poor willingness to participate in the delivery of care, low compliance and higher risks of inappropriate access to care.	Patient activation intended to increase the patients' self-care abilities, which helps health protection and promotion. Lower health-related charges have been attached to the implementation of a patient-centered approach to care
Individual barriers to patient empowerment concur in restraining the ability to establish a co-creating partnership which is intended to facilitate delivering of health services.	Users contribute to the effectiveness and responsiveness of services by bringing innovative perspectives and non-conventional ideas
Patient may not be able to engage; or there is an inadequate capacity of the healthcare professionals to involve patients; or there is a desire of professionals to preserve control	Participation in the design and delivery of public services support the public sector organizations to anticipate the future needs of the community
Co-creation requires that patients and professionals agree to establish a long-term partnership, which is intended to exploit patients' resources (Alakosi 2017)	The process of empowerment is aimed at improving the ability of patients to comply with the clinical prescriptions of professionals and to stick to the requirements of the treatment (Alakosi 2017)

Table x.

In the following, we present some examples that were carried out to use patients (end-user group) as source of information to improve the provided services or products. However, these examples may not be fully equivalent to our co-creation approach and definition.

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Good practice example - S4S Medication Assistant application

- S4S is a medication taking application to support the elderly. It gives alerts, visualizes information of each medication and gives information on what to do when forgetting to take a medication.
- The elderly have unique needs, limitations and capabilities if it is about technology. Involving elderly in the design and testing process will provide information about the features and attributes that elderly prefer, and improve the understanding of which factors enusre the usability of the product. The involvement process had four stages.
- ***First stage:*** A Persona was created (see Part Three 1.2.1). The persona was described with detailed socio-econimc features, daily routine, medical records, family circumstances. These details were created to have different context scenarios. The context scenarios were used to create the potential actions of the S4S Medication Assistant as the reaction to the Persona's actions. After these actions were defined the draft content of the program was ready with the main requirements.
- ***Second stage:*** A proposed prototype (see Part Three 1.2.1) was produced to meet the requirements set in the first phase. The application provides a set of options so the elderly can change the settings. Since it was designed for the elderly, special features were added: noise control features, changing font size, changing between dark and light mode and help mode. The program was equipped with an auto-zoom feature adapts the size of text and images to the user distance to the smartphone.
- ***Third stage:*** In the evaluation phase the prototype was tested, firstly by health professionals, engineers aged from 25-60. The second evaluation was made with end users aged 57-76 years.
- ***Fourth stage:*** The results of evaluation were analysed. Several features were identified that users considered more difficult or easier to use. During the continuous development process of the application users had active role, by participating in the process of evaluation, thus enabling the application to be shaped accordingly to the users' needs and capabilities.

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Good practice example - Using Facebook for knowledge co-creation

- Social media became crucial for social interactions, thus it can be utilized as a resource for co-creation.
- Social media platforms facilitate interaction among individuals with similar problems or challenges.
- An analysis (Bagayogo et al. 2014) of two cancer foundation's Facebook page highlighted the possibilities of knowledge co-creation in social media (Table x). This process had three stages; *initatiting a conversation*, *transition*, and *normalization*. In the first phase knowledge sharing about prevention, tests, diagnoses and experiences are the main activities. Initiating discussion, asking for feedback is also crucial. In the second stage, posts initiated discussions between individuals, who shared their stories. Respondents indicated their lifestyle changes, describing it as key factors of survival – thus educating others by sharing. Collaboration through debating and providing supplementary information are key features of this phase. In the normalisation phase the original post was shared by users. In this phase the aim is to reach consensus on an idea. Informing through the sharing of knowledge is also part of this step.
- Social media allows users to receive feedback quickly, thus can serve as an efficient tool for getting information and support from members of the community. Furthermore, communication and information-sharing on social media helps to involve individuals who are marginalised, isolated.

	Initiation	Transition	Normalization
Main activities	Knowledge sharing; sharing testimonies, requesting information and initiating discussion.	Collaboration; e.g. debating, supplementing information and responding.	Reaching a consensus; agreeing and informing
Key drivers	Adequate group climate; formal and informal knowledge sharing encounters, shared language and knowledge.	Visible progress; mechanisms for effective and efficient eliciting contributions; capacity to relate contributions to each other	Anticipated benefits; mechanisms for effectively completing group task, control and monitoring of progress.
Challenges	Overcome the boundaries to communication.	Maintaining constructive negotiation channels.	Ensuring the quality of the knowledge agreed.

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Practical implications of the above examples for co-creation in healthcare sector

- The role of patiens should be taken into account in any project that aims to develop services or products to patients. Developers should have a welcoming attitude towards the inputs of patients and they should be aware of the motivations of consumers – this ensures that the co-creation process will be beneficial for all parties.
- Emotional aspects should not be neglected. A social and emotional contact should be established with the patients, as it increases their engagement.
- Engagement platforms should be created and tested. Tests should be conducted with customers and feedbacks should be incorporated. (Ramaswamy – Gouillart 2010).
- Effective and easy-to-use feedback channels should be established for patients; through these, patients can contribute to the definition of good healthcare services and identify problems. Patients could provide feedbacks through a scale-based system. Patient diaries can be useful as well.
- Education is key: it should focus on patients, to ensure that they can effectively use the available resources. But it should also focus on healthcare professionals.
- ICT solutions should be used. Applications, wearable technologies and smart devices can record, store and analyse health data. These devices allow patients to manage their health information.
- Online communities are useful tools for sharing and gathering information, sharing experiences, or enabling communication.
- It is important that besides services, the customer experience and value-in-use should be emphasised (Van Oerle, 2018).
- The role of mediators is crucial. They create connections between the involved parties through facilitating communication, contribute to the resolution of conflicts, encourage openness, make minority opionions more visible.
- Acess to already existing data - for example anonimised patient data, user feedback, patient groups - should be granted.

2. Home care within the healthcare system

Home care is a specific segment of the healthcare sector. It aims to satisfy people's health and social needs while in their home, by providing appropriate and high-quality home-based health care and social services, by formal and informal

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caregivers, with the use of technology when appropriate, within a balanced and affordable care service (OECD, 2002).

The proportion of elderly in the population is increasing steadily in the Eurpean Union and is predicted to rise still further in the coming decades. This leads to increasing rates of care-dependent older people. The next decades will also see dramatic changes in the needs of those with noncommunicable diseases, as the leading cause of disability and death. A variety of people with chronic conditions will stay at home given difficulty in mobility, and dependent children with severe health problems or people with mental disorders may also require home care.

Homecare provision vary widely across Europe. Broadly, there are two types of ownership for home-care providers – **publicly and privately owned** organizations. Publicly owned providers fall under the direct control of government and thus directly influenced by it. While privately owned organizations are usually influenced indirectly for example by quality control or price setting. In some cases, there are privately owned providers who are funded publicly and privately owned providers who are hired by the client directly, without public resources.

In the EU, the publicly owned providers are the most prevalent provider type. However, there are many **different types of public provider**s. Public providers range from municipalities to national health service agencies; municipal or regional state agencies for social services; and semi-state-owned organizations. In several countries, there are separate departments in a municipality as well.

For private providers, a distinction needs to be made between **non-profit and profit-making providers**. In some countries the non-profit sector is extensive and comprise of voluntary, charitable and professionally led organizations. This sector may involve many different organizations (church affiliations, voluntary organizations; small professional teams; or professional non-profit organizations).

In most countries there is a mixed economy of home-care provision – including privately owned providers alongside with public providers.

3. Using technology for the development of home care

Any technology, medical and non-medical, that provides or facilitates care and everyday activities in a user's home can be considered as home care technology. Home care technologies may have distinct advantages over traditional means of care: they can prevent users from going to the GP, clinic or hospital to receive care. For people with chronic diseases, appointments can take up significant amounts of time and limit their ability to perform normal professional and social activities. Remote systems may allow much more frequent and unobtrusive monitoring than before. Irregularities are more likely to be noticed early, which could prevent deterioration in the condition of the service users.

A few categories are helpful for discussing the attributes and benefits of the technology in technology for home care.

- **Active devices** perform therapy on users: such devices as home dialysis systems, perfusion pumps, drug delivery systems and oxygen systems.
- **Non-active devices** work without the intervention of clinicians or the users and do not require electricity or programming: incontinence pads.
- **General assistance and monitoring devices** include items as fall detectors and pill-minders. Advanced information and communication technology could be also used to locate people with dementia and Alzheimer's disease who wander away from home. ICT allows information to be shared and stored.
- **Home modification**: it is fundamental to adapt the residential setting and match it with the needs of residents. For example, non-medical equipment for disabled people.

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Technology has shown the potential to improve clinical outcomes, reduce the length of hospital stay, reduce reoccurrence and readmission rates and improve quality of life. Technology can also improve the quality of life of informal carers, making it likely that the informal carers can stay active at home and in the community.

Altough, delivering of innovative healthcare solutions for the elderly may not be seem different then developing something for other customers. However, there are three key aspects that have impact on the adaptation of novel ICT solution by the elderly.

The first determining factor for the successful implementation of ICT solutions in home care are related to the **technology** itself.

TEHCNOLOGICAL FACTORS

- The most important aspect of the solution is its relabiltiy. Withouth being realiable in long term, patients will not use it or it will not be implemented at all.
- New ICT based soltuions should be *suitable for the living environment*. The new solutions should fit to the homes of the elderly.
- Infrastructure boundaries can hold back the implementation of the solution.
- The *effects and the benefits* should be objectively *measured* before implementation and should be communicated to end-users. Innovation will be adopted only if the effects are proven, and people are satisfied with them.
- The solutions should *match with the users needs*. Innovations will be adopted if the abilities offered by the new technology match the user’s needs and requirements.

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- ICT solutions must be *designed for users* and should be *designed with users*. A large number of products or innovations were already created to help the elderly, but the creators, in their design, took little account for the involvement of the target group. Involvement of the users is beneficial because it creates engagement and higher chance for adoptation. In addition, it is easier to create something that considers the social, and emotional relationships that older people establish with the product.
- The new solution should provide *user-friendly interfaces*. It must be taken into account that elderly people have impairments in vision, hearing and mobility.
- Size and portability are key for successful home care solutions (European Commission, 2007; Vavilis et al. 2012).

The second determining factors can be addressed as **local factors**.

LOCAL FACTORS

- The purchase of home care solutions may not be properly funded by public bodies. In England, health and social care budgets for equipment have been integrated, and all localities now have a jointly funded integrated community equipment service.
- Reimbursement schedules for home care services could be updated relatively to the level of technology on the market: schemes that are not updated may create incentives for clinicians to prescribe more conventional inpatient treatments
- The acceptance of innovation in an environment depends on who is involved in introducing it. For example who is identified with the innovation, and who takes the lead role as an initiator. This means that stakeholders with developed network and acceptence can serve as icebreakers.
- Innovators should do efforts to developing a collective “understanding of the innovation” through various forms of providing information and communicating. This ensures trust and engagement of clients.
- Mutual cooperation of relevant stakeholders is a must. It is essential for achieving high levels of awareness and recognizability, showing better cost effectiveness, increasing transparency while taking into account needs of a user, searching for solutions for adjusting

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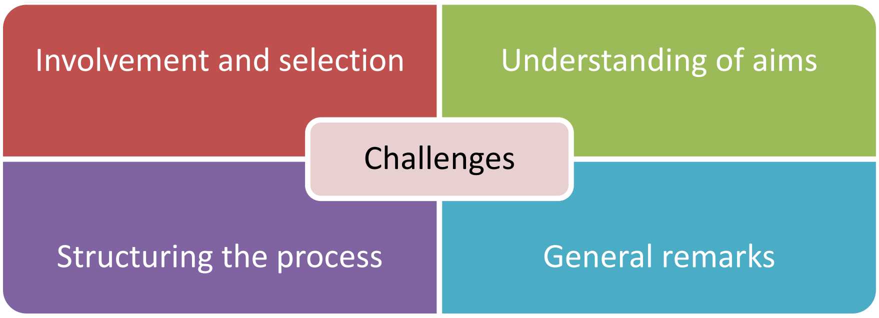
legal frameworks, dividing risks in research and innovations, and monitoring progress (European Commission, 2007, Vavilis et al. 2012).

The third factor is **the end-users attitude** towards the new ICT based solution.

END-USER ATTITUDES
- The elderly view technology as a substitute for human contact, and it discourages them from using it. They fear technology reducuces social contacts. - The elderly do not trust ICT. This is because they do not know how to use new technologies or do not have confidence in, and doubt their own abilities due to sensory and cognitive deficiencies. This refers to “technophobia”. - The elderly does not like to use something if they feel that it is pushed on them. - The elderly fear their privacy and do not like the idea of being monitored. - However, most of these negative attitudes can be over come if the potential users are informed properly, their awareness and understanding of the technology is raised, they clearly see the usefulness and the operation of the home care technolgies. (European Commission, 2007; Vavilis et al. 2012).

