An Analysis of Factors in Developing a Cross-Border Knowledge Region: The Case of Helsinki and Tallinn City-Regions

Merle Krigul

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AN ANALYSIS OF FACTORS IN DEVELOPING A CROSS-BORDER KNOWLEDGE REGION: THE CASE OF HELSINKI AND TALLINN CITY-REGIONS

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by
Merle Krigul

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The Institute of Social Sciences, Estonian Business School, Estonia

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Supervisor: Professor Ruth Alas, Ph. D., Chair of Management, Estonian Business School, Estonia

Opponents: Professor Tõnu Oja, Ph. D., Chair of Geoinformatics and Cartography, Institute of Geography, University of Tartu

Professor Vilmante Kumpikaite, Ph. D., Kaunas University of Technology, Lithuania

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Lepik, K-L., Krigul, M. 2009. Cross-Border Cooperation Enhancing Sustainable Business Growth Environment. *Insights into the Sustainable Growth of Business*, ISM University of Management and Economics, November 19-21, Vilnius, Lithuania.

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ABSTRACT

The globalization of economic and social activities is testing the ability of local economies to adapt and exploit, or maintain, their competitive edge as scale becomes more important: economic activity continues to cluster and concentrate. Technological change (ICT), networking and greater use of knowledge are offering new opportunities for regional and inter-regional development and knowledge transfer, but changes also in local governments' governance philosophy, further involvement of innovative enterprises, and participation of universities and research institutions in local environments impact the environment. The topic of higher level international cooperation of border regions and border cities where the focus is on joint development of knowledge and technological knowledge transfer, fostering of contacts of universities-enterprises-local authorities, using triple-helix method in the framework of cross-border cooperation, is not sufficiently covered in the literature and under-exploited in practice. Alternative new tools for enforcing cross-border (CB) innovation and knowledge transfer and dissemination should be investigated.

In this Dissertation, the author studies the factors in, and obstacles to, creating a common knowledge region between Helsinki and Tallinn capital regions under conditions where a special integration-enhancing institution, the non-profit organisation Helsinki-Tallinn Euregio, is part of the process. From a geographical perspective, Helsinki and Tallinn are among the closest capitals in Europe. A long-term vision of the leaders of Helsinki and Tallinn states that the Helsinki and Tallinn regions will form a united science and education area - a Knowledge Region (KR) in the future. In the study, the role of the CB co-operation (CBC) organization, Helsinki-Tallinn Euregio, as a change agent developing innovative forms of co-operation, initiating and supporting knowledge transfer via triple-helix and Living Lab method is analysed.

The principal aim of the Dissertation is to analyse the theories, methods and factors which would assist in the development of a CB KR, using the case of Helsinki-Tallinn Euregio. The developmental factors are analysed in the context of three interlinked theoretical concepts: regionalisation and networking theories, knowledge creation theories, including knowledge transfer, and Living Lab as an innovative method in the evolution of a KR. This approach makes it possible to analyse how CBC organisations can enhance the use of complex tools and methods for the advancement of a CB innovation that can be multiplied to other CB regions.

The research includes theoretical research, traditional empirical research, and action research.Firstly, the regional integration and knowledge theories and factors for the purpose of developing a Helsinki-Tallinn capital cities' KR are analysed (Study I).

Secondly, complex forms of CBC, such as the triple-helix and Living Lab method, utilizing the advantages created by collaborating organisations are analysed (Study II).

Thirdly, Helsinki-Tallinn Euregio is analysed as an agent for change; also, its role as a facilitator in the cooperation and creation of a regional innovative environment.

The Dissertation shows that a CBC organization can be a facilitator and an appropriate framework for fostering innovative and complex CBC forms and tools. The Dissertation proposes a possible model for enhancing integrated CB KR with a specially established organisation being part of the process.

Keywords: Knowledge Region, cross-border cooperation, cross-border cooperation organisation, euroregion, regional integration, regionalisation, knowledge transfer, *ba*, SECI, triple-helix cooperation, Living Lab method, Helsinki-Tallinn Euregio

INTRODUCTION

This dissertation is based on the following original publications, which will be referred to in the text by their respective Roman numerals.

I Krigul, M. 2011. On Possibilities to Develop CB Knowledge Region: The Case of Tallinn (Estonia) and Helsinki (Finland). *Problems and Perspectives in Management,* Volume 9, Issue 1, pp 23-30.

II Lepik, K.-L., Krigul, M. and Terk, E. 2010. Problems of Initiating International Knowledge Transfer: Is the Finnish Living Lab Method Transferable to Estonia? *International Journal of Technology Diffusion (IJTD),* Volume 1, Issue 2, pp 75 – 85.

III Krigul, M., Lepik, K.-L. 2009. Innovating through building a knowledge CB region. *Laurea Publication A-series*, Volume A70, pp 42-63.

Relevance of the Topic

The relevance of the topic is as follows:

1. Agreement exists among researchers that two words are central to the future of economic development around the world: "Knowledge" is the key to innovation, and innovation is the underlying phenomenon that allows per-capita economic growth. "Regions" have become the basic economic building blocks of the (global) economy. Regionalisation in the European Union (EU) is an ongoing process with increasing importance as regions perform the role of platforms for intensified competitiveness in the whole EU and also in local settings. Besides, regional disparities and cultural differences may perform as barriers to implementation of EU strategies, thus, being also a source of management problems. The relevance of my study is evident when one considers the fact that Knowledge-based regions like Silicon Valley and Route 128 did not occur spontaneously; they are the result of initiatives which reached fruition after decades. Social evolution occurs through conscious intervention. Concentration of entrepreneurial talent, intellectual capital and tacit knowledge in a relatively few world-class regions gives these regions a clear competitive advantage in drawing talent and innovative firms into their orbit from emerging regions (Etzkowitz 2010). These processes of emigration of knowledge workers from Helsinki-Tallinn city-regions are well documented in several statistical reports.

2. In view of the shift towards a "knowledge-driven economy" since the 1980s and 1990s, extra-economic relations and the capacity of regions to support processes of learning and innovation have been identified as significant sources of competitive advantage (Amin & Thrift 1994; Jessop 2000). Knowledge has been pointed out

as an organisation's sustainable source of competitive advantage (Drucker 1988; Nonaka 1991; Morey & Frangioso 1997; Zwass 1999; Argote & Ingram 2000; Argote et al. 2000; Davenport & Prusak 2000; Lahti & Beyerlein 2000; Rulke et al. 2000) and academic attention on organisational knowledge creation, capture, and transfer prove the acceptance of this idea (Davenport et al. 1998; Marchand & Davenport 2000).

This view became dominant in the so-called Lisbon Strategy initiated in 2000. The Lisbon Strategy was adopted at the extraordinary European Council in Lisbon in March 2000 (Lisbon Extraordinary European Council 2000).

The idea of the Strategy was to develop an action plan which would turn the EU into "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion by 2010" (Lisbon Extraordinary European Council 2000). The Strategy was initially based on economic and societal renewal ideas, founded on the economic concept of innovation as the engine for economic growth and jobs creation (Rodrigues 2005). The Lisbon Strategy highlighted theories of Knowledge, Knowledge Management, Lifelong Learning and Learning/Knowledge organisations as future competitiveness and economic growth factors and sources. Unfortunately, the Lisbon process has not produced the expected change in pan-European world-class competitiveness (Kok 2004). In 2004, Kok advised broader involvement of the regional and local levels to implement the Strategy (Kok 2004, 10-11). The revised Lisbon Strategy (2005) turns attention to local governments as basis for considering regions as an appropriate level for stimulating innovation. Still, the idea was not new: it had been presented more than a decade earlier by scholars and policy-makers (Lundvall 1992; Cooke 2001, 2003). Cooperation of regions is a growing trend, supported not only by OECD, but also by different programs of the EU.

Innovation and innovation policy as core elements of the Lisbon Strategy have become the focus of statements and perennial commitments of politicians, policy-makers and scholars at all European levels. In these statements, fostering innovation is portrayed as the key to economic growth and social well-being, although the concepts of both innovation and innovation policy are subject to a huge variety of definitions, especially in the general (also policy) discourse (cited by Lang 2010).

Rapid technological change and greater use of knowledge were supposed to offer new opportunities for local/regional development and knowledge transfer, but also for coping with the specifics and complexity of CB cooperation (CBC) and regionalization. The globalization of economic and social activities is testing the ability of local economies to adapt and exploit, or maintain, their competitive edge as scale becomes more important: economic activity continues to cluster and concentrate. Disparities in economic performance among different, even neighbouring countries tend to be persistent (OECD 2010). Still, aforementioned technological

change (wider use of ICT in the first place) and greater use of knowledge are offering new opportunities for regional and inter-regional development and knowledge transfer, but they demand changes in local governments' governance philosophy, further involvement of innovative enterprises, and participation of universities and research institutions in local environment(s). J. Frank Brown, a former Dean of INSEAD, is critical towards the innovation-related situation in the EU: "The European Union is nowhere near where it needs to be", noting that innovation and entrepreneurship policies in Europe still tend to be local in focus. European countries still see innovation as a nation-by-nation competition. "Until the EU attacks the problem as a 27-member region initiative, creating jobs and encouraging researchers to move more openly across EU borders, innovation will continue to face obstacles" (Science and Business 2011). According to the 2009 OECD report, the role of non-traditional factors, including users and consumers, has become more important in driving scientific discovery and innovation. For example, the public sector is an important purchaser and provider of services. Since innovation is closely linked to demand by users, government as a large scale purchaser can promote innovation by being a demanding buyer, signalling acceptance of innovations as a lead user and creator of new markets.

As innovation and innovation policy in connection with cooperation of regions are gaining increasing attention on the EU level, this dissertation is especially relevant as it addresses those aspects from the novel viewpoint – from the public sector and non-traditional factors' point of view.

The OECD report pointed out several failures and systemic mistakes. According to Padoan (2009), incomplete policy-mix explained the failure of the Lisbon Strategy: policies must ensure the proper conditions for knowledge to circulate in a global and connected world. Major themes emerging from the innovation strategy that are missing, but can help the Lisbon Strategy to evolve and become relevant to the policy making process, are: the "openness" of innovation; the central role of entrepreneurship; the importance of creativity and culture; the role of innovation and innovation policy in addressing global challenges; and the need for new measurement tools. "Openness" is central to the innovation process as new modes of innovation factors have gained importance: in addition to companies, non-profits or universities from the same country or from abroad, new users, consumers, amateurs, philanthropists are emerging and influencing the demand for innovation. This trend is connected to the Living Lab method.

There are also contradictory theories about the influence of globalization. On the one hand, it is stated that knowledge is global, talents move globally, but on the other hand, the concept of a Place (in our case, region) becomes more important. According to Alfred Marshall, knowledge spill-over effects cause people to locate closely to each other and benefit from minimizing distance-related transaction costs and maximizing tacit knowledge flows and learning effects. Therefore, globalization and technological change have not only upgraded the knowledge in-

tensity of the constituent companies, but also strengthened clustering effects to optimize knowledge spill-over (Dumming 2000). Geographical proximity facilitates the acquisition, accumulation, and use of knowledge as a region's performance depends not only on that of enterprises and research institutes, but also on interactions between different stakeholders and organizations (OECD 2005). This study discusses the role of an intermediary organisation as an agent of change facilitating the knowledge transfer processes between different stakeholders.

3. Societal innovation to raise regional competitiveness is among the policy priorities of the EU. As the population living in CB areas amounts to 181.7 million in the EU (37.5 % of the total EU population), CBC is one of the main means to reach that objective: CBC is one of the most recognised ways to develop border regions (Baldwin & Forslid 1999; Brodzicki 2002; Pitoska 2006) and thereby increase territorial cohesion in Europe. According to a OECD (2010) proposal for developing CB regional innovation policy, trans-border innovation potential is underexploited, and constitutes a missed opportunity for OECD regions and countries. Key factors in determining productivity/output, such as diffusion of technology and knowledge transfer (knowledge sharing), co-operation among enterprises, universities/R&D institutions and (local or national) governments, social capital development, allocation of labour and infrastructure, are likely to be sub-optimal because the economic space is divided. Integration should remove the fragmentation that constructs the economic space (OECD 2010). In this paper, I look at the aspects of cross-border innovation and integration from the knowledge-driven economy's viewpoint. Helsinki-Tallinn city region's joint enhancement of innovation potential has not been studied earlier.

A societal comparative advantage goes beyond the notion of Porter's "Competitive Advantage of Nations" (1990) which explains differences in national economic prosperity and productivity with purely economic patterns of company strategies and governmental policies. Knowledge economists would argue that intangible, societal assets and flows are prerequisites for building a national or regional competitive advantage, and that technological innovation builds on societal innovation. Termeer (2007) states that societal innovation is "not just about isolated instances of innovation brought about by a few people but about changes in the way of looking, thinking and acting, with sweeping consequences for the arrangement of organisations, markets, technology, social relations and concepts".

4. CBC is one of the means to raise the competitiveness of regions. It is a characteristic for regional co-operation that in addition to the movement of capital and goods also objects which are more difficult to transfer or receive/introduce like technology, skills and knowledge must move from one region to the other. When the co-operation deepens and the goals become more ambitious, the role of intangible components in co-operation increases compared to the tangible ones. Instead of co-operation forms that can be dealt with separately (economic, cultural, administrative) complex tasks uniting several co-operation forms arise. Hence, the ne-

cessary circle of stakeholders required for fulfilment of co-operation tasks increases and becomes more complex. For instance, in economic co-operation projects universities and cultural institutions and often also citizens as potential users of the new systems must be included. The creativity of the co-operation increases. The simple, even algorithmic transfer, multiplying and copying, that include learning and changing of the behaviour mainly by the recipient will no longer be dominant; instead, both parties must solve creative tasks while creating new systems and often the end results cannot be forecast.

CBC may be implemented by using different forms and levels of cooperation, starting from very simple person-to-person contacts and learning from each other, cooperation contracts and different projects to complicated and developed forms like triple-helix or Living Lab methods or environments.

Integration may be realised in different models, such as acting under an umbrella organisation (Öresund Committee, Helsinki-Tallinn Euregio), or without it by being only project based like ELAt (Eindhoven, Leuven, Aachen territories), or multilevel governance that may be realized through joint organizations, horizontal clusters, or in different cooperation fields (for example medical care in older border regions).

During the Hanseatic period in the 14-16th centuries, the networks actively determined and imposed institutional rules in various areas, e.g. worked out rules for the certification of craftsmen and for political life in the Baltic and North Sea regions, besides trade which played a key role in that league. It can serve as a valuable example for today when small countries are at a disadvantaged position in comparison with big markets; they could work out rules that would enable them to scale the innovations, services and products in several countries (Niitamo 2009).

5. In order to promote CBC more effectively, many regions in the EU have established CBC organizations/euroregions. Euroregions are administrative-territorial structures designed to promote CBC between neighbouring local or regional authorities of different countries with a shared border (Lepik 2010). Perkmann (2003) argues that CBC organisations "represent a specific challenge within public governance due to their a-typical, non-nested territorial set-up: As their constituent parts – municipalities, districts and other sub-national jurisdictions – belong to different nation-states, they do not operate in a conventional context of public administration defined by legal competencies and decision-making mechanisms rooted in public law." The non-profit organisation Helsinki-Tallinn Euregio (hereafter Euregio), which is one of such organisations, was established between the capitals and municipalities of the capital regions with the aim of enhancing regional integration between Tallinn (Estonia) and Helsinki (Finland) capital regions. Types and models of euroregions are covered by Lepik (2010). Unlike earlier literature, this paper covers the topic of a euroregion from the knowledge enhancement viewpoint in the integration processes. Euregio is the only regional

level tool between Estonia and Finland whose main task is to enhance integration between universities, enterprises and local governments and whose mission is to intensify CB integration between the Helsinki-Uusimaa region and Tallinn-Harju county. As its role is "to promote and assist co-operation inside the twin-region, Euregio supports and promotes inter-regional development and competitiveness, aiming to strengthen the regional knowledge based economic development" (Euregio Statute 2004).

Euregio has taken a proactive role since 2001 in enhancing knowledge based co-operation forms. Since 2004 the concept of Knowledge Arena has been introduced to Euregio's priorities with the aim of creating Helsinki and Tallinn capital regions into a united region of science, education, arts and innovative knowledge-based business, called Knowledge Arena. This has certain empirical parallels with the concept of a (cross-border) KR and thus it has been an integral part of Euregio's operations since 2004. The concept of twin-region, twin-city, or twin-city region has been constituently used in Euregio documentation since 2008. According to Kosonen (2004), the twin-city concept refers to bordering two cities in close physical and functional proximity (adjacency). They have a shared/similar history, language and culture, a somewhat shared/similar institutional basis, and the inhabitants in both cities identify themselves as inhabitants of a twin city. These conditions do not exist between Tallinn and Helsinki.

6. In this study, CB region is understood as the territory of Euregio, which is a stakeholders' area in Helsinki-Tallinn capitals' region(s) limited to a specific developmental aim: the Helsinki-Tallinn CB KR (Annex 2). Helsinki and Tallinn are the centres of higher education and R&D activities; they also have concentrations of investments, entrepreneurship and wealth. Uusimaa region (Helsinki capital region) already introduces itself as a KR. Its qualification process is not documented, but the reasoning behind the title is as follows: Uusimaa offers a wide range of knowledge intensive public services (Virtual Finland, e-Finland), several universities and high schools (University of Helsinki, Aalto University, Hanken, Helsinki University of Technology) and expertise centres (TEKES, SITRA, Culminatum, Enterprise Finland, Nordregio, VTT, Technopoles and technology centres) are located here.

Tallinn/Harjumaa has the potential for becoming a KR. Except for Tartu University, the main research and development institutions are located in Tallinn and Harjumaa. In January 2010, the Intelligent Community Forum's evaluation committee chose Tallinn as one of the seven most intelligent communities in the world for the fourth time, based on 2009 activities. Intelligent Community Forum is a US think-tank dedicated to creating new jobs and promoting economic development in the field of broadband data communications. Being in the top seven shows that Tallinn is increasing its information technology capability and uses the newest systems, promotes adopting, implementing and perfecting e-services (Statistical Yearbook 2009-2010).

This also offers scope for co-operation in the region and justifies Euregio's priority to enhance the common KR. The creation of a common information and media space, not covered in this paper, is among the first challenges to be addressed in this process and needs academic inclusion.

According to the Non-Paper "The 2010 meeting of the Science and Research Councils of Estonia and Finland", co-operation between Finnish universities, polytechnics, research institutes and funding organizations and the partner organizations in Estonia has developed favourably. Focus has been on direct and practical co-operation among operators within the innovation system. The most salient focus areas have been joint research and technology programs, researcher training, research infrastructures, top level research, and student and researcher mobility. Co-operation has taken place mainly through larger international organisations that involve also other countries. Networking and international co-operation have been strengthened within the framework of the EU.

7. In this dissertation, I analyse the factors for developing more complex forms of CBC and integration, with emphasis on cooperation between local governments and universities, R&D institutions, in order to advance knowledge intensive entrepreneurship that fosters economic growth and the well-being of the region. This has not yet been researched in the context of Helsinki-Tallinn cities region.

Transfer of knowledge is a complicated leadership process that can fail due to cultural and institutional tensions, in addition to the tendency among countries in transition - Estonia included - to concentrate on immediate economic matters only. Hence "out of the box" thinking is not easily achieved and demands changes in leadership styles (Alas et al. 2003, Alas & Vadi 2004, Alas 2005, Alas & Rees 2006, Alas & Sepper 2008, Übius & Alas 2009). In this paper, I also examine alternative methods of knowledge transfer in the region. Unlike the more common universities' centred practice (Reichert 2006), in this study the promoter of societal innovations is a local government level.

Being one of the initiators and later a long-standing practitioner at Euregio, the experience has shown that the field of study needs uniform terminology and content definition. In order to establish long-term strategies and goals for the organisation and for managing the achievement of these goals, it is necessary to apply academic discipline. While putting CBC into practice, new and more complicated tasks emerge which in turn demand greater theoretical research.

The aim and research tasks

The main aim of the dissertation is to analyse the theories, methods and factors which would assist in the development of a cross-border Helsinki-Tallinn Knowledge Region and initiate Euregio's role as an agent of change in the processes that advance regional cooperation and the creation of an innovations centred environment.

Research tasks and Questions

Firstly (Study I), is to study the regional integration and knowledge theories for the purpose of developing a Helsinki-Tallinn capital cities' KR.

Secondly (Study II), is to analyse complex forms of CBC, such as the triple-helix and Living Lab method, utilising the advantages created by collaborating organisations.

Thirdly (Study III), is to analyse Euregio as an agent of change in the processes that advance regional cooperation and the creation of an innovations centred environment.

Methods used in the research

In this field I have conducted the following empirical research since 2004: a complex survey of science twin-city development, containing qualitative research; two qualitative and one quantitative research, and one evaluation report that contained qualitative research, totalling four qualitative and one quantitative items of research.

The processes have been described and the results and conclusions published in different peer-reviewed international scientific journals.

Data was collected via questionnaires, in-depth diagnostic interviews and elite interviews. In the research process, I worked out the following instruments:

(1) Methodology and interview questions for Helsinki-Tallinn Science Twin-City Research in 2004;
(2) A questionnaire among Euregio stakeholders in 2007;
(3) Interview questions for elite interviews on regional developmental perspectives in 2008;
(4) Diagnostic interview questions for adoption of the Living Lab method in Tallinn and Helsinki CB context in 2008 (together with Terk and Lepik);
(5) The results of the evaluation report "Evaluation of Knowledge Arena Activities" have been used. The evaluation was carried out by the Latvian based consultancy company DEA Baltika Ltd., between August and December 2009. I drafted the questions and blocks of problems to be addressed and DEA Baltica Ltd. conducted the interviews.

Prior to my research, I studied many and various source materials on the theoretical basis for, and problems of, CBC and integration.

