D.T. 1.3.2 - REGIONAL ANALYSIS OF OPPORTUNITIES FOR EFFICIENT ENGAGEMENT OF BUSINESS

Business Engagement TWG

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INVOLVED PARTNERS

ACRONYM	NATIONALITY
SI4LIFE	ITALY
NOWA	AUSTRIA
SPEKTRA	CZECH REPUBLIC
BME	HUNGARY
MUL	POLAND
TUKE	SLOVAKIA

ACRONYM

TWG	Transnational Working Group
BE	Business Engagement
WPT	Thematic Work Package
BP	Best Practise

GLOSSARY

The definition of common understanding of specific terms such as Innovation, Use Cases or Best Practices is demanded to the project Glossary available also in the TWGs' Supporting Documents that has to be intent as an integral part of this deliverable.

1. INTRODUCTION

Business Engagement TWG's activities are defined in the ICARE SMART WPT1 framework with the overall objective **to identify tools supporting the business engagement in the Co-Creation process**. To achieve this objective the BE TWG members follow the methodological approach, represented in Figure 1, and described in D.T. 1.3.1 "*Concept Paper For Elaborating the BE Toolbox*".

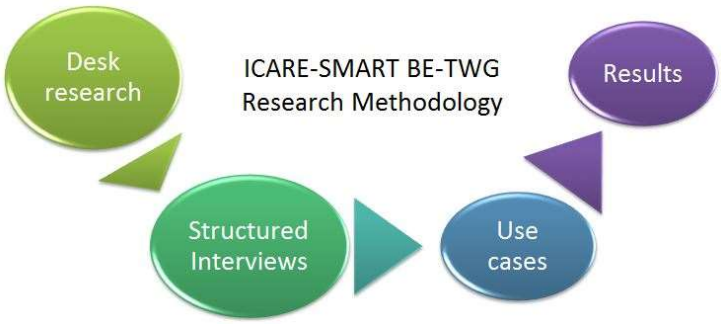


Figure 1 The schema represents the methodological approach design to retried the regional information on business engagement and best practices.

This document is focused on the regional analysis on primary and secondary data to collect examples of channels of businesses, good practices and suggestion to attract business to co-creation. In **Section 2** a comparison between the regional contexts is provided to better understand the peculiarity of each territory. In **Section 3** the main best practices identified in the regions will be compared to highlight common success factors and possible barrier for the businesses engagement that will be highlighted in the main regional finding (**Section 4**) that emerges from the interviews.

The main regional findings, as well as the use cases, will be reported in Deliverable 1.3.3. "*Summary report of regional analysis – 1st draft of the Toolbox for business engagement*"

2. CONTEXT

This session provides an overview of the regional demographic context in order to better understand each regional perspective and to set up an adequate comparison. The demographic context is presented concerning (i) the ageing perspective of the population and (ii) the level of innovation.

2.1. DEMOGRAPHIC CONTEXT

The demographic context, for our research, is important to understand the environment in which the companies are working, mainly in terms of catchment area and policy supporting active and healthy ageing. In this paragraph, we did not present a detailed demographic analysis but just some data to clarify the picture. In particular, we propose the dependency ratios that support the study of the level of support given to younger and/or older persons by the working-age population.

2.1.1. OLD-AGE DEPENDENCY RATIO

This indicator is the ratio between the number of persons aged 65 and over (an age when they are generally economically inactive) and the number of persons aged between 15 and 64. The value is expressed per 100 persons of working age (15-64).

Following the Eurostat data published in July 2019, the old-age dependency ratio for EU-28 in 2018 was 30.5%, e.g. there were just over three persons of working age for every person aged 65 or over. The old-age dependency ratio ranged across the EU Member States from a low of 20.6 % in Luxembourg with almost five working-age people for every person aged 65 or over, to highs of 35.2 % in Italy, thus with less than three working-age people for every person aged 65 or over.

Figure 2 shows the ratio in the partners' countries. They are around the EU value (30.5%) except for Italy and Slovakia that are respectively significantly above and below the EU average value.

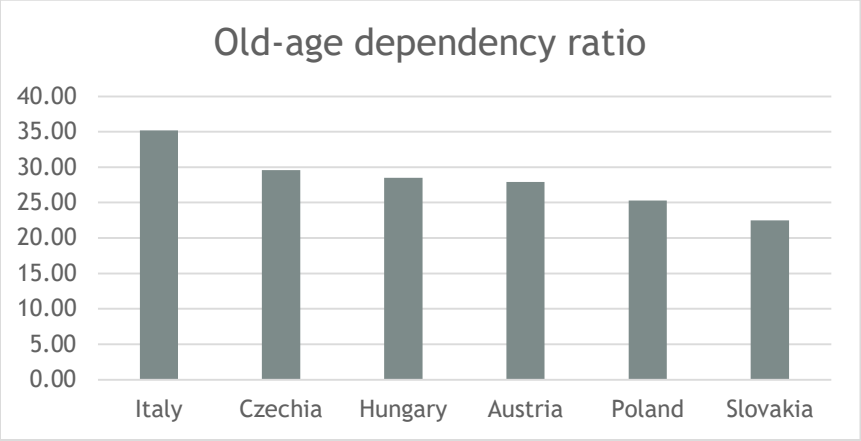


Figure 2 It is the graphical representation of the old-age dependency ratio of the countries target of our analysis. It highlights the difference between Italy and Slovakia.

2.1.2. TOTAL AGE DEPENDENCY RATIO

The Total Age Dependency ratio is calculated as the ratio of dependent people, young and old, compared with the population considered to be of working age, in other words 15 to 64 years old.

It is a combination of the old-age dependency ration, described above, and the young age dependency ratio, i.e. the ratio between people below 15 years old and the number of persons aged between 15 and 64. The combination of the two ratios provides the weight of dependent person with respect to the working people.

In 2018 this ratio was 54.6 % in the EU-28, indicating that there were approximately two working age persons for every dependent person. The lowest total age dependency ratio among the EU Member States in 2018 was observed in Luxembourg (43.8 %) and the highest in France (60.7 %).

Table 1 reports the ratio for partners' countries; it is interesting to highlight that:

- Italy has the higher total age ratio but with respect to the lower young-age ratio, that provide a perspective of increasing of old-age ratio considering also the very high share of population over 80s. This is a critical issue for the point of view of social costs, but it is also an important aspect for the Silver Economy in general and health care for elderly people in particular, because it has the greater amount of end users.
- Slovakia has the lower total-age ratio with a balance between young and old-age dependency ratio. This can represent a significant number of stakeholders in term of researchers, entrepreneurs or, in any case, as people employed in the sector.
- Hungary, Austria and Poland are around the EU-28 average value for the ratios that means that are affected by the same progressive population ageing suffered by the other countries.

- Czech Republic instead has the highest young-age dependency ratio that provide a perspective of increment of people in working age in the next years, i.e. a reduction of the old-age ratio.

	Young-age dependency ratio	Old-age dependency ratio	Total age dependency ratio	Share of population aged 80 or over
EU-28	*24.1*	*30.5*	*54.6*	*5.6*
Czechia	24.2	29.6	53.8	4.0
Italy	20.8	35.2	56.0	7.0
Hungary	21.9	28.5	50.3	4.4
Austria	21.6	27.9	49.5	4.9
Poland	22.5	25.3	47.8	4.3
Slovakia	22.7	22.5	45.2	3.2

Table 1 The table reports the age dependency ratio value for the partners' countries and the components, i.e. young-age and old-age dependency ratios. The last column presents the share population over 80s.

2.2. INNOVATION. THE NATIONAL CONTEXTS

For the purpose of the regional analysis, Innovation is intent in the context of digital solutions for older adults in the field of care and health. The definition is very close to the Health Innovation provided by WHO:

> *"Health innovation identifies new or improved health policies, systems, products and technologies, and services and delivery methods that improve people's health and wellbeing.*
>
> *It aims to add value in the form of improved efficiency, effectiveness, quality, sustainability, safety and/or affordability. Health innovation can be preventive, promotive, curative and rehabilitative and/or assistive care."* (WHO, s.d.).

