



Helsinki-Uusimaa
Regional Council



SMART SPECIALISATION IN THE HELSINKI-UUSIMAA REGION

Research and Innovation Strategy for Regional Development 2014–2020

Publication of Helsinki-Uusimaa Regional Council B 51 - 2015
ISBN 978-952-448-422-0
ISSN 2341-8893

Translation: Käännöspolku Oy
Photos: Tuula Palaste-Eerola

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OUTLINE DESCRIPTION OF PUBLICATION

Title

Smart specialisation in the Helsinki-Uusimaa Region - Research and Innovation Strategy for Regional Development 2014-2020

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Helsinki-Uusimaa Regional Council

Report written by

Aalto University, Helsinki-Uusimaa Regional Council

Title of series and publication no.

Publication of Helsinki-Uusimaa Regional Council B 51

Date of publication

2015

ISBN

978-952-448-422-0

ISSN

2341-8893

Language

English

No. of pages

46

Abstract

Abstract can be found on the page 7

Keywords (topic words)

Smart Specialisation, Innovation, Helsinki-Uusimaa Region, Regional Development

Remarks

This publication can also be found in Finnish (Älykäs erikoistuminen Uudellamaalla – Aluekehityksen tutkimus- ja innovaatiostrategia 2014–2020, Uudenmaan liiton julkaisuja B 50 -2015) on our website www.uudenmaanliitto.fi/julkaisut.

CONTENTS

Foreword	6
Summary	7
1. Introduction	10
2. RIS3 Smart Specialisation as a EU-wide project	12
2.1 Strong regional innovation ecosystems as the goal	12
2.2 Smart Specialisation in the implementation of the Europe 2020 strategy.....	12
2.3 Creating a Smart Specialisation strategy for the Helsinki-Uusimaa Region	13
2.4 The vision and strategies of the The Helsinki-Uusimaa Regional Programme "On top of the Baltic Sea Region"	15
3. The Helsinki-Uusimaa Region's RIS3 for research and innovation activities from a regional development point of view	17
3.1. The starting point and current situation in Helsinki-Uusimaa	17
3.2 Spearhead industries (Smart Specialisation)	19
3.3 Enabling knowledge and technologies (Smart Value).....	20
Key Enabling Technologies (KET).....	20
3.4 Innovation platforms and development environments (Smart Platforms)	22
3.5 Innovation politics and funding instruments (Smart Support).....	23
3.6 Innovation challenges and opportunities	25
4. RIS3 – strategic choices and priorities 2014-2020	26
4.1 The starting point for goal setting.....	26
4.2 Goals	26
4.3 Suggested solutions and development projects	27
4.3.1 General description of the solution	27
4.3.2 The designation of priority sectors - Smart Specialisation & Smart Value.....	28
4.3.3 Increasing the impact – Smart Platforms & Smart Support.....	28
4.4 Implementing the strategy.....	29
4.4.1 Open development platforms – the RIS3 operating model	29

4.4.2 Business co-operation in the RIS3 strategy	33
4.4.3 Determining the RIS3 priorities.....	37
4.5 The priorities and priority portfolios.....	38
A. Urban Cleantech - The Cleantech metropolis platform.....	39
B. Human Health Tech - Human-centred health and well-being solutions	40
C. Welfare City - Everyday wellbeing in the city	40
D. Digitalising Industry - The digital renewal of industries.....	41
E. Smart Citizen - Citizens of the internet era	41
4.6 The monitoring and implementation of the RIS3 strategy	42
References	46

Foreword

Focus on the essentials and work together in synergy

In order to reach the goals of the Europe 2020 strategy (smart, sustainable and inclusive growth), the EU expects every region to create a study based on the regional development perspective and to formulate a Research and Innovation Strategy for Smart Specialisation (RIS3). This is a continuous process with the goal of strengthening the region's economy. According to the instructions, the process mainly consists of the following interwoven parts:

- Analysing the future of the region, creating different scenarios
- Shared commitment by the region's various actors
- Utilizing the best information available globally
- Direct connections to the Europe 2020 strategy and the promotion of European partnership activities
- Systemic co-operation policy and operational programs
- Mobilisation of the actors for implementation and effective feedback mechanisms

The spearhead industries for the Helsinki-Uusimaa Region have been recognized after extensive forecasting and strategy processes. They were carried out during the past few years involving several stakeholder groups. The region's key decision makers have been involved in e.g. the future assessment project 'Siivet ja Juuret' (Wings and Roots), the creation of the Helsinki-Uusimaa Regional Programme and writing the competitiveness strategies for the metropolitan area. The choices presented in the RIS3 strategy reflect the spearhead industries chosen by the decision-makers.

Digitalisation, new technology and expertise support the growth and successful development of all the spearhead industries. The main focus of the implementation of the Helsinki-Uusimaa Region's RIS3 strategy is on improving our strengths, effectively combining our skills and quickly creating applications for the discovered solutions. We should utilize the international networks of the actors in the region. Let's use the information that is available and work in synergy.

In practice, the RIS3 strategy will be implemented in the form of five main priorities and related priority portfolios. The priorities are multi-disciplinary thematic entities with strong innovation and value creation potential. These will be expanded on and developed throughout the RIS3 period. Universities, universities of applied sciences and research institutes are key actors. Co-operation, especially with companies and municipalities, is vital.

The RIS3 activities will be organized on shared, thematic innovation platforms. The platforms will be used to coordinate the progress and change processes as well as to promote active collaboration between and within the key actors and their stakeholder.

Particular attention should be paid to more efficient facilitation of innovation and networking, catalysation of synergetic project and development work and orchestration at the innovation ecosystem level when organizing and managing priority portfolios.

Markku Markkula

Chairman of the Regional Cooperation Committee (MYR)

Summary

Smart Specialisation in the Helsinki-Uusimaa Region - Research and Innovation Strategy for Regional Development 2014-2020 is the RIS3 strategy for the Helsinki-Uusimaa Region. It is, among others, required by the EU Structural Funds. The RIS3 strategy is closely connected to the Europe 2020 strategy and its policies and financial instruments. The main responsibility for the RIS3 strategy's contents and future implementation lies with the Helsinki-Uusimaa Region.

This is the second iteration cycle of the Helsinki-Uusimaa Region's RIS3 process. The thoroughly prepared the Helsinki-Uusimaa Regional Programme already included many RIS3 resources. As the EU emphasizes, RIS3 is a continuous process and an economic transformation agenda. In this iteration, the choices made during the Helsinki-Uusimaa Regional Programme have been turned into clear priorities according to the EU's Smart Specialisation guidelines. The aim is to achieve significant improvements in productivity and impact by focusing on these priorities. The RIS3 strategy acts as a framework for working on concrete goals and projects through the co-operation of the actors in the region. Reaching the set goals and renewing/strengthening the economy of Helsinki-Uusimaa (and Finland) is only possible through determined and synergetic co-operation of all the involved parties. The Helsinki-Uusimaa Regional Programme's implementation plan is a rolling tool that is continuously renewed through the RIS3 strategy. Its contents and implementation are directed by the decisions of the Regional Cooperation Committee (MYR).

The goal of the RIS3 strategy is to be such an important tool that it can gain the support of all the main experts and developers of new knowledge in the region and mobilise them in synergetic co-operation.

During the creation of the strategy, the Helsinki-Uusimaa Regional Programme and its background studies as well as other national and international studies and programmes have been utilized. There have also been discussions with the region's innovation actors. Based on these, a framework has been developed for the strategy and the main goals and challenges of RIS3 have been determined. For the strategy, a general description of the Helsinki-Uusimaa Region's innovation profile from the RIS3 perspective has also been created (Smart Specialisation / Smart Value / Smart Platforms / Smart Support). The goals and actions will be determined in phases by the RIS3 actors, based on the RIS3 strategy and framework.

The goal of the Helsinki-Uusimaa Region's Smart Specialisation strategy is to promote sustainable growth via value creation of research and innovation activities. **In the year 2020, according to the goals set by the Helsinki-Uusimaa:**

- **The Helsinki-Uusimaa Region will be an international innovation cluster and a forerunner in the use of innovative products and services.**
- **The regional impact of research and innovation work will be doubled.**

These goals will be promoted through four objectives related to cultural change:

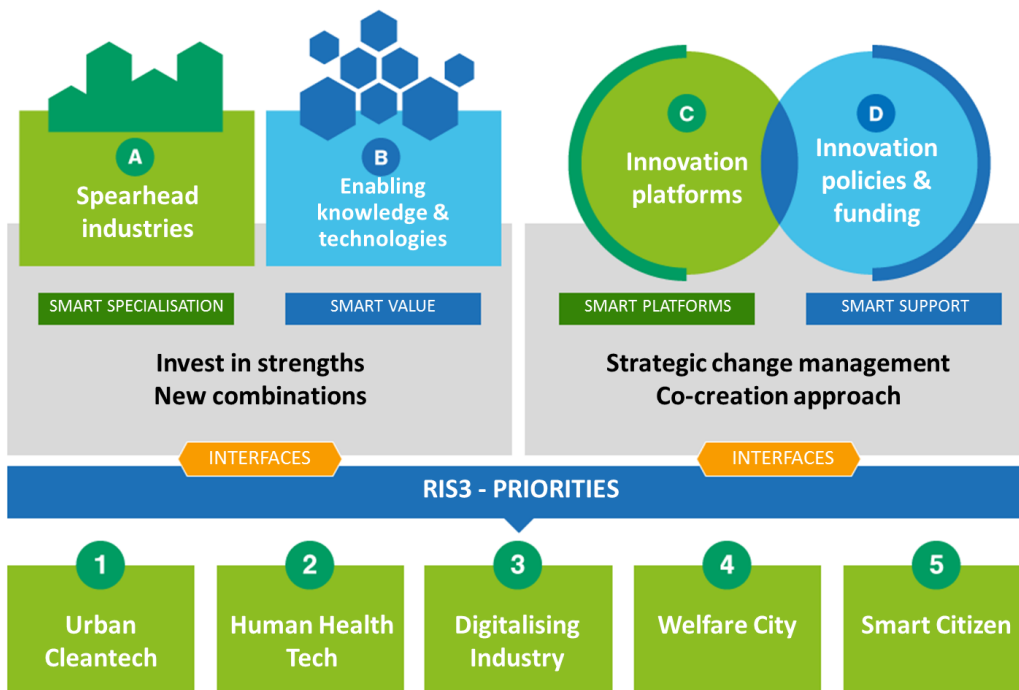
- Strong innovation hubs will create **breakthroughs on an international level.**
- The region's **know-how will be better utilized in** innovation processes.
- Networking becomes **clearer and more effective.**
- Research and innovation work will be **more productive and focus on long-term approaches.**

Smart specialisation will bring together the goals and viewpoints of the public services and businesses (Smart Specialisation) and the region's versatile, value-creating know-how (Smart Value). Research and innovation activities will be developed through co-operation platforms (Smart Platforms) and promoted through policies and financing instruments (Smart Support). The Smart Specialisation strategy makes it possible to connect the research and innovation activities in the Helsinki-Uusimaa Region with projects focusing on the selected themes and to promote both local and European partnerships.

In order to implement the strategy, three complementary development projects are suggested:

1. The development of an innovation ecosystem based on openness and facilitated co-operation from a regional point of view. For this purpose, the strategy describes, on a general level, the RIS3 operating model and especially the required innovation platforms and new innovation culture.
2. Supporting business activities that aim at sustainability and growth and developing business services from a regional perspective. Here, the strategy refers to the metropolitan area's business service development model, created in 2013, and other services.
3. Practical implementation of the aforementioned themes and operation models in the five RIS3 priorities. The strategy presents a suggestion on the priority themes that relate to the region's strengths and growth opportunities and make it possible to utilize RIS3 funding and collaboration in the region's research and innovation activities.

The structure and solutions of the RIS3 strategy:



The goals of implementing the RIS3 strategy of the Helsinki-Uusimaa Region are:

- To create the prerequisites for and actively promote regional co-operation with the goal of creating breakthroughs on an international level.
- Combine and utilize the know-how and expertise existing and cumulating in the region as a common basis for innovation.
- Bring the various actors together on the co-operation platforms and combine expertise, solutions offered by technology and key resources in order to solve common challenges.
- To increase the productiveness, predictability and use of long-term approaches in research and innovation activities. To improve networking so that it becomes clearer and more effective.
- Focus collaboration on thematic priorities that seek solutions for the everyday and business challenges of actors in the Helsinki-Uusimaa Region.