I used both traditional empirical research methods as well as action research meth-

ods. The selection of the methods was guided by my employment at Euregio, which made it possible to implement the so-called intervention activities (initiatives, conferences, forums, roundtables, seminars, action, and strategies) and to follow their impact. The latter is concretely analysed in the dissertation. In the second and third research tasks, questionnaires and in-depth interviews were conducted. Due to the number of direct stake-holders in the CBC processes being small, focus was rather on the qualitative rather than quantitative method of research which enabled thorough analysis of leadership views.
In the case of Euregio, qualitative data (strategies and developmental plans for Euregio and the Helsinki and Tallinn capital regions) were used to analyse the characteristics and functioning of a CBC organization in a real-life context.

The Originality of the Research and Its Practical Merit

The research's originality and its practical merit are the following:

1. Region building and different theories of knowledge and knowledge management have been objects of academic research for decades. The application of knowledge concepts to Space or Place is a new phenomenon. KRs are insufficiently studied by academia, even an acknowledged definition is lacking. In this study, KR is addressed in an original and dynamic way by inter-linking theories of regionalisation, networking, knowledge creation theories, including knowledge management and knowledge transfer, and using Living Lab as a method.

2. Heretofore, creation of a KR has been analysed mainly in the context of one country (Reichert 2006, Luis 2010) and to my knowledge, the developmental factors for a CB KR have not yet been studied within the context of regions from different countries. CB regional integration processes have been covered by several OECD reports, but not with focus on KRs. Furthermore, an empirical study of the role of a CBC organisation and a theoretical debate on the creation processes of a CB KR have not been explicitly linked to date. This paper also addresses regional integration as a process of CB integration of local authorities differently than the wide-spread approach as integration between states or supra-national states.

3. I have examined the management problems that may emerge when using novel management methods for enhancing development of a CB KR.

4. CBC organizations have been previously addressed in literature from diverse aspects. However, they have yet to be addressed as factors and facilitators in the development of a KR.

5. The originality of my study is in its exploration of CB knowledge transfer for regional integration and development, and its implications for future societal innovations in Helsinki-Tallinn capital regions. Aspects of it have been addressed

in theories like institutional economics, network theory, new urban development theories, clustering theories and others.
The focus of this research is on factors in the development of a CB KR and knowledge transfer, fostering of contacts among local authorities-universities-enterprises, and using Living Lab method in the framework of CBC. International transferability of the Living Lab method is explored, using Helsinki and Tallinn as a geographical dimension or Place/Space/Ba. In this study, the promoters are local authorities (CB local authorities) and Living Lab is analysed as a method (not environment or approach).
The dissertation proposes a possible model for enhancing an integrated CB KR based on the case of Euregio.

6. In the Estonian context, the Living Lab method has not been applied before and the use of it in my research constitutes a contribution to the knowledge transfer process.

The work consists of nine years of research of Estonian-Finnish CBC in Euregio and in the Estonian Business School. In both instances, I have pursued extensive academic research and empirical analysis. The used methodological approaches include literature analysis, policies' studies, analysis of strategic development plans in Estonia and in Finland, web surveys, protocols of seminars and workshops, and collecting of original empirical information via interviews and questionnaires. Preliminary results have been discussed in numerous workshops and seminars held in Tallinn, Tartu (Estonia), Helsinki, Espoo (Finland), Brussels (Belgium), Vilnius (Lithuania), Stockholm (Sweden), Krakow (Poland), Vigo (Spain), Malmö (Sweden), Copenhagen (Denmark), Eindhoven (Holland), Lisbon (Portugal), Hong Kong (China) and Newcastle (Great Britain).

PART 1. THEORETICAL BACKGROUND FOR ANALYSING THE FACTORS IN DEVELOPING THE HELSINKI-TALLINN CROSS-BORDER KNOWLEDGE REGION

In this dissertation I aim to analyse the developmental factors of a CB KR, using the case of the Euregio. The factors are analysed in the context of three inter-linked theoretical concepts: regionalization and networking theories, knowledge creation theories that include knowledge management and knowledge transfer, and analysis of the concept of Living Lab as an innovative method. According to the available information, these concepts have not been heretofore addressed together in the framework of an evolving KR (Figure 1).

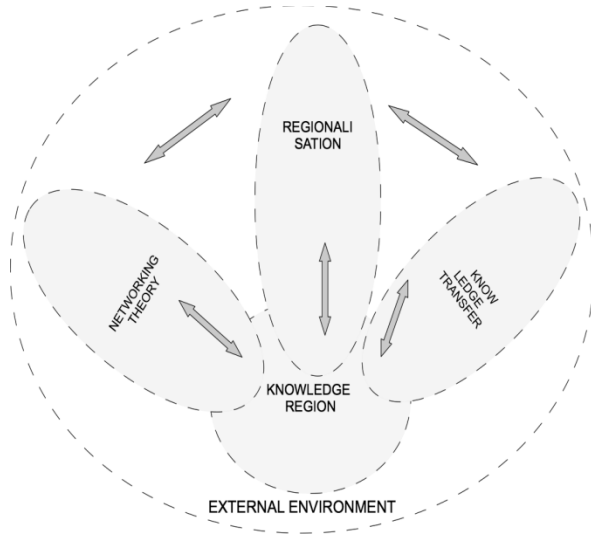

Figure 1. Interlinked theories in developing a Knowledge Region (author's graph).

Figure 1 explains the linkages between theories of regionalisation, networking and knowledge transfer. KR is related to regionalisation and especially to the topic of regional integration as a prerequisite for CB KR; networking theory is relevant as it tackles the weak and strong ties between factors; knowledge transfer is needed for creation of KR.

The theories of old and new regionalisation are covered in chapter 1.1 under the heading "Region-building theories", 1.1.1 "Classical theories on regional integration". Figure 1 illustrates the theories in 1.1.1, 1.1.2 and 1.1.3 for region building. Implementing the Living Lab method in the Knowledge transfer is covered in chapters 1.2.2 and 1.4.

1.1. Region-building theories

In current debates, regions and regionalisation are important topics regarding the "best" spatial level of governance in addressing global competitiveness; cohesion and convergence are emphasised in EU (Herrschel & Tallberg 2011). Theories of regional integration have been developed mainly to explain European integration (Laursen 2008). Neo-functionalist regional integration theories and constructivist /new/ regionalisation theories are covered in Chapter 1.1.1. Networking theories supporting region-building processes are covered in Chapter 1.1.2.

1.1.1. Classical theories on regional integration

European integration began with the European Coal and Steel Community (ECSC) in 1952. Ernest Haas theorised this experience in *The Uniting of Europe* (1958). The concept of integration could be defined in different ways: "a process that leads to a certain state of affairs" (Laursen 2008, 4), or as "the attainment, within a territory, of a 'sense of community' and of institutions and practices strong enough and widespread enough to assure, for a 'long' time, dependable expectations of 'peaceful change' among its population" (Deutsch et al., 1957, 5-6).

Today's academic discussions and practical solutions offered to meet the challenges of economic globalization stem from basically two systems of thought – the classical integration theory **neo-functionalism (**Ernst B. Haas 1958, 1964, Lindberg 1971, Lindberg & Scheingold 1970; Schmitter1996), or post-functionalism (Corbey 1995; Mattli & Slaughter 1998; Schmitter 2003; Hooghe & Marks 2009), and **constructivist theories** of (New) Regionalism or Regionalisation developed by Björn Hettne, Frederik Söderbaum and Karl Polanyi after 1980.

Neo-functionalism is a theory of regional integration that seeks to explain the European integration debate from the 1950s until the early 1990s. Neo-functionalism describes and explains the process of regional integration with reference to how three causal factors interact with one another: (a) growing economic interdependence between nations, (b) organisational capacity to resolve disputes and build international legal regimes, and (c) supranational market rules that replace national regulatory regimes (De Lombaerde & Van Langenhove 2007). The focus of the theory is on factors that drive integration: interest groups, political parties and decisions, role of governments and supranational institutions - the driving force being self-interested groups and institutions. The theory is often considered as elitist (Chini 2007, 87). After being "out of fashion" in the 1970s, the enlargement of the EU since the 1990s brought neo-functionalism back to academic and practitioners' attention.

Regional strategies and solutions are traditionally based on neo-functionalist approach: According to Hans van Ginkel (2003), regional integration refers to the

process by which states within a particular region increase their level of interaction with regard to economic, security, political, and also social and cultural issues. Neo-functionalism presents the basic question of whether or how economic integration leads to political integration, and if it does, then what kind of political unity would be the result. The other interest of neo-functionalist theorists is the importance of supranational institutions. Supranational institutions are likely to have their own political agenda (Chini 2007) that are finally higher than the agendas of participating states.

The main theoretical contribution was the concept of spill-over (Laursen 2008). According to Lindberg (1963), spill-over refers to a process where political cooperation with a specific goal leads to formulation of new goals that were not in mind at the beginning in order to assure achievement of the original goals. It means that the political agenda set at the beginning is extended over time in directions that were not intended. For example, on the national state level the issue may be free movement of people. Then it may occur that free movement is impossible due to regulations that demand specific educational certificate. As a result, national educational systems may become the target of cooperation. The process of generating new political goals is the very essence of a neo-functionalist concept of a spill-over (Chini 2007, 90). Haas also argued that political or interested groups could be key factors in driving integration forward even if governments were reluctant to be engaged in integration. So neo-functionalists saw integration processes as driven by self-interest of groups, rather than any ideological vision or shared sense of identity.

A spill-over may be functional (technical) or political (cultivated). A functional spill-over takes place when cooperation in one specific area creates a necessity for cooperation in another related area. Political spill-over refers to processes where factors make package deals in order to establish common agreement in a range of policy areas (Chini 2007).

It is important to emphasise that all the authors consider regional integration as a phenomenon within the borders of one state, or between or across states, unlike the perspective in this study where regional integration is between local authorities.

Constructivist theory of regionalisation in Europe had its first wave in the 1950s and 1960s. These initiatives resulted in the establishment of the European Community and were called "old regionalism" (Ethier 1998). In the late 1980s, a new bout of regional integration called "new regionalism" began and still continues (Fawcett 1996, Hettne 2002, Wallis 2002, Söderbaum 2008). The enlargements of 2004 and 2007 gave a boost to new regionalisation. Enlargements made membership grow from 15 to 27 states, widened the Union territory, and at the same time contributed to the diversity of EU (Lang 2010). Regionalisation as a form of differentiation is based on the phenomenon that geographically close member states often share a common history, common values, and common interests in a variety of issues and they enter into coordination and cooperation on a pragmatic base.

The other option is to deal with "old" and "new" regionalism, focusing on the degree of flexibility of networks. Regions are understood as variably defined policy spaces rather than centrally fixed units of administration (Herrschel & Tallberg 2011).

The New Regionalism Approach (NRA) differs from most neo-functionalist approaches in the sense that the state-led regional organisations are seen as a second order phenomenon compared to the processes of regionalisation, where the question is asked by whom, for whom and for what purpose regions are made and unmade. In NRA this means, among other things, that regions are not taken for granted or conceived as pre-defined spaces (Söderbaum 2008). The NRA attempts to uncover existing power structures and imbalances in order to identify alternative channels for societal change. Söderbaum (2008) draws a difference in the roles of regionalism (formal regional integration projects) and regionalisation (*de facto* economic, social, cultural and political processes on a regional scale) in different regions by different state and non-state factors, and on various regional scales. Regionalism refers to the cognitive ideas and policy aimed at enhancing cooperation, integration or coordination within a regional space. It is usually associated with a regional strategy or program, and often leads to institution-building as the Euregio case also demonstrates.

Regionalisation refers to the process of cooperation and integration creating a regional space, and an "outcome". At its most basic, it means a concentration of activity on the regional level which may give rise to the formation of regions, regional networks and factors, or regional organisations. Regionalism and regionalisation often impact one another.

The concept of "Regionness" was coined by Björn Hettne in the early 1990s. He was mainly inspired by the concept of "stateness", but also by the literature on imagined communities. The concept seeks to conceptualise the process whereby regions are "becoming". It can be seen as an analytical tool for understanding the construction and consolidation of regions and the formation of relevant factors in a historical and multidimensional perspective. There are a few different versions, but the most recent ranges from seeing the region as (a) a social system, (b) a regional complex, (c) an international society, (d) a regional community, (e) a regional institutionalised polity (Söderbaum 2008). In recent debates, a sub-national level as a platform to negotiate between different scale policies is added (Herrschel & Tallberg 2011). The word "new" marks conceptual and practical departure from the conventional association of "region" as administrative-governmental and planning-related territoriality, defined by using specific criteria and indexes. Regionalisation is a version of differentiation on a territorial base and has different aspects in different fields of study: globalization, politics, economic geography or international relations. According to Florida (2007), in the globalization context mega-regions (large-scale economic units of multiple large cities and their surrounding suburbs, the world's 40 mega-regions account for two-thirds of all

the global economic activity and 85% of world's technological innovation while housing 18% of its people) present the future of economic success already now and even more so in the future. In politics, it is the process of dividing a political entity or country into smaller jurisdictions (administrative divisions or sub-national units) and transferring power from the central government(s) to the regions - in our case to local authorities - who carry out the CBC initiatives. In international relations, it stands for the expression of a sense of common identity and purpose combined with the creation and implementation of institutions that express a particular identity, and shape collective action within a geographical region. There are no qualitative studies on how citizens of the Helsinki and Tallinn capital regions see themselves, which identity they carry (which phase of response hierarchy models they are living through) – awareness, knowledge, liking, preference, conviction, "purchase" (Lavidge & Steiner 1961) - but we may assume that self-identification as a twin-city citizen is not in an initial phase, but already exists, especially among young people (Demos Helsinki 2008).

Processes on how regions are constructed and consolidated indicate that the important choices in region-building are the questions who and what belongs to the region, what are the factors of a certain region, and which are the policy issues that should be included in the spectrum of regional cooperation. According to Hettne (2002), there are parallel processes going on: the regionalisation in Europe composed of both a formal, planned integration of the members of the EU and a more spontaneous, non-planned regionalisation process covering the whole of Europe, which in turn is part of the larger process of globalization. The long-term integration process from inside is described in terms of increasing levels of "regionness." The outside impact, but here primarily identified with globalization, is called "'the New Regionalism" (Söderbaum 2008). One of the options to region building is through path-dependent political projects that aim at regional cooperation and integration (formal, planned, neo-functionalist approach). The other is taking into account regionalisation and "regionness" approaches, including networking and loose ties theories.

The approach to regions may vary: starting from global horizontal networks, continuing with the EU, coming "down" to smaller units like EU strategies for certain regions, as for example the EU strategy for the Baltic Sea region accepted on June 10, 2009. This was the first time that a comprehensive strategy, covering several community policies, was targeted on forming a "macro-region". It was followed by the EU strategy for the Danube region on December 8, 2010 and others are to come. The topic of territorial cohesion as a way to decrease regional disparities has nowadays significant importance in the ongoing debates on EU level.

Still, several authors mark the "fuzziness" of the concept of "new region". Markusen (2003) considers this "fuzziness" as a particular strength, as emphasis on actor networks and collaboration are main drivers of regionalisation. Lovering views it as an indication of insufficient theoretical underpinning (1999).

Coming nearer to localities, CBC is one of the most recognized ways to develop border regions (Baldwin & Forslid 1999; Brodzicki 2002; Pitoska 2006) which, thereby, increases territorial cohesion in Europe. Many border regions have established special cooperation bodies, called euroregions, euregios, etc. In theoretical literature, the forms of CBC, especially focusing on CB governance, are usually addressed in the framework of multi-level governance (the nature, typology, standards, legal forms of euroregions are analyzed by Lepik [2010]). According to Perkmann (2005), building a border region is a re-scaling process; questions like what are the general circumstances in which new scales are constructed, and what are necessary ingredients of such scale construction should be asked. According to Perkmann, regionalisation may be analysed as a specific type of re-scaling process, involving political mobilisation (coalition building), institutional restructuring (channelling political interests into decision-making) and functional needs (construction of a new scale).The question remains: what are the pushing and pulling powers that give rise to regionalisation or regionness. In neo-functionalist paradigm, the creation of framework by institutions, authorities and policies may be considered as a starting point and the governing bodies of these processes. Something additional is needed in a constructivist environment. Networking theories present the missing link.

1.1.2. Networking theories supporting region-building processes

The terms *network* and *networking* are often used in a broad context and in different ways by different authors. Some researchers are committed to social network research and some to business strategy, but none of the approaches is about a sole dominant position. According to Lumiste (2008), a reason for the absence of a dominant theory could be that in real life exist a large number of very different and effective network organisations (Sydow & Windeler 1998), and gathering all those theories under one roof is a complicated task. The various approaches to network research also have different developmental paths. The presence of a technological infrastructure often designs networks and *vice versa*. For example, in Nordic countries a highly developed technological infrastructure exists for the creation and utilisation of technological information (Seremetis 1994, Blomström & Kokko 2002). This infrastructure includes technical universities, research institutes, laboratories and vocational schools that are used extensively (Seremetis 1994, OECD Eurostat 1996).

Jeremy Rifkin (2005) has stated that networking by businesses is one of the features why the modern economy and society differ from classical capitalism: nowadays interests force different parts of the society into multilateral exchanges of information and cooperation. ICT enables anyone from anywhere to participate in a network. According to Kosonen (2009), this is a phenomenon of post-western globalization: innovation may come from anywhere, global middle-class can participate in local processes, and in order to achieve regional welfare it is necessary to create CB cohesive relationships and networks.

The term *network* represents interpersonal, non-hierarchical connections between individuals or organisations along which knowledge (i.e., information plus interpretation) flows. The positive effect of networking depends largely on mutual trust (Rifkin 2005).

Increasing attention is paid to using networks for innovation and joint learning. In both regionalisation and networking, Place has strong meaning: participants of the process located in the same or nearby localities share a social monitoring system and much can be based on mutual trust.

After the 1980s, Granovetter (1985) revitalized in classical sociological theory the idea that economic action is embedded in social networks. According to him, the micro-foundations of embedded economic action rest on "the widespread preference for transacting with individuals of known reputation", for resorting to "trusted informants" who have dealt with potential partner and found this partner trustworthy, or even better, for relying on information from one's own past dealings with that person.

The quality of ties between universities or research institutions and enterprises, not to mention (local) governments, is problematic. Although the use of wider sources of information enables firms, and especially the SMEs, to get up-dated and sophisticated information, the Eurostat Community Innovation Study (CIS-2) showed in 2000 that in 1996-1998, four percent of European Economic Area enterprises in the manufacturing sector regarded universities as important sources of information. Three percent of enterprises considered governmental and private non-profit research institutes as important sources of information. In Denmark, Finland and Sweden, the use of universities as an important source of information was one to three percentage points higher. The respective number in Denmark was six percent, in Finland seven percent, and in Sweden five percent.

It can be argued whether weak or strong ties are more beneficial for participants. Mark Granovetter (1973; 1983) distinguishes between strong (family, other people with strong bonds) and weak (relationships that transcend local relationships socially or geographically) ties between pairs of network nodes (dyads). Ties are defined as strong or weak based on the frequency, emotional intensity, and intimacy of the interaction. Granovetter (1973) argues that persons with whom we have strong ties are the persons with whom we have the most ties in common. Networks of strong ties consequently resemble network "cliques" - substructures of networks where all nodes are connected (Everett & Borgatti 1998). This does not mean that we share all ties with our strong tie connections, but we have multiple ties in common which are connected in a closely knit "clique". Usually the universities who collaborate have strong ties. Thus whatever information strong ties can provide, universities are likely to have multiple access points to it. On the other hand, fewer ties have weak connections. Each of them is a gateway to an abundance of information and possible favours and contacts which we can seldom reach otherwise, such as in the attempt to build a network between

cities, entrepreneurs and research and development organizations. In this respect, relations likely to have the largest effect as a pipeline are the weak ties, because they serve to break out of the densely clustered network of relations constituted by strong ties. Quite often cities or regional organisations have cooperation contracts with universities. They seldom have formalised ties with entrepreneurs for different reasons, among them the severe terms of public procurement. In this respect, theories of weak ties help to organise different counterparts into a networking system.

Understanding of a particular industry requires not only personal, as mentioned by Granovetter (1985), but any kind of relations - especially inter-organisational relations. These relations are important for developing a more comprehensive, socially informed, and dynamic understanding of a specific industry (Sydow et al., 1998).

The valuable insight of Granovetter's work on weak versus strong ties is taken one step further by Burt (1992). Burt argues that the importance is not the strength of the tie, but the social gap it spans. While strong ties are of local nature, weak ties often span both social and geographical distances.

Weak ties play an additional role in uniting the regions into a CB (knowledge) region. In addition to spatial proximity, good past experiences, knowledge of each other, and successful past cooperation matter. This kind of setting is more difficult to have in CBC which has partners from different countries, as questions about the amount of contributions by the partners and the division of eventual results occur more sharply.

Logically, more information and knowledge exist in extra-organisational than in intra-organisational sources. Echeverri-Carroll (1999) showed that the ability to access and retrieve knowledge from external sources improves an organisation's capability to generate new products and processes. At the same time, intra-organisational information and knowledge often may be more relevant, accessible, and ready to use than extra-organisational information and knowledge, because locally produced knowledge is more easily understood and applicable (Cummings & Teng 2003). Therefore, at least in routine situations, it is more efficient to acquire information and knowledge from intra-organisational knowledge repositories and sources.

The seeker of information and knowledge can apply strong or weak ties (Granowetter 1973, Hansen 1999) for acquiring knowledge. Weak ties may be of support in locating information and knowledge although the flipside is that they are poor at transferring (especially tacit) knowledge (Hansen 1999). Distant and weak (both extra and intra-organisational) sources can be more difficult to approach, but they can provide novel information and knowledge when it is needed (Granovetter 1973, Hansen 1999). In their study of 317 firms, Soo et al., (2002) showed that both formal and informal, internal and external networking are strongly related to organisations' ability to acquire information and knowledge. Differences and similarities of inter-linked theories can be found in Table 1.

