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Future Innovations for Independent Living: Defining New Competences and Professions

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Abstract: Due to economic turbulence and ageing population, the Nordic welfare model is facing significant challenges. Especially in terms of ageing Finland is interesting market since the demographic shift takes place first and more rapidly in Finland than in the other countries. As a result, the existing Finnish healthcare system is not able to meet the future challenges without significant transition and innovations. Therefore, in this study we are focusing on the innovation needs of the Finnish education system relating to independent living. Grounded on the multi-client participatory action scenario process which was supported by mass collaboration data collection method, we define four scenarios while noting the specific features from five geographical regions. On the basis of these scenarios new competences and skills are identified and novel professions are presented.

Keywords: future-oriented innovation; educational structure; regional profile; welfare & security services; independent living

1 Introduction

In recent years European economies including Finland have encountered serious economic challenges as a result of Eurozone crisis (Mody and Sandri, 2011). Besides challenges caused by the economic turbulences and globalization, the Nordic welfare model (also known as Scandinavian model) is facing another significant challenge – the ageing population (Andersen et. al. 2007). In terms of ageing, Finland is especially interesting market, since the demographic shift takes place first and more rapidly in there

than in the other countries (Laine and Maiväli, 2010). The growing number of senior citizens is posing a serious pressure to the healthcare system and according to Ryynänen et. al. (2004) the existing Finnish healthcare system is not able to meet the future challenges. Thus, the traditional tasks of public sector have been and will be outsourced to private operators. Furthermore, on the top of high cost structure of the existing healthcare system, there are concerns to ensure the sufficient number of trained healthcare and wellbeing professionals. However, the need to take care of elderly people and to secure them safe and valuable life will remain despite of limited economic resources.

Interestingly, in addition to the growing number of senior citizens, the number of students is taking a downward trend and is regionally uneven in Finland (Ministry of Education, 2008). In the future, this makes more difficult to develop the network of education institutions and their curriculums. To meet these challenges, Ministry of education in Finland launched and renewed the development plan for education and university research in Finland for 2011 to 2016 (Ministry of education, 2012). According to this plan the goal is to reduce the total number of higher education institutes, increase the unit sizes within the remaining institutes, create strategic alliances between universities and universities of applied sciences and clarify the institute profiles. In practice the purpose of these actions are closely related to enhancement of the cost-effectiveness of higher education institutes in Finland. The search of novel ways to cut costs in higher education is topical question also in other countries and new learning strategies such as e-learning have been suggested as a solution (Tucker and Gentry 2009). As a result, in this study we are focusing on the innovation needs of the wellbeing and security services for independent living as well as innovation needs in Finnish education system based on that.

Research objective

The education system in the welfare and security field is in transition. It is fragmented, not well-defined and not fully developed for future needs. Rather, it is following old institutional structures, not being able for agile and flexible actions on changing operational environment conditions. Recently, Santonen and Paasonen (2012) identified three different future scenarios for the Finnish private security market, including (1) international success via innovations, (2) success via domestic markets, and (3) pessimistic success vision. Moreover, in their study the importance of a high-quality national-level educational system was emphasised, thus partially validating the innovation needs in Finnish education system at least in context of security services. Therefore, in this study we want to identify and define qualitative skills and competences which in the future are required in the wellbeing and healthcare sector concerning the independent living through a person's whole life. Grounded on these competences, we will also present as an example a group of new professions, which can be linked to novel wellbeing and security innovations.

This paper is organised as follows. Firstly, we introduce our research design including the theoretical justification of research method selection. Second, we present our results and conclude the findings.

2 Research design

Topic wise this study focus on the long-term foresight of qualitative skills in the wellbeing and healthcare sector concerning especially in terms of the independent living through a person's whole life. In the following we will first present the generic selection criteria for foresight process which will be then aligned to the mixture of methods which were utilized in this particular study. Then we will present our data collection process in detail.

2.1 Justifying the foresight method selection

The selection of foresight methods is a multi-factor process which typically end-up on using five or more different methods while favouring qualitative approaches in a way that the four fundamental capabilities including creativity, expertise, interaction and evidence are met (Popper, 2008a). Popper (2008b) coined foresight diamond concept in which these capabilities can be constructed as a practical mapping framework while helping to understand the differences and inter-linkage between the suggested foresight methods.