4. Co-creation with seniors

With this present Tool, we intend to facilitate the involvement of the elderly to the co-creation processes. However, it is important to note that co-creation with seniors induce special challenges. We have identified the following challenges and barriers based on the experience of Campisi et al. (2018) in a Senior Living Lab.



Challenges and barriers related to working with the elderly can be arranged around few topics. The first challenge is the **involvement and selection** of the elderly.

INVOLVEMENT AND SELECTION
- It is advices to involve the eldery from the very beginings of the process. This ensures they will have a clear understanding of what is going on, what are the objectives of the project, what is their role and what we expect from them. - However, they might not feel motivated or they do not see why their engagement is necessary. In this case, the mutual benefits should be explained. - Mobility is a challenge. One must consider that the elderly have different level of mobility, it may be hard for them to attend to regular meetings far from their home. - The right social networks are needed to establish connection with the elderly, and it is adviced to recruit them through organizations. Therefore, the project must be explain to the institution as well. - The elderly has limited capacity to work on the project. For those that have problems with motor or cognitive skills might be difficult to fully participate in the sessions. - Access to advanced communication channels is often a barrier. - Selection of the elderly should be based on proximity, work capacity and access to communication technologies. - Challenges related to involvement can be overcome by the involvement of specialists.

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The second challenge is **understanding** the aims, objectives, roles and expectations.

UNDERSTANDING THE PROJECT
- Explain the project in the simplest way possible to the elderly, use stories. - It needs to be explained what we expect from the elderly. They may think that they are attending to a conference where passive participation is needed. - The elderly might think that the co-creation process serves the interest of an SME to find new markets. Mutually benefits must be explained. - Missunderstaings can happen, therefore participants should be encouraged to ask if they do not understand something.

The third challenge is related to the **structuring** the co-creation process.

STRUCTURING THE PROCESS
- First, it may be difficult to mobilise the elderly in daily basis. This can be overcome by organizing the co-creation process within a longer period of time. - Co-creation processes are rather short but intensive sessions. However, it needs to be taken into consideration that the elderly might not be able to participate in sessions longer then few hours. In this case, the factilitator needs to decide whether there will be more shorter sessions or they let the elderly to participate when they feel. - We suggest to combine shorter work sessions with longer breaks or invite the elderly to actively participate only in specific aspects of the journey.

At the end we continue with some **general remarks** that needs to be keep in mind while conducting the co-creation process.

GENERAL REMARKS

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- Before starting the process with the elderly, the faciltiator should explore their social and work background in order to understand who they are.
- Inform the elderly in advance about the schedule of co-creation session. A clear structure at the beginning of the session assures less problems during the process.
- Each session should be structured with enough breaks to maintain attention.
- Ask frequently questions, to ensure that the elderly follows the process. These questions bring attantion to uncertainties.
- Value the older persons' contribution to the process. This ensures their motivation to participate and increases their engagement.
- Stimulate group interaction. This helps the elderly to understand better the other participants and vica versa which increases mutual trust.
- The facilitator should pay attention to group dynamics, as some persons might be more dominant than others which could lead to unilateral outcomes. In this case, the faciltiator should intervene more often by involving other participants more actively.
- During the co-creation process, examples should be used to clarify certain issues or challenges (Campisi et al. 2018).

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PART THREE – THE PLAY

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1. The process

In the present project we propose the following steps of co-creation for development of a product with the involvement of end-users, academia and the service providers. The process consits of four main steps, these are ***preparation***, ***knowledge creation, prototyping the outcome*** and ***concluding the process***. Each steps consists of activities that the co-creating team or the facilitator alone needs to go through.

In **preparation**, firstly, the necessary physical conditions for the co-creation process are prepared. This refers to the creation of creative and inspirative environment and atmosphere. The facilitator must be prepared for leading the co-creation process as well, here we give some tips how to guide the team and what kind of leading techniques are required to master. Further more, the co-creation team must be set and the project objectvies must be declared. Once it is done, the facilitator and the team are ready to embark on the process.

The actual co-creative work starts in **knowledge creation**. The aim of this step is to **identifying the user's requirements** of the future product. Here, the aim is to explore needs, capabilities, attitudes and characteristics of the end-users. This is followed by the phase in which the **user requirements are analyzed** and organized, to identify development path for the future solution. After the knowledge from users is gathered and the main development areas are set, it is time for prototyping.

The whole point of co-creation is to reach the **prototyping** phase. It is the time when actual outcomes are prepared and the first prototypes of the future product are created. Prototyping starts with overviewing whether enough knowledge is gathered to start prototyping. If yes, it goes on with creation of the 1st prototype. This must be evaluated with end-users and should be mathced with the initial user requirements. Refinitions must be done, and then the creation of the 2nd prototype will take place, which is better fitting and might be already good enough to present for leadership and getting approval for production.

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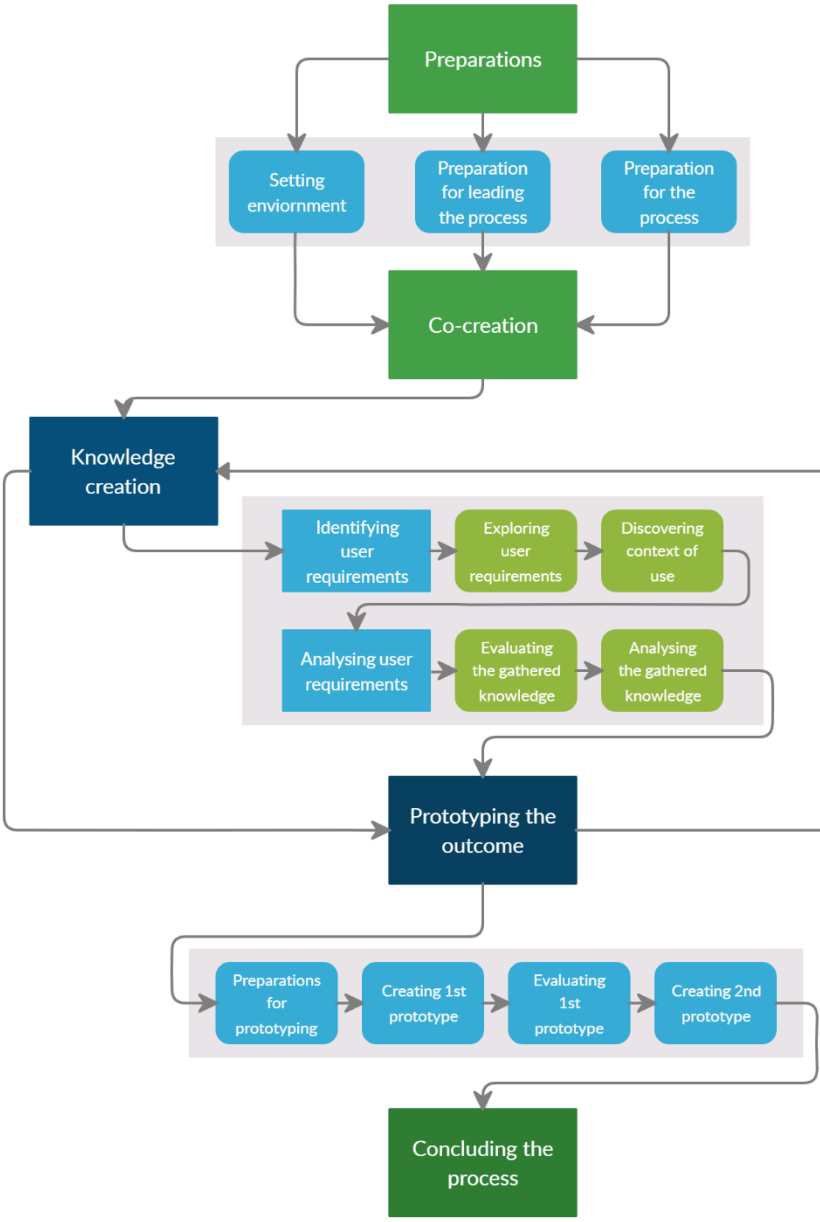
As the 2nd prototpye is prepared, the co-creation process is over and **the process** must be **concluded**. The team and facilitator should reflect on the process and activities done during the co-creaiton session. It is essential to document the process and identify the lessons learnt.

A process map is summarizing the steps of co-creation:



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1.1 Preparations

Every process starts with the preparation. This chapter aims to introduce the reader into what steps need to be made to establish a creative environment for a co-creation process. A creative environment supports the generation of innovative ideas and increase social bonding. The chapter also provides practical tips for leading and for setting the project on track.

1.1.1 Setting the environment

> *The first step of the process is set the right environment in which the team will work together. Ideally the physical space is equipped with the right elements and a good atmoshpere that supports creativity. In addition some rituals (team activities) can be introduced to form the symbolic space, to foster authentic speaking and safe environment for discussion, idea generation and critisizing without deminishing team spirit and triggering interpersonal conflicts.*

Creativity is often killed by the form of space, as it mimics the school class rooms, which reinforces power relations and distance “leaders” and “learners”. When the aim is knowledge sharing, the subtext is that people should be passive. This is not what is needed for co-creation. On the contrary, some organizations – incubators, design firms, start-up communities - have dedicated spaces for creative teams to work and it also allows them to rearrange the space according to their needs.

But **why environment supports** creativity? Because the space into which people walk in shapes their experiences, affects their activities, level of engagement and trust. Creative spaces support social bonding, ensure smooth communication and maximize interactions. When setting the creative environment pay attention to both physical

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and symbolic elements of the space, and create team rituals to establish the atmosphere.

DESIGNING THE PHYSICAL SPACE
- The right spaces are stimulating, peaceful, bright with natural light, spacious, have less furtniture and simple, and are not distracting. These spaces encourage social interactions. - An effective arrangement for co-creation is the use of circle of chairs. Circles are easy to use and eliminating hierarchy. They encourage engagement and participation and makes everyone equally vulnerable, which tends to invite deeper dialouges. The circular shape provides people equal opportunity to talk if they choose to. - Other important factors of a creative environment are the followings: Flexiblity, Multimedia tools and ICT, Open collaboration zones, Culture hubs. These areas provide inspiration for work, Interplay areas. These areas mix work and play, Moveable walls and writeable walls, or seperation design. - Creativity benefits from having both community spaces and places for private work. - Third places are water coolers, lounges, cafes or all other places that encourage socialization. This help people to talk beyond work and get to know each other.

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Good practice example – Cocreate spaces of Philips

- Philips realized the importance of spatial design in innovation. They have created inspirational spaces which are dedicated co-creation spaces. One in Eindhoven, Netherlands. These spaces are designed to inspire people to think differently, while promoting creativity and collaboration. The environments have flexible areas, stimulating materials, and tools for different needs.
- Their CoCreate Space is designed for rapid prototyping. Their facilities offer everything necessary to challenge stakeholders in the early stages of innovation and encourage follow-through that results in complete concepts. The space also enables where concepts can be rapidly transformed into basic and tangible demonstration objects using various technologies and techniques.
- Building on the existing CoCreate spaces experiences, Philips also can recreate pop-up temporary cocreative spaces. Therefore, providers place for creative thinking, building, testing and learning.

- https://www.philips.com/a-w/cocreatorlab/homepage.html

The experience of any environment is also **a psychological one**. Our experiences shape the understanding of the environment in which we exist. But no two people ever have exactly the same impressions. The use of signs (symbols, images, colours, furniture arrangements) in an environment help the establishment of the atmosphere. These signs are usually not explicit. Humans naturally respond to cues based on ther internal understanding. If they have no internal model for what to do, most people look to those around them and follow the group behaviours.

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Designing the symbolic space

- A possible way to improve the design of a place by hanging posters of quotes from famous people on the walls. This may break the ice and bring up some topics that people would talk about. It may encourage people to behave creative.
- A more direct way to shape participants behaviours is setting guidelines or creating a social contract. This might draw attention to rules of play. Instructions on what to do and how to act increases comfort, and it decreases the time to establish social cohesion. Instead of acting based on internal schema, people are given standard that they can align to. People will follow the provided guideline, if it is not too complex.

A **ritual** is a series of actions followed in a prescribed order in a specific place. Rituals are symbolic acts, where signs are manipulated by participants. Highly symbolic and embodied rituals can be used to join the space, express membership, and trigger behaviours. These activities are involving explicit creation and engagement with symbols. Creating a team logo, a company brand or a piece of art is symbolic. The most memorable rituals are the ones in which people are fully engaged, using their mind, senses and bodily interaction. Rituals can be the vehicle for creating and transmitting the mythology of a group.

