Interreg BSR OSIRIS

PROJECT PERIOD 4

GA 3.2 Developing Knowledge Management Model

REPORT

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LITHUANIA

CONTENT

1. INTRODUCTION

Knowledge Management Model (KMM) is a key output of GA3.2 because it defines the optimal processes that must be followed by innovation actors located in the project regions. It defines working processes and practices oriented at the creation, acquisition, capture, sharing and use of knowledge, skills and expertise. Knowledge Management is the systematic management of an organization's knowledge assets for the purpose of creating value and meeting tactical & strategic requirements; it consists of the initiatives, processes, strategies, and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation of knowledge.

Knowledge management therefore implies a strong tie to organizational goals and strategy, and it involves the management of knowledge that is useful for some purpose and which creates value for the organization. In the project the "organizations" are the regions, and the "organizational goals" are smart specialization strategies (RIS3). Practically developed Knowledge Management Model handle the systematic management of project regions knowledge in order to boost innovation capabilities and enhance silver economy growth opportunities based on implementing smart specialization approach: ***Health Technologies and Biotechnologies*** (*Lithuania*), ***Growth Drivers and Smart Industries*** (*Denmark*), ***ICT & well-being*** (*Russia*), ***Advanced Information and Communication Technologies; Biomedicine, medical technologies and biotechnology*** (*Latvia*), **Age-friendly Smart Living Environments (SLE), which foster wellbeing** (*Finland*), **ICT – Secure solutions, E-government, Smart home solutions, E-health solutions** (*Estonia*). Based on KMM, local public authorities can better design their policies as well their strategy for resource creation investments because they can correlate the needs and gaps of innovation actors with missing assets.

KMM implements a systematic approach of where, what, when, and how are the following processes run:

1. Identification of needs.
2. Identification of knowledge resources.
3. Acquisition, creation, or elimination of knowledge related resources/processes/environments.
4. Retrieval, application and sharing of knowledge.
5. Storage of knowledge.

Knowledge Management Model has a important role because it does not permit that above described processes are to be treated as independent but as interdependent flows at regional and interregional level. This makes our model fully replicable in Baltic Sea Region. Knowledge Management Model will comply with open-access principles and will be published on project website with free and open access.

Research organizations will have the possibility to use KMM for the following:

1) Generating, capturing and reusing accessible knowledge
2) Capturing and sharing lessons learned from practice
3) Identifying sources and networks of expertise
4) Structuring and mapping knowledge needed to enhance performance
5) Accessing, synthesizing and sharing knowledge from external sources.

Business and Industry will also have the possibility to use KMM for:

1) Structuring and mapping knowledge needed to enhance performance
2) Measuring and managing the economic value and/or impact of knowledge
3) Accessing, synthesizing and sharing knowledge from external sources
4) Embedding knowledge in processes, products and/or services
5) Facilitating knowledge growth through culture and incentives.

KMM is an ***intermediary output*** of the project that outlines the main findings of the activities implemented under GA 3.2.

Workshops' main task was to gather new information from participants and progress towards final version of the KMM. Preparation for each workshop was made by each country experts and support staff. Each country experts and support staff aggregated the information of each workshop and developed documents as the results of each workshop.

The **Final version of the Knowledge management model** in each country include information, but is not limited to:

1. list of all involved parties in the model,
2. main functionalities and restrictions of the model,
3. types of information used in the model as inputs,
4. types of information resulted by the model as outputs,
5. work process in all four Pillars as the united model,
6. work process in all four Pillars in detail describing processes inside every Pillar,
7. responsibilities of each party in the model, including the description of the main host,
8. technologies/medias used to process information in the model,
9. model review and update periods.

To identify KMM every partner had four Knowledge Management co-creation workshops that used the same methodology described in a chapter *2.*

2. WORK PLAN

In order to identify a common knowledge management model, it was necessary to find the right solution in each country. Aims of the knowledge management co-creation workshops were detected.

1st Knowledge Management co-creation workshop was dedicated **to debating** of current situation on Knowledge detection and discovery Pillar, Knowledge capture, organization and assessment Pillar, Knowledge creation and acquisition Pillar, Knowledge transformation Pillar.

Prerequisite: completed **1st Knowledge Panel Meeting** and visual representation of findings. This should help to identify the sources, location, flows and storage of knowledge within open innovation ecosystem (related to the RIS3 priority to be tackled in each country). The first kick off workshop is used to get acquainted all participants with the open innovation ecosystem terms, scholar literature KMMs descriptions, process macro (high level) models, describe in groups and plenary session each country's Knowledge Management System "As Is" and brainstorm actual current barriers of information flow.

Questions to be answered during this workshop (could be adopted to RIS3 priority for each country):

1. What information from the Knowledge Map could be used to identify the sources, location, flows and storage of knowledge within open innovation ecosystem?
2. What barriers of information flow exists between open innovation ecosystem participants (including horizontal and vertical flows in all four Pillars)?

Output: Defined current each country open innovation ecosystem in terms of knowledge sources, locations, flows and storage, main actors and current barriers of information flow.

2nd Knowledge Management co-creation workshop was dedicated **to analysing draft designs** of Knowledge detection and discovery Pillar, Knowledge capture, organization and assessment Pillar, Knowledge creation and acquisition Pillar, Knowledge transformation Pillar.

Prerequisite: completed **2nd Knowledge Panel Meeting** and visual representation of findings. This should help to develop recommendations and possible solutions to the knowledge management model.
During this workshop participants in groups and plenary session develop the criteria for acceptance/validation the KMM and according to the prepared drafts of four Pillars develop joint draft KMM.

Questions to be answered during this workshop (could be adopted to RIS3 priority for each country):

1. Who is participating in a KMM and what actions these participants shall perform in each Pillar?
2. How would you visualize the actions and information flow (from inputs to outputs) in all four Pillars?
3. What should be done in all Pillars of KMM to overcome barriers of information flow listed in a Knowledge Map?
4. What properties of the Knowledge Management Model will work as criteria for it's acceptance or rejection?

Output: Developed the additional criteria for the best model selection based on RIS3 priority for each country, Development of the first draft of the Knowledge Management Model incorporating all four Pillars.

3rd Knowledge Management co-creation workshop was dedicated **to verification** of Knowledge Management draft Model.

Prerequisite: Finished Knowledge Map. Visual representation and short description of the draft of KMM.
Using the finished Knowledge Map workshop participants in plenary sessions and groups verify that draft of KMM meets the Knowledge Map. KMM should incorporate findings and results of the Knowledge Map and do not override or conflict. Workshop should end with clear participants vision of the KMM.

Questions to be answered during this workshop (could be adopted to RIS3 priority for each country):

1. Was the draft of Knowledge Management Model built on the Knowledge Map?
2. Were all barriers of information flow already solved in a Knowledge Management Model?
3. Will Research organizations have the possibility to use Knowledge Management Model for the following:
    1) Generating, capturing and reusing accessible knowledge
    2) Capturing and sharing lessons learned from practice
    3) Identifying sources and networks of expertise
    4) Structuring and mapping knowledge needed to enhance performance
    5) Accessing, synthesizing and sharing knowledge from external sources.
4. Will Business and Industry also have the possibility to use Knowledge Management Model for:
    1) Structuring and mapping knowledge needed to enhance performance
    2) Measuring and managing the economic value and/or impact of knowledge
    3) Accessing, synthesizing and sharing knowledge from external sources
    4) Embedding knowledge in processes, products and/or services
    5) Facilitating knowledge growth through culture and incentives.
5. Does everybody workshop participant understand how the Knowledge Management Model works?

Output: 1) Ensured that KMM meets the Knowledge Map, 2) Verified that KMM include the solutions for all information flow barriers, 3) Verified that KMM include all required possibilities for Research organizations, Business and Industry, 4) Draft of KMM including visual and full description.

4th Knowledge Management co-creation workshop was dedicated **to validation** of Knowledge Management Model.

Prerequisite: Full description and visualization of KMM.
The last workshop concentrates on strong involvement and commitment of all participants as it is the last meeting, they can change KMM. This workshop will simulate functionality of the model based on an established scenario.

Questions to be answered during this workshop (could be adopted to RIS3 priority for each country):

1. Is the Knowledge Management Model verified and include all final results from **3rd Knowledge Management co-creation workshop**?

2. Does the Knowledge Management Model meet the Criteria for best model selection that were developed during the **2nd Knowledge Management co-creation workshop** based on RIS3 priority for each country?
3. Does the KMM implement a systematic approach of where, what, when, and how are the following processes run:
    1) Identification of needs
    2) Identification of knowledge resources
    3) Acquisition, creation, or elimination of knowledge related resources / processes / environments
    4) Retrieval, application and sharing of knowledge
    5) Storage of knowledge.
4. Is the Knowledge Management Model fully described as guided in 9 parts at Expertise and detailed guidance on Knowledge Management Model (KMM) section of these Guidelines?
5. Is every workshop participant following it's own believes and personal responsibility ready to validate developed Knowledge Management Model and process it to the host?

Output: 1) Ensured that KMM meet the Criteria for best model selection, 2) Ensured that KMM is properly verified, 3) validated by KMM host and representative participating parties.