The RIS3 strategy will be implemented as a shared process:

- Common, multi-disciplinary spearhead projects shall be formulated around **a competitive advantage based on new value creation and distinctiveness.**
- The aim of the spearhead projects is to create changes in **operating culture.**
- Support is focused on co-operation interfaces and on active **co-operation facilitation across actor boundaries.**
- The Regional Cooperation Committee (MYR) guides this process and initiates and organizes necessary actions once the Board of Helsinki-Uusimaa Regional Council has confirmed the RIS3 strategy.
- Operations are developed and measures directed based on experiences, using the Helsinki-Uusimaa Regional Programme implementation plan as a tool.



1. Introduction

Smart Specialisation in the Helsinki-Uusimaa Region - Research and Innovation Strategy for Regional Development 2014-2020 is the RIS3 strategy for the Uusimaa region. It is, among others, required from each region by the EU Structural Funds. The RIS3 strategy is connected to the Europe 2020 strategy and the EU growth and employment pact and the policies and financial instruments supporting them.

The approval and implementation of the RIS3 strategy is the Helsinki-Uusimaa Region's responsibility. The strategy is based on the Helsinki-Uusimaa Regional Programme, whose priorities will be specified with regard to research and innovation support. The strategy is based on a Smart Specialisation framework created by the EU. It determines the common guidelines and a framework that takes into account the region's innovation priorities, opportunities and actors. In the next phase of the RIS3 process, the goals and actions aimed at value creation, competitiveness and sustainable growth are determined together with the innovation actors.

The strategy is used on the regional level in the implementation of the region's programme and actions, on the national level by the Ministry of Employment and the Economy and on the EU level for the allocation of various financial instruments. Carrying out the strategy requires a strong commitment from the region's research and innovation actors. The actions should be planned together with companies, research and educational institutions, development companies, public entities and local and international partners.

The goal of the Smart Specialisation strategy is to promote economic growth and employment by strengthening the region's research and innovation activities. This will be done by focusing on the region's success factors and the development of structures and methods that will improve the effectiveness of innovation activities. Carrying out the RIS3 strategy is a process that continues throughout the strategy period. The emphasis is on the active participation of innovators, continuous development of spearhead industries and better utilization of policies and financial instruments.

In the year 2020, according to the goals set by the Helsinki-Uusimaa Region:

- The Helsinki-Uusimaa Region is an international innovation cluster and a forerunner in the use of innovative products and services.
- The regional impact of research and innovation work is doubled.

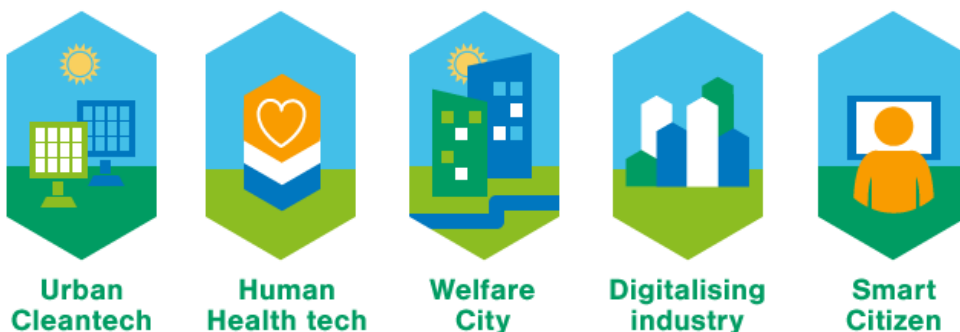
These goals are promoted through four objectives related to cultural change:

- Strong innovation clusters create **breakthroughs on an international level**.
- The region's **know-how will be better utilized in** innovation processes.
- Networking becomes **clearer and more effective**.
- The research and innovation work is **more productive, more predictable and based on a long term approach**.

In practice, the RIS3 strategy will be implemented through five main priorities and related priority portfolios. The priorities are multi-disciplinary thematic entities with strong innovation and value creation potential. These will be expanded on and developed throughout the RIS3 period. Universities, universities of applied sciences and research institutes are key actors. Co-operation, especially with companies and municipalities, is vital.

Synergetic co-operation between the different actors is the key to the RIS3 strategy. For the priority portfolios, general priorities and an operating method aiming at increased impact will be defined and then later applied to projects. Each priority will be implemented in the form of one or more portfolios that contain several projects linked to each other. The projects are formed by combining the normal activities of the various actors or as new projects specifically created for this purpose. Mutual synergy in the operations is a crucial parameter - together the projects carry out RIS3 objectives while also supporting each other. Each project has its management, but at the same time they are all orchestrated using synergistic cooperation methods.

The RIS3 priorities for Helsinki-Uusimaa:



2. RIS3 Smart Specialisation as a EU-wide project

2.1 Strong regional innovation ecosystems as the goal

Research and innovation strategies based on Smart Specialisation (RIS3 strategies) are a common tool for the regions of the European Union. Their purpose is to strengthen and speed up regional growth and development through research and innovation activities. RIS3 strategies are, therefore, change programs that aim to affect the region's economy and competitiveness.

The following points are highlighted in Smart Specialisation:

- Recognizing the special properties and resources of EU countries and regions;
- The competitive advantages of each area;
- Bringing regional stakeholder groups and funds together to support future possibilities based on expertise;
- Strengthening overall regional innovation systems, maximizing good communication, and spreading innovation-based advantages into the entire economy of the region.

The RIS3 strategies are coherent regional programmes for economic change. They have five main properties:

They focus policy support and investments on key national/regional priorities, challenges and needs for knowledge-based development.

They build on each country/region's strengths, competitive advantages and potential for excellence.

They support technological as well as practice-based innovation and aim to stimulate private sector investment.

They get stakeholders fully involved and encourage innovation and experimentation.

They are evidence-based and include sound monitoring and evaluation systems.

2.2 Smart Specialisation in the implementation of the Europe 2020 strategy

In a changing world, the EU should be a smart, sustainable and involved economy. These three complementary goals are intended to help the EU and its member states to reach a high level of employment, productivity and social inclusion. As a concrete step, the union has set five ambitious objectives - relating to employment, innovation, education, social inclusion and climate/energy - that should be reached by the year 2020. Every member state has approved its own national goals for each field. The union and member states support the strategy through concrete actions. National and

regional officials in all of Europe are creating Smart Specialisation strategies in a process that promotes entrepreneurship and new innovations so that the European Structural Funds and Investment Funds can be used more efficiently and the impact of EU, national and regional level policies, as well as public and private investments can be increased.¹

Smart Specialisation is based on 15 years' experience of supporting innovation strategies regionally and on the guidelines created by international institutions such as the World Bank, the OECD and the IMF. It requires that the regions set thematic priorities for innovation activities and use multiple incentives to get experts in business, education, research, the public sector and the third sector to collaborate synergistically in selected priority projects on the regional, national and international levels.

In the new EU strategy, the Smart Specialisation perspective is a prerequisite for obtaining financing from the European Regional Development Fund (ERDF)². The choices in the RIS3 strategies also guide the use of other financial instruments. According to the EU's new cohesion policy, the various financial instruments and frameworks must complement each other for increased impact (especially the structural and investment funds and Horizon 2020). Synergies between programmes and the region's overall RIS3 goals will be taken into account in the application process. In addition, the EU supports complementary cooperation and the deepening of partnerships between European regions according to each region's RIS3 strategy and strengths.

2.3 Creating a Smart Specialisation strategy for the Helsinki-Uusimaa Region

The Smart Specialisation strategy for the Helsinki-Uusimaa Region is a process that will complement the Helsinki-Uusimaa Regional Programme and help develop the activities taking place in the region. It will be carried out in phases as a part of the goal-setting for the region's development goals and the planning and implementation of projects.

In this process, the region's challenges, development goals and necessary actions have been described comprehensively by combining the viewpoints of various actors and work done in different areas:

- The municipal point of view: The 26 municipalities of the Helsinki-Uusimaa Region have all defined their priorities and created a municipal strategy.
- The metropolitan point of view: In the Helsinki metropolitan area (a part of Uusimaa Region) 12 municipalities have created a shared competitiveness strategy. Internal cooperation, a strong intent in pursuing a common goal, and internationalism are highlighted in the strategy.³
- Future scenarios:
 - In order to identify future opportunities and challenges, the Uusimaa ELY centre (Centre for Economic Development, Transport and the Environment) organized a scenario workshop, Uusimaa 2020.

¹ Source: http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_fi.pdf

² Source: http://ec.europa.eu/regional_policy/sources/docgener/informat/2014/smart_specialisation_fi.pdf

³ Helsingin metropolialueen 14 kunnan yhteinen kilpailukykystrategia (2012). Elinvoimainen metropoli: tulevaisuuden tekijät 2025.

- The future assessment project 'Siivet ja Juuret' (Wings and Roots) was carried out as a collaboration in the Southern Finland co-operation area between Häme Region, Päijät-Häme Region and Helsinki-Uusimaa Region and using crowdsourcing.⁴
- The research and innovation point of view:
 - The preparation for the national Innovative Cities project (INKA) has played an important part in identifying the strengths and priorities of the Helsinki-Uusimaa Region. In the process, experts from research facilities, universities, universities of applied sciences and businesses and municipal actors were invited to the discussions. Over 280 people from Helsinki-Uusimaa, 60 of them business representatives, participated in the seminars and workshops that the themes were tested and modified in.⁵
 - The development of Helsinki-Uusimaa as an innovation ecosystem has been analysed and developed in a process led by the Finland Futures Research Centre of the University of Turku.
 - Aalto University has described innovation and collaboration practices and modelled operating methods from the point of view of researchers and innovators.
- Connections with other strategic programs: In addition, separate surveys have been commissioned and the strategic programs and plans of other regional and national actors have been examined from the Smart Specialisation point of view.
- European partnerships: The Helsinki-Uusimaa Region has in many ways and in several projects collaborated with other European regions and e.g. organized the Smart Specialisation Strategies - Implementing European Partnerships conference for RIS3 actors in Brussels 18.6.2014.⁶
- Aalto University has assisted in the creation of the RIS3 strategy together with Hubconcepts Oy as a part of a project carried out with regional development funds.
- The Regional Cooperation Committee (MYR) has participated in the preparation of the strategy. The strategy will be confirmed by the Board of Helsinki-Uusimaa Regional Council.
- The RIS3 strategy sets a common framework and goals for the region's innovation activities. Based on the strategy, the RIS3 process continues in the form of development projects and participatory planning. The Helsinki-Uusimaa Region has the main responsibility for the implementation and facilitates the RIS3 process in the form of collaboration between the region's innovators.

⁴ Helsinki-Uusimaa Region (2013). Siivet ja juuret, Laajan metropolialueen tulevaisuustarkastelu.

⁵ Pääkaupunkiseudun INKA-hakemus ja sen valmistelumateriaali (2013).

⁶ EU Committee of the Regions (2014). Bench-learning Conference for Pioneering Innovation Regions – Smart Strategies: Implementing European Partnerships.

<http://cor.europa.eu/en/events/Documents/Smart%20specialisation%20proceedings.pdf>



2.4 The vision and strategies of the The Helsinki-Uusimaa Regional Programme "On top of the Baltic Sea Region"

Based on studies and a participatory process, the Helsinki-Uusimaa Region has created the Helsinki-Uusimaa Regional Programme that defines the vision and strategy for the region up to the year 2040 and specifies strategic choices for the years 2014–2017.