Creativity dimension is referring to inventiveness of individuals. The ability to create a novelty is an essential cognitive skill of the human mind (Klahr, 2000, Thagard and Croft, 1999). Creativity can be defined as a process whereby an individual exceeds a conventional habit (Suomala et al., 2006) while using expectation or unexpected findings as an idea or innovation source (Santonen *et al.,* 2007).

Expertise dimension is linked to the skills and knowledge of participating actors relating to the selected topic area, which in our case was narrowed to the wellbeing and security services for independent living as well as the innovation needs in Finnish education system within those domains. Dreyfus and Dreyfus (1982) suggested a continuum model to classify expertise ranging from ignorance novice individuals who work by instruction to brilliance stage which includes superior performance. Moreover, Kuusi (1999) analysed how expert knowledge is linked to foresight processes and identified different types of expert about the future.

Interaction refers to collaboration among foresight project participants. As know from prior studies, the knowledge relevant to solve complex (Murthy, 2000), ill structured problems (Simon, 1973), which in foresight context have been referred also as wicked problems (Navarro *et al.* 2008) requires skills and socio-technological environments that bring together people with different, complementary, and often controversial points of view to form a community. Therefore, there have been efforts to define collaboration events in which interaction and heterogeneity of participants can be systematically planned in order to enhance innovation capability (e.g. Santonen and Saarela, 2013). Moreover, due to social media revolution and it's linkage to users as content creators (OECD 2007; Le Borgne-Bachschmidt *et al.*, 2009) and users driven innovation (Wandahl *et al.,* 2011) phenomenon, mass collaboration also sometimes known as mass innovation systems have been introduced (Santonen, 2012). When combining a wide range of people and their different but complementary insights and creative interaction, a novel thinking outside the box is possible and mass innovations emerge (adapted from Leadbeater, 2008).

Evidence as final dimension is grounded on the support of reliable documentation and appropriate analysis which are usually utilized in form of quantitative methods. Models for evidence based decision making have described relating to innovation management (Chalkidou *et al.* 2008).

2.2 Defining multi-client participatory action scenario process for data collection

The research design is grounded on the multi-client participatory action scenario process as proposed by Meristö (1989, 1991). However, the process was modified in order to integrate the mass innovation viewpoint to the data collection process as defined by (Santonen et al. 2007; Santonen, 2012). This enhanced process has previously been partially documented in English at national level by Meristö et al. (2012a) and in Finnish by Meristö et al. (2012b) and Laitinen et al. (2013). Thus the detailed process description in this paper is omitted due space limitations. However, in the following we will shortly introduce the main foresight approaches which were implemented during the project.

Scenario is a description of future conditions and events (Gershuny, 1976) and although the concept of scenario is old dating back all the way to earliest recorded time, the modern day scenario techniques emerged only after World War II (Bradfield et al., 2005). A good number of scenario types have been presented, yet there is there is no consensus on the scenario typologies (Börjeson *et al.* 2006). Recently Amer *et al.* (2013) reviewed the scenario planning literature and evaluated how qualitative and quantitative scenario methods differ and what are the strength and weakness of these two different approaches. As a result they concluded that by combing qualitative and quantitative techniques will provide more robust scenarios. Within our study we are basically followed the combination of qualitative and qualitative thinking, i.e. first, statistical data was collected about general facts from wellbeing and security field and its indicators. Then, qualitative information as well as visionary knowledge were produced in multi-actor scenario workshops. Finally, the combination of qualitative and quantitative perspectives were interpreted e.g. in social media and via web surveys. However, the focus in the project was more on the qualitative side.

Multiple scenario approach requires at least two scenarios, which are describing different future and are mutually exclusive alternatives (Ansoff, 1978). Therefore, we end-up generating four scenarios, which is in-line with previous suggestions in foresight literature arguing that three to five future scenarios are appropriate for a scenario project (Amer *et al.*, 2013). In order to note our national vs. regional point of view, the original four national level scenarios (Meristö *et al.*, 2012b) were later on fine downed and weighted to regional level (Laitinen et al. 2013).