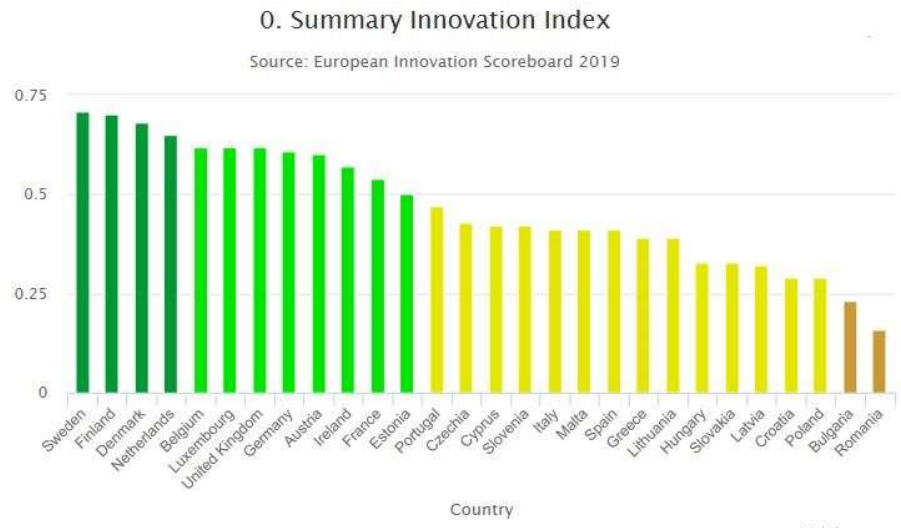
Different factors may intervene in such process and their effects can result as barrier or facilitator, depending on the specific market sector, the dimension of the business or just the global economic situation.

To support the analysis of the regional research, we refer to the European Innovation Scoreboard,[1] provided by the European Union (EIS -2019, 2019). The published data are related to innovation and the countries framework conditions supporting innovation in general, not for a specific market sector, but it can be useful to understand the regional analysis because data provide general information about the context. Figure 3 shows an overview of the European performance in terms of Innovation.

Except for Austria that results to be a Strong Innovator, the other countries considered in our regional analysis are Moderate Innovators. Of course, this parameter must be analysed concerning the demographic context and in its main indicators.

In this respect, the EIS framework contains four main types of indicators, each of them representing different dimensions as a combination of specific indexes. For our regional analysis, we focused only on some specific indicators that better represent the possibility for a business to be engaged in co-creation of innovative solutions for older adults.

[1] The European innovation scoreboard provides a comparative analysis of innovation performance and assesses relative strengths and weaknesses of national innovation systems.



The graph represents the performance in 2018 of the European Countries with respect to the composite indicator summary innovation index. Four categories of countries have been detected according to the results:

- Dark green: Innovation leaders
- Green: Strong Innovators
- Yellow: Moderate Innovators
- Orange: Modest Innovator

Figure 3 Performance of EU member states' innovation systems

2.2.1. EIS INDICATORS COMPARISON

From the EIS framework, we identified two main types of indicators *Framework conditions*[2] and *Innovation activities*[3]. As to Framework conditions, we focus on innovation dimensions Attractive research systems and Innovation-friendly environment. For the Innovation activities, we focused on Innovator and Linkages

Attractive research systems

This dimension includes three indicators aiming at capturing the international competitiveness of the science base. Two of them are more important for our comparative analysis, i.e.:

1. International scientific co-publications; and
2. Most cited publications.

These indexes are provided in numbers of publications divided by the total of population. Table 2 provides the 2019 data by countries. Austria is leading this dimension followed by Italy. Significant is the data from Czech Republic that has a very high value for International scientific co-publications, i.e. publications with at least one author form outside EU.

Table 2 This table provides the indexes value for the dimension attractive research system. The values are reported in numbers of publications over population.

Country	Attractive research systems	International scientific co-publications	Scientific publications among top 10% most cited
Austria	147,52	241,98	110,12
Czechia	73,60	132,32	47,97
Hungary	55,93	71,85	50,17
Italy	101,47	110,60	119,91

[2] **Framework conditions** measure the main drivers of innovation performance external to the companies

[3] **Innovation activities** capture different aspects of innovation in the business sector.

Poland	34,62	47,01	46,07
Slovakia	46,74	84,09	34,85

Innovation-friendly environment

This dimension aims to provide a picture of the environment in which businesses operate. It includes two indicators:

1. Broadband penetration among enterprises (i.e. the numbers of firms with a maximum contracted a fastest fixed internet connection), and
2. Opportunity-driven entrepreneurship (measuring the degree to which individuals pursue entrepreneurial activities as they see new opportunities). This is a motivational index and is the ration between *shared persons involved in improvement-driven entrepreneurship and the share of persons involved in necessity-driven entrepreneurship [EIS, 2019].*

This dimension is lead by Poland followed by Hungary, see Table 3. The meaning is related to investment (public) done to improve the businesses connections and to support new entrepreneurship.

Table 3. The table provides the data for Innovation-friendly environment dimension as reported by EIS 2019.

Country	Innovation-friendly environment	Opportunity-driven entrepreneurship	Broadband penetration
Austria	0,43	0,42	155,56
Czechia	0,41	0,42	144,44
Hungary	0,50	0,41	211,11
Italy	0,37	0,46	100,00
Poland	0,69	0,72	233,33
Slovakia	0,32	0,22	144,44

Innovators

This dimension measures the share to businesses that have introduced innovation according to three indicators:

1. The percentage of SMEs that introduced innovations in terms of product and/or process,
2. SMEs that introduce marketing and organisational innovations (as a percentage), and
3. The percentage of SMEs with in-house innovation activities.

Table 4 provides the values for these indicators in the six countries subjects of our research.

Table 4 This table provides the value EIS 2019 for the innovators dimension. Data are provided for BE-TWG countries for comparison.

Country	Innovators	SMEs with product or process innovations	SMEs with marketing or organisational innovations	SMEs innovating in-house
Austria	0,80	0,80	0,80	0,79
Czechia	0,52	0,54	0,42	0,59

Hungary	0,18	0,22	0,16	0,16
Italy	0,69	0,71	0,57	0,81
Poland	0,09	0,15	0,01	0,10
Slovakia	0,22	0,25	0,19	0,22

Linkages

Linkage dimension looks at collaboration efforts between innovating firms, between the private and public sector and the extent to which the private sector finances public R&D activities. It is measured by three specific indicators but, for this regional analysis, we focused only on innovative SMEs collaborating with others as a percentage of SMEs.

As reported in Table 5, Austria have a rank in line with its status of Strong Innovator, Czech Republic provides a very high dimension for a moderate innovator region, thanks to the collaboration between businesses and the policies to support that collaboration. Another significant aspect are the Slovakian results in terms of collaboration, this indicates a good effort of businesses to set-up collaboration and networking, that is the bases to improve the overall index.

Table 5. Linkages value are ported in this table according to the EIS 2019.

Country	Linkages	Innovative SMEs collaborating with others
Austria	0,78	209,51
Czechia	0,40	114,38
Hungary	0,26	46,74
Italy	0,22	45,61
Poland	0,15	32,84
Slovakia	0,27	70,09

2.3. THE RESULTS OF THE CONTEXT ANALYSIS

Ageing population is a European condition but does not affect the countries in the same way. For example, Italy has the oldest population, both in terms of higher percentage of people over 80s and in terms of old-age dep. ratio, and at the same time Italy has the lowest young age dependency ratio. This implies that older adults may not have frequent contact with younger either support from them. This situation drives research and business at looking for ICT solutions supporting older adults' daily activities and risks monitoring.

Czech Republic instead has the second position in terms of old-age dependency ration but, at the same time, has the highest young-age dependency ratio, this means that ageing tendency are reverted. This condition may imply that older adults in the future may have human support and businesses are more focused on services for older adults and inclusion.

To the purpose of the business the more evident effect is that the demand is increasing but can be different between countries according to environmental conditions.

From the Innovation point of view, the indexes report the effects of policies that have supported businesses in creating innovation. The effects are also projected in the best practices identified in each desk research.

3. MAIN REGIONAL FINDINGS

This section provides the main regional findings, according to the performed desk researches.

The aim of the research is the identification of existing Best Practices and Tools supporting co-creation and innovation in elderly care with a focus on Business Engagement. The objective is to identify comparable methods that succeed in involving business in co-creating innovative solutions.

Specific research questions, as well as a template for interviews, has been designed with the purpose to support the regional research in identifying best practices, success factors and key barriers that obstruct the involvement of businesses or prevent the success of a tool.

Research questions have been defined to support the secondary data gathering and are described with the methodology in D1.3.1 *Concept paper for elaborating the BE toolbox*.