Table 1. Inter-linking theories of regional integration, regionalization and networking. (Drafted by the author)

Theoretical background	**Content and basic aspiration**	**Content and driving force 1**	**Content and driving force 2**	**Content and driving force 3**	**Questions to be answered**
Neo-functionalist regional integration theories. ***Concept of spillover (functional or political)***	Regions as centrally initiated	Interest groups, self-interested groups	Governments, political parties and decisions	supranational institutions with their own agenda	1) economic integration lead to political integration? 2) if yes, then to what political unity?
Constructivist theories of New Regionalization. ***Concept of regionness: process from inside***	Activity on regional level which may give rise to regions, networks or organizations	Regions are as variably defined policy spaces where regional organizations are seen as a second order compared to the process of regionalisation	Existing power str structures and imbalance as a source of societal change structures	Cooperation and integration for creating regional space	1) by whom 2) for whom 3) for what purpose regions are made and unmade?
Networking theories	Network=-non-hierarchical interpersonal connections along which knowledge flows	Strong ties have local character, as there are multiple ties in common, counterparts have multiple access to solutions	Weak ties transcend local relationships socially or geographically, connections are gateways to new contacts	Overcoming the social gap	1) how changes the meaning of "Place" in use of networking? 2) What contribute weak or strong ties to integration processes?

Region-building theories may occur in sequences or develop in parallel. EU enlargement re-vitalized integration theories, but new regionalisation has gained ground as a more flexible and general approach.

1.2. Development of concepts of knowledge- and innovation-related Places, Spaces, Ba

The concept of knowledge has long fascinated scholars in many disciplines. This has contributed to making the subject extremely complex. Different perspectives have given rise to different methodologies by which knowledge can be studied and to different ways for analysing, interpreting and managing elements of knowledge management processes, including knowledge transfer (Troilo 2006, Firestone 2001, Dawson 2005). One of the popular typologies for knowledge originates with the ideas of Polanyi (1966), who proposed a distinction between explicit and tacit knowledge. On the basis of his theories Nonaka et al., developed a three-element knowledge creation model, presented in 1.2.1. The related problems of knowledge transfer as an important component of knowledge management (Davenport & Prusak, 2000) are covered in 1.2.2.

1.2.1. The knowledge creation theories

Numerous authors have pointed to knowledge as an organisation's best sustainable source of competitive advantage (Drucker 1988; Nonaka 1991; Morey & Frangioso 1997; Zwass 1999; Argote & Ingram 2000; Argote, et al. 2000; Davenport & Prusak 2000; Lahti & Beyerlein 2000; Rulke et al. 2000). Recent academic and popular media attention on organizational knowledge creation, capture, and transfer attests to a widespread acceptance of this idea (Davenport et al. 1998; Costa 1999; Marchand & Davenport 2000).

Nonaka (1994), and Nonaka and Konno (1998) developed Polanyi's ideas further. Explicit knowledge can be codified, stored, and transmitted using formal language or symbols. It can be captured in texts or charts. Explicit knowledge (or information) is easy to transfer and retain in the organisation, but the process may be costly (it takes time to transform tacit knowledge into explicit form), and the results poorer in quality, because of a lack of contextual elements (Markus 2001, Benbya & Belabaly 2005). Tacit knowledge, instead, is rooted in action and gained through experiences. As individuals are the carriers and processors of knowledge, it tends to be subjective, context dependent, socially constructed, and embedded in practice. In this view, knowledge is created and validated through social processes (Nonaka 1994). It is context specific, personal and embodied, hard (or impossible) to represent using any formal system of symbols, and difficult to transfer to another person. Tacit knowledge includes mental models and schemes that help individuals to perceive and interpret the world around them. "*Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others. Subjective insights, intuitions, and hunches fall into this category of knowledge. Furthermore, tacit knowledge is deeply rooted in an individual's action and experience, as well as in the ideals, values, or emotions he or she embraces*" (Nonaka & Takeuchi 1995, 8). Tacit knowledge con-

tains two types of ingredients. One type refers to the skills and fingertips experience in mastering a certain domain of practical activity. The other one refers to the mental models, beliefs and perceptions so ingrained that we take them for granted.

Nonaka, Toyama and Konno have proposed a model describing an organisation's knowledge creation consisting of three elements: (1) the SECI process, the process of knowledge creation through conversion between tacit and explicit knowledge; (2) *Ba*, the shared context for knowledge creation that combines physical and intellectual space, creating favourable conditions for knowledge creation; and (3) knowledge assets, the inputs, outputs and moderators of the knowledge creating process (Figure 2). These three elements have to interact with each other to form the knowledge spiral that creates new knowledge (Nonaka 1991, 1994; Nonaka et al., 1994; Nonaka & Takeuchi 1995; Nonaka & Konno 1998; Nonaka, Toyoma & Byosiere 2001; Nonaka & Toyoma 2007).

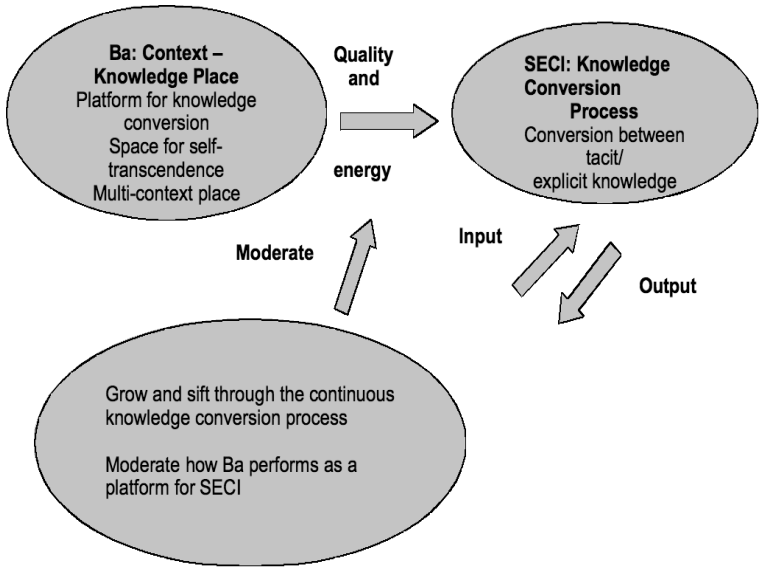

Figure 2. Three elements of the knowledge creation process (Nonaka & Konno 2000)

The SECI involves knowledge transformation processes. Nonaka (1994), Nonaka et al., (1994), and Nonaka & Konno (1998) propose that knowledge can be transformed from one type to another via conversion processing:

Through socialisation, an individual gains tacit organisational knowledge; through externalisation, an individual transforms tacit knowledge into explicit form; through combination, collective explicit knowledge resources are combined; and

through internalisation, an individual transforms explicit knowledge into personal tacit knowledge (Nonaka 1994, Nonaka et al., 2000).

The second important part of knowledge creation is *Ba*, which is the context shared by those who interact with each other. *Ba* is a Japanese word for a place that is not only a physical space, but also a specific time and space. The intention with *Ba* is that knowledge is never absolute, objective or free from the context. Instead, the knowledge creation process is always bound to some type of connection - it is a local process. Another possible word to describe Ba is connection. Being present in a place is not enough; what is required is to produce an interactive connection between people, and between people and their environment. Nonaka emphasises Place as a term, even with regard to virtual interaction between people. Ba is a Place with several events in progress during interaction between people, including the generation of new knowledge (from discussions with Finnish experts 2002).

Nonaka, Toyama and Konno define *Ba* as follows: *Ba* is "a shared context in which knowledge is shared, created and utilised. In knowledge creation, generation and regeneration, *Ba* is the key, as *Ba* provides the energy, quality and place to perform the individual conversion and to move along the knowledge spiral." *Ba* is defined "as a context in which knowledge is shared, created, and utilized, in recognition of the fact that knowledge needs a context in order to exist" (Nonaka et al., 2001, 499). This context can be tangible, intangible or any combination of tangible and intangible elements. In this perspective, the concept of knowledge is strongly related to a given material and cultural context, beyond the fact that it is has been considered a personal belief. Knowledge belonging to given person may be shared, recreated or amplified when that person is an active actor in *Ba*. To make things even more confused, Nonaka et al.. (2001, 499) consider that "*Ba* as an interaction means that *Ba* itself is knowledge rather than a physical space containing knowledge or individuals who have knowledge".

The dual sphere of the space has been developed by Etzkowitz and Ranga (2010): Our vision of spaces reflects the sense conveyed by the Finnish notion of "*tila*" as space, mode, status, but also passage from one status to another. The spaces are seen as the physical, but also virtual areas in which the three selection environments of industry, academia, and government interact.

Nonaka, Toyama and Konno describe four different meeting Places, or *Ba* types, based on two different dimensions. The interaction type determines the first dimension; interaction is either individual or communal. The second dimension is determined by the interaction method; using face-to-face contacts or virtual contacts. What is essential for success, however, is that all *Ba* types are essential in a suitable proportion during the various stages of the process, and especially when several processes are in progress at the same time. The four *Ba* types are originating, dialoguing, systemising and exercising Ba. The relationships between SECI and *Ba* are presented in Figure 3.

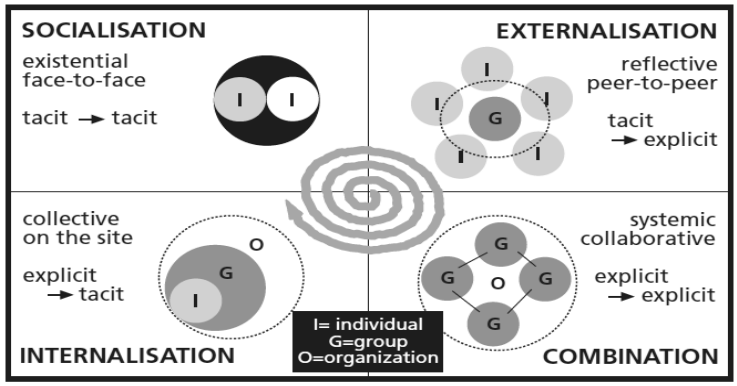

Figure 3. Different dimensions of Ba in the SECI process (Nonaka, Toyama & Konno 2000)

Originating *Ba* is defined by individual and face-to-face interactions. It is a place where people share tacit knowledge: their experience, feelings, emotions and mental models. Interaction is used to eliminate boundaries between people. At its best, *Ba* is characterised by love, care, trust and commitment which provide the basis for knowledge conversion among individuals. The SECI process starts from Originating *Ba*.

Dialoguing *Ba* is defined by collective and face-to-face interactions. Dialogue is used to promote feedback and the conscious sharing of mental models and skills between experts (peer-to-peer) as well as people's analysis of their own views. The individuals' tacit knowledge is shared and articulated through dialogues among participants. The efficiency of *Ba* depends on selecting individuals with the right mix of specific knowledge and capabilities, and whether they are able to generate an atmosphere of trust where knowledge is not withheld.

Systemising *Ba* is defined as collective and virtual interactions where explicit knowledge is combined. ICT offers opportunities to transfer explicit knowledge to large numbers of individuals and groups of people at the same time. In organisations, for example, Intranets, telematic learning environments, databases, etc. can be used to share, process and distribute knowledge fast and effectively.

Exercising *Ba* is defined as individual and virtual interactions. It offers a context for people to internalise knowledge. Individuals process knowledge that they receive in a virtual form. For example, they study or work on manuals, reports, or use simulation programs. Exercising *Ba* synthesises the transcendence and reflection through action.

Ba can be envisioned easily as working within individual, formal organisations. But we can also apply *Ba* within a far less formal and structured environment of

knowledge transfer. In a sense, the idea of *Ba* is essential in the process of creating the knowledge region: a space, both physical and conceptual, to bring the assets of the region together to create new economic value and perpetuate a cycle of innovation.

According to Nonaka et al., the core of the knowledge conversion process consists of knowledge assets. There are four types of knowledge assets which form the basis for the knowledge creation process. Knowledge assets consist of inputs, outputs, and moderating factors of the knowledge creating process. For example, mutual trust among organisational members is created as an output of the knowledge creation process, and at the same time it affects how *Ba* will function as a knowledge creation platform.

Nonaka, Toyama and Konno have divided knowledge assets into four types: experiential knowledge assets, conceptual knowledge assets, systemic knowledge assets, and routine knowledge assets.

Experiential knowledge assets consist of shared tacit knowledge that is built through shared hands-on experience among the members of the organisation, and between the members of the organisation and its customers, suppliers and affiliated firms. The expertise and skills acquired by the company's personnel are examples of experiential knowledge assets.

Conceptual knowledge assets consist of explicit knowledge articulated through images, symbols and language. They are the assets based on the concepts held by the stakeholders and members of the organisation.

Since they have tangible forms, conceptual knowledge assets are fairly easy to grasp, though it is still difficult to know how stakeholders perceive them. Systemic knowledge assets consist of systematised and packaged explicit knowledge, such as explicitly stated technologies, product families, manuals and documents. Systemic knowledge assets are relatively easy to transfer, due to being the most visible knowledge asset type.

Routine knowledge assets consist of the tacit knowledge that is routinely used and embedded in the daily actions and practices of the organisation. Know-how, corporate culture and organisational routines for carrying out day-to-day business are examples of routine knowledge assets.

1.2.2. Knowledge Transfer: part of the knowledge management process

The English words knowledge and management have in the Estonian language a multitude of equivalents of various degrees, plus a wide variety of philosophical and conceptual connotations. The Estonian equivalent of knowledge may be used

to refer to a single or several items of knowledge, awareness, experience and mastery of something, plus related skills. Management can be translated as handling and manipulation, catering for, administration, leadership, wisdom, skilfulness, prudent action, and accurate attention.

The literature identifies two fundamentally different approaches to knowledge management. First, the technological approach emphasises the use of technological applications for collecting, storing and transferring knowledge. The ontological assumption of the technological approach is that knowledge is independent of human action and is an objective, tangible resource that can be transferred between different locations and contexts by using technology. Second, the human interaction based approach suggests that knowledge is mostly embodied in people and that its transfer requires human interaction (which can sometimes be mediated by technology). This approach emphasises that leadership, culture, and interaction promote knowledge utilisation. The ontological assumption in the human based approach is that knowledge is subjective and context dependent and needs human interaction to be transferred, interpreted, and reconstructed. An organisation's competitiveness is based on its capabilities that impact its performance. Those capabilities are based on a fusion of effective goal oriented business and management processes and skills, both of which are forms of knowledge. Firestone (2001) defines knowledge management as human activity that is part of knowledge management process (KMP) of an agent or collective. And KMP, in turn, is an ongoing, persistent, purposeful network of interactions among human agents through which the participating agents aim at managing (handling, directing, governing, controlling, coordinating, planning, organising) other agents, components, and activities, that participate in the basic knowledge processes (knowledge production and knowledge integration) in order to produce a planned, directed, unified whole, producing, maintaining, enhancing, acquiring, and transmitting the organisation's knowledge base.

Knowledge management means effective knowledge transfer, which in turn is based on a culture that includes co-operative involvement, trust, and incentives (De Tienne et al., 2004).

Although knowledge transfer is an important component of knowledge management (Davenport & Prusak, 2000), it has received the least attention in the business community. In the field of psychology, however, the study of knowledge transfer predates the study of knowledge management by several decades (Argote et al., 2000). The notion that knowledge transfer could represent not only a competitive advantage within a firm, but also a less expensive alternative to knowledge creation and acquisition is well documented in economics (Alchian & Demsetz 1972) and organizational behaviour literature (Argote & Ingram 2000).

Knowledge transfer is nominally concerned with the process of moving useful information from one individual to another. Notably, in order for this transferred

information to have utility, it must be critical to the success of the organisation (Davenport & Prusak, 2000). Extant literature provides several instances of organisations skilful at knowledge transfer (Zairi & Whymark, 2000), but most of these case studies do not fully explore why these organisations were successful at this endeavour. To fully understand how to develop this capability, it is probably necessary to understand what factors tend to affect knowledge transfer. According to Lad and Mark (2002) the following five factors might influence knowledge transfer:

a) Relational channels - frequency and depth of two-way human-to-human contact (Rulke et al., 2000);
b) Partner similarity - degree of similarity (e.g., interests, background, or education) between individuals (Almeida & Kogut 1999; Darr & Kurtzberg 2000);
c) Depreciation - loss of knowledge after transfer (Argote et al., 1990; Darr et al. 1995);
d) Organisational self-knowledge - what do individuals know (Rulke et al. 2000);
e) Divergence of interests – congruency of individual and organisational goals (Alchian and Demsetz 1972; Jensen and Meckling 1976; Donaldson 1990).

The knowledge transfer process can be viewed from many perspectives. These include, e.g., knowledge transfer between individuals or groups of people (e.g., Nonaka 1994, Hansen 1999), knowledge transfer between organisations (e.g., Holmqvist 1999, Simonin 1999, Grant & Baden- Fuller 2004), applied tools and practices (e.g., McDermott 1999, Swan et al., 1999, Mäki et al., 2004), and the type of knowledge that is being transferred (e.g., Hansen 1999, Halding-Herrgard 2000, Cummings & Teng 2003). All these perspectives have something in common: they aim to describe and explain why knowledge transfer fails or succeeds. The success of knowledge transfer can be difficult to measure or even evaluate (Cummings & Teng 2003). One way to evaluate the success of knowledge transfer is to evaluate the changes in knowledge or in the performance of the recipient unit (Argote & Ingram 2000). This can often be useful conceptualisation, but if the recipient unit already has the transferred knowledge, no changes would be observable even though one could argue that the knowledge transfer has been successful.

Ipe (2003) proposes that four factors influence the success or failure of knowledge sharing between individuals within an organisation. The four factors are: the nature of knowledge, the motivation to share knowledge, opportunities to do so, and the culture of the organisation.

It is even more difficult to implement knowledge transfer in international co-operation than within one country because the hindering factors include national, organisational, cultural differences as well as the economic environment's peculiarities.

1.3. Development of concepts of knowledge and innovation related Places and Spaces

Earlier knowledge was analysed mainly from the perspective of businesses. The application of knowledge concepts to cities (ideopolis) and regions is a phenomenon of the last two decades, bringing publications on relationships between innovation, learning, and regional economic development and places that are connected to them. This includes literature exploring the concept of a learning region (Florida 1995; Morgan, 1997; Simmie 1997), regional systems of innovations (Braczyk et al., 1998), role of local and regional development policy in promoting and sustaining innovation (Glasmeier 1999; Glasmeier et al., 1998; Lagendijk & Cornford 2000). All of them follow the concepts of innovative milieu (Aydalot 1986; Maillat 1992), industrial district (Becattini 1991; Piore & Sabel 1984) and technopole (Benko1991). Applying knowledge concepts to Places has undergone significant conceptual development, but has also contributed to the formation of a concept of a KR (Figure 4). Some authors (Reichert 2006) consider KRs as organisations. The question whether knowledge is local or global is a constituent part of discussions. Reichert (2006) states: "Recently economic geographers, economists and other social scientists have started to emphasise that neither all assets of knowledge economies nor knowledge itself are as mobile as its codified expressions in publications and patents. /..../ more implicit 'tacit' forms of knowledge have a geographic dimension which can be positively influenced by policies and framework conditions. /..../ for knowledge economies the dimension of 'place' has gained importance in recent years, even or especially in an age of globalization" (p 10). Etzkowitz and Ranga (2010) define Space as a venue for recombining elements of existing organisational models together with new concepts of organisational functioning.

1.3.1. Innovative milieu, industrial district and techopole

Innovative milieu, industrial district and technopole are similar concepts, in all cases. Despite the different approaches, these notions have been used to designate the methods for arranging a community's technology, territory and organisations (Storper 1997, Tremblay et al., 2005).

The innovation milieu approach assumes that the most fundamental resource in contemporary economies is knowledge, that the most important process is learning, and that learning is predominantly an interactive and, thus, a socially embedded process, which cannot be understood without taking into account its institutional and cultural context (Lundvall 1992, O'Gorman & Kautonen 2004).

Technopole may stand for a science city or for university–business cooperation models. It refers to a geographical agglomeration of high technology activities ("science city") whose objective is to successfully commercialise technology in

order to create wealth and high-value jobs (Gibson & Stiles 2000). Often policymakers, local universities and/or a dominant local firm play a critical role in "seeding" a new technopolis (Druilhe & Garnsey 2000). The scientific knowledge base is developed in a lead research institute such as a university or in a lead firm, and this knowledge is then commercialised by entrepreneurs who spin out of the knowledge-creating institution(s). The process of commercialisation and spin-out is facilitated by the networking that results from the geographic proximity of the critical factors (O'Gorman & Kautonen 2004).

1.3.2. Learning region

The concept of learning regions is known especially in the fields of innovation economy and economic geography. The main argument behind learning regions is that they are restricted geographical areas where learning and the facilitation of learning processes take place. The concept of a learning region - the idea that economic competitiveness is increasingly based on the capacity to develop and apply knowledge - is connected to several authors. Firstly, it was coined by academic authors working in the field of innovation studies and economic geography (Florida 1995; Morgan 1995). Cooke, Morgan, Asheim considered the learning region as an intermediate synthesis in the debate on the territorial innovation model (Cooke 1998; Morgan & Nauwelaers 1998). Hassink (2005) considers the concept as networks driven by policy-making that serve as regional development tools, in which (1) the main factors are strongly, but flexibly connected with each other and (2) are open to both intraregional and interregional learning processes. Regional learning refers to more spontaneous cooperation between factors in a region through which they learn (Boekema et al., 2000).

In the academic arena, the learning region presented a synthesis of new ideas from evolutionary economics with emphasis on the institutional underpinning of the systemic process of innovation and learning and new theories on the role of spatial agglomeration. Recently, the learning region became associated, also, with higher education and educational organisations at the regional level (Goddard 1998). Still Lagendijk and Cornford note (2000, 217): "The term learning region often remains unquestioned. There are signs that some of the factors originally promoting the concept have already distanced themselves from it".

1.3.3. Knowledge region, ideopolis, knowledge city-region

Recent years have given birth to overlapping concepts of knowledge city / ideopolis and KR, or knowledge city-region. This is an emerging concept. Although knowledge intensive regions have existed in Europe for decades, and are emerging all over the world, the phenomenon of KRs as a conscious interactive triple-helix set of policies and actions is only just developing (Reichert 2006).

