Reflection papers on place-based innovation ecosystems and evidence-based policy making in BSR regions

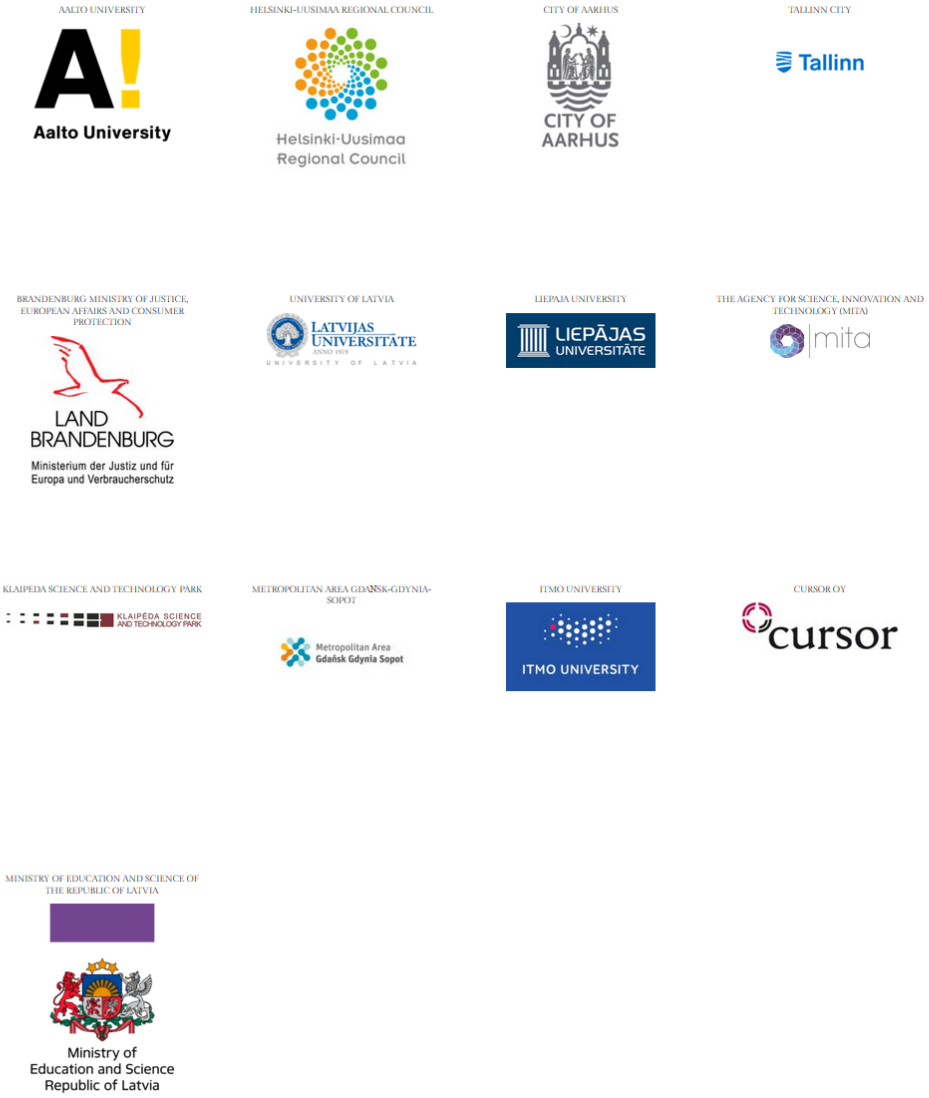
compiled by Aalto University Team

Output 4.1

Table of Contents

ACKNOWLEDGEMENTS

This output has been developed based on the reflection papers provided by the Smart Up BSR project partners. The final report is a result of reiterative process in the project. Regional lessons learned are based on pilot implementation processes that constituted the innovation ecosystem experiences of Smart Up BSR partners.



1. Introduction

This document compiles information provided by the project partners concerning their place-based innovation ecosystems piloting. Regions were asked to reflect and how in preparing the pilots they have implemented, supported, and leveraged the region's place-based ecosystem. Each region has compiled a description of their choices and their actions in form of 'reflection papers'.

After presenting the framework for the reflection papers the regional contributions are presented and summarized in table format. The original reflection papers are annexed.

2. Framework

The information on the local and regional place-based innovation ecosystem was gathered by asking the project partners to provide a 'reflection paper'. Each region has gathered a description of their choices and their actions. The guidelines and inspiration for the reflection papers provided the partners with a structure on how to describe their local activities.

Each region provides first the context in terms of geographical boundaries and specific characteristics. In some regions this may have been the background that motivated the choice of specific spearheads.

In addition to indicating the chosen spearheads the regions were asked to reflect on the constellation of partners involved. This is important, in order to have an overall picture of what the regional innovation eco-systems consists of, who are the leading partners, and what is the collaborative environment that allows action. The assumption has been that in order to achieve an overall regional development, the action needs to be collaborative, and building on the engagement of a broader innovation ecosystem that supports the chosen spearheads.

As the Smart-Up project relies on the contribution of specific partners, the reflection paper included a description of the role that the specific partner organisation plays in the local ecosystem.

Another aspect the partners have been asked to reflect upon has been the question of being able to leverage the ecosystem to support innovations. This allows to arrive at an overall understanding of the situation and context in the participating regions with regard to intentionally utilize a place-based approach to innovation.

The reflection papers as contributions by the partners are presented in table format as response to seven questions or aspects relevant to get a grasp of the local actions within the concept of place-based innovation ecosystem. The seven aspects which present the region in table formats are:

1. Describe the geographic boundaries of your region.
2. What spearheads have you chosen for the Smart-Up BSR project?
3. List the actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead.
4. Identify the role of your organization in this innovation ecosystem.
5. How does this ecosystem support/hinder innovations?
6. Identify lessons learned, and make recommendations for your regional ecosystem development.
7. Give examples of local policy making utilizing scientific research from the Smart-Up BSR spearheads.

Through this process regions have also reflected on:

- The kind of resources that need to be made available to support the innovation theme from a place-based perspective (e.g. human capital, finance, technology, supporting legal framework, favourable market conditions)
- The role of regional actors through their commitment to the shared goal/vision? What activities demonstrate commitment (or its lack)?

This is the framework that allows the Smart-Up BSR partners to reflect on how to direct their choices and actions towards a place-based innovation ecosystem. In compiling the different reflections lessons can be learned on the overall approach to place-based innovation as it is taking place in different regions.

The intent has also been to raise awareness on the different aspects of the place-based innovation ecosystem in the specific partner regions. Through the engagement of the partnering organisation this awareness can be expanded in the region.

The overview of the reflection papers in presented in the following chapter in alphabetical order of the country in which the specific participating region resides.

3. Smart-Up BSR Case Analysis – Place-based Innovation Ecosystems

In the following the regions' reflection papers are compiled in table format based on the framework presented in the previous chapter. The case analyses based on the regions' contributions are compiled in alphabetical order according to the Baltic Sea Region country they represent.

DENMARK	
1 Describe the boundaries of your geographic region	2 What spearhead have you chosen in Smart Up?
Denmark is divided into five regions. Aarhus is part of the Central Denmark Region, which stretches across the central part of Jutland. 1.3 mio. people live in this region, which covers 19 municipalities. Aarhus is the second largest city in Denmark and the largest in the region with a population of 350.000 citizens. Aarhus municipality is a project partner in Smart-up BSR and Aarhus University is the associate partner.	Aarhus is internationally known as an innovative smart city and supports other municipalities and stakeholders by being a first-mover and paving the way, which is also why the Smart City spearhead has been selected within the Smart-up BSR project. A significant milestone on Aarhus' Smart City journey was made in 2012, where a diverse group of stakeholders from the industry, research and knowledge institutions, and public sector established "Smart Aarhus". The experiences from the Smart City projects running in Aarhus and coordinated within Smart Aarhus, but also experiences from other municipalities should be collected and shared in a way, so they can be operationalized better for other municipalities. When it comes to the Internet of Things (IoT) many municipalities struggle with deciding which way to go, what technologies to priorities, and who to collaborate with. Developing and implementing IoT solutions in the cities requires alignment on activities on both practical and political levels and that there is a need for a more coordinated effort between the cities. The pilot that we are working on in Smart-UP BSR is therefore to establish a regional IoT and GovTech Center and explore new collaborations and create networks, where we can become stronger and faster in creating solutions that can make our cities better. As part of this we are building a concept for an IoT Starter Kit for cities to assist

	them, when exploring how IoT can help create better urban solutions.

DENMARK	
3 List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead	4 Identify the role of your organization in this innovation ecosystem
Smart Aarhus is a coalition of the willing who collaborates on Smart City initiatives through a set of guiding principles, which serves as a "Scandinavian Third Way". As part of Smart Aarhus' establishment 35 working groups was created consisting of quadruple helix stakeholders. These groups came up with some of the founding initiatives in Smart Aarhus. One of these was the Internet Week Denmark (IWDK) Festival, which is an annual festival celebrating the internet. In 2019, IWDK had 11,000 participants coming from both the public sector, private companies, knowledge institutions and citizens, which make up the informal part of the ecosystem in the city, but also on a national level. Below is a highlight some of the key actors in the Smart City ecosystem in Aarhus and the region – most of who is also important drivers in the establishment Aarhus' Smart-uP BSR pilot:	The Aarhus Municipality is a frontrunner, when it comes to starting smart city initiatives. Aarhus Municipality was the first municipality in Denmark to establish an Open Data platform, and was instrumental in establishing the national open data initiative Open Data DK, which is also chaired by the CEO of the department for Innovation, Technology and Creativity. Previous open source initiatives also inspired and paved the way for another national initiative called OS2, which is a national Open Source community for Municipalities for developing and maintaining shared ICT solutions, and the secretariat is now hosted in Aarhus Municipality. Aarhus Municipality also installed a city-wide LoRaWAN network for IoT to speed up the IoT development of the city. Many other examples showcase Aarhus Municipality's role as a first mover regarding the application and exploration of new technologies into the public sector and urban environment. Aarhus Municipality always does this through an open mindset; The solutions are whenever possible created as open source, and all experiences and insights are shared with other municipalities who is about to embark on similar journeys. Aarhus Municipality's role in establishing the regional IoT & GovTech center is therefore important to drive the vision and convey the value proposition of the center and to help gather the right stakeholders.

DENMARK	
5 How does this ecosystem support/hinder innovations?	6 Identify lessons learned, and make recommendations for your regional ecosystem development
Another network called GeoMidt, which is a cross-municipal network for GIS-experts also has an ambition of establishing an IoT network. This network is a collaboration between the 19 regional municipalities on geodata. There can be made great synergies with the IoT & GovTech center here. The Business Region Aarhus has already worked with an IoT challenge focused on mobility, so early experiences from using the technology from other municipalities can be collected and used as a foundation for the center. Aarhus Municipality's existing collaborations with IoT SME's are helping shape the legal framework for testing/demonstrating IoT/Smart City solutions. So experiences from legal aspects can also be fed into the center from this activity. However, since the uptake of IoT is happening at such a fast pace, it also means that it is a challenge to align activities and interest. Many new networks and projects are created, so it is important to try to keep the overview of these, to ensure that experiences from other projects and stakeholders are transferred to these initiatives, so the same mistakes are not repeated. Another hinderance to some degree is that the Central Denmark Region cannot take part in business support activities after the recent form of the business support system in Denmark. This means that there are some of the business aspects of the center, which they	• IWDK, the annual digital festival in Aarhus, is a platform that can be operationalized even more by having to develop the Smart City solutions of the City. We encourage stakeholders from the whole quadruple helix to reach out to each other and collaborate on making each others initiatives even more meaningful and relevant to society. IWDK is all about co-creation and debates about how our city and society in general should develop and be a livable place for our citizens. This level of openness and curiosity between the stakeholders in the ecosystem is vital and should remain a priority. • The efforts on the developing a smart city, should be more focused on challenges experienced from the rather than being technology-driven. Therefore, six main challenges for the city has been identified. The challenges are cross sectorial and involve a broad partnership across the public and private sector, knowledge institutions and the citizens. • A shared vision of making Aarhus a living, breathing, a global testbed for innovative Smart City initiatives will help the city sustain its momentum and end up with solutions to the City's challenges at a faster pace. E.g. we are working on combining the city's living lab with Aarhus University's new campus area that also are going to function as a living lab. Creating City Labs is a way to strengthen the Smart City market and startup scene.

cannot co-develop. The IoT startup scene is also still emerging and could be stronger to support the local development of IoT and GovTech solutions even more.	
DENMARK	
7 Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP	The new business plan for Aarhus Municipality covers Smart-up BSR spearheads such as Smart City, Climate Change, Circular Economy. In the process Aarhus University has given feedback on its content, while it has also been in public hearing where other research institutions have provided responses.
	.

ESTONIA

1 Describe the boundaries of your geographic region	2 What spearhead have you chosen in Smart Up?
The country is highly centralized with two levels of government: the state and local municipalities. County-level has no executive nor elective body. Municipalities in Estonia are mostly responsible for service delivery while the state is responsible for policy development and higher-level service delivery. The City of Tallinn is the capital of the Republic of Estonia. As of January 1 2020, the population of Tallinn City was 443 932 residents which is 1/3 of the total population of Estonia. Tallinn together with the rest of the surrounding Harju county have a population of approximately 600 000 people. Tallinn has been blessed with a good location as it is surrounded by some of the most important cities in the Baltic Sea region such as Helsinki, St. Petersburg, Stockholm and Riga which gives numerous business and cooperation possibilities.	Tallinn City has chosen smart city as its spearhead topic. A growing number of smart city projects and initiatives have been launched in Tallinn. In March 2019 Tallinn City together with Tallinn University of Technology launched the TalTechCity initiative with an aim to strengthen educational and project cooperation in topics related to smart city development. Together with Mainor Ülemiste Tallinn City is co-funding the establishment of the Future City Professorship in Tallinn University of Technology. In December 2019 the first global Cross-Border Smart City Center of Excellence started its work in Tallinn University of Technology. The other partners include the Estonian Ministry of Economic Affairs and Communications, Aalto University and Forum Virium Helsinki. In 2020 Tallinn City launched a small fund for funding smart city projects in Tallinn City. An overview of different smart city projects in Tallinn City can be found here: www.tallinnovation.ee The smart city concept is very much focusing on the integration of IT solutions into different hard (e.g mobility, energy) and soft domains (e.g education, data). As Estonia has strong competences in IT, the development and practical implementation of different smart city solutions can provide good cooperation opportunities for local companies, universities and municipalities. From the economic point of view, the development of new solutions can provide a good opportunity of Estonian companies to enter the global market as the demand for such solutions is increasing together with the growing urbanization in the world.

ESTONIA	
3 List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead	4 Identify the role of your organization in this innovation ecosystem
Universities & research institutes Tallinn University of Technology is the only technical and the second-largest university in Estonia. TalTech serves as the location for the Cross-Border Smart City Center of Excellence. The university is also involved with numerous projects which have practical applications in the city environment. Tallinn University is the third-largest public university in Estonia which mostly focusses on humanities. Tallinn University has competences in areas such as sustainable development, cultural studies, cultural geography, society and open governance. Tallinn University of Applied Sciences (TTK) is the largest technical university of applied sciences. TTK has strong competences in civil engineering, architecture, logistics and circular economy. Estonian Academy of Arts provides higher education in fine arts, design, architecture, media, visual studies, art culture, and conservation. Public organizations The City of Tallinn is the largest municipality in Estonia which also serves as the country's capital. Tallinn City is the economic hub of the country generating more than half of the total Estonian GDP. Tallinn is also an important cultural hub and is the location for the most of governmental organizations in the country. Tallinn Science Park Tehnopol is the largest science park in the Baltic states which was established by the Ministry of Economic Affairs and Communications, Tallinn University of	The role of Tallinn Enterprise Department in the local ecosystem Among the Estonian municipalities, Tallinn City has long been a frontrunner in developing and implementing new solutions. The role of Tallinn Enterprise Department is to support the development of entrepreneurship and business environment in Tallinn City. For many years the department put a big portion of its focus on business incubation services. In recent years the department has looked for a more active role and has chosen smart city development as a way to support the creation of new innovations. The department is very supportive towards the companies that wish to test their solutions in the urban environment. Providing testing opportunities for companies has also been written into the new Tallinn Development Plan 2021+ as one of the ways how the city can be highly competitive. Based on the department's proposal the city has also established the new innovation fund for financing smart city development projects. It can be said that the role of Tallinn Enterprise Department is step-by-step changing from providing generic support for companies to becoming the shaper of the local innovation ecosystem.

Technology and the City of Tallinn. The Science Park is located right next to the campus of Tallinn University of Technology which for companies provides additional piloting and cooperation opportunities. Tehnopol is the founder of Estonian HealthTech Cluster Connected Health and is an active member in the Estonian Smart City Cluster and leader for green-tech sector. Enterprise Estonia is a national agency under the Ministry of Economic Affairs and Communications. The agency is responsible for providing different kind of business support such as counselling and funding. The agency is also running the Estonian e-Residency programme. Union of Harju County Municipalities is the cooperation organisation which unites all the municipalities in the county. The Union is dealing with county-level questions such as the county-level development plan and county-level spatial planning. Relevant NGO-s Estonian Smart City Cluster is a cluster organisation which unites research organisations, companies and municipalities such as Tallinn, Tartu and Pärnu. The aim of the organisation is to support the creation of public test environments and the development and support export of innovative smart city solutions globally. Estonian Association of Information Technology and Telecommunications (ITL) is a non-profit organization which unites local information and telecommunications technology companies and other relevant companies and organisations to promote the development of the sector. ITL is also the lead organization of the Estonian ICT cluster. Relevant companies It is hard to put together a complete list of companies that are active in developing smart city solutions. Most of such companies in Estonia are small or medium-sized enterprises that are trying to bring their product to the market. Here is a list of some of the companies. Mainor Ülemiste is a private company that develops the Ülemiste City area which is located right next to Tallinn Airport. The area is home	

for over 400 companies, many of them active in logistics, IT, electronics etc. Estonian Tax Board and Estonian Entrepreneurship University of Applied Sciences are also located in Ülemiste. As a real estate developer, Mainor Ülemiste is heavily emphasising smart city development. The company is co-financing the Future City professorship in Tallinn University of Technology and is providing opportunities to test smart city solutions in Ülemiste. Thinnect is a private company active in the development of IoT solutions. Together with TalTech, the company has recently installed 900 sensors in Tallinn which measure air quality and traffic flows. The sensors use solar power. Ridango is a private company active in the development of Automated Fare Collection (AFC) and Real-Time Passenger Information (RTPI) systems for public transport systems. The clients of Ridango include Tallinn City Transport, Skånetrafiken, Klaipeda, Kyiv, Sörmlandstrafiken and Movingo. Cityntel is a private company which provides smart city light solutions and has references in Tallinn and Tartu. Reach-U is a private company which develops location-based services (LBS) and solutions such as custom GIS software, civil warning broadcast, civil safety application etc. The company is one of the largest providers of LBS to telcos serving more than 343 million subscribers of 25 operators globally. GoSwift is a private company active in the development of queue management solutions. The company has provided queue solutions which are in use at the Estonian-Russian, Finnish-Russian, Lithuanian-Russian and Lithuanian-Belarussian borders. As part of the FinEst Smart Mobility project the company developed a queue management solution for port areas. Bercman Technologies is a private company which is developing smart pedestrian crosswalks, intersection control units and smart bus stops. Starship Technologies is a private company which develops autonomous delivery bots which can operate in 6 km radius. The service is currently available in Tallinn, Milton Keynes (London) and George Mason University campus (U.S).	

Bolt is a private company which provides a platform for ridesharing and food delivery. The company has 30 million users in 35 countries. Cleveron is a private company which develops robotics-based parcel terminals and last mile click and collect pickup solutions for retail and logistics sectors. The company has also started to develop its own autonomous package delivery robot. AuVeTech is a private company that has grown out from Tallinn University of Technology. Together with TalTech, the company is currently developing its own autonomous bus for last mile services. Elering is a state-owned company which functions as an independent electricity and gas system operator. The company is also very active in smart grid development.	