Workshop based scenario process involved three different half day workshops starting with topic related presentations and series of group discussions as presented in appendix 1. The regional scenario process followed the same action scenario framework (Meristö 1991) as the national scenario process which was carried out in 2011. Thus, the tasks in the workshops were mainly the same both in national and regional process. However, the scenario filter model (e.g. Meristö et. al 2012a) that was used in the national process was omitted from the regional process in order to simplify the process. Instead the regional participants modified national scenarios by thinking about the assumptions and consequences from the regional perspective. Another difference was the SWOT analysis (strengths, weaknesses, possibilities and threat) (see e.g. Weinrich 1982)

which was carried out only in the regional process in order to help compiling action proposal for the scenarios (Weinrich 1982; Meristö et al. 2007).

The first regional workshop round was carried out in March 2012. At that time the progress of the ForeMassi2025 project and objectives were demonstrated to the workshop participants and the national background scenarios (Meristö et al. 2012b) were described. Furthermore, the regional coordinators kept a presentation from the special characteristics and underlying factors of their areas. In the group work part the taboos, core competences (Kamensky 2000) and the vision (Nanus 1992) of the region were discussed. After the workshop it was possible to comment and supplement a regional vision in massidea.org. In the second workshop round, which was carried out in May 2012, the participants modified the national background scenarios into regional scenarios. Furthermore, the participants pondered the actors and their roles related to the scenarios. After the second workshop there was a possibility to comment on the regional scenarios in the massidea.org. The third regional workshops were kept during September and October. The SWOT analyses of the scenarios were made before the workshop as a pre-task. In the workshop SWOT analyses were supplemented based on the advance task in the alternative scenarios. Additionally, the winners and losers were thought about in different scenarios, proposal for actions, i.e. utilising the possibilities and repelling the threats, were drawn up based on the SWOT analysis (Meristö et. al 2007) and the skill profiles of the future were also considered.

2.3 Data collection process

This suggested study is a continuum of previous work by Meristö et al. (2012b) who introduced the first stages of the action scenario framework in context of our ForeMassi2025 project and presented as an outcome following four scenarios: 1) Welfare and Security on Technology, 2) Rise of the Civic Society, 3) On the Markets' Terms and 4) Comprehensive Wellbeing. Besides these scenarios, the documentation in Finnish (Meristö *et al.*, 2012b) included also actors with different roles, possible action alternatives in each scenario as well as skills and competences, values and attitudes and networks needed in the future when producing new service concepts for independent living; which were acting as starting point for regional foresight activities.

In 2012 we had three regional workshops in each included regions, resulting altogether 15 regional workshops and one national level workshop summarizing the regional work. The project partner network included five provinces, which were acting as forums of cooperation for the multiple municipalities of a region. In terms of European scale, nearly whole Finland can be considered rural (Nivalainen, 2003). However, in Finnish scale, three included regions – Uusimaa, Pirkanmaa and Varsinais-Suomi – are run by large urban municipalities, while remaining two regions – Satakunta and especially Etelä-Pohjanmaa – can be characteristics more as a semi-urban and rural areas (Ministry of Agriculture and Forestry, 2006). As a result, the selected regions differed significantly in terms of demographic and economic profile and therefore we were convinced that our data set was adequate and heterogeneous enough to look for answers to our research questions (Appendix 2). In all more than 350 persons participated in these national and regional workshops covering educational, public, private and NGO sector actors as required in Triple Helix based collaboration network (Etzkowitz and Laydesdorff, 1999, 2000). In appendix 3, we have presented the profile of participants

relating to regional workshops. Altogether 314 persons participated in regional workshops. The participation was the busiest in Satakunta region even it was the smallest regions in terms of population. Generally looking, the majority of the participants came from the arranging universities including both staff and students.

In addition, the data concerning the trends and signals were collected in the 2011 World Future Society's annual conference while regional background information and statistics were introduced by regional coordinators participating in these workshops. Moreover, between workshops the preliminary results were complemented in a specialized social media based open innovation online community named Massidea.org (Santonen, 2012). Five independent regional case reports were written by regional coordinators and summarized by Laitinen *et al* (2013) in Finnish. Then the individual case reports were revised and verified by multiple researches from our core research team and all the discontinuities and ambiguities were clarified with the regional coordinators. Finally, these five verified case reports were compared and semantically analyzed in the light of our research questions.

3 Results

3.1 Focusing national scenarios to regional level

Four national level scenarios (1. Welfare and Security on Technology, 2. Rise of the Civic Society, 3. On the Markets' Terms and 4. Comprehensive Wellbeing) produced in 2011 and described by Meristö *et al.* (2012b) were further developed to the regional level in 2012. This work was done in each five regions while noting the specific features from each region during the scenario workshop process. Interestingly, as a result the further developed regional level scenarios did not significantly differ when compared to the previously developed national level scenarios. Moreover, we were not able to identify clear differences between the five regions even if their profile was somewhat differing.

