Interreg BSR OSIRIS

PROJECT PERIOD 1

GA 2.2 Entrepreneurial Discovery Process for market driven prioritization of investment in silver economy

MAPPING ANALYSIS REPORT

GA 2.1 Lead Partner: Lithuanian Innovation Centre
Lithuania

CONTENT

1. INTRODUCTION

Objectives

This Mapping Analysis Report (MAR) aims to enhance silver economy growth opportunities in the Baltic Sea Region by improving the capacity of innovation actors to apply smart specialization approaches for tackling the challenge of the region's ageing society. It seeks to boost market uptake and scaling of user-driven technology innovations that accommodate age-specific needs and preferences, and demonstrate a significant impact on the quality of life of the ageing population, including age-friendly living environment, health, safety, and leisure.

MAR outlines the main findings of Entrepreneurial Discovery process:

1) MAR describes thematic focus groups results in project regions and describe the assets, capabilities and competences identified, also points out the silver economy knowledge-intensive areas for potential growth, in close correlation with RIS3 priorities selected to be tackled in each project region and country.
2) Second part of MAR describes the assessment, conclusions for the identified assets, competencies and capabilities for particular subsectors of the tackled RIS 3 priorities.
3) Third part of MAR explains the options and recommendations that have been explored under co-creation workshops as well as the obtained baseline for improving innovation actors' capacity to implement smart specialization projects.

Mapping Analysis report's findings are combined and integrated with market studies data & conclusions.

WORK PLAN

Summary of the GA 2.2. Methodology

EDP process was organized using two co-creation methods in all regions: co-creation workshops and focus group meetings. The objective of the focus group meeting - identification of silver economy knowledge-intensive areas for potential growth, in close correlation with RIS3 priorities.

Focus groups were be based on particular sub-sectors of the tackled RIS3 priorities and focused on the identification of assets, capabilities and competences. 2 focus group meetings were foreseen in each region inviting participants from Experts from the specific RIS3 priority area:

- members of the National EDP process group, who were involved in creating and developing National RIS3 programme or took part in EDP evaluation process;
- representatives of business sector acting in the specific RIS3 priority area, who know the status, potential and challenges of the sector;
- representatives of science institutions working the specific RIS3 priority area, who know the status, potential of research, etc.;
- silver economy representatives, who are aware of seniors' needs and challenges;
- representatives from the HE institutions (working in silver economy topics);
- social services and care providers;
- representatives from silver economy associations;
- experts of political agenda, involved in silver economy issues at Parliament, Governance, etc.;
- representatives of municipalities who are dealing with silver economy issues at municipal level;
- seniors.

The objective of the co-creation workshop – to explore options to open new niches, to create new markets, to exploit new opportunities generated by silver economy in close correlation with identified silver economy knowledge-intensive areas for potential growth.

2. RESULTS – Mapping analysis report

2.1 Finland

The regional development of the silver economy via technological solutions faces challenges. On the one hand, market players see a considerable number of factors promoting growth in Southern Finland. On the other hand, seniors strongly perceive the coming technological potential through modern devices (smartphone, computer, tablet) and they have little desire to experiment with anything new. The expansiveness of companies on the market is also quite moderate. Hence, while the target market will grow in the near future along with the target group, this growth will probably not lead to a demand-led growth story for the region's silver economy. In other words, the service providers have to create demand despite the users' lack of skill and reluctant attitude and market players wished for a considerable increase in services that guide people in the use of digital services and equipment As such, the investment risk of individual actors can easily become an unhealthy one, which is why the region needs ecosystem solutions in order to both understand and serve the target group.

Expectations of silver economy services and product manufacturers are directed towards the growth of services in the social services and health care sector - having an independent life for as long as possible, maintaining and developing vitality and functional ability, overall services and utilising technology. These are at the top of identified needs of elders in Finland.

Help for maintaining an independent life is sought from both robots and various smart devices: a robotic bus or car could help an individual go to the store and do other errands, a robot could also help with various household chores and maintaining one's physical condition as well as rehabilitation. However, technology should not be used in such a way that the person's own ability to function becomes secondary, f. e, a home care robot should support the senior's independence and participation in activities. Stimulation and mental well-being should be considered when developing smart homes. It is considered important that knowledge of different services and especially technologies should be increased as robots and machines might be considered frightening. Learning about them in familiar places, e.g. libraries, contributes to adopting the technology. Sharing success stories also is part of raising knowledge and approval. Last, but not least important is taking care of basic needs, namely a healthy diet, daily hygiene and exercise. Technology should be utilised for both care and treatment as well as a decent everyday life and managing day-to-day matters.