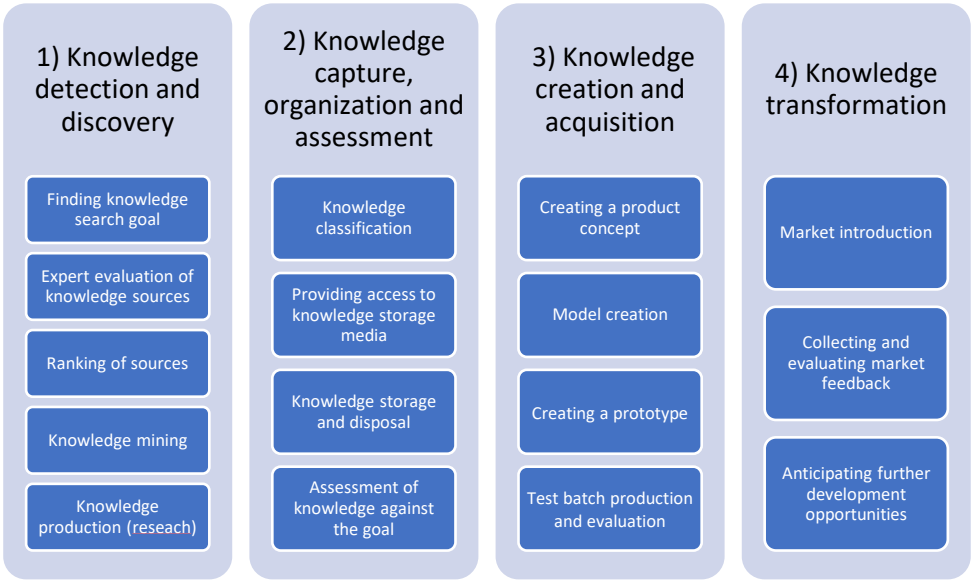


Fig. 2 Elements of four Pillars of knowledge management

The participants to be invited to the knowledge management co-creation workshops

It was a strong recommendation to invite to workshops participants who have possibility to participate in all four workshops as these events build on each result and will not start each time from the beginning. Workshop participants should be from very start encouraged actively from to take part in a KMM development, as it would influence their country's future.

As many people acquainted with the Silver Economy and Knowledge Management will be already participating in Knowledge Panel Meeting, it is recommended invite the same people and add more participants for better representation.

Workshop include participants representing Formal side of society: Policy developers (from Central Government), Employees from target sector, Science and research institutions, Business representatives.
Workshop include participants representing Non-Formal side of society: Seniors, Relatives, Influencers, NGO's for seniors, Alternative persons with not traditional points of view (hackers, nonformal doctors, etc.) representing the RIS3 priority for the country. The group should have between 10 and 18 key individuals. Less than 10 participants compromise the model validity. These key experts in every participating country shall represent the RIS3 priority specified actors of 5-12 organizations in the open innovation ecosystem.

Time and duration of the knowledge management co-creation workshops

The scheduled timing for WP3.2 knowledge management co-creation workshops was November 2019 - November 2020. Workshops were planned for 4-5 hours of work, mixing plenary sessions and debating in groups. Groups were mixed to represent as much different opinions as possible. Start and finish of each workshop should be organized in plenary sessions drawing attention to general purpose and progress made.

3. RESULTS – Knowledge Management Model (KMM)

The model ownership is an important issue directly related with project results. The host of the model:

1) takes the responsibility for the knowledge management processes results and therefore creation of a high growing potential products
2) has to monitor and change the model when the situation in the region or country requires other approach to knowledge management in an open innovation ecosystem
3) has to strengthen the processes stability and intensity inside the knowledge management model
4) consolidate Business and Research and education organisations for cooperation, including Civil society / user members.

For the above listed reasons, the KMM should be presented to the host (already provided in the KMM description) and ownership should be transferred from the creators to the implementors. Those countries representatives that are working on a country's level it is strongly recommended to ensure the ownership comes from the Central Government institution.

Actors. The actors of the KMM include four Quadruple Helix members: Research and education, Public administration, Business and Civil society/users. The quadruple helix has been applied to European Union projects and policies, including the EU-MACS (EUropean MArket for Climate Services) project, European Research and Innovation Roadmap for Climate Services, and the European Commission's Open Innovation 2.0 (OI2) policy for a digital single market.
Adopting the Quadruple Helix to the KMM allowed to unify approach of model development, but still maintaining differences that are necessary to meet every country partner RIS3 priority specifications. Depending on a

country's RIS3 priority / smart specialisation and the level of integration (regional vs. national) the list of Quadruple Helix member will vary. The development of a model was also constructed in a such way that every country should invite into workshops their actors (co-creators) of interest under such classification:

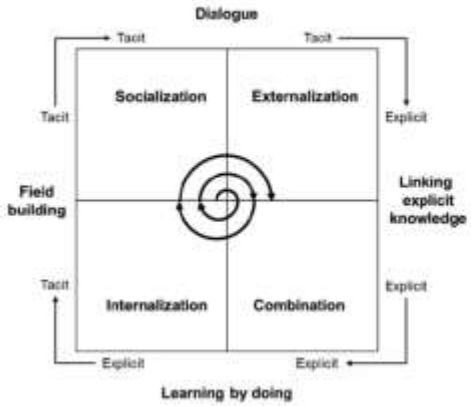
A) Formal side of society: Policy developers (from Central or Regional Government), Employees from target sector, Science and research institutions, Business representatives.
B) B) Non-Formal side of society: Seniors, Relatives, Influencers, NGO's for seniors, Alternative persons with not traditional points of view (hackers, nonformal doctors, etc.) representing the RIS3 priority for the country.

The same actors' classification was useful in model validation, as actors from different sectors had the possibility to evaluate model's usability and question their role in KMM. Keeping the Quadruple Helix members integration as developers' structure and the users' structure is the same made the Knowledge Management Model homogenous.

The Knowledge Management Model, although surrounded by other operating systems, the international environment, is essentially a process - roadmap that is based on knowledge transformation model made by Ikujiro Nonaka and Hirotaka Takeuchi's (1995). The knowledge is accumulated, transformed into tangible product and reused, reaccumulated. This process - roadmap is also a risk management that aims to maximize the chances of achieving a Product with a high growth potential, while showing what path typically awaits everyone who is determined to follow it. The Knowledge Management Model is strongly influenced by public administration, that formulate and implement innovation policy, but are not established to create innovative products themselves. Public administration creates the conditions and facilitate the emergence of innovation.

Products with a high growth potential are created by research and education and business organizations in accordance with their strategies. For their overall interaction, this roadmap is divided into 4 blocks, 16 stages and 70 steps. Although the process of developing products without specifying the product is general, each organization will go through its own path and visit all stages in its own way through unique networking and with unique potential. A more detailed breakdown of the steps is provided in the section 6 *Processes inside four Pillars of Knowledge Management*.

The characteristics of open innovation are implemented in this model through three elements: a) shared knowledge sharing at all stages of the road and between all actors, b) acquired and implicit knowledge of product development that is used many times, c) and part of this knowledge, together with other knowledge about innovation, finds itself in a comprehensive innovation database in the field of innovation based on "Capture, arrangement and assessment" technologies.

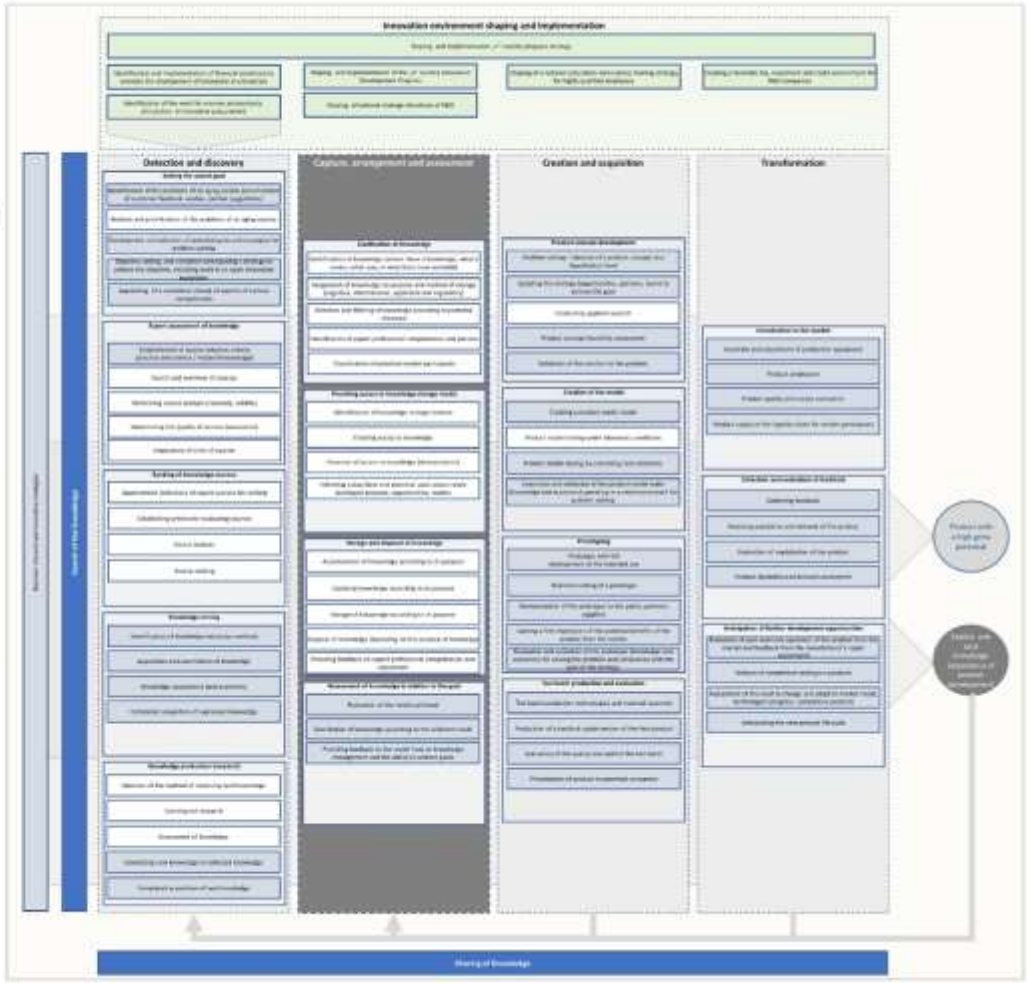


SECI model by Nonaka and Takeuchi, 1995

ACTORS

- Public administration
- Business
- Research and education
- Civil society / Users