ESTONIA	
5 How does this ecosystem support/hinder innovations?	6 Identify lessons learned, and make recommendations for your regional ecosystem development
One of the strongest sides of the local ecosystem is a growing number companies that are developing their solutions. Many of these solutions have also received a chance to be tested in the real-life setting with the help from the Tallinn City Government and/or other actors such as Tallinn University of Technology, Tallinn Science Park Tehnopol or Mainor Ülemiste. Several companies have also managed to attract investors such as Bolt or Starship Technologies. The new Cross-Border Smart City Center of Excellence has great potential to support the development twin city smart solutions for Tallinn and Helsinki which can also benefit the local companies. Tallinn City is also home for several universities that do research and provide higher education that can further support the smart city developments. However, several challenges exist in the local ecosystem that hinder the development and adoption of smart city solutions. First is a lack of user perspective as currently there is not a	1) To get the user perspective, new possible solution could be the empowerment of local community organisations. The city could also start using the Open City mobile application to ask feedback and input related to smart city solutions. Currently the application is only used to get feedback and collect ideas about the development of the urban environment in certain areas of the city. 2) The establishment of an intermediary which would act as a middleman between different key stakeholders in smart city development and lead the innovation procurement process – from defining the bottlenecks to delivering the scale-up of pilot projects. Good example is Forum Virium Helsinki which was established by the City of Helsinki and private (telecom) companies. Although Forum Virium is now owned only by the

single organisation that is actively providing the perspective of local residents. Another issue is the fact that the full potential of public procurements for innovation is not utilised. Public organisations, including different departments in the city administration which often are responsible for providing different public services have little knowledge about such procurements. There is also fear among officials to use such procurements as the evaluation of bids is more complex than with standard procurements which can lead to court disputes. Although there is a number of different actors in the local smart city ecosystem, there is not a single organisation that can be considered as a purely intermediary organisation that would act as the middleman between the relevant actors. This makes it harder to build a common understanding about the direction of smart city development. From the positive side, the local universities (and also universities from Helsinki) include a wide variety of local stakeholders into different smart city projects. Also, Tallinn City is increasing its activities and has recently started the practice of regular meetings with companies that develop and provide different solutions.	city, the companies and other institutions such as universities are official members of the organisation. 3) Increasing the use of public procurements for innovation through different means such as providing training for officials dealing with public procurements, starting with small-scale pilots etc.

ESTONIA	
7 Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP	The new Tallinn Development Plan 2021+ which is still in the development process has integrated several important topics related to healthy aging (e.g healthy environment, accessibility, 80:8 principle), smart city (city as a testbed), circular economy and climate change (energy saving, climate neutrality). The universities have also been included to the process through the advisory board. Tallinn City is also cooperating with local universities through different projects, e.g: - Sohjoa Baltic – piloting self-driving electric minibuses in cooperation with Tallinn University of Technology; - Augmented Urbans – developing and piloting the AvaLinn mobile app in cooperation with Tallinn University;

	- Smart sensor network development in cooperation with Tallinn University of Technology. Tallinn City has also launched an initiative together with Tallinn University of Technology called TalTechCity. The aim of the initiative is to improve students' and city officials' knowledge about smart city development and launch innovation and development projects related to smart city.
	.

FINLAND / HELSINKI-UUSIMAA

1 Describe the boundaries of your geographic region

Located on the south coast of Finland

Helsinki-Uusimaa Region is home to around 1.4 million people or more than a quarter of the country's total population. Nationally we work closely with our neighbour regions Kymenlaakso, Päijät-Häme, Häme and Southwest Finland. Across the Baltic Sea the co-operation with Estonia is very active.
Due to our big harbours and the Helsinki International Airport we are also internationally well connected.

2 What spearhead have you chosen in Smart Up?

Our chosen theme for piloting in the Smart-up BSR project is active and healthy ageing. AHA is one of the central topics of the health and welfare spearhead priority theme in our regional strategy for smart specialisation 2014-2020.
In the pilot we have been mapping the actors and knowledge hubs on this field. So far, we have learned that in addition to stabile actors there are several agile and changing actors. The ecosystem for active healthy ageing is constantly evolving and we are merely presenting snapshots of it here. Having now the pilot version of the mapping helps us to define how and which parts of it we would like to update regularly and how much resources are needed for the work.

FINLAND / HELSINKI-UUSIMAA

3 List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead

In the region we have several local ecosystems on health. They are situated around different university campuses. The biggest one is in the Academic Medical Center Helsinki in the Meilahti area, hosting the core partnership between the Hospital District of Helsinki (HUS) and the Faculty of Medicine at Helsinki University. Many other major health care organisations also locate in the area.

4 Identify the role of your organization in this innovation ecosystem

The cooperation in innovation ecosystems is based on the aims and goals of the individual actors and it is dependent on their abilities to connect and get financing. Here the regional council can support the ecosystem. The region may be the only actor looking for the best of a wider area instead of optimizing the results just for one organisation.
The Regional Council supports the ecosystem by encouraging networking and financing joint

Health Capital Helsinki alliance is working to develop and promote the life science and health ecosystem of greater Helsinki. The alliance consists of Cities of Helsinki and Espoo, HUS Helsinki University Hospital, University of Helsinki, Aalto University, and Helsinki Metropolitan Universities of Applied Sciences Haaga-Helia, Laurea and Metropolia. **Upgraded** is the non-profit association for health & wellbeing start-ups and innovations. It builds bridges between the different pieces of start-ups, corporates, public sector and universities. The community brings together over 60 members. Upgraded also arranges an invitational Health100 conference that evolved from a series of very successful Upgraded Life Festivals. **Socca** is the Centre of excellence on social welfare in the Helsinki metropolitan area. It is a network organisation, working closely together with the municipalities in the metropolitan area, as well as with educational institutes providing a meeting place for social welfare professionals. These actors have helped us in mapping the actors specified on active and healthy ageing.	projects. The role of the region is to make the circumstances best possible for a well-functioning ecosystem.

FINLAND / HELSINKI-UUSIMAA	
5 How does this ecosystem support/hinder innovations?	6 Identify lessons learned, and make recommendations for your regional ecosystem development
The ecosystem is strong has potential with globally recognized expertise. New knowledge and technologies are created and there are business activities based on that. More public and private investments are still needed to improve the interaction and synergy of the actors as well as to attract global talents and international investments. The AHA pilot has covered actors that have deployed both short term measures and longer-term strategies. On the latter, more intensive deployment and capability building in Connective Health technologies is needed. Senior citizens, especially the older cohorts, are frequent users of health services and for them, effectivity in	In an efficient ecosystem the actors are tightly connected but they still make their decisions independently according to their own interests. Many real ecosystems are self-organising and the connections and partnerships are formed without external or centralized guidance. In younger ecosystems some orchestration is still needed together with active and open dissemination of information. This may speed up forming the ecosystem and help the actors to join and commit to it.

care and more timely health outcomes can be achieved by new digital means.	

FINLAND / HELSINKI-UUSIMAA	
7 Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP	In the decision making of our region the representatives of research institutes are very active. In the Regional Management Committee, we have members from the universities and research organisations. It is a statutory body appointed by the Regional Government. The Committee approves the implementation plan for the regional program, which includes the most urgent projects in the province and an agreement on their financing. It directs the content and implementation of the regional smart specialisation strategy and makes decisions of the regional ERDF funding. The representatives of science institutions bring their latest scientific knowledge to this local policy making.

FINLAND / KYMENLAAKSO

1 Describe the boundaries of your geographic region

Kymenlaakso is a region in Finland. It borders the regions of Uusimaa, Päijät-Häme, South Savo and South Karelia and Russia (Leningrad Oblast). The region of Kymenlaakso is made up of seven municipalities, of which three have city status (Kotka, Hamina, Kouvola). Kotka is the second largest city in Kymenlaakso region with population of circa 52.000 people. It is located on the coast of the Baltic Sea, the Gulf of Finland, at the delta of River Kymijoki. Other cities are Kouvola further in the inland with population of circa 83.000 people and in the south Hamina - Finland's oldest garrison town.

Kymenlaakso has approximately 180 000 inhabitants. It is one of the most significant forest industry clusters in Europe and an international hub of logistics and logistics related business and knowhow in the Baltic Sea region with Finland´s largest universal export and transshipment port, Port of HaminaKotka. In the northern part of the region in the city of Kouvola lies Finland´s largest railway hub.

One special feature of the region is that Kymenlaakso has the most eastern and the primary border crossing point called Vaalimaa between European Union and Russia.

The region is also famous for beautiful nature e.g. national parks; Eastern Gulf of Finland – outer archipelago, Valkmusa – marshland and Repovesi – forest and lakes and renowned city parks in the city of Kotka. This year three parks in Kotka were awarded the Green Flag Award, an international award for quality in green areas and Kotka National City Park was awarded with honorable mention in the

2 What spearhead have you chosen in Smart Up?

For Smart-up BSR smart city and smart port are the most suitable spearheads for Kymenlaakso for several reasons. Although sustainability and circular economy themes have begun to gain prominence in the last couple of years as well. Kymenlaakso region has chosen the following spearheads for its research and innovation strategy for smart specialisation (RIS3) for 2016-2020 (the RIS3 strategy update process will be completed this year):

- logistics: safety and intelligent logistics
- bioeconomy: new products and business from resource-efficient and low-carbon bio- and circular economy
- digitalization: cyber security and gamification and digital applications in logistics and bioeconomy as well as in tourism and health and wellbeing.

As mentioned earlier, Kymenlaakso has Finland´s largest universal export and transshipment port, Port of HaminaKotka, therefore port related development is essential for the region. In addition to that, digitalization is seen as an overarching theme in current RIS3 strategy. There are also lots of projects and processes presently going on in the Kotka old port area which further emphasize the importance of port area.

Council of Europe Landscape Award Competition as well.	

FINLAND / KYMENLAAKSO	
3 List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead	4 Identify the role of your organization in this innovation ecosystem
a. Universities & research institutes: South-Eastern Finland University of Applied Sciences, Kotka Maritime Research Centre b. Relevant companies (spearhead): Port of HaminaKotka, Empower Oy, Finnhub Association etc. c. Public organizations, Regional Council of Kymenlaakso, the city of Kotka, South Kymenlaakso Vocational College, Kymenlaakso Chamber of Commerce, entrepreneur organizations d. Civil society organizations (representing citizens/consumers):	Cursor Oy has been coordinating the collective identification of needs and potential for Kymenlaakso´s innovation ecosystem by revisiting existing RIS3 and making RIS3 related SWOTs synthesis in June 2018. This e.g. has helped to predict future scenarios and pinpoint specific development needs. These exercises have shown regional strengths and opportunities and most importantly weaknesses and threats which need specific attention and building of new competence and collaboration. Cursor Oy has a twofold role in region´s innovation ecosystem. Cursor Oy is involved both in the update process of RIS3 strategy and also in concrete implementation activities.

FINLAND / KYMENLAAKSO	
5 How does this ecosystem support/hinder innovations?	6 Identify lessons learned, and make recommendations for your regional ecosystem development
a. What kind of resources are available for the innovation theme (e.g. human capital, finance, technology, supporting legal framework, favorable market conditions)? b. Which actors are committed to the shared goal/vision? What activities demonstrate commitment (or its lack)?	Projects have traditionally been the most important means of regional development in Kymenlaakso region. Nowadays access to structural funding is constantly tightening (decreasing) and competition for funding between different actors is also becoming more intense. International cooperation and joint

Our region is geographically a relatively small area and all the relevant innovation actors know each other quite well. The communication and contacting between actors are smooth, fast and straightforward. A joint working group of all actors has been set up in the region by Regional Council of Kymenlaakso to work on updating the RIS3 strategy. In the context of this, all the existing innovation services and resources as well as possibly lacking ones will be identified and described. This working group serves also as a joint platform for intensified cooperation on selected strategic spearheads/ areas (e.g. establishment of joint innovative projects). E.g. port-related activities and business have a long tradition in the region -valuable know-how and relationships have been accumulated for decades. Kotka-Hamina region´s port areas are being developed currently very strongly and new investments with substantial amounts of euros have been declared during last few weeks (well over one hundred million euros in total). The current strong trend is also that port areas attract investments in bioeconomy and renewable energy.	projects will play (and should play) even a bigger role in the future. The cooperation between Cursor Oy and the University of Applied Sciences should be further enhanced. It would foster the development of local enterprises by combining development company´s business knowledge and expertise at the business interface with strong applied research know-how from the university. This cooperation could also open new possibilities for graduate students to find employment in local enterprises and vice versa offer enterprises qualified workforce.
FINLAND / KYMENLAAKSO	
7 Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP	The city of Kotka is active on climate work. During this year the city of Kotka will be updating its climate and energy program.

GERMANY / BRANDENBURG

1 Describe the boundaries of your geographic region	2 What spearhead have you chosen in Smart Up?
Together, the Federal States of Berlin and Brandenburg form the capital city region of Berlin-Brandenburg. Given its excellent science and research facilities and the broad range of business-oriented research and development, the capital region holds a top position in Germany's and Europe's innovation landscape. Berlin as a metropolitan region should be distinguished from Berlin's immediate agglomeration, called Berliner Umland (English: Berlin's surrounding countryside) which comprises the city and the nearby Brandenburg municipalities. Berliner Umland is significantly smaller and much more densely populated than the metropolitan region, as it accounts for the vast majority of the region's population over a fraction of its total land area. As with the joint development strategy also spatial planning policy is jointly managed by institutions of both federal states so that they act in unison in decision making and when cooperating with the federal government and other federal states. The Brandenburg region contains five independent cities – of which Potsdam the Brandenburg capital is the only one with a population greater than 100,000 – and 14 districts (Landkreise). By adding the inhabitants of Berlin, the two cities Potsdam and Berlin account for more than 80 percent of the total population of the Berlin/Brandenburg region. The Brandenburg area is characterized by suburban settlements surrounding either the Berlin city limits and or comprising small towns in the rural outer area.	The State of Berlin and its neighbouring State of Brandenburg launched their Joint Innovation Strategy known as "innoBB", in 2011, as the first attempt of joining two state level strategies under one common innovation strategy. Aimed at linking the wider reaching business and R&D sectors positioned in Brandenburg and the international innovation community in the capital region, the innoBB strategy focuses on five clusters: ▪ Life sciences and healthcare ▪ Energy technology ▪ Mobility (including transport and logistics) ▪ ICT, media and creative industries ▪ Photonics (including microsystems technology).

BRANDENBURG	
3 List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead	4 Identify the role of your organization in this innovation ecosystem
An example of the level of stakeholder involvement in the Berlin/Brandenburg Region is the Potsdam-Golm Science Park. From leading international research in areas such as biotechnology, or gravitational physics, to training opportunities for young researchers, to research-based production and commercialisation, numerous aspects of stakeholder involvement combine to make Potsdam Science Park in the heart of the fast-growing region of Berlin-Brandenburg into a location with extraordinary potential for innovation. Entrepreneurial activities benefit from knowledge exchange with scientific Institutes and Institutions at Potsdam-Golm Science Park: two faculties of Potsdam University, three institutes of Max- Planck-Society, two institutes of Fraunhofer-Society, the Brandenburg Main State Archive and about 20 small companies (former Start-ups). Nevertheless, Potsdam Science Park is lacking space for the start-up community and a meeting a place for social interaction among people living close by. While cluster management organisations have a clear role to initiate and implement collaboration between industry and science based on the cluster masterplans and thus further stakeholder engagement in projects to continuously increase competitiveness, the local community seldom is a stakeholder in these activities. In the future the ability to interact between the scientific institutions and civic stakeholders needs to be improved. The regular residents lack the opportunity to meaningfully network and exchange ideas between them and the science/innovation community working in the Science Park. Engaging the community can be part of the Science Park activities. With regard to innovative solutions it could also become increasingly attractive for industry to actively join and interact with the community with technology development for social innovation. The task is also to address how the Science Park could help to engage local people with the local associations/NGOs, and researchers/industry for testing environments and meeting spaces.	Not applicable

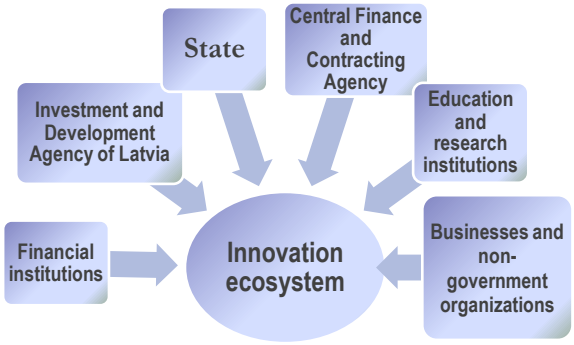
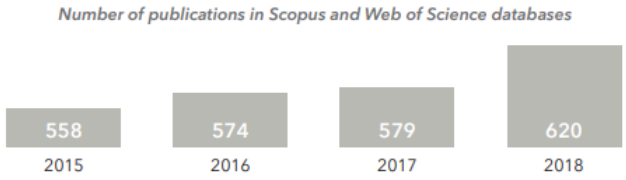
BRANDENBURG	
5 How does this ecosystem support/hinder innovations?	6 Identify lessons learned, and make recommendations for your regional ecosystem development
The Berlin/Brandenburg region is a hot-spot for start-ups in Germany and company founders drive the economy through the digital work transformation in the region. They are able to rethink technologies, products and services and create new socially relevant solutions that also success on the market. These innovation-oriented SMEs are to be supported by various targeted instruments. Similarly, cluster platforms provide networking possibilities crucial for the development of the regional innovation dynamics. The stakeholders that operate as motors of each cluster play a central role in pushing forward these thematic priorities, especially with focus on fostering SMEs in bringing their ideas to market. Therefore, it is also of vital importance that clusters as well as social stakeholders collaborate in a constructive manner to operationalise these priorities across clusters and thus make innovations possible that solidify the selected regional spearheads. ▪ Scientific talents from all over the world also appreciate the open research atmosphere and the high quality of life in the Brain city Berlin ▪ Berlin's research landscape is characterized by change and progress ▪ The density of the scientific locations in Berlin and also the networking within European networks brings a lively and dynamic element into research.	The focus of the 2011 strategy has led to a successful development of the five selected clusters. The goal of the innoBB 2025 strategy is to solidify this positive development. The strategy provides for each cluster a masterplan with a political innovation profile which structures and supports the work of the clusters in attaining the strategic vision and the goals of the strategy. In this way each cluster can make use of the specific regional resources and opportunities in working towards the horizontal strategic priorities of digitalization, new concepts of field testing and real-world laboratories, work 4.0 and start-up and founders funding. In short, the new innBB 2025 strategy underscores the innovation guidelines that have previously brought results acknowledging in an emphatic way that the change brings a considerable rewiring towards solutions of a sustainable, smart and inclusive future at regional, national, and EU level. This is envisioned by ▪ A broader innovation concept, ▪ A deeper cross-cluster collaboration, ▪ A clearer opening up of innovation, ▪ A greater consistency towards sustainability, and ▪ A stronger regional emphasis on internationalisation.

BRANDENBURG	
7 Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP	The region occupies the highest level of excellence in Europe and can contribute to innovation with a marked European level presence in the EU Commission in Brussels. However, as an exemplary region in Europe a wider international impact could be achieved, as impacted by the SmartUp BSR project.

LATVIA

1 Describe the boundaries of your geographic region	2 What spearhead have you chosen in Smart Up?
Latvia lies on the eastern shores of the Baltic Sea. It is bordered by Estonia to the north, Lithuania to the south, Russia to the east, Belarus to the southeast, as well as shares a maritime boarder with Sweden to the west. In overall there are approximately 1,9 million inhabitants in Latvia and a territory of 64,589 km^2. Most of the businesses are concentrated in the capital of Latvia, Riga, and the cities surrounding it. Other major cities are often devoted to a particular market sectors, e.g. the port cities of Ventspils and Liepāja provide ice-free ports, while Daugavpils is an important railroad hub. The most urbanized regions of Latvia are the central, Eastern and Westerns regions. It must be noted, though, that if the central region is thoroughly urban, the East and the West are urban in the sense that the majority of population lives near major cities, with pockets of rural areas in-between. The Southern and the North-Eastern regions are mostly rural. Latvia has the 5th highest proportion of land covered by forests in the European Union. Forests account for 3,5 million ha or 56% of the total land area, creating a great importance in the economy of Latvia. **Main figures of business environment in Latvia:** • GDP (2018 data) – 29 milliard EUR. • According to Central Statistical Bureau data there were 185 thousand economically active companies as of end of 2018 in Latvia (the main sectors represented: wholesale and retail trade, repair of motor vehicles and motorcycles; agriculture, forestry and fisheries; other services; professional, scientific and technical services). • Unemployment rate 6%; average salary as of 3rd quarter of 2019 – 1091 EUR (+8,3% comparing to same period in 2018).	**Active healthy ageing** and **smart city** via the following pilot projects: **House of Technologies**as Technology transfer centre including development of innovations from TRL 3-4 to 6-7; 3 main specialisation fields according UL smart specialisation directions (HEPC - radiation chemistry and physics; Materials, mechanics and prototyping centre; Life Science centre). **Medicine Centre** - development of existing medical infrastructure for providing primary and secondary health care to inhabitants of Riga city, UL students and staffin cooperation with Riga City Council emphasising common research and education programmes as well as internships for medical students and residents. **UL Academic Centre as a pilot micro model of a smart city concept** - robust IT connectivity and digitalization; well developed e-governance; innovative solutions in energy and heating supply, use of renewable resources; an efficient waste management system; etc.