It could be stated, that the solutions already mostly exist for the identified challenges. What is needed is ability and new skills – for example new investment abilities in order for the solutions to be utilized. Besides, systemic and structural development is also required, f. e. initiating pilots and experiments, national approval (a successful pilot – approval everywhere) as well as knowledge regarding the projects and good practices in different parts of the country is a requirement for the silver economy and the well-being sector to be financially profitable for companies and other organizations in the business. Among other things, the social well-being of ageing people, the increasing numbers of people living alone and the risk of social exclusion were brought up. Loneliness was seen as a serious phenomenon that had to be combated in different ways. It is strongly emphasized that senior services and the care sector should be kept apart. There is a demand for the third sector and its volunteer workers in many places to replace regular personnel, but that the problem is the insufficient number of volunteers for each sector. Many volunteers may also have trouble coping on account of the heavy pressure they are subjected to.

It is stated that the use of technology should continue to be voluntary despite the fact that the use of various mobile applications has become increasingly common and future generations already have plenty of technological know-how. Many seniors want to live in their homes for a long time, at some point almost everyone will hit their limit when it comes to living at home. Life at home, alone, is considered unsafe or socially isolating. When that limit is reached, the next dwelling is usually a sheltered home.

Before this occurs, new solutions regarding housing are often encountered already during the retirement phase. People want to move from a laborious or excessively large dwelling to an easier and more unobstructed form of abode. However, such a transitional phase involves much agonising; it is hard to leave one's beloved home, and there does not seem to be a sufficient number of alternative forms of dwelling.

Robotics and new technology in general is a source of debate. Many seniors have strong prejudices about new technology. Such concerns could be alleviated by e.g. allowing seniors to try out the technology in controlled conditions in health clinics, libraries or other suitable facilities.

Is it necessary to rebrand the digital services towards seniors in particular. There should be more and clearer communication regarding digital services in the future, as well as more assistance. The responsibility for utilising the data accured from the needs and service use of and that better results would be achieved if the public and

private sectors were to cooperate in this matter. In order to find solutions for the challenges identified, such ideas were raised:

- To promote, multigenerational communal living where e.g. seniors take care of schoolchildren's snacks;
- to establish a housing cooperative's senior social media channel, with its own digital janitor;
- to ensure a quality of life insurance, which would guarantee funds to improve the quality of life of people living in sheltered homes

2.2 Latvia

Two Latvian RIS 3 priorities are emphasized: "Advanced ICT" is directed towards innovative knowledge management, system modelling and software development methods and tools; innovative sectoral ICT hardware (hardware) and software (software) applications; cyber-physics systems, language technologies and the semantic web; bulk data and knowledge infrastructure; information security and quantum computers; computer system testing methods.

Smart Specialization priority area "Biomedicine, medical technologies and biotechnology" is directed towards development chemical and biotechnological methods and products for the production of pharmaceutical and bioactive substances, development and research of new and existing human and veterinary medicinal products, molecular and individualized treatment and diagnostic methods and cell technology, functional foods, therapeutic cosmetics and bioactive natural substances. Neither the state nor the private sector has yet ascribed an important role to the senior economy. It can now be described as rather unimportant to both sectors; it is neither targeted nor developed. When assessing which sectors, either public or private, will contribute to the development of the senior economy over the next twenty years, it was opinion expressed that it will be primarily the private sector. In the next twenty years, moderate updating of the senior economy is expected, mainly in the private sector. It is not forecasted that the senior economy will be ascribed an extremely important role and that it will be targeted and developed. The results outline a number of barriers in the smart specialisation approach to improving independent and healthy lifestyle of seniors, which should be addressed in Latvia. The major barriers for the development of silver economy identified are technology-related barriers – lack of healthcare systems, lack of interoperability of devices, and low digital skills of seniors, and legal aspects – deficiencies in policies and legislation. Firstly, it is low digital skills of seniors. The most valued technologies and services among seniors in Latvia include mobile devices for monitoring the vitally important indicators, the increase of

digital/computer skills, as well as accessibility of partially or fully autonomous or self-driving taxis and public transport. The improvement of these skills is recognized as part of business and development activities. Secondly, if jobs and working conditions matching the age and health condition of the seniors were available on the labour market, a significant proportion of seniors would be willing to stay in the labour market for longer than their retirement age. Although organisations acknowledge that the development of the senior economy provides an opportunity for seniors to both create new products and services and export them to new markets, still, overall, the priority of the senior economy is not high and a slight increase in its importance is expected over the next twenty years. Another group of obstacles includes applications, device design and management functions that are inappropriate for seniors, low digital skills among the service providers (carers, medical staff) and incomplete or unfinished technical solutions. Results shows that the current development of digital services for seniors in Latvia is mainly hampered by the low purchasing power of seniors and the lack of state funding.

When assessing the development of information and communication technology services in Latvia in order to promote the senior economy, it is clear that the education of seniors in usage of ICT and mastering the required skills is the main requirement and has a potential to grow.
Other high-priority development areas are integrated technologies or wearable devices to collect health and wellbeing information, age-friendly environment for seniors, including smart house technologies in both care institutions and at home, personalised medical and nutrition recommendation applications based on the individual data, the development of robots for promotion of a sustainable independent life and mobile education centres for educating seniors in ICT use and remote work.