KNOWLEDGE MANAGEMENT MODEL IN OPEN INNOVATION ECOSYSTEM



Processes inside four Pillars of Knowledge Management Model

Detection and discovery

Input	National level strategic documents and programs, action plans, business strategies.	
Output	Transfer of explicit knowledge to the stage of arrangement and assessment	
Stage	Action	Actors
Setting the search goal	• *Identification of the problems of an aging society (*accumulation of customer feedback, wishes, partner suggestions*).*	*Public administration, Research and education, Business*
	• *Analysis and prioritization of the problems of an aging society.* The analysis of the identified problems is performed and the priorities are selected, according to which the most relevant ones are selected.	*Public administration, Research and education, Business*
	• *Development and selection of potential goals and strategies for problem solving.* Except for priority issues, potential goals and strategies to address these issues are envisaged. Strategies are considered and the most promising strategy is selected.	*Public administration, Research and education, Business*
	• *Objective setting and validation (anticipating a strategy to achieve the objective, including work in an open innovation ecosystem.* Anticipating a strategy to achieve the objective, including work in an open innovation ecosystem*.*	*Research and education, Business*
	• *Appointing of a committee (team) of experts of various competencies.* An expert committee (team) is formed to implement the strategy.	*Public administration, Research and education, Business*
Expert assessment of knowledge	• *Establishment of source selection criteria (practice and science / research knowledge).* The practice and science / research-based knowledge will be assessed according to the strategy for solving the identified priority problems and the criteria for the selection of knowledge sources will be established.	*Research and education*
	• *Search and overview of sources.* The search for local and foreign sources is performed according to the established criteria. The found sources are reviewed and selected for more detailed analysis.	*Research and education*
	• *Performing source analysis (necessity, validity).* An analysis of selected sources is performed, assessing their necessity and validity for the implementation of the strategy.	*Research and education*
	• *Determining the quality of sources (evaluation).* The quality of the analysed knowledge sources is assessed.	*Research and education*

	• *Preparation of a list of sources.* The Committee of Experts shall draw up a comprehensive list of sources of knowledge to be included in the ranking.	*Research and education*
Ranking of knowledge sources	• *Appointment (selection) of expert sources for ranking.* An expert group is convened to identify the most valuable sources of knowledge for the implementation of the strategy from the prepared list of sources.	*Research and education, Public administration, Business*
	• *Establishing criteria for evaluating sources.* The Committee of Experts sets criteria for the value of knowledge sources for the implementation of the strategy.	*Research and education, Public administration, Business*
	• *Source analysis.* The analysis of knowledge sources is performed taking into account the implementation of the planned strategy.	*Research and education, Public administration, Business*
	• *Source ranking*. Knowledge sources are ranked according to value and those that will be used to implement the strategy are selected.	*Research and education, Public administration, Business*
Knowledge mining	• *Identification of knowledge extraction methods.* After assessing the situation, knowledge extraction methods are chosen. If there is no prior knowledge in the data sample, clustering (grouping), relationship analysis, generalization and visualization can be chosen. There can also be predictive data mining, where all knowledge of available data is used to predict new data.	*Research and education, Business*
	• *Acquisition and assimilation of knowledge.* The implementation of the strategy requires knowledge from the most valuable selected sources of knowledge.	*Research and education, Business*
	• *Knowledge assessment (and economic).*	*Research and education, Business*
	• *Completed acquisition of expressed knowledge.* All planned knowledge is obtained from all selected and evaluated sources. A final summary of the expressed knowledge is prepared. Possible sources of knowledge during product development are foreseen.	*Research and education, Business*
Knowledge production (research)	• *Selection of the method of obtaining tacit knowledge.* If there is a lack of implicit knowledge that is in implicit knowledge, then methods of extracting implicit knowledge are chosen.	*Public administration, Research and education, Business*
	• *Carrying out research.* If necessary, planned research is carried out to obtain tacit knowledge (choosing	*Public administration, Research and education, Business*

	appropriate methods: case study, monitoring, interviews, etc.)	
	• *Assessment of knowledge.* The completeness, reliability and need for re-examination of the newly acquired knowledge are assessed.	*Public administration, Research and education, Business*
	• *Connecting new knowledge to collected knowledge.* The experts compare the received tacit knowledge with the already available knowledge, interpret it and decide on its suitability to supplement the already existing knowledge bank..	*Public administration, Research and education, Business*
	• *Completed acquisition of tacit knowledge.* A summary of tacit knowledge has been prepared and integrated with tacit knowledge. Indicate possible ways of obtaining tacit knowledge to be used later in the project.	*Research and education, Business*

Capture, arrangement and assessment

Input	National level strategic documents and programs, laws, orders. Results of the search and discovery process: customer feedback, wishes, partner suggestions, knowledge extraction and knowledge production results. Knowledge of the development and acquisition and transformation stages, including experience in the development of the final product.	
Output	Sharing existing knowledge with ecosystem actors; the information transmitted is needed at all stages of innovation development.	
Stage	Action	Actors
Classification of Knowledge	• *Identification of knowledge (where there is knowledge, what it covers, what uses, in what form, how available).*	*Research and education*
	• *Assignment of knowledge by purpose and method of storage (cognitive, informational, applicable and regulatory).*	*Research and education*
	• *Selection and filtering of knowledge according to potential relevance.*	*Research and education*
	• *Classification of expert professional competencies and persons.* An expert database is being compiled, where specialists can be found according to the required competencies. This step is singled out in the model because one of the main challenges in developing innovation is to gather the right competencies for the Expert Team and expand it appropriately.	*Research and education* *Public administration* *Business* *Civil society and users*
	• *Classification of potential market participants,* which will then be used by the dissemination step.	*Research and education* *Public administration* *Business*

		Civil society and users
Providing access to knowledge storage media	• *Identification of knowledge storage location.*	*Research and education*
	• *Creating access to knowledge.* Depending on whether open access is restricted or under what conditions it is restricted, appropriate access is created.	*Research and education*
	• *Provision of access to knowledge (dissemination).* Facilitates the dissemination of knowledge.	*Research and education*
	• *Informing subscribers and potential users about newly developed products, opportunities, studies.*	*Research and education* *Public administration* *Business* *Civil society and users*
Storage and disposal of knowledge	• *Accumulation of knowledge according to its purpose* (depending on whether it is cognitive, informational, applied or regulatory knowledge, it is stored and stored in the right place)	*Research and education*
	• *Updating knowledge according to its purpose* (updating of knowledge is ensured depending on whether it is cognitive, informational, applicable, or regulatory knowledge)	*Research and education*
	• *Storage of knowledge according to its purpose* depending on whether it is cognitive, informational, applied, or regulatory knowledge	*Research and education*
	• *Disposal of knowledge depending on the purpose of knowledge* (outdated knowledge, obsolete versions must be removed depending on whether it is cognitive, informational, applicable or regulatory knowledge.)	*Research and education*
	• *Providing feedback on expert professional competencies and adjustment.* In order to keep the knowledge about the expert competencies relevant, the feedback is collected and constantly updated.	*Research and education* *Public administration* *Business* *Civil society and users*
Assessment of knowledge in relation to the goal	• *Evaluation of the results achieved.* If the previous stages of this block were dedicated to the systematic continuous work of the information base, which will be used by the Search and Discovery stage, not only the later ones, then the last stage and its steps are dedicated to further work on a specific innovation. The committee of experts evaluates the results of knowledge management.	*Research and education*
	• *Distribution of knowledge according to the achieved result.*	*Research and education*

	• *Providing feedback to the model host on knowledge management and the ability to achieve goals.* During each innovation development project, at this stage, the Committee of Experts provides feedback to the Model Host through information systems on the effectiveness of this unit.	*Research and education* *Public administration* *Business* *Civil society and users*

Creation and acquisition

Input	Innovation development strategy, all knowledge related to the product being developed, list of experts corresponding to the required competencies.	
Output	For potential investors and consumers: an initial assessment of the product as a possible solution to the problem. Innovation for developers: knowledge of product transfer to market. Research and education organizations are provided with knowledge about the innovations created.	
Stage	Action	Actors
Product concept development	• *Problem solving - formulation of a product concept idea at a hypothetical level.* At the beginning of the project, the formulated problem and possible solution are detailed up to a set of conditions, according to which the model and prototype are developed.	*Research and education* *Business*
	• *Updating the strategy (opportunities, partners, team) to achieve the goal.* Involvement of stakeholders in the organization's innovations, provision of information related to the organisation's innovations to partners and stakeholders, and informing partners and stakeholders about the integration of their ideas into innovation.	*Research and education* *Business*
	• *Conducting applied research.* Carrying out research that would confirm the possibility of creating an innovation.	*Research and education* *Business*
	• *Product concept feasibility assessment.* Anticipation of possible consequences of innovation and development of possible scenarios of innovation implementation.	*Research and education* *Business*
	• *Validation of the solution to the problem.* After gathering the newly acquired knowledge, it is assessed whether, based on the received research and global progress, it is worthwhile to continue the development of the identified solution to the problem, to what extent to make modifications.	*Business*
Creation of the model	• *Creating a product model layout.* Creation of visual image and form, and description of functions.	*Research and education* *Business*