The fact that the regional scenarios in all five regions were based on the same background scenarios and the same megatrends (e.g. aging of population) might have affected our results even if during the process it was emphasised that these background materials are just the starting point. Moreover, the participants in the workshop were domain experts, they were not highly qualified experts in the field of foresight. Therefore the tendency to challenge and question the previous national work might be lesser that in some other cases which include experienced foresight specialists. Nevertheless, from the ForeMassi2025 project point of view the regional scenario process was useful because it deepened scenarios with some region-specific features and it made possible for a wider participant group to affect the contents of scenarios. Regional scenarios also helped workshop participants to identify and name the regional actors and their role as well as to develop action proposal of needed measures. Finally, one of the goals in the ForeMassi2025 project was also to increase the knowledge and skills relating to foresight process within the regions. By increasing the number and diversity of participants, helped to enhance the *interaction* among foresight project participants having different domain and foresight *expertise*, provide regional level *evidences* such as statistics and to create a trans-disciplinary environment (e.g. Santonen and Saarela, 2013) which is known to enhance the *creativity* as suggested in Popper's (2008b) foresight diamond concept.

3.2 Identifying scenario driven competences and skills

In appendix 4, tables 4a and 4b we presented competences and skills which were defined on the basis of the regional workshops. According to Kamensky (2000) the competence of a person does not consist merely of the skills & know-how but also of the values & attitudes and contacts & experiences. For this study, we have applied Kamensky's framework in order to capture the comprehensive view of the competence.

Interestingly, like in the case of national vs. regional scenarios, the skill and competence needs varied only a little from one scenario to another, even if some subtle difference and emphasis can be noted. We have summarized and visualized these observations in to figure 1.
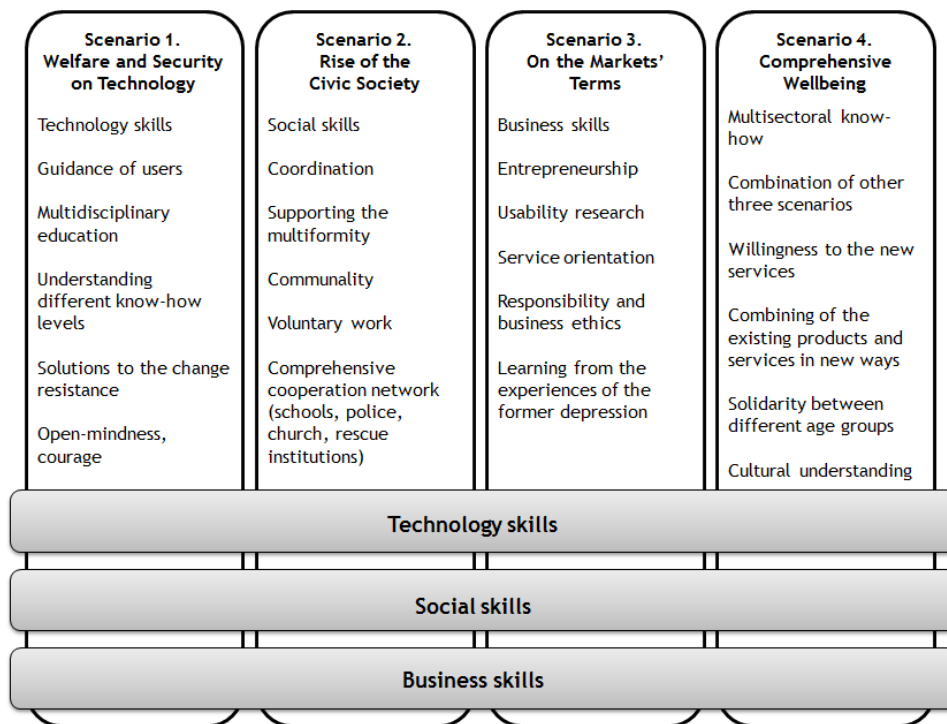