• Manufacturing 12% of GDP (main sectors wood, food). • Export extent 59% of GDP (main export products wood 13%; transportation services 12%; electrical appliances 7%).	

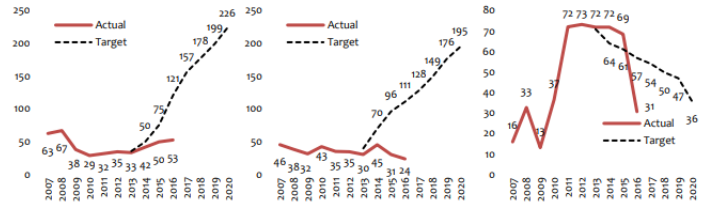
LATVIA	
3 List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead	4 Identify the role of your organization in this innovation ecosystem
	UL appears to be the leading research institution in Latvia – creator and facilitator of the innovations in Latvia. With science and research funding UL is financing innovation development up to TRL 3-4. In 2018 UL has yielded 2344 scientific publications, including monographs, chapters in monographs, articles in local and international scientific journals and conference proceedings. This constitutes 85% of the entire number of publications by UL authors and co-authors (2754). 620 publications by the representatives of UL personnel were included in Scopus and Web of Science databases in 2018, and 377 of these were articles published by international scientific journals.  *Data source: UL Annual report 2018* 204 of the articles published in scientific journals by UL employees have been written in collaboration with foreign authors, and 303 of the articles were printed in scientific journals whose citation index is above the average in the respective field of science. The number of articles in exact sciences, life sciences and medicine is 268, in humanities — 24, whereas in social sciences — 8. As an example - one of the achievements in Science in 2018 awarded by the Latvian Academy of Sciences: Portable device for early contactless diagnosis of skin cancer. In a collaborative project, researchers from University of Latvia, Institute of Atomic Physics and Spectroscopy, Riga Technical University, Faculty of Computer Science and Information Technology have

	developed a unique skin cancer diagnostic service that is already being tested in practice. Diagnosis is based on measurements of diffuse reflection and skin auto fluorescence. The unit uses specific lighting. The LEDs are selected based on the specific properties of the chromophores and fluorophores present in the skin. The device is intended to perform a full body examination of patients and early detection of skin cancer. It is connected to a remote cloud service, where image processing of suspicious skin formations is performed and the result is immediately accessible to any specialist via the internet. The diagnostic system is being tested at the Latvian Oncology Centre, where it has identified all cases of melanoma from 800 measurements of different skin formations.

LATVIA

5 How does this ecosystem support/hinder innovations?

Even though Latvia has succeeded in moving from an achievement rate "modest" to "moderate" in the European Innovation Scoreboard one of the key indicators of economic knowledge and technology capacity – investment in R&D - is not growing in either the public or the private sector. Below reflected figures represent the actual and estimated situation regarding the investments in R&D.



Data source: RIS3 monitoring report

The actual investments extent in R&D as a percentage of GDP is significantly lower as planned and lower than the average of previous years. The decrease is explained by the reduction of private and international (EU funding) sector investments combined with public investment stagnation. Taking into account that the objective of public and EU funds investment is to provide preconditions for private sector investment growth, the negative development trend indicates that the structure

6 Identify lessons learned, and make recommendations for your regional ecosystem development

The main challenges for local RIS3 development, taking into account first monitoring report results: investment in R&D increased up to 1,5% of GDP; development of knowledge base and human capital; development and increase of manufacturing industry productivity; FDI attraction and regional development.

The strengths of UL are world level research, highly qualified scientific personnel; some researchers are involved in sector policy making on national level; stable partner network – both local and international; well developed infrastructure.

The strengths mentioned before are leading to the following opportunities meeting the RIS3 challenges of the national level as well: the Academic Centre will provide an opportunity to increase multidisciplinary research and innovations; an increase in research capacity in connection with an increasing number of doctoral students and received degrees; favourable geographical location of Latvia is providing the possibilities for establishing international

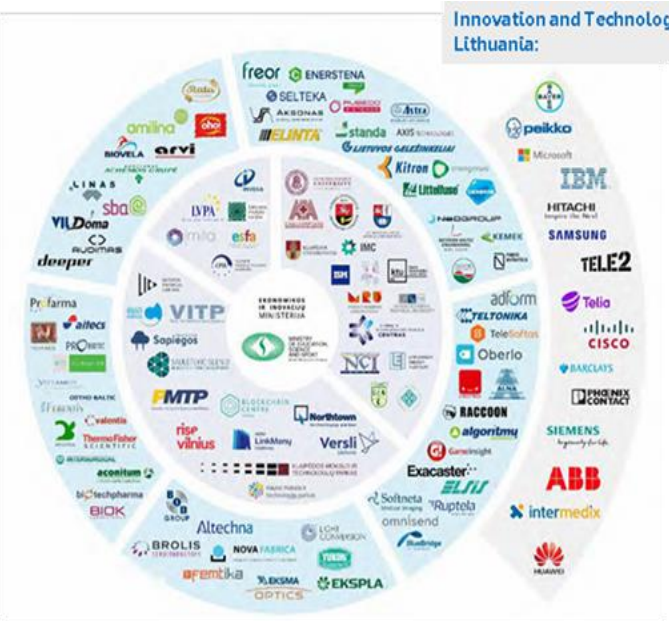
of the national economy remains not only unchanged, but also deteriorates. Challenges of the Latvian economy development: • Necessity to foster diversification of production and technological modernisation; • Concentration on manufacturing of products with a higher added value is required; • It is necessary to find complex solutions to eliminate weaknesses in the Latvian innovation system by improving Latvia's position in international ratings; • The performer of the transformation process is the entrepreneur who decides to modernise production or shift resources to another industry/region/country. The main goal of the Policy is to increase entrepreneurs' motivation; • It is necessary to reduce the productivity gap with highly developed countries in order to prevent stagnation and avoid middle-income-trap; • Structural reforms that will reduce the imbalances in labour demand and supply are required; • It is necessary to improve the institutional and business environment by removing obstacles to more efficient use of resources. Taking into account the information above – even though Latvia has structurally successful innovation ecosystem, it is hindered by: • Significantly lower investments in R&D as a percentage of GDP than EU average; • Business sector is dominated by SMEs with very limited financial possibilities; • Lack of mechanism and resources for innovation development from laboratory (TRL3/4) to market (TRL7/9).	contacts and networking in science. The interest of foreign researchers about announced vacancies for post-doctoral and researcher positions is already observed as well as the market cooperation with partners in the BSR is enlarging.

LATVIA	
7 Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP	**Smart energy** is in line with Smart up theme **Climate change**. Research and innovation play an important role in competitiveness increase in the sector, otherwise the creation of a single European energy system is impossible. University of Latvia appears to be part of this ecosystem as well - faculty of Physics and Mathematics is performing research in the energy efficiency of building structures, modelling wind power, and optimizing and managing various electrical processes, thus UL researchers make a significant contribution to

	the generation of new knowledge. Also, the UL Institute of Solid State Physics with several years of research in hydrogen recovery, storage and energy release methods and prototyping for economic use is considered to be part of this ecosystem.
	.

LITHUANIA

1 Describe the boundaries of your geographic region	2 What spearhead have you chosen in Smart Up?
The definition "region" in Lithuania is associated with three types of territorial units: administrative units of the state territory of higher level – counties (apskritys); ethnocultural regions; territorial units where Lithuania's national regional policy and the European Union's cohesion/ neighbourhood policy are implemented. In 2016, the Government formed two larger non-administrative regions corresponding to NUTS II (the Capital Region and the Central-Western Lithuania Region). Before this, Lithuania was considered as single NUTS II region. This change was done in order to avoid losing certain EU financial assistance in the upcoming EU financial perspective (since due to the economy of Vilnius County, Lithuania would exceed 75 per cent of the EU average GDP per capita, thus losing EU funding for lagging regions). The Capital Region and the Central-Western Lithuania Region have no governing bodies or powers, and EU financial assistance (if said is still planned according to NUTS II regions) would in any case be managed using a centralised national system. Nevertheless, Smart specialization is covering whole Lithuania and all regions (NUTS III level) in Lithuania have equal opportunities to participate in and use of the support foreseen in many financial instruments. Even if the described elements of innovation ecosystem apply to whole Lithuania, some regions take advantages of their geographic placement or other regional opportunities and use them to form additional place-based innovation ecosystems.	Klaipeda Science and Technology Park (KSTP) is an active player in the innovation ecosystem of Klaipeda region. KSTP implementing innovative projects also helps science and business to find common points to create and innovate together. In Project Smart-up BSR Klaipėda Science and Technology Park has chosen smart port theme. Klaipėda region is influenced by Klaipeda Sea Port that's why KSTP seeks breakthrough innovations in port technology and transport. Main R&D directions at KSTP are: - Marine technologies; - Information technologies and telecommunication, - Transport and transportation technologies; - Environmental technologies - Digitalization and automatization solutions. Innovation ecosystem in Klaipeda region involves: - Start-up companies (innovation projects); - Innovative growth companies (free economic zone, LNG Cluster, Klaipeda Posrt companies, others) - Investor networks (Klaipeda science and technology park, Baltic tech park) - Research infrastructure (KU Marine research institute, others KU laboratories) - Skilled talent pool. The innovation ecosystem of Klaipeda region cannot operate separately from the national innovation ecosystem. Smart specialization directions and other key players in the Lithuanian innovation ecosystem influence the Klaipėda region and the innovation ecosystem.

LITHUANIA	
3 List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead	4 Identify the role of your organization in this innovation ecosystem
Implementation of the S3 requires widest possible involvement of business entities and science and study institutions in Joint Projects.  R&D&I Ecosystem in Lithuania consists of: **Business industry** (national & international start-ups, experienced innovators - creating and developing new products and putting them into the market); **Science, study, research institutions** (creates knowledge which is the basis for innovations and preparing qualified specialists – creative force- the cornerstone of the modern society); Innovation support and administration institutions (Lithuania **Business Support Agency** (LVPA), Central Project Management Agency (CPVA), European Social Fund Agency (ESFA), etc. – are responsible for allocations of SF/ESIF funding on research and innovation in Lithuania; **Innovation policy implementation agencies (**Agency for Science, Innovation and Technology (MITA) is the main governmental institution responsible for implementation of innovation policy in Lithuania. Together with 'Enterprise Lithuania' and 'Invest Lithuania' implements various programmes and initiatives designed to promote innovation, commercialization of R&D results, international cooperation, attracts new investors to Lithuania);	Implementation of the Joint Initiatives is organized according to the Provisions of the Joint Initiatives Procedure by the Agency for Science, Innovation and Technology – MITA. MITA is one of the main institutions, responsible for implementation of S3 and promoting the collaboration between businesses and science and study institutions. This governmental agency is organizing discussions of the implementation of the Programme and Individual R&D&I priority action plans with the process participants and other stakeholders from both public and private sectors. MITA is responsible for the preparation of proposals to the stakeholders, organization of information seminars and partner search events, activities of collaboration between science and study institutions and other public and private entities in order to encourage their joint participation in the projects to be implemented under the study and RDI policy measures. MITA is also providing consulting to economic entities on the possibilities of applying the R&D&I results in the production of high value-added products. To ensure the quality of the results, MITA may hire experts competent in the relevant R&D&I priority areas for the implementation of the Agency's activities (an expert per area). Currently MITA is also ensuring the process of coordination of the group work in

Monitoring institution (Government Strategic Analysis Center (STRATA), previously known as Research and Higher Education Monitoring and Analysis Centre (MOSTA) is responsible for the monitoring and assessment of the implementation of Smart specialisation strategy (further - S3) in Lithuania, the R&D&I priorities and the R&D&I priority action plans; **Innovation development institutions** (Lithuanian Innovation Center (LIC), Science and Technology parks provide consulting services to business, science, industry and public sector.); **Innovation policy-making ministries** (Ministry of Economy and Innovation and Ministry of Education, Science and Sport are the main institutions responsible for science, technology and innovation (R&D&I) policy formation). The Innovation ecosystem in **Klaipeda region** involves: • Start-up companies (innovation projects); • Innovative growth companies (free economic zone, LNG Cluster, Klaipeda Posrt companies, others) • Investor networks (Klaipeda science and technology park, Baltic tech park) • Research infrastructure (KU Marine research institute, others KU laboratories) • Skilled talent pool.	each S3 priority by allocating existing resources and expertise through various projects and budgetary means. MITA also facilitates organizing projects, hackathons, labs and other initiatives, that strengthen innovation ecosystem.

LITHUANIA	
5 How does this ecosystem support/hinder innovations?	6 Identify lessons learned, and make recommendations for your regional ecosystem development
The Klaipeda region case shows how this region is using their unique geographic location, set of players and cooperation possibilities to build separate marine/ smart port ecosystems. Interreg BSR supported project Smart up BSR provided instruments to foster development of this innovation ecosystem in Klaipeda region by three main pilot projects – LNG Forum 2019, Portathon Baltic 2019 and Delta Navy, that were jointly co-organized by Klaipeda Science and Technology park and MITA, together with other key players of Innovation ecosystem. Klaipeda Science and Technology Park (KSTP) is an active player in the innovation ecosystem of Klaipeda region. KSTP implementing innovative projects also helps science and business to find common points to create and innovate together. In Project Smart-up BSR Klaipėda Science and Technology Park has chosen smart port theme. Klaipėda region is	The innovation ecosystem of Klaipeda region cannot operate separately from the national innovation ecosystem. Smart specialization directions and other key players in the Lithuanian innovation ecosystem influence the Klaipėda region and the innovation ecosystem. The innovation ecosystem in Klaipeda region is interested in cooperating, generating joint activities and projects, also involving foreign partners and their best practices. All innovation ecosystem parties are open not only with their human recourses but also with their infrastructure and contacts. Solutions and ideas that was generated during Pilot project not only received the support of the city municipality, but also attracted the interest of innovative companies. Lessons are outlined in the document: Place-based ecosystem in Lithuania, overview and

influenced by Klaipeda Sea Port that's why KSTP seeks breakthrough innovations in port technology and transport. Main R&D directions at KSTP are: • Marine technologies; • Information technologies and telecommunication, • Transport and transportation technologies; • Environmental technologies • Digitalization and automatization solutions. The strengths of the innovation ecosystem of Klaipeda region could be identified: a favourable environment for innovation, cooperation of business and science and human resources. The contribution of Klaipeda Science and Technology Park to the innovation ecosystem is quite important – science and business relations have been intensifying lately. All innovation ecosystem participants are involved to achieve main Klaipeda region goals – to attract new technology Klaipeda municipality in 2019 has also approved Klaipeda Economic Development Strategy 2030 where main actors are innovation ecosystem participants. Good example about how different stakeholders and innovation ecosystem actors are involved in implementation of S3 is their participation in Pilot initiatives, that are worked out with the help of Smart up BSR project. During 2019 there were initiated and implemented one pilot project in theme Smart City which involved three events, that aim to attract citizens and other stakeholders to create the unique ecosystem, needed to produce new products and technologies for smart maritime sector. The main task of the pilot was to analyse the current situation of ports, maritime transportation, their challenges, the technologies applied in the port and generate ideas, prototypes, solutions for port digitalization and automation processes with the help of target groups.	Klaipeda region case, which is annexed to this document.

LITHUANIA	
7 Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP	With this pilot project event Klaipeda Science and Technology Park (KSTP) and MITA has demonstrated that both science and business representatives can jointly generate solutions and

	share not only theoretical, but also practical experiences. Klaipeda university, as one of the main parts in the Klaipeda region innovation ecosystem is looking to specialize its education programs according to the current need and considering the great potential in the field of maritime transport. This will allow more professionals to be placed on the market. Klaipeda authorities and Klaipeda ID (City development agency https://www.klaipedaid.lt/) have a package of offers to attract more talents to the region. It is also sought to attract an international university to the Klaipeda region, which is expected to bring added value to the entire innovation ecosystem of the region. Another important highlight that is crucial to the growth of the innovation ecosystem is the engagement of business and science and other organizations in clusters. Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also co-operate (Michael Porter, a Harvard University Professor). A classical cluster is the one where companies of various sectors, whose activities are focused on specific value chains, intertwine.
	.

POLAND / GDANSK

1 Describe the boundaries of your geographic region

The Metropolitan Area of Gdansk-Gdynia-Sopot is the largest and the fastest-growing metropolitan area in northern Poland, it is located in the Pomorskie Region, near the Bay of Gdańsk. It is inhabited by more than 1.5m citizens. It is one of two metropolises with the fastest population increase, according to Statistics Poland (Główny Urząd Statystyczny) predictions

The Metropolitan Area of Gdansk-Gdynia-Sopot is a bottom-up association of 57 municipalities. The Gdansk-Gdynia-Sopot Metropolitan Area was established on September 15, 2011, to strengthen cooperation and to achieve the sustainable development of the entire metropolitan area around Gdansk, by making the best use of the potential of the member cities and municipalities, while at the same time respecting their differences and unique idiosyncrasies. The two biggest cities in the metropolitan area are Gdańsk and Gdynia.

The Gdansk-Gdynia-Sopot Metropolitan Area is also a significant centre of integration processes within the Baltic Sea region, as well as being an important link in the transport chain, linking the north and west of Europe with central and southern Europe. The international importance of the Gdansk-Gdynia-Sopot Metropolitan Area is also shown by the ever-expanding network of air connections available from Gdansk Lech Walesa Airport; the number of international corporations or local companies which have invested abroad. This importance is also demonstrated by the number of international agreements signed with our universities, the increasing number of foreign students and the number of joint research projects undertaken.

2 What spearhead have you chosen in Smart Up?

Gdansk-Gdynia-Sopot metropolitan area is a window to the world to gain access to Central and Eastern Europe, which are the natural catchment areas for the two largest seaports in Poland. Both of the ports have a direct connection with the ports of South East Asia. That is why the Smart Port spearhead has been selected within the Smart-up BSR project.

POLAND	
3 List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead	4 Identify the role of your organization in this innovation ecosystem
Gdansk entrepreneurship foundation - Gdansk Entrepreneurship Foundation (Starter Incubator) conducts the role of the Leader (Coordinator) of 1 Pomeranian Smart Specialization – Maritime/Transport/Logistics/Offshore. Their role is to effectively link traditional maritime companies with innovative startups, scale-ups and SMEs to build up cluster solutions and involve academic institutions to simplify business – academia cooperation. Pomorskie Maritime&Logistics Smart Specialization Board - The council was created as part of each of the 4 Pomorskie smart specializations to better cooperate in setting the direction of the Smart Specialization activities and to exchange knowledge on a regular basis. The maritime and logistics council consists of representatives of the seaports (the port in Gdańsk and in Gdynia) as well as universities, research institutions, business environment institutions and representatives of the logistics and maritime industry. Pomorskie region - the authorities of the Pomeranian region are responsible for the creation and activity of Smart Specializations Gdansk-Gdynia-Sopot Metropolitan Area - a bottom-up association of 57 municipalities and cities that strive to operate across sectors, where possible, including not only local authorities but also business environment, science and non-governmental organizations. City of Gdansk and City of Gdynia - two largest cities in the metropolis and the Pomeranian region, in which innovations naturally develop the most, and which attract investors and business and new citizens University of Gdansk and Gdansk University of technology -The two largest universities in the metropolis - with over 23,000 and 15,000 students, respectively in 2019. Pomorskie is the largest	As a bottom-up association, consisting of 57 municipalities and cities we strive to operate across sectors as much as possible, including not only local authorities but also business environment, science and non-governmental organizations. In the process of building strategy or implementing progressive policies, or other actions, we try to **involve all identified stakeholders** and work as **participative and inclusively** as possible. We also run a Metropolitan Socio-Economic Commission, where issues related to the development of entrepreneurship are one of the priorities. Representatives of this Commission take part, among others, in works on the new strategy of the Pomorskie Voivodeship. Also one of the Working Groups within the Socio-Economic Commission deals with education for the development of entrepreneurship. Our organisation is also a platform for exchanging experiences both within the metropolis and with other cities/metropolises. Also in one of our projects as a part of Integrated Territorial Investments (ITI) there is a project of cooperation between science and technology parks from Gdańsk and Gdynia. As part of this project, an IT platform is being developed for better

academic centre in northern Poland. Twenty-four colleges operate in Pomorskie, which educate a total of over 81 thousand students. In 2019, over 21,000 of them became graduates. The Port of Gdansk and Port of Gdynia - The two biggest seaports in the metropolis, dynamically developing with constantly-expanding logistics facilities. The Gdańsk-Gdynia-Sopot metropolitan area acts as a port hub for Central and Eastern Europe.	cooperation between science parks and for better communication between science parks and SMEs.