The main business activities to be developed are innovative knowledge management, system modelling, software development methods and tools and Innovative sectoral ICT hardware/software applications. The next activities, which are already part of business development, include development and research of new and existing medicines, testing methods for computer systems, infrastructure for big data and knowledge, and information security and/or quantum computers.

Compared to the current plan of business and development activities in the fields of biomedical, medical technology, biotechnology services and information and communication technology services, more growth is

expected in the development of innovative sectoral ICT hardware or software applications in the context of the senior economy and introduction of information security or quantum computers.

Regarding the development and deployment of specific services/devices in the polled organisations, it is evident that the development of digital skills among seniors is already on their agenda. Moreover, it will continue increasing over the next twenty years. A number of organisations are already working on a range of other services and devices, predominantly, age friendly environments for seniors, integrated technologies, wearable devices, integrated care services and improved connectivity, age-friendly environmental institutions and cross-border open data platforms. The introduction of private or public self-driving transport is partly or entirely on their agenda. The union of municipalities is still in the process of improving digital literacy, developing mobile education centres, and developing mobile devices and robotization. The development of personalised medical and nutrition recommendation applications and digital cognitive training games are topical issues for the association of inventors.

The most dynamic work will be done on active improvement of the digital skills of the seniors, as well as on the integrated technologies, wearable devices, integrated care services and improved connectivity, increasing the digital skills of carers, personalised medical and nutrition recommendation applications, digital cognitive training games and mobile education centres – these directions will be increasingly more actively introduced in business development plans.

One of the areas this the biggest potential to grow is the development and implementation of mobile devices for monitoring vitally important indicators, currently demonstrates a lower level of activity and, although the plans to introduce them over the twenty years have the uprising tendency, there is a certain caution regarding the possibilities to develop them compared to others services/devices included in the research. At the same time, the development of mobile devices is ongoing and, as part of business activities over the next twenty years, will be on the agenda of the union of municipalities, pharmaceutical and information and communication technology organisations.

Other high-priority development areas identified are integrated technologies or wearable devices to collect health and wellbeing information, are an age-friendly environment for seniors, including smart house technologies in both care institutions and at home, personalised medical and nutrition recommendation

applications based on the individual data, the development of robots for promotion of a sustainable independent life and mobile education centres for educating seniors in ICT use and remote work.
Currently, the main business activities to be developed are innovative knowledge management, system modelling, software development methods and tools and Innovative sectoral ICT hardware/software applications. The next activities, which are already part of business development, include development and research of new and existing medicines, testing methods for computer systems, infrastructure for big data and knowledge, and information security and/or quantum computers (identified by 4 experts from organisations).

The majority of Latvian seniors have got very limited ability to buy modern smart specialisation medical products and services. State and municipal health and social care is limited with very basic services. In addition, health indicators in Latvia are very poor in comparison with other EU countries: Latvia has got one of the lowest healthy life-time in the EU - 55.3 for women and 51.5 for men in 2014. In Malta, Sweden and Norway, the indicator for healthy life-time is over seventy years (2016). This means that it is very important to make emphasis in Latvia on primary health care as well as on active health promotion which depends both from an individual and environment. Health promotion (as defined by World Health Organization) is a process that allows people to improve and control their health. It is a process that encourages individuals and society as a whole to increase control over health determinants, thereby improving health. It is a comprehensive concept that promotes health-promoting lifestyles and positively influences other social, economic, environmental and individual factors. A broad capability set for life-long learning is offered through different projects and agencies in Latvia, f.e. National Employment Agency supports training for unemployed, State Education Development Agency is coordinating the project “Improvement of professional competence of employed persons”. The aim of the project is to improve the professional competence of the employed persons in order to prevent the mismatch of the labor force qualification with the demand of the labor market, to promote the competitiveness of the employees and increase the productivity of work. Priority is given to employees in social risk groups, including those aged 50 and over. But only some of them are adapted to the specific needs of seniors taking into account very low healthy life-time. As mentioned in “Labour market adaptation” section job retraining courses should be divided according to age groups. At the moment in many cases it is difficult for seniors to study together with much younger trainees. The pace at which young people are able to acquire new knowledge often seems to be too fast for seniors. It relates to a large extent to digital skills improvement, but also to any other sphere of training.

To support active aging informal education is also very important. The most adequate offer for seniors' needs and expectations as well as the potential for growth can be found in the non-governmental sector (NGO) - Senior Associations.