The World Knowledge Competitiveness Index 2008 provides the recent analysis of the performance of the leading KRs in the world. It compares 145 regions – 63 from North America (USA and Canada), 54 from Europe, and 28 from Asia and Oceania – and is headed by the San José region in the US followed by other US regions. In the top 10 are two non-US regions - Stockholm (sixth) is the best performing European region and Tokyo (ninth) is the best performing Asian region. Comparative analysis of KRs has been carried out by Robert Huggins, producer of the World Knowledge Competitiveness Index. The Index is an overall benchmark of the knowledge capacity, capability and sustainability of the best performing and most dynamic regions in the global economy. Nevertheless, the academic research about KRs is scarce and a theory is missing.

The concept of KRs is relatively young and there is no consensus about its precise contents. The concept refers to micro-regions - territorial units which are parts of a national state - that operate as regional innovation systems according to the new logic of the knowledge economy and society. The focus until now has been more on national KRs.

The amount of KRs literature on the concepts of a KR (city region) is small and the number of researchers is limited. In his study "The Rise of Knowledge Regions: Emerging Opportunities and Challenges for Universities" Reichert analyses the preconditions for forming KRs, using Öresund region and ELAt as basic objects of research.

She states that in order to generate a KR, a number of preconditions have proved to be necessary and first of them is clear leadership. In all regions there was an initiating group, sometimes consisting of only two-three people. In addition, there was a group of "brokers", mediators. Second, there has to be a critical mass - strengths and developmental potential in terms of knowledge intensity. It has to have sufficient research and skills base and enough infra-structural assets. Third, cultural attitudes that believe in collective psychology which enables the city/region to identify, adopt and cherish technological, social and cultural innovation, and the common ambition of being better than others. Additionally, there are two creative disciplines which greatly contribute to the construction of collective beliefs in the possible, both of inhabitants of the regions in question, as well as of outside observers and potential investors: the art of marketing and the art of architecture and urban planning. Fourth, strategy formulation consisting of a list of key success factors, involvement of stake-holders, and clustering. Fifth, define the key actions and institutions - intermediaries as nodal points of KR development: joint lobbying, establishing or expanding common science or technology-oriented infrastructures, establishing intermediary institutions to facilitate interaction between different institutions. Sixth: industry engagement. The role of universities cannot be overestimated.

KR is characterized by experts (Kaskinen, J. et al., 2006) as follows:

a) KR is actively involved in developing future scenarios and is able to react quickly to changing environment;

b) KR creates, concentrates and uses the latest knowledge (research, science, best practice, new financial procedures, models, trends in politics) in all its activities and policy-making fields;
c) KR offers its citizens lifelong learning opportunities;
d) KR where the institutions are not only able to learn and adopt new practices, but also ready to abandon old and useless models;
e) KR has common vision and shared goals.

In order to generate a KR, the hard factors of critical mass of people, institutions, infrastructures, tax conditions and funding opportunities, need to be complemented by important soft factors which are seen as key components of the regional knowledge strength and potential. First of all, there is frequent mention of the importance of a good quality of life and a creative cultural environment which make the city-region attractive to innovative individuals. Such quality of life may be reflected in a wide range of features, from the number of cafés, restaurants, theatres, museums, and architectural landmarks to connectivity, roads and the beauty of the landscape. Some cities have been taking the idea of fostering such environments quite seriously in major urban planning and expansion projects. Measures include the explicit provision of low cost housing for artists, students and other low income individuals all of whom are well-known for adding a "buzz" to a town area. Interesting urban development projects foresee mixed use, by interlacing science, business and residential space, sprinkled with cafés and creative spaces to glue the different individuals and communities together (Reichert 2006).

Experts consider the following as main goals:
a) creation of a strong innovation system;
b) uniting universities and research centres;
c) investing in basic studies;
d) enhancement of innovative entrepreneurship;permanent search for new growth sectors and adoption of regional processes in accordance with above.

Leading KRs are characterized by very high levels of tertiary education, employment in high-tech services, human resources in science and technology. As the CROSSWORKS (2008) analysis shows, leading KR models stimulate the development of high-tech services; the development of education: knowledge workers, universities, life-long learning; the development of wide cooperation and collaboration in R&D among and between triple-helix factors; international cooperation in R&D.

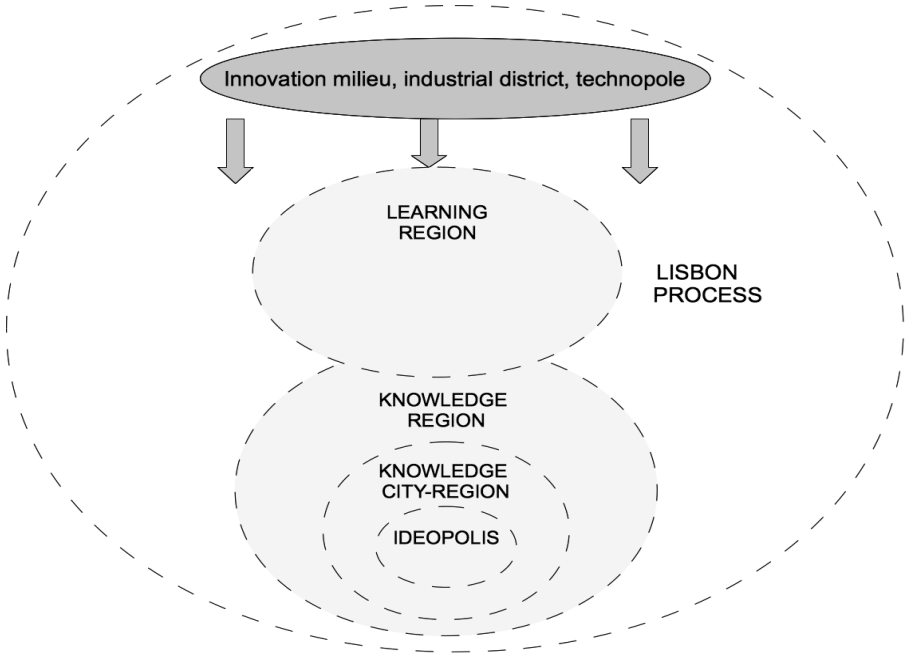

Figure 4. Inputs in developing a KR as a Place (author's graph)

Part of the measures for advancing KR depends on the competence of cities' administrations within the borders of one country. The building of CB KR demands more from the initiators: vision, political support, use of new complex methods like CB triple-helix cooperation and Living Lab method (both methods are discussed in Study II).

1.4. Alternative methods for developing a Knowledge Region: triple-helix and Living Lab as methods of knowledge transfer

Regional cooperation and integration have been subjects of academic research as indicated in chapters 1.1 and 1.3. In Table 2 traditional methods as analysed by Reichert and OECD are presented.

Table 2. Traditional methods of enhancing CB regional integration and a KR (Drafted by the author)

BY OECD (2003): Cross-border region	**REICHERT (2006): Knowledge region**
1) informal networks, person-to- person contacts and activities	1) leadership: small group of charismatic visionaries and managers and individual contacts of key personalities

2) Interreg and other EU funding projects	2) EU structural funds
3) clear local strategy for developing CB integration	3) Define key actions and institutions - Intermediaries as nodal points of knowledge region development
4) clear policy priorities	4) multi-actor and cross-sectorial approach
5) building sustainable CB institutions	5) intermediary institutions which are meant to forge new links between different types of institutions, in particular universities and knowledge-based businesses
6) attention to labour market, to better integrate CB labour market and set up a labour market institution, involving public and private factors, unlock it from national state activities;	6) hard factors of critical mass of people, institutions, infrastructures, tax conditions and funding opportunities
7) transportation connections, besides visible infrastructure projects have symbolic value for integration processes	7) architecture and urban planning, new fundamental projects: visible symbols of progressive thinking and design; infrastructural assets: dense and multi-faceted knowledge environment
8) environmental programming and spatial planning	8) high quality of life and a creative cultural environment
9) governance framework enhancing horizontal collaboration: flexible governance structure – permanent, specialised CB institutions, plus coordinating Committee	9) collective cultural attitudes: famous past, common ambition being better than others and “common enemy effect”
10) collection and dissemination of information that facilitate cross-border activities for firms and individuals	10) can-do attitude
	11) proactive roles of universities (adequate research and skills base)

Search for alternative methods brought me to triple-helix, which led me to the next level, the Living Lab method.

The triple-helix method was developed in the 1990s. The triple-helix theory maintains that in addition to the knowledge infrastructure of university-industry-government relations, an overlay of communications and negotiations among these

institutional partners has become increasingly important for the dynamics of the overall system. Knowledge organisation and knowledge-based reconstructions can be transformed into a third coordination mechanism of social change in addition to the economics of the market and government interventions. Political economy is thus reshaped into a knowledge-based economy containing a more complex dynamics, because of the evolutionary advantages of the combinations (Schumpeter 1943; Krugman 1996; Leydesdorff & Etzkowitz 1998). The public can be said to constitute a fourth party whose concerns and ideas have to be taken as seriously as those of the others. Indeed, we could say that KRs are not so much built on triple-helix interactions, but that they constitute a quadruple-helix system.

The idea of the importance of the public as a fourth party in the system was proposed by Michael Mehta (2002) at the International Workshop on Science, Technology and Society in Singapore. Mehta proposed that the science and innovation system should include the public as a fourth helix, given its influential role e.g., regarding the acceptance and resistance to new technologies. Likewise, Merle Jacob argued that the public be included as a fourth helix at the Triple-Helix Conference in Copenhagen. His position was criticized by Leydesdorff and Etzkovitz who thought that the free public should be seen more as a foundation for a functioning triple-helix system than a party in the system (Reichert 2006).

Below is the draft of a graphic demonstrating the overlapping interests of the factors in the triple-helix system (Luis 2010).

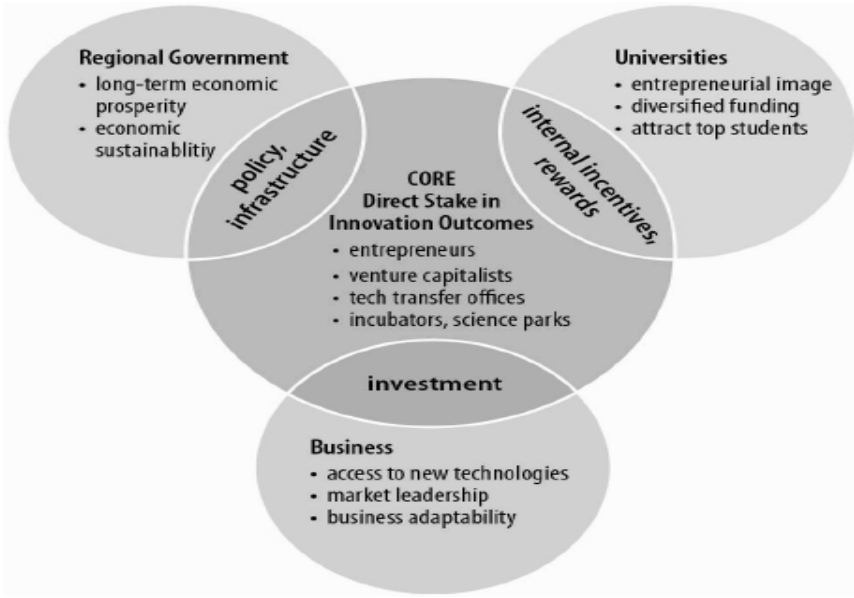

Figure 5. Overlapping interests in the triple-helix system (Luis 2010)

The image in Figure 5 is of three independent, but interacting, forces working together and spiralling upward. This concept is easy to describe, but very difficult to bring into being. The problem is that the three strands have historically not had many things in common and their core interests differ.

The challenge for governments is that the economic benefits of innovation in the knowledge economy are not predictable, either in time or space. Having made investments — financial and/or political — governments expect a return, and if that return is slow, small or occurring elsewhere, governments can come under political pressure.

Universities have historically offered considerable academic freedom to their faculties, and have few internal incentives for entrepreneurial activity. Administrators often do not want to upset the long-standing culture of "research for its own sake." (Luis 2010). Pushing commercial outcomes can be seen as violating longstanding university practice.

The "traditional" business community of a region consists mostly of businesses with rather conservative risk profiles and often they do not become involved with brand new technologies and markets. Shareholders generally do not take great risks and rarely put their money in new ventures.

Among these three strands there seem to be few primary interests that intersect with each other. Without some interests in the intersection points, we cannot assume that these institutions will find any reasons to work together and make the triple-helix operational. In other words, the strands of the helix may be spiralling upward, but not in any connection to each other, and thus producing no additional value for the regional economy. So the triple-helix approach demands a permanent search for intersections, and the results are dependent on the regional development levels or situations.

The Living Lab method may be or may not be a development phase from the triple-helix model: in triple-helix the public may participate as opinion-maker. Living Lab is a human-centric research and development approach in which new technologies are co-created, tested, and evaluated, all in the users' own private context (Samelin 2007). This is a societal innovation which is coupled with technological innovation. The approach includes creative processes for developing new or innovative solutions in co-operation with local authorities, technology companies and citizens. For the purpose of this study, we have looked at Living Lab as an innovation methodology.

The users are facilitated to communicate their needs and requirements on the basis of their everyday experiences. According to Kosonen (2009) the world is dictated by end-users who do not care about value-added, but care about how the value is added and created.

According to Ståhlbröst (2008), the concept of Living Lab started to develop in the late 1990s. One of the first mentions of it was at Georgia Institute of Technology which developed technology for capturing a live experience from an educational situation and then providing it to users for later access and review (Abowd 1999). According to Veli-Pekka Niitamo (Nokia presentation 2009), the term Living Lab was first used about 1995 by MIT Professor Bill Mitchell in Boston. Other areas where Living Labs have been used as a concept have been in tests of new technologies in home-like constructed environments (Markopoulos 2000). Since then, the concept has grown and today a precondition for Living Lab activities is that they occur in real-life contexts, i.e., are not constructed laboratory settings. With such an approach, it follows that users are involved actively in development processes in their own settings, communicating their needs and requirements on the basis of their everyday experiences. It is assumed that the development and innovation process should be open for all relevant and interested stakeholders. This is influenced by the open innovation approach proffered by Chesbrough (2003), and by the emerging Web 2.0 approach, aiming to facilitate creativity, information sharing, and collaboration among users (Dearstyne 2007; Leibs 2008; Walters 2007). Another important aspect of a Living Labs environment is the "living" aspect - people involved in any development project live with the process and constantly check how it proceeds. Eriksson and others (Eriksson 2005) define Living Lab as a research and development methodology whereby innovations, such as services, products, and application enhancements, are created and validated in collaborative, multi-contextual empirical real-world settings. This definition implies that humans are seen as collaborative sources of innovation, and not involved merely for testing and validating products and services. Inherent in this definition is the assumption that the involvement processes should be carried out in real-world settings and in close relationship to research. In this definition, the perspective of Living Lab is that it is a methodology. Figure 6 presents connections between the triple-helix and Living Lab methodologies in advancing the CB KR.

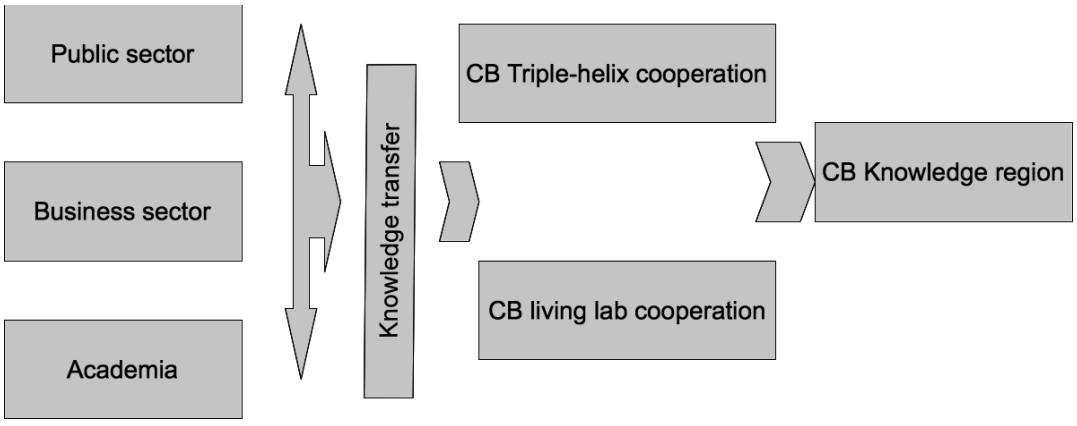

Figure 6. Factors in the building of a CB KR (author's graph)

Public sector together with academia and businesses can create conditions for new institutional systems like a KR for CB knowledge sharing (transfer). Or *vice versa*, knowledge transfer becomes a factor in enhancements of a new environment.

PART 2. THE EMPIRICAL STUDY

2.1. The research process and methods

In order to fulfil the aim, I conducted one quantitative and four qualitative researches, adopting a mix of primary research of five studies – four interviews and one questionnaire. Secondary evidence was obtained from literature, programs, strategic development documents (strategic plans of Tallinn, Helsinki, Uusimaa and Harjumaa), topical meetings, round-tables and forums. According to Mason (1996), qualitative research is: (a) grounded in a philosophical position which is concerned with how the social world is interpreted, understood, experienced or produced; (b) based on methods or data generation which are flexible and sensitive to the social context in which data are produced; (c) based on methods of analysis and explanation building which involve understandings of complexity, detail and context. In this research, I used both traditional empirical research as well as action research methods where the researcher acts as the change agent during the whole cycle of diagnosing the management problems, generating, assessing, selecting and implementing new solutions, checking outcomes of actions and introducing corrective actions. Action research methods are especially applicable to Euregio's case study. Due to my employment at Euregio, it was possible to implement so-called intervention activities (initiatives, conferences, forums, roundtables, seminars, action, and strategies) and their impact is more concretely analysed in this dissertation. In the second and third research tasks, questionnaires and in-depth interviews were conducted.

The data was generated mainly by using the interview method in four studies. Due to its flexible nature, the interview method is very suitable for studying the complex research phenomena and for carrying out the necessary research tasks. According to Mäki (2008), research traditions have favoured the term "collecting data" in describing the activity by which research data is accumulated. Mäki suggests that "collecting" should be replaced by the term "generating data" (Mason 1996) when data accumulation in the selected research approach is dependent on the interaction between the researcher and data sources (interviewees) as was the case in this study. Kvale (1996) uses the term "co-authored" and Coffey & Atkinson (1996) the term "creation" to describe the same operation. The term "interview" is derived from the words "inter" and "view," which convey well the meaning of interviews. The data generation takes place in co-operation with the interviewee and the interviewer. The interviewer has the responsibility to lead the discussion.

Mäki (2008) cites Kvale's (1996) two metaphors to describe the role that an interviewer can take in the interviews. In the *miner* metaphor, the interviewer is understood to be someone who attempts to mine the source and find the material. In the *traveller* metaphor, the interviewer is seen as someone who

takes a trip with the interviewee. They jointly travel and explore the landscape of the research topic. Both roles were applied in the interviews conducted for research in this study. The miner role was adopted in the Science Twin-City study (2004) and Evaluation study (2009), and the traveller role was adopted especially in the Living Labs research, but also in elite interviews (2009) when the interviewees generated perceptions and interpretations of their own subjective experiences.

The criteria for selecting the interviewees were: (a) they are experts in the studied field and had personal experiences in it, (b) they represent different operative functions or areas of expertise in the field, including high leadership positions, and (c) they are more and less interested in Estonian-Finnish CB development issues. The interviewees were promised that the interviews would be confidential and that when reporting the results, the interviewees' identities would not be linked to their statements in the interviews.

The names of all the interviewees are in my possession. Except for the 2004 research, where notes were made, the interviews are tape-recorded and written down.

Starting in 2004, I conducted the empirical research for addressing the research tasks: the complex survey of science twin-city development containing qualitative research, two separate qualitative researches and one quantitative, and one evaluation report containing also a qualitative research, making a total of four qualitative and one quantitative researches.

1. Helsinki-Tallinn Science Twin-City Research 2004 (Study I, III),
2. Questionnaire among Euregio stake-holders 2007 (Study I, III),
3. Elite interviews on regional development perspectives 2008 (Study I, III)
4. Expert interviews about the innovative method Living Labs in 2008 (Study II).
5. Results of evaluation report "Evaluation of Knowledge Arena Activities" 2009 are used (Study I, III).
6. All previous studies are used in the case-study of Euregio (Study III).

The processes have been described, and the results and conclusions published in different international scientific journals.

In the research process I worked out the following instruments:

(1) Research methodology and interview questions for Helsinki-Tallinn Science Twin-City Research in 2004: I studied the mobility - especially obstacles to mobility - of students and academic personnel, participation in Estonian-Finnish research projects, perspectives of cooperation and academic integration. Data was collected via 14 interviews, and the available documentation at Tallinn University

of Technology and at Helsinki University of Technology was studied. I worked out the concept of the study, methodology, interviews' questionnaire and instructions for the interviews. Five of the interviews on the Finnish side were conducted by specialists at Culminatum Ltd.

(2) The questionnaire among Euregio stakeholders in October 2007: the questionnaire as a quantitative method included topics about Euregio governance: the relationship of partners in the various sectors, mechanisms of power, its role in society. The questions involved Euregio's expected areas of expertise, influence mechanisms, supporters and partners. The questionnaire was sent out in October 2007 to 50 persons who were the stakeholders and partners of Euregio - members of the general meeting, members and substitute members of the Board and the Secretariat, entrepreneurs, artists, university lecturers, former speakers at Euregio forums, former project partners. Out of 50 participants, 32 responded. Respondents were asked to prioritise the statements. There was an "other, please specify" option. The given priorities' numbers were counted and the number of points calculated.