	• *Product model testing under laboratory conditions.* Testing of individual features of the product model layout, according to the compiled list of tests.	*Research and education* *Business*
	• *Product model testing by simulating real conditions.* Testing of individual features of the product model layout, according to the compiled list of tests.	*Research and education* *Business*
	• *Evaluation and validation of the product model make (knowledge and economic) operating in a real environment for problem solving.* Knowledge, technology, psycho-socio-economic analysis is carried out in the innovation development phases to examine the challenges, what information is still lacking for innovation excellence, the views of the partners involved and the potential contribution to innovation adjustment. It also seeks to reconcile potentially different values (economic gain and social benefit to society). In this step, this assessment is made not only intuitively, but also necessarily formally, when deciding whether to innovate further.	*Research and education* *Business*
Prototyping	• *Prototype with full development of the intended use.* Development of a single instance (if the testing strategy requires more, more prototypes are developed) that meets all its conditions of use.	*Research and education* *Business*
	• *Real-time testing of a prototype.*	*Research and education* *Business* *Civil society and users*
	• *Demonstration of the prototype to the public, partners, suppliers.* Final preparation of the prototype presentation strategy (it is recommended to start from the beginning) and implementation.	*Research and education* *Business* *Civil society and users*
	• *Gaining a first impression of the potential benefits of the product from the market.* Gathering feedback on innovation from potential customers, consumers, investors and the education / research community according to the intended presentation strategy.	*Research and education* *Business* *Civil society and users*
	• *Evaluation and validation of the prototype (knowledge and economic) for solving the problem and compliance with the goal of the strategy.* Knowledge, technology, psycho-socio-economic analysis is carried out to identify the challenges, what information is still lacking for innovation excellence, the views of the partners involved and	*Research and education* *Business*

	the wider public, and the potential contribution to innovation adjustment. It also seeks to reconcile potentially different values (economic gain and social benefit to society). In this step, this assessment is made not only intuitively, but also necessarily formally, deciding whether to continue to innovate and take on the further risks associated with investing in the further production of batches or units.	
Test batch production and evaluation	• *Test batch production technologies and material assembly.* In preparation for series production of the product, resources for the production of the test batch (closest to series production) are planned and completed.	*Research and education* *Business*
	• *Production of a batch of a pilot version of the final product.* Production of the last approved product shall be carried out as close as possible to the series production conditions.	*Research and education* *Business*
	• *Evaluation of the quality and yield of the test batch.* Production is evaluated in financial - economic, technological, organizational sections.	*Research and education* *Business* *Public administration*
	• *Presentation of product to potential consumers.* Exhibition of the final version of the products manufactured on the principles of series production. Adjustment for innovation depending on relevant information provided by partners and stakeholders. Deciding whether to move the project to another block, transform it and put it on the market.	*Research and education* *Public administration* *Business* *Civil society and users*

Transformation

Input	Results of test batch production and evaluation	
Output	Further life cycle Knowledge sharing by transferring information to the Detection and Discovery process	
Stage	Action	Actors
Introduction to the market	• *Assembly and adjustment of production equipment.* Creating all the conditions needed to meet market demand in product quantities.	*Business*
	• *Product production.* Production of the last approved product is carried out under series production conditions.	*Business*

	• *Product quality and output evaluation.* Production is evaluated in financial - economic, technological, organizational sections.	*Business*
	• *Product supply to the logistics chain for market participants.* According to the planned product distribution channels, the product is delivered in the planned quantities and terms.	*Business*
Collection and evaluation of feedback	• *Gathering feedback.* Implementation of designed feedback collection channels on innovation from customers, consumers, investors and the education / research community.	*Research and education* *Public administration* *Business* *Civil society and users*
	• *Assessing popularity and demand of the product.* Analysis of sales, distribution network, competition, market saturation.	*Business*
	• *Evaluation of exploitation of the product.* Evaluation of product technical properties based on warranty and non-warranty repair system data. Analysis of changes in product technical properties (materiality, technological partner solutions).	*Business*
	• *Product durability and demand assessment.* Assessing the product's potential in relation to the market and making business development forecasts.	*Business*
Anticipation of further development opportunities	• *Evaluation of post-warranty operation of the product from the market and feedback from the manufacturer's repair department.* Evaluation of product technical properties based on long-term repair system data.	*Business*
	• *Analysis of competitive analogous products.* Periodic comparison of competitive products, assessing not only the technical characteristics of the product, but also the sales strategy, the potential of organizations.	*Business*
	• *Assessment of the need to change and adapt to market needs, technological progress, competitive products.* The extent of product change is determined and a change management plan is developed, including returning activities to the Search and Discovery and Development and Acquisition blocks.	*Business*
	• *Anticipating the next product life cycle.* The extent of product change is determined and a change management plan is developed, including returning activities to the Search and Discovery and Development and Acquisition blocks.	*Research and education* *Public administration* *Business* *Civil society and users*

Information gathering and sharing technologies. The knowledge management system must provide flexibility:

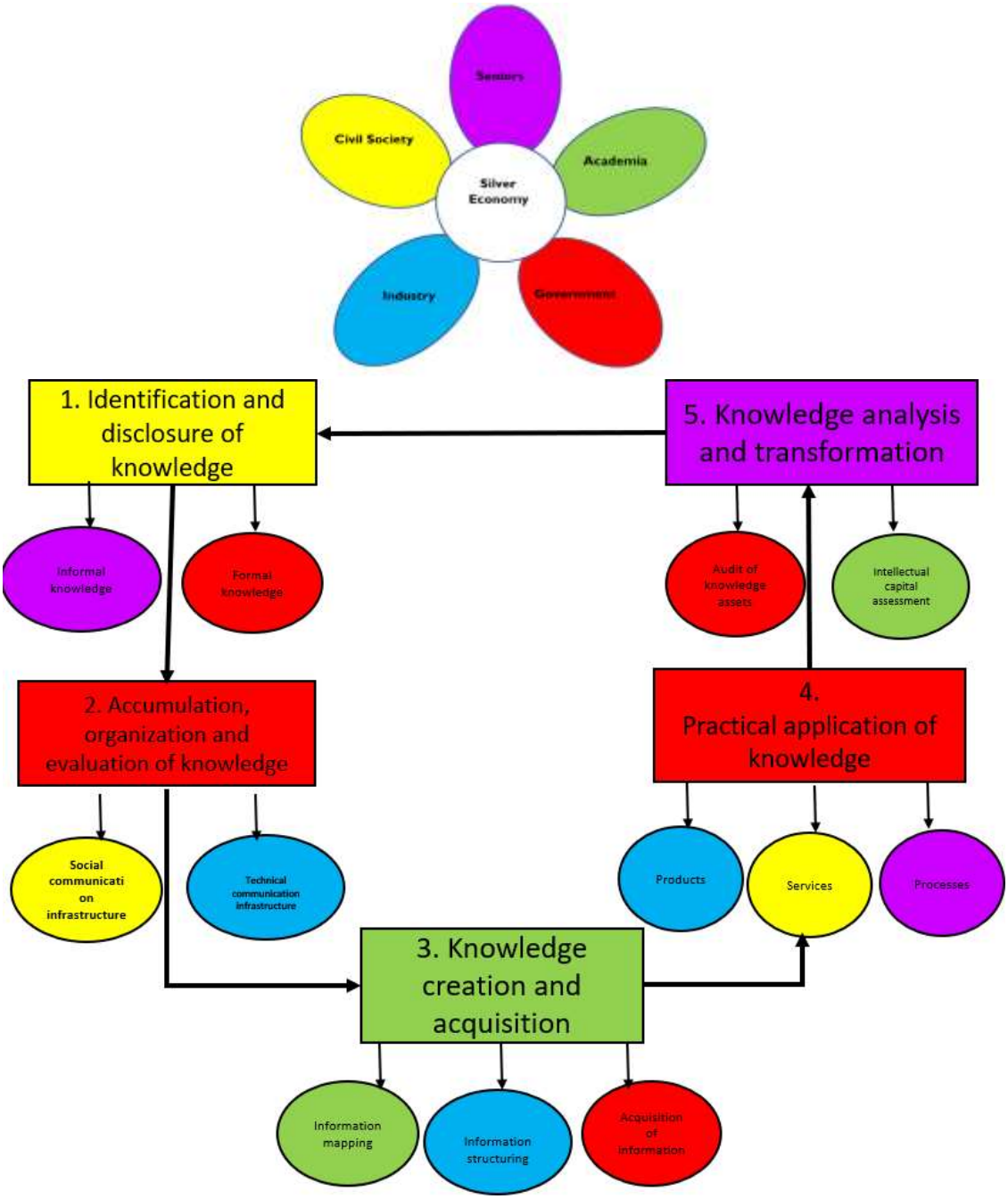
- collect reliable information,
- to create conditions for various users (participants) to view the data,
- connect functionality and logically related things.

There is a need for effective coordination, integral and coordinated activities, systematic collection and use of information. Ensuring more efficient interoperability, knowledge management, a platform:

- with impeccable speed and a user-friendly interface would help
- low maintenance, cost-effective
- have a data analysis tool capable of automatically generating all sources of knowledge
- to monitor the implementation of economic action plans, have a competitiveness / comparability dashboard for all participants
- have a position preparation / alignment tool when you need co-edited documents, persistent versions, automatic deadline tracking, etc.
- It would have an automatically generated news flow, the calendar would be automatically synchronized with the calendars of the included institutions, the most important events in country and abroad would be included
- automatically transfer tasks from / to Excel and Word;
- with an integrated Artificial Intelligence tool that analyses the accumulated data, helps to find team members (specialists), sources, select the necessary participants; opportunity to communicate, work in groups.

3.1 KMM Latvia

Graphical representation of the Knowledge Management Model



1. Identification and Disclosure of Knowledge

1.1. Stage Description and Technologies

All potential sources of information, including those outside the EU, focusing on knowledge related to the Silver Economy (SE) and the responsible organisations and persons are initially identified. Their significance, reliability, security, and accessibility are assessed. It is necessary to agree with holders of such data on possibilities of using them for establishment and functioning of the SE ecosystem in Latvia. In this stage already, an expert group should be formed which would evaluate reliability of the sources of knowledge and arrange all the sources by their significance. This group should develop criteria for evaluating the knowledge sources according to their significance. Occurrence of each new source and inclusion thereof in the list should be evaluated by experts who also provide a conclusion on inclusion of the sources to the shared flow of knowledge. The bearers of tacit knowledge are people and above all they are seniors–experts (end-users), specialists of different sectors, as well as organisations that are already operating in the field of the SE.
Explicit knowledge is the statistics available about the seniors and other issues related to the SE. These data are collected in the forms that allow them being stored, analysed, processed (digitalised), and transferred to other users.
All identified and disclosed data are sent to a responsible authority of the second stage where knowledge is accumulated, organised and assessed.

1.2. Players

On the basis of the expert assessment, the main knowledge host could currently be:

A. Ministry of Economics (EM) in the person of the Central Statistical Bureau (CSP)
B. Ministry of Welfare (LM) in the person of the State Employment Agency (NVA) C. Ministry of Health (VM)
C. Ministry of Education and Science (IZM)
D. State Revenue Service (VID)
E. Non-governmental organisations (NGOs), including organisations representing the seniors
F. State Social Insurance Agency (VSAA)
G. Academy of Sciences (ZA)
H. Professional and sectoral organisations, particularly those related to ICT and
I. (bio)medicine (Latvian IT cluster, Latvian Information and Communications Technology Association (LIKTA), a.o.)
J. Scientific and research institutions and higher education institutions (HEIs)
K. Local governments and planning regions

L. Entrepreneurs (economic operators), particularly those active in the field of ICT and biomedicine
M. Other entrepreneurs (economic operators) active in the SE field

At this level, all organisations already generating and keeping such knowledge, as well as those that could create missing knowledge in the future, can be considered as players. A deeper analysis is needed to identify all potential sources of knowledge and players with an aim of continuing the SE development.