The main barriers to the introduction of digital services for seniors in Latvia are low purchasing power of seniors and low level of digital skills. It has been recognised by 83% and 80% of the polled seniors respectively. Other, less frequently mentioned barriers are lack of public funding and applications, device design, management functions that are inappropriate for seniors. The lack of state funding as a barrier that currently prevents the development of digital services for seniors in Latvia has been particularly often mentioned by seniors in the age group 55-64 (78%) and when the digital skills of seniors are at the level of the regular or independent user (71%). In other age groups (over 65 years) covered by the senior polling, there are no significant differences in the replies provided by the respondents.
The improvement of digital skills of seniors is recognized as part of business and development activities. Latvia should work on the introduction of mobile devices for monitoring the vitally important indicators, digital reports, the development of cognitive training games and the improved compatibility solutions for integrated care services, applications that connect seniors with carers and social services providers.

According to the data, among a variety of technological solutions and devices or services, the use of mobile devices for monitoring vitally important indicators, the increase of digital and computer skills for seniors and partially or fully autonomous or self-driving taxis and public transport may best improve the duration of an independent, healthy and active lifestyle.

To develop and research of new and existing medicines, molecular treatment, diagnostic methods and the development of functional food products, therapeutic cosmetics and biologically active natural substances have been most recommended.

When assessing the development of information and communication technology services in Latvia over the twenty years, in order to promote the senior economy, it is clear that the education of seniors in usage of ICT and mastering the required skills is the main requirement.

Regarding the development and deployment of specific services/devices in the polled organisations, it is evident that the development of digital skills among seniors is already on their agenda. Moreover, it will continue increasing over the next twenty years. A number of organisations are already working on a range of other services and devices, predominantly, age-friendly environments for seniors, integrated technologies, wearable devices, integrated care services and improved connectivity, age-friendly environmental institutions and cross-border open data platforms. The representatives of start-ups, the union of municipalities and the association of inventors point out that the introduction of private or public self-driving transport is partly or entirely on their agenda. The union of municipalities is still in the process of improving digital literacy, developing mobile education centres, and developing mobile devices and robotization. In addition to the above, the development of personalised medical and nutrition recommendation applications and digital cognitive training games are topical issues for the association of inventors.

Looking at the period of twenty years, the most dynamic work will be done on active improvement of the digital skills of the seniors, as well as on the integrated technologies, wearable devices, integrated care services and improved connectivity, increasing the digital skills of carers, personalised medical and nutrition recommendation applications, digital cognitive training games and mobile education centres – these directions will be increasingly more actively introduced in business development plans.

It must be emphasised that one of the areas that is among the most demanded in the view of seniors and also recognised among experts from the organisations as a priority for Latvia – the development and implementation of mobile devices for monitoring vitally important indicators, currently demonstrates a lower level of activity and, although the plans to introduce them over the twenty years have the uprising tendency, there is a certain caution regarding the possibilities to develop them compared to others services/devices included in the research. At the same time, the development of mobile devices is ongoing and, as part of business activities over the next twenty years, will be on the agenda of the union of municipalities, pharmaceutical and information and communication technology organisations

2.3 Lithuania

Healthcare challenges of an aging society in Lithuania are as follows: the need for balanced development of prevention, treatment and long-term care and nursing services.

Lithuania's Smart Specialization priority area "Inclusive and Creative Society" is directed towards promotion of R&D activities and innovation. Its main aim is to create favourable conditions for the integration of business, science and culture, development of talents and their creative potential, enable more efficient use of the resources of creative and cultural industries as well as encourage non-technological innovations. In turn, this will contribute to one of the key aspects of progress – the creativity and providing the basis for the development of creative, educated and united society. At the same time, this priority area will have positive impact for the economy by encouraging knowledge intensive and high added value economic activities.

Private business and non-governmental organizations participate actively in the development and delivery of proposals for essentially new or improved human resources and organizational learning products, and the development of provision of services. Especially great potential is accumulated in such sectors as information and communication technologies (ICT), consulting services (CS), creative industries (CI) and other sectors receptive to knowledge and changes in technologies. A large number of researchers are working in educational sector in Lithuania. In addition to this, technology-based learning is growing and the number of researchers conducting research in this field is increasing. In general, situation of human capital in this primacy is sufficient, however it could be improved by encouraging the internationalization and addressing the attractiveness of the sector. According to reports, Lithuanian higher education institutions produce high quality scientific works, however only at national level. Generally speaking, social sciences in Lithuania as well as other countries mostly respond to the domestic needs, while researchers, including researchers in educational sciences, do not submit their research work to international journals or conferences. Despite these drawbacks, various analysis indicates that higher education institutions, specifically Vytautas Magnus University (VMU), Vilnius University (VU), M. Riomeris University (MRU) and Kaunas University of Technology (KUT) have the highest capacity to carry out international projects. Currently, there are no critical mass of start-ups or offshore companies in the field of

education technologies. However, there are some single successful cases, suggesting that the ability to create such products and services is rising.