Scenario 1. Welfare and Security on Technology	Scenario 2. Rise of the Civic Society	Scenario 3. On the Markets' Terms	Scenario 4. Comprehensive Wellbeing
Technology skills	Social skills	Business skills	Multisectoral know-how
Guidance of users	Coordination	Entrepreneurship	Combination of other three scenarios
Multidisciplinary education	Supporting the multiformity	Usability research	Willingness to the new services
Understanding different know-how levels	Communality	Service orientation	Combining of the existing products and services in new ways
Solutions to the change resistance	Voluntary work	Responsibility and business ethics	Solidarity between different age groups
Open-mindness, courage	Comprehensive cooperation network (schools, police, church, rescue institutions)	Learning from the experiences of the former depression	Cultural understanding

Technology skills

Social skills

Business skills

Figure 1 The summary of the skills needed in scenarios.

First of all, technology skills are important in all the scenarios and not merely in the scenario 1 (Welfare and Security on Technology), in which they are especially highlighted. In the case of scenario 2 (The Rise of the Civic Society) and scenario 3 (On Markets' Term), a tentative ideological tension can be identified. The Rise of the Civic Society (scenario 2) stresses softer values such as voluntary work, communality and the appreciation of the people, while on Markets' Term (scenario 3) impress especially entrepreneurship, business skills, and company contacts, which typically are considered more harder values. Thus, the cross-cutting competences in figure 1 derived from softer approach were named as social skills and business skills are a result of harder values. Only clearly different scenario appears to be scenario 4 "comprehensive wellbeing"

which requires successful combinations and balance of all these three core competence areas. It is notable that the traditional nursing skills are not emphasized in any scenarios which can be considered somewhat surprising. The possible reason for it might be that the participants in the workshops have taken it for granted.

As a result in our case which is concerning especially independent living and related services, technological, social and business skills are needed in order to operate in future working environment. Therefore, the forthcoming education reforms relating to Finnish wellbeing and security education has to take into consideration not only skills and knowledge but also values and attitudes as well as networking capabilities relating these three cross-cutting competences. All these competences are important in practise and educators have to ensure that students really can use these in working life, too.

According to Day and Schoemaker (2000) technology can be defined as set of discipline-based skills that are applied to the certain product or market. In the field on wellbeing and security it often takes place in a digital form. Social skills are the specific behaviors people use when interacting with others that enable individuals to be effective at achieving their personal goals. Situations such as having a casual conversation, making friends, expressing feelings, or obtaining something from another person all require the use of social skills (Bellack et al. 2004). In the case of independent living when working with elderly people sometimes with limited communication skills e.g. because of the deaf, social skills are in high priority of competences. Business skills include all the functions of the firm, e.g. management and leadership, accounting and finance, marketing, administration, human resource management, strategic management, innovation management and commercialization of new ideas as well as entrepreneurial skills (see e.g. Hamel 2002; Kotter 1986). In the field of independent living both wellbeing and security sides have actors from public, private and third sector which role in the networked society has changed. Thus, there is a need to define new business model innovations (e.g. Osterwalder and Pigneur, 2010) for enhancing independent living related services, which will genuinely utilize the identified skills and competences of the future.

3.3 Introducing new professions

In order to make these skill and competence requirements concrete, in the third workshops besides discussing just abstract and generic skill profiles and fields of know-how, the participants also identified a specific educational and traineeship needs in order to gain the defined skills. Moreover, on the basis of these suggestions participants generated ideas for new professions related to them. In the following a few examples of the future professions including required skill profiles are briefly presented. In the technology-driven scenario (scenario 1) typical profession could be a nursing engineer, which profile would combine and balance between engineer studies and nursing know-how. This job profile could concentrate e.g. on designing technical instruments and services from the user point of view while genuinely understanding also the patients and customers point of and different aspects of social communication and interaction. A possible profession in the second societal-driven scenario (scenario 2) could be a community coordinator who should have good know-hows of the health care and social services but also be communicative and have great listening skills as well. A community coordinator could work on either municipal or private side but the entrepreneurship could

also be possible. A typical profession in the market-driven scenario (scenario 4) could e.g. a welfare consultant who understands customers' needs and is creative, cooperative and familiar with the legislation, yet is able to run profitable business along these activities. In the scenario 4, which can be considered a combination of the other three scenarios, a typical profession could be a trainer of immigrants. In addition to the substance knowledge and skills, a trainer would need communicative and language skills and the understanding of cultures. The education could be arranged e.g. as a supplementary education and a person could work in educational institutions or in organisations operating with immigrants.