1.3. The Key Responsible Entities

EM, LM, scientific and research organisations, Latvian Association of Local and Regional Governments (LPS), VID, NGOs, seniors and their representative NGOs can be mentioned as potential key responsible entities. It may be necessary to agree on several institutions that will each be responsible for a part of knowledge and its systematic transfer to a (central) responsible institution, Smart Silver Lab (SSL), which will collect, organise, and assess the knowledge. SSL will also need to ensure that knowledge is collected from mass media, as well as it should analyse other potential sources of knowledge and ensure regular acquisition of knowledge from the above sources.

1.4. Motivation

For different players, the motivation of accumulating knowledge in the SE field differs. In general, this can be described as the willingness of all players to understand the current situation in the SE field and to ensure that everyone has a clear and common understanding of the potential and implementation opportunities of silver economy in Latvia. By understanding seniors' willingness and readiness of being included in the economy and by knowing their true capabilities, it is easier to propose an accurate offer for achievement of the objectives. To do this, an initial collection of knowledge in this field should be carried out to ensure development of specific proposals and offers as accurately as possible.

At the moment, awareness of this field is more based on assumptions and extrapolation of foreign experiences rather than on the real-life situation in Latvia. The experts suggest that the available knowledge in this field will allow completing this task only partially and there will be a need for additional knowledge. At the same time, in the opinion of the experts, even a targeted collection of existing knowledge could significantly improve the situation and provide clarity as for many issues related to the SE. An opportunity of fostering research capacities in the SE field, fund raising, or cooperation with public authorities could be the motivation for the organisations that would be ready to create new knowledge and work in research.

1.5. Obstacles

The bottleneck at this stage is the limited content, incompleteness, and unavailability of these data to all potential stakeholders, as well as differing interpretation and understanding thereof. The general public is not familiar with SE issues and public authorities neither pay the necessary attention to improvement of this situation nor stimulate or coordinate the collaboration of the potential stakeholders. The lack of joint position and cooperation at national and local level in the SE field, as well as insufficient assessment of economic

potential of seniors, lead to fragmented and incomplete understanding of this issue. There are no institutions in the country that would identify the overall picture in this area and be responsible for targeted use of potential of the seniors. Also, as for research, adequate attention has not been paid to these issues until now, and thus perception of potential of the Latvian SE is rather approximate.

1.6. Solutions

The experts therefore believe that new and improved knowledge sources in the SE should be created and research should be organised to ensure a deeper understanding thereon, and to gather information on experience and achievements of foreign countries, particularly in the countries of the Baltic Sea Region (BSR), in development of the SE. When identifying previously undiscovered sources of knowledge abroad, they should be assessed and developed in Latvia, if necessary.

Also, the organisations representing the seniors and businesses interested in the SE growth in Latvia should engage in this work more actively. For these organisations to better understand and define their interests, they should be presented with the best practice in Latvia and abroad. To find out the situation in the field and develop suggestions for acquisition of the necessary knowledge in the SE, it is recommended to carry out an appropriate study.

1.7. Resources

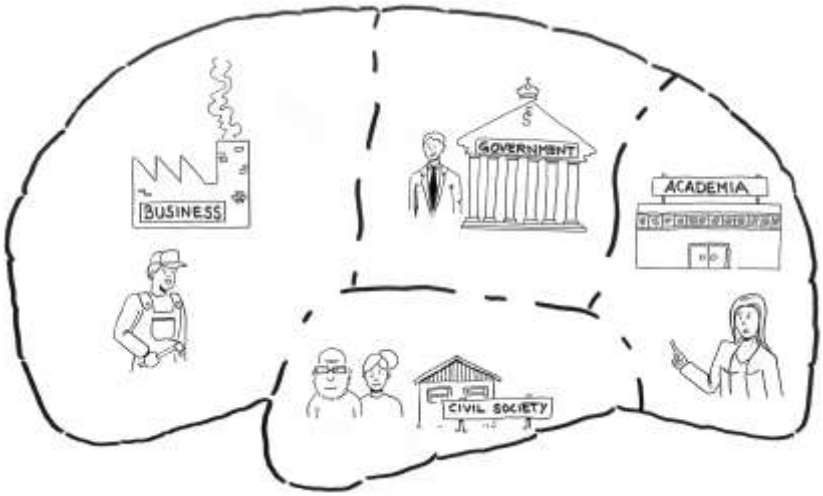
As with implementation of any new idea, the information provision to form the SE will require resources for starting the work and further implementing thereof. In the opinion of the experts, the key issue is organisational resources rather than financial resources. At the same time, systematic transmission, use and maintenance of knowledge must be ensured.

Public authorities must agree on the establishment and deployment of this joint flow of knowledge in a single direction, which would allow identifying, organising, and monitoring the SE in Latvia, as well as they should determine the organisations or persons responsible for systematic transmission and use of this knowledge. Clear solutions for cooperation among entrepreneurs, NGOs, seniors, and the country should be found

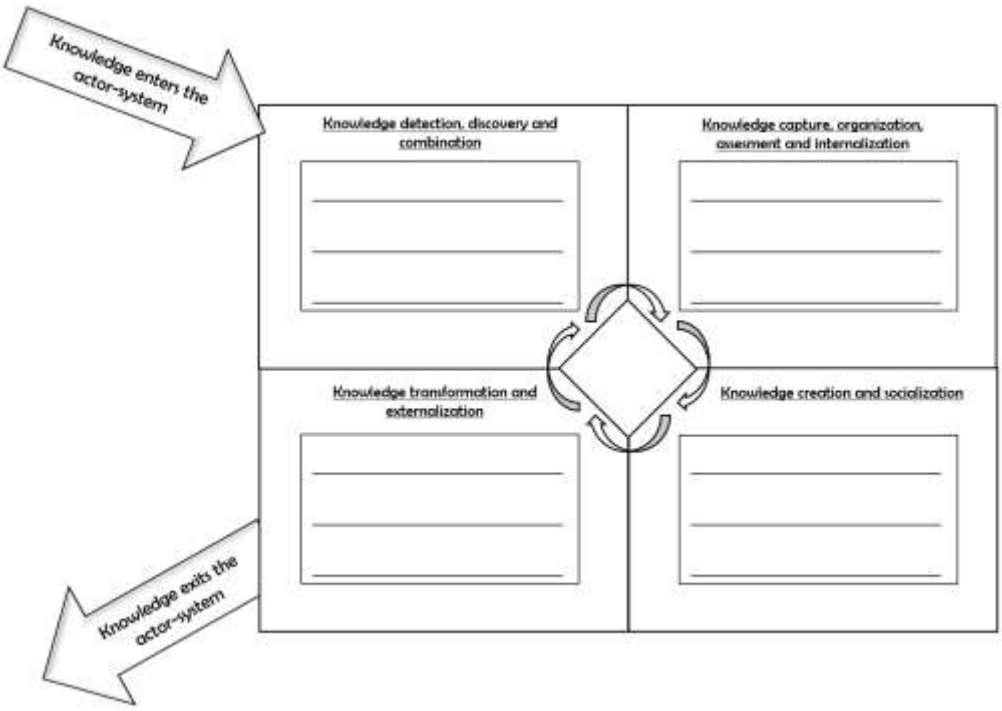
3.2 KMM Denmark

Graphical representation of the Knowledge Management Model

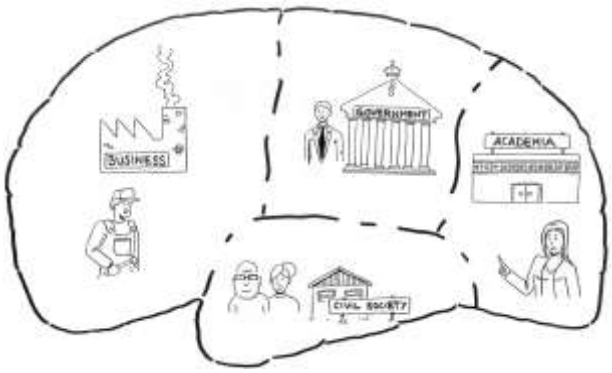
Knowledge Management Model for the open innovation ecosystem (Interactive model-template)



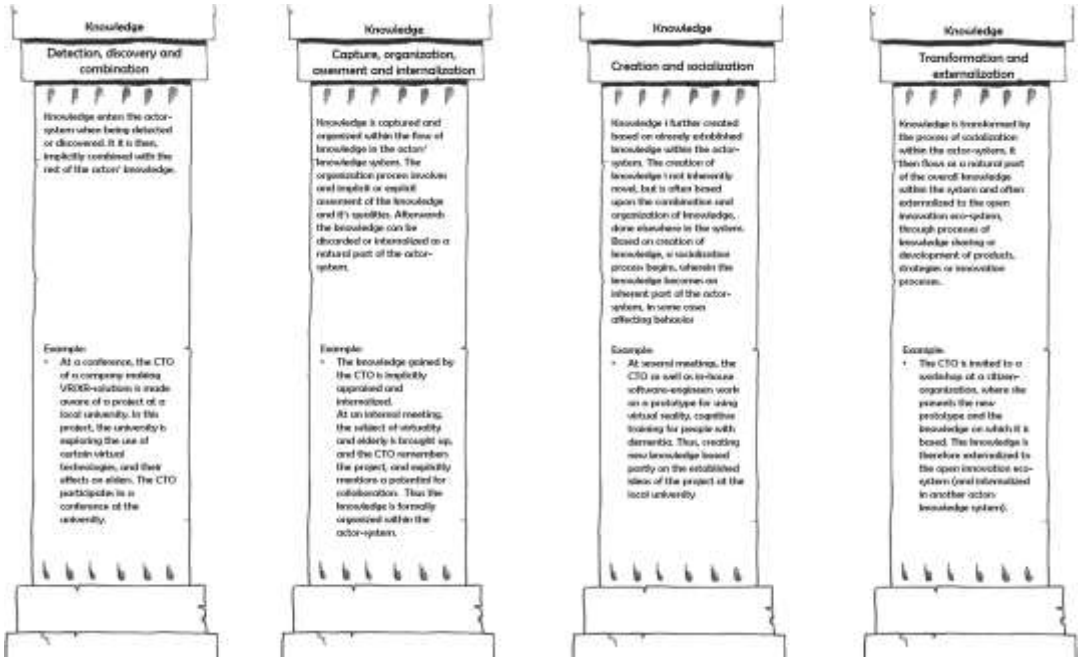
The above model is an interactive model (double-click to open). As the model is interactive, the following illustrations depict different parts of the model, the interactive model can be found above



The illustration above represents the main part of the model. This is the illustration of knowledge flow within an actor-system, based on the four modified knowledge pillars. The flow follows the four centre-arrows and moves from the top left square, to the top right square, bottom right square and finally the bottom left square. From there knowledge is externalized and often further developed, altered, combined within the sole actor system.