POLAND	
5 How does this ecosystem support/hinder innovations?	6 Identify lessons learned, and make recommendations for your regional ecosystem development
The ecosystem helps the pilot by organizing regular meetings, dedicated events (conferences, hackathons, Innovation Camps), as well as regular animating and supporting initiatives Smart Metropolia, the annual conference in Gdansk, already is/and still could be a platform for sharing the smart solutions between the cities and its between cities and their rural surroundings. Congress is based on the idea of cross-sectoral cooperation (quadruple helix stakeholders are involved). Every year, we also try to make the congress supporting socially and ecologically responsible solutions.	An important issue is the early involvement of all identified stakeholders. The concept should be developed as participative and inclusively as possible. In building cooperation, the most common problem is to understand that together we can do more: that bigger (city/municipality/institution, business) can help the smaller, or the more experienced can share his knowledge with the less experienced and often it is a big advantage for both. It is extremely important to diagnose the needs first and to think about the impact of this initiative and how we will monitor the change and how we will keep the continuum. While working together with various stakeholders, it is a huge challenge to jump over political divisions and over the atmosphere of competition. The metropolis and the entire region should jointly consider how to prevent too much outflow of talent. There should be joint actions to ensure a good quality of life, adequate housing, good transport connections, as well as access to the natural environment. Another important thing is finding some tools to support entrepreneurship from an early age for children.

POLAND	
7 Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP	The structure of the new Strategy of the Pomorskie Voivodeship 2030 covers global challenges and conclusions from the analysis of the socio-economic situation of the Pomeranian Voivodeship contains basic diagnostic theses, key from the point of view of intervention planning, formulated, among others based on statistical data and monitoring, conclusions from scientific and evaluation reports and publications, as well as knowledge expert. A SWOT analysis was also developed and investment conditions were identified development of the voivodeship in the perspective of 2030. Scenarios for the development of the Pomeranian Voivodeship until 2030 present - in a variant way - possible development paths of Pomerania in the next 10 years. In the process of developing the above scenarios, a number of variables were used, such as digitalization, climate crisis or the aging of the society. The strategy input from the metropolitan team was also based on global challenges Gdańsk 2030 Plus Development Strategy outlines the directions of long-term development, it forms the grounds for conscious shaping of processes taking place in the city. The Strategy identifies most important challenges that the city faces, needs of its residents, and also it provides an overarching framework for cooperation between parties engaged in shaping Gdańsk's future https://www.gdansk.pl/download/2016-11/81350.pdf

RUSSIA

1 Describe the boundaries of your geographic region	2 What spearhead have you chosen in Smart Up?
St. Petersburg is located at the eastern point of the Gulf of Finland of the Baltic Sea. The city covers an area of 1439 km2, 650 km2 of which is the territory with high-density buildings constructed on it. St. Petersburg is the second largest city in the Russian Federation. The population of the city according to Rosstat is 5 383 890 people. (2019). The population density is 3837.41 people / km2 (2019). The average life expectancy in St. Petersburg in 2016 was 74.6 years. There are representative offices of international organizations, consulates of foreign states, territorial bodies of federal ministries and departments. Also, since 2008, the Constitutional Court of the Russian Federation has been located in St. Petersburg. St. Petersburg is the administrative center of the North-West Federal District, which includes the Republic of Karelia, the Komi Republic, Arkhangelsk Region, Vologda Region, Kaliningrad Region, Leningrad Region, Murmansk Region, Novgorod Region, Pskov Region, Nenets Autonomous District. The Northwest Federal District has significant natural resource potential, a highly developed industry, a dense transport network, and through the seaports of the Baltic and the Arctic Ocean provides the Russian Federation with the outside world. 20% of the total volume of transportation of export-import goods of the country pass through St. Petersburg, including 52% of imported goods that are delivered to Russia by sea.	St. Petersburg is focusing on the development of the Smart City actions that have been spearheaded and are also in line with developments that are supported nationally. This involves several areas of Smart City functions as the concept is ambitious and reaches from citizens services to business services to cultural services.

RUSSIA	
3 List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead	4 Identify the role of your organization in this innovation ecosystem
Universities & research institutes: ITMO University, Saint-Petersburg State University of	ITMO University creates favorable climate for the promotion and taking up R&D results to the

Architecture and Civil Engineering, St. Petersburg State university Relevant companies (spearhead): JSC “Algorifm”, national telecom operator “Rostelecom”, PJSC “MegaFon”, PJSC Russian Towers, GC “RT Labs”, JSC “SUPERTEL”, GC “Open Systems and High Technologies Center”, Arrow Electronics, LLC Pepeliaev Group, LLC “Rosengineering Project”, CJSC “OS Group”, PJSC Mobile TeleSystems (MTS), CompTek, Comfortel. Public organizations Associations of participants in the Internet of Things market, Non-profit Organization “National Association of Home Information and Communication Networks” (NADICS), Non-profit Partnership “ and RUSSOFT”, Non-profit Partnership Club of Leaders in Promoting Business Initiatives, International Academy of Communications (IAC), Association of Alternative Telecommunications Operators (OJSCC) , Club of IT Directors “i-IT-s”, CJSC OS Group Dmitry Zuev Civil society organizations (representing citizens/consumers) All-Russian public organization of small and medium-sized enterprises "Support of Russia"	market. Building up full-fledged communicative environment ITMO supports researchers, scientists and entrepreneurs, innovators and policy-makers to facilitate their interactions. ITMO has created sustainable innovation ecosystem to support innovations and turn research results to successful ventures. Providing taking up to the market innovations and transferring technologies, settling start-ups and small innovative enterprises ITMO operates as an entrepreneurial university. Innovation system or hub of ITMO consists of well-developed instruments and practices: Centre for Entrepreneurship, engineering center, Techno Park, FabLab, start-up accelerating programs, Foresight Center, Center of transferring technologies. ITMO provides sustainable support to innovators, researchers and entrepreneurs among the staff and students of ITMO. The ITMO innovation system contains European offices (Italy, Belgium) and networks with national and international partners in innovation and entrepreneur activities. ITMO University as an innovation and entrepreneurial university participates in the life of the city and region that contributes to efficient development of the region and enhances social sustainability and economic prosperity. Today the annual turnover of 40 ITMO SMEs consists of 70 billion rubles. ITMO students and staff work in more than 100 start-ups. ITMO accomplishes social projects. Carrying out different society significant projects ITMO becomes social responsible and person-focused university - the basic characteristics of University 4.0. It plays significant role within the Triple Helix interaction between academia, government and business at the regional level and inputs the innovation growth of Saint Petersburg. ITMO participates in five innovation clusters in Saint Petersburg. ITMO has experienced in tackling social and economic challenges in the region of Saint Petersburg that composes the base for the University to take scientific and technological level for advance development in future. The leading idea of ITMO strategy is to focus on the demand of the society and economic. The ITMO mission is to generate advanced knowledge, train highly qualified graduates capable to tackle of the world’s challenge and co-create national and international innovation system to benefit for the region, country and people.

RUSSIA

5 How does this ecosystem support/hinder innovations (context: use spearhead of your pilot as example)	6 Identify lessons learned, and make recommendations for your regional ecosystem development
The objective of the Smart City in St.Petersburg is to improve the quality of life of citizens and ensure its sustainable economic development. The widespread use of advanced ICT is also intended to ensure intensive and high-quality interaction between citizens, business representatives and government authorities. Implementation of Smart City was launched by St. Petersburg governor Alexander Poltavchenko and administration in 2017. The National Program “Digital Economy of the Russian Federation”, approved by the minutes of the meeting of the Presidium of the Presidential Council for Strategic Development and National Projects of the Russian Federation dated June 4, 2019 No. 7. and the Strategy for social-economic development of St. Petersburg serve the strategical and legal framework of transforming St. Petersburg in Smart City. The implementation and governing of Smart City implementation was delegated to Smart St. Petersburg Project Office. The office includes representatives of ITMO University, which is a recognized educational and scientific leader in the field of IT technologies, representatives of business entities which perform in the development and production of state-of-the-art software and hardware, and representatives of the executive bodies of St. Petersburg government. The head of Smart St. Petersburg Project Office is V. N. Vasiliev, ITMO University Rector. ITMO Expert had elaborated the Smart City concept that was approved by St.Petersburg government in April of 2018. Based on this concept, a priority program "Implementation and use in St. Petersburg of the technologies of the" smart city "using IT solutions for the period until 2024" and related activities for the implementation of smart city technologies was developed. Smart City concept defines the roadmap and priorities for smart technology solutions and technologies. The process of introducing of smart city technologies and activities in St. Petersburg perform as an annual cycle of events: Stage 1. is identification of priority areas for the implementation of the components of the “smart city”. Measures are being taken to update the characteristics and parameters of the digital image of the city and identify problems and development prospects based on it. Stage 2. Competitive selection of projects for inclusion in the “smart city” in priority areas. Based on the results of the project evaluation, a list of projects is proposed that are proposed for implementation as part of Smart St. Petersburg for final decision-making by the responsible public authority. Stage 3. Implementation and implementation of projects. Stage 4. Monitoring and evaluation of target performance indicators for the implementation of Smart St. Petersburg and its components.	• What could your organization do to improve your regional innovation ecosystem? ITMO University is an active actor in innovation ecosystem, it is fully committed into smart city implementation. Beside contributing the expertise in Smart St. Petersburg Project Office, participating in priority program roadmap implementation, hackathons, accelerator programs ITMO are the partner of ITMO Highpark project. ITMO Highpark is a center of innovation, education and high technology in St. Petersburg which embraces an innovative world-class scientific and technological center is being created, including a new campus of ITMO University, the Highpark innovation center, and the innovative science and technology center. The Highpark Innovation Center will commercialize scientific and innovative achievements, supports existing and creates new high-tech enterprises for the growth of the digital economy in the Russian Federation. An infrastructure is being created for the development of innovative projects, including acceleration, information, consulting and financial support for introducing innovative Russian products to the international market. ITMO Highpark will be a new generation innovation center focused on the integrated development of scientific, educational, high-tech, social and residential infrastructures. • Sound transport accessibility • Location of a land plot of 100 hectares in the city • Capacities for innovative development of the territory of the satellite city “Yuzhny” using advanced ideas and technologies for organizing urban space – a pilot of Smart City

The experts and developers of Institute of Urban Studies and Design developed a digital platform where people can learn more about the project and share their ideas and suggestions on how to improve the situation in the city. All residents of St. Petersburg and developers of various urban development projects concerning energy-efficient lighting, green spaces, social infrastructure, public information amenities, etc. Companies and startups in the field of urban development use the platform to upload their projects. Their suggestions will undergo several stages of assessment: • Every application is first reviewed by a moderator. • The project is then assessed by a group of experts. The project is evaluated by an expert council, which will include a representative of the field to which the project belongs (for example, if the project involves changes in the healthcare system, then the council will have a representative from this area), a representative of the authorities of St. Petersburg, as well as a developer of the concept of "Smart St. Petersburg" (that is a representative of ITMO University). • Concurrently, the project is shared on the website where every citizen can have their say. • If the project is approved by both experts and citizens, it is included on a list that will be submitted to the Governor of St. Petersburg. Thus, it can be said that implementing the smart city concept in St. Petersburg is facilitated with the existing innovation ecosystem. The representatives of Quadro Helix interact in the course of proposing projects, selecting them and afterwards in taking them into real life. Another path of figuring out solutions and proposals of smart city is to carry out hackathons. Universities in collaboration with other innovation actors, such as techno parks and business incubators, run Smart City and Green Sustainable hackathons. The financial mechanism of executing the smart city technological solutions embraces different forms from government support to government-private partnership, private investments. The smart city implies maximum usage of ICTs to meet the needs of citizens, and thus public participatory principle in the process is a necessary condition of implementing smart city. In general, the city is seen as an open platform for communication between business, citizens and government. In this case, the active participation of citizens via expressing the needs and demands by the means of digital platform and other ways contributes into transforming St. Petersburg in a comfortable city for living and address urban development challenges.	

RUSSIA	
7 Give examples of local policy making utilizing scientific research	1. Scientists and researchers from ITMO University accomplished IMPRECITY project

from any spearhead themes of Smart UP	that allowed to visualize information about citizens' feelings and informal behavior patterns and practices about and connected with the city and its various public spaces, and the results of the project can be applied during the design urban development projects. 2. Smart St.Petersburg Concept was developed by experts of Institute of Urban Studies and Design of ITMO. 3. A digital platform of Smart St. Petersburg was developed by Institute of Urban Studies and Design of ITMO
	.

4. Conclusion

This overview of pilots presents the reflection of regional actors in nine regions in the Baltic Sea Region concerning place-based innovation ecosystems. The activities in the regions were done within the Smart-Up BSR project.

For several of the regions the approach was a way to emphasize the role of research and scientific collaboration in pushing forward regional development. The core of a place-based innovation ecosystem based on these regional reflections is a successful leverage of the local research and innovation strengths through collaboration. However, international collaboration plays a key role as well, and needs to be improved.

This overview presents the kind of resources regions have or need to be made available to support the innovation theme from a place-based perspective (e.g. human capital, finance, technology, supporting legal framework, favourable market conditions)

Finally, the role of regional actors through their commitment to the shared goal and vision is emphasized.

ANNEX – Original reflection paper documents

DENMARK, Reflection paper by Aarhus

Describe the boundaries of your geographic region

Denmark is divided into five regions. Aarhus is part of the Central Denmark Region, which stretches across the central part of Jutland. 1.3 mio. people live in this region, which covers 19 municipalities. Aarhus is the second largest city in Denmark and the largest in the region with a population of 350.000 citizens. Aarhus municipality is a project partner in Smart-up BSR and Aarhus University is the associate partner.

What spearheads have you chosen in Smart-Up?

Aarhus is internationally known as an innovative smart city and supports other municipalities and stakeholders by being a first-mover and paving the way, which is also why the Smart City spearhead has been selected within the Smart-up BSR project. A significant milestone on Aarhus' Smart City journey was made in 2012, where a diverse group of stakeholders from the industry, research and knowledge institutions, and public sector established "Smart Aarhus". The experiences from the Smart City projects running in Aarhus and coordinated within Smart Aarhus, but also experiences from other municipalities should be collected and shared in a way, so they can be operationalized better for other municipalities. When it comes to the Internet of Things (IoT) many municipalities struggle with deciding which way to go, what technologies to priorities, and who to collaborate with. Developing and implementing IoT solutions in the cities requires alignment on activities on both practical and political levels and that there is a need for a more coordinated effort between the cities. The pilot that we are working on in Smart-UP BSR is therefore to establish a regional IoT and GovTech Center and explore new collaborations and create networks, where we can become stronger and faster in creating solutions that can make our cities better. As part of this we are building a concept for an IoT Starter Kit for cities to assist them, when exploring how IoT can help create better urban solutions.

List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead

Smart Aarhus is a coalition of the willing who collaborates on Smart City initiatives through a set of guiding principles, which serves as a "Scandinavian Third Way". As part of Smart Aarhus' establishment 35 working groups was created consisting of quadruple helix stakeholders. These groups came up with some of the founding initiatives in Smart Aarhus. One of these was the Internet Week Denmark (IWDK) Festival, which is an annual festival celebrating the internet. In 2019, IWDK had 11,000 participants coming from both the public sector, private companies, knowledge institutions and citizens, which make up the informal part of the ecosystem in the city, but also on a national level. Below is a highlight some of the key actors in the Smart City ecosystem in Aarhus and the region – most of who is also important drivers in the establishment Aarhus' Smart-uP BSR pilot:

DitCom, Aarhus University: Centre for Digital Transformation in Cities and Communities works with research and innovation projects and partnerships that address the digitalisation that is increasingly shaping our cities and communities. Located at Aarhus University, the centre has a human-centric approach to digitalisation and technology applications.

ORBIT Lab, School of Engineering, Aarhus University: is a creative and inspirational tech hub with workspaces and unique experimental facilities packed with the most recent technologies in ICT such as mobile, wearable, cloud, internet of things, virtual reality and augmented reality.

The Central Denmark Region: Central Denmark Region has an ambition is to be an attractive and sustainable region and to contribute to solutions to major challenges both nationally and globally.

Business Region Aarhus: Business Region Aarhus is a partnership between 12 municipalities. Denmark's largest growth area outside the capital, Copenhagen.

Business Mid West: Business Mid West covers the remaining 7 municipalities in the region as is an important partner to establish a regional GovTech center.

Aarhus Municipality: The municipality is divided into six magistrates, which are Mayor's Department, Social Affairs and Employment, Technical Services and Environment, Health and Care, Culture and Citizens Services and Children and Young People. The Smart City agenda encompasses many of the departments in the municipality and covers different topics such as open data, mobility, climate change, healthcare, education, business support, urban planning, and more. One of the city's ambitions is to become CO2-neutral by 2030.

The Alexandra Institute: The Alexandra Institute is a privately owned, non-profit company that works with applied IT research, development and innovation with the aim of creating growth and welfare within Danish society.

IT-Forum: It-forum is a membership-based network of 20.000 IT professionals in all positions from 470 companies from private and public organizations, colleges, and local, regional and state authorities in Region Midtjylland and Southern Denmark.

Open Space Aarhus: A community-driven hackerspace, where tech-savvy citizens can come and work on tech-projects.

IWDK & Aarhus Mini MakerFaire:

The tech festivals in Aarhus also operate as key actors in the Smart City ecosystem. They serve as temporary (yet recurring) testing ground for new collaborations and solutions.

Identify the role of <u>your</u> organization in this innovation ecosystem

The Aarhus Municipality is a frontrunner, when it comes to starting smart city initiatives. Aarhus Municipality was the first municipality in Denmark to establish an Open Data platform, and was instrumental in establishing the national open data initiative Open Data DK, which is also chaired by the CEO of the department for Innovation, Technology and Creativity. Previous open source initiatives also inspired and paved the way for another national initiative called OS2, which is a national Open Source community for Municipalities for developing and maintaining shared ICT solutions, and the secretariat is now hosted in Aarhus Municipality. Aarhus Municipality also installed a city-wide LoRaWAN network for IoT to speed up the IoT development of the city. Many other examples showcase Aarhus Municipality's role as a first mover regarding the application and exploration of new technologies into the public sector and urban environment. Aarhus Municipality always does this through an open mindset; The solutions are whenever possible created as open source, and all experiences and insights are shared with other municipalities who is about to embark on similar journeys. Aarhus Municipality's role in establishing the regional IoT & GovTech center is therefore important to drive the vision and convey the value proposition of the center and to help gather the right stakeholders.

How does this ecosystem support/hinder innovations (context: use spearhead of your pilot as example)

Another network called GeoMidt, which is a cross-municipal network for GIS-experts also has an ambition of establishing an IoT network. This network is a collaboration between the 19 regional municipalities on geodata. There can be made great synergies with the IoT & GovTech center here.

The Business Region Aarhus has already worked with an IoT challenge focused on mobility, so early experiences from using the technology from other municipalities can be collected and used as a foundation for the center.

Aarhus Municipality's existing collaborations with IoT SME's are helping shape the legal framework for testing/demonstrating IoT/Smart City solutions. So experiences from legal aspects can also be fed into the center from this activity.

However, since the uptake of IoT is happening at such a fast pace, it also means that it is a challenge to align activities and interest. Many new networks and projects are created, so it is important to try to keep the overview of these, to ensure that experiences from other projects and stakeholders are transferred to these initiatives, so the same mistakes are not repeated. Another hinderance to some degree is that the Central Denmark Region cannot take part in business support activities after the recent form of the business support system in Denmark. This means that there are some of the business aspects of the center, which they cannot co-develop. The IoT startup scene is also still emerging and could be stronger to support the local development of IoT and GovTech solutions even more.