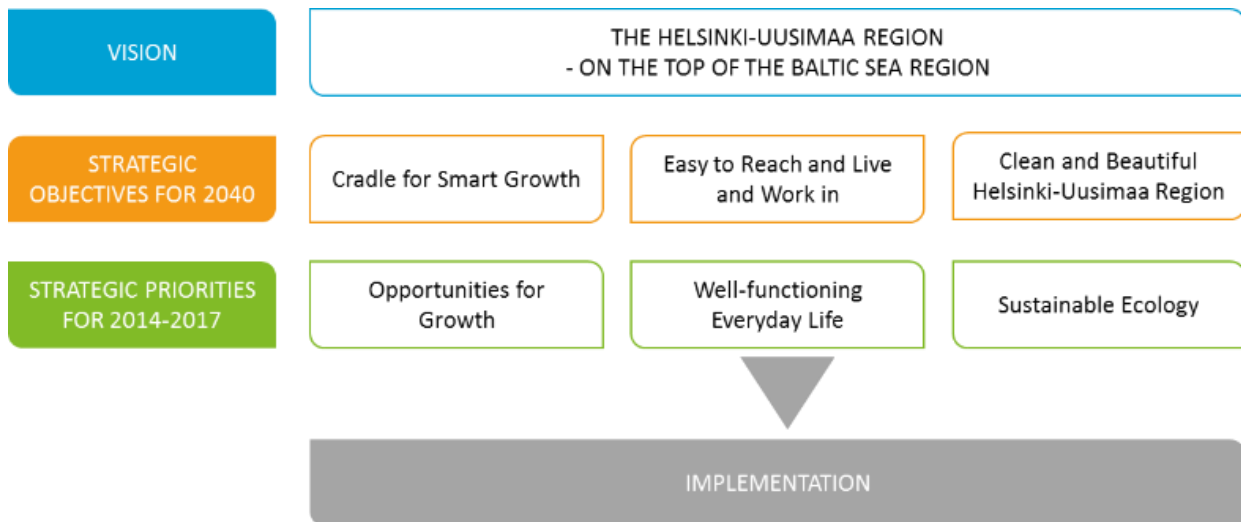
The Helsinki-Uusimaa Regional Programme has been created in co-operation by municipal decision-makers, developers, industries, businesses, the education sector, the third sector and citizens. The programme is based on national land development and use guidelines, administration-specific regional strategies, the Helsinki-Uusimaa Regional Plan 2033, regional plans, as well as other plans that affect the region's development.

In the Helsinki-Uusimaa Regional Programme's vision, in 2040 Uusimaa will be a Baltic region leader in terms of creating and utilizing economic and intellectual growth, providing citizens with a functional everyday environment and in organizing all activities in a way that is both economically and environmentally sustainable.

The long-term goal is to ensure the region's position as a source of smart growth. According to these goals, in 2040 the Helsinki-Uusimaa Region will be:

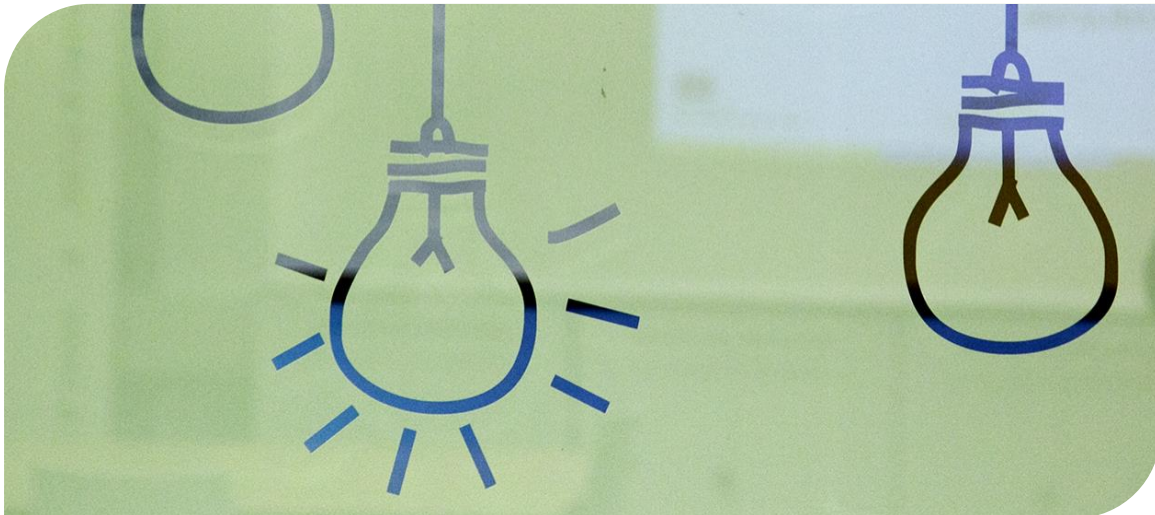
- The most competitive region in the Baltic Sea area.
- **One of the most important innovation clusters promoting sustainable growth with the help of information technology.**
- **Fully utilizing its position in the Gulf of Finland's future triangle.**

The Smart Specialisation framework has guided the strategic choices in the Helsinki-Uusimaa Regional Programme in 2014–2017:



In order to achieve sustainable growth and a European leadership position, actions where the Smart Specialisation strategy has a major role are needed. Strategic choices **will be used to improve innovation capabilities and regional and national innovation structures, maintain a high level of expertise, create a positive atmosphere for growing and new businesses, favour renewable energy sources and to improve the services and logistics that businesses need.**

Smart and sustainable growth in the Helsinki-Uusimaa Region requires the full utilization of the region's potential and special focus on the three major innovation clusters. The internationally significant investments that will take place in Helsinki, Espoo and Vantaa in the next few years provide an excellent breeding ground for innovation and require strong cooperation throughout the region in order to develop the entire region's innovation activities.



3. The Helsinki-Uusimaa Region's RIS3 for research and innovation activities from a regional development point of view

3.1. The starting point and current situation in Helsinki-Uusimaa

The RIS3 work done in the EU during the past few years has been the basis for the RIS3 process in the Helsinki-Uusimaa Region.⁷ This connection to other similar projects in the EU is also important because the EU will take inter-region collaboration and partnerships into account when making funding decisions. Secondly, the Helsinki-Uusimaa Regional Programme and its background studies as well as other national and international studies and programmes have been utilized. There have also been discussions with the region's innovation actors.

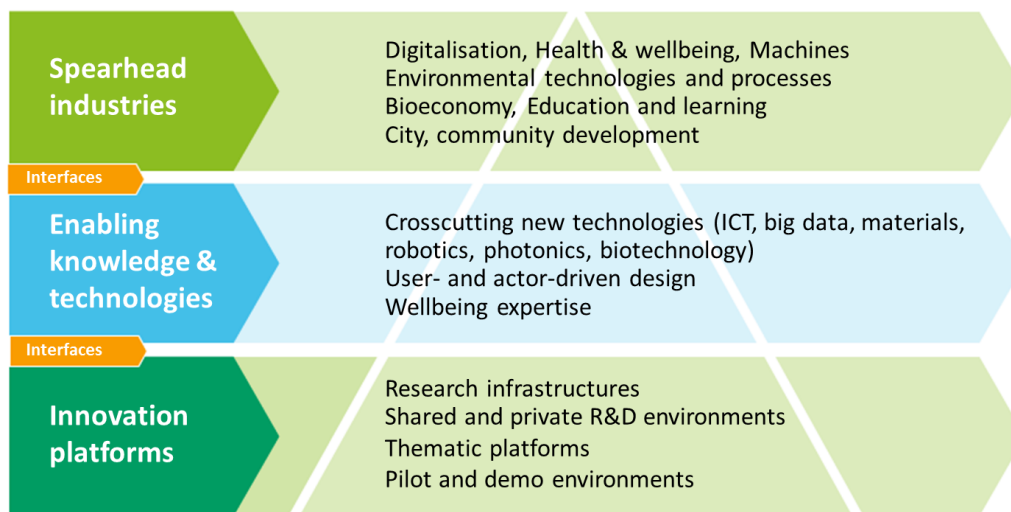
Based on these, some main points of the Helsinki-Uusimaa Region's innovation profile have been listed below, from a RIS3 perspective. On a regional level, it is also important to remember the differences between the different parts of the Helsinki-Uusimaa Region. In the figure below, these differences have been shown as the specialisation profiles for each area. The Helsinki-Uusimaa innovation complex has been described in the Helsinki Smart Region document.⁸

The Helsinki-Uusimaa Region is one of the most affluent and fastest growing metropolitan areas in Northern Europe. The area has a high level of education, and the investments made in research and development are top-notch. There are four universities and seven universities of applied sciences, as well as several state research institutes in Helsinki-Uusimaa. Within their spheres of influence, several spin-off and start-up businesses are created every year. The utilization of information technology in completely new sectors is one particular strength of new businesses.

⁷EU Smart Specialisation materials. s3platform.jrc.ec.europa.eu

⁸ Helsinki-Uusimaa Region (2014). Helsinki Smart Region raportti, 4.6.2014.

The description and actors of Smart Specialisation in the Helsinki-Uusimaa Region - general information:



3.2 Spearhead industries (Smart Specialisation)



Especially businesses from sectors that benefit from a large scale and good accessibility have formed clusters in the Helsinki-Uusimaa Region. These sectors include business services, information technologies, design, culture and recreation and high-tech production. These fields are strongly linked by innovativeness.⁹

The term spearhead industries refers to sectors that the Helsinki-Uusimaa Region is known for and that can be expected to grow. The main strengths aka spearhead industries of Helsinki-Uusimaa relate to *digitality, energy and the environment and good everyday life and health*. In the spearhead selection process, scale, international competitiveness and exports, employment potential, growth potential as well as the amount of research and innovation in the field in Helsinki-Uusimaa have been taken into account.

- Digital technology (ICT, networks, mobile applications and services, the game industry)**
- Well-being and health (healthcare solutions / processes / technologies / services, nutrition, exercise, culture, recreation)**

⁹ Uudenmaan 4. vaihemaakuntakaavan taustaselvitys (Laakso ja Kilpeläinen 2014)

Energy and resource efficiency (renewable energy, recycling, waste management, water, logistics, environment, materials, components, equipment and machinery, cleantech)
The bioeconomy (primary production, logistics, food, biomass, industrial processes)
Education, teaching and teaching technologies
City/community planning, mobility and functional everyday life
Machinery and equipment technologies

3.3 Enabling knowledge and technologies (Smart Value)



The renewal of spearhead industries and creation of new, strong growth industries is based on value creation throughout the innovation chain. The prerequisite for success is that sufficient resources are dedicated to the process and that area of strong expertise, enabling technologies (Key Enabling Technologies - KET) and active industrial clusters are fully utilized.

The foundation of the spearhead industries in the Helsinki-Uusimaa Region is formed by the actors' strong expertise and the combining of areas of expertise in a way that creates new value.

As a region that encompasses the Helsinki metropolitan area, the Helsinki-Uusimaa Region has attracted a large number of innovation actors and the education level of the population living in the area is quite high. The region's universities and research institutes are among the best in the world in certain areas and the education system's merits are recognized at the international level. A significant part of the country's public administration and third sector actors are also located in the region. The expertise of the people working for these actors supports innovation activities in all fields.

The area's main strength is thus in combining diverse expertise flexibly with different areas of application.

Key Enabling Technologies (KET)

One of the EU's Horizon 2020 programme's three pillars is "industrial leadership position". Its main focus is on KET (Key Enabling Technologies), which are cross-cutting, expertise-intensive technologies. They play an important role in promoting the competitiveness of European industries. The KETs are the key to renewing industries and to enabling business operations that create new growth.