The questionnaire was worked out, analysed and discussed with Lepik. Conclusions were drafted together with the emphasis that Lepik had special interest in CBC organisations, and that my scientific interest was to study the possibilities of applying knowledge concepts to CB regional development processes (Annex 4).

(3) Questions for the elite interviews on regional development perspectives in 2008: structured interviews were conducted with the fourteen experts (from universities, local governments, entrepreneurs) on both sides of the Gulf of Finland to study the prospects for regional integration between the Helsinki and Tallinn capital regions as the main target area for the CBC organisation Euregio. Prospects and development trends for Euregio as an institution were studied separately.

The interviews were named "elite" as defined by Odendahl and Shaw (2002) since they were carried out among decision-makers in Estonia and Finland. Elite interviews were used, because they contribute to a fuller picture of multiple realities and they provide as complex a picture as possible by the specialized knowledge possessed by the interviewee. Because the in-depth interview format stresses the interviewee's definition of a situation, the interviewee is encouraged to structure the account in a way which enables him/her to introduce notions of what is most relevant instead of relying on the interviewer's notions of relevance (Odendahl & Shaw 2002). The interviews were aimed to elicit subjective perceptions. I conducted seven interviews out of 14 with key persons (Annex 5).

(4) Diagnostic interviews were conducted with 14 persons involved or potentially involved in adoption of the Living Lab method in Tallinn and Helsinki CB context in 2008. This part of the research served as an investigation of a novel method for implementing of innovative CBC tasks. The questions were worked out in cooperation with Prof. Erik Terk at the Institute of Futures' Studies (now at Tallinn University).

Based on the research, some general conclusions were made about the factors hindering more complex international knowledge transfer. In the course of the interviews, prerequisites of the method's transfer, potential areas of usage, and realization options were investigated. The interviewer had a list of topics to be discussed during the interview. Depending on the interviewees' knowledge and experiences, some topics were emphasized more and some less in the interview. Interviewees were given time and space to describe their visions and give meanings to the issues at hand. This approach is recommended by Starbuck (1993), because it could produce relevant information not anticipated by the researcher. The loosely structured data generation approach also helps the research to sustain theoretical sensitivity (Glaser & Strauss 1967).

The interview program consisted of several blocks, containing main and additional sub-questions. The methodology made it possible to change the sequence of the questions. It was presumed that the researchers can later classify the answers given to the questions, e.g., to differentiate more perspective fields of use from the less perspective, differentiate the existence of preconditions from a lack of preconditions to using the method. At the same time, the aim of the interviews was not only to get answers to the questions, but also to encourage the respondents to develop their own ideas and suggestions on how to use the Living Lab method in Tallinn. The average length of the interview was 60 to 100 minutes (Annex 3).

(5) The results of the evaluation report "Evaluation of Knowledge Arena Activities" 2009 have been used. The evaluation was carried out by the Latvian based consultancy company DEA Baltika Ltd., between August and December 2009. I drafted the questions for the interviews, the blocks of problems to be addressed, suggested the interviewees in Estonia and Finland, and DEA Baltica conducted the interviews (Annex 6).

In the case of Euregio, qualitative data (strategies and development plans for Euregio and for the Helsinki and Tallinn capital regions) was used to analyse the characteristics and organisational functioning of a CBC organisation in a real-life context (Annex 7).

Part of the results of the study was obtained from in-depth research of one object - Euregio. According to Lepik (2010) in interpreting the results, it is difficult to estimate the exact scale of the multiplication and generalisation of the results to different CBC organisations as their performance levels vary: differences in the developmental levels and qualitative differences between CBC organisations can be limiting factors. Euregio case study connotes to possible solutions in situations where cultural and linguistic conditions are similar, but histories and societal developments are not. For advanced cooperation and integration counterparts should be on similar institutional developmental level.

The main reason many of the articles are co-authored is that the work is a team-effort product of research and policy analysis, each team member having different

focus which led to considerable synergies. My contribution to all the articles is considerable and is focused mainly on CB knowledge transfer opportunities, innovation environments in territorial aspects as KRs, and CB knowledge organisations to enhance targeted aims. Knowledge-related aspects of Estonian-Finnish cooperation with emphasis on Helsinki-Tallinn capital regions integration processes are covered as a basis for developed CBC. Models of strengthening CB knowledge-intensive integration are presented for further discussion.

The main aim of this dissertation is to analyse the factors in development of a CB KR, based on the concrete case of Euregio.

CB KR process is analysed in the context of three inter-linked theoretical concepts: regionalisation, networking theories and knowledge transfer via the Living Lab method. This approach makes it possible to analyse how CBC organizations can enhance the use of complex tools and methods for the advancement of CB innovation, to develop a model of CB knowledge transfer via the Living Lab method that can be multiplied to other CB regions.

2.2. Research tasks and questions

The first research task (Study I) was to study the regional integration and knowledge theories for the purpose of developing a Helsinki-Tallinn capital cities KR.

To find answers, the Science-Twin City study (2004), questionnaire (2007), diagnostic interviews (2008), and Evaluation Study (2009) were used. Data was also generated by researching documents in universities, additional interviews with experts, scientists, students and representatives of local and regional governments (between 2009-2011). The interviews, questionnaires and evaluation materials used in previous studies were re-analysed from the viewpoint of creating a Helsinki-Tallinn capitals KR.

The questions posed for research:

1. What factors are essential for developing a CB KR between the capital regions of Helsinki and Tallinn?
2. What are the circumstances under which new scales are constructed?
3. What are the necessary factors of such scale construction
4. How regions can be constructed and consolidated: who and what belongs to the region, what factors of the region and which policy issues should be included in the regional cooperation spectrum
5. What are the preconditions, opportunities, and difficulties in developing a CB KR?

The selected methods proved to be sufficient.

The second research task (Study II) was to analyse innovative methods for enhancing CB regional development. The international transferability of an innovative method of a Living Lab for cross-border knowledge transfer from one country (Finland) to another (Estonia) was analysed.

1. Is the Living Lab transferable to Estonia?
2. What are the possible advantages of this innovative method's transfer for the region?
3. What are the foreseeable challenges in this knowledge transfer?

A set of 14 in-depth interviews were conducted in 2008 that concerned the Living Lab methodology knowledge transfer. These interviews were conducted with people who would be involved in the process as well as the usage of knowledge transfer. Within the framework of the second and third research tasks, questionnaires and interviews were carried out and are addressed in the dissertation as action and supporting research, and to a lesser extent as separate empirical research. The action research was considered appropriate as it placed the researcher in the organisational situation being studied. This not only created a sense of contribution to knowledge, but also a setting for applying and validating useful knowledge directly (Remenyi 1998).

The model drawn for a CBC organization to follow in the knowledge transfer process is based on these interactions and interviews.

The main focus was to analyse how to facilitate the creation of CBC forms with more specific focus like CB triple-helix and Living Lab type of cooperation, using the opportunities available at a CBC organisation.

The third research task (Study III) involved Euregio as an actor and to examine its role as a facilitator of cooperation in the creation of a regional innovative environment – a KR.

1. What kind of role does a CBC organisation play in creating a CB KR?
2. What facilitates the creation of CBC forms with more specific focus like CB triple cooperation and a CB Living Lab type of cooperation, using the prospects availed by a CBC organisation?

I analysed the process of developing a CB KR with a CBC institution - Euregio - being part of the process. All interviews and the questionnaire, plus the action research and secondary empirical research, were used to find answers to the research questions. The studies, research tasks and methods are presented in Figure 7.

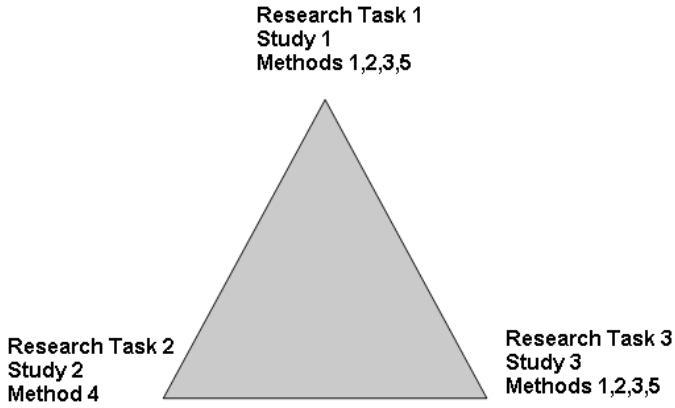

Figure 7. Connections of research tasks, studies and methods. (author's graph)

2.3. Division of contribution between the authors of articles of the thesis.

2.3.1. Analysis of preconditions to develop Helsinki-Tallinn cross-border Knowledge Region

The dissertation uses the case of Euregio for empirical study. However, I include other aspects of CBC, such as knowledge management and knowledge transfer. This paper brings the enhancement of innovation to a broader level. While Lepik discussed the creation of innovation within and between the CBC organisations as institutional mechanisms, I approach the topic of innovation on a higher and broader regional level, encompassing borders of two neighbouring countries and analysing the tools and mechanisms for innovation creation on that level. Living Lab as an innovative method for creating new innovative environments is analysed.

In her study, Lepik focused on institutional aspects of CBC. She identified the main characteristics, constraints, and development potentials occurring in the activities of CBC organisations or euroregions as institutional mechanisms enhancing regional development. She differentiated the organisations according to their level of maturity. Lepik proposed that institutionalised CBC models can serve as mechanisms of intervention in regional policy and cooperation between different bordering countries, considering the legal, organisational, financial, and functional dimensions of cooperation.

In contrast, I focus on the content and functioning of a CBC organisation on a more concrete level in order to identify the developmental process, based on the case of Euregio. In addition, my analysis seeks to find how to facilitate the creation of CBC forms with public and private sectors, academia and the active involvement of citizens in service design for the creation of a regional innovative environment.

2.3.2. Article: Problems of Initiating International Knowledge Transfer: Is the Finnish Living Lab Method Transferable to Estonia?" (2010) by Katri-Liis Lepik, Merle Krigul and Erik Terk

The reason for examining the transferability of the Living Lab was presented by developments at Euregio where Krigul and Lepik work. The interview questions were drafted by Krigul, Lepik, and Terk collectively; Terk had a significant role in refining the questions. The chapters "Theoretical framework" and "Knowledge transfer" were produced by Krigul;
The following chapters were written and analysed by Krigul and Lepik jointly:
Introduction
Study of Living Lab Method's Transferability and Implementation Peculiarities
Design of the Method Transfer and Perspectives of a CB Living Labs (initiated by Terk).
Discussion and perspectives for future research are suggested by Krigul, Lepik and Terk.

2.3.3. Article: Innovating Through Building a CB Knowledge Region (2009) by Katri-Liis Lepik and Merle Krigul

Introduction and conclusion are written jointly by Krigul and Lepik.
Chapter "Theoretical framework" was drafted by Krigul.
Chapter "Methodology" by Krigul.
A questionnaire among Euregio stake-holders in 2008:
The questionnaire was drafted, analysed and discussed together with Lepik and the conclusion were drawn jointly.

Interview questions for elite interviews on regional development perspectives in 2009: structured interviews were conducted with 14 experts from universities, local governments, and entrepreneurs on both sides of the Gulf of Finland to study the prospects for regional integration between the Helsinki and Tallinn capital regions as the main target area for the CBC organisation Euregio. Prospects and development trends for Euregio as an institution were separately studied.

The empirical research evidence consists of the five investigations and a case study

a) The study was worked out in 2004; implemented and analysed by Krigul
b) The study of Euregio owners and partners. The questionnaire was jointly drafted, analysed, discussed, also the conclusion.
c) Seven interviews out of 14 key persons were conducted by Krigul
d) The case of Euregio

As Krigul and Lepik work for the organisation Euregio, the material used for the case studies was accessible equally for both researchers.

PART 3. PUBLICATIONS

3.1. ON POSSIBILITIES TO DEVELOP CB KNOWLEDGE REGION: THE CASE OF TALLINN (ESTONIA) AND HELSINKI (FINLAND)

Merle Krigul

Krigul, M. 2010. On Possibilities to Develop CB Knowledge Region: The Case of Tallinn (Estonia) and Helsinki (Finland). *Problems and Perspectives in Management,* Volume 9, Issue 1, 2011 pp 23-30.

JEL Classification: R580.

The globalisation of economic and social activity is testing the ability of local economies to adapt and exploit or maintain their competitive edge as scale becomes more important: economic activity continues to cluster and concentrate. Disparities in economic performance among different, even neighboring countries tend to be persistent. Still, technological change (ICT) and greater use of knowledge are offering new opportunities for regional and inter-regional development and knowledge transfer, but demand changes in local governments' governance philosophy, further involvement of innovative enterprises and participation of universities and research institutions in local environment.

The CB co-operation is one of means to raise the competitiveness of regions: In order to better promote the CB co-operation many regions in the EU have established CB co-operation (CBC) organisations/euroregions, as such, NPA Helsinki-Tallinn Euregio was formed in 1999 with the aim to enhance regional integration between Tallinn (Estonia) and Helsinki (Finland) capital regions. Euregio is the only regional level tool between Estonia and Finland which deals with contact making between universities, enterprises and local governments and whose mission is to enhance CB integration between Helsinki- Uusimaa region and Tallinn-Harju county" and the role is "to promote and assist co-operation inside the twin-region, Euregio supports and promotes inter- regional development and competitiveness, aiming to strengthen the regional knowledge based economic development".

Applying knowledge concepts to cities and regions is a phenomenon of the last twenty years. From a geographical perspective, Helsinki and Tallinn are among the closest capitals in Europe. A long-term vision states that the Helsinki and Tallinn regions will form a united science and education area, a Knowledge region.

In the current article the author studies preconditions for creation of a common knowledge region between Helsinki and Tallinn capital regions under conditions where a special institution Helsinki-Tallinn Euregio is part of the process, developing innovative forms of co-operation, using complex tools and methods for advancement of regional integration.

The empirical part of the article is based on the analyses of studies conducted among Tallinn and Helsinki experts since 2004 to 2010.

The article concludes by presenting experiences this type of institution could use to assist in forming two capital regions into the integrated knowledge region.

Keywords: CB co-operation, CB knowledge region, knowledge transfer, Helsinki-Tallinn Euregio
JEL classification: R580

1. Introduction

Globalization is a fact in the 21st century and due to that, Silicon Valley, BRIC countries and Asian Tigers are next door to European gateways. Thus, theories demanding changes in an approach to economy, understanding of driving forces in economic growth and world competitiveness, are driven from the simple truth that there is no other choice as to improve the European growth and well-being capacity through knowledge and innovation, using flexible theories of management.

Lisbon process highlighted theories of Knowledge, Knowledge Management, Lifelong Learning and Learning Organisations as future competitiveness and economic growth ffactors and sources. Unfortunately the Lisbon process has not produced the expected change in pan-European world-class competitiveness. (Kok, 2004) In 2004, Kok advised broader involvement of the regional and local levels to implement the strategy (Kok, 2004, 10-11). Rapid technological change and greater use of knowledge are offering new opportunities for local regional development and knowledge transfer, but demand changes in local governments' governance philosophy towards being more open, oriented to private-public partnerships and to further inclusion of citizens, further involvement of innovative enterprises and participation of universities in shaping of local environment, but also coping with the specifics and complexity of CB co-operation.

CB co-operation is one of the most recognised ways to develop border regions (Baldwin and Forslid, 1999; Brodzicki, 2002; Pitoska, 2006) and thereby increase territorial cohesion in Europe: according to OECD recent proposal for developing CB regional innovation policy, the hypothesis behind the proposed project is that the trans-border innovation potential is under-exploited, and constitutes a missed opportunity for OECD regions and countries (2010). Key ffactors in determining productivity/output, such as diffusion of technology, co-operation among enterprises, social capital development, and allocation of labour and infrastructure, are likely to be sub-optimal because the economic space is divided. Integration should remove the fragmentation that construct the economic space.

In order to better promote the CB co-operation many regions in the EU have established CB co-operation (CBC) organisations - euroregions are administrative-territorial structures intended to promote CB co-operation between neighbouring local or regional authorities of different countries located along shared state borders (either land or maritime borderlines) (Lepik, 2010). As one of them, NPA Helsinki-Tallinn Euregio (HTE) was formed in 1999 between the City of Helsinki (Finland), City of Tallinn (Estonia), Uusimaa Regional Council (Finland), Union of Harju

County Municipalities (Estonia) and the Harju County (Estonia) and re-organised as a non-profit organisation in 2003 with the aim to enhance regional integration between Tallinn and Helsinki capital regions and to develop a CB metropolitan region. Since 2004 the concept of Knowledge Arena has been introduced in Euregio priorities, with a goal that Helsinki and Tallinn metropolitan regions will become a united region of science, education, arts and innovative knowledge-based business. Since then Knowledge Arena has been an integral part of the operations of Helsinki-Tallinn Euregio.

In this article CB region is comprehended as the territory of Euregio stake-holders' area in Helsinki-Tallinn capitals' region with limitation to a specific development aim: Helsinki-Tallinn CB knowledge region. Helsinki and Tallinn are the centres of higher education and R&D activities, but also concentration of investments, entrepreneurship and wealth. This offers scope for co-operation in the region and justifies the Euregio priority to enhance common knowledge region.

2. Contextual framework

Recent years have brought publications on relationships between innovation, learning, and regional economic development. This includes literature exploring the concept of a learning region (Florida, 1995; Morgan, 1997; Simmie, 1997), regional systems of innovations (Braczyk et al, 1998), the role of local and regional development policy in promoting and sustaining innovation (Glasmeier, 1999; Glasmeier et al, 1998; Lagendijk and Cornford, 2000). Applying knowledge concept to regions and cities (ideopolis) is a late phenomenon, following the concepts of innovative milieux (Aydalot, 1986; Maillat, 1992), industrial district (Becattini, 1991; Piore and Sabel, 1984) and technopole (Benko, 1991). In all cases these notions have been used to designate the methods of arranging a community, technology, territory and organisations (Storper, 1997).

In developing CB knowledge region, at least two development phases should be considered: the phase of CB co-operation (CBC), using more conservative tools for enhancing the process, like matchmaking, networking, organising joint events or projects of different kind, all well-known tools for a co-operation-enhancing organisation, and on grass-root level people's mobility either for leasure or for working. The next phase suggested is integration (OECD 2010). The latter prerequisites special activities. CB knowledge region is influenced by spatial-economic, administrational-political, socio-cultural conditions, by process and performance (van Winden et al, 2006). There is no single opinion which steps should be taken first or which preconditions should be existing for enhancing knowledge region. According to the literature a group of initiators is necessary: "In each of our case studies, interviews with a wide range of factors revealed that the initial vision and initiative to develop the common cause of knowledge region development begins with a very small group of people. These were usually intermediaries or brokers, as

individuals or as part of organisations, whose importance cannot be overestimated (Reichert, 2006, p 26).

Other necessary conditions are strategy and strategic actions. In the case of Öresund region all four city-regions spent time and effort to involve different stake-holders in the formulation of regional innovation and knowledge development strategies. This was judged to be important for urgent pragmatic reasons - to acquire additional resources from national or supra-national funding agencies, also important as enhancing mutual understanding, bringing potential conflicts into a constructive negotiation process and establishing common perspectives that can provide a solid basis for future projects. (Reichert, 2006). In addition to the hard factors of critical mass of people, institutions, infrastructures, tax conditions and funding opportunities, there are important soft factors which are seen as key components of the regional knowledge strength and potential. First of all there is frequent mentioning of the importance of a high quality of life and a creative cultural environment which makes the city-region attractive to innovative individuals.

Leading knowledge regions are characterized by very high levels of tertiary education, employment in high-tech services, human resources in science and technology. As the CROSSWORKS (2008) analysis shows, leading knowledge region models compel: the development of high-tech services; the development of education: knowledge workers, universities, life-long learning; the development of wide cooperation and collaboration in R&D among and between triple helix factors; international cooperation in R&D.

According to the collaboration and network analysis, Helsinki/Uusimaa is a leading knowledge region that also has high-tech region characteristics. Much debate focuses on the future directions of Tallinn capital region and the whole Estonian economy: to stress the potential of Estonian manufacturing, given its proximity to the more expensive production environments of the Nordic countries or shift to a contemporary service economy?

Both arguments are pertinent. With manufacturing moving out of the Nordic countries, Estonia has a good opportunity to link into the value added clusters of Nordic countries and a manufacturing culture is a prerequisite to raising the technology level of other economic sectors. The limitations of this type of development tend to be the low attraction of manufacturing among the youth and low reputation of vocational schools. Neither is engineering as attractive as a service sector profession. Prerequisites to develop high-level service sector (ICT in banking, e-services) are high.

Part of the measures for enhancing knowledge region belong to cities' administrations competence within the borders of one country, building CB knowledge region demands more from the initiators: vision, political support, use of new complex methods like CB triple helix co-operation and living laboratories' method.

Triple helix concept was developed in the 1990ies. The triple helix thesis states that in addition to the knowledge infrastructure of university-industry-government relations, an overlay of communications and negotiations among these institutional partners has become increasingly important for the dynamics of the overall system. Knowledge organisation and knowledge-based re-constructions can be transformed into a third co-ordination mechanism of social change in addition to the economics of the market and government interventions. The political economy is thus reshaped into a knowledge-based economy containing this more complex dynamics because of the evolutionary advantages of the combinations (Schumpeter, 1943; Krugman, 1996; Leydesdorff and Etzkowitz, 1998).

The method is easily used in CB negotiations even if the whole process is complicated. Still, there is another field of developments open to triple helix method: the question of involvement of public: The political contexts of triple helix arrangements and the issue whether bridges between private and public should be crossed. Should the public perhaps be considered as a fourth strand to be added to the triple helix model? asked Leydesdorff already in 2002 (Leydesdorff and Etzkowitz, 2002).

Living Laboratories concept may be or may not be a development phase from the triple helix model: in triple helix public may participate as opinion-maker. In Living Laboratories this role is different: it means being an active part of a development process, being an end-user in open innovation process in which new technologies are co-created, tested, and evaluated in the users own private context. The users are facilitated to communicate their needs and requirements on the basis of their everyday experiences.