4 Conclusions

The results of this study are based on still active ForeMassi2025 foresight project, which includes participants from different Triple Helix actors including educational institutions, private companies, public sector but also different kinds of NGO organisations (Etzkowitz and Laydesdorff, 1999, 2000). As suggested by Ughetto (2007) foresight can be used as a tool to enhance dialogue between these different actors. This collaboration can even be systematically planned ensuring interaction and heterogeneity of participants and leading to enhanced innovation capability (e.g. Santonen and Saarela, 2013). In order to answer our research questions, grounded on the four defined scenarios new competences and skills were identified, new solutions for educational purposes were presented and new service concepts for future needs were illustrated while integrating national vs. regional level viewpoints to these suggestions and scenarios. Thus, especially the practical implications of our observations are versatile from organization type point of view.

Educational institutions can utilise our findings in their curriculum planning and strategy work. This can help them to form their own future oriented unique profile and reduce the existing overlapping education supply which has been identified on the national level reviews resulting extensive reform of higher education system in Finland (Ministry of education, 2012). Also the companies get fresh information about the trends of the future of wellbeing and security fields which they can utilise in their own operation and strategy work. Therefore, our study and participation to project activities can be considered as a tool to conduct open innovation in-bound strategy (Chesbrough, 2003; Chesbrough et al. 2008) and utilize open search strategy, which becomes more successful when multiple information sources are used (Henttonen and Ritala, 2012). Especially our results will help understating and identifying the possibilities within the private security market and education in which the importance of a high-quality national-level educational system has been highlighted just recently by Santonen and Paasonen (2012) due alternative future scenarios.

Regional public actors such as the Regional Council possibilities to affect the future education supply of its own territory. Moreover, national actors, for example the Finnish National Board of Education and the Ministry of Education have the possibility to carry on an active dialogue and to present views which are reflected in the strategies of the educational institutions and regions based on the project results. Although our study was carried out in Finland, the contribution especially from the theoretical point of view cannot be limited only to national or regional level results in Finland. Finland is one of the forerunners in the field of wellbeing challenges derived from skewed demographic

profile. Therefore in our opinion the suggested results are also a good benchmark for other countries as well, which are encountering similar market environment in the future.

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Appendix 1: Table 1. Contents and structure of the regional workshops following the action scenario approach (Meristö 1991).

Workshop I	Workshop II	Workshop III:
Workshop focus and main research questions		
Action scenario phase I Who and where are we?	Action scenario phase II What are the possible worlds?	Action scenario phase III Where can we go and how?
Presentations		
1. Introduction of the project, research process and Massidea.org.	1. Summary of the results received from the previous workshop and massidea.org campaign.	1. Summary of the results received from the previous workshop.
2. Presentation of the national background scenarios and region-specific features.	2. Presentation related to the welfare/security theme from regional perspective	2. Presentation of the SWOT analysis results.
3. Introduction to the group works.	3. Introduction to the group works.	3. Introduction to the group works.
Tasks in the workshops		
I. Regional taboos.	I. Modifying national background scenarios into the regional level.	I. Recommended measures based on the SWOT results.
II. Regional core competences.	II. Identifying the actors in the scenarios.	II. Actors and their roles in the scenarios.
III. Regional vision.	III. Naming of the scenarios.	III. Skill profiles: future know-how areas and education solutions.
Tasks after workshops		
Massidea.org campaign I: comments on the regional vision.	Massidea.org campaign II: comments on the regional scenarios.	Preparation of joint seminar presentation and written report based on the regional results.
	Web survey: SWOT analysis of the regional scenarios.	

Appendix 2: Table 2. Facts from the regions included in the project.

	Uusimaa	Pirkanmaa	Varsinais-Suomi	Satakunta	Southern Ostrobothnia
Area (km^2)	9 097	12 585	10 661	7 819	13 444
Population (inhabitants)	1 566 835	496 568	468 936	224 934	194 058
GDP (million euros)	69 348	15 210	13 550	6 965	50 529
GDP per capita (index; Finland average = 100)	136	94	88	92	78
Dependency ratio (non-labor force in relation to labor force)	44,9	51,1	52,2	57,3	58,5
Crimes (per 10 000 inhabitants)	1022	691	767	748	540
Education (% of population who taken degree subsequent to the comprehensive school)	69,0	69,1	66,7	63,6	63,9

Source: Statistics Finland

Appendix 3: Table 3. Summary of the participants in the regional workshops according to their reference group.