Identify lessons learned, and make recommendations for your regional ecosystem development

- IWDK, the annual digital festival in Aarhus, is a platform that can be operationalized even more by having to develop the Smart City solutions of the City. We encourage stakeholders from the whole quadruple helix to reach out to each other and collaborate on making each others initiatives even more meaningful and relevant to society. IWDK is all about co-creation and debates about how our city and society in general should develop and be a livable place for our citizens. This level of openness and curiosity between the stakeholders in the ecosystem is vital and should remain a priority.
- The efforts on the developing a smart city, should be more focused on challenges experienced from the rather than being technology-driven. Therefore, six main challenges for the city has been identified. The challenges are cross sectorial and involve a broad partnership across the public and private sector, knowledge institutions and the citizens.
- A shared vision of making Aarhus a living, breathing, a global testbed for innovative Smart City initiatives will help the city sustain its momentum and end up with solutions to the City's challenges at a faster pace. E.g. we are working on combining the city's living lab with Aarhus University's new campus area that also are going to function as a living lab. Creating City Labs is a way to strengthen the Smart City market and startup scene.

Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP

The new business plan for Aarhus Municipality covers Smart-up BSR spearheads such as Smart City, Climate Change, Circular Economy. In the process Aarhus University has given feedback on its

content, while it has also been in public hearing where other research institutions have provided responses.

ESTONIA, Reflection paper by Tallinn

Describe the boundaries of your geographic region

The country is highly centralized with two levels of government: the state and local municipalities. County-level has no executive nor elective body. Municipalities in Estonia are mostly responsible for service delivery while the state is responsible for policy development and higher-level service delivery.

The City of Tallinn is the capital of the Republic of Estonia. As of January 1 2020, the population of Tallinn City was 443 932 residents which is 1/3 of the total population of Estonia. Tallinn together with the rest of the surrounding Harju county have a population of approximately 600 000 people.

Tallinn has been blessed with a good location as it is surrounded by some of the most important cities in the Baltic Sea region such as Helsinki, St. Petersburg, Stockholm and Riga which gives numerous business and cooperation possibilities.

What spearhead have you chosen in Smart Up? (active healthy ageing, climate change, smart city, smart port, circular economy)

Tallinn City has chosen smart city as its spearhead topic. A growing number of smart city projects and initiatives have been launched in Tallinn. In March 2019 Tallinn City together with Tallinn University of Technology launched the TalTechCity initiative with an aim to strengthen educational and project cooperation in topics related to smart city development. Together with Mainor Ülemiste Tallinn City is co-funding the establishment of the Future City Professorship in Tallinn University of Technology. In December 2019 the first global Cross-Border Smart City Center of Excellence started its work in Tallinn University of Technology. The other partners include the Estonian Ministry of Economic Affairs and Communications, Aalto University and Forum Virium Helsinki. In 2020 Tallinn City launched a small fund for funding smart city projects in Tallinn City. An overview of different smart city projects in Tallinn City can be found here: www.tallinnovation.ee

The smart city concept is very much focusing on the integration of IT solutions into different hard (e.g mobility, energy) and soft domains (e.g education, data). As Estonia has strong competences in IT, the development and practical implementation of different smart city solutions can provide good cooperation opportunities for local companies, universities and municipalities. From the economic point of view, the development of new solutions can provide a good opportunity of Estonian companies to enter the global market as the demand for such solutions is increasing together with the growing urbanization in the world.

List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead

Universities & research institutes

Tallinn University of Technology is the only technical and the second-largest university in Estonia. TalTech serves as the location for the Cross-Border Smart City Center of Excellence. The university is also involved with numerous projects which have practical applications in the city environment.

Tallinn University is the third-largest public university in Estonia which mostly focusses on humanities. Tallinn University has competences in areas such as sustainable development, cultural studies, cultural geography, society and open governance.

Tallinn University of Applied Sciences (TTK) is the largest technical university of applied sciences. TTK has strong competences in civil engineering, architecture, logistics and circular economy.

Estonian Academy of Arts provides higher education in fine arts, design, architecture, media, visual studies, art culture, and conservation.

Public organizations

The City of Tallinn is the largest municipality in Estonia which also serves as the country's capital. Tallinn City is the economic hub of the country generating more than half of the total Estonian GDP. Tallinn is also an important cultural hub and is the location for the most of governmental organizations in the country.

Tallinn Science Park Tehnopol is the largest science park in the Baltic states which was established by the Ministry of Economic Affairs and Communications, Tallinn University of Technology and the City of Tallinn. The Science Park is located right next to the campus of Tallinn University of Technology which for companies provides additional piloting and cooperation opportunities. Tehnopol is the founder of Estonian HealthTech Cluster Connected Health and is an active member in the Estonian Smart City Cluster and leader for green-tech sector.

Enterprise Estonia is a national agency under the Ministry of Economic Affairs and Communications. The agency is responsible for providing different kind of business support such as counselling and funding. The agency is also running the Estonian e-Residency programme.

Union of Harju County Municipalities is the cooperation organisation which unites all the municipalities in the county. The Union is dealing with county-level questions such as the county-level development plan and county-level spatial planning.

Relevant NGO-s

Estonian Smart City Cluster is a cluster organisation which unites research organisations, companies and municipalities such as Tallinn, Tartu and Pärnu. The aim of the organisation is to support the creation of public test environments and the development and support export of innovative smart city solutions globally.

Estonian Association of Information Technology and Telecommunications (ITL) is a non-profit organization which unites local information and telecommunications technology companies and other relevant companies and organisations to promote the development of the sector. ITL is also the lead organization of the Estonian ICT cluster.

Relevant companies

It is hard to put together a complete list of companies that are active in developing smart city solutions. Most of such companies in Estonia are small or medium-sized enterprises that are trying to bring their product to the market. Here is a list of some of the companies.

Mainor Ülemiste is a private company that develops the Ülemiste City area which is located right next to Tallinn Airport. The area is home for over 400 companies, many of them active in logistics, IT, electronics etc. Estonian Tax Board and Estonian Entrepreneurship University of Applied Sciences are also located in Ülemiste. As a real estate developer, Mainor Ülemiste is heavily emphasising smart city development. The company is co-financing the Future City professorship in Tallinn University of Technology and is providing opportunities to test smart city solutions in Ülemiste.

Thinnect is a private company active in the development of IoT solutions. Together with TalTech, the company has recently installed 900 sensors in Tallinn which measure air quality and traffic flows. The sensors use solar power.

Ridango is a private company active in the development of Automated Fare Collection (AFC) and Real-Time Passenger Information (RTPI) systems for public transport systems. The clients of Ridango include Tallinn City Transport, Skånetrafiken, Klaipeda, Kyiv, Sörmlandstrafiken and Movingo.

Cityntel is a private company which provides smart city light solutions and has references in Tallinn and Tartu.

Reach-U is a private company which develops location-based services (LBS) and solutions such as custom GIS software, civil warning broadcast, civil safety application etc. The company is one of the largest providers of LBS to telcos serving more than 343 million subscribers of 25 operators globally.

GoSwift is a private company active in the development of queue management solutions. The company has provided queue solutions which are in use at the Estonian-Russian, Finnish-Russian, Lithuanian-Russian and Lithuanian-Belarussian borders. As part of the FinEst Smart Mobility project the company developed a queue management solution for port areas.

Bercman Technologies is a private company which is developing smart pedestrian crosswalks, intersection control units and smart bus stops.

Starship Technologies is a private company which develops autonomous delivery bots which can operate in 6 km radius. The service is currently available in Tallinn, Milton Keynes (London) and George Mason University campus (U.S).

Bolt is a private company which provides a platform for ridesharing and food delivery. The company has 30 million users in 35 countries.

Cleveron is a private company which develops robotics-based parcel terminals and last mile click and collect pickup solutions for retail and logistics sectors. The company has also started to develop its own autonomous package delivery robot.

AuVeTech is a private company that has grown out from Tallinn University of Technology. Together with TalTech, the company is currently developing its own autonomous bus for last mile services.

Elering is a state-owned company which functions as an independent electricity and gas system operator. The company is also very active in smart grid development.

The role of Tallinn Enterprise Department in the local ecosystem

Among the Estonian municipalities, Tallinn City has long been a frontrunner in developing and implementing new solutions.

The role of Tallinn Enterprise Department is to support the development of entrepreneurship and business environment in Tallinn City. For many years the department put a big portion of its focus on business incubation services. In recent years the department has looked for a more active role and has chosen smart city development as a way to support the creation of new innovations. The department is very supportive towards the companies that wish to test their solutions in the urban environment. Providing testing opportunities for companies has also been written into the new Tallinn Development Plan 2021+ as one of the ways how the city can be highly competitive. Based on the department's proposal the city has also established the new innovation fund for financing smart city development projects. It can be said that the role of Tallinn Enterprise Department is step-by-step changing from providing generic support for companies to becoming the shaper of the local innovation ecosystem.

How does this ecosystem support or hinder innovation

One of the strongest sides of the local ecosystem is a growing number companies that are developing their solutions. Many of these solutions have also received a chance to be tested in the real-life setting with the help from the Tallinn City Government and/or other actors such as Tallinn University of Technology, Tallinn Science Park Tehnopol or Mainor Ülemiste. Several companies have also managed to attract investors such as Bolt or Starship Technologies. The new Cross-Border Smart City Center of Excellence has great potential to support the development twin city smart solutions for Tallinn and Helsinki which can also benefit the local companies. Tallinn City is also home for several universities that do research and provide higher education that can further support the smart city developments.

However, several challenges exist in the local ecosystem that hinder the development and adoption of smart city solutions. First is a lack of user perspective as currently there is not a single organisation that is actively providing the perspective of local residents.

Another issue is the fact that the full potential of public procurements for innovation is not utilised. Public organisations, including different departments in the city administration which often are responsible for providing different public services have little knowledge about such procurements. There is also fear among officials to use such procurements as the evaluation of bids is more complex than with standard procurements which can lead to court disputes.

Although there is a number of different actors in the local smart city ecosystem, there is not a single organisation that can be considered as a purely intermediary organisation that would act as the middleman between the relevant actors. This makes it harder to build a common understanding about the direction of smart city development. From the positive side, the local universities (and also universities from Helsinki) include a wide variety of local stakeholders into different smart city projects. Also, Tallinn City is increasing its activities and has recently started the practice of regular meetings with companies that develop and provide different solutions.

Lessons learned and recommendations for ecosystem development

1. To get the user perspective, new possible solution could be the empowerment of local community organisations. The city could also start using the Open City mobile application to ask feedback and input related to smart city solutions. Currently the application is only used to get feedback and collect ideas about the development of the urban environment in certain areas of the city.

2. The establishment of an intermediary which would act as a middleman between different key stakeholders in smart city development and lead the innovation procurement process – from defining the bottlenecks to delivering the scale-up of pilot projects. Good example is Forum Virium Helsinki which was established by the City of Helsinki and private (telecom) companies. Although Forum Virium is now owned only by the city, the companies and other institutions such as universities are official members of the organisation.
3. Increasing the use of public procurements for innovation through different means such as providing training for officials dealing with public procurements, starting with small-scale pilots etc.

Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP

The new Tallinn Development Plan 2021+ which is still in the development process has integrated several important topics related to healthy aging (e.g healthy environment, accessibility, 80:8 principle), smart city (city as a testbed), circular economy and climate change (energy saving, climate neutrality). The universities have also been included to the process through the advisory board. Tallinn City is also cooperating with local universities through different projects, e.g:

- Sohjoa Baltic – piloting self-driving electric minibuses in cooperation with Tallinn University of Technology;
- Augmented Urbans – developing and piloting the AvaLinn mobile app in cooperation with Tallinn University;
- Smart sensor network development in cooperation with Tallinn University of Technology.

Tallinn City has also launched an initiative together with Tallinn University of Technology called TalTechCity. The aim of the initiative is to improve students' and city officials' knowledge about smart city development and launch innovation and development projects related to smart city.

FINLAND, Reflection paper by Kymenlaakso region

Kymenlaakso region -a geographic description of innovation ecosystem

Kymenlaakso is a region in Finland. It borders the regions of Uusimaa, Päijät-Häme, South Savo and South Karelia and Russia (Leningrad Oblast). The region of Kymenlaakso is made up of seven municipalities, of which three have city status (Kotka, Hamina, Kouvola). Kotka is the second largest city in Kymenlaakso region with population of circa 52.000 people. It is located on the coast of the Baltic Sea, the Gulf of Finland, at the delta of River Kymijoki. Other cities are Kouvola further in the inland with population of circa 83.000 people and in the south Hamina -Finland's oldest garrison town.

Source: Kyamk

Kymenlaakso has approximately 180 000 inhabitants. It is one of the most significant forest industry clusters in Europe and an international hub of logistics and logistics related business and knowhow in the Baltic Sea region with Finland´s largest universal export and transshipment port, Port of HaminaKotka. In the northern part of the region in the city of Kouvola lies Finland´s largest railway hub.

One special feature of the region is that Kymenlaakso has the most eastern and the primary border crossing point called Vaalimaa between European Union and Russia.

The region is also famous for beautiful nature e.g. national parks; Eastern Gulf of Finland – outer archipelago, Valkmusa – marshland and Repovesi – forest and lakes and renowned city parks in the

city of Kotka. This year three parks in Kotka were awarded the Green Flag Award, an international award for quality in green areas and Kotka National City Park was awarded with honorable mention in the Council of Europe Landscape Award Competition as well.

Chosen spearheads in Smart-up BSR for Kymenlaakso (What spearhead have you chosen in Smart-up? [active healthy ageing, climate change, smart city, smart port, circular economy])

For Smart-up BSR smart city and smart port are the most suitable spearheads for Kymenlaakso for several reasons. Although sustainability and circular economy themes have begun to gain prominence in the last couple of years as well. Kymenlaakso region has chosen the following spearheads for its research and innovation strategy for smart specialisation (RIS3) for 2016-2020 (the RIS3 strategy update process will be completed this year):

- logistics: safety and intelligent logistics
- bioeconomy: new products and business from resource-efficient and low-carbon bio- and circular economy
- digitalization: cyber security and gamification and digital applications in logistics and bioeconomy as well as in tourism and health and wellbeing.

As mentioned earlier, Kymenlaakso has Finland´s largest universal export and transshipment port, Port of HaminaKotka, therefore port related development is essential for the region. In addition to that, digitalization is seen as an overarching theme in current RIS3 strategy. There are also lots of projects and processes presently going on in the Kotka old port area which further emphasize the importance of port area.

Local actors of the local place-based innovation ecosystem relevant for Smart-up BSR spearheads

a. Universities & research institutes: South-Eastern Finland University of Applied Sciences, Kotka Maritime Research Centre
b. Relevant companies (spearhead): Port of HaminaKotka, Empower Oy, Finnhub Association etc.
c. Public organizations, Regional Council of Kymenlaakso, the city of Kotka, South Kymenlaakso Vocational College, Kymenlaakso Chamber of Commerce, entrepreneur organizations
d. Civil society organizations (representing citizens/consumers):

Cursor Oy´s role in regional innovation ecosystem

Cursor Oy has been coordinating the collective identification of needs and potential for Kymenlaakso´s innovation ecosystem by revisiting existing RIS3 and making RIS3 related SWOTs synthesis in June 2018. This e.g. has helped to predict future scenarios and pinpoint specific development needs. These exercises have shown regional strengths and opportunities and most importantly weaknesses and threats which need specific attention and building of new competence and collaboration.

Cursor Oy has a twofold role in region´s innovation ecosystem. Cursor Oy is involved both in the update process of RIS3 strategy and also in concrete implementation activities.

How does this ecosystem support/hinder innovations (context: use spearhead of your pilot as example)

Our region is geographically a relatively small area and all the relevant innovation actors know each other quite well. The communication and contacting between actors are smooth, fast and straightforward.

A joint working group of all actors has been set up in the region by Regional Council of Kymenlaakso to work on updating the RIS3 strategy. In the context of this, all the existing innovation services and resources as well as possibly lacking ones will be identified and described. This working group serves also as a joint platform for intensified cooperation on selected strategic spearheads/ areas (e.g. establishment of joint innovative projects).

E.g. port-related activities and business have a long tradition in the region -valuable know-how and relationships have been accumulated for decades. Kotka-Hamina region´s port areas are being developed currently very strongly and new investments with substantial amounts of euros have been declared during last few weeks (well over one hundred million euros in total). The current strong trend is also that port areas attract investments in bioeconomy and renewable energy.

Identify lessons learned, and make recommendations for your regional ecosystem development

Projects have traditionally been the most important means of regional development in Kymenlaakso region. Nowadays access to structural funding is constantly tightening (decreasing) and competition for funding between different actors is also becoming more intense. International cooperation and joint projects will play (and should play) even a bigger role in the future.

The cooperation between Cursor Oy and the University of Applied Sciences should be further enhanced. It would foster the development of local enterprises by combining development company´s business knowledge and expertise at the business interface with strong applied research know-how from the university. This cooperation could also open new possibilities for graduate students to find employment in local enterprises and vice versa offer enterprises qualified workforce.

Give examples of local policy making utilizing scientific research from any spearhead themes of Smart-up BSR.

The city of Kotka is active on climate work. During this year the city of Kotka will be updating its climate and energy program.

Smart-up BSR

FINLAND, Helsinki-Uusimaa region

Describe the boundaries of your geographic region

Located on the south coast of Finland Helsinki-Uusimaa Region is home to around 1.4 million people or more than a quarter of the country's total population. Nationally we work closely with our neighbour regions Kymenlaakso, Päijät-Häme, Häme and Southwest Finland. Across the Baltic Sea the co-operation with Estonia is very active.

Due to our big harbours and the Helsinki International Airport we are also internationally well connected.

What spearheads have you chosen in Smart Up?

Our chosen theme for piloting in the Smart-up BSR project is active and healthy ageing. AHA is one of the central topics of the health and welfare spearhead priority theme in our regional strategy for smart specialisation 2014-2020.

In the pilot we have been mapping the actors and knowledge hubs on this field. So far, we have learned that in addition to stabile actors there are several agile and changing actors. The ecosystem for active healthy ageing is constantly evolving and we are merely presenting snapshots of it here. Having now the pilot version of the mapping helps us to define how and which parts of it we would like to update regularly and how much resources are needed for the work.

List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead

In the region we have several local ecosystems on health. They are situated around different university campuses. The biggest one is in the Academic Medical Center Helsinki in the Meilahti area, hosting the core partnership between the Hospital District of Helsinki (HUS) and the Faculty of Medicine at Helsinki University. Many other major health care organisations also locate in the area.

Health Capital Helsinki alliance is working to develop and promote the life science and health ecosystem of greater Helsinki. The alliance consists of Cities of Helsinki and Espoo, HUS Helsinki University Hospital, University of Helsinki, Aalto University, and Helsinki Metropolitan Universities of Applied Sciences Haaga-Helia, Laurea and Metropolia.

Upgraded is the non-profit association for health & wellbeing start-ups and innovations. It builds bridges between the different pieces of start-ups, corporates, public sector and universities. The community brings together over 60 members. Upgraded also arranges an invitational Health100 conference that evolved from a series of very successful Upgraded Life Festivals. Socca is the Centre of excellence on social welfare in the Helsinki metropolitan area. It is a network organisation, working closely together with the municipalities in the metropolitan area, as well as with educational institutes providing a meeting place for social welfare professionals.

These actors have helped us in mapping the actors specified on active and healthy ageing.

Identify the role of your organization in this innovation ecosystem

The cooperation in innovation ecosystems is based on the aims and goals of the individual actors and it is dependent on their abilities to connect and get financing. Here the regional council can support the ecosystem. The region may be the only actor looking for the best of a wider area instead of optimizing the results just for one organisation.

The Regional Council supports the ecosystem by encouraging networking and financing joint projects. The role of the region is to make the circumstances best possible for a well-functioning ecosystem.

How does this ecosystem support/hinder innovations (context: use spearhead of your pilot as example)

The ecosystem is strong has potential with globally recognized expertise. New knowledge and technologies are created and there are business activities based on that. More public and private investments are still needed to improve the interaction and synergy of the actors as well as to attract global talents and international investments. The AHA pilot has covered actors that have deployed both short term measures and longer-term strategies. On the latter, more intensive deployment and capability building in Connective Health technologies is needed. Senior citizens, especially the older cohorts, are frequent users of health services and for them, effectivity in care and more timely health outcomes can be achieved by new digital means.

Identify lessons learned, and make recommendations for your regional ecosystem development

In an efficient ecosystem the actors are tightly connected but they still make their decisions independently according to their own interests. Many real ecosystems are self-organising and the connections and partnerships are formed without external or centralized guidance.