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Good practice example – adaptive space of Philips (ExperienceLab)

- Philips has created a prototype of an adaptive space that adapts to whoever is inside it, breathes as they do, and changes shape and sound to fit their needs. This may be different then what we can expect from an average office but the idea behind is similar.
- This prototype was designed with co-creation in Philips, a team of designer experts, academics and users. To gather essential insights from the field, the team worked closely with experts in mental health, people who experienced burnout through stress at work, professionals from psychiatric healthcare institution were shadowed and interviewed.
- The designed space aims to reduce work-related stress by altering people's behaviour naturally to encourage mindfulness. As well as in workplaces, this concept has potential for use in hospitals, mental healthcare and other care facilities.

- https://www.philips.com/consumerfiles/newscenter/main/design/resources/pdf/Inside-Innovation-Backgrounder-Adaptive-Relaxation-Space.pdf

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1.1.2 Preparing the facilitator for leading

Facilitators are the key players in co-creation. Facilitators have significant tasks during the entire process, they need to select project participants, ensure team building, encourage discussions, be informed of all activities and outcomes, manage conflicts if needed and manage daily activities of the process. Therefore, they must be prepared for leading and they should understand and practice some attitudes.

A good facilitator have the ability to lead the process with **PACE**. PACE stands for *presence*, *authenticity*, *courage* and *eco-centered mindset*. It is a general attitude what facilitators must have during the co-creation process. Facilitators should also support participants to practice the PACE during the process.

PACE, THE FUNDAMENT OF A SUCCESSFULL CO-CREATION PROCESS

Presence

- Is an awareness that enables people to observe and process information in the moment.
- Presence creates a slight pause in which a person can evaluate possible reactions and choose what they feel most appropriate. This has a significant impact on dialogues
- Presencing impacts the ability to realize potentials, thus improving innovation

Authenticity

- It means being honest with yourself and others. uthentic interactions lead to trust
- An authentic leader is completely honest with himself regarding his abilities to lead and make the right decision. If he recognised his weaknesses, he may turn his position over

Courage

- Means the willingness to take risk, to carry on and face the fear of the unknown
- It's an attitude that sees failiure as a learning opportunity
- When people feel free to be courageous and taking risks, they can be creative and generate a much greater range of ideas. They will be able to handle failures as well

Eco-centered mindset

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- In the simplest form means thinking of the whole. Facilitators are expected to think of the whole, but it benefits all team members to do the same - In an eco-centered approach the facilitator also seeks for opportunities to involve all members of the team equally into the process and make serious contribution
Tips for practicing PACE: - Asses the situation before acting. If something happens during the process, the best is to not react immediately. You may even let it go for a while, then when you see the events it triggers, act and steer back the process to the right direction. Then evaluate again whether the process is on track or not. - Speak always honest with the team, especially with the elderly. Honesty, even if it means you may need to explain difficulties of the process, cultivates trust and increases engagement. - Do not hide information from any parties, ensure transparency and communicate the goals of the process form the beginings. - Ensure that every participant has the way in which they can contribute. Allocate tasks according to their capacities. - Think always of the process goal, evaluate everything from that perspective. Encourage participants to do the same as well.

PACE is the fundament of good leadership. But, there are some other approaches that are needed when leading the co-creation process. These **styles of facilitation** are completing the four pillars of a facilitator. We recommended the following:

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FACILITATION STYLES DURING THE PROCESS
- *Inclusiveness.* Invite many perspectives, accept all ideas, involve everyone. No one has all the answers or “the right answer”. - *Participation with respect*. Listen with deep sensitivity to allow others to participate. Put aside judgments and assumptions. Provide a safe and inviting environment. Support the group with open-ended questions. Be open and honest. - *Discovery process*. Have a clear intention, but be open to outcome. Let go of judgments so you can stay open. Use intuition, both left and right brain, and your multiple intelligences. - *Context for understanding and commitment*. Be mindful and present, resolve to make a difference, ask helpful questions, and take personal responsibility for the group’s decision. - *Facilitative style*. Speak to be heard and understood. Acknowledge self-organization, which you cannot control, with deep appreciation for where the group is. The facilitators responsibility is the process rather than the result.

A successfull facilitator is also aware of the complexity of dialouges. **Dialogical practices** have significant impact on the co-creation process. Therefore, it needs to be clearly understood by the facilitator to successfully tackle communication related challenges. Altough, people might think they know how to do it well, usually it is not the case. Having an effective dialouge is difficult, and without understanding its principles, co-creation has little chance to success.

Dialouge does not mean telling to each other, but it is not negotiation either. It is the combination of talking and listening. If in listening our opinions and ideas, or prejudices or our background dominate, we hardly listen at all. Therefore, one must listen with full attention, and in a state of silence.

However, it is hard to reach awareness because people tend to like their own mental models and viewpoints. When entering to a dialouge, usually people talk from their worldview, which is internally coherent. But it may seem odd for others, and this

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leads usually to comments like “You are wrong” and “I’m right”, which is understood as a personal attack. This indicate the unwillingness to enter into a true dialouge. A good dialouge is accepting all the different perspectives.

In creative teams the best way to cope with differencies in opinions is to approach them from the perspective of the whole group. People must threw away their ideas if its not beneficial enough to the whole team. If you are in the idea generating phase, do not stick to your ideas, just threw them into the middle and do not care about what happens to it later. This is a constant challenge for each team members.

The problem is that people rarely think through dialouges before entering into a conversation, and also do not dedicate time and resources to develop this capacity. Knowing the principles of conversation, we can categorize dialouges by difining different levels of conversations.

There are four levels of conversations: Talking nice, Talking tough, Dialouge and Generative dialouge.

All levels of dialouges are used in a co-creative process. However, one should not expect that the teams will jump immediately to the fourth level.

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Levels of dialogues
- ***Talking nice.*** People talk politely on the expense of authenticity. It is speaking from what others want to hear instead of saying what you think. It maintains social harmony but it does not build relationships and acts against mutual trust. - ***Talking tough.*** People say what they think and often argue which perspective is better or worse. Personal ego and ideas are closely attached, and it makes it difficult to come to terms with others. But it is beneficial because it reveals a persons worldview and it makes easier to others to work with him or her. - ***Dialouge***. In a dialouge, people see how they are part of a larger whole and speak from that position. It creates an authentic space to have conversations. Note that it reveals vulnerabilities which can be taken advantage of by manipulative people. Even if there is authentic space, conflicts appear that needs to be managed. - ***Generative dialouge or collective creativity.*** This level is characterized by generative dialouges in which the team explores the space between. The creative ideas coming from them are the seeds of innovation. It transforms people who participate in the dialouges, it is empowering them and raises their levels of energy. However, it is important for facilitators to stay sharp, and act if the discussion meander into off topics.
Tips for ensuring high level of dialouges: - Always speak with empathy and respect. If participants will see that you are trying to understand their position they will accept your suggestions. - Encourage participant to participate in discussions, do not let anyone out. Altough, do not force them to say their opinions. Sometimes people just simply do not have an opinion of a specific thing. - Ensure that participants do not attach too much to their ideas. Just show them you can also through in ideas and do not care whether eventually that will be the solution for a problem or not. But this ensures participants will not feel discouraged, if their idea is not selected. - Be patience with people, listen to their opinion always, and try to udnerstand them.

1.1.3 Starting the process

Co-creation is a like any other process or project. It has its participants that work together towards a goal. Here we give suggestions for the facilitator to selecting the participants, for teambuilding and setting the project on track.

The following section aims to support facilitators how to initiate the process. Here we detail the preliminary activities of co-creation process. Some of these steps are complusory, while others are maybe not too relevant in certain project as they are already given (boundaries and success criteria, mission statement).

1. Selecting stakehodlers	Facilitator of the process (internal team)	1 h for stakeholder analysis	2-3 days for selection
- Co-creation is based on the active involvement of stakeholders. The first task for the facilitator is to define who are the stakeholders. This might be obvious in some cases while in others more complicated. In the present project, it is predefined (QH actors). - The goal is to ensure that those who were selected are relevant to the specific goal. Take the initiative to carry out a stakeholder analysis to find the best fitting member.			
Tips for making stakeholder analysis: - First, *identify* who are possible stakeholders. This can be done by a brainstorming activity that identifies who have positive influence on and who are affected by the project. - Second, *priorityze* the stakeholders. This may be based on various qualities of the stakeholders, - their level of interest, power on the processes, available resources (human, financial and knowledge). Use a matrix to prioritize the stakeholders.			

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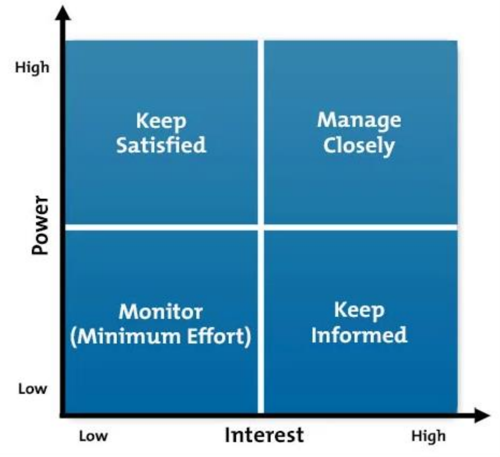

- Third, the facilitator needs to *understand* the key stakeholders. In this stage, it is a theoretical way of exploring the stakeholder group's need, actual understanding will happen once they are selected.
- Fourth, the facilitator needs to work out how to *engage* stakeholders.

- Key questions to help to understand the stakeholders include: What financial or emotional interest do they have in the outcome of the project? What motivates them? What information do they require? What is the best way of communicating with them? What is their current opinion of the project? Who influences their opinions? If they are not supportive, what will win them to support it? How their opposition can be managed?

Tips for selecting the eldery:

- Co-creation might be demanding for the elderly. They might need to participate in idea generation, interviewing and other activities to provide their contribution to the project. They also need to support testing of the outcome. Therefore, it is important who are selected.
- In some cases, there might be elderlies who are professional in the field you are working, in other there might be elderlies with some health issues and lowered cognitive skills. Depending on your target, you need to select the right person for it.
- If it is possible, contact caregivers in advance and ask them for an "evaluation" of elderlies in different perspectives, such as cognitive, motor and social skills, and their daily routine.

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2. Understanding the need	Facilitator of the process and stakeholders	Various methods and approaches	2-3 days for selection

- Understanding the needs of stakeholders is the first step to ensure that the co-creative process is going to be beneficial equally to all parties.
- The need can mean different thing for different parties. For governments, better and cost-effective services, while for users better received services and easier access.
- Identifying the needs of stakeholdres can be done *indirectly* and *directly*.
- Methods to understand the stakeholder's needs: literature review, expert interviews or expert advices, focus group meetings, observations and *stakeholder interviews*.

3. Building rapport with the team	Facilitator of the process and stakeholders	Special approach to the elderly	1-2 hours

- Rapport is a connection or relationship with someone. It is a state of harmonious understanding and building rapport refers to the process of developing that connection.
- Sometimes rapport happens naturally, we all had experiences where we "get on well" with somebody without trying. However, rapport can be built and developed consciously. Rapport is usually based on shared experiences or views. Building rapport tends to be the most important at the start of new working relationship. The rapport created can last long.

Tips for building rapports:

- Remember the basics: Be culturally appropriate, smile, relax, remember people's names, maintain a good posture, listen carefully to others.
- Identify common ground to help to establishing rapport, so use small talk to find something that you both share. Most people like talking about themselves, and the more genuine interest you show in them, the more likely they are to open up.
- Use open-ended questions to discover personal information. Even just expressing your shared frustration at the traffic can help you to draw closer to someone.

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- Create new, shared experiences. Shared experiences can be attending to the same conference session together. Working collaboratively to define problems, devise solutions, and design strategies, can help to bring you and the other person closer.
- Be emphatic. Empathy is about understanding others by seeing things from their perspective, and recognizing their emotions. For this one must be a good listener.
- Faciltiators must serve the groups needs without personal interest in the outcome.
- It is also usefull to pay attention to communication styles and personality types. Then you will be able to work with participants in a way that matches with their style or type.

Tips for building rapport with the elderly:

- Start the meeting with the elderly with asking about their lifes. What they do, how they live, what is their proffession etc. This ensures that the elderly will be cooperative with you from the beginigns.
- Ensure elderly from the beginigns that their contribution will be valued.
- Use proper form of address, be respectful. Make them feel comfortable. Speak plainly and keep your message simple. Learn to listen, avoid interrupting. Do not rush with the conversation. Demonstrate empathy, seek for moments when you can respond.