Lithuania‘s Smart Specialization priority axis “Health Technologies and Biotechnology” is directed towards promotion of RDI activities, which would create conditions for reduction of expenses associated with health care, purchase of medicines, treatment and nursing of elderly patients that occur due to rising life expectancy and activities which would increase healthy lifespan, decrease the risk of pandemics and prevent geographical spread of infectious diseases, would seek to reduce systemic pollution of the environment with toxic substances, also lessen the influence of globalization and rising competition for highly qualified medical professionals.

The main economic entities that implement objectives of this priority are public and private health care establishments. Recently, major medical equipment manufacturers, such as Hollister Incorporated (50 MEUR investments), Intersurgical (around 100 MEUR, 2287 employees), Intermedix (20 MEUR, 688 employees), and other have come to Lithuania. Lithuanian high-tech biomedical devices companies, such as Telemed (that exports medical scanners to 75 countries), Baltic Orthoservice (turnover 3-5 MEUR, 133 employees), Viltechmed (the division of Moog Medical Devices; 5-10 MEUR), Vittamed (Lithuanian-US company) as well as electronic medical devices manufacturing and related IT companies, such as Kitron (30-40 MEUR, 440 employees), Elinvision, “Algoritmų sistemos”, UAB Neurotechnology, UAB Medical technologies, and other are also accelerating their activities. The main precondition for the competitiveness of production of these medical technology companies supporting their development in Lithuania and the demand for products are innovative solutions oriented towards new medical equipment trends - multimodality, intelligent sensors, integrated electronic systems, artificial intelligence, knowledge engineering elements, microelectromechanical and mechatronic components in products that become "smart", adaptive, capable of responding to a situation and recording valuable data. Therefore, the experience of Lithuanian R&D institutions in the development of high value-added ultrasonic diagnostic and monitoring devices (including devices patented abroad), customized smart implants based on additive manufacturing technologies, wearable wireless health monitoring sensors, methods and algorithms for processing medical signals and images, data analysis systems and algorithms will substantially enhance the ability of Lithuanian business entities to occupy many international market niches and to keep pace with rapidly growing competition. The potential of this priority axis is determined by the changing health care paradigm, which focuses on prevention, prediction, personalization, empowerment of patients, and a wide use of information

technologies opening new challenges for medical engineering. The potential is also largely influenced by the growing demand for health technologies and equipment due to the aging of the population and the rising costs of health care as well as the modern society's need for health promotion and personal health monitoring equipment, processing of data acquired with this equipment and its applications for prophylaxis and lifestyle correction. There is also a growing need for personalized medical engineering solutions - smart 3D implants delivered together with implantation techniques as well as personalized monitoring with wireless sensors for risk and threat assessment. With the increasing use of big data, the issues of data accuracy, reliability, comparability, automated capturing and availability become more relevant, however, they can be solved with medical engineering approaches. The potential is strengthened by the development of interdisciplinary medical technology clusters, centres of excellence focused on topical issues and innovation activities.

The greatest potential for the development of the silver economy is in the field of interactive, experiential educational systems and technologies for new-generation thinking models, educational strategies, technologies and higher education, vocational training, general education and non-formal education. Most active market participants in the field of educational technologies are representatives of gaming industry, which creates educational games and virtual education platforms. This market niche is not fully developed and quite fragmentated.

In the field of educational technologies and processes development the potential business niches are likely to be related to the development of senior competences. An aging society and an increase in the employment rate of older people of working age are one of the most pressing problems in Lithuania. At the same time, it is necessary to create conditions for lifelong learning, adapt workplaces for all age groups, and develop employment opportunities for older workers. It is also of paramount importance to develop the general competences of older people with a view to their return or survival in the job market and to involve them actively in voluntary activities. A potential business niche would be the creation and implementation of a personalized, age-oriented competency assessment and improvement system, which would include strengthening motivation to act, learn and work, personal needs assessment, individual motivation, volunteering, volunteering support.

The greatest potential for developing silver economy in the priority area "Health and Biotechnologies" is the genomic and post-genomic technologies. In this field Lithuania has already managed to create a large business

and to attract internationally significant international investments. Lithuanian science institutions potential in the field of molecular technologies is very high. Lithuanian science and study institutions and business enterprises are collaborating through participation in activities of various Clusters such as the Cluster of Stem Cells and Regenerative Medicine Innovations, Complex Solutions for Health Promotion Cluster, Lithuanian Biotechnology Association, Innovative Medicine Technologies and Biopharmacy Association. Possible cooperation and synergy with Vilnius University Life Sciences Centre and the National Centre for Physical and Technological Sciences, linking laser technologies and bio-label technologies.

The priority area related to advanced applied technologies for personal and public health, is the greatest potential for developing silver economy is public health technology. There are a number of possibilities for cooperation and synergy between biotechnology, biopharmacy and bioinformatics companies. Lithuanian telecommunication, informatics, as well as bioinformatics technology companies can make a significant contribution to creating information systems for medical data storage and processing, transmission and archiving of large amounts of visual and textual information.