In younger ecosystems some orchestration is still needed together with active and open dissemination of information. This may speed up forming the ecosystem and help the actors to join and commit to it.

Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP

In the decision making of our region the representatives of research institutes are very active. In the Regional Management Committee, we have members from the universities and research organisations. It is a statutory body appointed by the Regional Government. The Committee approves the implementation plan for the regional program, which includes the most urgent

projects in the province and an agreement on their financing. It directs the content and implementation of the regional smart specialisation strategy and makes decisions of the regional ERDF funding. The representatives of science institutions bring their latest scientific knowledge to this local policy making.

GERMANY, Reflection paper by Brandenburg

Describe the boundaries of your geographic region

Together, the Federal States of Berlin and Brandenburg form the capital city region of Berlin-Brandenburg. Given its excellent science and research facilities and the broad range of business-oriented research and development, the capital region holds a top position in Germany's and Europe's innovation landscape.

Berlin as a metropolitan region should be distinguished from Berlin's immediate agglomeration, called Berliner Umland (English: Berlin's surrounding countryside) which comprises the city and the nearby Brandenburg municipalities. Berliner Umland is significantly smaller and much more densely populated than the metropolitan region, as it accounts for the vast majority of the region's population over a fraction of its total land area. As with the joint development strategy also spatial planning policy is jointly managed by institutions of both federal states so that they act in unison in decision making and when cooperating with the federal government and other federal states.

The Brandenburg region contains five independent cities – of which Potsdam the Brandenburg capital is the only one with a population greater than 100,000 – and 14 districts (Landkreise). By adding the inhabitants of Berlin, the two cities Potsdam and Berlin account for more than 80 percent of the total population of the Berlin/Brandenburg region. The Brandenburg area is characterized by suburban settlements surrounding either the Berlin city limits and or comprising small towns in the rural outer area.

What spearhead have you chosen in Smart Up?

The State of Berlin and its neighbouring State of Brandenburg launched their Joint Innovation Strategy known as "innoBB", in 2011, as the first attempt of joining two state level strategies under one common innovation strategy. Aimed at linking the wider reaching business and R&D sectors positioned in Brandenburg and the international innovation community in the capital region, the innoBB strategy focuses on five clusters:

- Life sciences and healthcare
- Energy technology
- Mobility (including transport and logistics)
- ICT, media and creative industries
- Photonics (including microsystems technology).

List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead

An example of the level of stakeholder involvement in the Berlin/Brandenburg Region is the Potsdam-Golm Science Park. From leading international research in areas such as biotechnology, or gravitational physics, to training opportunities for young researchers, to research-based production and commercialisation, numerous aspects of stakeholder involvement combine to make Potsdam Science Park in the heart of the fast-growing region of Berlin-Brandenburg into a location with extraordinary potential for innovation.

Entrepreneurial activities benefit from knowledge exchange with scientific Institutes and Institutions at Potsdam-Golm Science Park: two faculties of Potsdam University, three institutes of Max- Planck-Society, two institutes of Fraunhofer-Society, the Brandenburg Main State Archive and about 20 small companies (former Start-ups). Nevertheless, Potsdam Science Park is lacking space for the start-up community and a meeting a place for social interaction among people living close by.

While cluster management organisations have a clear role to initiate and implement collaboration between industry and science based on the cluster masterplans and thus further stakeholder engagement in projects to continuously increase competitiveness, the local community seldom is a stakeholder in these activities. In the future the ability to interact between the scientific institutions and civic stakeholders needs to be improved. The regular residents lack the opportunity to meaningfully network and exchange ideas between them and the science/innovation community working in the Science Park. Engaging the community can be part of the Science Park activities.

With regard to innovative solutions it could also become increasingly attractive for industry to actively join and interact with the community with technology development for social innovation. The task is also to address how the Science Park could help to engage local people with the local associations/NGOs, and researchers/industry for testing environments and meeting spaces.

How does this ecosystem support/hinder innovations (context: use spearhead of your pilot as example)

The Berlin/Brandenburg region is a hot-spot for start-ups in Germany and company founders drive the economy through the digital work transformation in the region. They are able to rethink technologies, products and services and create new socially relevant solutions that also success on the market. These innovation-oriented SMEs are to be supported by various targeted instruments. Similarly, cluster platforms provide networking possibilities crucial for the development of the regional innovation dynamics.

The stakeholders that operate as motors of each cluster play a central role in pushing forward these thematic priorities, especially with focus on fostering SMEs in bringing their ideas to market. Therefore, it is also of vital importance that clusters as well as social stakeholders collaborate in a constructive manner to operationalise these priorities across clusters and thus make innovations possible that solidify the selected regional spearheads.

- Scientific talents from all over the world also appreciate the open research atmosphere and the high quality of life in the Brain city Berlin
- Berlin's research landscape is characterized by change and progress

The density of the scientific locations in Berlin and also the networking within European networks brings a lively and dynamic element into research.

Identify lessons learned, and make recommendations for your regional ecosystem development

The focus of the 2011 strategy has led to a successful development of the five selected clusters. The goal of the innoBB 2025 strategy is to solidify this positive development. The strategy provides for each cluster a masterplan with a political innovation profile which structures and supports the work of the clusters in attaining the strategic vision and the goals of the strategy. In this way each cluster can make use of the specific regional resources and opportunities in working towards the horizontal strategic priorities of digitalization, new concepts of field testing and real-world laboratories, work 4.0 and start-up and founders funding.

In short, the new innBB 2025 strategy underscores the innovation guidelines that have previously brought results acknowledging in an emphatic way that the change brings a considerable rewiring towards solutions of a sustainable, smart and inclusive future at regional, national, and EU level. This is envisioned by

- A broader innovation concept,
- A deeper cross-cluster collaboration,
- A clearer opening up of innovation,
- A greater consistency towards sustainability, and
- A stronger regional emphasis on internationalisation.

Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP

The region occupies the highest level of excellence in Europe and is able to contribute to innovation with a marked European level presence in the EU Commission in Brussels. However, as an exemplary region in Europe a wider international impact could be achieved, this is positively impacted by the SmartUp BSR project.

LATVIA

Describe the boundaries of your geographic region

Latvia lies on the eastern shores of the Baltic Sea. It is bordered by Estonia to the north, Lithuania to the south, Russia to the east, Belarus to the southeast, as well as shares a maritime boarder with Sweden to the west. In overall there are approximately 1,9 million inhabitants in Latvia and a territory of 64,589 km2. Most of the businesses are concentrated in the capital of Latvia, Riga, and the cities surrounding it. Other major cities are often devoted to a particular market sectors, e.g. the port cities of Ventspils and Liepāja provide ice-free ports, while Daugavpils is an important railroad hub. The most urbanized regions of Latvia are the central, Eastern and Westerns regions. It must be noted, though, that if the central region is thoroughly urban, the East and the West are urban in the sense that the majority of population lives near major cities, with pockets of rural areas in-between. The Southern and the North-Eastern regions are mostly rural. Latvia has the 5th highest proportion of land covered by forests in the European Union. Forests account for 3,5 million ha or 56% of the total land area, creating a great importance in the economy of Latvia.

Main figures of business environment in Latvia:

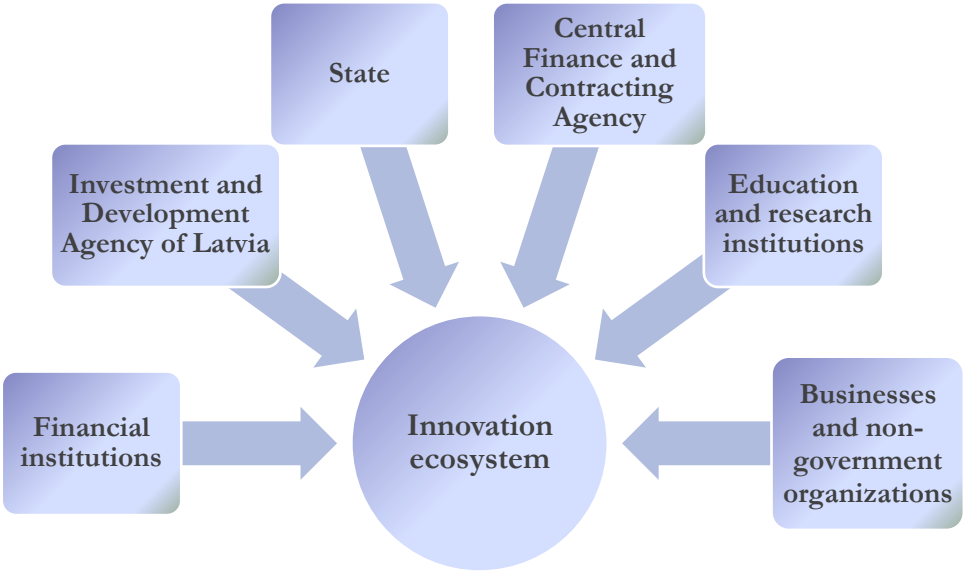
- GDP (2018 data) – 29 milliard EUR.
- According to Central Statistical Bureau data there were 185 thousand economically active companies as of end of 2018 in Latvia (the main sectors represented: wholesale and retail trade, repair of motor vehicles and motorcycles; agriculture, forestry and fisheries; other services; professional, scientific and technical services).
- Unemployment rate 6%; average salary as of 3rd quarter of 2019 – 1091 EUR (+8,3% comparing to same period in 2018).
- Manufacturing 12% of GDP (main sectors wood, food).
- Export extent 59% of GDP (main export products wood 13%; transportation

services 12%; electrical appliances 7%).

What spearhead have you chosen in Smart Up? (active healthy ageing, climate change, smart city, smart port, circular economy)

Active healthy ageing and smart city via the following pilot projects:
House of Technologiesas Technology transfer centre including development of innovations from TRL 3-4 to 6-7; 3 main specialisation fields according UL smart specialisation directions (HEPC - radiation chemistry and physics; Materials, mechanics and prototyping centre; Life Science centre). Medicine Centre - development of existing medical infrastructure for providing primary and secondary health care to inhabitants of Riga city, UL students and staffin cooperation with Riga City Council emphasising common research and education programmes as well as internships for medical students and residents.
UL Academic Centre as a pilot micro model of a smart city concept - robust IT connectivity and digitalization; well developed e-governance; innovative solutions in energy and heating supply, use of renewable resources; an efficient waste management system; etc.

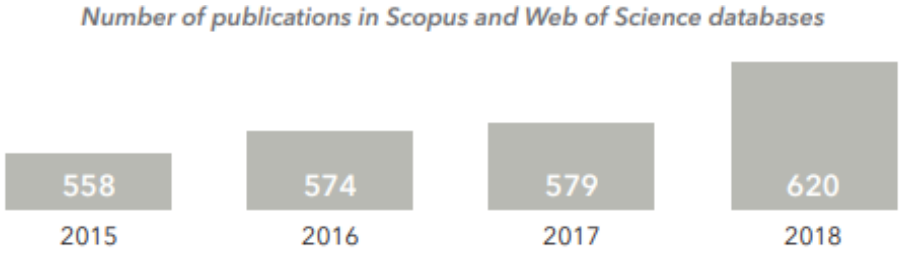
List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead



Identify the role of your organization in this innovation ecosystem

UL appears to be the leading research institution in Latvia – creator and facilitator of the innovations in Latvia. With science and research funding UL is financing innovation development up to TRL 3-4.
In 2018 UL has yielded 2344 scientific publications, including monographs, chapters in monographs, articles in local and international scientific journals and conference proceedings. This constitutes 85% of the entire number of publications by UL authors and co-authors (2754). 620 publications by the representatives of UL personnel were

included in Scopus and Web of Science databases in 2018, and 377 of these were articles published by international scientific journals.



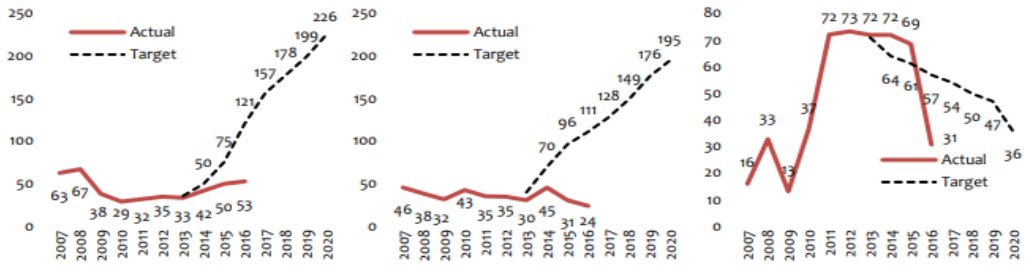
Data source: UL Annual report 2018.

204 of the articles published in scientific journals by UL employees have been written in collaboration with foreign authors, and 303 of the articles were printed in scientific journals whose citation index is above the average in the respective field of science. The number of articles in exact sciences, life sciences and medicine is 268, in humanities — 24, whereas in social sciences — 8.

As an example - one of the achievements in Science in 2018 awarded by the Latvian Academy of Sciences: Portable device for early contactless diagnosis of skin cancer. In a collaborative project, researchers from University of Latvia, Institute of Atomic Physics and Spectroscopy, Riga Technical University, Faculty of Computer Science and Information Technology have developed a unique skin cancer diagnostic service that is already being tested in practice. Diagnosis is based on measurements of diffuse reflection and skin auto fluorescence. The unit uses specific lighting. The LEDs are selected based on the specific properties of the chromophores and fluorophores present in the skin. The device is intended to perform a full body examination of patients and early detection of skin cancer. It is connected to a remote cloud service, where image processing of suspicious skin formations is performed and the result is immediately accessible to any specialist via the internet. The diagnostic system is being tested at the Latvian Oncology Centre, where it has identified all cases of melanoma from 800 measurements of different skin formations.

How does this ecosystem support/hinder innovations (context: use spearhead of your pilot as example)

Even though Latvia has succeeded in moving from an achievement rate “modest” to “moderate” in the European Innovation Scoreboard one of the key indicators of economic knowledge and technology capacity – investment in R&D - is not growing in either the public or the private sector. Below reflected figures represent the actual and estimated situation regarding the investments in R&D.



Data source: RIS3 monitoring report.

The actual investments extent in R&D as a percentage of GDP is significantly lower as planned and lower than the average of previous years. The decrease is explained by the reduction of private and international (EU funding) sector investments combined with public investment stagnation. Taking into account that the objective of public and EU funds investment is to provide preconditions for private sector investment growth, the negative development trend indicates that the structure of the national economy remains not only unchanged, but also deteriorates. Challenges of the Latvian economy development:

- Necessity to foster diversification of production and technological modernisation;
- Concentration on manufacturing of products with a higher added value is required;
- It is necessary to find complex solutions to eliminate weaknesses in the Latvian innovation system by improving Latvia's position in international ratings;
- The performer of the transformation process is the entrepreneur who decides to modernise production or shift resources to another industry/region/country. The main goal of the Policy is to increase entrepreneurs' motivation;
- It is necessary to reduce the productivity gap with highly developed countries in order to prevent stagnation and avoid middle-income-trap;
- Structural reforms that will reduce the imbalances in labour demand and supply are required;
- It is necessary to improve the institutional and business environment by removing obstacles to more efficient use of resources.

Taking into account the information above – even though Latvia has structurally successful innovation ecosystem, it is hindered by:

- Signifficantly lower investments in R&D as a percentage of GDP than EU average;
- Business sector is dominated by SMEs with very limited financial possibilities;
- Lack of mechanism and resources for innovation development from laboratory (TRL3/4) to market (TRL7/9).

Identify lessons learned, and make recommendations for your regional ecosystem development

The main challenges for local RIS3 development, taking into account first monitoring report results: investment in R&D increased up to 1,5% of GDP; development of knowledge base and human capital; development and increase of manufacturing industry productivity; FDI attraction and regional development.
The strengths of UL are world level research, highly qualified scientific personnel; some researchers are involved in sector policy making on national level; stable partner

network – both local and international; well developed infrastructure. The strengths mentioned before are leading to the following opportunities meeting the RIS3 challenges of the national level as well: the Academic Centre will provide an opportunity to increase multidisciplinary research and innovations; an increase in research capacity in connection with an increasing number of doctoral students and received degrees; favourable geographical location of Latvia is providing the possibilities for establishing international contacts and networking in science. The interest of foreign researchers about announced vacancies for post-doctoral and researcher positions is already observed as well as the market cooperation with partners in the BSR is enlarging.

Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP

Smart Specialization strategy RIS3 - a national research and innovation strategy for economic transformation, which involves defining permanent competitive advantages, selecting strategic priorities and designing policy instruments that maximize the country's knowledge-based development potential, thus contributing to economic growth. There are 5 smart specialization areas defined in Latvia. One of these areas appears to be Smart energy – going in line with Smart up theme Climate change. Looking more deep into the ecosystem of the particular area –the main goal of EU in the energy sector is to transform the European energy system into a single European energy system that supplies safe and climate-friendly energy to users at affordable prices.Research and innovation play an important role in competitiveness icrease in the sector, otherwise the creation of a single European energy system is impossible. University of Latvia appears to be part of this ecosystem as well - faculty of Physics and Mathematics is performingresearch in the energy efficiency of building structures, modeling wind power, and optimizing and managing various electrical processes, thusUL researchers make a significant contribution to the generation of new knowledge. Also the UL Institute of Solid State Physics with several years of research in hydrogen recovery, storage and energy release methods andprototyping for economic use is considered to be part of this ecosystem.

LITHUANIA, Kleipeda region

;

Place-baced ecosystem in Lithuania: Owerview and Klaipėda region case

RESEARCH AND EXPERIMENTAL DEVELOPMENT AND INNOVATION (R&D&I) ECOSYSTEM IN LITHUANIA: SHAPE AND ORGANISATION

The definition "region" in Lithuania is associated with three types of territorial units: administrative units of the state territory of higher level – counties (apskritys); ethnocultural regions; territorial units where Lithuania's national regional policy and the European Union's cohesion/ neighbourhood policy are implemented.

In 2016, the Government formed two larger non-administrative regions corresponding to NUTS II (the Capital Region and the Central-Western Lithuania Region). Before this, Lithuania was considered as single NUTS II region. This change was done in order to avoid losing certain EU financial assistance in the upcoming EU financial perspective (since due to the economy of Vilnius County, Lithuania would exceed 75 per cent of the EU average GDP per capita, thus losing EU funding for lagging regions). The Capital Region and the Central-Western Lithuania Region have no governing bodies or powers, and EU financial assistance (if said is still planned according to NUTS II regions) would in any case be managed using a centralised national system.

Nevertheless, Smart specialization is covering whole Lithuania and all regions (NUTS III level) in Lithuania have equal opportunities to participate in and use of the support foreseen in many financial instruments.

There will be presented overview of R&D&I Ecosystem in Lithuania with some focus on the unique ecosystem, that right now is developing in the Klaipeda Region (NUTS III – County level).

R&D&I Ecosystem in Lithuania consists of:

Business industry (national & international start-ups, experienced innovators - creating and developing new products and putting them into the market);

Science, study, research institutions (creates knowledge which is the basis for innovations and preparing qualified specialists – creative force- the cornerstone of the modern society);

Innovation support and administration institutions (Lithuania Business Support Agency (LVPA), Central Project Management Agency (CPVA), European Social Fund Agency (ESFA), etc. – are responsible for allocations of SF/ESIF funding on research and innovation in Lithuania;

Innovation policy implementation agencies (Agency for Science, Innovation and Technology (MITA) is the main governmental institution responsible for implementation of innovation policy in Lithuania. Together with 'Enterprise Lithuania' and 'Invest Lithuania' implements various programmes and initiatives designed to promote innovation, commercialization of R&D results, international cooperation, attracts new investors to Lithuania);

Monitoring institution (Government Strategic Analysis Center (STRATA), previously known as Research and Higher Education Monitoring and Analysis Centre (MOSTA) is responsible for the monitoring and assessment of the implementation of Smart specialisation strategy (further - S3) in Lithuania, the R&D&I priorities and the R&D&I priority action plans;

Innovation development institutions (Lithuanian Innovation Center (LIC), Science and Technology parks provide consulting services to business, science, industry and public sector.);

Innovation policy-making ministries (Ministry of Economy and Innovation and Ministry of Education, Science and Sport are the main institutions responsible for science, technology and innovation (R&D&I) policy formation.).