Another important aspect of Living Labs' environment is the living aspect - people involved in any development project live with the process and constantly check how the process proceeds. Eriksson and others (Eriksson, 2005) define Living Labs as a research and development methodology whereby innovations, such as services, products, and application enhancements, are created and validated in collaborative, multi-contextual empirical real-world settings. This definition implies that humans are considered as the collaborative sources of innovation, not merely involved in testing and validating products and services. Inherent in this definition is the assumption that the involvement processes should be carried out in real-world settings and in close connection to research. According to Lepik (2010) Living Lab can also be considered an institutionalised form of an innovation system where public sector, private sector, and third sector representatives cooperate. Thus, innovation can also be considered as a localized form of collaborative learning where representatives of various sectors participate in an open exchange of knowledge and ideas.

3. Methodology

The article adopts a mix of primary research of three studies and secondary evidence provided by the literature, programs, strategic development documents (strategic plans of Tallinn, Helsinki, Uusimaa and Harjumaa), topical meetings, roundtables and fora. Evidence was collected via in-depth interviews, elite interviews and questionnaires as follows: Helsinki-Tallinn Science Twin-City Research 2004, Questionnaire among Euregio stake-holders 2007, Elite interviews on regional development perspectives 2009. In this article only parts of each study have been used due to limited space. Qualitative methods were used due to the complicated topic where experts need previous knowledge on the activities of the organisation and also on the regional development prospects.

The research task was to analyse preconditions and activities to facilitate the creation of Helsinki-Tallinn cross- border knowledge region with specific focus on CB triple-helix and Living Lab methods, using the Helsinki-Tallinn Euregio as an initiator.

3.1 Helsinki-Tallinn Science Twin-City Project

The research idea originated from November 2001, when Director of Biotechnology Institute of Helsinki University, professor Mart Saarma, Academician of the Estonian Academy of Sciences, presented his idea of Helsinki-Tallinn Science Bridge at the Forum of Helsinki-Tallinn Euregio. The need for closer co-operation in science and e.g. high-tech business development stems from the fact that neither of the capital regions is big enough to compete alone internationally. Pooling of the resources enables to profit from the strengths of both cities and is mutually beneficial.

The data was collected by fact-finding studies, researching documents in universities, and interviews with experts, scientists, students and offices' representatives. Interviews were oral, lasted about an hour and were taped.

The questions involved statistics on Finnish students and professors in Estonia and vice versa, obstacles to mobility, perspectives of joint scientific projects and common academic perspectives, also facing the global challenges.

Findings

Mobility:
Estonian degree students were the third largest group among international degree students in Finnish universities. The number of Finnish degree students in Estonian universities had declined since the academic year of 1998.

University of Helsinki was favoured by Estonian students. Most popular Estonian university among Finnish students was the University of Tartu. Favoured Tallinn-based university was the Pedagogical University (now Tallinn University).

There were concrete examples of on-going collaboration between Tallinn University of Technology (TUT) and Helsinki University of Technology (HUT): students from TUT continue their studies in HUT (naval architecture, electrical and electronic engineering, aeronautics, telecommunication etc.). There has also been assessment of study programmes and course level co-operation, research collaboration between laboratories and exchange of administrative staff.

The research revealed several important preconditions for later knowledge region developments. To face global challenges measures were foreseen: the idea of Gulf University Consortium (Baltic Ideopolis); Strengthening of existing cooperation between science parks and incubators; Jointly target regions like China, India to build up strategy how to attract knowledge holders; Development of clusters of universities, entrepreneurs, academy, local authorities.

The same ideas were presented again in the report, ordered by prime ministers of Estonia and Finland "Opportunities for Cooperation between Estonia and Finland" (2008), based on interviews with two vice-rectors of HUT and two from TUT in 2010 as follow-ups to previous studies, no concrete actions towards the Gulf University Consortium have been taken, also the connections to work jointly on the Asian direction are weak and universities seem to see each other like competitors. Cooperation between science parks and incubators is rising, change of incubators CB is ongoing process. Development of clusters of universities, entrepreneurs, academy, local authorities need further boost.

3.2 Questionnaire among Euregio stake-holders (2007)

The areas where positive CB changes are expected:
Respondents favored innovation, education, approximation in cross-border regional development and, one respondent used the term "twin-region of knowledge".

Power of influence of stakeholders:
Euregio is influential via top leaders whom vice-mayors were considered to be, entrepreneurs, artists and media people, university representatives. Middle-level leaders (heads of departments, etc.) and officials were not considered as influential. Suggestions to raise the level of representation to mayors-level were presented.

Strong connection to the respondents profession or position was noted: university and art representatives did not mention official top-leaders (vice-mayors); official top-leaders did not mention middle-level leaders and artists. It may indicate that for official city leaders new developments in city entrepreneurship bases is not fa-

miliar and ideas of city economic bases are traditional. The under-estimation of the middle-level leaders was surprising as the majority of every-day practice is going on between the middle-level leaders. The answers allow conclude that three important sectors – local government officials, university leaders and entrepreneurs are weakly connected within one country, even less CB. As a leader to unite the CB region no name was mentioned. It may indicate that approximation of capital regions is going on the networking basis, citizens not percipient that these processes are leaded by city officials, not to mention the Euregio activities.

Euregio partners in the strategy process:
Euregio was considered as a representation and cooperation body for city authorities, artists and media people, entrepreneurs. Politicians and common citizens were not mentioned. It may indicate the fact that mayors and vice-mayors are not considered to be politicians, and the link to common citizens is understood directly.

Euregio success factors:
Euregio success factors were connected with fora, seminars, projects, implementing new ideas. There was a strong connection with respondents profession. University-connected respondents tended to consider Euregio as a developer of a science and arts region through people connected to universities and artists and they under-estimated local government and politicians' roles. The trend was stronger among Estonian experts. Respondents being the city or regional officials under-estimated university co-operation and pointed out co-operation between local authorities. Only one respondent indicated that success factors can be characterized by the development of co-operation between the regions, namely, the number and scope of joint projects, the number of joint events, marketing and representation of the region in fairs, seminars, etc., the number of joint publications, etc. One respondent named as success the emergence of a knowledge region. Study indicated need to achieve common understanding between main stake-holders about the expectations towards regional integration as the main goal. Proceeding from these results Euregio should continue building the common knowledge region.

3.3 Elite interviews on regional development perspectives (2009)

Interviews were carried out with fourteen experts (university, local government, entrepreneurs) in Estonia and in Finland to find out is there understanding and perception of need towards regional integration, especially towards forming a knowledge region. Part of the results of the interviews were used in former articles.

Results of the in-depth elite interviews:

Future trends for regional integration

(1) Integration between the two regions will deepen via television and e- and m-services, integration of university and science institutions; joint city and regional planning activities; job mobility; joint festivals; joint marketing, joint television programs. Sill there is no clear twin-region self- identification. An emergence of a knowledge region was considered as one possible option for regional integration.

(2) Joint integration will not happen at all. The cities and the regions will follow different paths and the present interaction and networking will be stopped either by internal or by external forces.

(3) A new entity Helsinki-Tallinn twin-region will emerge: a twin-entity may correspond to many features, for example joint universities between the cities, joint city councils, joint city departments, joint services in the region (social services, health care, procurement, etc.), joint resources, joint transport networks (tunnel), joint spatial planning (general and regional planning), etc. A new dialect (like stadia) might emerge. But this will not happen in short-term perspective.

The investigation indicated the belief in regional integration, still the self-identification of the region as a twin-region is not foreseen, knowledge region is more easily accepted. The number of respondents who believe in positive qualitative developments indicates that Euregio activities and goals correspond to interviewed partners' expectations. High-tech and innovative e-, m- and digi-services serve as a perspective bases for the Knowledge region.

4. Discussion

The article indicates problems in developing CB knowledge region. Relationships between local authorities and universities differ in Tallinn and in Helsinki. The City of Helsinki has been more successful in developing tight cooperation links with research institutions than Tallinn. There remains a question of who should lead the initiators group - weather universities, local authorities or is Euregio strong enough to take the role? The role of local authorities in developing knowledge intensive entrepreneurship together with universities demands further research.

Practicalities of formulating and implementing a coherent CB strategy should be objects of further research.

Horizontal alliances between different public organisations, especially from different countries are difficult to design and need thorough research.
Possible limitations to implementing the CB knowledge region vision require also thorough research.

Changes in local governments' governance philosophy towards being more open, orientated towards further inclusion of citizens, but also towards CB initiatives,

are expected. Further involvement of innovative enterprises and participation of universities and research institutions in shaping of local environment is an initial part of CB knowledge region development.

5. Conclusions

The studies proved that pre-conditions exist for development of Helsinki-Tallinn knowledge region. Relying on research and literature, steps to be taken might be as follows:

Firstly, political decisions should be taken on as high level as possible: in mayors' offices, but also on the governmental level. Existing initiating group alone is not enough as the policies co-construct the knowledge-based innovation systems by introducing infrastructure, human resources, and public demand into the innovation processes.

Secondly, three sub-goals should be decided: (1) knowledge and technology transfer-type of cooperation should develop further using triple-helix principle; (2) based on win-win principles Estonian and Finnish institutions (for example in Living Labs) should form bodies to conquer markets of scale; (3) inter-regional physical connections should be improved (tunnel or rail-ferry).

Thirdly, a CB joint strategy for development of the CB knowledge region should be worked out, with most high-level decision-makers and experts participating. Until now Euregio has been the only institution with the task to enhance CB regional integration. Euregio-type organisations should be part of the process, being initiators of it, also finding innovative ways for knowledge transfer and regional development, like triple-helix or Living Labs' methods.

The findings of the research allow state that horisontal cooperation within one organisation, among other organisations in one country and furthermore across borders is very complicated to implement.

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3.2. PROBLEMS OF INITIATING INTERNATIONAL KNOWLEDGE TRANSFER: IS THE FINNISH LIVING LAB METHOD TRANSFERABLE TO ESTONIA?

Katri-Liis Lepik, Merle Krigul and Erik Terk

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Abstract

Regional competitiveness is among the policy priorities of the European Union. The novelty of this article lies in the fact that it explores CB knowledge transfer for regional integration and development. The focus of this research is the role of CB co-operation in development of innovative forms of co-operation, initiating and supporting knowledge transfer. The article presents, firstly, a theoretical-methodological analysis of new complex tasks and theoretical paradigms emerging in the context of increasing integration and convergence of CB co-operation: method's innovation approach, knowledge and knowledge transfer. Secondly, a CB co-operation organisation's potential model for enhancement of complex regional co-operation has been described based on Helsinki-Tallinn Euregio's case. Thirdly, the article focuses on investigating the international transferability of the Living Lab's method. The article concludes by presenting the opportunities and principles of activities of a CB co-operation organisation to support the knowledge transfer process.

Keywords:
Knowledge transfer, innovation, living lab method, CB co-operation organisation, Helsinki-Tallinn Euregio

INTRODUCTION

Regional competitiveness is among the policy priorities of the European Union as economy is international. As the population living in CB areas amounts to 181.7 million in the EU (37.5 % of the total EU population), the CB co-operation is one of the main means to fulfil that objective. (Inforegio 2009) In order to better promote the CB co-operation many regions in the EU have established CB co-operation (CBC) organisations/euroregions. The case of Helsinki-Tallinn Euregio which is one of those organisations established between the capitals and municipalities of the capital regions will be addressed throughout this article. Among the organisation's multiple tasks is diminishing disparities within the CB region by enhancing knowledge and competitiveness in the region. This article focuses on CB knowledge transfer for regional integration and development and usage of an innovative method Living Lab.

The articles aims at, firstly, analysing how knowledge management is used for development and management of CBC organisations with the task of building a

knowledge region. Findings indicate that a knowledge transfer developed in one of the metropolitan regions will lead to an integration of that competence with other metropolitan region. Secondly, the article explores the knowledge transfer in CB co-operation organisations and the innovative method used in knowledge transfer – Living Labs. Thirdly, the article discusses the process of utilising the Living Labs concept in enhancing Helsinki-Tallinn metropolitan regional integration.

The article analyses management in creation of knowledge cross-border region, and how cross-border cooperation is enabled via cross-border cooperation institution using the example of Helsinki-Tallinn Euregio. The article concludes by presenting how a learning organisation can be a tool for cross-border regional integration and how it could contribute to the development of a common knowledge cross-border region.

The article concludes by presenting how a CB knowledge organisation uses an innovative Living Labs' method for regional integration and development of the region.

METHODOLOGY

The present article is a research on knowledge transfer in CB co-operation. The case of two metropolitan regions – Helsinki and Tallinn are explored. Helsinki-Tallinn Euregio - a CB co-operation organisation which is a tool for promotion and initiation of is analysed.

The article presents a theoretical-methodological analysis of new complex tasks and theoretical paradigms emerging in the context of increasing integration and convergence of CB co-operation, frameworks which allow successfully tackle and solve such tasks: method's innovation approach in the frameworks of developing innovation theory, knowledge and knowledge transfer focused approaches. Thereafter a CBC organisation's potential model has been explained based on the investigation of 35 representatives of CBC organisations, its various options, advantages and disadvantages are described. Proceeding from the research focus of the present article, which is the role of CBC in development of innovative forms of co-operation, initiating and supporting knowledge transfer, the initial model has been developed based on the results of the interviews. The attempt has been made to formulate which characteristics of the model are suitable especially for enhancement of more complex regional co-operation. Following, the article focuses on investigating the international transferability of a concrete complex co-operation task, namely the living lab's method as one of the modern methodology of open innovation which is about to gain large popularity.

For that purpose a special interview methodology was compiled and 14 in-depth interviews were conducted with persons who are involved or would potentially be

involved in adoption of the living lab method in Tallinn and Helsinki. In the course of the interviews the prerequisites of the method's transfer, potential areas of usage and realisation options of the method were investigated. Based on the researched case some general conclusions were made about the ffactors hindering more complex international knowledge transfer. Finally, the conclusions were made about the opportunities and principles of activities of a CBC organisation to support the knowledge transfer process researched.

THEORETICAL FRAMEWORK

It is characteristic for regional co-operation that in addition to the movement of capital and goods also objects which are more difficult to be transferred or received/introduced like technology, skills and knowledge must move from one region to the other. When the co-operation deepens and the goals become more ambitious the role of immaterial components in co-operation increases compared to material ones. Instead of co-operation forms that can be dealt with separately (economic, cultural, administrative) complex tasks uniting several co-operation forms arise. Hence, the necessary circle of stake-holders required for fulfillment of co-operation tasks increases and becomes more complex, for instance, in economic co-operation projects universities and cultural institutions and often also citizens as potential users of the new systems must be included. The creativity of the co-operation increases. The simple, even algorithmic transfer, multiplying and copying will no longer be dominant which includes learning and changing of the behavior mainly by the recipient, instead both parties must solve creative tasks while creating new systems and often the end results cannot be really forecasted.

The usefulness of the activity of CBC organisation depends on how well it can contribute to enhancement of such gradually more complex co-operation, support and initiate even more challenging forms of co-operation.

The previously described activity, the problems that might arise and ways of solution can be addressed in the framework of two paradigms. Firstly, the paradigm developed in the framework of innovation theory, and secondly, discussions based on the term "knowledge" (knowledge creation, knowledge transfer, knowledge management). Following, we will try to show what kind of framework the two paradigms will constitute for the tasks we try to solve. We would like to stress that we deal with complementary rather than incompatible paradigms in innovation related paradigm (Viia et al 2007) In principle both are important but we will focus on more complex innovations in this article, meaning, on more radical innovations. Research done also in Estonia has shown that there are problems especially with this form of innovation. In Estonian companies, including those of Tallinn, the innovation intensity is not low according to international methodology (CIS-methodology, Community innovation Survey); at the same time the investment into radical innovations which would strongly change the situation are not

sufficient. (Viia et al 2007) The same result was received after analysing various development plans of Tallinn some years ago (Tafel, Terk 2007). If we leave aside success in implementation of IT governance in the city, in case of which Tallinn is ahead of many other cities, the research has shown that despite large construction activities (assisted naturally by the economic boom) the majority of the urban development solutions and development plans included incremental, not radical innovations. International co-operation, especially when the partner is significantly well positioned in innovation charts like Southern-Finland could contribute to the change in this situation. At the same time no changes have occurred recently in Helsinki-Tallinn co-operation which could radically change the picture.

The intensity and making innovation more radical depends to a large extent on the spectrum of the source of innovative ideas. In addition to inherent sources of innovation like the direct clients and suppliers, other companies in the same field, and as co-operation partners, fairs, universities, research institutions, international literature, etc. are distinguished as sources of innovation in case of enterprises. (Viia et al 2007) According to the approximate model the public sector institution's like city's sources of innovation "reservoir" can be described. The problem facing Estonian companies is the weak role of universities and research institutions as the source of innovative ideas and despite Estonian economy's (and society's) high level of general internationalisation, the CB innovation clusters including Estonia are not sufficiently developed. In some cases Estonian factors participate in them as fulfilling realisation functions rather than equal participants in innovation processes.

Significantly interesting tendency lies in such new developments in addressing innovation process like emergence of open innovation concept on the one hand, and convergence of ideology in development of innovation process and so called creative industries on the other hand.

The first one means transfer from innovation creation in a "lab" with a small number of people and publicising in co-operation with a large number of parties at a later stage, whereas the relations of the participants in the innovation process are not (only) strictly commercial. The motives can include opportunity for development of own ideas, new synergic effects hoping that they can be later commercialised in other business processes or in case of a city or a citizen just a wish to create surrounding living environment according to the local factors' versions and ideas. The second means logic which is characteristic for arts where one operates with meanings, symbols and identities rather than satisfies pragmatic needs and where instead of known achievement of results a creative and open ended process becomes important and spills over to other areas where the so called fordist logic was applied earlier.

The concept of innovation has been mostly discussed in literature as something related to technology and product innovation. In some cases innovation of organisation is also treated separately. However, the most difficult type of it is prob-

ably method's innovation. (Terk 1986) However, in some cases the need to change methods of activities can be determined by the usage of new production or information technologies, to be so called automatic inevitability and in that case they get adopted quicker, at the same time such connection does not necessarily have to occur. There might occur situation where exactly the change of a method can open new opportunities for implementation of new technologies or for creation of new products. The usage of new methods requires in those cases very good demonstration and promotion activities, teaching and training. Massive breakthrough of new activity methods on some social environment can take even a generation, for instance, pedagogics. As a rule, successful innovation of the activity of some production-economic system requires inter-linked changes in products, technologies, organisation as well as people activity methods. (Terk 1986) Such logic should also apply in case of other social systems.

Knowledge transfer adds new dimensions to innovation related to the social and institutional processes. In the present article we deal with innovation of innovation as we speak about Living Lab which is an innovative tool used for innovation and competitiveness.

Rogers (1964, 2003) proposes that adopters of any new innovation or idea can be categorised as innovators, early adopters, early majority, late majority and laggards, based on the mathematically-based Bell curve. These categories, based on standard deviations from the mean of the normal curve, provide a common language for innovation researchers. Each adopter's willingness and ability to adopt an innovation depends on their awareness, interest, evaluation, trial, and adoption.

In case of Living Lab's only the awareness raising stage has been implemented so far and the practice is still very limited. The Living Lab method's innovation is more complex than a product, technology or any other type of innovation as in living Labs the technology and life-style are interwoven.

1. Knowledge and knowledge transfer

Knowledge transfer has abundantly been addressed in knowledge management literature.

The concept of knowledge has long fascinated scholars in many disciplines. This has contributed to making this concept extremely complex. Different perspectives have given rise to various methodologies by which knowledge can be studied and different ways for analysing, interpreting and managing knowledge. (Troilo 2006, Firestone 2001)

Regional competitiveness is based on its capabilities that impact its performance. Those capabilities are based on a fusion of effective goal-oriented business and

management processes and skills, both of which are forms of knowledge. One of the best ways of understanding knowledge is to bring out the distinctions between information and knowledge. A common distinction is to note that information is anything that can be digitised. As such, if it can be stored in a database or attached to an e-mail, it is information.

There is no consensus on the nature of knowledge (Firestone, 2001). Definitions vary from "Justified true belief" (Nonaka and Takeuchi, 1995), "Knowledge, while made up of data and information, can be thought of as much greater understanding of a situation, relationships, causal phenomena, and the theories and rules (both explicit and implicit) that underlie a given domain or problem." (Bennet and Bennet, 1996) to "Knowledge is the capacity for effective action" (Karl-Erik Sveiby 1999). This definition is the one favoured by the organisational learning community. Similarly, Tom Davenport and Larry Prusak contend that "knowledge can and should be evaluated by the decisions or actions to which it leads"(by Firestone 2001).

Another important distinction is between tacit and explicit knowledge, introduced by Polanyi (1996): we can know more than we can tell or explain to others. Explicit knowledge is what we can express to others, while tacit knowledge comprises the rest of our knowledge - that which we cannot communicate in words or symbols. Much of our knowledge is tacit. Explicit knowledge, conversely, can be put in a form that can be communicated to others through language, visuals, models, diagrams or other representations. When knowledge is made explicit by putting it into words or other representations, it can then be digitised, copied, stored, and communicated electronically. It has become information. What is commonly termed explicit knowledge is information, while tacit knowledge is simply knowledge.

One way we can share our tacit knowledge with others is socialisation, where we converse directly, share experiences, and together work toward enhancing another person's or organisation's or local knowledge (Dawson 2005). This is what happens in the process of CB co-operation.

Knowledge transfer seeks to organise, create, capture or distribute knowledge and ensure its availability for other users. In earlier literature knowledge transfer has been approached furthermost in the context of technology transfer. In case of some forms of technology transfer like direct investment from a strategic partner the recipient receives the technology and accompanying know-how relatively easily. In case of some other forms like buying of licences or patents of in case of "turn key" contract, it requires more learning from the recipient and in the third case when an international specialist is hired or own employee is sent abroad to study, not only technology but all knowledge in the person's head about the technology as well as its usage, organisational and other aspects moves (Lumiste 2005). Knowledge management paradigm allows approaching the process deeply. The above-mentioned division between the tacit and explicit knowledge allows understanding that one

part of knowledge, tacit knowledge, cannot be mechanically transferred from one person or body to another. It can be transferred in joint activity or the new group of people can create new and slightly different tacit knowledge than before.