The template for the interviews has been designed during the second data analysis to define a proper structure and questions considering all the regional conditions. The Interviews for gathering primary data have been decided to be a structured interview with an open question at the end. Annexe 1 is the questionnaire template in English. Interviews have been done in mother language, partners translated the template in their mother language and translated back the answers for the analysis.

In the subsequent paragraphs the main results of secondary and primary data are provided per countries.

The overall perception was that businesses have difficulty in applying co-creation methodology autonomously because they cannot have a deep knowledge of the industry-specific challenges of the health / social system in general (shortage of staff, lack of time, etc.).

3.1. AUSTRIA

Although for EIS-19 Austria is a Strong innovator, in Graz Co-Creation is getting more and more forward, there are some Innovation Labs as well as projects including living-labs approaches.

In the field of regional development there is for example the Stadtlabor Graz, which is also part of the European Network of Living Labs (ENoLL). The Stadtlabor Graz stands for more cooperation in the development and transformation of cities into livable places for people. In this sense, they work at the interface between city administration, developers, utilities, local businesses and institutions as well as citizens and promote a new culture of cooperation and co-creation of ideas and solutions.

The BlueLab in Graz is an example for a platform that supports companies and regions in innovation and development processes, and is setting impulses with workshops and seminars.

The Human Technology Cluster relies on lighthouse projects such as active and healthy aging (Styria is a European reference region), medical 3D printing or the promotion of innovation by regional companies.

The Next Incubator from Energie Steiermark supports companies, startups and public institutions who want to advance their innovative ideas.

The Ideentriebwerk is a platform providing networking for the start-up scene in Graz.

ZWI Graz is providing space for innovators; the ZWI will actively engage the individuals and organizations involved. The aim is to create a hub for entrepreneurship and innovation in the heart of the city, fuelled by the power of university research and harnessing the momentum of entrepreneurial activity. A focus will be on modern aging and demographic change.

The JOANNEUM RESEARCH is the active network node within the international research and innovation system. Its stakeholders are represented by the Province of Styria (80,75% of the shares), the BABEG -

Kärntner Betriebsansiedlungs- & Beteiligungsgesellschaft (14,25%) and the Landesholding Burgenland (5%). JOANNEUM RESEARCH works closely with and for partners from economy, science and research as well as public authorities. In the context of projects with partners from various industries and fields of activity, JOANNEUM RESEARCH - in its role as an "INNOVATION COMPANY" - significantly contributes to sustainable, innovative solutions. Moreover, JOANNEUM RESEARCH actively practices cooperation via its shareholdings in companies - including spin-offs to utilise technologies and many companies in the framework of the COMET Competence Centre for Excellent Technologies.

Examples of these activities are:

- **AMIGO project** (analysis and motivation of training activities for people with dementia through social robotics with dialogue-based coaching). In the AMIGO project, a humanoid robot (Pepper from SoftBank Robotics) for people with dementia will be further developed and tested in nursing practice. Coordinator of the project is the JOANNEUM RESEARCH research institute (Institut Digital). Other project partners are Humanizing Technologies, FameL and Sozialverein Deutschlandsberg.
- **DigniSens** a solution to facilitate the handling of incontinence. The project idea is a sensor system - a smart device - which informs relatives or caregivers if diapers need to be changed. The firm participates to several StartUp-accelerator programs (e.g. Gründungsgarage, Science Park Graz, HVLab by General Electric/Budapest) and particularly its working prototype is ready for the testing phase under hard conditions in various nursing homes in Styria. They are incubated by Science Park Graz until the end of 2020.
- **Evolaris** assists companies in realizing comprehensive ICT-innovation processes and put the user´s needs and expectations in the focus of their strategy. Evolaris is working on improving digital networking in Austria by developing digital assistance systems for industry and commerce. The competence center is funded within the framework of the COMET program (Competence Center for Excellent Technologies) and works in cooperation with science partners. To engage users and gather ideas, a Living Labs platform with small competitions (p.4, Policiy Brief) was created.
- **E_nnovation Emma hilft.** Emma - the flexible life assistant is the solution from E-nnovation offering support in the organization of informal and professional care. Emma is divided into EmmaHome and EmmaHelp products. Emma offers assistance in various areas of the lives of older people in order to secure their independence within their own four walls. At the same time, family members are relieved from caring stress and more time is gained for family and work.
- **Tyromotion**. Tyromotion develops technology-based rehabilitation devices that put patients at the heart of rehabilitation. They are a leading manufacturer of technology-based therapeutic devices with the goal to sustainably improve peoples' independence and quality of life. By using powerful novel technologies such as robotics, sensor technology, virtual reality and gamification, tyromotion makes it possible to guide patients through the rehabilitation process more intensively and motivationally.

3.2. CZECH REPUBLIC

Czech Republic is investing in supporting its businesses to perform innovation and it is reflected by its current position in the EIS classification. The young- age dependency ratio close to the EU-28 mean value and the highest with respect to the analysed countries, put the bases for improving much more in the future.

On the other hands older adults are increasing, the old-age dep. ratio is high, and lower income affects people with longer time of receiving pension. For these reasons quality of life became a keywords in co-creation of innovative solutions.

Seniors are spending much more money for their basic needs: food, housing and health. Poverty can be a threat for 9,2 % of women and 8,3 % of men in the age 50-64; and for 12,4 % of women and 5,4 % of men in the age 65+.

Seniors are a very heterogeneous group numbering almost 2 million people. Heterogeneity is given by age, health, life expectancy, income, education, location of living (country vs cities), social relations, personal activities and life experience. And moreover, important factors for 21.century are add-on: globalisation, migration, progress in technologies, digitisation,…. There are big mental and perception differences among seniors at ages 55-60, 65-75 and 80+ and any communication with these groups should respect it.

There are few key aspects for a better quality of life: personal activity, civil engagement, volunteer activity, good social relations (family, community, village, parish). Important factor seems to be a family stableness, which is not too high, the divorce rate over the last 10 years is between 44% and 50%.

The main coordinator for ageing policy is the Ministry of Labour and Social Affairs and basic strategy documents towards preparation for the ageing population were processed, unfortunately fulfilled / followed rather formally. Pension reform is still missing though all politicians agree that it is unavoidable.

The above-mentioned conditions put a light on a specific requirement for a successful business engagement and a successful co-created solution, i.e. communication.

Any communication from the business side should respect findings above: the last almost 20 years in senior's life is spent with healthy problems of some kind (e.g. sighted, hearing, motoric, cognitive). There are known ways how to overcome the communication barriers caused by health problems – these are so called tools of assistive technologies (AT). Their purchase can be funded from the governmental budget but the funding is conditioned by appropriate health diagnosis. The funding is available for handicapped people but still there is a grey zone of people who are „not handicapped enough" to reach the funding. Taking into account the senior's income and needed expenses (see above) there is no big space for buying AT devices from the own income.

Recommendations for the business communication:

- Pay attention to make your communication accessible; only a small part of your target group will be equipped with AT tools, you should respect and apply AT principles at your side of communication.
- Make your communication simple and understandable: use understandable terms and do not use geek or slang words, concentrate rather on what you offer than how it works.
- The other way on how to reach the senior target group is to address their family members, friends: In general this is a younger group and the communication used should respect it; keep in mind to whom you are speaking – directly to seniors or through family members.

Recommendations for the business development:

- Map the actual senior's needs before any development decision: What you think that is good for seniors maybe is not the reality, make a market research among the target group as a starting point (and make it in an accessible way).
- Developed products must be accessible (with accessible control), do not underestimate audibility, contrast and legibility of control description, easy control itself, ergonomics – and that all adapted for senior age.
- The most effective way how to help seniors in their everyday life is to design products based on electronics: Include university, industry research into your development.

Successful examples are:

- BlindShell, the manufacturer and distributor of special mobile phones with voice screen-reading for seniors
- Czech Technical University starting "navigation centre" project
- Travel company QualityTours offering special products for seniors
- City Prague Library
- Palata, special home for seniors with visual impairment

3.3. HUNGARY

In the area of innovative companies, Hungary ranks 25th in the EU country ranking, and is significantly below the EU average (they are also lagging behind those of the Visegrád countries -V4[4]), as described in section 2. In detail the EIS framework highlights also that in Hungary, as in almost all Europe, there is not enough connection between the university and the business sector (industry, SMEs) and Hungarian higher education students gain little entrepreneurial experience during their studies.