Highest potential for development of silver economy in the advanced medical engineering for early diagnostics and treatment priority area is the technology of disease modelling, medical informatics and knowledge engineering; biomedical engineering, electronics and mechatronics and biomechanics; laser and ultrasonic diagnostic and therapy technologies; medical materials, rehabilitation and nanomedicine technologies. High-power high-speed laser technologies, which are widely developed in both the private manufacturing sector and public sector science institutions, are widely used in modern molecular, cell and tissue imaging, in various diagnostic and therapeutic procedures.

Currently Lithuania do not fully utilize the potential of social sciences as well as arts and humanities (economics, management, sociology, political science etc.), which could be used to create technological processes or organizational or social innovations. On the other hand, four higher education institutions - Vilnius Gediminas Technical University (VGTU), Vilnius Academy of Arts (VAA), Lithuanian Academy of Music and Theatre (LAMT), Vytautas Magnus University (VMU) - have well developed cultural and creative industries study programs and prepare high quality specialists. Level of science internalization in cultural and creative industries shows growing potential. New evaluation criteria for the evaluation of R&D and cultural studies with the requirements to submit scientific papers to international journals or conferences were introduced in 2017. Rising numbers of

international publications can be observed since then in the fields of humanities, social sciences and management. Lithuania has broadly developed business structure operating in the field of cultural and creative industries (CCI). Lithuanian CCI sector employs around 2% of all work force in Lithuania creating more than 5% of national GDP. This sector accounts for 5% of total Lithuanian export. The main export partner countries are UK, USA, France, Luxemburg etc. Currently there are 4 registered cultural and creative industries clusters that unite over 50 companies and 12 arts incubators countrywide. Most of these actors are export oriented. There are also around 50 companies directly participating in the creation and implementation processes of innovation and innovative solutions. In addition to this, there are around 190 ICT companies that could be relevant in the development process.

R&D in "Health Technologies and Biotechnology" priority area is characterized by strong interdisciplinarity that leads to fruitful synergies and wide application of medical engineering in health promotion and health care. The ongoing R&D activities also cover a large number of niche innovations and technologies, as there are initiated a lot of start-ups, there is a high number of patents and multi-disciplinary activities are effectively sustained. Information and communication technologies, electronics, biomechanics and biophysics infrastructure needed for the growth of R&D in Lithuania are well-developed. There are implemented a number of successful joint business and science medical technology projects, prospective technologies in the areas of 3D additive manufacturing, smart health monitoring sensors, ultrasonic diagnostics and bioelectronics are being created.
Social business could contribute to solving the problems of the participation of older people of working age in the job market and voluntary activity, as the share of older persons is increasing in Lithuania. Even though the activity and employment rate of older (55-64 years old) people in Lithuania is not low at the moment, there is a tendency that the employment rate decreases as the age increases. This is mostly due to a decline in the need for unskilled or low-skilled job, inability or unwillingness to work full-time, measures to enable older people of working age to work part-time and to reconcile family responsibilities related to long-term social care or lack of care for family members. Employers' attitude to the need to invest in the training, retraining or competence development of such workers, distrust of older people themselves, etc. Social business could provide services (e.g. training, research, implementation of educational activities for employers to achieve equal opportunities for older people in the job market; organization of voluntary activities, etc.) to overcome age barriers, improve microclimate at work, motivate older people to plan promote their careers, employers to improve age-related

policies at the organizational level, encourage social dialogue between employers and employees to introduce active aging measures within companies, encourage older people to engage in voluntary activities, and so on.

In the field of genomic and post-genomic technologies, the potential business niches are likely to be related to innovative products and services geared towards an individual, based on a genetic research aging strategy. Technologically, it would be possible to develop a technology that identifies an individual aging plan identified by the genome (which drugs to drink, what diseases are threatened, whether or not to do sports, etc.).

The most potential business niches in the field of public health technologies are related to telemedicine technologies, i.e. technologies for the provision of medical services at a distance, increasing the availability of quality medical services. These technologies could be adapted:

- For primary care and inspection - the data on the patient's health, which has been gathered so far, as well as phone or video consultations.
- For patient's health monitoring through a distance - patients would administer diagnostic tests at home with special equipment (various tests for home use, glucose, blood cholesterol, etc.). The information would be remotely transmitted to their health care professional.
- Providing wireless communication, information on various health topics, and health care services.

In the field of Advanced Medical Engineering for Early Diagnostics and Treatment, potential niche business would be related to early diagnostic technologies. These technologies would contribute to the development of new medication, the reduction of mortality (not only the human, but also the economic positive effect), the saving of public funds for health services, etc. A potential business niche could also be related to personalized medical and disease prevention technologies related to the permanent monitoring and diagnosis of health status.

2.4 Russia

In absence of Smart Specialisation, Russia uses different kind of methodology. The chosen priorities of the country are “Advanced ICT” and “Well-being”.