4. Setting boundaries

Key stakeholders of the process (SME, facilitator) 1-2 hours

- Setting boundaries is when the facilitator and the team overviews and identifies what kind of support or resources the project has. Some questions might help the facilitator to discover the capacity that is available for supporting the project.
- Discuss the following questions: What is the level of investement of people coming into the process? What are the resources available? Who makes the decisions? What are the givens? What is non-negotiable?
- The answers reveal the resources and constraints of the project. This helps the facilitator to understand what they can and what they can not do, and what are the boundaries of the project. This information, when shared with the team can help bring focus at critical juncture as they narrow the field of possibilities.
- Note that the boundaries of the project might be predefined already.

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5. SETTING SUCCESS CRITERIA	Key stakeholders of the process (SME, facilitator)	1 hour

- In co-creation any program has at least two sets of outcomes. The first are practical goals and desired outcomes. These are stated in terms of products and services. In some cases it would be a new product line or a new form of customer interaction with the staff. Practical goals are outcomes that people can see, touch or measure.
- The second set of outcomes are experiential. We rarely see experiential intentions, such as personal growth or emotional breakthroughs important, but still these are valuable outcomes to consider as a result of the co-creation process. These moments are interal outcomes of the process, thus it is hard to measure it.
- When starting the co-creation process, it is important to set the desired outcomes in advance, to enable us to evaluate the process after its finished. It is adviced that success is approached in a more broad way, do not set specific goals as you can not be sure of the outcome at the beginings. Pay attention to both practical and experiental outcomes.
- NOTE that the success criteria of the project might be predefined already.

6. CREATE MISSION STATEMENT	Full team involved	30-60 mins

- Social contract details how the team will work, while the mission statement describes why, what, when and where.
- The mission statement allows the team to determine what is their own focal point. The where may be defined by the objectives of the project. The why details personal motivations, the what sets the general tasks and when describes a timeline.
- Creating the mission statement involves the team early into the creative process. Rather than being told what to do, they are co-determining their own path.
- Involve every participant to develop common understanding of the goals.

Tips for creating mission statement with the elderly.

- Involve the elderly to this activity. This ensures that they will also understand what is the overall goal of the process and what are the objectives. This means they will be more comfortable with their involvement.

- Use simple language and avoid technical terms. If needed, educate them about 3-4 new words that are professional terms. Then they will be able to follow the discussion in later phases of the process as well.

7. Create rules of engagement

Full team involved | 30-60 mins

- Co-creation works best when the team decides on how they will work together. Giving permission to a team to decide how it will work is empowering. Rules written by the team are more likely to keep.
- Rules of engagement gives constraints to the creative process. It is beneficial because if there are no barriers, the creative process may lead to non-realistic thinking. While sometimes it is positive to work without barriers, but its better for people if they have a framework within which they operate. Introducing timelines, commitments, deliverables and resources create the frame. The main point is to give a change to the group to declare the manner in which they want to work together.
- Creating a social contract leads to the first challenges. The facilitator should not let dominant members of the team to take control over.

Tips for creating rules of engagement:

- Involve each participant into the process. Value everyone’s contributions. Ensure that the elderly will have a say and their contribution is valued as well.

8. Create rituals

1-2 times a meeting | Full team involved | 30-60 mins

- Creation a mythology of a group supports team building. Desiging rituals is usefull because the team create meaning and giving culture to the environment.
- Team symbols are foundations of team culture. They serve as reference points for the team to remind them from where they come from and what they achieved.
- Circles of trust is an example for rituals. Chairs are arranged in a circle, and participants explain their concerns with authenticity. These discussions serve as events to reflect on events happened on the same day. This creates a sense of sharing, mutual respect and

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emphaty. Circle of trust can be also decision making events. In this case, everyone should value the idea of others. What is needed for it?

  - *separation, authenticity, connection, engagement*

- Circles of trust can be check ins and check outs. This means that at the beginings of the session participants express their concerns, ideas, expectations from the session. This is the check in. While check outs are reflections to the events happened during the session.
- These events become rituals because they are organized on a regular basis.
- Using rituals also ensures continuity of the project. This is the warm up session for each day, once participants will be after it, their mind will be already focused on work.

9. Socialize the team	2-3 acitivities	Full team involved	1-3 hours

- Socialization activities are tools to help people learn about each other, their work, work styles and expectations. During these activities, people build trust.
- A valuable activity is sharing expectations. This helps the facilitators to understand the driving forces of stakeholders and gives inputs for team members to form common bases. Besides, by letting people speak authenticly, you strengthens social bonds.
- A common way to establish authenticity is to share fears and concerns. One may not open up fully about fears, thus, it is better to ask in a way that is reflecting to the stakeholder group in general.
- Card games maybe usefull to break the ice at the beginings and strengthening relations, but also to set the creative mindset of participants. For example the Dixit card game is a good way to socialize and discover personalities. Other card games, such as ESP (emphaty, style, preference) are usefull as well.
- These methods socialize the team, help strangers to get to know each other and create bases for cooperation.

Tips for socializing with the elderly:

- Ensure the elderly is introduced to everyone and at least they have spoken a little with each other. You can support other stakeholders to go on with building the rapport with them as

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the facilitator did. Ensure that participants also asked simple questions from the elderly to build rapport (about their life, their profession, their interests etc.)

10. HOLDING OPEN SPEACHES	1-2 keynote speaker	Full team involved	Max. 30 mins

- Co-creation process should begin with an opening to settle energy and the commitment of the group. It directs team emotions and minds towards the challenge. Openings should be done by speakers that are aware of the process. One may not be so talented at speaking, but if people feel that you are passionate about what is going to happen you raise their attention.
- Speakers remind the participants to why they are there and what are their tasks. Stakeholders may arrive to the process without knowing exactly what is their role and task. Therefore, they will be informed once more.
- The facilitator may invite a guest speaker to frame the session. A good speaker sets the direction and generate energy towards it, but also validates the process.
- Once the energy is kicked up and everyone is on the same page, you can move into other activities to bond the team and build the collective knowledge.

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1.2. Knowledge creation

The actual creative work starts in the knowledge creation phase. The team must be already familiar with each other and have trust. The general goal of the stage is to identify end-users requirements. So to answer, what are the needs of the elderly. As the needs are defined, the user requirements must be analysed. This can be done as a team effort or by the SME only as well. At the end of the stage, the team will know what needs should be addressed with a new solution and a development path is also set.

In general, co-creation is mostly about gathering knowledge from external stakeholders. Therefore, the first step of co-creation is to create a collective knowledge. The knowledge gathered in this phase will serve as the foundation of prototyping. Facilitator must help the team to discover the needs of the end-user group and identify their primary requirements towards the future product. This section will provide the reader with various methods that can be usefull in collecting information from stakeholders, mostly from the end-users. Once the knowledge is created it is also improtant to reflect on it in a later stage of the process, while prototyping the first ideas. It ensures that the prototpye will be reflecting to actual needs of the end-users.

This section is divided into 2 parts, *Identifying user requirements* and *Analysing user requirements*. Besides, we give tips for facilitators how to manage the process of collecting knowledge with the team and the users.

1.2.1. Identify user requirements

In the followings we are going to proivde the readers with the necessary tools and methods that are essential for identifying user's requirements towards a future solutions. We also provide suggestions for facilitators how to lead this stage.

1.2.1.1 Discover context of use:

The first step in identifying user's requirements is to define where the developed solution is going to be used. It is necessary, because exploring the context for which we are developing a tool supports the developers in understanding better the users needs. It is essential to involve in this stage the end-users because simply, people are experts of their own lives and have personal experiences. End-users can help to understand better the context and it can contribute to the creation of a truly innovative product. Discovering the context of use is technique that

- Allows designers to get to the latent needs, dreams and aspirations of a target group.
- Enable users to show their world, their reflections on it and their dreams about its future.

The purpose of these activities is to inspire the product designers at the starting phases of a project. The way in which you set up the exercises is essential for receiving the desired information. The aim is to reveive infromation from users and enable them to share clues about their lives.

1. Mapping existing user journeys

MAPPING EXISTING USER JOURNEYS	Qualitative	1-2 hours length	3-6 person	1-3 team size	Low costs	Medium lvl. of skills
GENERAL REMARKS FOR MAPPING EXISTING USER JOURNEYS						
- User journeys map the user's experience across a timeline. These are vital ways of both understanding how a product or service is used, and of identifying how it could be improved (whether creating a new product or service, or redesigning an existing one). - Journeys are best developed on the basis of research with users. It can be combined with interviews with the users. Therefore, one must identify how the elderly caregivers or the elderly use the existing products.						

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How to map a user journey?

- Create a user persona: User persona should always be created based on information you have about your target audience. That is why always start with user research. Having solid information about your users will prevent you from making false assumptions.
- Define scenario that describes the situation that the journey map addresses and define what expectations a user persona has about the interaction.
- Create a list of touchpoints: Touchpoints are user actions and interactions with the product. It is vital to identify all main touchpoints and all channels associated with each touchpoint.
- Take user intention into account: What motivates the user to interact with your product? What problem are users looking to solve when they decide to use your product? Different user segments will have different reasons. For each user journey it is vital to understand: Motivation. Why are they trying to do it? Channels. Where interaction takes place; Actions. The actual behaviours of users; Pain points. What are the challenges users are facing?

2. Shadowing

SHADOWING	Qualitative	1 - 2 hours length; various	5-10 person	3-5 team size	Medium investment	Low lvl. of skills

GENERAL REMARKS FOR SHADOWING

- Shadowing is a qualitative technique conducted on a small scale where the researcher acts as an observer. Researchers observe real-life situations of the subject (end-users) for a set period of time. First, they do not interfere with the end-user to avoid to deviation from their natural behavior.
- To understand the context in which a product or service will be used shadowing is a useful tool. Arrange to accompany users as they go about their everyday life. This allows you to identify behaviours and situations that you would not have known from an interview setting.
- Shadowing allows you to receive real time data and providers meaningful insights for developers. It also increases the emphaty with end-users.

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- When accompanying the users, firstly observe and take notes. Later, you may ask questions. Alternatively, arrange to take on the role of an end user for a day, so that you can get a deep insight into the context in which the products or services are used.

Good practice example – Shadowing (VitalTech)

- VitalTech worked on developing a solution that provides a more subtle way to monitor falls of the elderly but also tracking vital signs (heartrate, oxigen saturation, physical activity and sleep quality).
- They have examined products that were already in use on the market, by following elderly's activities and attitudes towards these other solutions. They have discovered, that a solution used in a specific senior center was actually not used, because the elderly felt embarrassed by it. This solution was designed as a pendant and reminding them to their health condition.
- Therefore, the team decided to take a special care of the look of the product that they design. The team created a smart watch that would be easier for seniors to use, while monitoring for falls.

- https://www.vitaltech.com/vitalband

3. Diary study

DIARY STUDY	Qualitative	1 days length	1-6 person	1-3 team size	Low investment	Medium lvl. of skills
GENERAL REMARKS FOR DIARY STUDY						

- Diary study is a method that uses the own observations of the users. It keeps track of activities or events in some form of diary or log for a particular period of time.
- Participants are asked to track specific items or general activities like "what you did for each 30 minutes of your work day."

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- Diary entries can include: text accounts of events, pictures, video, audio, sketches, and voice-mail.
- The main benefit of a diary study is to get information about the user's experience over time. The feedback is also often provided while the user is interacting with the product, so there is less of a lag in the feedback than with other methods and it is in the actual context of use. The main disadvantage is that all information is self-reported.

Good practice example – Diary study (Tango – Life in motion)

- Tango is a start-up seeked to reduce seniors' chances of fracturing their hips as a result of falling by an airbag belt. Falls often lead to medical complications that significantly decrease quality of life. Every year, more than 1/4 of Americans over the age of 65 experience a fall, and at least 300,000 of them are hospitalized for hip fractures.
- The start-up tested the algorithm with multiple senior care providers and analysed the wearability, usability and workflow issues of an airbag by asking users to make notes. The examinations allowed them to refine the design and the features.
- The airbag weights 1 kg and fitted with sensors that deploys when the wearer falls over. It also sends an alert to caregivers at the time of the fall.

- https://www.tangobelt.com/

Once the context in which the product will be used and some of the needs of the users are identified, it is time to go on and talk with end-users. Note that the above mentioned methods can be also used to deepen the understanding of user’s requirements as well, therefore, can be also used in the next section.

1.2.1.2 Exploring user requirements:

The needs of users can be identified in various ways. A number of methods presented here for identifying user needs. The suggested methods are: ideation workshop, various *interviews, surveys, focus groups and engaging with extreme users*.