According to the regional challenges the Hungarian Government identified three main objectives for domestic innovation policy responding to the results of the Innovation Scoreboard:

1. to increase the practical use of research results from public-funded research centres.
2. to improve the innovation performance of domestic enterprises, mainly concerning SMEs' weak performance, and to enhance cooperation between RDI actors.
3. To promote Hungary's economic growth, the Ministry of Innovation and Technology will continue its efforts to develop an innovation ecosystem that enhances the capacity for value creation and the receptivity to innovation and promotes the more effective use of resources and technological development.

The main difficulties highlighted by businesses are related to the lack of a valuable channel to reach older adults and effectively validate concepts. This is mainly due to difficulties for businesses to understand and identify the most appropriate tools, service or methodology that can support them in reaching customers. So firms try to get direct connection to customer segments, but time-to market became too long and there is a lack of internal resources for doing effective validation and end-users involvement.

The main conclusion and suggestions for business engagement and tools supporting their involvement are:

- Different tools needed to get closer to customers/clients but most of them unable to follow the trends and updates
- Not only technology innovation could trigger new products or services.
- Direct and personal connection with potential customers is radically shortening the time to market.
- Most of the companies are developing in-house (cheaper and safer).
- All stakeholders must know their benefit from co-creation, but also others.

Successful Hungarian examples are:

- **V4 Startup Force by Design Terminal.** Design Terminal is the leading innovation agency in Hungary aiming at nurture business talents and develop the regional entrepreneurial as well as the innovation ecosystem. Design Terminal builds bridges between talented start-ups and corporations, connecting the two different business environments. V4 StartupForce is a special accelerator program for B2B start-ups who can meet potential business partners from V4 region (Czech Republic, Hungary, Poland

[4] http://www.visegradgroup.eu/

or Slovakia) and gain access to the global market. One start-up from each of the V4 countries is selected by Design Terminal and its local partner organizations. Two people of the selected start-ups join a 7-day long training and mentoring program by Design Terminal in Budapest and a 10-day long mobility and networking tour in the V4 countries.

- **Startup and innovation day.** One of the biggest networking events of the CEE region where investors, accelerators and business angels dress up nicely to mingle with fresh, cutting edge start-ups and corporate thoughts-leaders.
- **Startup and Innovation Award of Hungary** recognizes the outstanding start-ups and start-up minds. As the award stands as a representation of the collaboration between the stakeholders and thought leaders of the strongly developing start-up ecosystem, the judges' panel is filled with well-known, respected professionals and entrepreneurs. In the ceremony, the greatest Hungarian start-up achievements will be awarded in the following categories: 1 Most promising start-up, 2 Best scale up start-up, 3 Founders of the year and 4 Best female entrepreneurs.
- **Demola** The purpose of this project is to offer a platform for companies to effectively experiment and test new ideas, but also to validate and solve problems. Demola projects offer the possibility to work with multidisciplinary talented teams in a fully facilitated innovation environment consisting of university students, researchers and other companies. The co-creation process lasts a 3-4 months and includes problem validation, concept development, demo building and end-user validation.

3.4. ITALY

Italy is the country with the oldest population (i.e. higher old-age dep ratio and the higher share of the population aged 80 or over and the lowest young-age dep ratio).

Aside from this, Regione Liguria is the oldest region of Italy. In this context, accessibility and health care for older adults are keywords in the daily activities of local institution and population. The high density of population is not equally distributed in the territory and, for this reason, there are difficulties for persons living in the internal areas, mainly to have the same opportunities and services of those living on the coastline.

Research of innovative solutions and co-creation become year by year the must for the whole territory and businesses, regional authorities, municipalities, hospitals, research centres and end-users' associations are all involved in co-creation.

17.4% of the projects in Liguria Region involved social actors, such as citizens, civil society organisations, etc., who participated in the co-creation of scientific agendas and project content. In general representatives of end-users provide fundamental support in terms of defining the needs and expectations for stakeholders (e.g. older adults, relatives of informal caregivers), i.e. influencing the design of the project, but there is not a unique approach to innovation and co-creation.

In terms of innovation the Liguria Region is in line with the Italian rate, i.e. a moderate innovation as defined by the EIS-19 and, in the context of innovation of digital solution for older adults, the region is in line with some constraints. The main barriers to be considered are (i) the acceptability and usability of the designed solutions and (ii) the technological literacy of the elderly population.

Following the analysis of Eurostat, the share of older people have never used a computer was higher than two thirds in Italy. At the same time, the same analysis highlighted that almost half of the older adults have not used the internet in the past three months.

Between Italian's regions, Liguria reports an average position both in older people accessing to the internet and in elderly's digital skills. In this context the more successful results are based on collaboration between the different actors.

The approach in Liguria region to co-creation is more related to co-innovation as defined by Sang M. Lee, David L. Olson e Silvana Trimi, i.e. Co-innovation: convergenomics, collaboration, and co-creation for organizational values. Examples are:

- **PLSV** includes all main public and private entities in the field of life science. It supports co-creation intending to stimulate demand for innovation and technology transfer and creating a network that supports and increases the effectiveness of the companies involved. In 2018 it counts 90 members, public and private.
- **AUSER Liguria**, it is an association of older adults that supports active ageing. It represents the biggest network of older adults in Liguria with 270000 members and 54 locations throughout the region. It is involved in promotion activities, support services, transportation and so on thanks to a well-organized network of volunteers. It is involved by the region, municipalities and business networks in the co-creation of innovative solutions for older people.
- **Consortium AGORA'** that represents, at local level, the biggest association of persons and cooperatives involved in homecare with a special focus on older adults living alone. It collaborates with public institution to innovate the home care services and its regulation.
- **Regional Start up incubators**, are two structures coordinated by Liguria region through Filse spa and are members of the EBN (European Business Network). They provide services as logistics, co-working area, specialised consultancy and support in the development of networking.
- **Digital tree incubator** an incubator for innovative start-ups in the ICT area. In this incubator was born (for example): -/Estro that create a product to stimulate/compensate neurological development; -Teseo that developed a plug&play system allowing an unobtrusive monitoring of a person's well-being (mainly older adults), without interfering with his/her habits, and automatically alerting relatives or assistance centres in case of need;- Pillohealth that provides solutions to monitor healthcare at home, in particular, the robot supports older adults in respect of prescription and diet.
- **Silver Economy forum.** This three days event is designed to exchange information about the silver economy from all business sectors that contribute to delineate the ecosystem that revolves around the world of the over 50's. The format includes a series of meetings, conferences, workshops to understand the needs and to draw a roadmap with experts, economists, companies, public administration, academics and older adults associations on the effect of the demographic changes in order to intercept and meet the demand of people 50+.

3.5. POLAND

In Poland, engaging business and the environment in creating innovative solutions is widely known, but most often used in business cooperation with science through academic centers, universities and entities such as innovation and technology transfer centers, business incubators, and science and technology parks. This is due to the fact that these entities are most often beneficiaries of external financing, which forces them to cooperate in creating innovations. Nevertheless, enterprises also create innovations and establish relationships with various stakeholders themselves. Cooperation with scientists is a popular form, followed by the creation of spin-off companies.

Nowadays Poland is ranked as moderate innovator (see Figure 3) but according to the evidences and the environmental conditions (see 2.2.1) businesses faced to improve their conditions.

The literature on the subject lists a whole range of different practices for involving business, scientists, potential clients and other stakeholders in co-creating innovation. However, these are not specific, real

examples, but a discussion of the methods, forms and tools available such as the Demand model of shaping innovation[5], the TRIZ method, the open innovation methods[6] and so on

Creating innovation with users requires from the enterprise to be able to involve users in this activity, coordinate their work and to manage decentralized innovation processes[7]. At the same time, the literature on the subject indicates a number of benefits resulting from better cooperation between business and the environment, including, among others, better understanding of the client - his needs, emotions, values, behaviour, increased interaction with the user, testing services and products with the user. Furthermore benefits for the organization are mentioned, including regular exploration of the potential and possibilities of innovative organizations, increasing efficiency, increasing flexibility and creativity, and significant time savings.

Parallel to opportunities and benefits, a number of important barriers are mentioned. These include, but are not limited to, changes in the environment, including customer expectations, insufficient empathy, lack of motivation, lack of leader, poor selection of project group members, partners and stakeholders, lack of creative attitudes, lack of support from stakeholders, high costs of introducing innovations, or insufficient access to external sources of financing, and even an underdeveloped area of commercialization of research results[8].