Above, you will find our illustrators work on illustrating the different actors within a quadruple helix perspective on an open innovation ecosystem. This version is pending visual alteration of the 'business'-actor.



An example of a filled in model can be provided, but was not included, as the actors deemed it irrelevant.

Description on Knowledge Management Model

The KMM is an interactive, digital model, that combines Ikujiro Nonaka and Hirotaka Takeuchi's SECI-model for knowledge management, with the four knowledge pillars. This it is an overall model, that can be modified and understood at each specific actor levels. The model combines the activities of the knowledge pillars, where each pillar represents actions taken "with" or on the basis of knowledge, with perspectives of how knowledge becomes organizational through processes of combination, internalization and socialization, and furthermore how knowledge then becomes externalized to the open innovation eco-system.

In that sense, the model includes perspectives from all above-mentioned actors, in an attempt to sensitize knowledge flow, creation and modification and thus provide actors with a tool, with which the actor is able to consciously make deliberate decisions pertaining to knowledge and management of knowledge within their own actor-system, but also with concrete links to the rest of the open innovation eco-system. Within the final interactive model, each actor can select their own quadruple helix actor-perspective, to be provided with specific descriptions and examples of tacit and explicit processes, that might be relevant to them as actors within the eco-system (specific examples will be provided after validation has finished).

The model especially has a focus on how, when and where knowledge enters the actor-system, and how, when and where it exits the actor-system (to other actor-systems or to the eco-system), this provides a focus on what happens within the knowledge systems of specific actors, when knowledge is obtained. There is a certain flow to knowledge, where it often goes from being an external entity, to becoming socialized and apart of the actor-system, this the model tries to exemplify.

Four modified pillars:

- Knowledge Detection, discovery and combination
  - Knowledge enters the actor-system when being detected or discovered. It it is then, implicitly combined with the rest of the actors' knowledge.
- Knowledge Capture, organization, assessment and internalization
  - Knowledge is captured and organized within the flow of knowledge in the actors' knowledge system. The organization process involves and implicit or explicit assessment of the knowledge and its qualities. Afterwards the knowledge can be discarded or internalized as a natural part of the actor-system.
- Knowledge Creation and socialization
  - Knowledge i further created based on already established knowledge within the actor-system. The creation of knowledge i not inherently novel but is often based upon the combination and organization of knowledge, done elsewhere in the system.
  - Based on creation of knowledge, a socialization process begins, wherein the knowledge becomes an inherent part of the actor-system, in some cases affecting behaviour
- Knowledge Transformation and externalization
  - Knowledge is transformed by the process of socialization within the actor-system, it then flows as a natural part of the overall knowledge within the system and often externalized to the open innovation

eco-system, through processes of knowledge sharing or development of products, strategies or innovation processes.

The downsides to an interactive, general model, is that it might not be technical enough for those actors, looking for in depth analysis of specific knowledge strings. It does however, provide a tool for analysing how the organization (or entity) as an actor, regards and acts on knowledge both outside and inside of the actor-system. The model itself does not provide actor-specific information (aside from examples), but it does provide the actor with the means and tools to find such information by themselves, thus making it a sustainable tool, after the OSIRIS-project has finished.

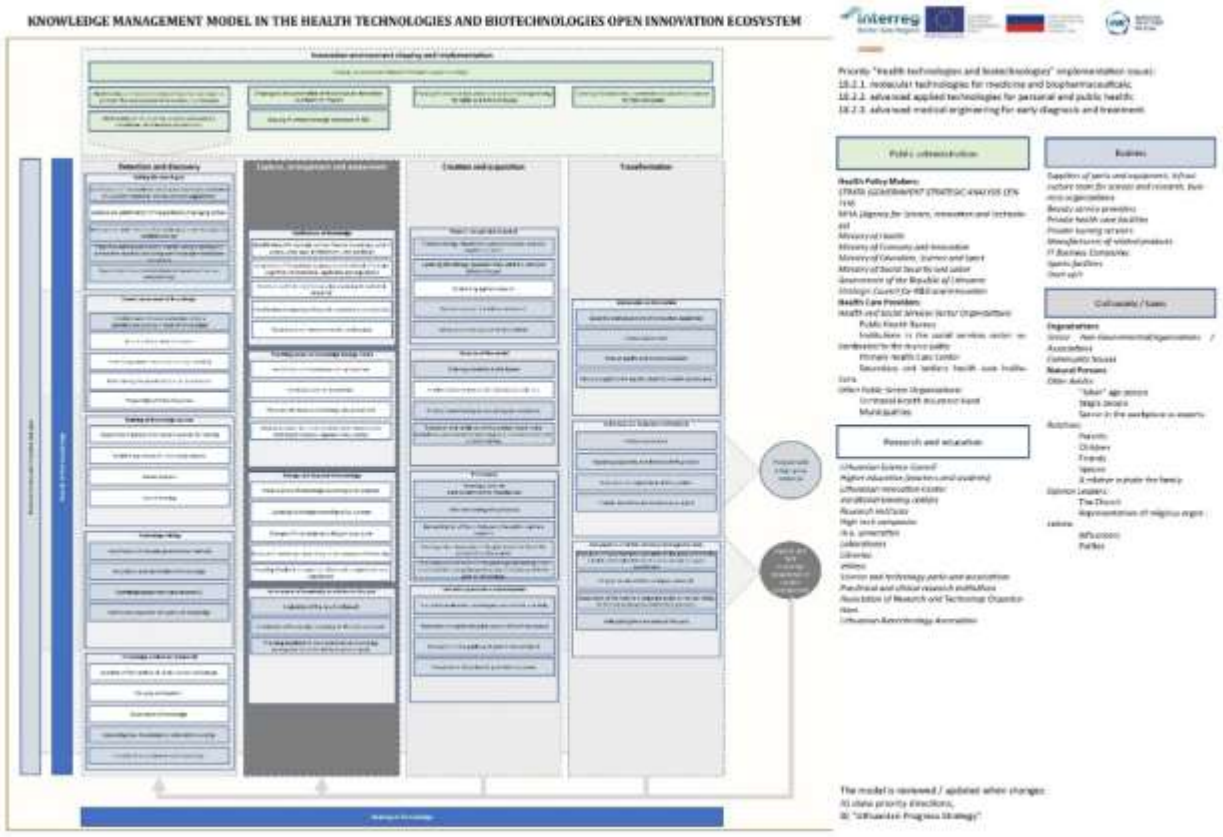
The content of the model provided is theoretical, actor-specific content will be added after validation.

3.3 KMM Lithuania

Graphical representation of the Knowledge Management Model

Simplified Knowledge Management Model

Knowledge management model (expanded version)



Description on Knowledge Management Model

The open innovation ecosystem is defined as a network of market and non-market actors with interdependent, actively exchanging knowledge and experience, focused on the generation of innovation, added value based on open flows of incoming and outgoing knowledge. The core innovation activity is focused on solving the challenges of shaping society (social, environmental, sustainable economic growth). The knowledge management model in the open innovation ecosystem of health technologies and biotechnologies (hereinafter - the Model) is intended for the Lithuanian health community. The solution it proposes encompasses the challenge of a society of health and well-being in healthy aging, which aims to contribute to solving the problems of aging, human well-being. The Lithuanian health community consists of public administration, business, research and education organizations, as well as the public and consumers. The purpose of the model is to create products with high growth potential in the market. In the expanded graphical representation shown - Knowledge Management Model in the Health Technology and Biotechnology Open Innovation Ecosystem, products are depicted on the right.

The model, although surrounded by other operating systems, the international environment, is essentially a roadmap. This path is influenced by public administration institutions, especially those that formulate and implement innovation policy in Lithuania. Therefore, in the simplified Model public administration institutions

are depicted as the roof of a house. Public administrations create the conditions and facilitate the emergence of innovation. In addition to creating favourable conditions, innovations also appear, but to a much lesser extent and at a slower pace, and the Model aims to take advantage of the conditions created in the Silver Economy, which receives a lack of innovation not only in Lithuania but also in the surrounding countries. The model is based on the applicable laws, resolutions of the Government of the Republic of Lithuania regulating innovations, R&D activities.

The innovations themselves are created by research and education and business organizations in accordance with their strategies. For their overall interaction, this path is divided into 4 blocks, 16 stages and 70 steps. Although the path (process) to developing products without specifying the product is common, each organization will go through its own path and visit all stages in its own way through unique networking and with unique potential. A more detailed breakdown of the steps and steps is provided in the Information Management, Processes, and Participants in the Model section.
The characteristics of open innovation are implemented in this model through three elements: a) shared knowledge sharing at all stages of the road and between all actors, b) acquired and implicit knowledge of product development that is used many times, c) and part of this knowledge, together with other knowledge about innovation, finds itself in a comprehensive innovation database in the field of innovation based on "accumulation, organization and evaluation" technologies (technology in the information section Information gathering and sharing technologies).