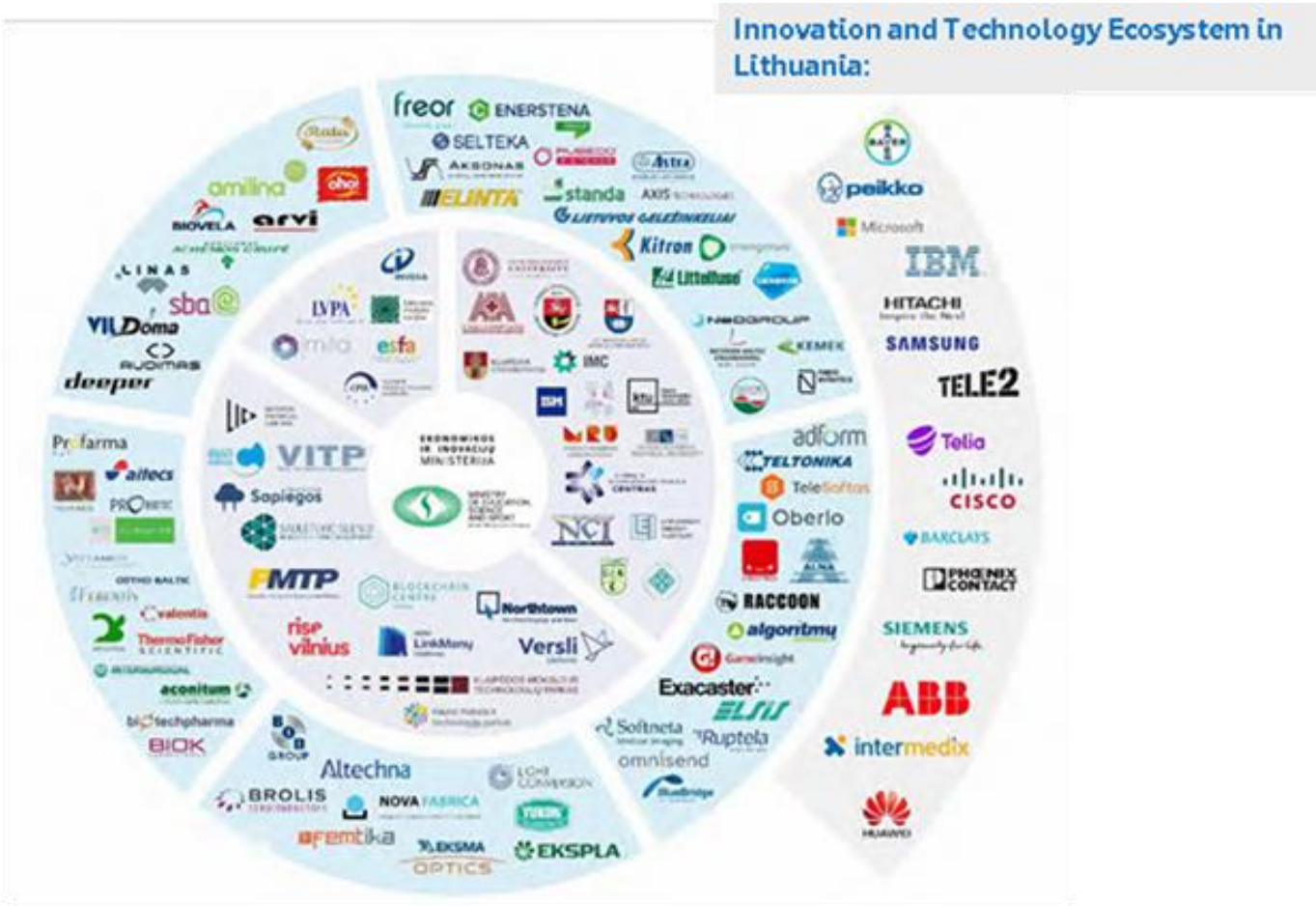


Table 1. R&D&I Ecosystem in Lithuania:

In the programming period of 2007 – 2013 Lithuania was slow to mainstream the ecosystem of innovations due to the shortcomings of the public sector. Among the challenges of Lithuanian public sector is its efficiency of governance (aggregate indicator of voice and accountability, political stability. Government effectiveness, regulatory quality, rule of law and control of corruption), which has been progressing much1.To create more effective R&D&I policy coordination mechanism, Government level Science, Technology and Innovation Council has been launched in 2019. Council is responsible for the overall coordination of R&D&I policy and it is composed by the ministers who are in charge for implementation of smart specialization policy, and 7 associates of business and science structures, who are dealing with technology and innovation.

At ministerial level, Ministry of Economy and Innovation together with Ministry of Education, Science and Sport are the main institutions responsible for R&D&I policy formation.

The implementation of innovation and technology policy in Lithuania is carried out by the Agency for Science, Innovation and Technology (MITA). MITA's activities cover the administration of national and international programs for R&D&I. Also, together with Lithuanian innovation center (LIC), science

technology parks and business confederations MITA provides consulting services to business, science, industry and public sector.

Development and implementation of S3 initiative has decreased fragmentation of innovation policy and increased the levels of co-ordination across public policy bodies and implementing agencies. For better implementation of smart specialization initiative, Smart Specialization Coordination Group has been set up by the Ministry of Economy and Innovation together with the Ministry of Education, Science and Sport. It consists of the representatives of relevant ministries, agencies and some experts of business and science structures.

Still, whole Lithuanian innovation policy framework consists of many different laws, programs, strategies, policy instruments, and tax reliefs. Two major legal acts regulate science, technology and innovation policy. Law on Science and Education of the Republic of Lithuania is one of them and it regulates everything from research institutions, research human resources and students to state financing of R&D&I.

Another important document is Law on Innovation and Technology of the Republic of Lithuania. The law defines the concept of the entire innovation cycle and its phases, the principles of state support to all subjects for R&D&I in line with the European Union State aid requirements.

The main Lithuania's Progress Strategy is "Lithuania 2030". To achieve the goals, set up in Strategy, additional Progress Program for 2014-2020 was developed. It strives to foster research- business collaboration, implementation of joint projects and joint use of R&D infrastructure. It also contains a set of demand-side innovation policy instruments, e.g. innovative public and pre- commercial procurement, regulation, financial and tax incentives for innovation consumers.

Another important document is National Program for the Development of Studies, Research and Experimental (Social, Cultural) Development for 2013-2020. This program is designed to define the main directions of studies, research and experimental (social, cultural) development, which would promote the harmonious development of people and society, strengthen the competitiveness of the country. Programme corresponds to the Strategy "Lithuania 2030", Progress Program and European Commission provisions.

European Union funds investment in Lithuania 2014 – 2020 is another important set of regulation for R&D&I. During the period of 2014 – 2020, considerable attention is expected to be devoted to a high value-added economy. About 10 percent EU funds are allocated for R&D&I promotion, about 8% - promoting small and medium-sized businesses.

These funds are used to increase a) the number of new innovative enterprises and to accelerate technological modernization, b) the share of innovative Lithuanian companies cooperating with higher education institutions until 2023 from 9.8% to 12.8%. Finally, it also aims to promote integration of at least 4 Lithuanian research infrastructures into international research infrastructures.

Lithuanian Innovation Development Program for 2014-2020 is designed to focus state resources on increasing Lithuania's innovation and create competitive, high-level knowledge, advanced technology, skilled human resources and smart specialization-based economy.

Smart Specialization is a strategic programme of state support for R&D&I (the Programme was approved on the 30th of April 2014 by the Resolution of the Government of the Republic of Lithuania No 411 (further – Initial S3) in which Lithuania, like other European Union countries, has set its R&D&I priorities, considering existing or potential competitive advantage. Priority directions

for R&D&I were determined by analyzing the potential of business and research in Lithuania, including the human capital.

On the basis of the interim evaluation there was prepared updated version of The Programme on the Implementation of the Priority Areas of Research and (Socio-Cultural) Development and Innovation (Smart Specialization) and their Priorities, that was approved on the 24th of July, 2019 by the Resolution of the Government of the Republic of Lithuania No 760.

ROLE OF SCIENCE, INNOVATION AND TECHNOLOGY AGENCY (MITA) IN R&D&I ECOSYSTEM

Implementation of the S3 requires widest possible involvement of business entities and science and study institutions in Joint Projects. Implementation of the Joint Initiatives is organized according to the Provisions of the Joint Initiatives Procedure by the Agency for Science, Innovation and Technology – MITA.

MITA is one of the main institutions, responsible for implementation of S3 and promoting the collaboration between businesses and science and study institutions. This governmental agency is organizing discussions of the implementation of the Programme and Individual R&D&I priority action plans with the process participants and other stakeholders from both public and private sectors.

MITA is responsible for the preparation of proposals to the stakeholders, organization of information seminars and partner search events, activities of collaboration between science and study institutions and other public and private entities in order to encourage their joint participation in the projects to be implemented under the study and RDI policy measures.

MITA is also providing consulting to economic entities on the possibilities of applying the R&D&I results in the production of high value-added products.

To ensure the quality of the results, MITA may hire experts competent in the relevant R&D&I priority areas for the implementation of the Agency‘s activities (an expert per area). Currently MITA is also ensuring the process of coordination of the group work in each S3 priority by allocating existing resources and expertise through various projects and budgetary means. MITA also facilitates organizing of various projects, hackathons, labs and other initiatives, that strengthen innovation ecosystem.

Even if described elements of innovation ecosystem apply to whole Lithuania, some regions take advantages of their geographic placement or other regional opportunities and use them to form additional place-based innovation ecosystems.

Further there will be discussed Klaipeda region case and how this region is using their unique geographic location, set of players and cooperation possibilities to build separate marine/ smart port ecosystems. Interreg BSR supported project Smart up BSR provided instruments to foster development of this innovation ecosystem in Klaipeda region by three main pilot projects – LNG Forum 2019, Portathon Baltic 2019 and Delta Navy, that were jointly co-organized by Klaipeda Science and Technology park and MITA, together with other key players of Innovation ecosystem.

PLACE-BACES INNOVATION ECOSYSTEM: KLAIPEDA REGION CASE

The Klaipėda Region is a modern and integral Baltic Sea Region, a centre for sustainable economic growth, science, technology, culture and tourism with well-developed infrastructure, where high-quality living environment for a creative and community-oriented person is created through close cooperation.

The Klaipėda Region consists of Klaipėda city, Klaipėda district, Palanga town, Neringa, Kretinga district, Skuodas district and Šilutė district municipalities. It is the only region in Lithuania having access to the seacoast: as many as four municipalities of the region are located by the Baltic Sea. Maritime trade traditions, as well as the tourism and recreation sector, has been developed here since ancient times. The Baltic Sea, the Curonian Lagoon and the Curonian Spit Peninsula are the unique landscape elements, distinguishing the Klaipėda Region from other regions of Lithuania.

The engine of regional economy – Klaipėda Seaport – is a non-freezing port of the eastern Baltic Sea located furthest to the north. The main advantage of the Klaipėda Region is a strategically convenient geographical location. The Klaipėda Region is the most attractive of all regions of the country in terms of the development of inbound and domestic tourism, as well as it is the major transport hub of the country, linking the West and the East. The region is developing the marine and inland waterways, railway, road and air transport. At the international level, the Klaipėda Region is bordering with the Republic of Latvia in the north and the Kaliningrad (Königsberg) region of the Russian Federation in the south, while the Baltic Sea connects the Klaipėda Region to Poland, Germany, Denmark, Sweden, Finland, Russia, Estonia and Latvia.

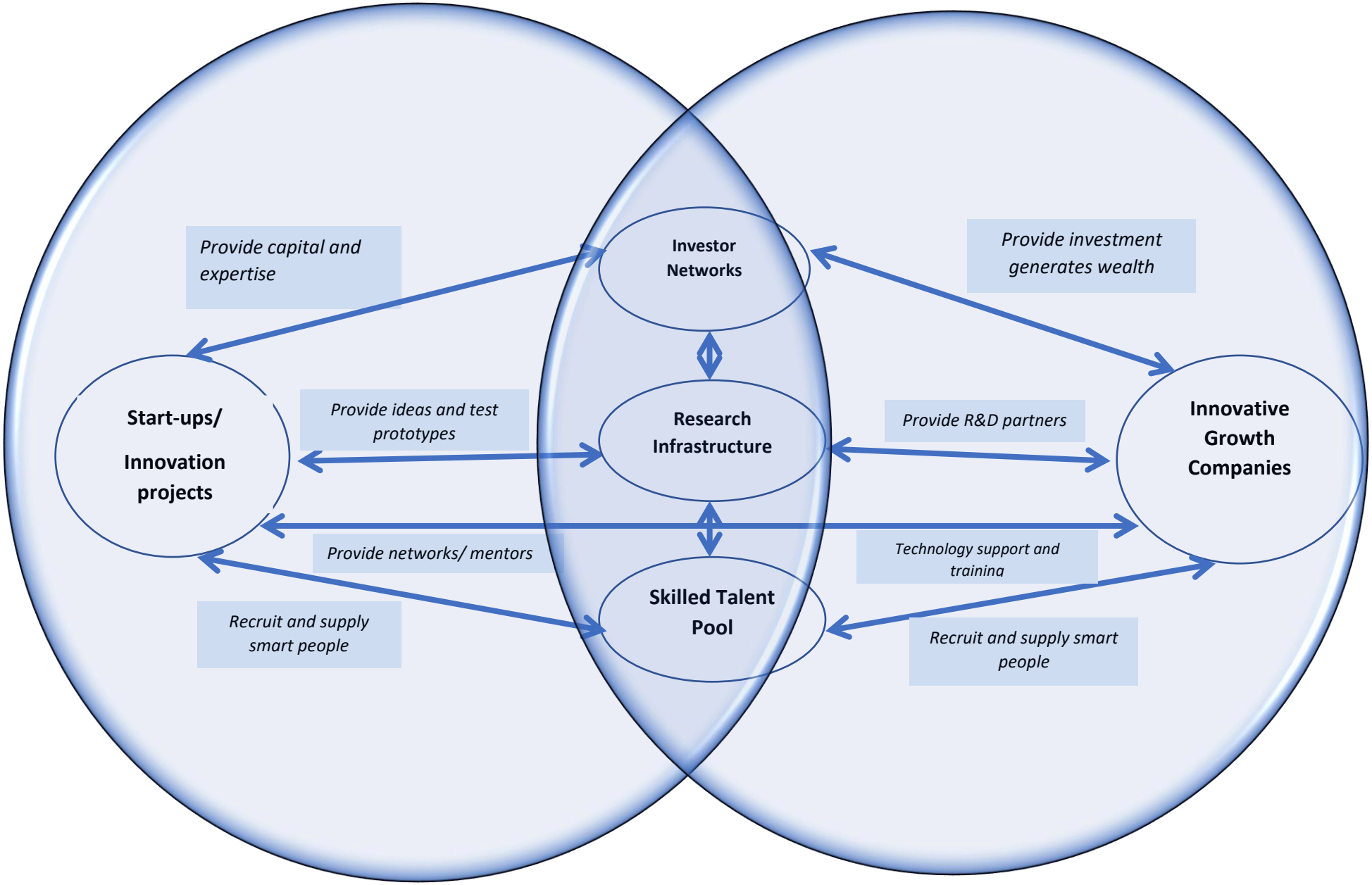
Klaipeda Science and Technology Park (KSTP) is an active player in the innovation ecosystem of Klaipeda region. KSTP implementing innovative projects also helps science and business to find common points to create and innovate together. In Project Smart-up BSR Klaipėda Science and Technology Park has chosen smart port theme. Klaipėda region is influenced by Klaipeda Sea Port that's why KSTP seeks breakthrough innovations in port technology and transport. Main R&D directions at KSTP are:

- Marine technologies;
- Information technologies and telecommunication,
- Transport and transportation technologies;
- Environmental technologies
- Digitalization and automatization solutions.
-

KSTP renders strategic, technical and administrative assistance to companies and projects related to development of new technologies and innovations. The innovation ecosystem is not just about interacting higher education institutions, businesses and public authorities (municipalities). Klaipeda Science and Technology Park connects all participants of the region innovation ecosystem and concentrates them to reach economic and social development goals, ensuring transfer of innovations, technologies, science and knowledge. Innovation ecosystem in Klaipeda region involves:

- Start-up companies (innovation projects);
- Innovative growth companies (free economic zone, LNG Cluster, Klaipeda Posrt companies, others)
- Investor networks (Klaipeda science and technology park, Baltic tech park)
- Research infrastructure (KU Marine research institute, others KU laboratories)
- Skilled talent pool.

The innovation ecosystem of Klaipeda region cannot operate separately from the national innovation ecosystem. Smart specialization directions and other key players in the Lithuanian innovation ecosystem influence the Klaipėda region and the innovation ecosystem.


Provide capital and expertise
Investor Networks
Provide investment generates wealth
Start-ups/ Innovation projects
Provide ideas and test prototypes
Research Infrastructure
Provide R&D partners
Innovative Growth Companies
Provide networks/ mentors
Technology support and training
Skilled Talent Pool
Recruit and supply smart people
Recruit and supply smart people

The strengths of the innovation ecosystem of Klaipeda region could be identified: a favourable environment for innovation, cooperation of business and science and human resources. The contribution of Klaipeda Science and Technology Park to the innovation ecosystem is quite important – science and business relations have been intensifying lately. All innovation ecosystem participants are involved to achieve main Klaipeda region goals – to attract new technology Klaipeda municipality in 2019 has also approved Klaipeda Economic Development Strategy 2030 where main actors are innovation ecosystem participants.

Good example about how different stakeholders and innovation ecosystem actors are involved in implementation of S3 is their participation in Pilot initiatives, that are worked out with the help of Smart up BSR project. During 2019 there were initiated and implemented one pilot project in theme Smart City which involved three events, that aim to attract citizens and other stakeholders to create the unique ecosystem, needed to produce new products and technologies for smart maritime sector. The main task of the pilot was to analyse the current situation of ports, maritime transportation, their challenges, the technologies applied in the port and generate ideas, prototypes, solutions for port digitalization and automation processes with the help of target groups:

1. **LNG forum 2019.** This event was organized as a pilot project on 15-16 May, 2019 Klaipėda, Lithuania. **Partners:** Lithuanian LNG cluster, KSTP, JSC Klaipėdos Nafta (KN), Embassy of the Kingdom of the Netherlands in Lithuania.

Representatives from Poland, Sweden, Germany, Belgium, Norway, Denmark, the Netherlands and Lithuania.

Goal: to present and share experience about new, innovative technologies and services that are developed in BSR and provide a full overview of the LNG application and perspectives, ranging from LNG road and railway transport to the maritime and inland waterway sector. Sustainable LNG and liquefied biogas (LBG) infrastructure development.

Statistics: 200 participants, 8 countries, 26 speakers.

2. Portathon Baltic 2019. Pilot project of Smart up BSR, that was very successful event, that gathered many parts of smart maritime innovation ecosystem together and contributed to development of concrete solutions, took place on 20-22 September, 2019 Klaipėda, Lithuania.

Partners: Lithuanian LNG cluster, Klaipėda Science and Technology Park (KSTP), Gdansk-Gdynia-Sopot Metropolitan Area, Agency for Science, Innovation and Technology (MITA), Klaipeda State Seaport Authority.

Representatives from Sweden, Germany, Netherlands and Lithuania.

Goal: to generate ideas and prototypes that could be adapted in developing smart transport ecosystems and in the logistics sector through automation and digitalization of port terminal facilities and various processes; to increase port efficiency and do impact for port environment regarding SDG.

Statistics: 80 participants, 4 countries, 12 mentors, 18 teams and solutions.

3. Delta Navy – Military Tech Hackathon. Another Pilot project that concentrates on encouragement of citizens and other stakeholders of local-based ecosystem to take active role in the development of new technologies, related to safety and security, took place on 25-27 October, 2019 Klaipėda, Lithuania.

Partners: Lithuanian Naval Force; MITA, Ministry of National Defense, Enterprise Lithuania, Kaunas University of Technology, Klaipeda University, Vilnius Gediminas Technical University, Baltic Tech Park, Klaipeda Science and Technology Park.

Goal: to generate ideas and prototypes that could be adapted in the Navy; to encourage the development of advanced products that require the highest military requirements; to bring people from different fields for the same purpose - to strengthen the Navy and development of solutions, that might be used for civil purposes of safety and security.

Considering the specific maritime smart city topic, Delta Navy Hackathon was held in a Lithuanian Naval Force headquarters and supply ship "Jotvingis".

Statistics: 50 participants, 26 mentors, 11 teams and solutions.

With involvement of main stakeholders of maritime ecosystem, IT/engineering field qualified citizens, it was taken an advantage of innovations to improve safety and living standard of the population by creating the following solutions:

- Personnel monitoring system;
- Laser communication;
- Search/environmental analysis drone (sea launch).