1. Ideation workshop

IDEATION WORKSHOP	Qualitative	60 - 90 mins	All team	Low costs	Medium lvl. skills
- An ideation workshop is a dedicated session for coming up with new ideas. Unlike traditional brainstorming, ideation workshops are unique because they take place once you already have an idea of basic user needs or at least identified some problems. - Ideation will take place both individually and as a multidisciplinary group. - The main goal of an ideation session is to spark innovation. The focus is on quantity rather than quality of ideas. The ideas generated in an ideation workshop aren’t evaluated here, people should feel free to just simple threw in their ideas. - An ideation workshop presents the ideal opportunity to bring people together from different teams — not just designers. By leveraging a diverse variety of perspectives, you’re much more likely to think outside the box and explore new ideas. The focus on quantity over quality encourages freedom and creativity, leaving participants open to more ideas.					
Tips for doing ideation workshop: - The faciltiator should set the mood for crazy idea generation. Figure out something unusual and threw it in the middle. Do not care what will be the reaction of participants. But ensure, they understand that this is the point. TO come up with ideas and let them go immediately. This ensures security of participants to say their ideas freely. - Seperate young and old participants of the process to work on sub-group ideas. Then clash them after a time. - Ensure that the ideas of the elderly are chanelled into the to process.					

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2. Interviews.

GENERAL REMARKS FOR CONDUCTING INTERVIEWS

- There are many different ways of doing interviews. You do it with users, experts, in a context or ad hoc. The aim of interviews is to udnerstand the perspective of the interviewee.
- Before an interview, write a discussion guide beforehand, or a lists of questions. Use open questions. Do not influence answers, do not use suggestive questions. Let the interviewees explain their opinion even if you need to wait a little longer. Record, and identify key points.
- When analysing the interviews, first read the texts. Then code the relevant parts, use labels or colours. Search for themes with broader patterns of meaning. Then define the themes and topics and use interview quotes to support your claim.
- When developing a new service or a product, make sure that you explored all the requirements of the users. If not enough data was collected, return to the person and present the identified requirements and aks them to complete with specifics.
- We suggest to use *user, expert, ad hoc* and *contextual interviews*.

USER INTERVIEW	Qualitative information	60-90mins length	6-10 interviews	Team size 1-3	Medium cost	High lvl. of special skills

- The outcome should be a clear overview of the expectations of users on what they want to see, how they want to have it etc.

How to interview the elderly?

- Start with a warm up question, an open-ended open question.
- First, elderly may not always be independent in deciding whether they participate in an interview or not. This right may belong to the home care service providers or to the family.
- The elderly might have physical (hearing, vision, speech) and cognitive limitations (memory and logical thinking disorders) which may influence their willingness to participate.
- It is important to choose an environment that is familiar and comfortable to them. External distractions (noise, people etc.) are limited.
- The elderly may say stories that are not directly relevant to your topics. The interviewees can be directed back to the original topic with careful disruption or repeating the question.

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- The elderly may interpret your questions in a different way. Use simple words. - Establish trust in advance, as the elderly might fear to criticize directly the services received. Therefore, develop trust and ensure privacy, and communicate it to the elderly. - It is a heterogenous group. Their age, life experiences, work background, level of education have impact on their answers. There are young elderly (65-74), elderly (75+), old (85+). - When preparing the interviews, do not limit topics because you think they are unable to answer. In worst case, they say that they do not know, but at least the chance is given. - Involving the elderly makes them feel empowered. They are open to share their opinions. Usually, they are the most open group for interviews (Warren – Williams, 2008). - The interviewer itself may influence the quality of answers. Race, gender, attitudes and background have influence on the answers received (Vidovicova – Dosedel, 2018).
How to interview with the elderly when the family is present? - The involvement of the family of the elderly complicates the interview, however, family can be considered as a valuable source of additional information. For example, they may present more objective description about the patients health conditions then the patient himself. - Inviting the family to the interview raises ethical questions and confidentiality issues. For example, if the third party holds legal and financial decision-making rights of the patient. - The family member may be a source of distraction. The elderly may try to involve the family member in the conversation. Therefore, it is suggested to inform every parties in advanced that separate interviews will be done. - Another challenge is that there might be conflicts between the elderly and the family member, which needs to be managed. In this case, the interviewer should not take sides. - Having a family member onboard makes easier to build trust with elderly (Lang et al. 2002)
How to interview the elderly care recipients? - Interviewing with care recipients requires empathy as they work with people. Caregivers are often the subject of emotional stress and challenges as they take care of patients with fatal diseases or loose patients because of age. Researchers suggest that interviews can include sensitive topics, but the right attitude from the interviewers are expected.

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- Care recipients are valuable source of information. They may provide information on the community, care routine, used technologies, the challenges and opportunities etc. - Once the interviewer understood the special situation of the the elderly care recipients, then the interviews can be done without any serious constraints (Funk – Stajduhar, 2009).

EXPERT INTERVIEW	Qualitative information	60-90mins length	6-10 interviews	Team size 1-3	Medium cost	Medium lvl. of special skills
- Identify and approach relevant experts who have insight into the area you are working in. Do not just rely on experts becasue they bring a 'big picture' vision that is a useful complement too, but not a replacement for, understanding the experiences of users. - The involvement of an external expert could provide a shortcut, as expert can react to the specific problem or solutions that you need						

3. Surveys.

SURVEYS	Quantitative	5-10 days length	30+ person	Not relevant	Medium investment	Medium lvl. of skills
GENERAL REMARKS FOR SURVEYS						
- Surveys can be usefull to collect a large amount of data from end users. - The data is usually obtained through the use of standardized questions which purpose is to ensure that each respondent is able to answer the questions. - Considering the nature of the method, it provides rather quantitative data to researchers or to the team, which maybe usefull, but has to be completed with qualitative methods, such as interviews. - Recommended platforms are online, because of the number of users is asked, however, as the elderly is usually not so comfortable with the digital world, one may use paper based questionnaires. Then digital coding is needed.						

4. Engaging with extreme users.

ENGAGING WITH EXTREME USERS	Qualitative	2-3 days length	6-10 person	1-3 team size	High investment	High lvl. of skills

GENERAL REMARKS FOR ENGAGING WITH EXTREME USERS

- To gain deep insight into some of the issues surrounding the project, look for 'extreme users' of existing systems. For example, if you are looking to replace or redesign an existing interface, locate people who use that interface all the time, and also people who have never used it.
- Understanding the extremes enables you to think about the full spectrum of people who might have to use what you design, and how you cater for very different uses.

Good practice example – Engaging with extreme users (ElliQ)

- One way to define extreme users is to consider the most socially isolated elderlies as one of them. This is because in some aspects – mental health, number of social connections and the strengths of these ties – makes them differ significantly from others in their age.
- Many people consider AI as not a pleasant when intruded into households. However, Intuition Robotics saw in AI to help those elderly that are the most isolated. They have engaged with them and understood their expectations. Therefore, the team has designed ElliQ, a social companion AI.
- The elderly in the testing were happy to have an ElliQ and they related to it as something between an average device and a person. The product enables them to connect to the outside world, it greets the elderly, checks the weather, ask the elderly various questions and have unrepeated answers.

- https://elliq.com/

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5. *Focus group meetings*

FOCUS GROUPS	Qualitative	2 hours	3 - 6person	1-2 team member	Medium investment	High lvl. of skills

- A focused discussion where a moderator leads a group of users through a set of questions on a particular topic. Focus groups are often used in the early stages of product planning and requirements gathering to obtain feedback about users, products, concepts, tasks, strategies, and environments. Focus groups can also be used to obtain consensus about specific issues.
- Advantages of focus group are: Focus groups used early in a project can produce insights and questions from the interaction among different users or stakeholders. Focus groups are relatively inexpensive and can be arranged quickly.
- Disadvantages of focus groups are that it does not examine actual user behavior. The data from focus groups are self-report data which depend on the participants' truthfulness and recall accuracy. What people report may be quite different than what they actually do. Dominant participants can skew the results of the focus groups. Conflicts and power struggles can arise among participants. Moderating a focus group is difficult. Moderators must be trained to deal with a wide range of group dynamics as well as individual differences among participants.
- To gather more detailed data, participants can spend part of the focus group working with a prototype. After participants have worked with the prototype, they can come together and discuss their reactions to the prototype

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Tips for visiting the elderly at home environment or home care center:
- In different phases of the co-creation process you may work with the elderly in their home environment. In this cases, ensure there is limited number of disturbing factors (TV, radio, other people). If other people around, inform them about your purpose of visit and ask them not to interfere. - Advatages of working with the elderly in their home environment that they feel comfortable and safe there. They might even forget that they are interviewed or are testing your designed product. Therefore, in some cases you might get better outcomes in their home setting then if you organize the meeting in an office.

1.2.1.3. Role of facilitator

The main goal of the facilitator in this stage is to create optimal conditions for knowledge to emerge. The role of facilitator is to support participants, monitor progress and the team and make adjustments if needed.

1. *Supporting the participants*:

SUPPORTING THE PARTICIPANTS AND MANAGING CONFLICTS
Supporting the team from the beginings to knowledge organizing phase: - The facilitator has to recognize the uniqueness of each person. Every participant has a value in the program, by recognizing that value, they are encouraged and they do their bests. - The team is always wiser than the facilitator alone. It means that the collective knowledge and potential of the team is always greater than the facilitators. Therefore, its better let the team work according to their ideas. - Trusting the team is a way to express that the facilitator accepts the wisdom of the group. Trust leads to new ideas and personal growth. - Do not force engagement. It is important to let people to be less engaged sometimes as there are different type of personalities and not all of them has the capacity to participate all the time equally. Facilitator must let participants to get refreshed.

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- Balance out the different perspective and let everyone to contribute. Ensure participants to recieve evidence that they have contributed the process. This increases their engagement.

Managing conflicts:

- Diversity leads to conflicts of individuals. Altough, conflicts may be negative and it is better to avoid direct conflicts, but it is not beneficial either if the group comes to consensus early.
- The participants must learn not to hide conflicts but use them. Successfull partnerships are those that are not afraid of conflicts. The facilitator should also have a welcoming attitude towards problems, like “Okay, we have finally a problem! How can we solve it?”.
- There are two *types of conflicts*. Interpersonal conflits and substantive conflicts. This last one refers to problems arise from performance, management and expertise.
- There are various conflict management methods for *interpersonal conflicts*, but the bases are good dialogue and feedback mechanisms in a safe and honest atmosphere. If the atmosphere is set, the facilitator should dedicate time for participants to share their frustration.
- *Substantive conflicts* can be the best managed in group dialouges that create transparency, shared understanding, and alignment. Focused conversations tease out the reasons for conflicts. When conflicts are solved in group context, these expand the collective knowledge of the group and also stimulates cooperation.
- Conflicts can be utilized to go forward with the knolwedge creation. Tension might serve as the push that is needed to move forward. Creative tension emerges from the gap between the vision and the current reality. By making the distinction between the creative and emotional tension, we are able to separate the two and see the possibility in the former.

2. Monitoring progress and team balances:

MONITORING PROGRESS AND THE TEAM

- The facilitator needs to know in every moment where is the group exactly, where is it heading and where it should be. This helps to spot the mistakes of the process.
- However, it is not as easy to identify mistakes while one is in the middle of the process. Therefore, we provide here tips what to consider when monitoring the team.

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- The facilitator must monitor the activities. This enables the facilitator to track progress and helps to estimate whether project is proceeding as planned or not.
- The facilitator must monitor team dynamics. The team could proceed with the tasks without serious delay, but under the surface their could be tensions. These tensions might appear in a later stage, when they cause more serious troubles. Therefore, the facilitator needs to make sure that the team funcitons well as a team.
- The facilitator must monitor emotions. There can be a lot of fluctuations of the emotions within the team, especially at the beginings. Emphatic leaders may manipulate slightly the emotions of the team. This means activating the team's positive energy towards the process. However, when decision needs to be made both objective and emotional aspects of the matter should be considered.

- When the facilitator is not capable of monitoring each of these aspects of the team include one of the team members to do so.

3. Making adjustments.

MAKING ADJUSTMENTS

- Monitoring activities may bring attention to some imbalances wihtin the process. If this happens, corrections needs to be made. But, before intervention, it is adviced to step back and evalute the situation. Only after analysis should be actions taken. Once intervetion is done, step back again, and observe whether there have been any side-effects.

Maintaining good team dynamics.

- Successfull facilitators always stays inside the group. Getting and staying in the team is crucial for the success, because as an outsider it is nearly impossible to sense changes. Being part of the team makes it easier to make changes within the team. The facilitator also has the chance to encourage someone to participate more or slow down the team if needed.
- The facilitators role is to catalyze the collective performance of the group, helping in the production of new knowledge and unlocking the internal capacity. A good facilitator knows how to inspire, ask the right questions and handle uncertainty.