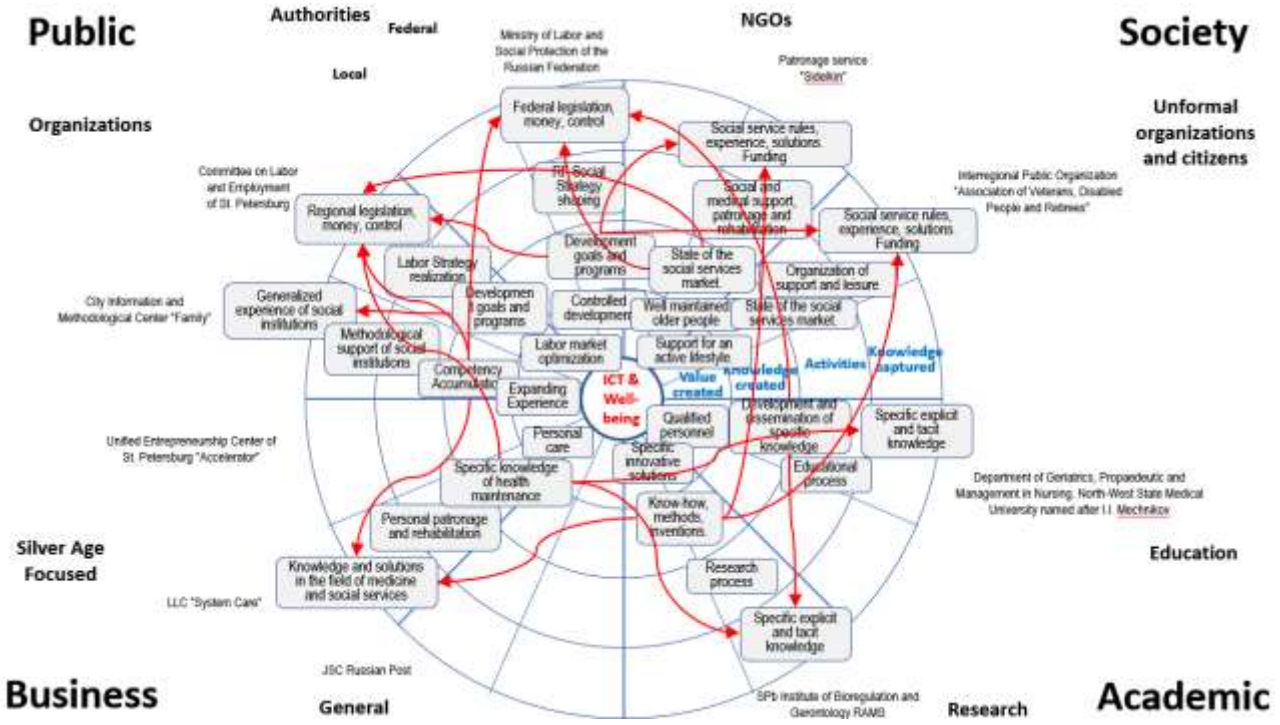
The model can also be used by other communities seeking to develop innovative products. It should also be appropriate for countries where public administrations facilitate innovation and translate it into high-potential products. The Model Path itself is already risk management that aims to maximize the chances of achieving a goal, while showing what path typically awaits everyone who is determined to follow it. On the other hand, the authors of the Model sought to reduce the risk by detailing, describing the stages, preparing for the trip, but did not detail the possible risks at each step, as they are specific to each organization traveling on the paved road. The model has several other limitations: I) The model is still a project of how the Lithuanian health community could be interested in developing high-potential products for the participants of the Silver Economy. It is not a law, it is not an obligation to do so; II) The model does not detail the products and their implementation paths, starting with the current existing funding models, possible strategies and the recommended path, The model is more general; III) Although from a technological point of view the Model is feasible, no calculations have been made as to how much it would cost to implement such a model, especially the "**Capture, arrangement and assessment**" part, using different technologies.

When it comes to the consequences of an aging population, their economic potential is often not taken into account. The opportunities and exploitation of older people can also have a positive impact on the economy. The knowledge management model is being developed as a key tool linking smart specializations (Health Technologies and Biotechnology), business and knowledge resources. With the help of this model, we will assess and integrate knowledge at the regional level in order to properly exploit the growth potential of the silver economy. At the same time, the knowledge management model will be a useful tool for managing the whole evolutionary cycle of the innovation process, making full use of research knowledge and transforming it into products and services with high growth potential, user-friendliness and user-friendliness. After all, in order to

improve the lives of older people, it is important to extend a healthy and working age - to strengthen their health in order to promote active and healthy aging, to reduce the morbidity, disability and mortality of older working people. Improving the health of older people also reduces their social exclusion, as they can participate more actively in social life, remain independent for longer and not become a burden on their relatives and / or the state.

3.4 KMM Russia

Graphical representation of the Knowledge Management Model



Description on Knowledge Management Model

Disclaimer: The proposed model is not comprehensive and complete. In our humble opinion, to bring it into a state suitable for real practical application on the scale of such a large city as St. Petersburg, it will be necessary to spend several times more man-hours and attract many times more representatives of Actors than has been done so far.

1. List of all involved actors in the model. Currently, the proposed model allows to involve and contains examples of the following Actors mentioned in the quadruple helix model:

Public organizations:

- Public Authorities
- Other public (budgetary) organizations

Society:

- Citizens
- NGOs
- Informal communities and organizations

Academic organizations:

- Educational organization
- Research organizations

Businesses

- Focused on the silver age
- General (other)

2. Main functionalities and restrictions of the model

The proposed KMM makes it possible to include any Actor in it, describe its external properties (consumption from the environment, activity, creation of knowledge and social value), describe connections with other Actors. Participants of the workshops did not reveal any significant restrictions of the proposed model

3. Types of knowledge used in the model as inputs

Both types of knowledge (tacit and explicit) can be freely used in the proposed model (and have already been partially used)

4. Types of knowledge resulted by the model as outputs

Workshop participants believe that as a result of using the model, documented (explicit) knowledge about the relationships and patterns of behavior of Actors should appear

5. Work process in all four Pillars as the united model

The model itself allows us to describe all these processes, but the workshop participants came to the conclusion that there is no need to include the description of the internal processes of Actors in the model.

6. Work process in all four Pillars in detail describing processes inside every Pillar

The model itself allows us to describe all these processes, but the workshop participants came to the conclusion that there is no need to include the description of the internal processes of Actors in the model.

7. Responsibilities of each actor (part) in the model, including the description of the main host

This is possible, but currently not done due to lack of information on the necessary responsibilities of the main host.

8. Technologies (Innovations) used to process knowledge in the model

At the moment this has not been done and has not been discussed in the course of the workshops.

9. Model review and update periods

The future of this model (as well as the period of its revision and updating) depends on the results of its discussion with all the partners of the Project and on the readiness of the future main host to use it, which has not yet been determined.

3.5 KMM Finland

Graphical representation of the Knowledge Management Model

A. Enabling activities

Legend: Actor		Knowledge detection and discovery	Knowledge capture, organisation and assessment	Knowledge creation and acquisition	Knowledge transformation
ALL	Enabling activities	Availability of reliable data sources	Recognition of users' needs	Conversion of Tacit Knowledge and Experiences to a visible format	Active Use of Social media, e.g. WhatsApp, Facebook, Twitter, Youtube, LinkedIn
SOCIETY		Capability to Question Current Practices	Conversion of Tacit Knowledge and Experiences to a visible format	Participatory Ways of Working	Instruction Manuals
BUSINESS		Personal Relationships	Capability to Use Data Sources	Availability of Information across Various Organizational Hierarchical Levels	Capability to Share Data in Open Platforms
ACADEMIA		Stakeholder participation	Open Data from Every Organization	Hackathons	Availability of information related to the Best Practices
POLICY MAKERS		Recognition of elderly people's opinions	New solving	Creative Processes	New solving
		Availability of Information across Organizational Hierarchical Levels	Platform for Ideas	Pilots and Demo Projects	Open Communication Between Actors
		Openness to External Resources	Participative Development of Future Services	Tests	Availability of New Funding Opportunities
		Social media channels: e.g. WhatsApp, Youtube, Twitter, LinkedIn, Facebook	Use of Open Source Working Practices	New solving	Voluntary Help with Technology Learning and Use
		Google Search	Capability to Learn from the Past	Capability to Address Meaningful Issues	User-friendly data management
		Availability of Open Source Working Practices	Innovative Work at Different Levels, Including Students	Knowledge-based decision making	Following of laws & regulations
		New solving	Benchmarking	Capability to Share Data in Open Platforms	Ethics
		Recognition of Ideas	Creative Processes	User-friendly data management	Availability of Information across Various Organizational Hierarchical Levels
		Easy Access to Information	Availability of Information Across Various Organizational Hierarchical Levels	Capability to Share Data in Open Platforms	Capability to Share Data in Open Platforms
		Clear Aims and Goals for Information Needs	Interactions between Different Generations	Workshops for Group Work to Boost Daily Innovations	Collaboration between various Professional Areas
		Recognizing users' needs	Combining knowledge and quality of life	Innovative Work at Different Levels, Including Students	Interactions between Different Generations
		Idea Competitions	Skills to Make Use of Data Sources	Interactions between Different Generations	Open access to information hubs and discussion forums
		Participatory Ways of Working	Participatory Ways of Working	Innovation hubs	Youtube
		Capability to Learn from the Past	Workshops for Group Work to Boost Daily Innovations	Open innovation competitions for older people	Agreed methods and processes for knowledge sharing
		Interactions between Different Generations	Availability of Data Sources	Showrooms of technology	Company web sites
		Sharing of ideas	Participatory Ways of Working / Participative Development of Future Services	Open Communication between Actors	Join agreements
		Open Communication Between Actors	Hackathons	Minimization of Time-Consuming Planning	Marketing channels: e.g. exhibitions, fairs
		Understandable information	Strategic partnership in value chain	Availability of New Funding Opportunities	Storytelling
		Up-to-date information in data sources	User-friendly data management	Storytelling	Provision of databases
		Searching for experiences	Pilots and Demo Projects	Open Communication Between Actors	Scientific publications
		Workshops for Group Work to Boost Daily	Minimization of Time-Consuming Planning	Instructions on How to Share	Hackathons
		Willingness to Social Information around the World	Collaborative Research	Practices	Availability of Open Data
		Meetings with Different People	Availability of Open Source Working Practices	Collaboration between various Professional Areas	Creative Processes
		Co-operative ways of working in multi-professional teams: e.g. Nursing, Engineering, Economy	Workshops for Group Work to Boost Daily Innovations	Active Use of Social media channels: e.g. LinkedIn, Facebook, Twitter, Youtube	Authorities' consortium at European level
		Use of Open Source Working Practices	Capability to Address Meaningful Issues	Availability of databases	
		Active Searching for New Funding Opportunities	Databases	Scientific publications	
		Ability to Question Current Practices		Follow up of Laws, regulations & ethics	
		Students		Experimental (Dis) Planning	
		Ability to Search for Information Across the World			
		Capability to Learn from the Past			
		Open Communication between Actors			
		Appreciation of Ideas			
		Availability of New Funding Opportunities			
		Openness to Data Sources			
		Strategic plans			
		Co-research consortiums			
		Regular provision of information related to challenging home care			