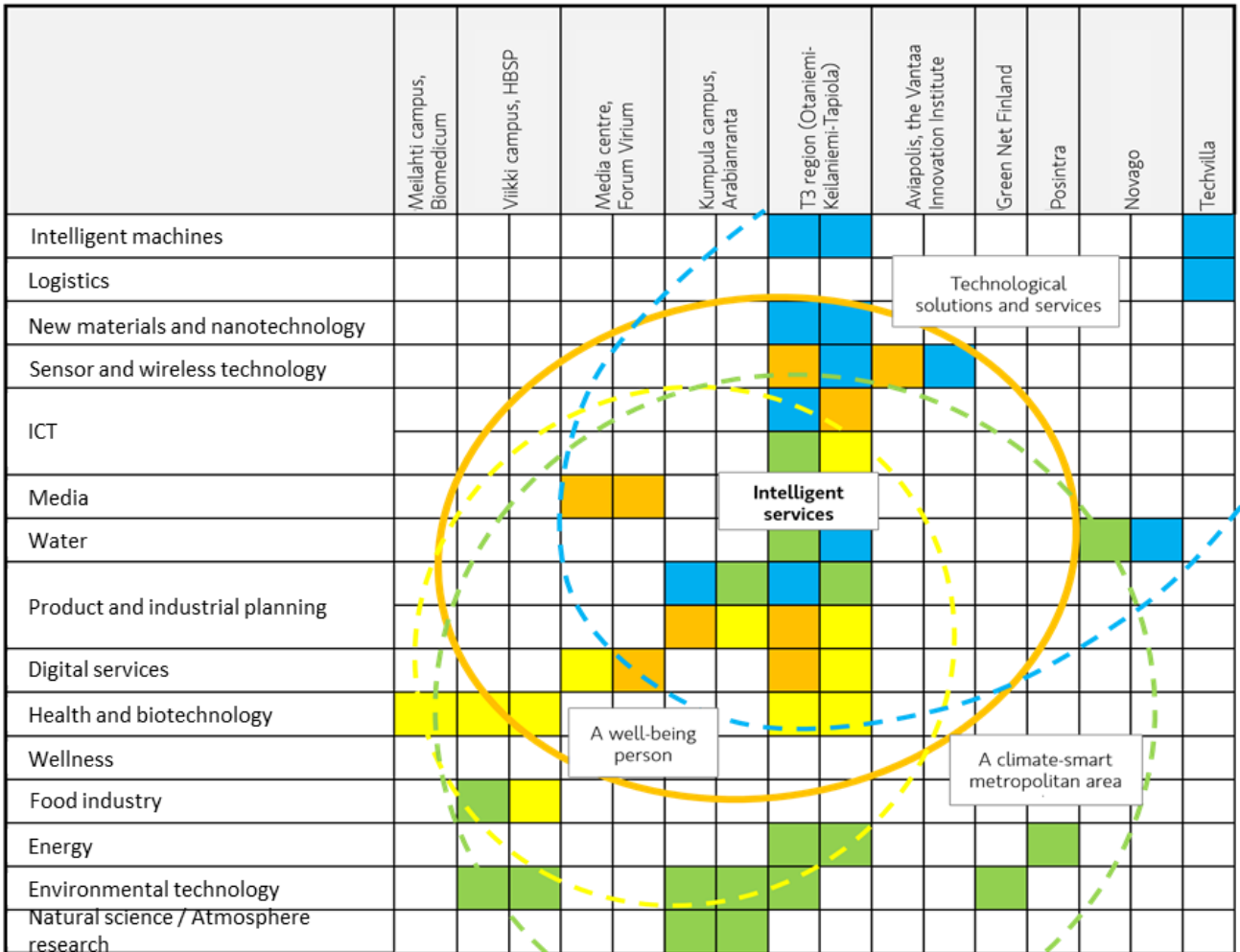
Sustainable and effective growth is created when technology-based KET expertise is channelled into applications that are meaningful for people and the society, promote value creation and bring successful businesses into the region.

The Helsinki-Uusimaa Region has significant expertise in the following cross-cutting KET technology sectors:

- **ICT and telecommunications technology. The applications range from intelligent machines to public services and entertainment.**

- **ICT and computing skills. Big data has an extremely wide range of applications.**
- **Material technology. The applications include new materials, bio and nano technology.**
- **Micro and nano electronics. The applications include sensors, robotics and automation**
- **Photonics, optics and optoelectronics**
- **Biotechnology and bio-processes (biochemistry, microbiology, gene technology, bioinformatics). Application areas: food, environmental technologies, as well as the use of biomass in chemicals, materials and fuels.**

Smart specialisation focus areas and innovation clusters (The Helsinki-Uusimaa Regional Programme):



3.4 Innovation platforms and development environments (Smart Platforms)



Internationally competitive, diverse and rapidly renewable knowledge-based sectors need to be surrounded by a sufficiently broad-based and vital innovation ecosystem.

Innovation platforms and development environments play a key role in the regional innovation ecosystems. In clusters, the research teams and experts of universities, universities of applied sciences and research institutes as well as companies and public actors making use of the research results collaborate in order to create new, innovative results or products. The information obtained from research and experiments is a prerequisite for the development of new technologies, solutions and services. Bringing the most promising solutions and services on the market, however, does in most cases require a validation process (so-called piloting, reference and demonstration facilities, technology infrastructures) and ensuring distribution channels before companies are prepared to make the kind of large industrial scale investments that create jobs in the ecosystem.

Innovation platforms can be classified based on e.g. actors, operating models or fields of application. The following are the most important examples of innovation-driven, business-driven and city-driven development environments.

Research-based development environments: the universities' (incl. research facilities) campus areas, Otaniemi, Viikki, Kumpula and Meilahti and the Helsinki city centre.
Application development environments: universities of applied sciences campus areas, applied learning platforms, for example Metropolia, Laurea, Aalto Design Factory.
Large concentrations of business activity: Aviapolis near the Helsinki-Vantaa airport and the Innovation Garden in Espoo (T3) and its core area, Otaniemi-Keilaniemi.
Industrial innovation clusters and the value chains created by them: the lifting and transport industry, logistics, TechVilla in Hyvinkää
Concentrations of start-up and small businesses: Start-up Sauna in Otaniemi, Start-up center in Ruoholahti, New Co. Factory, Design District, Vallila start-ups.
The Living labs city platforms: Arabianranta, Kalasatama, Kivistö, Suurpelto.
Intermediary organizations: Forum Virium and Demos Helsinki, Helsinki Think Tank activities and the Helsinki Think Company in the city centre and Viikki.
Thematic and virtual innovation networks, e.g. Robotics Finland.

In terms of the scale and organization of activities, there are major differences between platforms:

- Large science parks or research and innovation clusters are based on established infrastructure, long-term zoning and the local presence of several actors (e.g. Innovation Garden/T3 in Espoo).
- Major thematic platforms bring together actors from research and teaching to businesses and public bodies (e.g. the EIT-ICT Labs centre of expertise in Otaniemi, Bioruukki in Espoo).
- Depending on the situation, opportunities to utilize pop-up development environments in a new way can occur unexpectedly (e.g. a closing factory or landfill may provide excellent conditions for innovation activities, or a new data centre can create a framework for the application of new technological solutions).
- The cluster-type platforms bring together different actors around a common sector or topic (for example the strategic expertise centres SHOKs).
- Participatory, functional platforms are development environments whose effectiveness is based on the creation of networks and channelling a wide variety of experts towards innovation activities (e.g. Startup Sauna in Otaniemi, New Co. Factory).
- Intermediary organizations play an important role in the area of innovation as well as in creating networks between actors and the promotion of interaction (e.g. Forum Virium, GHP, Otaniemi Marketing, Posintra, Novago, HTC Kirkkonummi, Kilpilahti Porvoo).
- The universities and universities of applied sciences maintain versatile platforms and infrastructures that are suitable for research, teaching and business collaboration (e.g. Aalto Ictetank, Aalto Nanofab, Aalto Neuroimaging, Bioeconomy Infra, Cryohall, Metsähovi, Nanomicroscopy Center and Science-IT. In addition, for example the Aalto University's factories (Design, Health, Media and Service Factory) act as collaboration platforms. The basic structures of the University of Helsinki include e.g. Viikki with its experimental facilities and gardens, the environmental technology piloting platform Ympäristötalo, the technology platforms at the Kumpula and Meilahti campuses or collaboration platforms such as the Helsinki Think Company, Kohtaamispaikka and the Playful Learning Center that combines teaching with gaming.

3.5 Innovation politics and funding instruments (Smart Support)



There are several support systems and programs for innovation activities. The state and cities also provide support to new entrepreneurs for the commercialization of innovations. The regional ELY Centres (Centre for Economic Development, Transport and the Environment) also support innovation.

The commercial utilization of the research and development results becomes possible when the rights to the created products, services or technologies are transferred to an involved or third party company. Such transfer of results is a well-established practice in the universities, universities of applied sciences and research institutes in Helsinki-Uusimaa. The universities, entrepreneurship associations and chambers of commerce offer support services for the commercialization of innovations

Prerequisites for start-up businesses are created in the Helsinki-Uusimaa Region with increasing pace. The universities, universities of applied sciences and research institutions invest in spin-offs and technology transfer. In addition, Tekes and the cities are supporting businesses through various services. Services with the aim of accelerating business activities and expansion of businesses into internationally significant players are under further development.

Innovation activities are also supported through numerous projects and trainings. There is a wide variety of services that directly or indirectly support innovation activities and they may be difficult to find or understand. Some of the services overlap or are targeted only at niche segments (such as the creative industries).

In addition to actual innovation, entrepreneurship or commercialization support, many public functions have a direct effect on the prerequisites of innovation activities. Zoning and the traffic and logistics systems in cities are a good example of this. Innovative public procurement can offer a great opportunity to promote the achievement of these goals.

Innovation support services can be roughly classified as expert services, financial services and training services or as "enabling" indirect services. Key service evaluation dimensions are scalability, resource efficiency, internationalization (making operation possible from Finland to abroad and from abroad to Finland), client profile and satisfaction, the time span (project or a permanent service), location close to customers both physically and culturally, the financial structure and the utilization of a variety of financial instruments.

In the future, the national research and innovation system in Finland will include three competitive research funding instruments, which are controlled by the Academy of Finland, Tekes - the Finnish Funding Agency for Innovation and Strategic Research Council. In addition to the scientific research and innovation financial instruments there will be a strategic research financial instrument that is used to fund problem-oriented research. The goal is to find solutions for major challenges and problems in the society.

The first Finnish research infrastructure strategy and road map for the years 2014-2020 guide the entire research infrastructure ecosystem, which includes the major national research infrastructures, Finnish actors' partnerships in European infrastructure projects (ESFRI), memberships in other international research infrastructures, as well as the local research infrastructures of the research institutes. In the strategy, the following actions are highlighted¹⁰:

- All research infrastructures must be developed on a long-term basis
- The openness and shared use of research infrastructures must be improved
- The funding for research infrastructures must be increased.
- The road map must offer a solid foundation for the controlled development of research infrastructures.
- The effectiveness and significance of research infrastructures must be assessed

¹⁰ Suomen tutkimusinfrastruktuurien strategia ja tiekartta 2014-2020 (Tutkimusinfrastruktuurien asiantuntijaryhmä, 2014)

3.6 Innovation challenges and opportunities

The chances and possibilities of innovation in Helsinki-Uusimaa were mapped in the background studies for the Helsinki-Uusimaa Regional Programme. The following challenges mentioned by the actors were listed as having significant adverse effects on productivity and impact:

- Small scale
- The ability to communicate to the international market and attract international talent
- Global investors and partners do not have sufficient knowledge of Finnish expertise and innovations
- Business renewal and value chain development needs
- Developing business models and creating competitive advantage
- Short-term initiatives
- Lack of common practices
- Lack of physical development environments that promote open interactions
- Lack of predictability and long-term thinking
- The innovation platforms' weak business models
- Unnecessary competition and lack of openness
- Confusing networks
- Patchy support functions
- Weak earnings logic
- Uncertainty factors that reduce risk-taking ability
- Time delays, added administrative work and loss of strategic focus due to the application of various financial instruments.

Suggested solutions include:

- Supporting internationalization and better integration of international experts
- Turning know-how into profitable businesses.¹¹
- Developing export and new value chains
- Developing open innovation processes
- Clearer and more proactive business service packages, corporate customer models for business services
- Coordinating the viewpoints and interests of the involved actors
- Longer-term structures upon which individual actors, clusters and platforms can build their operations and earnings logic
- Maintaining neutral ground and changing attitudes
- The creation of a common vision and mandate and the development of operations in small steps using small experiments

¹¹ Uudenmaan innovaatioekosysteemi - toimijat ja tarpeet (Stähle ja Oksanen, 2014)

4. RIS3 - strategic choices and priorities 2014-2020

4.1 The starting point for goal setting

RIS3 is a continuous process whose effects are specifically targeted at creating changes in the economic foundation. Smart Specialisation strategies do not only aim at better focused financial and project complexes. The goal is to create significant improvements in the region's business environment and prerequisites for innovation ecosystems. Improving international co-operation in a small country requires that activities are scaled up in order to create critical mass around the spearhead industries. Today, the critical mass is increasingly formed through international networking so that the mass is physically located in several countries but is intellectually highly connected.

The RIS3 projects are also used to support co-operation between the public, private and third sectors and to create operating models that can be used to facilitate the participation of various actors, support the implementation of long-term spearhead projects and to promote good practices and emerging opportunities through experimentation and fast development.

The choices in the Smart Specialisation strategy support these goals. The projects and support in the region will be combined into priority packages that reflect the region's potential for excellence and the guidelines aiming to increase the potential for impact.