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- *Team formation*. The facilitator must ask what is the optimal team arrangement to achieve the goal. As most of the work is actually done independently, the facilitator still needs to make sure that it feels like a team effort.
- An other important aspect is to *vary the team* according to personalities. Strong egos might be usefull in certain groups but in others they may not be.
- It is important that groups should not be split up after the first conflicts.

Managing emotions.

- An intensive process brings up strong emotions in the participants and these can be positive and negative. Positive emotions are contagious, therefore, it is suggested to express them since it is a good way to pump up the team spirit and boost the energy. While negative emotions can be used to build trust, if they are handled properly. First, the person with negative feelings should get some space, then later the facilitator should deal with it respectfully and in an understanding way.
- All expressions should be done within the group.

4. *Tips for leading the stage*

TIPS FOR LEADING THE STAGE

- Be a *creative leader*. There are some activities that the good facilitator does to support the exploration.
- *Holding the space of uncertainty*. People usually jump to the first solution, but the facilitator should keep the team longer in the uncertainty.
- *Moments of stillness*. While people might be running in high gear, it is also valuable to take a break and slow down to better process emotionally and mentally the activities.
- *Questions over statements*. Questions invite people to dig deeper.
- *Encouarge dialouge*. Facilitators must support dialouges in which participants open their mind, heart and will. It allows critical exploration of issues without personal attacks.
- *Trust*. The facilitator must trust the team's growing collective intelligence, encouraging them to take ownership of their process.

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- *Support the team*. Facilitator must support the maintainance of the trust and authentic relationships. Active listening is crucial.
- *Active learning*. The team must learn from failures.
- *Shift attitude from ego to eco*. Ideas should be separated from the ego.
- *Integrate the needs*. The facilitator must usually ask how does this serve the whole and the participants needs?

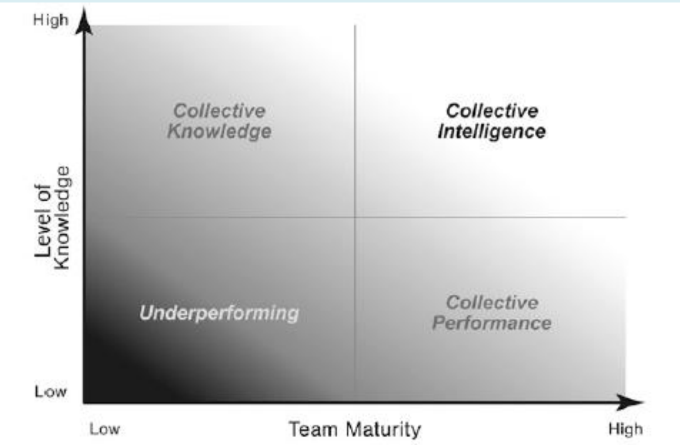
1.2.2. Analyse user requirements

The knowledge gathered from end-users must be carefully analysed before making any step towards prototyping. Once the knowledge is overviewed and understood, one narrow down the long list of possible solutions and identify a development path. However, before doing so, facilitators should critically evaluate the team's performance and the knowledge gathered.

1.2.2.1 Evaluating the gathered knowledge

EVALUATING TEAM PERFORMANCE IN DIFFERENT SCENARIOS

- There are 4 different scenarios that may happen once the team is after the knowledge gathering stage. This is the best presented through a matrix.



- Not all co-creation journeys are reaching collective intelligence. This means that the facilitator must use alternative ways to continue the project:

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- working with that knowledge the team has gathered; restarting the knowledge creation stage; renewing the team with fresh members, or pulling the plug

- This decision must be made according to the face of how the team has performed in the team maturity and knowledge matrix. This helps also the facilitator to understand what could be done to improve.

Collective intelligence:

- The best case scenario. The team has already expanded the body of knowledge meanwhile, the team evolved, become familiar with each other's skills and capabilities. This enables the team of using the knowledge and skills beyond the limitations of individuals.
- This means, the team is ready to unleash their potential. But how the teams collective intelligence should be used? When the team is working well and have a clear understanding of the topic the best choice to release them to work.

Collective performance:

- When the team works well, but there has not been knowledge produced, they went towards the bottom right of the matrix to *collective performance*. In this case, time and resource constraints could be the reason of underperforming. Here, repeating knowledge creation is an option. If they failed because of lack of expertise, the involvement of an expert could help. When externals are involved, the facilitator must examine the team dynamics again.

Underperforming:

- Once the team still does not produce enough knowledge, then the best is to split up the team and forge again in a new way. In this case, the whole process should start from the beginings.
- Another solution is to skip to the follow up activities, to discover what was right and what could be improved.

Collective knowledge:

- If the team is not working well together, but made relevant discoveries they are in *collective knowledge* part of the matrix. In this case one solution can be to provide chance to the team to work together on the matter, with the collected knowledge and try to explore something new. In other case, maybe external guidance can be used.

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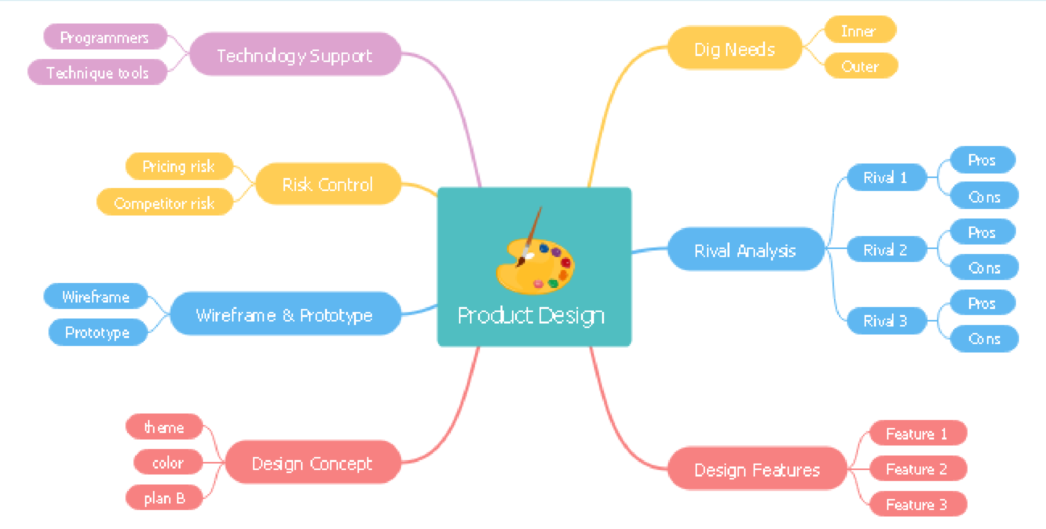
Once the team has at least enough knowledge for going on, the next step is analysing the gathered knowledge. However, it is important to ensure that the team's performance is also good, as in the prototyping stage it is important to work as a team.

1.2.2.2 Analysing the knowledge

The knowledge gathered through the interaction with users should be analyzed to identify a development path. A number of methods presented here for identifying user needs. End-users might be involved in this stage, but it is typically done internally with designers. The suggested methods are: *sticky notes on wall; mind maps; diagrams; affinity diagrams; asset maps* and *mood boards*.

1. *Sticky notes on wall*:

STICKY NOTES	After the knowledge gathered	Full team involved/SME	30-60 mins
- Collect what we know about a certain problem and arrange the knowledge on the wall according to certain themes. An example how it should look like:			



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2. *Use mind maps*:

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MIND MAPS	After the knowledge gathered	Full team involved/SME	60 mins

- It helps to organzie information and knowledge into a structure, and represents the relation between the components.
- Think of your general main theme and write that down in the center of the page. Figure out sub-themes of your main concept and draw branches to them from the center. Then it begins to look like a spider web
- Make sure to use very short phrases or even single words. Add images to invoke thought or get the message across better. Try to think of at least two main points for each sub-theme you created and create branches out to those

3. Use diagrams:

DIAGRAMS	After the knowledge gathered	Full team involved/SME	30 mins

- Diagrams can be usefull tools to explain trends of the problem.
- Use computer softwares for visualizing the received information.

4. Affinity diagrams:

AFFINITY DIAGRAMS	After the knowledge gathered	Full team involved/SME	30-60 mins

- The Affinity Diagram is a method which can help to gather large amounts of data or ideas and organise them into groups or themes based on their relationships. The affinity process is great for grouping data gathered during research or brainstorming.
- Identify few key topics and organize the gathered ideas and data under them which represents their relation to each other and their importance. Use post-its to visualize.

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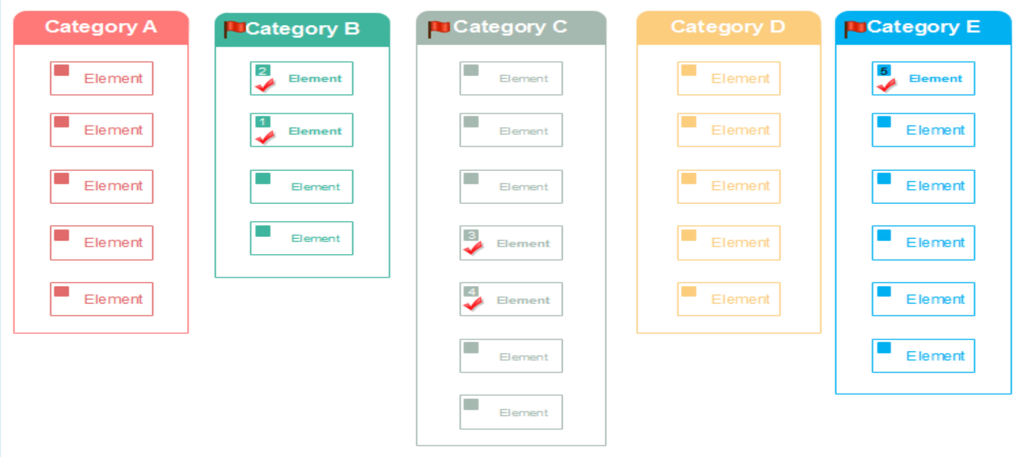

5. *Asset maps*:

ASSET MAPS	After the knowledge gathered	Full team involved/SME	30-60 mins
- Asset maps are poweerfull tools to explore strengths and resources of the team. Asset maps are similar to SWOT analyzis, how the difference is the possibility for visualization. - Determine your purpose for mapping. Map your organization's "internal" resources. - Secure funds for the completion of mapping and the larger project. Utilize multiple tools, methods, and sources to identify and catalog the community's assets.			

6. *Mood boards*:

MOOD BOARDS	After the knowledge gathered	Full team involved/SME	30-60 mins
- Mood boards are tools for designers to gather ideas for a product, usually consisting of images, texts, and objects - Using the mood board helps present the visual qualities of a product better then what could be reached with descriptions. It is usefull when planning to engage users.			

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1.3. Prototyping the outcome

The aim of knowledge creating was to arrive to the prototyping phase.

PROTOTYPING THE OUCOME
- This is the stage when the team is performing. The aim is to deliver a lightweight design of a product or service from which we can gather feedback from users and project participants. Prototyping can vary on different levels of "fidelity" - from the simplest sketches to the most detailed renderings nearly at the level of of what a final interface would look like. - Depending on the purpose, *prototyping* can be divided into two general categories, *communication* and *learning*. A prototype can tell more then a hundred words. While in case of learning, a prototype helps the team to understand what can or can not be done and improves understanding of how to realize the concept. It enables testing, aesthetic evaluation and ending with mechanic simulations. - Luckily the prototyping process is more linear, however, loops may be included as not all the prototypes are perfect for the first try. Prototyping begins with conceptual design in which inspiration is translated into a broad outline of function and form. - **There are several aspects in which prototyping has a values:** - ***Prototypes as shared models for communication.*** Prototyping play a curcial role in communication, shared understanding and even a foundation of trust within the team. The prototype serves here as a shared model that enables team members to debate and share their perspectives in a constructive way. - ***Prototyping as experimentation.*** Here, the objective of prototyping is to experiment to increase the teams understanding and producing new knowledge. It can be used within the second stage as well. It supports knowledge creation by discovering what does work and what does not, therefore, it is usefull to identify solutions and opportunites. - ***Finding from through mock-ups.*** Mock-ups are used to bring physical form to a product concept. These types of mock-ups can be made of very simple materials, such as cardboards, sticks, paper clips, modeling clay, straws and paper cups.

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- ***Testing conceptual models.*** There might be a need to test and validate the concepts gathered during co-creation. This could be done by simulations or realistic visualisations used by digital technologies. Organizations have different tools that could be used for concept testing, such as focus groups, empirical tests in controlled and natural environments. The aim of this is to get feedback to the concept.

1.3.1 Preparations for prototyping

Before lunching the prototying of the new product it is advised to look around in the field and identify good practices. Examine products that are already in use and get inspired. Here some methods are described to support the prototyping.