B. Knowledge Sources

Legend: Actor		Knowledge detection and discovery	Knowledge capture, organisation and assessment	Knowledge creation and acquisition	Knowledge transformation
ALL	Knowledge sources	Customers	Field Experts	Strategic partnership	Laws & regulations
SOCIETY		Public Innovation Company	Strategic partnership (Strategic partners)	Customers	Influential ageing people
BUSINESS		Private Innovation Company	Open discussion forums	Field Experts	
ACADEMIA		Reliable Databases	Influential people in ageing	Representatives of older people's associations	
POLICY MAKERS		Open Data from Every Organization	Open Data from Organizations	Researchers	
		Public authorities	Researchers		
		Friends	Open Data from Organizations		
		Internet-related services & e-commerce (Amazon, ect.) & Google Play (apps)	Databases		
		Amazon	Open Data from Organizations		
		Playstore (apps)	Open Data at local, subregional, regional and national level		
		News			
		End-users			
		Field Experts			
		Companies' web sites			
		Laws, regulations, rules			
		Competitors			
		Partner universities and research centers			
		Project consortiums and steering committees			
		Laws, regulations, rules			
		Google Scholar			
		Laws, regulations, rules			
		Regional strategy plans			
		Reports about e.g. the Future and various activities			
		White papers on future of Europe			
		Zoning schemes (kaavoitussuunnitelmat)			

Description on Knowledge Management Model

Regional innovation actors, society, business, academia and policy makers, were engaged in the development of the model. Main functionalities and restrictions of the model could be identified in the workshops and remote session when the model was developed by regional innovation actors. The model was developed with an open innovation ecosystem philosophy: the model was developed by all interested parties and it can be used by all. However, the theoretical nature of the model can inhibit the use of it. It became clear during the workshops that the participants' perception of the world (epistemology) and acquiring of information varied widely.

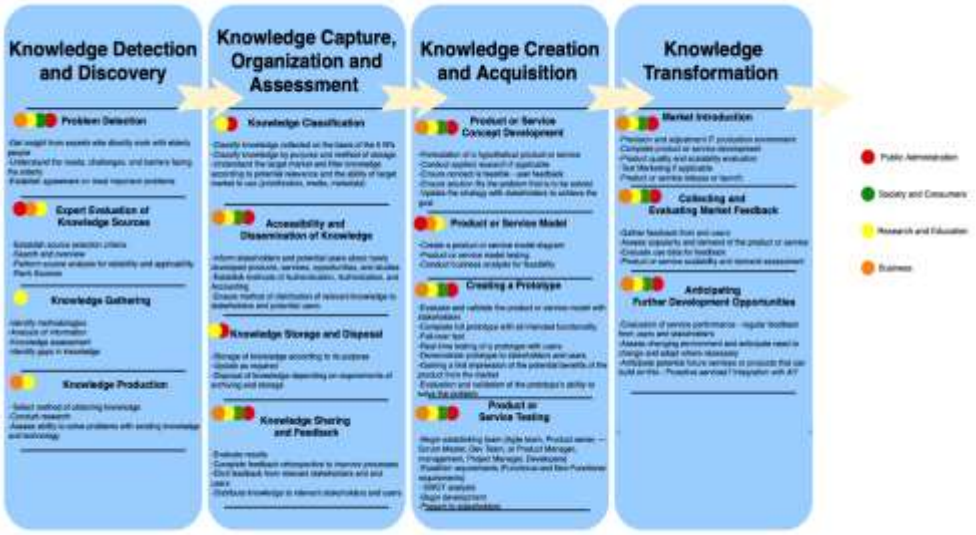
There were four knowledge pillars, 1) Knowledge detection and discovery, 2) Knowledge capture, organisation and assessment, 3) Knowledge creation and acquisition and 4) Knowledge transformation, used to categorize knowledge. The pillars were introduced in the third workshop to the participants, and their theoretical background was explained. Knowledge elements (in total 331 elements) were outcomes of the work package (WP) 3.1, and they were used in the third workshop. The participants were asked to populate the four pillars with appropriate knowledge elements.

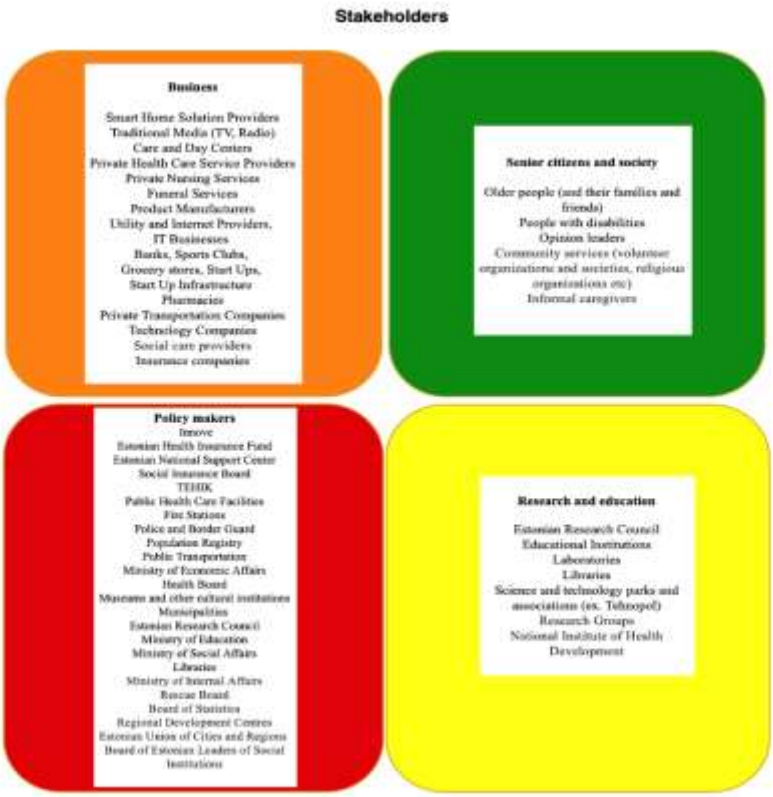
Each regional innovation actor developed the KMM from own perspective but was also aware of the work and perspective of the other actors.

Face to face workshops turned out to be the most effective way to develop KMM due to old age of majority of the participants. Use of A4 and A3 size papers, post-it notes, and pens were the most useful tools. The remote session held in June was not successful regarding development of KMM although elderly participants learned to use MS Teams as a mean to conduct a remote meeting. Email correspondence was the best way to invite participants to the workshops as well as disseminate outcomes of the workshops and stating additional questions when needed.

3.6 KMM Estonia

Graphical representation of the Knowledge Management Model





Description on Knowledge Management Model

In Estonian Knowledge Management model, the involved parties are all quadruple-helix actors: Public administration (policy makers), Business, Senior citizens and society and Research and education. List of involved parties has been included in the graphical representation of the model above.

With this knowledge management model, it is possible for new ICT-businesses or even policy makers to come up with new services (or products). It includes all phases:

- Research and communication between different stakeholders
- Different phases of development (toward the development goals of ICT use- based on the feedback of experts)
- Description of a service prototyping
- Market introduction and further development opportunities.

In this model was used as input the results from 3 previous workshops. One of the workshops was built up as online-questionnaire and interviews with 6 experts which gave us very valuable input to this model together with a Knowledge Management Map- which was crucial to map out specific stakeholders and problems surrounding Estonian society. Input for this model came from both tacit and explicit (Nonaka & Takeuchi, 1995) knowledge. Technologies used to process information in this model:

- Recording of all the sessions – analysis and summaries
- Coggle.it to create a Knowledge Management Map of workshop results
- To identify the key knowledge resources, we used the Protégé ontology model.

4. CONCLUSION

- The objective of the activity 3.2. was to design a Knowledge Management Model that will be the main instrument for handling the connection between RIS3 approach, industry and knowledge assets.
- Developed Model is useful instrument for managing a complete evolution cycle of the innovation process, making full benefit of the research knowledge and transforming it into products and services with high grow potential and high user adaptation and satisfaction integrating RIS3 approach. Practically the Model supports open innovation ecosystem and coordinates the path from concept formulation, proof of concept, lab to market flow in a line with particular RIS3.
- The KMM mostly combines Ikujiro Nonaka and Hirotaka Takeuchi's SECI-model for knowledge management, with the four knowledge pillars. This it is an overall model, that can be modified and understood at each specific actor levels.
- For the specific use KMM must implements a systematic approach of where, what, when, and how are the following processes run.
- In the result developed Model synthesizes and integrates full life-cycle of knowledge transformation at the regional level for creating a common process for exploiting silver economy growth opportunities. Based on KMM, local public authorities will be able to prepare their policies as well their strategy for resource creation investments because they can correlate the needs and gaps of innovation actors with missing assets.