We can assume that it is even more difficult to implement knowledge transfer in international co-operation than within one country because the hindering ffactors include national-organisational-cultural as well as economic situation's and economic environments' peculiarities, different institutional histories, etc.

Following we will test this hypothesis with one concrete innovative method, namely based on the analysis of the living lab method's transferability.

THE ROLE OF CB CO-OPERATION ORGANISATION: CASE OF HELSINKI-TALLINN EUREGIO

CBC organisations are well informed about the local needs and problems of border territories and they are bearers of longstanding tradition of CB co-operation on the grass-root level. This knowledge and experience of the CBC organisations are valuable for discussions concerning crucial challenges of the region. Effective knowledge transfer in a CB organisation would contribute to developing regions' competitiveness. This means that knowledge creation, storage, and transfer are essential factors of raising regional competitiveness.

CBC organisations are important partners in knowledge transfer process, being collective agents of managing knowledge production, knowledge integration and knowledge transfer. They embody organisational process, combining information processing capacity of information technologies, and the creative and innovative capacity of human beings. CBCs use IT systems and change processes to generate ideas, transform the organisation or the problem into a new quality, manage change processes, use information, data and knowledge to achieve goals.

The present article presents the knowledge transfer from the CB co-operation perspective. The authors of the article presume that in the case, where the strategy, vision and mission of a CBC organisation is focused on initiation and promotion of innovation and knowledge processes in the region, then knowledge transfer has to be in focus. One of such CBC promoters in the Baltic Sea area is Helsinki-Tallinn Euregio, an association of five partners: City of Helsinki, City of Tallinn, Uusimaa Regional Council, Union of Harju County Municipalities and Republic of Estonia, represented by Harju County Government. Helsinki-Tallinn Euregio started as a CB co-operation network in 1999 and was formalised into a non-profit association (NPA) in 2003. The mission of the Euregio is to enhance CB integration between Helsinki/Uusimaa region and Tallinn/Harju county. The role of Euregio is to promote and assist co-operation inside the twin-region as well as inter-regional development and competitiveness, aiming to strengthen the regional knowledge based economic

development. Among its priorities are: increased interaction in spatial and regional planning, creation of an innovative and a barrier free region with common well-functioning markets, development of twin-region of arts and sciences. Twin-Region based on knowledge and culture is facilitated and supported via its activities.

The advantages and drawbacks of Euregio for being the promoter of regional knowledge transfer will be discussed based on the research carried out among the leaders of the 35 CBC organisations from the Baltic Sea Region. The detailed analyses of the characteristics and most crucial problems for CB co-operation institutions and ideas for addressing the problems are in the article "Euroregions as Mechanisms for Strengthening of CB Cooperation in the Baltic Sea Region" (Trames 2009 in process). The present interpretation relies on the material from the research but discusses the aspects of knowledge transfer which have not been previously dealt with.

Knowledge management as one of the management areas can be implemented in an organisation with developed structure and working culture. The investigation made evident that CBC organisations with partners from old EU member states and organisations established between new EU member states or member states and other countries differ significantly in their financial, institutional, organisational and managerial capabilities. According to its type and role Helsinki-Tallinn Euregio falls into the first category.

In first-mentioned CBC organisations the structures are developed and there tends to be a joint governing body or a secretariat and in new ones there tends to be no joint structure. In Euregio's case there is a CB office with employees from both sides, joint secretariat and joint board. The board consists of stake-holders from Estonia and Finland, both officials and politicians which is a crucial advantage in knowledge transfer processes as the involvement of political representatives (local, regional, national and European) is crucial for successful CB co-operation. Another advantage is involvement in long-term strategies of the development of the region. In CBC organisations with new EU member states the focus is often on solving concrete small-scale immediate border related problems rather than tackling larger regional challenges.

The most crucial challenge for several new CBC organisations with EU members states and new member states is absence of permanent funding and the required co-financing in projects. This also prevents them from having joint structures with common resources and they have to work merely on project bases rather than have permanent staff and long-term co-operation strategies in order to cover the costs of the activities and the office. Such funding scheme is unsustainable but the project management is of utmost importance since the goals of the organisations are achieved by implementing projects which support the strategy. As technical, administrative, financial and decision-making instruments are vital for lasting CBC activities, the results of the study allow presuming that advanced management sys-

tems are to be developed in the future. Another drawback in addition to the lack of funding in new CBC organisations is being understaffed as they are often one-or-two person led organisations. This is a disadvantage in involvement of large arena of stake-holders and leading larger knowledge transfer activities. A manager is expected to be competent in all areas of activities and processes on different sides of borders. She or he becomes a real knowledge bank – if the manager leaves, organisation is at risk of not being sustainable, as explicit knowledge consists basically of minutes of meetings, project descriptions and annual reports; good or bad working relations, unofficial networks, contexts and inside information are not described in the written form. Among various initiatives there is a need for better co-ordination of different institutions, demonstrations of the benefit of collective work and establishment of direct contacts to universities and business sector. This is not possible with one-person management that acts on project bases.

The importance of knowledge transfer has increased as today's successful regional and interregional co-operation is built on triple-helix model which forms a complicated system and requires various methods to be effectively implemented. The next step in the regional development process is the usage of an innovative tool - a Living Lab's method. The novelty of this research is to contribute to a successful use of Living Labs as a means for user involvement in public services by multiplying the Finnish experience to Estonia and developing the method further to be applied in CB context.

USAGE OF LIVING LABS' METHOD IN ENHANCING HELSINKI-TALLINN CB CO-OPERATION AND METROPOLITAN REGIONAL INTEGRATION

Living Labs is a human-centric research and development approach in which new technologies are co-created, tested, and evaluated in the users' own private context (Samelin 2007). Living Labs is societal innovation with technological innovation, it includes creative processes for developing a new or innovative solution in co-operation with local authorities, technology companies and citizens.

The Living Lab phenomena can be viewed in two ways, as an environment, and, as a method or a concept or an approach.

In this article, the perspective taken is Living Lab as a method. Hence there is a noticeable lack of theories and methods supporting its actions. As a concept Living Lab is an innovative method with large potential but rather immature and there are many aspects that need to be studied and further explored to understand the phenomena in depth; hence, more insights into how Living Lab activities and contexts can be supported are needed (Stahlbröst 2008). Følstad (2008) argues that the most pressing challenge for research in Living Labs is related to the current lack of studies of Living Lab methods and tools.

Proceeding from the fourteen in-depth interviews carried out in 2008 with city officials, representatives of technology companies, experts of the fields that are internationally recognised as Living Labs testing grounds from Estonia and Finland, we may conceptualise the usage of the Living Lab's method in Helsinki-Tallinn CB concept.

Main research questions were:

a) Do those areas exist in Tallinn that require Living Labs' method to introduce and develop new solutions?
b) Is there any potential and motivation of technology companies and universities, technology parks, research institutions to develop Living Labs' co-operation model?
c) Are the local authorities ready to work for developing new technologies and methods like Living Labs?
d) Are the citizens prepared for active participation (as the essence of the method presumes)?

As a result of the research two versions can be considered here.

1. Transfer of the method

This includes the spill-over effect when the experiences on the Finnish side should be creatively applied in Estonian context as direct copying is not possible due to different socio-economic context. Another aspect concerns the potential inclusion of the Finnish small and medium sized enterprises (SMEs). There are no economic or ideological limits to that but the problems may arise due to the local nature of the Living Lab. The prerequisites for a good Living Lab process are tight co-operation between SMEs while developing the ideas and services and it requires close ties and contacts with the city governments, citizens and environments. At the same time it is impossible to guarantee with detailed contracts between the SMEs and the city governments what benefits will be gained and what will be the profit earned as the nature of the final target services is not yet known. Therefore the authors perceive the usage of the SMEs of the neighbouring country in contributing to solving a problem of a local nature (meaning local during the testing period) as something exceptional and not a mainstream case. This applies to both, Estonian SMEs in Finland and Finnish ones in Estonia.

2. Estonian-Finnish joint living lab

The above mentioned limiting factor does not apply in the case when speaking about an affiliation of company (or an international company) located in the neighbouring country. The participation of a local affiliation of a Finnish mother company in Estonia would be more likely and therefore the authors would recommend this as an option while establishing a Living Lab in Tallinn. This naturally requires corresponding decision making of mother companies in Finland. In order to guarantee interest of Finnish SMEs towards such activity, several bonus schemes should be developed, e.g. giving shares of Tallinn Living Lab to Finnish counterparts. There

is a need to deal with the awareness raising on the Living Lab's method. The prerequisite is that both sides need to profit from the activities.

Still, the study revealed barriers that need to be overcome:

a) semantical: with no previous experiences, the method is just not understood or understood in an incorrect way;
b) differences in institutional and organisational behaviours between Estonia and Finland, but also in-between different institutions in the same country;
c) lack of co-operation culture between the public sector and entrepreneurs in Estonia;
d) differences in democratic inclusion processes in Estonia and Finland;
e) differences in priorities and innovation strategies in Helsinki and Tallinn.

a) Regarding the areas for the use of the Living Lab's method in Tallinn, two areas were equally considered as having high potential: transport (also including logistics) and media. As far as media is concerned, it was sometimes considered as multimedia and sometimes as means of communication. Also the traditional media as well as interactive media were mentioned. Several respondents also favored security and tourism. Two respondents favoured other areas (design and architecture, health care, energy sector). As far as technological tools used in those areas were concerned, the majority of the respondents mentioned ICT (in some cases ICT and in some cases IT, also as telecommunications and communication system). In some cases also several measuring and identifying systems as well as optics in relation to cameras were mentioned. In many cases also biotechnology was mentioned but its concrete usage in city areas were not covered.

b) Several, but not too many companies and also universities were interested in participation in developing the Living Lab's method, still one of the major obstacles is different understanding of the method itself and its realization possibilities;

c) Some interested local leaders were identified in Tallinn with the same major obstacles as the differences in understanding of the method itself and its realisation possibilities;

d) Estonian citizens are interested and open to new technologies and ICT, hence citizens' and tourist' participation in developing of new solutions may presume to be existing. The problem includes different tradition of involving citizens in democratic participation processes that are different in Estonia and Finland.

In the case of implementing new CB methods the role of a CB organisation is significant. Helsinki-Tallinn Euregio is a suitable institution for CB knowledge transfer as its strategy includes promoting and assisting knowledge based co-operation inside the twin-region. Therefore a matchmaking organisation like Euregio would fill that gap. In the case of innovation the imago is important and here we can rely on the trustworthy Finnish reputation in this area.

DISCUSSION AND SUGGESTIONS FOR FUTURE RESEARCH

The authors of the article have identified some aspects of CB Living Lab that they believe are important to do more research about. These aspects are related to the need, capacity of the stake-holders, the focus of the environments and areas and the financial schemes of such processes.

Even today, the most advanced Living Labs are rather immature. Hence, there is a significant need for research and development to gain knowledge about how to organise a Living Lab with its inherent complexity as we are still in the awareness raising stage.

Potential environments and areas for the use of the Living Lab method in Tallinn, Estonia have two options. The first option includes environment as a unique object for a city (e.g. district Pasila in Helsinki) and development of a city district or creation of an important place or improvement of a transport system as the main value. The fact that an added value will emerge that can be multiplied in the future has a secondary value for a city government. The city government however should consider that the companies need to be interested in the object which is offered for the Living Lab. The second option is that the city government has some solutions tested in one district in order to multiply it to another districts in the future. Therefore the city government is also interested in having a typical environment for using the solution in the future.

Realisation of the Living Lab's method is institutionally a very challenging task. Proceeding from the interviews, there is a shared understanding regarding several public areas that the method can be implemented and also ideas were expressed which solutions can be adopted to enhance city life. There is also a small number of technology based small and medium size enterprises (SMEs) who could participate in implementation of the method, especially ICT SMEs. As a barrier the study brought out the lack of finances in some smaller companies and also the habit of investigating a process with an outcome not known beforehand. At the same time the ideas are not focused on a central idea around which a Living Lab could be built. Additionally, there is no clear understanding regarding the environment suitable for potential Living Labs. The city government and city departments have the strategic position in the implementation of the method in public services. If the city government is in the position of an initiator, they need to suggest the idea and provide financing for the process. A focused task and a well planned goal are the key success factors here and the SMEs should not start working on random ideas.

While selecting the appropriate environment and when following the "bottom-up" principle, it is decisive to have a sufficient number of "end-users" of citizens (in some cases also tourists) who would feel the need to develop or at least give feedback to a certain innovative technological and social service in a certain space in a certain way. At the same time in specific public service areas regarding large tech-

nology systems the Lab can exist in co-operation not directly with the citizen but a mediator like creator of transport or energy systems, organiser of waste treatment or traffic schemes. Then there might arise the question about the real representation of the needs and wishes of an end-user. An effect characteristic for open innovation can still be gained when some technological idea is tested and developed in multiple environments with different clients and their representatives from real life and with their active participation. In other words, it is not only *technology push* but also *demand driven* type process.

Concluding from the interviews the following steps should be taken: to investigate if the city government of Tallinn is ready to implement the method, to select the potential public service areas for creation of Living Labs, to focus on a couple of ideas by city departments and develop them further. The steps need to be followed with corresponding relevant financial commitments.

It is important to discuss the nature of the initiator of a CB Living Lab. Helsinki-Tallinn Euregio has direct access to relevant decision-makers in the region, however, the direct link to the companies is missing. The SMEs have been involved as partners so far but the involvement of representatives of the companies in the management structures of Euregio would need to be considered.

CONCLUSIONS

CB integration is a kind of political- economic spectrum that runs from simple institutional co-operation all the way to functional economic interdependence implying joint decision making and resource sharing. Within the same country, the latter is difficult legally and administratively; across national borders it is extremely complex.

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3.3. INNOVATING THROUGH BUILDING A KNOWLEWDGE CB REGION

Katri-Liis Lepik and Merle Krigul

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Katri-Liis Lepik is currently a Ph.D. student of management at Estonian Business School. She has received her Master of Educational Sciences degree from Frostburg State University (Maryland, USA). Presently she is manager of non-profit organisation Helsinki-Tallinn Euregio focusing on CB regional development and strategies. She is an expert of European Grouping of Territorial Cooperation of the Committee of Regions of the EU. She has extensive experience from international project development and management, compiling of development and training programmes, developmental and strategic planning of organisations. She has fifteen years of experience in public sector and non-governmental organizations and the last six years in management. Ms. Lepik has been delivering lectures in international project management, regional development and EU-related topics at universities in Estonia for the last seven years.

She is a founding member of Estonian Students Society for Environment Protection Sorex which has contributed to sustainable and green governance in Estonia. Ms. Lepik is also a founder of the nature tourism company Reimann Retked which has significantly contributed to rural and nature tourism and outlaying areas of Estonia and is one of the most outstanding companies in its field. Her current research and business interests include CB cooperation, regional development and innovation of public sector.

Merle Krigul is currently a Ph.D. student of management at Estonian Business School. She has received her MA degree from Tartu (State) University (Estonia) and MBA degree from Estonian Business School. Presently she is a program manager of a non-profit organization Helsinki-Tallinn Euregio, focusing on CB regional development and strategies.

She has experience from national and international strategic development and management, consulting, project management and compiling of training programs. She has delivered lectures on marketing in the public sector and on knowledge management in international organizations in several Estonian universities for 20 years.

She has more than twenty years of experience in the public sector, being a previous Member of the Estonian Parliament, an advisor to the Minister without Portfolio, academician Endel Lippmaa, an advisor to the Estonian government (Prime minister Tiit Vähi) and an advisor to the Prime Minister Juhan Parts. During the Pre-Independence period she worked for the Tallinn Pedagogical University (now

Tallinn University) as a lecturer, project manager and Councillor to the Rector. She is a founding member of several non-profit organizations.

Her current research and business interests include CB cooperation, regional development, innovation and marketing, knowledge management in the public sector.

Sub-theme: Tools for Innovation

Innovating through building a knowledge CB region

Euroregions are administrative-territorial structures intended to promote CB co-operation between neighboring local or regional authorities of different countries located along the shared state borders. They are widely known cooperation mechanisms between the regions.

This paper explores development of integration processes in CB region based on the CB cooperation organisation. Firstly, it conceptualizes euroregions and CB cooperation regions from the viewpoint of knowledge management processes. Secondly, the article analyses management of CBC organisations and knowledge management in general. Thirdly, the article analyses management in creation of knowledge CB region, and how CB cooperation is enabled via CB cooperation institution using the example of Helsinki-Tallinn Euregio. The article concludes by presenting how a learning organisation can be a tool for CB regional integration and how it could contribute to the development of a common knowledge CB region.

Keywords: CB co-operation organisation, euroregion, knowledge management process, knowledge CB metropolitan region, triple helix, Helsinki-Tallinn Euregio

Introduction

The EU enlargement has created challenging opportunities to countries for the support of economic and regional development. Peripherality is a well-known problem of border regions and there is a wide discussion in the regional development literature about the possibilities to reduce regional disparities.

The CB cooperation is one of the most recognised ways to develop border regions (Baldwin and Forslid, 1999; Brodzicki, 2002; Pitoska, 2006). Still, the twenty first century new global economy seems to give metropolitan (city-) regions a new central role. In Jane Jacobs's words (1985) regions make the wealth of nations, and yet, often, their governmental structures and functions do not mirror those important urban social, political, and economic and spatial facts. In a British study which describes the challenges and opportunities for knowledge based city-regions under the term "Ideopolis", a city-region is defined as "the enlarged territories from which core urban areas draw people for work and services such as shopping, education, health, leisure and entertainment. (Brenner 2003)

CB cooperation in general refers to "a more or less institutionalised collaboration between contiguous sub-national authorities across national borders" (Perkmann, 2003). One possible and wide-spread CB co-operation institutional structure is a euroregion. Euroregions are administrative-territorial structures intended to promote CB cooperation between neighbouring local or regional authorities of different countries located along shared state borders (either land or maritime borderlines).

The authors of the article will use the term *euroregion* and *CB cooperation (CBC) organisation* synonymously hereafter to denote an area of co-operation of local and regional authorities situated directly at the border, or close to it and collaborating in different sectors.

The authors of the article work for the Non-Profit Association Helsinki-Tallinn Euregio (further: Euregio) whose mission has been stated as "to enhance CB integration between Helsinki-Uusimaa region and Tallinn-Harju county" and the role is "to promote and assist co-operation inside the twin-region, Euregio supports and promotes inter-regional development and competitiveness, aiming to strengthen the regional knowledge based economic development". Founded as a network in 1999 and re-organised as a non-profit organisation in 2003. As euroregions have been often created for finding solutions to concrete problems and not for dealing with the development of the competitiveness of the region, Euregio stands out as a different case. Euregio will be dealt with as a learning organization. From the point of view of the target and mission of Euregio, the aim is to develop a CB metropolitan knowledge region.

The organisation's development has raised several theoretical questions that have proved to be academically insufficiently covered. The problem regarding activities of the organisation lies in disparities in the development of innovation environment

between Finland and Estonia. Thus, investigation process is two-fold: organizational learning about the factors that help overcome this disparity and influencing actions via regional decision-makers to help overcome these disparities.

The goal of the article is to analyse knowledge management in creation of a knowledge CB region, and how CB cooperation is enabled via CB cooperation institution using the example of Helsinki-Tallinn Euregio.

Our hypotheses are that a euroregion that aims at developing a CB region of knowledge, arts and science should be a developing learning organisation itself and according to the stakeholders there takes place development towards a metropolitan knowledge CB region.

The empirical part of the paper consists of the Euregio's case as its novelty lies in the fact that CBC takes place between capitals/metropolitan regions, not peripheral regions. Still, disparities between two regions exist and they both, Estonia and Finland, are located far from the European growth centers.

The novelty of the article also lies in the fact that it analyses management of euroregions and specifically the implementation of knowledge management in a CB cooperation organisation based on the case of Helsinki-Tallinn Euregio. There is abundant literature on knowledge regions but about knowledge CB region the literature is scarce.

This paper explores development of integration processes in CB region based on the CB cooperation organisation. Firstly, it conceptualizes euroregions and CB cooperation regions from the viewpoint of knowledge management processes. Secondly, the article analyses management of CBC organisations and knowledge management in general. Thirdly, the article analyses management in creation of knowledge CB region, and how CB cooperation is enabled via CB cooperation institution using the example of Helsinki-Tallinn Euregio. The article concludes by presenting how a learning organisation can be a tool for CB regional integration and how it could contribute to the development of a common knowledge CB region. The present research is part of an ongoing longer research.

Theoretical Framework

CB Cooperation Organisations

Historically, the euroregions have come into existence due to the fact that unnatural barriers have been created between regions and ethnic groups which actually belong together. They are widely known cooperation mechanisms between the regions. Until today the concepts and characteristics of CBC organisations have been worked out by the Council of Europe and dealt with mainly by EU institutions and by associations uniting border regions.

However, the characteristics, management and problems of euroregions have not been thoroughly investigated in the Baltic Sea Region. Moreover, there are very few examples of clear institutional and functional frameworks presiding over large CB urban regions (Brunet-Jailly 2002). The management of the CB cooperation varies. There can be a joint executive committee created for a CB structure or region, permanent working groups and/or a CB secretariat with members from both sides of the border (AEBR). With the EU regulation on the European grouping of territorial cooperation (EGTC) adopted in 2006 the initiative was made to reduce the obstacles and difficulties encountered in managing actions of CB, transnational or interregional cooperation within the framework of differing national laws and procedures (MOT 2008).

Since 1958 when the first euroregion was created, more than 100 CB cooperation structures have been established at regional/local level along the EU's internal and external borders. Very often, there are big differences regarding size, population, competences and financing. Regarding the euroregions in the Baltic Sea Region, an analyses of the characteristics and most crucial problems for CB co-operation institutions and ideas for addressing the problems has been made by Lepik (2009) based on the research carried out among the leaders of the 35 CBC organizations.