1. Identifying existing good practices

GOOD PRACTICES	Qualitative	2-3 days length	6-10 examples	1-3 team size	Low investment	Low lvl. of skills
GENERAL REMARKS FOR IDENTIFYING GOOD PRACTICES						

- Consider which organisations work in an analogous space to the one you are investigating. One exercise, for example, is to think about how another organisation might approach the design of a system or interface: how would Apple do?
- In other cases, consider who else does this well, are there any good practices?
- Additional information can be gathered from observing and understanding what the competitors are doing. They might have faced with similar problem like the team, so exploring their answer to a problem that the team faced with could be usefull.

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Good practice example – Examining other existing practices (TreuLoo smart toilet)

- ToiLabs, a USA based company intended to create an innovation that can generate health data and health information about the elderly and able to detect dehydration, urinary infections and bowel related diseases. There were already existing solutions for this problem, but they were too big to implement or build in, expensive and generally not fitting to a typical home care environment.
- At the beginning they cooperated with various senior living companies and communities to test and develop a solution that better fits to the home care environments. They have created a solution that provides information directly to senior living managers about patients conditions and therefore enables caregivers to treat patients early and avoid hospitalization of the elderly.

- https://www.longevity.technology/trueloo-a-fascinating-insight-into-agetech-innovation/

2. Service safari

SERVICE SAFARI	Qualitative	1-2 days length	6-10 examples	3-5 team size	Low investment	Medium lvl. of skills
GENERAL REMARKS FOR SERVICE SAFARI						

- Service safaris involve experiencing other services and products that you may not be familiar with. They are a good way to understand what makes the difference between a good service experience and a bad one. Through direct experience, you can assess where the strengths and weaknesses are.
- It is also an entertaining activity and can get members of the development team into the right mindset for the task ahead.

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- How to do it? Select an objective and the tool that you are going to test. Create different scenarios for using the tool. Document your experience and create a report about it.

3. Draw up personas

DRAW UP PERSONAS	Qualitative	2-3 days length	1-6 person	4-8 team size	Medium investment	Medium lvl. of skills
GENERAL REMARKS FOR DRAWING UP PERSONAS						
- Create a series of fictional characters based on your insights, one for each main pattern of behaviour you have seen. Give them name, background information, a set of likes and dislikes (what activities they enjoy, what do they find annoying, boring). - Personas of this kind allow you to focus your investigations on what kind of experience you are developing for your users in a structured way, while still feeling 'human'.						

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Good practice example – Drawing up personas for empowering elderly caregivers (Helian Elderly Homecare App)

- In Indonesia developers created an application to support home care provision of the elderly with dementia. They carried out interviews with the elderly and their family members. Later they turned their focus towards caregivers which proved to be a turning point. Interviews with caregivers helped the team to realize: 1) Caregivers spend a lot of time on communicating to the family members things that were done. 2) Medical records are kept manually unorganized. 3) Changes of caregivers are expected as home care is a long-term process and transferring all information is a major issue.
- To address all problems of care givers they draw up a user persona. This helped them to understand what caregivers are going through, to empathize the team and gain clarity on how they will be able to help the users.
- Their solution was a digital logbook. This enabled caregivers to record, track day-to-day activities, and share records with others. Caregivers will also be able to plan patient's activities of daily living. Make a record in the logbook of any development that can indicate future health problems. https://apps.town/app/1449535500/helian-eldery-homecare-plan

1.3.2 Creating the 1st prototype

Once the developers are equipped with the knowledge and personal experience of other similar products, it is time to start creating the first prototype. Here we provide a step-by-step guide on how to do it.

PROTOTYPING THE OUCOME	Full team involved	various timeframe
How to prototype step-by-step? - Take apart competing products: Collect those products that exist on the market and disassemble them. Look at the materials used and how you can save time and n your design. - Make a sketch of your product. Write or type out your product's ideas on a piece of paper. Draw what your product will look like, if you can. This will give you a rough idea of how the first prototype will look and allow you catch flaws and ways to improve the design before		

you invest in building a prototype. Use the sketch to decide upon what features are necessary to your design. Choose the few features that allow your design to function and limit the amount of costly extras.

- Obtain a computer-aided design of your prototype. The computer design is much more detailed than your initial sketch. This is the design you will give to the prototype maker in order to get the most clear and detailed idea of your product.

Finalization:

- When the conceptual design is complete and the team knows what they need it is time to build the actual product. This is when the prototyping comes to realization. The first prototype that are designed, manufactured, tested and approved are the Alpha versions of the product. Once it is further refined and improved, it is the Beta version. Having a prototype does not mean that we are finished. It means that there is something that must be shown to people to learn from feedbacks.
- The first step of going forward with the prototype is *user testing*. The aim of this is to validate the idea before allocating further resources to the development. In this stage, it is important to seek for information that are disconfirming the previous assumptions.
- It is important to think through how the team will get people to try it. A good way is to create a compelling needs story to increase engagement. The prototype also must get the attention of potential consumers. For this, you have to build awareness and convince people to use it.

The Lean start-up method.

The Lean Start-up method:

- The Lean Start-up provides a scientific approach to creating and managing start-ups and get a desired product to customers' hands faster. The Lean Start-up method teaches how to drive a start-up how to steer, when to turn, and when to persevere and grow a business with maximum acceleration. It is a principled approach to new product development.

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- Too many start-ups begin with an idea for a product that they think people want. They then spend years perfecting that product without showing the product to future customers. When the team fail to reach customers, it is often because they determined whether, or not the product was interesting. When customers ultimately communicate, through their indifference, that they do not care about the idea, the start-up fails.
- The lack of a tailored management process has led many a start-up to abandon the process. They take a "just do it" approach that avoids all forms of management. But this is not the only option. Using the Lean Start-up approach, companies can create order by providing tools to test their vision continuously. Lean is not simply about spending less money or failing fast. It is about putting a methodology around the product development process.
- The Lean Start-up methodology has as a premise that every start-up is a grand experiment that attempts to answer a question. The question is not "Can this product be built?" Instead, the questions are "Should this product be built?" and "Can we build a sustainable business around this set of products and services?" This experiment is more than just theoretical inquiry; it is a first product. If it is successful, it allows a manager to get started with his or her campaign: enlisting early adopters, adding employees to each further experiment or iteration, and eventually starting to build a product. By the time that product is ready to be distributed widely, it will already have established customers. It will have solved real problems and offer detailed specifications for what needs to be built.
- A core component of Lean Start-up methodology is the *build-measure-learn* feedback loop. The first step is figuring out the problem that needs to be solved and then developing a minimum viable product (MVP) to begin the learning process. Once the MVP is established, a start-up can work on tuning the engine. This will involve measurement and learning and must include actionable metrics that can demonstrate cause and effect question.

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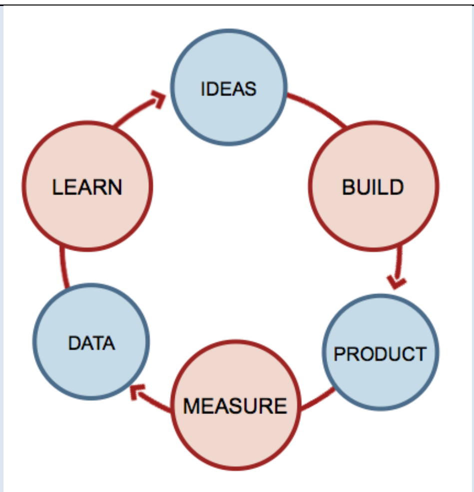

- The start-up will also utilize an investigative development method called the "Five Whys"- asking simple questions to study and solve problems along the way. When this process of measuring and learning is done correctly, it will be clear that a company is either moving the drivers of the business model or not. If not, it is a sign that it is time to make a structural correction to test a new fundamental hypothesis about the product, strategy and growth.
- Progress in manufacturing is measured by the production of high-quality goods. The unit of progress for Lean Start-ups is validated learning-a rigorous method for demonstrating progress when one is embedded in the soil of extreme uncertainty. Once entrepreneurs embrace validated learning, the development process can shrink substantially. When you focus on figuring the right thing to build-the thing customers want and will pay for-you need not spend months waiting for a product beta launch to change the company's direction. Instead, entrepreneurs can adapt their plans incrementally. The Lean Start-up method is built on the core concept of “Build-Measure-Learn”. At the end of each cycle, the start-up should be able to answer the question: “Should this marketplace be built?”
- Build: Starting off, instead of dealing with stacks of business plans and research, Lean Start-up founders develop a set of untested hypotheses. Using the Lean Canvas, they summarise the company’s value proposition: what they can offer and why customers should patronise them. For marketplaces, it is important to identify the point of interaction that you wish to facilitate between the provider and consumer. This will help you to see the tension or pain points that you wish to address with your marketplace.

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- Measure: Once you have a minimum viable product (MVP), you can start measuring the feedback on all aspects of your marketplace; features, pricing, distribution channels and payment are just some examples. It is important to define the Key Performance Indicators for your marketplace and include actionable metrics that can show the causes and effects of different components.
- Learn: Lean start-ups practice agile development; unlike traditional long product development cycles, this method focuses on development iteratively and incrementally, eventually building towards a commercially viable product. With the data collected from your measurements, keep asking yourself “Why?” to validate the effects of your revisions. Each answer and iteration allow you to focus on figuring out the right things to build a marketplace that people want and will pay to use. These ideas will then be implemented into the next “build” cycle, developing on the MVP.

1.3.3. Evaluating the 1st prototype

Not every first prototype is perfect. Their purpose is to draw attention to the main look and functioning of the future product. First prototypes serve as a core for developing the final product, therefore, they have to be carefully evaluated by experts and end-users. Their comments and feedbacks can be valuable inputs for the further development of the product.

To do so, developers must reflect on the knowledge gathered in the beginings of the co-creation session. They have to overview whether the prototype will match with the need of the end-users or not. In some cases, if there is deviation, the team must go back to knowledge creation once more.

Here we provide some additional method that could be used for testing the prototype. However, methods from knowledge creation stage can be used as well.

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1. Contextual interviews.

CONTEXTUAL INTERVIEW	Qualitative information	15-60 mins length	6-10 interviews	Team size 1-3	High cost	High lvl. of special skills

- Contextual interviews are similar to in-depth interviews but are conducted in people's personal contexts, whether at work, at home, or in other relevant place.
- This allows you to explore their day-to-day life with them, see how they use things and develop conversations based on what you observe.

How to conduct contextual interviews?

- The interview must take place in the context of use. In case of the elderly, it is the home care environment. The research observes the use of the product and talks to the user about what has happened in the session.
- There is a need for the user and researcher to form a collaborative partnership to understand what the user is doing and why. In general, a contextual interview will shift from observing to discussing what happened in rapid shifts throughout the interview.
- The researcher will explain their conclusions and interpretations with the user throughout the interview. The user is free to correct or expand on the researcher's interpretations.
- The researcher must keep the interview focused on the topics which need to be explored to provide useful data for the improvement project's scope. They may ask the user to perform specific tasks if they are to be examined specifically in the project brief.

2. Citizen walkthroughs

CITIZEN WALKTHROUGHS	Full team involved plus external users	Half a day

- A walkthrough, is a general review technique. A process in which the typical users are going step by step through a product or system design. The aim is to get reactions and feedbacks from the typical users. One or two members of the design team can guide the walk through while one or more users will comment as the walkthrough proceeds.

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- In other cases, expert evaluators can participate, and construct task scenarios from an early prototype and then role play the part of a user working with that interface. They act as if the interface was actually built and they (in the role of a typical user) were working through the tasks. Each step the user would take is scrutinized: dead ends where the prototype blocks the user from completing the task indicate that something is missing.
- The steps of a walkthrough: Choose a user from whose perspective the walkthrough will be done. Define what the person wants to achieve. Define the steps that this person should do in order to achive her/his goals. Perform the task and take notes.

1.3.4 Creating the 2nd prototype and final tasks

Once the 1st prototype is carefully evaluated, further development path can be set. Developing the second prototype can go in the same way as in the case of the 1st one, but at the end, we will get a more refined product.The second prototype can be tested once more with end-users and similar methods are suggested as above.

At this point, it is important to celebrate the efforts of the team and the successfull completion of the the co-creation process.

Before celebration, it is necessary to ***plan the implementation*** of the product, service or pilot that was designed during the co-creation process. This is basically the writing of a path way for further development.

In addition, a ***strategic agenda*** might be usefull as well, that identifies critical pillars, or levels of activity, that will manifest a strategic intent. Each pillar has its own prioirites, objectives, resources, success measures and timeline. These coordinate action on what is most important, rather than the long list of possible activities in any day. Strategic agendas are usefull also to bring focus on and clarity to actions.