Examples of the application of the above mentioned methods are:

- **Smart-up Lab.** An initiative implemented by the EIT-Health consortium by universities that connects business with potential innovators and end users of products or services. During numerous trainings and workshops thanks to which start-ups develop their business plan, they have the opportunity to solve real problems of enterprises with an established position on the market - introduce innovations or improvements to their activities. Joint creation is also implemented through the activity of the communities to which the innovation relates. This is based on a fresh look of young people from outside - potential innovators and the experience, expectations and needs of the people who will be affected by the solution. Entrepreneurs from all industries can participate, but nevertheless they create solutions dedicated to broadly understood health care or seniors. Communication takes place directly and indirectly, the parties can consult on an ongoing basis. The result of co-creation are concepts, solutions, business plans, demonstrators and even prototypes.
- **Models of mass customization - internet forums and crowdfunding platforms**[9]. The opportunity to benefit from the ideas, needs, expectations and experiences of potential consumers by sharing ideas by businesses online. Together, problems are solved and innovative solutions are developed. Many times combined with external financing. Communication takes place online and the initiators are the enterprises themselves.
- **Implementation doctorates.** They are a form of strengthening cooperation between universities, doctoral students, scientists and enterprises. A PhD student under the tutoring of an experienced scientist and business representative performs relevant research and analysis, and subsequently develops a solution that is finally implemented into the company's practice. Most often it is a product or service innovation or a significant improvement. Doctoral students

[5] Bylok F., *Prosumpcja jako forma innowacji na współczesnym rynku*, [w:] Konsumpcja i innowacje, A. Olejniczuk-Merta (red.), Marketing i Rynek, Warszawa 2015.

[6] Gardocka-Jałowiec A., *Zmiany w konsumpcji a kreowanie innowacji*, Wydawnictwo Uniwersytetu w Białymstoku, Białystok 2015

[7] Czakon W., *Podstawy metodologii badań w naukach o zarządzaniu*. Oficyna Wolters Kluwer business, Warszawa 2015.

[8] Misztal A., *Otwarte innowacje w polskich przedsiębiorstwach – ewaluacja;* Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie, t. 33, nr 1, 2017.

[9] Link: https://wspieram.to; https://polakpotrafi.pl/; https://www.wspolnyprojekt.pl/

carry out various types of surveys, market research, demonstrators, prototypes in business consultation, and after validation, the solution is implemented into the business. The initiator is the Ministry of Science and Higher Education, but also enterprises.

- **Open innovation network - Industrial Development Agency**[10]. Project implemented by the Industrial Development Agencies, which is dedicated to building a culture of open innovation. The project supports technology transfer transactions to small and medium enterprises in Poland. In addition, it provides the opportunity to consult various stakeholders and finance the purchase of innovative solutions or intangible property in the form of patents, licenses, know-how and utility models. To participate in the project, the company must complete an application and contact an advisor.
- **Business incubator - Medical University of Lodz**[11] The Business Incubator of the Medical University of Lodz supports the development of local business entities and entities of the economic and social environment, including the academic ones. The main goals of the incubator include: creating a center that generates conditions for the development of enterprise innovativeness, increasing the competitiveness of enterprises on the local market, assistance in establishing business contacts and associating companies, creating innovative production and service ventures on the local market, and creating a platform for cooperation between entrepreneurs starting their business and existing ones, as well as between business and universities.

3.6. SLOVAKIA

Slovakia is the country with the youngest population with respect to the six analysed in this report and it is ranked as a moderate innovator.

The segment of information and communication had the highest share in the creation of gross value added in all Slovak regions. In the subsequent table, Slovakia main characteristics are presented (see Table 6).

Table 6. The main caracteristics of Slovakia in nuts from the perspective of businesses.

Strengths	Weaknesses	Opportunities	Threats
The regional city and its surroundings are economically efficient, productive and attractive for foreign investments.	Significant social and economic disparities within the region	Significant development of new sectors with high added value, especially ICT	In the economically less efficient parts of the region, the population has a low educational level
Good availability of skilled and unskilled labour	In an economically efficient county seat, high costs of doing business in terms of both labour and real estate prices	Increasing employment in industrial production with higher added value	Poor level of transport infrastructure on the periphery of the region combined with insufficient means to expand it
Relatively developed infrastructure to support innovative business	Persistent high unemployment rate with a significant share of long-term unemployed	Suitable conditions for the development of tourism and agritourism	Long-term migration decline

[10] Link: https://www.arp.pl/wsparcie-innowacji/siec-otwartych-innowacji

[11] Link: http://ciitt.umed.pl/inkubator-przedsiebiorczosci/o-nas/

Relatively well-developed R&D capacities	The dominant industry in the region has stagnated for a long time	Space to increase productivity and added value in agriculture and food	Concentration of least developed districts within the region
Long-term high natural population growth	Unfinished motorway interconnection with western Slovakia as well as with Hungary		Involving many the long-term unemployed into the labour market can be problematic and / or costly

Concerning the overall Slovakia country, the Košice region has good research and development potential and is represented by a group of three universities of international importance, institutes of the Slovak Academy of Sciences as well as private technological - development centres. The Košice Region has the second largest research potential after the Bratislava Region, from the view of a number of research and development entities. The share of R&D employees is also the second largest in the Slovak Republic in this Region.

In particular, in the city of Košice, the economy moves from heavy industrial orientation towards a higher added value service economy, innovations, creative and bio-economy should bring higher competitiveness and attractiveness to the city. The city with its stakeholders has established an IT cluster to support investment in high-tech services – mainly information technology and software solutions - and to encourage and strengthen the intellectual and innovation potential of university students.

The innovation infrastructure of Košice region consists of 3 innovative subsystems - focusing on the application of technical and digital sciences to industry and services UVP TECHNICOM, life science, natural sciences and bioinformatics under the leading of UVP Medipark and TIP UPJŠ, and creative economy is developed by CIKE and creative platform Tabačka.

Examples of regional infrastructure supporting co-creation and business engagement, as well as tools and best practices, are:

- **Slovak Business Agency** has created National Business Centers (NPCs) specialized on providing support to SME (Start-ups and established entrepreneurs at various stages of the life cycle) mainly in the form of individual and group counselling aimed at promoting entrepreneurial skills, as well as presenting examples of successful business experience to increase the attractiveness of business as a career choice. The subject of support is also the provision of participation in internships and international professional events abroad to stimulate entrepreneurship also based on examples and experience gained from the business environment abroad.

  Support for small and medium enterprises is implemented through 5 components:

  - COMPONENT 1 – PUBLIC. It focuses primarily on the development of business potential and the popularization of business in an indirect way.
  - COMPONENT 2 – ACCELERATOR It represents a closed cycle for selected beneficiaries, which consists of two phases: phase 1) focused primarily on creating new business ideas and phase 2) focused on accelerating the business idea of the first phase by setting business goals and formulating the business model.
  - COMPONENT 3 – COMBINED INTERNSHIP VISITS This component is focused on the realization of combined internships on foreign and domestic markets.
  - COMPONENT 4 - PARTICIPATION IN INTERNATIONAL PROFESSIONAL EVENTS. It allows beneficiaries to participate in international professional events presenting, e.g. new knowledge in business trends, sectors and sectors.
  - COMPONENT 5 - CREATIVE POINT a creative workshop providing new technologies (such as 3D printers, laser, machine tools, electronic and diagnostic instruments) for the needs of the

recipient to create prototypes and designs that support business potential through rapid prototyping.