	Arranging university	Educational institution	Private sector	Public sector	Third sector	Other	Total
Pirkanmaa							
Workshop I	9	10	1	8	0	0	28
Workshop II	7	5	2	2	0	0	16
Workshop III	6	3	1	4	0	0	14
Total	22	18	4	14	0	0	58
Total (%)	38 %	31 %	7 %	24 %	0 %	0 %	100 %
Satakunta							
Workshop I	36	6	4	7	0	0	53
Workshop II	10	2	0	6	1	0	19
Workshop III	30	4	1	0	3	0	38
Total	76	12	5	13	4	0	110
Total (%)	69 %	11 %	5 %	12 %	4 %	0 %	100 %
Southern Ostrobothnia							
Workshop I	7	4	1	3	4	0	19
Workshop II	4	1	4	3	2	0	14
Workshop III	3	2	0	1	2	0	8
Total	14	7	5	7	8	0	41
Total (%)	34 %	17 %	12 %	17 %	20 %	0 %	100 %
Uusimaa							
Workshop I	18	0	3	4	6	1	32
Workshop II	11	2	2	3	2	0	20
Workshop III	8	0	0	0	3	1	12
Total	37	2	5	7	11	2	64
Total (%)	58 %	3 %	8 %	11 %	17 %	3 %	100 %
Varsinais-Suomi							
Workshop I	6	4	8	6	2	0	26
Workshop II	1	4	4	1	0	0	10
Workshop III	2	1	0	2	0	0	5
Total	9	9	12	9	2	0	41
Total (%)	22 %	22 %	29 %	22 %	5 %	0 %	100 %
SUMMARY: ALL REGIONS							
Total	158	48	31	50	25	2	314
Total (%)	50 %	15 %	10 %	16 %	8 %	1 %	100 %

Appendix 4: Table 4a. Skills requirements classified by scenarios

Skills & Know-how	*Values& Attitudes*	*Conctacts & Experiences*
Scenario 1: Welfare and Security on Technology		
Technology skills	Social skills	Relatives
Guidance of users	Autonomy	Service providers (private, public and third sector)
Multidisciplinary education	Change resistance have to be observed	The old persons' council
Multiculturalism and language skills	Flexibility	Habit into use of the technology
Marketing	Understanding different know-how levels	Immigrants
	Entrepreneurship	Existing cooperation models of universities
	Open-mindness, courage	Cooperation of social services and the police
Scenario 2: Rise of the Civic Society		
Supporting the multiformity	Allowing of the difference	Diverse supplementary services
Coordination	Communality	Contacts to organisations
Sector skills	Understanding of the multiculturalism	Voluntary work
Social skills	Voluntariness	Exchange of services
Customer orientation	Responsibility	Global perspective
Organisation work	Ability and desire for the commitment	Comprehensive cooperation network (schools, police, church, rescue institutions)
Culture know-how	Growing appreciation of the leisure, downshifting	
Ex-workers' from ICT-companies		
Post-traumatic care situations		
Statistics		

Appendix 4: Table 4b. Skills requirements classified by scenarios

Skills & Know-how	Values& Attitudes	Conctacts & Experiences
Scenario 3: On Market's Term		
Entrepreneurship	Communality	Company contacts
Business skills	Entrepreneurship	Unofficial networks
Social skills	Respect for other people	Learning from the experiences of the former depression
Service planning	Equality	Third sector
Data collection	Service orientation	Friend services
Technology skills (e.g. wireless technology, virtual learning environments)	Responsibility and business ethics	Peer group support
Usability research		
Scenario 4: Comprehensive Wellbeing		
Multi-sectoral know-how	Willingness to the new services	Countryside environment to family homes
Technology skills	Combining of the existing products and services in new ways	Relatives and friends
User education	Growth willingness of companies	Organizations, services of the society
Language skills, cultural understanding	Respect for all the age groups	Support persons
Planning	Significance of the family	Utilising of pets in the nursing
Customer orientation	Equality, responsibility, communality, autonomy, flexibility	Solidarity between different age groups
Information retrieval	Focus on quality	Social media
	Voluntary work, neighbor help	Cosmopolitanism
		Security cluster