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1.4. Concluding the co-creation process

Once the process is closed it is time to move on to evaluation. Follow-up activities have paralell objectives that need to be considered during the process.

- The first is harvesting the knowledge. This means that we make sure that all the relevant discoveries and results are recorded.
- The second objective is the refinement of the shared experience. This is related to the team from the team building aspect. This is especially relevant when we aim to build capacity for innovation and change on organizational culture.

Follow up activities are necessary because they provide a chance to finish the process with all conclusions recorded. When the follow-up activities do not take place, a huge part of knowledge dissappear.

Follow-up activities usually begin with quick ***debrief*** of the team and individuals, followed by a ***wrap-up*** to conclude the journey for the team. The wrap up offers a channel for constructive feedback helping the team to build on the success of the journey and learn from their mistakes. The objective of the debrief is to share experiences and evaluate the journey, forming an understanding of what took place, what was good and what could be improved. After this knowledge was harvested, there should be an effort to connect the knowledge to future projects in order to ensure that good practices have a chance to spread and mistakes are not repeated.

1. Debriefing

DEBRIEF	Full team involved in the project individually and as a team	1 -2 hours
- Debriefing is a short, intensive session intended for producing snapshots of what took place and what was experienced during the process. It aims to be objective, authentic and reflect		

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on the entire process, including the all the three dimensions (knowledge, interpersonal and emotional).

- A debrief takes place shorthly after the project concludes. Keep at least one week break before debrief, as the team needs time to cool off and process the intense work, which enables a more objective evaluation.
- Organzie two seperate debriefs. One for the whole team, and one for individuals.

Individual debrief:

- Individual debriefs are done after team debriefs. It should include every team member, even those that left the team. Those who were dropped out can reviel specific issues that need attention or improvement.
- Individual debriefs provide a channel for team members to express their feelings. The primary purpose is to extract information about the events that took place and to prepare them for team level debrief. Analyzing emotions might help to achieve both objectives.

Team debrief:

- Team debriefs have two objectives. Validation of conclusions and to reboot the team. It can help the team to get back on their feet after unsuccess.
- It is recommended to start with the negative things and then go on with the positive ones to enable participants to leave with a positive mood.
- Map the journey and identify key incidents and decision that guided the team through the three stages. The map should reflect to knowledge, interpersonal and emotional dimensions of the process. This helps the team to identify key point where the team experienced their most important shifts. These shifts could take place in any of the dimension. It also shows where could be done slightly different decision to avoid the wrong direction. The act itself could be small, but it has to be pointed and picked for further analysis.
- Note that strong teams will stand united at this point and they will not start backstabbing each other. Therefore, the facilitator must focus on every simple signals that could reveal issues that deserve a critical look.
- When the teams were unsuccessful and the projects were terminated, the best to do is to generate new concepts. This enables them to capture their knowledge and pass it on to new

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colleagues. Enough time must be granted to the team. The harvesting can take one more step further, by asking team members to plan a follow-up project for their interrupted process.

Different ways of doing debriefing:

- *Dealing with the one that got away*. A useful method when the process outcomes are satisfactory but the team spirit is not. In failure cases it is easy to indicate what went wrong, what is more challenging is to identify hidden causes that might be avoidable or identify the complex reasons for fail. A team might been on the right track and done a good job but it did not reach the performance expected. In this case, it is pointless to identify a single reason for failure.
- *Breaking the container*. There are many projects that are terminated before success. Then it is hard to motivate people to participate even in a debrief. A good way to start the revival process is to split the team. This makes team members to feel relieved from duties. This allows them to put behind the team experience. Only this way it is possible to be objevtive. In these cases, debrief starts with individal meetings and then with team.

2. Wrapping up

DEBRIEF	Full team involved in the project individually and as a team	1 -2 hours

- When debrief rounds are completed it is time to conclude the whole process. Wrapping up is the final time for constructive feedback of the team. The aim of the wrap up is to set a stage in which the team feels comfortable to share their final thoughts, ideas and talk casually. In case of failed teams, it is a suggested to reframe failure as opportunities. Buts, even in failure there are moments to celebrated.

Numerous methods can be used at this stage, only a few will be presented.

- **Dialouge circles**. Dialouge circles have 5 principles. First, participants are seated in a circle. Second, a physical object is used, and only the participant holding it speaks. Third, participants set their own ground rules prior to starting the circle. Forth, participants build trust. Fith, facilitators offer questions that initiate generative talk.

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- **Peer feedback**. Peer feedback is a practice where feedback is given by one participant to another. It provides participants opportunities to learn from each other. Participants think through each others work and prepare comments, opinions, suggestions or ideas for improvement. Friendly environment is a must.
- **Intuition walks**. Intution walks are done in natural settings which help to reframe one's perspective on a certain matter The participants need to answer to some key questions. The challenge is to not jump suddenly to answers. When doing the intuition walks, write down the most interessting answers. People who carry out the walks, usually come back to work with fresh or deeper perspective on their questions.
- **I like, I wish**. It is a team feedback method in which the team members provide and receive constructive feedback on individual and team level. The facilitator ask the team to reflect on everyones role in the project and how they are bonding together as a team. It consists of three parts, first is write down feedback individually, second is share feedbacks and third is reflect on the feedback. The main aim of the faciltiator is to create a safe environment to give feedback to one another. Positive feedbacks (I like) refers to strengths, where constructive feedbacks (I wish) refer to potentials.

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Part Four – Examples

Good practice example 1 – I-Sit chair – Denmark

- I-SIT chair is a special seating/ resting furniture designed for the of seniors and disabled people and considers their special needs.
- The development of the i-SIT chair has involved a wide range of users , both young and old and with and without reduced mobility throughout the entire development process. Extensive use of questionnaires and field tests gave users the opportunity to indicate and demonstrate how they use their current seating.
- A six-stage development process has rethought seating and the result is a genuinely democratic chair: the i-SIT. User input has been key to the development of the i-SIT chair at every stage of the process:
- PHASE 1: Knowledge Creation: Here the requirements of useres (seniors and people with reduced mobility) with regard to ergonomics, comfort, immaterial needs etc. were mapped along with the current market situation, trends and market potential. User groups were established and surveys were performed in which users' concious and unconscious seating requirements were investigated. User requirements were analysed and evaluated.
- PHASE 2: Idea Development and Prototyping. The team has designed and developed the chair on the basis of user requirements and expert knowledge. In addition, a functioning frame was developed and user-tested. Following the user testing of the frame, the design team developed further the prototype and manufactured the product. Users and specialists were involved throughout and the prototype was subject to extensive testing.
- For more information: http://i-sit.dk/en/
- 

Good practice example 2 – Mobile locker for patients (PatBox)

- The Association of Viennese Hospitals lunched a project in which they cooperated with a design studio and patients. They have seeked for a new solution that can make it easier for nurses or family members of patients to transport the belongings of the care receiver when moved to different location.
- The aim was to develop a mobile storage, where personal belongings and valuables of patients are stowed away safely in lockable compartments. This box shall accompany the patient during the whole hospital visit and be moved together with the bed to different points of care (in patient and operating rooms, laboratories...).
- The sservice provider decided to implement the co-creation method for creating the product. The first focus was on discovering, identifying, researching and understanding the initial problem through market research, user interviews and brainstorming with architects. Then the key idea was selected and interpreted by designers and finally transformed into the product. In the last stage, users and experts were involved through testing and evaluating the concept.
- For more information: https://www.lukasbast.at/patbox/
- 

Good practice example 3 – ASILI – Democratic Republic of Congo

- The American Refugee Committee (ARC) engaged IDEO.org to help design a way to get better health care to the young children of the Democratic Republic of Congo. They have aimed to create a service that offers health clinic services for the local community to ensure children under the age of 5 will not die because of preventable sickness like pneumonia, diarrhea, or malaria. However, before they started working out solutions, the organization intended to better understand local community needs.
- As a first step, the women of the local community were interviewed. One of the common insigths they received from the locals is that they wanted to bring their children to prenatal care but she never know how much would it cost. Therefore, the team realized that transparency and reliability in a non-funded governmental healthcare service is necessary.
- The team worked out initial ideas and tested them with the local community members during a 2 days workshop session. They have jointly designed the service, developed a logo, name and more. The locals were quickickly adopting to new roles, they have became designers, prototypers and problem solvers.
- After the session, the team have gathered the key points and returned to the USA with clear idea on how the service should work and what services it should provide.
- ***The key message***. By inserting the community members directly into the design process itself, the team came to grasp so much more than it could have by simply interviewing them. In addition, although the co-creation process was only 3Helix and the academia was not involved, it shows clearly that better fitting services can be developed with co-creation approach.

- https://wearealight.org/our-work/asili/

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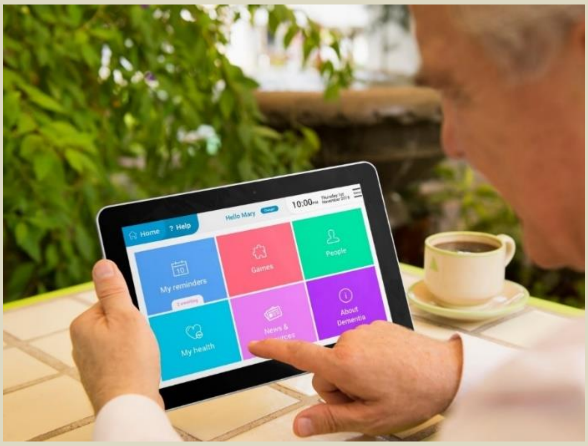
Good practice example 4 – Smart4MD

- ***The project or initiative.*** This project builds on an innovative patient support tool to develop a mHealth application that is specifically targeted to patients with mild dementia. The content and layout of the application, which is accessible via tablets given to patients during pilot treatment, is based on findings of the project focused on user-centric design, but generally is based on simplicity, memory helpers, reminders, photos, information sharing with carers and doctors and easiness of use for the patients.
- The tool helps patients to adhere to their treatment, reduce the progression of their illness and share data with their carers and doctors. This slows the patients' cognitive decline, avoid carers getting exhausted and reduce costs of emergency care.
- ***The key message.*** The project involved all stakeholders of quadruple helix, NGOs, target group representatives, hospitals, universities, research centers, as well as representatives of companies who participated in the development and creation process and contributed together to a positive outcome. This example shows very clearly that it is important to involve different actors in the development of such a product.
- ***Inspiration for the HoCare2.0 project.*** In this case, it is possible to be inspired by working with "test" groups, which will also be represented in the HoCare 2.0 project. It is important to use first of all good practice not only from this project when working with older people.
- For more information: http://www.smart4md.eu/



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CHECKLIST

Preparing for co-creation in healthcare sector			
Activity	***Task***	***Status***	***Comments***
Understanding co-creation in healthcare	Challenges of co-creation in healthcare is understood		
	Challenges of ICT is understood		
	Challenges when working with seniors is understood		
Preparations			
Activity	***Task***	***Status***	***Comments***
Setting creative environment	Spatial design supports creativity		
	Semiotic design is inspirative		
	Rituals are created		
Preparation for leading	Facilitator practices the PACE		
	Factilitation styles are understood		
	Facilitator practices effective dialouges		
Starting the process	Stakeholders are selected		
	Needs of stakeholders are understood		
	Rapport is established		
	Boundaries are set		
	Success criteria is set		
	Mission statement created		
	Rules of engagement is created		
	Rituals are created		

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	Team is socialized		
	Open speaches done		
Knowledge creation			
Activity	***Task***	***Status***	***Comments***
Identifying user's requirements	User journeys mapped		
	Shadowing		
	Diary study done		
	Ideation workshop done		
	Interviews (user, expert, contextual, ad hoc) users done		
	Surveys filled in		
	Engaged with extreme users		
	Focus groups done		
Role of facilitator	Supporting the team and managing conflicts		
	Monitoring progress and team balances		
	Making adjustments		
	Tips for leading checked		
Overviewing the team performance	Team performance evaluated in matrix		
Analysing user's requirements	Sticky notes used		
	Mind maps used		
	Diagramms used		
	Affinity diagrams created		
	Asset maps created		

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	Mood boards created		
Prototyping the outcome			
Activity	***Task***	***Status***	***Comments***
Preparation for prototyping	Good practices overviewed		
	Service safari done		
	Personas created		
Desiging the 1st prototpye	1st prototype done		
	Lean start-up method used		
Evaluting the 1st prototype	Contextual interview done		
	Citizen walkthrough done		
Designing the 2nd prototype	2nd prototype done		
Concluding the co-creation process			
Activity	***Task***	***Status***	***Comments***
Methods for evaluation used	Debriefing in individual level		
	Debriefing in team level		
	Dialogue circles used		
	Peer feedback used		
	Intuition walks done		
	I like, I wish done		

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