During Delta Navy Hackathon the groups were responding to the challenges in real time, presenting scientifically based solutions, that might be adopted in the practice in the nearest future.

The first prise at Delta Navy Hackathon was assigned to the team „VGTU-AGAI2", that created unique solutions for laser-based communication system, that might be used for communication between the ships in cases where radio connection is not possible or forbidden. These solutions are highly applicable for the use of safety and security in port areas. Involvement of scientists and specialists from different fields in the creation of new products for Smart ports is very important part of efficient functioning of innovation ecosystem as well.

All pilot projects were good examples that helped to test existing innovation ecosystem: starting initiation of events, testing of networks and cooperation between different stakeholders, response of science and business people, legal framework as well as financing instruments, that might be offered for the teams in all stages of product development.

The main lessons learned from the piloting actions concentrate on:

- the need for more focus on experimental development and innovation;
- closer networking with mentors, experts;
- improvement of financial motivation system for R&D&I activities and appearance of funding possibilities for attracting of professional mentors/ experts to work with the teams.

The need to revise Lithuanian innovation support system, that highly influence any innovation ecosystem, is reflected in the STI (Science, Technology and Innovation) reform, started by the Ministry of the Economy and Innovation of the Republic of Lithuania in 2018. The focus for the improvement of Innovation support system lays on:

- Use of EU Structural funds to create innovative products/services;
- Creation of infrastructure necessary for experimental development;
- Creation of the framework for innovation development infrastructure;
- Involvement of technology scouts;
- Motivating scientists to cooperate with businesses;
- Developing the framework of consulting services.

The innovation ecosystem in Klaipeda region is interested in cooperating, generating joint activities and projects, also involving foreign partners and their best practices. All innovation ecosystem parties are open not only with their human recourses but also with their infrastructure and contacts. Solutions and ideas that was generated during Pilot project not only received the support of the city municipality, but also attracted the interest of innovative companies. With this pilot project event Klaipeda Science and Technology Park (KSTP) and MITA has demonstrated that both science and business representatives can jointly generate solutions and share not only theoretical, but also practical experiences.

Klaipeda university, as one of the main parts in the Klaipeda region innovation ecosystem is looking to specialize its education programs according to the current need and considering the great potential in the field of maritime transport. This will allow more professionals to be placed on the market. Klaipeda authorities and Klaipeda ID (City development agency https://www.klaipedaid.lt/) have a package of offers to attract more talents to the region. It is also sought to attract an international university to the Klaipeda region, which is expected to bring added value to the entire innovation ecosystem of the region.

Another important highlight that is crucial to the growth of the innovation ecosystem is the engagement of business and science and other organizations in clusters. Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also co-operate (Michael Porter, a Harvard University Professor). A classical cluster is the one where companies of various sectors, whose activities are focused on specific value chains, intertwine.

Klaipeda Science and Technology Park is the coordinator of the Lithuanian Liquefied Natural Gas (LNG) Cluster. The Lithuanian LNG cluster unites 16 science and business organizations. Lithuanian LNG Cluster is also a member of BSR LNG cluster and BSR LNG competence centre.

The fields to which cluster participants direct their activities:

- Information and communications
- Co-operation
- Training and qualification improvement
- Innovations and technologies
- International development and partnership with other clusters

The aim of both the Cluster and the Competence centre is not only to bring together science and business for joint projects, but also to provide new knowledge, specialized, competence-based trainings (more info: http://www.lngcluster.eu/en)

Smart-up BSR

POLAND, Gdansk/Pomorskie region

Describe the boundaries of your geographic region

- The Metropolitan Area of Gdansk-Gdynia-Sopot is the largest and the fastest-growing metropolitan area in northern Poland, it is located in the Pomorskie Region, near the Bay of Gdańsk. It is inhabited by more than 1.5m citizens. It is one of two metropolises with the fastest population increase, according to Statistics Poland (Główny Urząd Statystyczny) predictions

- The Metropolitan Area of Gdansk-Gdynia-Sopot is a bottom-up association of 57 municipalities. The Gdansk-Gdynia-Sopot Metropolitan Area was established on September 15, 2011, to strengthen cooperation and to achieve the sustainable development of the entire metropolitan area around Gdansk, by making the best use of the potential of the member cities and municipalities, while at the same time respecting their differences and unique idiosyncrasies. The two biggest cities in the metropolitan area are Gdańsk and Gdynia.

- The Gdansk-Gdynia-Sopot Metropolitan Area is also a significant centre of integration processes within the Baltic Sea region, as well as being an important link in the transport chain, linking the north and west of Europe with central and southern Europe. The international importance of the Gdansk-Gdynia-Sopot Metropolitan Area is also shown by the ever-expanding network of air connections available from Gdansk Lech Walesa Airport; the number of international corporations or local companies which have invested abroad. This importance is also demonstrated by the number of international agreements signed with our universities, the increasing number of foreign students and the number of joint research projects undertaken.

What spearhead have you chosen in Smart Up?

Gdansk-Gdynia-Sopot metropolitan area is a window to the world to gain access to Central and Eastern Europe, which are the natural catchment areas for the two largest seaports in Poland. Both of the ports have a direct connection with the ports of South East Asia. That is why the Smart Port spearhead has been selected within the Smart-up BSR project.

List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead

Gdansk entrepreneurship foundation - Gdansk Entrepreneurship Foundation (Starter Incubator) conducts the role of the Leader (Coordinator) of 1 Pomeranian Smart Specialization – Maritime/Transport/Logistics/Offshore. Their role is to effectively link traditional maritime companies with innovative startups, scale-ups and SMEs to build up cluster solutions and involve academic institutions to simplify business – academia cooperation.

Pomorskie Maritime&Logistics Smart Specialization Board - The council was created as part of each of the 4 Pomorskie smart specializations to better cooperate in setting the direction of the Smart Specialization

activities and to exchange knowledge on a regular basis. The maritime and logistics council consists of representatives of the seaports (the port in Gdańsk and in Gdynia) as well as universities, research institutions, business environment institutions and representatives of the logistics and maritime industry.

Pomorskie region - the authorities of the Pomeranian region are responsible for the creation and activity of Smart Specializations

Gdansk-Gdynia-Sopot Metropolitan Area - a bottom-up association of 57 municipalities and cities that strive to operate across sectors, where possible, including not only local authorities but also business environment, science and non-governmental organizations.

City of Gdansk and City of Gdynia - two largest cities in the metropolis and the Pomeranian region, in which innovations naturally develop the most, and which attract investors and business and new citizens

University of Gdansk and Gdansk University of technology -The two largest universities in the metropolis - with over 23,000 and 15,000 students, respectively in 2019. Pomorskie is the largest academic centre in northern Poland. Twenty-four colleges operate in Pomorskie, which educate a total of over 81 thousand students. In 2019, over 21,000 of them became graduates.

The Port of Gdansk and Port of Gdynia - The two biggest seaports in the metropolis, dynamically developing with constantly-expanding logistics facilities. The Gdańsk-Gdynia-Sopot metropolitan area acts as a port hub for Central and Eastern Europe.

Identify the role of your organization in this innovation ecosystem

As a bottom-up association, consisting of 57 municipalities and cities we strive to operate across sectors as much as possible, including not only local authorities but also business environment, science and non-governmental organizations.

In the process of building strategy or implementing progressive policies, or other actions, we try to involve all identified stakeholders and work as participative and inclusively as possible. We also run a Metropolitan Socio-Economic Commission, where issues related to the development of entrepreneurship are one of the priorities. Representatives of this Commission take part, among others, in works on the new strategy of the Pomorskie Voivodeship. Also one of the Working Groups within the Socio-Economic Commission deals with education for the development of entrepreneurship.

Our organisation is also a platform for exchanging experiences both within the metropolis and with other cities/metropolises. Also in one of our projects as a part of Integrated Territorial Investments (ITI) there is a project of cooperation between science and technology parks from Gdańsk and Gdynia. As part of this project, an IT platform is being developed for better cooperation between science parks and for better communication between science parks and SMEs.

How does this ecosystem support/hinder innovations (context: use spearhead of your pilot as an example)

- The ecosystem helps the pilot by organizing regular meetings, dedicated events (conferences, hackathons, Innovation Camps), as well as regular animating and supporting initiatives

Smart Metropolia, the annual conference in Gdansk, already is/and still could be a platform for sharing the smart solutions between the cities and its between cities and their rural surroundings. Congress is based on the idea of cross-sectoral cooperation (quadruple helix stakeholders are involved). Every year, we also try to make the congress supporting socially and ecologically responsible solutions.

Identify lessons learned, and make recommendations for your regional ecosystem development

- An important issue is the early involvement of all identified stakeholders. The concept should be developed as participative and inclusively as possible. In building cooperation, the most common problem is to understand that together we can do more: that bigger (city/municipality/institution, business) can help the smaller, or the more experienced can share his knowledge with the less experienced and often it is a big advantage for both.

- It is extremely important to diagnose the needs first and to think about the impact of this initiative and how we will monitor the change and how we will keep the continuum. While working together with various stakeholders, it is a huge challenge to jump over political divisions and over the atmosphere of competition.

- The metropolis and the entire region should jointly consider how to prevent too much outflow of talent. There should be joint actions to ensure a good quality of life, adequate housing, good transport connections, as well as access to the natural environment. Another important thing is finding some tools to support entrepreneurship from an early age for children.

Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP

- The structure of the new Strategy of the Pomorskie Voivodeship 2030 covers global challenges and conclusions from the analysis of the socio-economic situation of the Pomeranian Voivodeship contains basic diagnostic theses, key from the point of view of intervention planning, formulated, among others based on statistical data and monitoring, conclusions from scientific and evaluation reports and publications, as well as knowledge expert. A SWOT analysis was also developed and investment conditions were identified development of the voivodeship in the perspective of 2030. Scenarios for the development of the Pomeranian Voivodeship until 2030 present - in a variant way - possible development paths of Pomerania in the next 10 years. In the process of developing the above scenarios, a number of variables were used, such as digitalization, climate crisis or the aging of the society. The strategy input from the metropolitan team was also based on global challenges

- Gdańsk 2030 Plus Development Strategy outlines the directions of long-term development, it forms the grounds for conscious shaping of processes taking place in the city. The Strategy identifies most important challenges that the city faces, needs of its residents, and also it provides an overarching framework for cooperation between parties engaged in shaping Gdańsk's future https://www.gdansk.pl/download/2016-11/81350.pdf

Smart-up BSR

RUSSIA, St. Petersburg

Describe the boundaries of your geographic region

St. Petersburg is located at the eastern point of the Gulf of Finland of the Baltic Sea. The city covers an area of 1439 km2, 650 km2 of which is the territory with high-density buildings constructed on it. St. Petersburg is the second largest city in the Russian Federation. The population of the city according to Rosstat is 5 383 890[1] people. (2019). The population density is 3837.41 people / km2 (2019). The average life expectancy in St. Petersburg in 2016 was 74.6 years.

There are representative offices of international organizations, consulates of foreign states, territorial bodies of federal ministries and departments. Also, since 2008, the Constitutional Court of the Russian Federation has been located in St. Petersburg. St. Petersburg is the administrative center of the North-West Federal District, which includes the Republic of Karelia, the Komi Republic, Arkhangelsk Region, Vologda Region, Kaliningrad Region, Leningrad Region, Murmansk Region, Novgorod Region, Pskov Region, Nenets Autonomous District. The Northwest Federal District has significant natural resource potential, a highly developed industry, a dense transport network, and through the seaports of the Baltic and the Arctic Ocean provides the Russian Federation with the outside world. 20% of the total volume of transportation of export-import goods of the country pass through St. Petersburg, including 52% of imported goods that are delivered to Russia by sea.

What spearhead have you chosen in Smart Up? (active healthy ageing, climate change, smart city, smart port, circular economy)

Smart city

List the local actors of the local place-based innovation ecosystem relevant for your Smart Up spearhead

- Universities & research institutes: ITMO University, Saint-Petersburg State University of Architecture and Civil Engineering, St. Petersburg State university
- Relevant companies (spearhead) – JSC “Algorifm”, national telecom operator “Rostelecom”, PJSC “MegaFon”, PJSC Russian Towers, GC “RT Labs”, JSC “SUPERTEL”, GC “Open Systems and High Technologies Center”, Arrow Electronics, LLC Pepeliaev Group, LLC “Rosengineering Project”, CJSC “OS Group”, PJSC Mobile TeleSystems (MTS), CompTek, Comfortel.
- Public organizations

  Associations of participants in the Internet of Things market, Non-profit Organization “National Association of Home Information and Communication Networks” (NADICS), Non-profit Partnership “RUSSOFT”, Non-profit Partnership Club of Leaders in Promoting Business Initiatives, International

[1] Численность населения Российской Федерации по муниципальным образованиям на 1 января 2019 года. https://gks.ru/compendium/document/13282?print=1

Academy of Communications (IAC), Association of Alternative Telecommunications Operators (OJSCC) , Club of IT Directors “i-IT-s”, CJSC OS Group Dmitry Zuev

- Civil society organizations (representing citizens/consumers)

  All-Russian public organization of small and medium-sized enterprises "Support of Russia"

Identify the role of <u>your</u> organization in this innovation ecosystem

ITMO University creates favorable climate for the promotion and taking up R&D results to the market. Building up full-fledged communicative environment ITMO supports researchers, scientists and entrepreneurs, innovators and policy-makers to facilitate their interactions.

ITMO has created sustainable innovation ecosystem to support innovations and turn research results to successful ventures. Providing taking up to the market innovations and transferring technologies, settling start-ups and small innovative enterprises ITMO operates as an entrepreneurial university. Innovation system or hub of ITMO consists of well-developed instruments and practices: Centre for Entrepreneurship, engineering center, Techno Park, FabLab, start-up accelerating programs, Foresight Center, Center of transferring technologies.

ITMO provides sustainable support to innovators, researchers and entrepreneurs among the staff and students of ITMO. The ITMO innovation system contains European offices (Italy, Belgium) and networks with national and international partners in innovation and entrepreneur activities.

ITMO University as an innovation and entrepreneurial university participates in the life of the city and region that contributes to efficient development of the region and enhances social sustainability and economic prosperity. Today the annual turnover of 40 ITMO SMEs consists of 70 billion rubles. ITMO students and staff work in more than 100 start-ups. ITMO accomplishes social projects.

Carrying out different society significant projects ITMO becomes social responsible and person-focused university - the basic characteristics of University 4.0. It plays significant role within the Triple Helix interaction between academia, government and business at the regional level and inputs the innovation growth of Saint Petersburg. ITMO participates in five innovation clusters in Saint Petersburg.

ITMO has experienced in tackling social and economic challenges in the region of Saint Petersburg that composes the base for the University to take scientific and technological level for advance development in future. The leading idea of ITMO strategy is to focus on the demand of the society and economic.

The ITMO mission is to generate advanced knowledge, train highly qualified graduates capable to tackle of the world’s challenge and co-create national and international innovation system to benefit for the region, country and people.

How does this ecosystem support/hinder innovations (context: use spearhead of your pilot as example)

The objective of the Smart City in St.Petersburg is to improve the quality of life of citizens and ensure its sustainable economic development. The widespread use of advanced ICT is also intended to ensure intensive and high-quality interaction between citizens, business representatives and government authorities.

Implementation of Smart City was launched by St. Petersburg governor Alexander Poltavchenko and administration in 2017. The National Program “Digital Economy of the Russian Federation”, approved by the minutes of the meeting of the Presidium of the Presidential Council for Strategic Development and National Projects of the Russian Federation dated June 4, 2019 No. 7. and the Strategy for social-economic development of St. Petersburg serve the strategical and legal framework of transforming St. Petersburg in

Smart City. The implementation and governing of Smart City implementation was delegated to Smart St. Petersburg Project Office. The office includes representatives of ITMO University, which is a recognized educational and scientific leader in the field of IT technologies, representatives of business entities which perform in the development and production of state-of-the-art software and hardware, and representatives of the executive bodies of St. Petersburg government. The head of Smart St. Petersburg Project Office is V. N. Vasiliev, ITMO University Rector. ITMO Expert had elaborated the Smart City concept that was approved by St.Petersburg government in April of 2018. Based on this concept, a priority program "Implementation and use in St. Petersburg of the technologies of the" smart city "using IT solutions for the period until 2024" and related activities for the implementation of smart city technologies was developed.

Smart City concept defines the roadmap and priorities for smart technology solutions and technologies. The process of introducing of smart city technologies and activities in St. Petersburg perform as an annual cycle of events:

Stage 1. is identification of priority areas for the implementation of the components of the “smart city”. Measures are being taken to update the characteristics and parameters of the digital image of the city and identify problems and development prospects based on it.

Stage 2. Competitive selection of projects for inclusion in the “smart city” in priority areas. Based on the results of the project evaluation, a list of projects is proposed that are proposed for implementation as part of Smart St. Petersburg for final decision-making by the responsible public authority.

Stage 3. Implementation and implementation of projects.

Stage 4. Monitoring and evaluation of target performance indicators for the implementation of Smart St. Petersburg and its components.

The experts and developers of Institute of Urban Studies and Design developed a digital platform where people can learn more about the project and share their ideas and suggestions on how to improve the situation in the city.

All residents of St. Petersburg and developers of various urban development projects concerning energy-efficient lighting, green spaces, social infrastructure, public information amenities, etc.

Companies and startups in the field of urban development use the platform to upload their projects. Their suggestions will undergo several stages of assessment:

- Every application is first reviewed by a moderator.
- The project is then assessed by a group of experts. The project is evaluated by an expert council, which will include a representative of the field to which the project belongs (for example, if the project involves changes in the healthcare system, then the council will have a representative from this area), a representative of the authorities of St. Petersburg, as well as a developer of the concept of “Smart St. Petersburg” (that is a representative of ITMO University).
- Concurrently, the project is shared on the website where every citizen can have their say.
- If the project is approved by both experts and citizens, it is included on a list that will be submitted to the Governor of St. Petersburg.

Thus, it can be said that implementing the smart city concept in St. Petersburg is facilitated with the existing innovation ecosystem. The representatives of Quadro Helix interact in the course of proposing projects, selecting them and afterwards in taking them into real life. Another path of figuring out solutions and proposals of smart city is to carry out hackathons. Universities in collaboration with other innovation actors, such as techno parks and business incubators, run Smart City and Green Sustainable hackathons. The financial mechanism of executing the smart city technological solutions embraces different forms from government support to government-private partnership, private investments.

The smart city implies maximum usage of ICTs to meet the needs of citizens, and thus public participatory principle in the process is a necessary condition of implementing smart city. In general, the city is seen as an open platform for communication between business, citizens and government. In this case, the active participation of citizens via expressing the needs and demands by the means of digital platform and other ways contributes into transforming St. Petersburg in a comfortable city for living and address urban development challenges.

Identify lessons learned, and make recommendations for your regional ecosystem development

- What could your organization do to improve your regional innovation ecosystem?

ITMO University is an active actor in innovation ecosystem, it is fully committed into smart city implementation. Beside contributing the expertise in Smart St. Petersburg Project Office, participating in priority program roadmap implementation, hackathons, accelerator programs ITMO are the partner of ITMO Highpark project. ITMO Highpark is a center of innovation, education and high technology in St. Petersburg which embraces an innovative world-class scientific and technological center is being created, including a new campus of ITMO University, the Highpark innovation center, and the innovative science and technology center.

The Highpark Innovation Center will commercialize scientific and innovative achievements, supports existing and creates new high-tech enterprises for the growth of the digital economy in the Russian Federation. An infrastructure is being created for the development of innovative projects, including acceleration, information, consulting and financial support for introducing innovative Russian products to the international market.

ITMO Highpark will be a new generation innovation center focused on the integrated development of scientific, educational, high-tech, social and residential infrastructures.

- Sound transport accessibility
- Location of a land plot of 100 hectares in the city
- Capacities for innovative development of the territory of the satellite city “Yuzhny” using advanced ideas and technologies for organizing urban space – a pilot of Smart City

Give examples of local policy making utilizing scientific research from any spearhead themes of Smart UP

- Scientists and researchers from ITMO University accomplished IMPRECITY project that allowed to visualize information about citizens’ feelings and informal behavior patterns and practices about and connected with the city and its various public spaces, and the results of the project can be applied during the design urban development projects.
- Smart St.Petersburg Concept was developed by experts of Institute of Urban Studies and Design
- a digital platform of Smart St. Petersburg was developed by Institute of Urban Studies and Design.