- **University Science Park TECHNICOM.** It is an open platform providing services to external, contractually cooperating domestic and foreign organizations and all other organizations that express interest to cooperate in one of the wide ranges of cooperation forms. These are mainly organizations: academic and scientific institutions, social and entrepreneurial practice, consultancy and mediation of innovation and technology transfer. TECHNICOM provides the innovative infrastructure for collaborative applied research and development (R&D) with a link to practical support of corresponding innovation activities, business acceleration and knowledge and technology transfer. UVP TECHNICOM creates at TUKE an ecosystem to accelerate technology transfer, innovation and business support. It provides support for the implementation of applied industrial R&D, ensures the transfer of R&D results into economic and social practice and also support for the creation and development of small and medium-sized enterprises that use R&D results for their innovative products, goods and services or carry out research themselves and development.
- **Technological and Innovation Park of University of Pavol Jozef Šafárik- TIP-UPJŠ** - is a center of scientific and technological excellence at UPJŠ in Košice in the field of biomedicine, biotechnology, information technology and advanced materials. The main task of TIP-UPJŠ is to develop activities mainly in the field of translational research and the development of new technologies and thus contribute to the development of the university as a modern university. TIPS is also an ecosystem of business acceleration at UPJŠ, which is designed to stimulate the continuous involvement of new employees based on the submitted innovative projects. In the process of technology transfer for efficient commercialization, TIP-UPJŠ uses forms of cooperation and support - incubator, accelerator and spin-off. Within the TIP-UPJŠ structure, administrative, legal, financial, marketing and PR support activities will be provided in full or in cooperation with other RUPJŠ units.
- **UVP Medipark** Within the park operate experts focusing their research on the fields as e.g. nanomedicine, regenerative medicine, personalized medicine, ageing, environment, information and knowledge systems, cybersecurity, communication and collaboration systems, development of progressive materials with potential applications in human medicine, nanotechnologies and information technologies based on current staffing in individual faculties.
- **Creative Industry Košice - CIKE.** It operates as an open platform providing services to external, contractually cooperating domestic and foreign organizations and all other organizations that express will to cooperate. These are mainly organizations: academic institutions, social and entrepreneurial practice, consulting and facilitating innovation and technology transfer in the crisis /creative industry. It provides training for talented individuals and cultural institutions by raising their international profile, for example by providing foreign trips, mobility and residential programs. CIKE also helps the city and the region in policy-making and sustainable regional development through their advice and consultation. CIKE organizes also the Design Sprint training programme based on methodologies of co-creation and co-design.
- CIKE developed the project **"CREATIVITY FOR BUSINESS"** [12], offering the catalogues of creative talents for businesses and public organizations who are looking for innovation for their products. In fact, since 2015 it has been extended to the whole of Slovakia. In 2018 the program has been enriched with sectors tourism and IT sector. The adopted instrument is the Escalator, an effective and intensive mentorship programme with a long tradition, which aims to professionalize organizations working in the creative industry and culture. It is composed of several parts that will gradually lead in understanding the principles of managing your project, creating, planning and functioning on the market. The main part

[12] http://cike.sk/en/project/creativity-for-business

is based on individual growth and getting to know one's own needs through in-depth interviews with foreign mentors. This enables participants to identify the key needs and objectives of your project or organization. As a result, a "tailor-made" training in the form of training, seminars, mentoring, strategic planning and research is created. When selecting the most suitable members, the originality, creativity, ambition and determination are considered. The submitted projects represent many activities in the field of management of cultural centers, performative, visual arts, urbanism, design, distribution, marketing, tourism. They are represented by managers, dancers, directors, curators, as well as project managers, artists or designers.

- **V4 Hackaton Košice** The mission of V4 Hackaton Košice is to provide IT skilled people interested in apps development or hacking hardware solutions to jointly develop innovative solutions to the proposed problem, usually in a short period, e.g. like within one weekend. In 2018 was the main topic of V4 Hackaton Košice re-invent healthcare and well-being with IoT solutions. The Healthcare and IoT themed Hackathon is a technology event focusing also on the topic of active ageing; Early detection of serious diseases – the case of Alzheimer's disease, Telemedicine and safety (driving environment), Environmental factors and health – global issue (note: significantly underestimated in SR), Active ageing – global issue, Creating community groups for impaired citizens to address social and health-related problems, Monitoring – obtaining health condition information of a person living alone. Mainly teams composed by young experts got the opportunity to present their skills via developed apps designed in cooperation with domain experts and what was important, to meet new peers and consult their ideas and work methodologies with skilled mentors from the related field.
- **Art & Tech Days Košice** The Art & Tech Conference is a business and knowledge platform providing each year important opportunity of meeting leading industry representatives and their projects from the recent years. Pioneers wanting to stand out from the crowd and discuss the changes that dynamically go through all sectors. Art & Tech Conference 2019 has defined revolutionary ideas, technological advances, but also changes in thinking and human behaviour nowadays. Nine speakers from completely different areas commented on one topic - artificial intelligence and the challenge it posed to society.
- **IT Innovation Bootcamp** Innovation Bootcamp is a one-day event aimed at introducing the creation and transformation of innovative ideas into real projects. The participants will experience the process of creating innovations through the Design Thinking method and will receive feedback from lecturers with academic and business experience on their innovative idea. Upon request, 24 participants were selected who were divided into 8 teams as part of the innovative boot camp. The teams were given a choice of 8 topics from the Horizon 2020 Health Program, Demographic Change and Well Being, from which they chose one to work on. Using the Design Thinking method, teams worked their way up to the final project design. Competitors could consult each stage of Design Thinking and the innovation creation process with the experts present. At the end of the pitching session, the teams had the opportunity to present their project proposal within 3 minutes.
- **Startup centre TUKE and Incubator TUKE** The Startup centre TUKE is looking for new, innovative projects by a competition "Do you have an idea? Present your idea". Right now, through the competition of innovative ideas more than 80 innovative projects have entered the accelerating programmes Overall, more than 30 promising start-ups with great innovation potential have been operating in the TUKE Startup Center. Some of these innovative projects are aimed at health and the silver economy. Several of them managed to gain investor support and launch several successful products while working at the TUKE Startup Center. The TUKE incubator is a key component of the ecosystem of business acceleration, technology transfer and innovation to TUKE. The incubator provides an incubation environment to ensure the acceleration process for the establishment and development of small and medium-sized "Hi-Tech" companies, respectively. Start-ups and spin-offs of companies mainly based on relevant results of research and development carried out within research and innovation activities within TUKE, which eventually went through the pre-incubation process at the TUKE Startup Center,

primarily in the following areas: Information and Communication Technologies, electrical engineering, automation and control systems, mechatronics and robotics, civil engineering, environmental engineering.

- **Business Acceleration Program of TUKE** Business Acceleration Program of the Technical University of Košice is an integrated system supporting the development of innovative projects, mainly based on the R&D results and networking innovators and potential investors under the leadership of the Start-Up Center TUKE and TUKE Incubator program. Business Acceleration Program provides complex services for innovation development, transfer of technology and knowledge and business development. The concrete services enable the teams working on their start-up ideas to have an office in the Start-Up Center of the university, consult their ideas with domain professionals from university, test their ideas using special facilities of the university etc.

4. BEST PRACTICES

In this section some of the identified best practises described in Section 3 are reported and detailed. Two or three regional examples have been selected by each partner with the aims to be representative (i) for the region and for (ii) their main businesses requirements. To support comparison between the different BPs even if they represent different types of solutions or tools, the best practises are represented in a table structure following the research questions identified in D1.3.1. Concept paper for elaborating the BE toolbox to support regional research.

4.1. Austria

4.1.1. Joanneum Research

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	National
Level of digital innovation of the involved companies	Medium level of innovation
Dimension of the involved companies	440 employees
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	Partners from economy, science, research and public author
Communication protocol for engagement	Depends from case to case, AMIGO: personal contact
Involvement of facilitator	Involving different facilitators

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Presentations, consultations, workshops, advisory board, real life test, prototype tests, focus groups, testing walking tours with users (context interview), contact to the relatives, caregivers (Visiting them, asking about how they are coming along with the product etc.), usability test in the laboratory, field test
Tools supporting the dissemination activities for example of the results	Implementation into business operations (implementation condition), networking events
OTHER INFORMATION	
Market sectors represented in the identified BP	Research Institute
How to join the network/community/event/… (i.e. enrolment mechanism)	It depends on the different specific activity.
(for events) Which are the frequency and the time structure of the event?	There are several different project and they all have a different structure

4.1.2. Dignisens

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	Regional level
Level of digital innovation of the involved companies	Medium level
Dimension of the involved companies	1-5 employees
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	Research center, AAL companies, public authorities, health providers, start-ups, seniors,
Communication protocol for engagement	Depends
Involvement of facilitator	Advisory board: health scientist, HTS Cluster, ZWI

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Interviews, round tables, advisory board
Tools supporting the dissemination activities for example of the results	Networking events: fairs
OTHER INFORMATION	
Market sectors represented in the identified BP	AAL products
How to join the network/community/event/… (i.e. enrolment mechanism)	Science park: applying, pitch,
(for events) Which are the frequency and the time structure of the event?	Once a year

4.2. Czech Republic

4.2.1. Screen reading cell phones

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	In transition stage "national to international"
Level of digital innovation of the involved companies	High level of digital innovation: software company with roots in Technical University, cooperating with qualified programmers
Dimension of the involved companies	Small
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	Education and research – strong (University) Cooperation with hardware manufacturer - medium Marketing & senior's involvement – weak
Communication protocol for engagement	Very good programmers working at the company, finding out very sophisticated solutions for the final product, very good contacts to Technical University (research), in general a good experience in research and innovation but there are also barriers: very weak market experience, with no professional marketing support, weak relationship towards senior organisations - target group (contacting them through facilitators, it seems the contact is rather casual).
Involvement of facilitator	Yes, towards senior organisations (no direct involvement)