4.2 Goals

Carrying out the RIS3 strategy is a process that continues throughout the strategy period. The emphasis is on the active participation of innovators, continuous development of spearhead industries and better utilization of policies and financial instruments.

According to the RIS3 principles, the goal of the Helsinki-Uusimaa Region's Smart Specialisation strategy is to promote sustainable growth via value creation through research and innovation activities. The goal of the RIS3 strategy is to advance step by step and reach the goals set by the Helsinki-Uusimaa Region in 2020:

- **The Helsinki-Uusimaa Region is an international innovation cluster and a forerunner in the use of innovative products and services.**
- **The regional impact of research and innovation work is doubled.**

These goals are promoted through four objectives related to cultural change:

- Strong innovation hubs will create **breakthroughs on an international level.**
- The region's **know-how will be better utilized in** innovation processes.
- Networking becomes **clearer and more effective.**

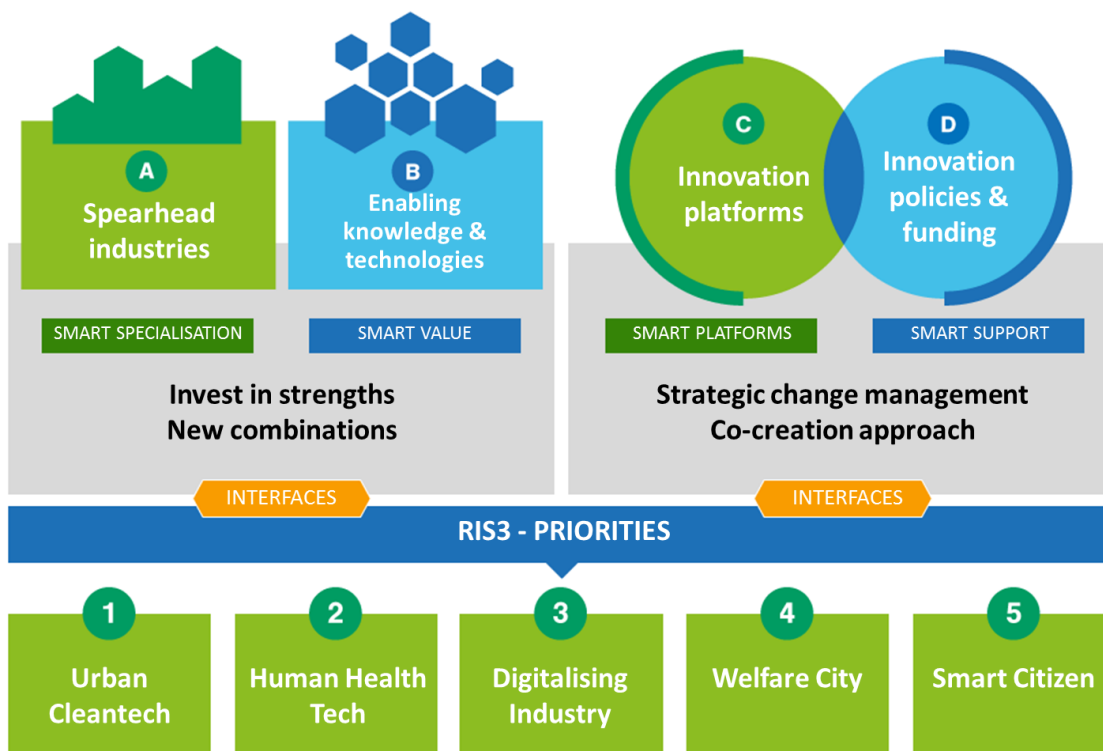
- The research and innovation work is **more productive more predictable and based on a long term approach.**

4.3 Suggested solutions and development projects

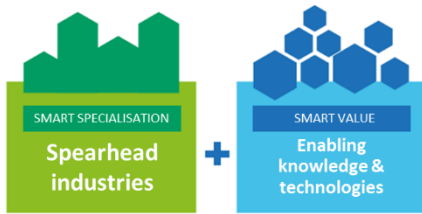
4.3.1 General description of the solution

- 1) The strengths and focus of the RIS3 period will be determined based on the spearhead industries, enabling technologies and key technologies. The goal is to increase the potential for excellence.
- 2) The areas in need of change during the RIS3 period will be determined based on the innovation platforms and innovation support goals. Another goal is to double the potential for impact.

The structure and solutions of the RIS3 strategy:



4.3.2 The designation of priority sectors - Smart Specialisation & Smart Value



The objective is to develop the Helsinki-Uusimaa Region into a truly competitive international innovation cluster and a pioneer capable of creating the conditions for employment to increase in the region and the whole of Finland. This requires that the innovation activities must be systematic, the quality must be improved, the main processes need to be commercialized and the region's innovation activities must be scaled up. The required growth will be generated through investment in knowledge, as well as investments in new areas of strength and unconventional combinations.

In the Helsinki-Uusimaa Regional Programme and the RIS3 strategy's preparation process, a number of strengths typical to the region and producing growth and added value were identified:

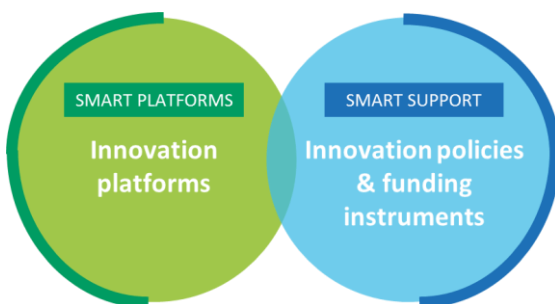
- Strong technological expertise.
- Strong wellbeing expertise.
- Solid citizen and user point of view and reliable processes.
- The ability to develop practical solutions, service and technology innovations.
- The ability to develop responsible pioneering solutions.

Based on the industrial structure, significant areas of expertise and the estimations of future development described above (Smart Support and Smart Value) the following points emerge as the Helsinki-Uusimaa Smart Specialisation priorities the RIS3 strategy:

- **Human wellbeing - wellbeing technologies and services**
- **A climate-oriented metropolitan area - cleantech**
- **Technology solutions and services - open data**

and digitalisation as a cross-cutting theme. These areas with versatile expertise are considered to be areas where the Helsinki-Uusimaa Region has a good chance to produce international level innovations, businesses and a permanent competitive advantage through distinction - a potential for excellence.

4.3.3 Increasing the impact - Smart Platforms & Smart Support



As a second Smart Specialisation goal, in support of the previous one, the RIS3 strategy for the Helsinki-Uusimaa Region includes the doubling of innovation impacts according to the EU's RIS3 goals. In order to raise the standards, practices that promote innovation work impact and scalability must be supported across all RIS3 priority areas. This means the critical mass and good practices, as well as an emphasis on operating practices both in the individual projects and public support schemes.

According to the EU's RIS3 principles, Smart Specialisation aims at **improving the management of research and innovation activities and more involvement and commitment from stakeholders**. This promotes improved impact, creates stronger consortiums and attracts the best experts and partners on both national and international levels.

In order to create commitment and motivation, the RIS3 activities must lead to significant improvements in research and development processes. A cross-cutting operating practice and culture change is required in order to make the necessary structural changes in the RIS3 period 2014–2020.

In the RIS3 strategy it is suggested that in order to implement these changes **the focus should be on the open co-operation ecosystem and the development of the region's business services as a part of the RIS3 activities**.

4.4 Implementing the strategy

In order to implement the strategy, three complementary development projects are suggested:

1. The development of an innovation ecosystem based on openness and facilitated co-operation from a regional point of view. For this purpose, the strategy describes, on a general level, the RIS3 operating model and especially the required innovation platforms and new innovation culture.
2. Supporting business activities that aim at sustainability and growth and developing business services from a regional point of view. Here, the strategy refers to the metropolitan area's business service development model, created in 2013, and other services.
3. Practical implementation of the aforementioned themes and operation models in the five RIS3 priorities. The strategy presents a suggestion on the priority themes that relate to the region's strengths and growth opportunities and make it possible to utilize RIS3 funding and collaboration in the region's research and innovation activities.

4.4.1 Open development platforms - the RIS3 operating model

The Smart Specialisation strategy is aimed at research and development work that is based on the interaction and common projects of numerous actors. This interaction environment is often described through so-called Triple Helix or Quadruple Helix models (cooperation between researchers, companies, public sector actors and citizens). In the Helix models, open and diverse interactions between the actors promote the creation of new innovations. In practice, this interaction between the different actors exists on every level. It is at its most concrete in shared projects and on dedicated platforms. To double the impact of innovation ecosystems, the Helix interaction processes and practical operating models must be renewed and shared support services aimed at all actors must be developed as needed.

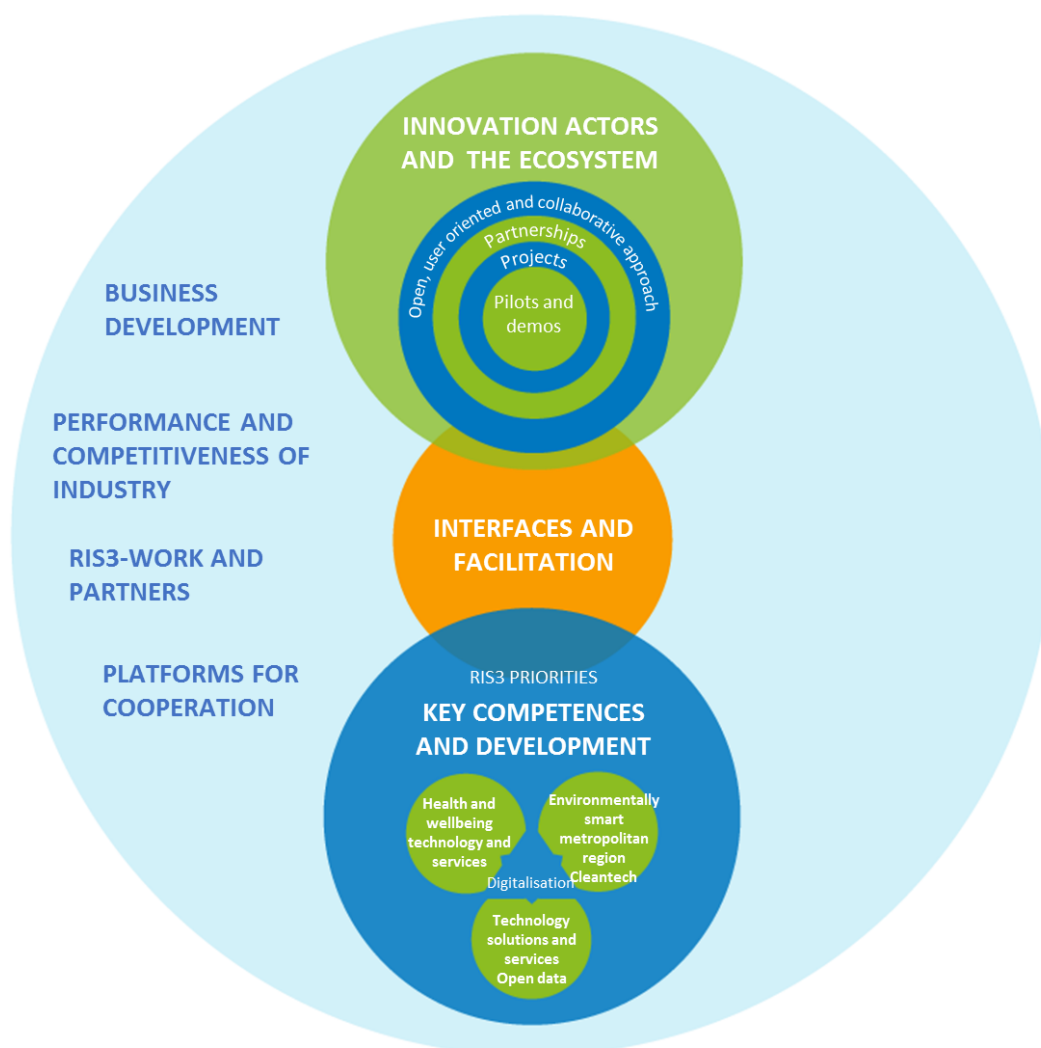
To respond to these needs, in the RIS3 period support will be directed at projects and services that apply the actor-oriented, facilitated open development environment operation model (see picture).