A remarkable peculiarity of the future Russian economy is a significant change in the labour market structure determined by demographic factors, one of which is a substantial increase in the pension age population (approx. 32% of the total number of citizens). With the raise of retirement age the Government was trying to balance the economics of the country. In return, this step increased social tension and demand for social innovations.
Currently, the biggest strength of the Russian “silver” market is relatively low competition with demand significantly growing every year. Moreover, with the appearance of business incubators, networking events and coworking spaces, it became easier for people to build networks and relationships within their area of business. Though social cohesion is quite strong, Russian people do not tend to trust public officials. Such skepticism creates a vital gap in cooperation and generates a poor implementing of the current governmental programs for the population. Even though the government forces technological innovation in the sector and develops various social programs (Social care, Education, Work past 50, Medicine, Entertainment), many people doubted the success of their implementation. This issue was also caused by inadequate public awareness of the existing governmental programs and poor promotion of available opportunities. For the point of business, poor-organized and not efficient regulatory framework and its bureaucratic structure repel entrepreneurs from entering this sector. Also it is important to add that Russian seniors tend to have very limited financial sources. Thus, it is possible to talk about low profitability of the projects, complicated and resource intensive launching, delayed results and drastic need of state support. From experts with a business background, it was also noticed that there is a general lack of management and organizational skills. Thus, broader implementation of educational and motivation programs would significantly minimize that issue. Promotion and development of social entrepreneurship is also problematic because of a lack of accessible spaces that could be used for various social projects or events. Even though the market is vast, low senior’s integration into social life, digital illiteracy, and low level of income pose a significant problem for potential entrepreneurs.

All-in-all, in Russia we can see right now a huge market potential, very high demand for social innovations and readiness of Russian Government to provide necessary funding to support different kinds of innovations. On the

other hand, current policy implementation is not always efficient and requires time to introduce any innovation to society. One of the latest laws introduces was aimed at stimulating and promoting social entrepreneurship. Thus, the Government is constructing a public-private partnership and stimulates the appearance of new social entrepreneurs on the market.

In Russia we have revealed the following needs of elderly people:

- Digital literacy, vocational trainings, lifelong learning education (relevant for the people aged from 50 to 65 in order to keep/find a job);
- Financial literacy (relevant for everyone in order to save financial independency after retirement);
- Healthy lifestyle, health-care system, early diagnosis;
- Communications and social inclusion (to keep even after retirement);
- Independency and self-sufficiency (including financial independency);
- Self-realisation and leisure activities (when you retire you feel a need to continue to have an impact on society and probably leave something good behind, mentoring programs);
- New impressions, f.ex. travelling (retirement provides a great opportunity to broaden the horizon and do something new and time consuming);
- Comfortable, friendly and accessible environment;
- Systems of care, health-care and social services for older people (after 70+)

Almost all of the named needs can be used as a business idea. Here we can also point out that in Russian case we can talk about a whole ecosystem, which supports different initiatives and social innovations, including potential entrepreneurs. Among such supporting mechanisms we can name the following: public institutions, incubators / accelerators / consulting bodies / funding institutions, educational / networking events. On the other hand, in order to stimulate the market, it is absolutely necessary to focus the efforts on creating new financial sources for population in general and older people in particular, as Russian consumer possibilities are currently shrinking due to several economic factors.

The research shows that Russia has a huge market potential, very high demand for social innovations and readiness of Russian Government to provide necessary support of different social innovations and technology development and implementation. At the same time we can notice that current policy implementation is not always efficient and requires time to introduce any innovation to society.

The development of silver economy is restricted by financial and social difficulties. Cooperation with the state for companies is perceived as bureaucratic red tape and a large number of difficulties. Potentially, such a partnership is possible, but requires changes in the processes at the state level. At the same time, companies see and are interested in cooperation with the state at one or another level. Companies have ideas for development in this area. All companies are ready to improve and develop the product in the future, focusing on the older generation. Companies are well aware of the problems of the older generation and the difficulties of working in this segment. At the same time these difficulties do not scare them. They work in this market and try to approach individually to consumers 50+.

Here we can also notice that in recent years we could see a growing number of "social entrepreneurs". In many cases they work in order to satisfy some specific social request and are ready to work without receiving any significant profit. Those kinds of entrepreneurship are supported by the Government (a new law was introduced in summer 2019, which clarified and expanded the definition of "social entrepreneurship" and broadened a range of measures of financial and property state support) and different Funds and Foundations.

All-in-all, in case of Russia we can talk about a whole ecosystem, which supports different initiatives and social innovations, including potential entrepreneurs. By the efforts of different stakeholders, the general knowledge level is raising, people are becoming more aware of different possibilities for them and are less afraid to start a project in social sphere.