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Active presentations, consultations & workshops for product programmers and testers, weak activities towards other stakeholders
Tools supporting the dissemination activities for example of the results	Going to start the implementation of marketing operations (marketing strategy)
OTHER INFORMATION	
Market sectors represented in the identified BP	Software – special SW shell for cell phones (screen reading feature)
How to join the network/community/event/… (i.e. enrolment mechanism)	Too accidental, missing a systematic approach
(for events) Which are the frequency and the time structure of the event?	Preferably oriented towards research and hardware base selection

4.2.2. City Library

GENERAL CARACTERISTICS	
Geographical relevance (i.e. At local level, regional level or national level)	Regional (capital city area, 1.5 mil. people)
Level of digital innovation of the involved companies	Standard level of digital innovation: own IT department, digital library books available, self-serving loans for seniors using a digital kiosk
Dimension of the involved companies	Medium
Number and type of other representative of the quadruple helix elements (i.e. Education, older adult's representative, research centres)	Education – strong (for target group, for employees) Research centers – medium External activity – strong (bibliobus, 3D city trips)
Communication protocol for engagement	Provided high-level services incl. the services for seniors, very strong and highly-developed contacts with senior clients. Weaker connections to research in spite of membership in CLIOA and CLA organisations, missing international cooperation.
Involvement of facilitator	Preferably no facilitators, well worked-out direct contact with library clients

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Active presentations, education, consultations & workshops for own library clients and other local libraries in the country.
Tools supporting the dissemination activities for example of the results	Dissemination activities strongly supported as shown above, preferably through roof organisations CLIOA and CLA. The actual dissemination process is restricted by available funds, in principle applied to the capital city area.
OTHER INFORMATION	
Market sectors represented in the identified BP	Library services
How to join the network/community/event/… (i.e. enrolment mechanism)	Membership in both: roof organisations CLIOA and CLA membership and library clients registrations
(for events) Which are the frequency and the time structure of the event?	Planned a regular meeting, typically: senior „Mondays", regular courses (e.g. computer, educational, the 60+ write Wikipedia), city tours

4.3. Hungary

4.3.1. Demola Project

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	National level
Level of digital innovation of the involved companies	High
Dimension of the involved companies	Start-up to multi
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	Students, researchers, entrepreneurs, company representatives and professionals, customers like elderly people
Communication protocol for engagement	NA
Involvement of facilitator	Fully facilitated process

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Presentations, consultations, workshop, rapid prototyping.
Tools supporting the dissemination activities for example of the results	Validation, implementation.
OTHER INFORMATION	
Market sectors represented in the identified BP	All
How to join the network/community/event/… (i.e. enrolment mechanism)	Challenge design workshop or as a challenge/problem owner can start a case.
(for events) Which are the frequency and the time structure of the event?	2 weeks

4.3.2. MatchPoint

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	Regional
Level of digital innovation of the involved companies	High
Dimension of the involved companies	All industry
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	Students, entrepreneurs, investors, universities,
Communication protocol for engagement	Social media
Involvement of facilitator	Medium

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Communication based events
Tools supporting the dissemination activities for example of the results	Early stage projects to communicate among the community
OTHER INFORMATION	
Market sectors represented in the identified BP	All
How to join the network/community/event/… (i.e. enrolment mechanism)	Participation on the events
(for events) Which are the frequency and the time structure of the event?	2-3 monthly

4.4. Italy

4.4.1. Silver Economy Forum

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	From Regional to National
Level of digital innovation of the involved companies	Medium
Dimension of the involved companies	Medium
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	Mainly institutional and research centres.
Communication protocol for engagement	Just news and press
Involvement of facilitator	Yes, is mainly led by facilitator at local and Regional level with involvement of facilitators from other regions

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	No
Tools supporting the dissemination activities for example of the results	No, just social network
OTHER INFORMATION	
Market sectors represented in the identified BP	Silver Economy and Active and Healthy Ageing
How to join the network/community/event/… (i.e. enrolment mechanism)	Website subscription https://www.silvereconomyforum.it/iscriviti/
(for events) Which are the frequency and the time structure of the event?	3 days every year

4.4.2. Digital Tree

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	Regional level
Level of digital innovation of the involved companies	High
Dimension of the involved companies	Start-up
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	1 research centre 3 corporation
Communication protocol for engagement	Call for candidates
Involvement of facilitator	None

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	No
Tools supporting the dissemination activities for example of the results	No
OTHER INFORMATION	
Market sectors represented in the identified BP	ICT solutions.
How to join the network/community/event/… (i.e. enrolment mechanism)	Only for start-ups, evaluation of a candidature
(for events) Which are the frequency and the time structure of the event?	n/a

4.5. Poland

4.5.1. Smart-up Lab

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	Rather a local level
Level of digital innovation of the involved companies	All levels of innovation
Dimension of the involved companies	Differential
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	Education, older adults, business, research centres
Communication protocol for engagement	Direct communication and online
Involvement of facilitator	Facilitator involved all the time (partly as a scientific unit)

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Direct communication and online
Tools supporting the dissemination activities for example of the results	Presentations, meetings, design-thinking workshops
OTHER INFORMATION	
Market sectors represented in the identified BP	Med-tech (large variety of participating companies)
How to join the network/community/event/… (i.e. enrolment mechanism)	Directly via the online form or personal contact
(for events) Which are the frequency and the time structure of the event?	Every year and implementation for 2 weeks

4.5.2. Models of mass customization - internet forums and crowd funding platforms

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	National level
Level of digital innovation of the involved companies	All levels of innovation
Dimension of the involved companies	Differential
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	It's hard to indicate a number and type of representative
Communication protocol for engagement	Online
Involvement of facilitator	Facilitator involved all the time

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Online communication
Tools supporting the dissemination activities for example of the results	Presentations, consultations
OTHER INFORMATION	
Market sectors represented in the identified BP	Med-tech (large variety of participating companies)
How to join the network/community/event/… (i.e. enrolment mechanism)	Online
(for events) Which are the frequency and the time structure of the event?	n/a

4.5.3. Business incubator - Medical University of Lodz

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	Local level
Level of digital innovation of the involved companies	All levels of innovation
Dimension of the involved companies	Differential
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	n/a
Communication protocol for engagement	Online, meetings, consultations, workshops
Involvement of facilitator	Facilitator involved all the time (the organizer is the facilitator – business incubator)

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Online, meeting, consultations, presentations
Tools supporting the dissemination activities for example of the results	Presentations, consultations, workshop
OTHER INFORMATION	
Market sectors represented in the identified BP	Med-tech companies
How to join the network/community/event/… (i.e. enrolment mechanism)	By completing the application at the organizer website and direct contact
(for events) Which are the frequency and the time structure of the event?	n/a

4.6. Slovakia

4.6.1. Creative Industry Košice Programme - CREATIVITY FOR BUSINESS

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	Regional
Level of digital innovation of the involved companies	High
Dimension of the involved companies	Not precisely defined within the call
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	University Hospital of Louis Pasteur patients
Communication protocol for engagement	n/a
Involvement of facilitator	no

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Presentations, consultations, workshops
Tools supporting the dissemination activities for example of the results	Implementation into business operations (in the hospital)
OTHER INFORMATION	
Market sectors represented in the identified BP	Health care/IT
How to join the network/community/event/… (i.e. enrolment mechanism)	n/a
(for events) Which are the frequency and the time structure of the event?	n/a

4.6.2. Innovation Day by T-Systems

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	Regional
Level of digital innovation of the involved companies	High
Dimension of the involved companies	Start-ups (small)
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	Mentors from various fields – mainly finance, project management, IT, design
Communication protocol for engagement	
Involvement of facilitator	no

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Consultations
Tools supporting the dissemination activities for example of the results	n/a
OTHER INFORMATION	
Market sectors represented in the identified BP	Health care/IT
How to join the network/community/event/… (i.e. enrolment mechanism)	Open call
(for events) Which are the frequency and the time structure of the event?	n/a