Quadruple Helix thinking is the basis for the model. For all actors, research and development is activity where they must move outside their normal scope of operations and into the area of other's expertise and interests. Common interests partially intersect and collaboration can open huge possibilities. On the other hand, innovation is rarely the main focus of any actor's operation - the organizations' main

goals and strategies often have a different focus, and interactive R&D work represents something that will then be applied to the main activities. Innovation work thus mostly takes place at the interfaces, on no-man's-land. This creates major challenges for the coordination and organization of shared projects. It is slow and demanding work trying to find functional interaction practices, understanding between the parties and balanced funding and decision-making mechanisms. Operations are often already well established, new consortia are regularly generated and innovation work is supported by numerous organizations from Tekes to small platforms. However, the industry's view is that the current practices are not sufficient to deliver innovations on the scale that would be required for the region to maintain its position and its international competitiveness.

In order to carry out the RIS3 spearhead projects, it is suggested that an ecosystem based on open and facilitated collaboration should be developed in Helsinki-Uusimaa. Below, the basis of this operating model is described. The model under development encompasses three points of view:

1. Innovation actors and the whole ecosystem in which the projects are carried out
2. The RIS3 main themes and related spearhead industries
3. Collaboration and enabling: facilitation and development activities



Innovation actors and ecosystem:

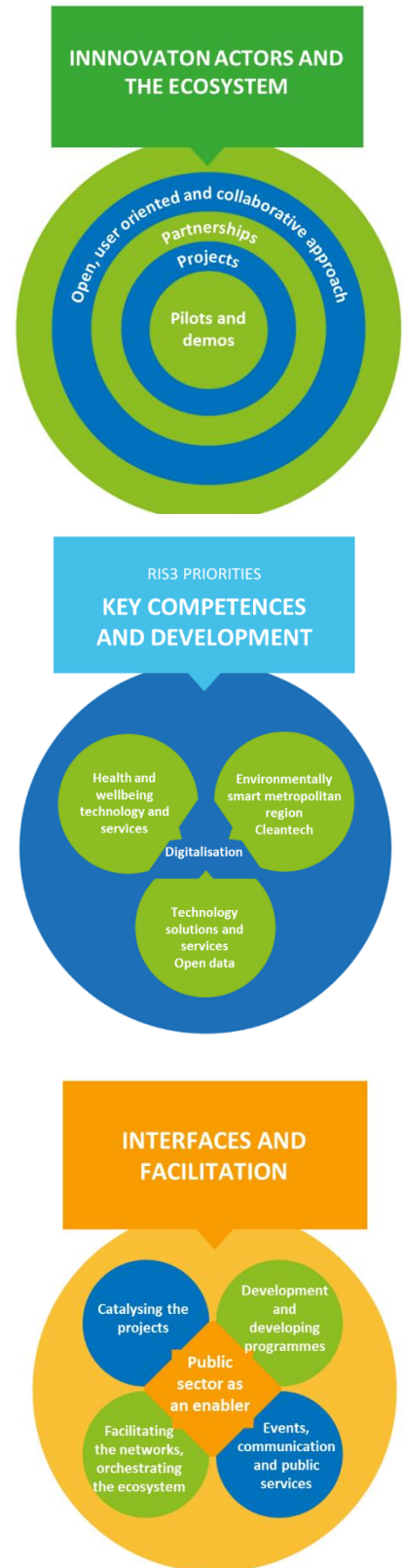
In the open development environments model, innovation actors form a loose entity and meet on the basis of common interests. As the co-operation becomes tighter, partnerships are born in order to realize common projects. Ideas are tested and projects prepared in small configurations using pilot projects, demos and other temporary experiments. The co-operation can be close or more remote. The results of this co-operation are applied in every actor's own operations according to their own needs.

Know-how spearheads:

The thematic priority choices of the RIS3 strategy define the spearhead priorities that will be supported during the strategy period. These are: human health, healthcare technology and services; an environmentally smart metropolitan area, cleantech; technology solutions and services, open data, and digitalisation as a cross-cutting theme. Each of them promotes a part of the strategic guidelines and research & development know-how of businesses as well as regional social objectives from employment to sustainable development.

Interfaces, facilitation and development:

The model also strongly focuses on facilitating innovation work more efficiently than before. Innovation activities are versatile, self-directed, ever-evolving processes between the ecosystem's actors in selected thematic areas. In practice, the major shortcomings tend to be in the areas of communication and facilitation. At this point, it seems that the various organizations are not paying enough attention to these issues or working together efficiently. These problems can lead to loss of opportunities, instability and weaker results. Facilitation-related interaction is a part of the activities of every organization participating in innovation activities. It isn't, however, normally considered as a separate item but in conjunction with each actor. The public sector is thus acting as both one party of the interaction and as an enabler of the entire network by supporting innovation activities. This section includes the following functions and services: catalysing projects; development and development programs; facilitation of networks, ecosystem orchestration; events, communication, customer service; and as a cross-cutting component, the public sector's role in these activities as an enabler.



The open development environment operating model describes the RIS3 complex and is in line with the Finnish research infrastructure strategy and road map for the years 2014-2020.¹² Individual development platforms realize this general model and its principles based on their own organization and networks. For the realization of the RIS3 goals (scale, participation, growth, impact) is extremely important that different actors will have a chance to develop their own innovation platforms and ecosystems with the help of a predictable and clear support system. Regardless of the type of activity, familiarity with the common operating culture and processes and applying them in the actor's own environment is central to the success of the RIS3 process.

The goal of the open development environment operating model is to achieve smoother and more successful co-operation in all three areas. In practice, this requires:

- Commitment to the opening and continuous improvement of practical product development environments from the companies, cities and municipalities.
- Commitment to the maintenance and opening of infrastructure and innovation platforms from the research and training actors.
- In terms of facilitation and development, collaboration by all actors, leg work and activation in the research facilities and the public actors' commitment to long-term support and easy-to-use public services (enough resources).

The ability to achieve changes means, among other things, that the innovation actors (eg. a company or an individual) can as smoothly as possible find the tools to develop their activities. Ideally, the innovator is able to develop their solution and quickly find a commercial demand and customers for their innovation or notices at an early stage that the innovation is not viable for commercial use.

The model's key principles:

- All the actors understand the overall picture and seek a competitive advantage based on the Helsinki-Uusimaa Region's specific skills and strengths.
- The innovation ecosystem's coordinators offer their support for the purpose of building a path to success for those projects that are being systematically developed and have significant growth potential in Helsinki-Uusimaa.
- The Innovation ecosystem coordinators work to communicate all the opportunities clearly to the actors and actively bring together new projects and organizations.
- Coordinators combine different skill sets and complementary interests in order to form projects. The meeting of interests is case-specific and often only partial - it requires facilitating.
- All representatives of the various institutions and communities working in coordination roles recognize the common operating model and practices, within which the best possible support should be provided to the projects. An efficient, stable and predictable support system allows the development of many types of projects.

¹² FIRI, Suomen Akatemia, Opetus- ja kulttuuriministeriö (2014). Suomen tutkimusinfrastruktuurien strategia ja tiekartta 2014-2020.

- The support and financial instruments should be flexible and based on what works for each consortium or facilitation case. Multifaceted innovation activities in themselves are difficult to manage.
- Many innovations are the result of long-term research and development work and their impact can only be assessed after a period of time. Coordinators must constantly develop long-term approaches for innovation work through experiments. Only successful concepts are established for permanent use.
- Coordinators actively transfer forward their facilitation experiences regarding platforms and projects. During facilitation work, special expertise is created. This expertise can be utilized in developing future operations. Business information related to innovations will not be transferred.
- The representatives of different institutions will share their innovation expertise across organizational boundaries. Constructive collaboration will be rewarded in the Helsinki-Uusimaa Region, which leads to more efficient innovation activities.
- The facilitation and coordination of innovation and research activities is a skill that should receive additional focus in addition to the main activities. It is a service function whose purpose is to provide funding, support and partners for the research and innovation projects.

4.4.2 Business co-operation in the RIS3 strategy

A business service complex is being developed for the metropolitan area with the goal of connecting these services and core processes more efficiently than before. The aim is to create an ecosystem in which the positive interaction, support services and creative research and development work together contribute to the region's economic success and well-being. The business and innovation support structures and services have been partially closed and sometimes also overlapping. Entrepreneurship support is offered by the universities, cities and the government. Now, the goal is to create a living ecosystem where the different services and forms of support all become a part of the process. This prevents e.g. development projects from becoming separate functions and keeps them closely linked with research and business activities.

Despite efforts, there are fairly few SMEs in the Helsinki-Uusimaa Region that are aiming for growth, in spite of the measures implemented to promote the growth of entrepreneurship. In addition, there is not a lot of growth stage venture capital funding available. Making the services available to SMEs in practice is still a challenge.

Potential for the creation of new growth companies has also been created through the start-up functions of the universities and universities of applied sciences. Finland has become an European start-up centre, especially in the field of technology. A versatile business structure will secure service production and have an increasingly important role in providing jobs.

In addition to the creation of new businesses, it is important to support the renewal of existing businesses. Restructuring of the global economy is strongly reflected in Helsinki-Uusimaa and the businesses must operate in constantly changing conditions. The main changes in financial structure will be in the technology sector and especially the large ICT sector. The RIS3 process seeks to promote the renewal of SMEs as value chains change (higher value added, more extensive, system-level solutions, the key positions in the value chain) and to improve the operating conditions of the manufacturing industry (own products and services vs. subcontracting).

A common intent, as well as co-operation between the regions and the municipalities, is important to achieve efficient implementation of enterprise services. Another key is business identification and activation, as well as the legwork that must be done at the companies and research institutes in order to catalyse new innovation.

As part of the of open development platforms approach, a practical business collaboration model and SME support services will be described. Clearer, more transparent and long-term business cooperation practices add value to the entire ecosystem of the Helsinki-Uusimaa Region.

An example of the description's contents:

- The parties and their roles in developing business networks (e.g. sharing the IPR portfolio 'Innovation Mill', value networks, subcontractor networks)
- The operating model that will link the SMEs to the product and service development platforms (e.g. Living labs, Aalto factories, shared technology facilities, Business hubs)
- The ways that the creation of new product and service packages (eg. district-scale energy management, positional intelligent services, airport terminal turnkey deliveries) is encouraged on the shared business collaboration platforms
- The ways to create connections between universities, universities of applied sciences, research institutes and business networks (e.g. education partnerships, cooperative research, corporate finance channelling of RDI projects, Tekes program subject groups, the Horizon 2020 program, the European networks).