Results obtained show that Russia needs to focus on the following issues:

- Increasing of financial stability and independence of older generation;
- Improvement of health-care and social-care systems;
- Dissemination of knowledge and information on existing possibilities;
- Better communication between governmental bodies and everyone else.

Improvement of the named areas could lay a strong foundation for further market development of the silver economy, as the problem is not in the absence of relevant technologies but in low purchasing power of end users. Thus, existing businesses have to focus their efforts on attracting other sources of financing (state funding / grants / subsidies / privileges / etc., private funds / foundations / sponsors / donations / etc.).

2.5 Denmark

In Denmark, social cohesion is strong and that is a major strength. The population is independent and well educated, and knowledge is easily accessible (homogenous society with a low degree of hierarchy). The political structure may inhibit innovation as the many rules and procedures limit the options that companies have. Furthermore, the structure may also cause decision-making to become long and cumbersome, not unlike an oil tanker that may be on a steady course but is difficult to change the direction of, especially in an ever-changing world. The impression is that it is often underestimated how much effort is required to implement new technology. Missing incentive structure for workers in the healthcare sector as an issue that impedes innovation. Management and staff receive no rewards for taking new technology into use – quite the contrary, as they experience loss of money and more hassle.

RIS3 priority area "Assisted living technology" has a potential to grow by raising the level of positive attitude towards technology and the use of smart technology. The seniors want to be independent and manage themselves – the technology can help them with this.

Lack of communication of the purpose, lack of reflection on the consequences of the technology, lack of personal/human relations because the technology is alienating, lack of cooperation with the citizens – these and some other challenges are clearly identified.

The implementation process was identified as a major challenge and many of the suggested proposals and recommendations addressed this challenge.

Cultural changes and new ways of thinking are difficult to complete but will have a large effect. We need a better understanding of each other's situation between public and private. We need change management to make the employees understand and accept the changes. We need to work on the incentives among the employees to speed up the implementation processes and the number of products implemented. This calls for new ways of cooperation, new ways of doing implementation and new ways of working.

It was also mentioned that we need to learn more from previous experiences in order to work more effectively and we need more communication and information to all stakeholders about products, needs, possibilities and competences.

2.6 Estonia

Two Estonian RIS 3 priorities are emphasized: ICT and Biotechnology. According to Statistics Estonia, by the year 2035, one in four people (25%) will be older than 65. This places a significant burden on the shrinking working-age population is Estonia. One of the main challenges for Estonia's future is to adapt to significant demographic changes. Population decline and population aging are having a direct impact on Estonia economic competitiveness and the country's administrative capacity. The declining workforce is currently facing both the private sector (eg manufacturing) and the public sector (eg education and training) health system, social welfare, internal security). As the proportion of the elderly increases, it is important to pay increasing attention to the elderly empowerment of the population (eg universities for the elderly, clubs for the elderly, lifelong learning measures). Valuing the maturity and life experience of older people is supported by greater and more informed involvement of older people such as volunteering and community activities. Various flexible solutions with the help of the state, the state can also encourage the retirement of older people at retirement age to do so wish. These trends are particularly reflected in Estonia: IT solutions are inappropriate for the elderly, including lack of skills and knowledge, access to health and social services is uneven across regions, entrepreneurship is not elderly oriented, it is focused on the younger and the rich people, the communication needs of older people are unmet.

The situation could be improved by following actions: empowering the older population through lifelong learning (eg senior universities) and community involvement in activities, family policies that provide a stable and supportive environment, implement effective labor market policies, facilitate cross-border mobility of people within the EU by removing administrative barriers and providing social guarantees (eg health insurance, pensions), change people's values, engage more civil society and implement a community support system, implement an effective regional policy, implement an integrated and smart migration policy, implement technological solutions.

The following actions are needed to bring about change: empower the older population through lifelong learning (eg senior universities) and community involvement in activities, develop family policies that provide a stable and supportive environment, implement effective labor market policies, facilitate cross-border mobility of people within the EU by removing administrative barriers and providing social guarantees (eg health insurance, pensions), change people's values, engage more civil society and implement a community support system, implement an effective regional policy, implement an integrated and smart migration policy, implement technological solutions, preserve the Estonian language and culture.

3. CONCLUSION

Summary

The GA 2.2 was conducted to identify and share practices and learning on how to apply the smart specialization approach for exploiting silver economy opportunities in the Baltic Sea Region. Results from thematic focus groups describe the assets, capabilities and competences identified, also points out the silver economy knowledge-intensive areas for potential growth, in close correlation with RIS3 priorities selected to be tackled in each project region and country. It also describes the assessment, conclusions for the identified assets, competencies and capabilities for particular subsectors of the tackled RIS 3 priorities and explains the options and recommendations that have been explored under co-creation workshops as well as the obtained baseline for improving innovation actors' capacity to implement smart specialization projects.

Mapping Analysis report's findings are combined and integrated with market studies data & conclusions.