4.6.3. Business Acceleration Program and Incubator of the Technical University of Košice

GENERAL CARACTERISTICS	
Geographical relevance (i.e. at local level, regional level or national level)	Regional
Level of digital innovation of the involved companies	High
Dimension of the involved companies	Start-ups (small)
Number and type of other representative of the quadruple helix elements (i.e. education, older adult's representative, research centres)	Mentors from various fields – mainly finance, project management, IT, design University staff
Communication protocol for engagement	
Involvement of facilitator	Yes – business incubator staff

USED TOOL(s)	
Tools supporting the co-creation process involved stakeholder	Consultation
Tools supporting the dissemination activities for example of the results	
OTHER INFORMATION	
Market sectors represented in the identified BP	Various fields
How to join the network/community/event/… (i.e. enrolment mechanism)	Open call to present business idea
(for events) Which are the frequency and the time structure of the event?	Already 10 open calls to join the business incubator

5. REFERENCES

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D1.3.2 ANNEX 1

BUSINESS ENGAGEMENT - QUESTIONNAIRE

1. GENERAL INTERVIEWEE IDENTIFICATION

Dimension of the business	☐Mirco/Small, ☐Medium, ☐Large
Innovation and co-creation best practises involvement	☐Involved, ☐Not Involved
Role of the interviewee in the company	☐CEO ☐Researcher ☐Communication Other: _____

NOTE FOR THE INTERVIEWER	The general interviewee identification must be compiled by you, before the beginning of the interview to identify the appropriate questionnaire.

NOTE FOR THE INTERVIEWER:	Some examples, to be proposed for explanation or clarification are reported in grey colour. When required you can provide more.

NOTE FOR THE INTERVIEWER	The questions marked with a ⇨ as to be considered mandatory

2. QUESTIONNAIRE FOR BUSINESS THAT ARE INVOLVED IN CO-CREATION OF INNOVATIVE SOLUTION FOR 60+

BUSINESS INFORMATION

BI-1. Could you specify the geographical market coverage of your company?

☐ Local	☐ Regional	☐ National	☐ International	☐ Not (jet) defined

BI-2. Which is your market area?

BI-3. Could you describe your product(s)/service(s)/…(s) for people 60+?

BI-4. Could you provide your personal opinion about innovation and digital solutions for people 60+ in your market sector?

BI-5. Could you explain your personal motivation in pursue innovation?

BUSINESS ENGAGEMENT

BE-1. Do you mainly use personal contacts to set-up collaboration on new ideas, prototype, ...?
e.g. such as with end-user representatives for requirement analysis

☐YES	☐NO

a. (if no to BE-1) Could you explain which tool/ method are you using to this purpose?
e.g. official facilitator, network, external expert/consultant,…

BE-2. How your company has been involved in co-creating an innovative solution for 60+?

BE-3. How you keep up to date about co-creation opportunities, as well as user requirements or market needs?

BE-4. Do you like the method you are using for being informed about co-creation, market needs and user requirements? i.e. The method mentioned in question BE-3

☐YES	☐NO

a. **(if no to BE-4) Why you don't like it?**

b. **(if no to BE-4) Have you any preferred alternatives?**

BE-5. Do you know any entity/facilitator or formal channel of communication to /to be engaged by other realities (such as end-user representative, research centres and so on) for co-creating innovative solution for 60+?

☐YES	☐NO

a. **(if yes to BE-5) Please specify them.**

NETWORKING

N-1. Is your company involved in a research network?

☐YES	☐NO

N-2. Why you are (not) involved? (ask the reason for both the answers)

N-3. Is your company involved in a thematic network (related to your market)?

☐YES	☐NO

N-4. Why you are (not) involved? (ask reason for both the answers)

N-5. Do you think it exist a specific network supporting the co-creation in innovation?

☐YES	☐NO

a. (if yes to N-5) Do you know it?

☐YES	☐NO

i. (if yes to a) Do you think it works in supporting co-creation?

☐YES	☐NO

1. (if no to i) Why do you think it is not useful?

b. **(if no to n-5) Do you think a network like this may help your business?**

☐YES	☐NO

i. **(if yes to b) In your opinion, how it can help?**

ii. **(if no to b) Why not?**

PERSONAL CONTACT

PC-1. Do you have any continuous collaboration with researchers, such us an university research team, a professor or a lab?

☐YES	☐NO

a. **(if yes to PC-1) How do you establish this collaboration?**
Such as after participating to a conference, thanks to a personal knowing, through an employee, after hosting a student....

b. **(if yes to PC-1) Do you think this collaboration satisfy both of you or mainly one,...**

PC-2. Do you have any personal collaboration with end users representatives?

☐YES	☐NO

a. **(if yes to PC-2) How do you establish this collaboration?**

SUPPORTING TOOLS

ST-1. Did you experience a tool supporting in networking for innovation/co-creation/matching?

☐YES	☐NO

if yes to ST-1 propose the question a.,b. and c.

a. **Which one?**

b. **How did you hear about it?**

c. **Was it useful?**

☐YES	☐NO

ST-2. Do you think, a tool designed on your need, can improve your possibility in deliver innovative solutions for 60+?

☐YES	☐NO

a. **(if no to ST-2) Why not?**

b. **(if yes to ST-2) How it can help, how you imagine it?**

ST-3. In your perspective, could you identify at least 3 barrier that prevent/make difficult to approach co-creation in your market sector?

ST-4. Could you describe 3 benefits in co-create innovative solutions for 60+ with respect to create/design and produce everything in house?

ST-5. Which are the lessons learned by your company?

OPEN PART (to be tailored to the person)

Could you envisage your future steps in co-creating digital innovative solution for 60+

3. QUESTIONNAIRE FOR BUSINESS THAT ARE NOT INVOLVED IN CO-CREATION OF INNOVATIVE SOLUTION FOR 60+

BUSINESS INFORMATION

BI2-1. Could you specify the geographical market coverage of your company?

☐ Local	☐ Regional	☐ National	☐ International	☐ Not (jet) defined

BI2-2. Which is your market area?

BI2-3. Could you describe your product(s)/service(s)/…(s) for people 60+?

BI2-4. Could you provide your personal opinion about innovation and digital solutions for people 60+ in your market sector?

BI2-5. Could you explain the main barriers to pursue innovation?

BUSINESS ENGAGEMENT

BE2-1. Do you have any contacts to set-up collaboration on new ideas, prototype, ...?
e.g. such as with end-user representatives for requirement analysis

☐YES	☐NO

a. **(if no to BE2-1) Is it unnecessary for your business?**

☐YES	☐NO

i. **(if yes to a) Why do you think it is unnecessary?**

b. **(if yes to BE2-1) Are you satisfied with this method of engagement?**

☐YES	☐NO

i. (for both the answers) **Could you explain your answer?**

BE2-2. Did you aware about co-creation opportunities in your sector?

☐YES	☐NO

a. **(if yes to BE2-1) Which is you opinion about these opportunities?**

b. **(if yes to BE2-2) Do you experience any barrier to be engaged in these opportunities?**

BE2-3. Do you know any entity/facilitator or formal channel of communication to /to be engaged by other realities (such as end-user representative, research centres and so on) for co-creating innovative solution for 60+?

☐YES	☐NO

NETWORKING

N2-1. Is your company involved in a research network?

☐YES	☐NO

N2-2. Why you are (not) involved? (ask the reason for both the answers)

N2-3. Is your company involved in a thematic network (related to your market)?

☐YES	☐NO

N2-4. Why you are (not) involved? (ask reason for both the answers)

PERSONAL CONTACT

PC2-1. Do you have any continuos collaboration with end-user representatives?

☐YES	☐NO

a. **(if yes to PC-1) How do you establish this collaboration?**
Such as thanks to a personal knowing, through an employee....

b. **(if no to PC-1) Do you think that this type of collaboration could be useful for your business**

☐YES	☐NO

c. **(if no to PC-1) Do you experience difficulties in contacting end-users?**

☐YES	☐NO

i. **Could you explain your answer?**

SUPPORTING TOOLS

ST2-1. Do you think, a tool designed on your need, can improve your possibility in deliver innovative solutions for 60+?

☐YES	☐NO

c. **(if no to ST2-1) Why not?**

d. **(if yes to ST-1) How it can help?**

ST2-2. In your perspective, could you identify at least 3 barrier that prevent/make difficult to approach co-creation in your market sector?

ST2-3. Could you describe 3 beneficts in co-create innovative solutions for 60+ with respect to create/design and produce everithing in house?

ST2-4. Which are the lesson learned by your company?

OPEN PART (to be tailored to the person)

How you can describe your vision for creating innovative solutions for older adults care?