The goal should be an efficient way of combining:

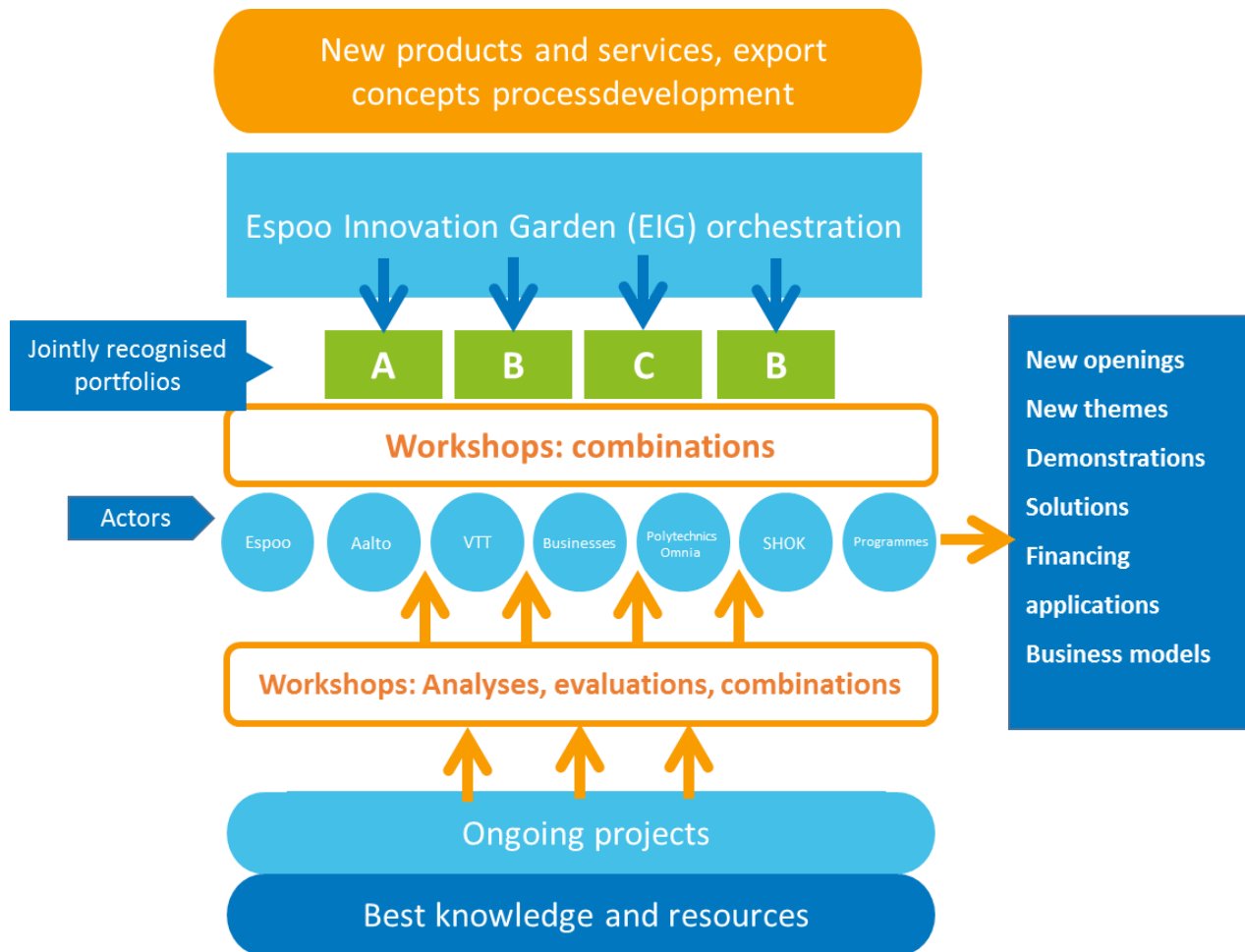
- operating models that support growth entrepreneurship by universities and research facilities
- a service package for SMEs and growth companies
- public services that promote entrepreneurship
- the know-how and interests of private service providers,
- bringing together the actors and services on business collaboration platforms.

The best models also describe:

- Profit models upon which the shared and company-specific success can be built, now and in the future
- Tools for collaboration (e.g. innovation tournaments, boot camps, company development events, international scale events) and the speeding up of solution-oriented business development and business collaboration processes
- Collaboration processes that facilitate joint activities
- Physical and virtual platforms for coordinating collaborations.

Below, two business service models are presented as examples of how innovator and company networks can be organized on shared RIS3 platforms.

Image: The Espoo Innovation Garden co-operation model

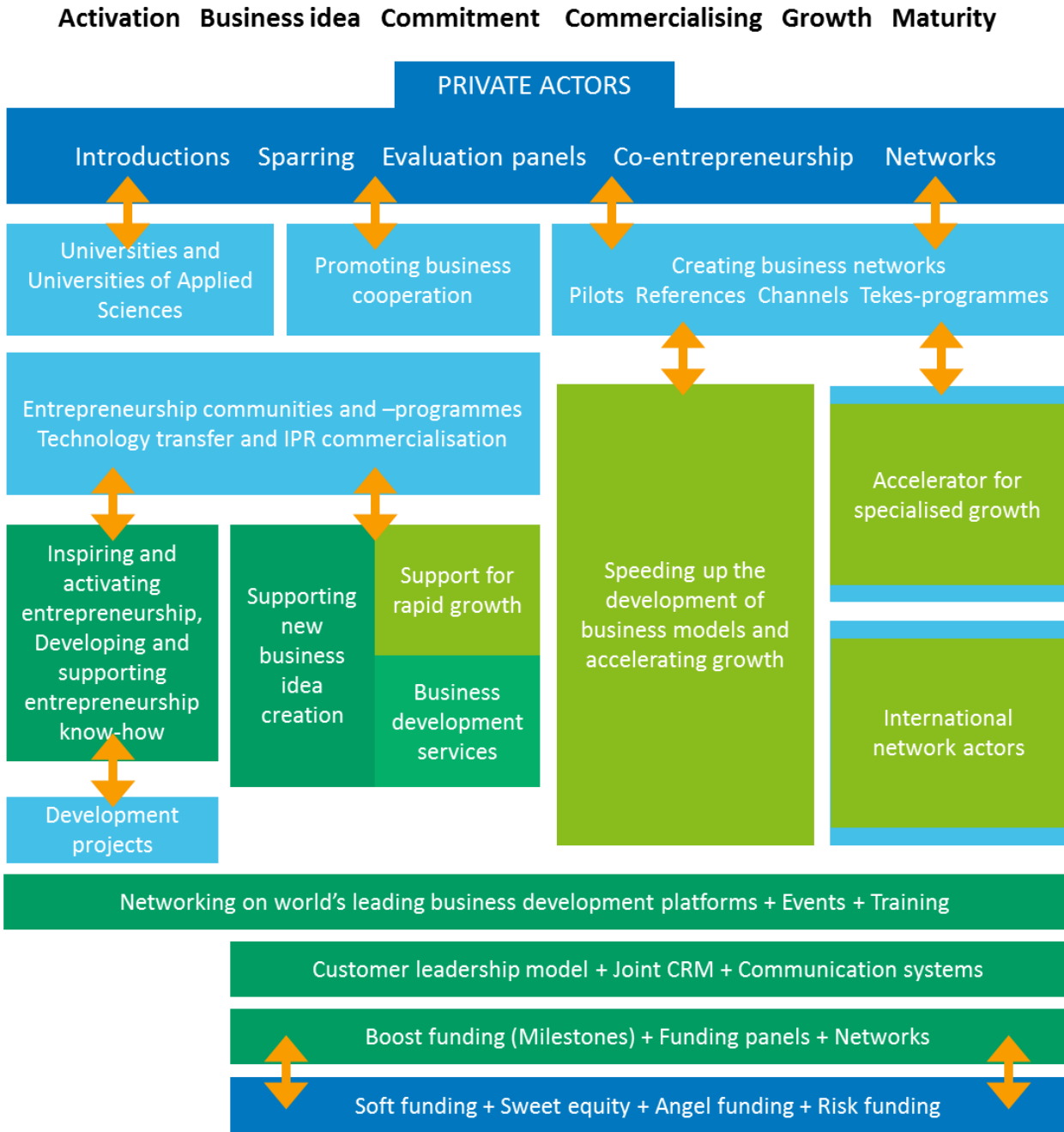


The Espoo Innovation Garden co-operation model describes a process in which the expertise of the different actors is combined with finding solutions for thematic challenges. Cooperation facilitators and competence composition planners will bring the key players into the continuous process, with the aim of creating, testing and completing new initiatives, businesses, business models and collaboration models. In the Innovation Garden model expertise, networks and actors are combined in order to develop new product/service sets and export concepts. The aim is to identify the most promising resources and expertise among the ongoing R & D projects, which can then be channelled and linked together as the building blocks for the defined key themes.

In Fall 2013 a suggestion was created as a development model for businesses in the metropolitan area. In it, all the public and private key actors have been brought into the same model so that their unique roles in developing business services and especially growth businesses can be seen.

By joining forces the SMEs and growth businesses can receive better services while individual actors can specialise in their core area of expertise. The most important thing is to pay attention to efficient designing of the interfaces between different actors and to building a genuine partnership between

growth companies and service providers. This work can be done through guidance, coaching and the building of partnerships both in Finland and abroad (e.g. by utilizing Team Finland connections).



4.4.3 Determining the RIS3 priorities

3-6 priorities will be chosen for the implementation of the Smart Specialisation goals and development projects. They form a single RIS3 operating model, which will be applied to the region's research and innovation profile, as well as the key areas relevant to the success of the spearhead industries. The intended impact can be most efficiently achieved through a change in operating culture:

- Common, multi-disciplinary priorities will be formulated around growth opportunities and **the creation of new value**.
- The aim of the RIS3 priorities is to create changes in **operating culture**.
- Support is focused on co-operation interfaces and on active **co-operation facilitation across actor boundaries**.

The priorities are multi-disciplinary entities consisting of the basic operation and projects of various actors and combining the strengths of the Helsinki-Uusimaa Region's research and innovation activities and the needs and opportunities of the business sector. In addition to thematic priorities, operating principles will be determined for the entities in order to double the impact of existing innovation activities during the RIS3 strategy period 2014–2020 and to reach a European leadership position. In terms of individual projects, the actors will implement these guidelines in practice. The priorities combine expertise and actors more efficiently and extensively than before in order to create critical mass at the main expertise clusters.

The priorities consist of many parties' common efforts. They are formulated and implemented in 2014-2020 in co-operation with the actors of the region. They focus on the Helsinki-Uusimaa Region's already rapidly renewed innovation strengths and support the region's development into a next generation innovation environment that represents international top quality in 2020 and attracts the best domestic and foreign experts to the region.

The basis for the selection of priorities was formed by:

The priorities represent the main RIS3 goals:

- International level breakthroughs from strong innovation clusters
- Better utilization of the region's expertise and channelling it into innovation
- Increased effectiveness of the networking approach
- The productivity of research and innovation environments and the predictability and long-term-orientedness of their operating environment

In practice, the following points should be stressed:

- Competitiveness: the opportunity to combine expertise with business at the international top level
- Value chains: renewal of businesses and the creation of competitive advantage.
- Attractiveness: the opportunity to generate a critical mass and form strong concentrations that attract a variety of expertise, also from outside the country's borders.

- Solution centricity: focus on the big picture - the implementation will happen in stages using pilot projects. The RIS3 priorities are large entities that are linked to the other strategy instruments. Promote common goal by utilizing synergies and the identification of good practices. The use of pilot projects must not, however, lead to the fragmentation of the field and the making of short-sighted decisions. In terms of partnerships the aim is to have good predictability even if the activities are experimental in nature.
- Good governance: clear decision-making, predictability and practicality = positive attitude toward actors.
- Innovation mechanisms and financial instruments: they have to be meaningful for all parties concerned and shall reflect the different actors' interests in a meaningful way.
- Facilitation, curating and orchestration: projects commit to follow open development environment policies in the facilitation work.
- Clarity, flow of information and data management: digitalisation makes it easier to manage and communicate complex subjects.
- Change agenda: priorities aim at doubling the impact of research and innovation work and profiling Helsinki-Uusimaa as an international innovation cluster and forerunner in the use of innovative products and services.

4.5 The priorities and priority portfolios

The RIS3 priorities were chosen as follows:



Each priority is realized using one or more portfolios. Their cross-cutting theme is: **Well-being solutions enabled by technological change - particularly digitalization - and existing in an environment shaped by it.**

RIS3 priority descriptions

Below, each of the five priorities has been described. At this point in the RIS3 process, a general framework has been created for each priority and potential development projects and themes have been presented as examples.

In the next RIS3 phase, the coordination and orchestration of each entity will be organized. The main actors in each area, especially the universities, universities of applied sciences, research institutes, municipalities and companies, are in a key position. The key is to focus on synergistic activities with innovative new solutions are at the core and that can be used to substantially speed up the desired development. One main criterion is the project's potential to get EU funding from Brussels. The Helsinki-Uusimaa Region and its stakeholder groups support the development of these priorities by supporting the activities included in the portfolios through calculated funding decisions.

In Finland, and in Europe in general, existing research is not utilized well enough. This is a well-recognized problem for which new solutions must be found. Each RIS3 priority will include parts of the existing basic operations and development projects of the various actors as well as new development projects as needed. It is particularly important to use the knowledge and expertise, generated in recent years through a number of Tekes programs and major development projects.

A. Urban Cleantech - The Cleantech metropolis platform

This priority focuses on combining the planned and existing development and pilot projects located in Helsinki-Uusimaa and fitting the Urban Cleantech theme into an entity that will produce a viable and compatible model for solving environmental challenges in cities. The goal is to make the Helsinki-Uusimaa Region the leading European platform for the development of Cleantech solutions, including the testing, development and commercialization of environmental technologies, energy solutions, biomass utilization, key infrastructure and service models.

The framework defines Cleantech loosely, so that it includes e.g. the energy efficiency of technologies, processes and services, solutions relating to raw materials, emission reduction carbon footprint reduction.

The priority portfolio may include for example the following development suggestions and themes:

- Renewable energy solutions: a mix of energy sources, intelligent networks, local energy solutions, decentralized power generation
- Projects promoting energy efficiency: construction, heat distribution and storage, power plants, industrial energy efficiency
- Life cycle construction model applications: combinations of construction, energy and maintenance processes, new construction business models, modelling and simulation
- Intelligent transport system overall models: infrastructure, service chains, business models, sharing, optimization
- Resource efficiency through new material cycle solutions: water, minerals, metals, biomass, recycling, reuse, new combinations, new areas of use

B. Human Health Tech - Human-centred health and well-being solutions

The priority is focused on Finnish medicine, biotechnology and health care technology and innovative care process expertise combinations. Co-development processes support a user-oriented perspective, where the well-being technologies are seen as a part of human-oriented health care and welfare services and processes.

The aim is to bring together clinical medicine and nursing science expertise, the entire health care sector's modern technology solutions (e.g. software, sensors, robotics, databases, automation), multi-talent team operating models, seamless care chains as well as nursing and care environment process know-how. At the same time, new solutions will be sought for preventive health care and the active promotion of well-being. In the development of information services, attention should be paid to the accessibility and plain language of the services from the perspective of older people and people with disabilities.

The priority portfolio may include for example the following development suggestions and themes:

- New technological solutions and equipment for diagnosing and healthcare purposes
- Demand and user driven services in hospitals and care institutions: technologies, service design, processes in hospitals and care facilities, hygienic materials, functionality of the hospital environment
- Self-care and health care at home: technologies, personal data, service design and construction of service infrastructure for at-home health care
- Solutions that support independent living for the aging population: activities, social aspects, technological solutions, community
- Exercise, sports and physical environment as part of well-being: actor orientation, participation, community service design, ergonomics, measuring, software and application development

C. Welfare City - Everyday wellbeing in the city

This priority combines the development of the urban metropolitan area and service solutions enabled by new technologies. The project complexes are used to design and implement new, value-creating solutions for functional everyday urban life.

Many city development projects that are about to be implemented deal with the development and implementation of systems linked to cities and urban environments and see the city as an ecosystem and operating platform of different systems. These can include e.g. innovation, information, service and traffic systems, which combine technological, organizational and human-centred processes into complementary entities and make the citizens' lives simpler, more efficient and livelier. Cities can participate in the creation of these solutions themselves or as a part of the service network or act as a platform for the suppliers and implementers of the various service solutions. The metropolitan area's large development projects offer an opportunity to both utilize new technologies and create forerunner markets.

The priority portfolio may include for example the following development suggestions and themes:

- Especially services that require extensive coordination and collaboration between actors, including the city's own service production such as transport services and urban space related services

- Urban development information models that allow the digital information produced by various actors to be compatible and available for all actors' use
- The city as an enabler and service platform, for example culture, recreation and tourism services
- Service process innovations that enable new ways of organizing or formulating services
- Project modules aiming to promote healthy urban living and combining construction expertise, digital solutions, welfare technologies and business models as well as sustainable development themes
- Developing the processes and services of large investment targets such as the ticket system reform, renewable energy investments, new hospitals and patient information systems

D. Digitalising Industry - The digital renewal of industries

This priority supports industry renewal by utilizing the opportunities provided by digitalization. The key development areas are the industrial internet, the Internet of Things (IoT), the data produced by production processes and installed equipment and the analysis and utilization of this data in order to optimize processes and increase the service business.

The goal is to recognize and make use of the opportunities offered by information and communication technologies and to improve the industry's competitiveness in the internet economy. Digital technology is widely seen as an integral part of all evolving business activities, a company's processes and social services, renewal-enabling tools and value-added solutions.

The priority portfolio may include for example the following development suggestions and themes:

- The utilization of embedded computers and technologies to create identities for objects and enabling their communication capabilities (the so-called Internet of Things)
- Turning industrial processes, manufacturing and logistics into services in order to streamline and optimize e.g. maintenance and repairs
- The active utilization of sensors and sensor technologies for manufacturing and service process automation and customer service provider interfaces (Big Data)
- Making use of the completely new possibilities offered by robotics
- Developing value chains and business operation in order to renew the companies

E. Smart Citizen - Citizens of the internet era

The strength of innovation in Helsinki-Uusimaa springs from a user-oriented, open, real-life based operating model that supports modern-day digital service systems and projects.

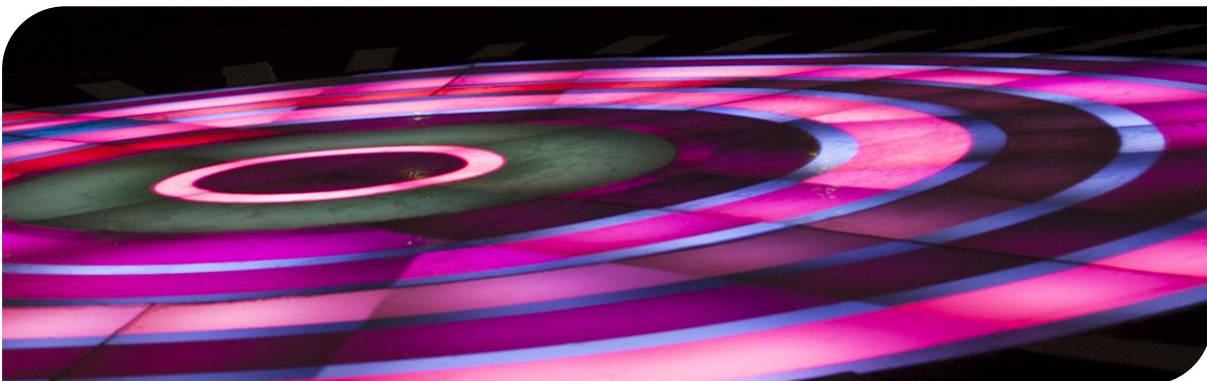
The utilization of Big Data and linked open data is relevant for nearly every industry. As data collection and analysis methods develop, operations and decision-making will change. The utilization of information will become increasingly important. The use and application of large data sets requires

comprehensive design and taking different perspectives into account. The goal is extensive and advanced use of data sets in a way that promotes economic growth and open society¹³.

The priority framework supports regional, national and international projects that aim to develop data and customer oriented service systems or to develop public administration e.g. in the areas of transport, infrastructure, consumer data, environmental data, learning and research, as well as decision-making areas.

The priority portfolios may contain development suggestions and themes such as:

- Open innovation models: inclusive innovation models, co-development, open source mind set, utilization of big data
- Possibilities opened up by digitalisation: data models, open data, analysis and evaluation algorithms, software development, application development
- Open service models: management and decision-making models, accessibility, user interfaces, seamless service chains
- Privacy themes: data integrity, protection, personal data management, global information flows and database security issues, cyber security



4.6 The monitoring and implementation of the RIS3 strategy

The implementation and monitoring specifics for the priorities will be determined by the Regional Cooperation Committee (MYR), separately for each priority and based on the common preliminary work by the actors. The intention is not to create new management for the extensive development work that is ongoing. The important thing is to accelerate the actions chosen in the RIS3 priorities so that significantly better impact can be achieved by boosting existing activities with synergetic methods and the required new additions.

Preliminary suggestions regarding the financial instruments and projects relevant to the implementation of the RIS3 priorities are listed below.

¹³ Liikenne- ja viestintäministeriö (2014). Big Datan Hyödyntäminen. Liikenne- ja viestintäministeriön julkaisu 20/2014.

A. Financial instruments

The RIS3 strategy's central guidelines direct the funding granted by the Helsinki-Uusimaa Region and synergies with other financial instruments will be sought based on them.

- In addition to the Mainland Finland's structural fund, the various INTERREG programs and the ENI program, the EU's framework programs and separate programs such as Horizon 2020, COSME and Life will be used to fund development activities and projects as much as possible.
- Projects funded by the Rural and Maritime and Fisheries Funds will also be carried out.
- National funds, such as development funds managed by Tekes and the ELY Center (Centre for Economic Development, Transport and the Environment) will be utilized in the implementation.
- Regional development funding granted by the Helsinki-Uusimaa Region will be directed at development projects in a new way.

B. Projects and programmes

- The three large cities in the Helsinki-Uusimaa Region are participating in the six-city sustainable urban development strategy 6Aika – Open and Smart Services, which will be carried out with EU's city and state funding (ITI). In the program, a shared ecosystem of smart services is created for the cities by collaborating in three ways: through open data, open innovation platforms and open participation.
- The Waters project, which deals with the protection of waterways in the Helsinki-Uusimaa Region (sustainable natural economy).
- Other projects focusing on the selected themes include the development of the business service ecosystem, looking at the regional land use plan as an "innovation plan" and the innovation actor meeting place.

C. Support and services

- Support business and innovation activities through land use planning.
- Increase the amount of "smart" public transport services and systems (e.g. digital services) and promote the development of other new service solutions through the utilization of open data and societal and social innovations.
- Support activities that promote networking and renewing the innovation structure in the region by
 - making use of the EU networks of major innovation actors (VTT Technical Research Centre of Finland Ltd, Helsinki University, Aalto University)
 - supporting activities that aim to bring the region's universities among the top universities in the world
 - by creating critical mass for the region's SMEs products and services and therefore also creating the prerequisites for a forerunner market

D. Monitoring and impact

The RIS3 strategy will be carried out as a continuous process. **The Helsinki-Uusimaa Region will, together with the region's innovators, facilitate the formation of the RIS3 action plan and the main framework projects.**

The priorities will be formed together with the actors. Crosscutting RIS3 projects and coordination aim to develop the operating environment and models as well as the prerequisites for business operations. In the priorities, the RIS3 operating models will be promoted within a framework of thematic packages. The mandate and actors for each priority will be defined in collaboration. Concrete goals and result indicators will then be set for each spearhead and RIS3 strategy.

Important goals include growth, business and value chain renewal, international activities as well as the initiation and diversification of practical innovation activities.

The result indicators for the RIS3 strategy and spearheads cover growth goals, high-quality operating environments and operating culture assessment. Participation, feedback, and evaluation work will be carried out as a part of the RIS3 activities in the form of a continuous process.

The implementation of the strategy in the Helsinki-Uusimaa Region is monitored on official, stakeholder and political levels. The strategy's success should be assessed regularly. In particular, success should be reflected in the initiation of large-scale EU-funded spearhead projects in the Helsinki-Uusimaa Region.

External evaluations will also be used to assess the implementation of the regional programme. A monitoring system based on a database will be created for the regional monitoring of the strategy. The system monitors the regional implementation of the measures, the realization of the Helsinki-Uusimaa Regional Programme's measures and related projects and their financing. The results should be reported to the Board of Helsinki –Uusimaa Regional Council regularly. Once the system is ready, the information will also be presented on the Helsinki-Uusimaa Region's website.

The Helsinki-Uusimaa Region, together with e.g. Regional Coordination Committee's (MYR's) member parties will develop a monitoring system that emphasizes the impact of the results and the region's placement and results in international comparisons. Important indicator sources include e.g. the Regional Innovation Monitor and the OECD reports.

The Ministry of Employment and the Economy coordinates and monitors the RIS3 strategies on the national level.

In the future, the following RIS3 impact indicators, determined by the EU, will be used:

- Number of start-ups/new companies founded in supported sectors
- Productivity increase for certain sector(s) or size class of enterprise
- New/improved products/services brought to market/their share on company turnover
- Employment increase in supported companies
- Number of supported business/university partnerships or number of innovation consortia
- Number of companies cooperating in innovation-oriented clusters
- Number of supported market-oriented collaborations/projects between companies and knowledge providers

- Measurable increase of innovation skills/technical competence levels in specific sectors
- Export levels (total or by sector)
- Community Innovation Survey indicators for the region
- Patent applications by SMEs
- Registered trademarks or designs
- Business survival rates
- Employment numbers or rates, either for the region as a whole or for specific sectors

The Regional Cooperation Committee (MYR) monitors the Helsinki-Uusimaa Regional Programme and Smart Specialisation implementation projects continuously. The MYR makes the necessary decisions and gives statements regarding the funded projects and promotes the strategy's implementation in other ways as well. The implementation plan of the Helsinki-Uusimaa Regional Programme will be a central administrative instrument.

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