Today the CB cooperation organisations in Europe differ with regard to organisational set-ups, legal forms, membership, roles and financing that characterise everyday activity of the CB co-operation. Knowledge management importance has risen as today's effective and successful regional and interregional organisations have been built on triple-helix model. Triple helix cooperation is a term used to denote cooperation between three sectors in the society: the public sector, businesses and high schools/universities at the regional, national and multinational level. (Etzkowitz 1998). This system is complicated and demands from counterparts knowledge sharing, as well as knowledge creation, sharing storing and transfer systems.

Knowledge Management and CB Learning Organisation

The concept of knowledge has long fascinated scholars in many disciplines. Different perspectives have given rise to different methodologies by which knowledge can be studied and different ways for analysing, interpreting and managing knowledge. (Troilo 2006, Firestone 2001) Over the last decade the concepts of knowledge and knowledge management in business and management sciences have been up and down the sinuous curves of the hype cycle. Now it is recognised that knowledge as a management theme is a fundamental part of our present and future (Dawson 2005).

The important distinction for the CBC institutions is between tacit and explicit knowledge, introduced by Polanyi (1996): we can know more than we can tell or explain to others. Explicit knowledge is what we can express to others, while tacit

knowledge comprises the rest of our knowledge —that which we cannot communicate in words or symbols. Much of our knowledge is tacit. Explicit knowledge, conversely, can be put in a form that can be communicated to others through language, visuals, models, diagrams or other representations. When knowledge is made explicit by putting it into words or other representations, it can then be digitized, copied, stored, and communicated electronically. It has become information. What is commonly termed explicit knowledge is information, while tacit knowledge is simply knowledge. One way we can share our tacit knowledge with others is socialization, where we converse directly, share experiences, and together work toward enhancing another person's or organization's knowledge (Dawson, 2005).

An organization's competitiveness is based on its capabilities that impact its performance. Those capabilities are based on a fusion of effective goal-oriented business and management processes and skills, both of which are forms of knowledge.

Firestone (2001) defines Knowledge management as human activity that is part of knowledge management process (KMP) of an agent or collective. And the KMP, in turn, is an ongoing, persistent, purposeful network of interactions among human-based agents through which the participating agents aim at managing (handling, directing, governing, controlling, coordinating, planning, organizing) other agents, components, and activities participating in the basic knowledge processes (knowledge production and knowledge integration) in order to produce a planned, directed, unified whole, producing, maintaining, enhancing, acquiring, and transmitting the organisation's knowledge base.

There is no consensus on the nature of knowledge (Firestone, 2001). Definitions vary from "Justified true belief" (Nonaka and Takeuchi, 1995), "Knowledge, while made up of data and information, can be thought of as much greater understanding of a situation, relationships, causal phenomena, and the theories and rules (both explicit and implicit) that underlie a given domain or problem." (Bennet and Bennet,1996) to "Knowledge is the capacity for effective action" (Sveiby, 1996). This definition is the one favoured by the organisational learning community. Similarly, Tonly slightly greater concern with the right, so world 2 and 3 knowledge of reality is in the outcomes of knowledge processes that are of primary concern to knowledge management .

Malhotra (2001) looks at knowledge management as "a synthesis of IT and human innovation: knowledge management caters to critical issues of organisational adaption, survival and competence, in face of increasingly discontinuous environmental change. Essentially, it embodies organisational process that seek synergistic combination of data and information processing capacity of informam Davenport and Larry Prusak contend that "knowledge can and should be evaluated by the decisions or actions to which it leads", while Donald Schön notes of professionals that "our knowledge is in our action."

Firestone (2001) distinguishes three types of "knowledge":

World 1 "knowledge" - encoded structures in physical systems (such as genetic encoding in DNA) that allow those objects to adapt to an environment;

World 2 "knowledge" - validated beliefs (in minds) about the world, the beautiful, and the right;

World 3 "knowledge" - validated linguistic formulations about the world, the beautiful and the right.

In many organizations, there is little concern with world 1 knowledge and with the beautiful, and info technologies, and the creative and innovative capacity of human beings" (2001).

The authors of this article consider Malhotra's (2001) and Karl Wiig's (2000) understanding of knowledge management relevant for CB cooperation organisations that have chosen their development towards a learning organization.

"Knowledge management in organisations must be considered from three perspectives with different horizons and purposes:

Business Perspective - focusing on why, where, and to what extent the organisation must invest in or exploit knowledge. Strategies, products and services, alliances, acquisitions, or investments should be considered from knowledge-related points of view.

Management Perspective - focusing on determining, organising, directing, facilitating, and monitoring knowledge-related practices and activities required to achieve the desired business strategies and objectives.

Hands-On Operational Perspective - focusing on applying the expertise to conduct explicit knowledge-related work and tasks."

Authors consider Senge's (1990) definition of the learning organisation most suitable in the CBC organisations context. Senge defines Learning Organizations as "Organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together." A Learning Organization has five main features; systems thinking, personal mastery, mental models, shared vision and team learning. In Euregio's context the authors propose that unlike Senge who suggests that all characteristics must be simultaneously developed, O'Keeffee (2002) suggests the characteristics of a Learning Organization are ffactors that are gradually acquired.

There has been an extraordinary burgeoning of literature in recent years on the relationship between innovation, learning, and regional economic development. This includes literature exploring the concept of a `learning region' (Florida, 1995; Morgan, 1997; Simmie, 1997) and knowledge region. As the Helsinki-Tallinn Euregio's strategy indicates the concept of a knowledge region, the authors remain with the term "knowledge region".

The authors consider most relevant approach to the definition of knowledge CB region as presented by the team of the Crossworks (2008) project:

As the analysis shows, leading knowledge region models compel:

- The development of high-tech services
- The development of education: knowledge workers, universities, life-long learning
- The development of wide cooperation and collaboration in R&D among and between triple helix factors
- International cooperation in R&D

Further moves to extend cooperation should be based on longer-term strategic considerations linked to the science policies of both countries and innovation policies of the countries and cities.

Methodology

In terms of methodology, the article adopts a mix of primary research and secondary evidence provided by the literature. Evidence was collected by participatory method via in-depth interviews, elite interviews and questionnaires. The qualitative approach was selected as euroregions are not widely known among not-involved citizens.

The empirical research evidence consists of the 3 investigations and a case:

(a) the investigation carried out among the thirty-five CB cooperation organisations in the Baltic Sea Region to identify the most crucial issues and problems for euroregions (Lepik, 2009);
(b) investigation among Helsinki-Tallinn Euregio owners and partners
(c) elite interviews
(d) Helsinki-Tallinn Euregio case

Research methods:

(a) The leaders of the 35 CBC organisations from the Baltic Sea Region commented on the 10 statements concerning euroregions to find out the characteristics and most crucial problems for CB cooperation institutions and receive ideas for addressing the problems. The study was carried out in 2006 and other aspects apart from knowledge have been addressed in the article "Euroregions as Mechanisms for Strengthening of CB Cooperation in the Baltic Sea Region" (Trames 2009).

(b) The Questionnaire
The questions involved Euregio's expected areas of expertise, influence mechanisms, supporters and co-partners. The questionnaire was sent out to 50 persons in October 2007, the stakeholders' and partners' of Euregio: members of the general

meeting, members and substitute members of the board and secretariat members, entrepreneurs, artists, university lecturers, former speakers on Euregio fora, former project partners. Out of 50 questionnaires 32 answers were received. Respondents were asked to prioritise the statements. There was "other, please specify" option. The given priorities' numbers were counted and the number of points calculated.

The statements were:

1. Euregio should influence decision-making of city governments and state governments in the following policy areas:
   innovation
   general and spatial planning
   Environment protection
   physical infrastructure
   Social services
   Energy economy
   Education
   Regional development
   Other, please specify…….

2. Helsinki-Tallinn Euregio should influence changes in society through:
   Top-leaders (mayors, vice-mayors, municipality heads, MPs, CEOs, etc.)
   Middle-level leaders (heads of departments, etc.)
   Officials
   University representatives
   Artists and media people
   Entrepreneurs

3. Helsinki-Tallinn Euregio is a representation and cooperation organisation for:
   Politicians
   Common citizens
   University professors and students
   Artists
   Entrepreneurs
   Others: .....

4. Please describe what indicates Euregio's success?

(c) Elite in-depth interviews on regional integration
The research question was on the perspective of regional integration between Helsinki and Tallinn metropolitan regions as the main target area for Euregio. The perspectives of development of Euregio as an institution were additionally studied. Elite interviews on regional development perspectives were carried out with 14 experts (university, local government, entrepreneurs) from both sides of the Gulf.

Elite interview questions:

1. Which scenario do you predict to happen?
   - integration between two regions will deepen;
   - Joint integration will not happen at all;
   - A new entity Helsinki-Tallinn twin-region will emerge
   - regional integration will happen in a form of knowledge region/science and arts region/technology region/functional region/virtual region
2. Which scenario do you predict to happen to Euregio?
3. How to brand the twin-region and Euregio?

The questions were asked in the course of discussions in order to allow the respondents to comment and offer ideas connected to the research area. Every interview lasted about an hour, the interview period was February to July, 2008 and interviews were conducted by two persons and they were recorded. Respondents were promised anonymity, their names are recorded by researchers.

(d) Helsinki-Tallinn Euregio Case

Helsinki-Tallinn Euregio's mission, role, institutional structure and management, strategy, priorities and activities for implementing of the given tasks were studied. The investigations named above have been included in the analyses of the case. Additional evidence was gathered from secondary material as well as policy documents of European Union institutions, Council of Europe and CB organisations, Helsinki, Tallinn, Uusimaa and Harjumaa different strategy documents, Euregio fora, conference and workshop materials; articles in the local and international press, government programmes affecting CB co-operation and related issues as well as Internet data were reviewed.

Helsinki-Tallinn Euregio Case

Authors investigate Helsinki-Tallinn Euregio case as an empirical inquiry that analyses a phenomenon of the organisational development and goals within its real-life context. Case study research includes qualitative evidence – the questionnaires, elite interviews and strategy documents of Euregio and its partners.

Euregio has a well-developed institutional organisation with characteristics of a classical management system: General meeting, Board meetings, Secretariat meetings as strategic management bodies, manager, project managers as implementing bodies; permanent funding by partners, additional funding from European projects; priorities and action plans are worked out yearly, information producing and preserving mechanisms established. Since 2001 the target area is innovation, science and arts co-operation, competitiveness of the region. Additionally the organisation has a specified target area of activities – Harjumaa/Tallinn and Uusimaa/Helsinki metropolitan regions.

From both, an understanding-oriented and an action-oriented perspective, it is

more important to clarify the deeper causes behind a problem of further developments of the Euregio and the region.

Helsinki-Tallinn Euregio – organisation, mission, priorities

Helsinki-Tallinn Euregio started as a CB co-operation network in 1999. The non-profit association (NPA) for providing services to the partners of the network was established in 2003. Helsinki-Tallinn Euregio's role is to promote co-operation inside the region and enhance regional integration by:

- being a CB, triple helix driven tool;
- aiming to strengthen the CB regional knowledge based economic and political development;
- aiming to develop of a united multi-cluster innovation region of high competitiveness.

The financing of Euregio is provided from annual membership fees paid by the partners. Additional sums for joint projects are applied for from various national and international funds.

Key events of the cooperation process are Euregio fora, which take place every 1,5 years. The second most important event is the Knowledge Arena, which takes place every second year.

Effective work in the period between the key events is carried out in seminars, conferences, round table meetings, minor and major cooperation networks, project groups, forming, maintaining and mediating of contacts between local governments, academic circles and entrepreneurs.

Helsinki-Tallinn Euregio members are: Helsinki, Tallinn, Uusimaa Region, Republic of Estonia represented by Harju county government and Union of Harju county municipalities.

The list of co-operation partners includes Culminatum Ltd. (Uusimaa research and development centre), the Tuglas Association, the Finnish Institute in Estonia and the Estonian Institute in Finland, embassies, EAS (Enterprise Estonia), universities, science parks, chambers of commerce and trade and ministries.

The mission of Euregio is to increase balanced CB integration and to contribute to the emergence of the Harjumaa-Uusimaa a CB metropolitan knowledge region by boosting the entire area's competitiveness and sustainability. The development of an integrated CB region is based on the principle that both sides should benefit from closer ties and co-operation and that balanced mutual economic co-operation makes the two metropolitan regions stronger and more visible together than they could be apart. The basis for this process is provided by an innovative and creative environment, knowledge-based economy, mutual support and operation according

to the "triple helix" principle – co-operation of universities, business and local governments to either side of the Gulf of Finland.

Euregio priorities are set by two-year periods. The 1999-2000 was for the Estonian and Finnish sides primarily a period of learning to co-operate and adjusting to the other party's operating culture. The first formal action plan was drafted for the years 2003-2005. Keywords of that period were connected to the European Union – how it works and how to operate within the union, dialogue and information exchange, learning how to select possible projects in accordance with the needs of Tallinn and Harjumaa, how to solve own problems. The rectors and pro-rectors of universities of Tallinn, representatives of the Tallinn City Chancellery and higher officials of the Ministry of Education and Research convened in the Euregio offices in January 2004 in order to agree on common interests and spheres of co-operation. The Science twin cities project was completed in 2005; it comprised six reports and studies, including two specifically dedicated to Helsinki-Tallinn universities cooperation "Helsinki-Tallinn - Science Twin City: University Co-operation Development" (Merle Krigul) and "Cooperation in High-tech Business Development" (Raivo Tamkivi).

Keywords of the period 2005-2006 were competence and knowledge: development of the science region concept, branding activities for the science and arts twin region – the idea of a science twin region was complemented by art and the designation no longer concerned twin cities, but twin region.

Priorities for 2007 – 2009 included sustainable regional planning, creating a common business environment, developing human resources. The keywords were recreation services and ways for improving welfare of seniors; relations between urban space and "new media artists", use of new technologies in humanising the urban space (m-services, VJ-bus, wiki-technologies) and new type of festivals; branding and marketing; cooperation between euroregions of the Baltic Sea area.

Priorities for 2009-2013 are increased interaction in spatial and regional planning, creation of innovative and a barrier free region with common well-functioning markets and development of Twin-region of Arts and Sciences. In order to implement the above-mentioned priorities the activities include a fixed link/transportation systems' development study, Helsinki-Tallinn Twin-TV based services' development, implementation of the Living Laboratories' method in Tallinn metropolitan region and common festivals in the framework of Tallinn Culture Capital 2011.

Results

Investigation of euroregions

Based on the study (Lepik, 2009), CB cooperation organisations in Europe depending on type and role differ in management categories and implementation of

management. Euregios are part of knowledge management process, being collective agents of managing CB knowledge production, preservation, integration and transfer.

In the case, where the strategy, vision and mission of a CB cooperation organisation is focused on basic knowledge processes, then knowledge management should be applied. Euroregions' competitiveness and sustainability is based on a fusion of effective goal-oriented business and management processes and skills, and both of them are forms of knowledge.

Knowledge management is an inherent part of the work of developed CB cooperation organisations as it demands organisational capabilities. As CB organisations act in a very practical world, Firestone's World 3 "knowledge" accompanied by Wiig's business, management and hands-on perspectives form theoretical basis to analysis of management of CB organisation. Explicit and tacit knowledge are important part of everyday life of these organisations.

According to Lepik (2009) newer euroregions are in lack of funds and human resources that raises a dual situation – on the one hand, there is lack of finances for using them in developing knowledge formation, storing and management, and lack of time to develop special knowledge systems; on the other hand, as in majority of euroregions in the Baltic Sea region there are one to four employees, a manager is expected to be competent in all areas of activities and processes on different sides of borders. She or he becomes a real knowledge bank – if the manager leaves, organisation is at risk of not being sustainable, as explicit knowledge consists basically of minutes of meetings, project descriptions and annual reports; good or bad working relations, unofficial networks, contexts and inside information are not described in the written form.

In knowledge management of euroregions predominant is tacit knowledge, both, in older and newer organisations: this is the information, competencies, and experience possessed by employees, including professional contacts and cultural and interpersonal dimensions – openness, lessons to be gained from successes of failures, anecdotal fables, and information sharing (Hellriegel 2002). Tacit knowledge is inexpressible, so, in many instances, it is impossible to share even through non-verbal communication. Thus, if we accept the idea of personal, tacit knowledge, we must also accept that knowledge is not always experience we can share. Possibilities to add to knowledge sharing is socialization and this is inherent part of activities of euroregions.

In newer CB cooperation organisations factors of knowledge management are covered or partly covered: use of new technologies (tele-conferences, Skype, etc.), knowledge producing and preserving procedures are well established (systems of minutes, information sharing etc.), still, the problem of one-person-connected knowledge and knowledge management makes CB cooperation organisations vulnerable.

Importance of knowledge management has increased as today's effective and successful regional and interregional organisations have been built on triple-helix model and forms a complicated system. This system is many-sided and demands knowledge storing systems, as well as knowledge transfer and competencies to use the positive effects knowledge management process in different aspects offers.

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Euroregions are well informed about the local needs and problems of border territories and they are bearers of longstanding tradition of CB co-operation on the grass-root level. This knowledge and experience of the CB cooperation organisations are valuable for discussions concerning crucial issues of the region. Effective knowledge management in a CB organisation would contribute to developing regions' competitiveness. This means that knowledge creation, storage, and transfer are essential ffactors of raising regional competitiveness.

According to the development documents of both, Estonia and Finland, and strategic plans of Tallinn, Helsinki, Uusimaa and Harjumaa (Tallinn Development Strategy 2025, Harju County Development Strategy 2025, Trends and bases for activities of the Union of Harju County Municipalities 2007-2013, Uusimaa Development plan 2030/Vision and Strategy, Helsinki Strategy Programme 2009-2012), all counterparts state that knowledge economy is the future of development of the region. This sets frames to Euregio – Euregio should be a learning organisation, and the management type is knowledge management.

Results of the stakeholders' questionnaire

The areas where positive changes are expected:
Respondents favoured innovation (28 points), education (27), regional development (25) and social services (24), environment protection (1), physical infrastructure and energy economy (0 points).

Power of influence of stakeholders:
Euregio is influential via top leaders (18 points), entrepreneurs (14 points), artists and media people (13 points), university representatives (10 points), middle-level

leaders (heads of departments, etc.) (0 points), officials (0 points). Strong connection to the respondents' profession or position was noted: university and art representatives did not mention official top-leaders; official top-leaders did not mention middle-level leaders and artists. It may indicate that for official city leaders' new developments in city entrepreneurship bases is not familiar and ideas of city economic bases are traditional. The under-estimation of the middle-level leaders surprised the authors as the majority of every-day practice is going on between the middle-level leaders.

Euregio partners in the strategy process:
Euregio was considered as a representation and co-operation body for city authorities (others – 6 points), artists and media people (5 points), entrepreneurs (3 points); politicians and common citizens were not mentioned. It may indicate the fact that mayors and vice-mayors are not considered to be politicians, and the link to common citizen is understood directly.

Euregio's success factors:
Euregio's success factors were connected with fora, seminars, projects, implementing new ideas.

There was a strong connection with respondents' profession. University-connected respondents tended to consider Euregio as a developer of a science and arts region through people connected to universities and artists and they underestimated local government and politicians' roles. The trend was stronger among Estonian experts. This trend needs further study. Respondents being the city or regional officials under-estimated university co-operation and pointed out co-operation between local authorities. Only one respondent indicated that success ffactors can be characterised by the development of co-operation between the regions, namely, the number and scope of joint projects, the number of joint events, marketing and representation of the region in fairs, seminars, etc., the number of joint publications, etc. For the Euregio staff the study indicated the necessity to repeat the questionnaire and organise interviews with key persons. It is also necessary to achieve common understanding between main stake-holders about the expectations towards Helsinki-Tallinn Euregio organisation and towards the twin- region as the main goal. Proceeding from these results Euregio brand can be developed.

On the bases of the research it may be stated that Helsinki-Tallinn Euregio is expected to focus on innovation and education, meaning knowledge dissemination, its visibility increased through top-leaders. The main clientele being from the demand side founding members (board, top-politicians and top-officials, secretariat) and supply side being universities, innovative businesses, new media representatives, new media artists.

Results of the in-depth elite interviews

Future trends for regional integration:
Integration between the two regions will deepen – television and e- and m-services, integration of university and science institutions; joint city and regional planning activities; job mobility; joint festivals; joint marketing, joint television programmes. Sill there is no twin-region self-identification; (8 experts)

Joint integration will not happen at all. The cities and the regions will follow different paths and the present interaction and networking will be stopped either by internal (common will, laws, economic situation etc.) or by external (national security situation, natural disasters, etc.) forces; (2 experts)

A new entity Helsinki-Tallinn twin-region will emerge.
A twin-entity may correspond to many features. It may include for example joint universities between the cities, joint city councils, joint city departments, joint services in the region (social services, health care, procurement, etc.), joint resources, joint transport networks (tunnel), joint spatial planning (general and regional planning), etc. A new dialect (like stadia) might emerge. (4 experts)

Future trends for Euregio development:
Euregio as a strong networking and matchmaking organisation between Estonia and Finland. (8 experts)
Euregio will continue working as it has so far and no significant changes happen. The awareness of the activities and results of Euregio remains low among the stakeholders as well as the target group. (3 experts)
Euregio will be transformed into something else like Öresund Committee or, Euregio might finish its existence. (3 experts)

Euregio branding
Euregio's brand is connected to fora, seminars, innovative festivals, innovation-promoting activities. Extended and visible projects, like tunnel/fixed link study, serve as branding actions.

The investigation showed that regional integration will deepen between the two regions, still the self-identification of the region as a twin-region is not foreseen Euregio development is seen by interviewees as continuing and strengthening but not transforming into any other type of organization. The number of respondents who believe in positive qualitative developments indicates that Euregio activities and goals correspond to interviewed partners' expectations.

Case study results

Euregio's organisation and interplay with founding members and interested parties can be described as follows:

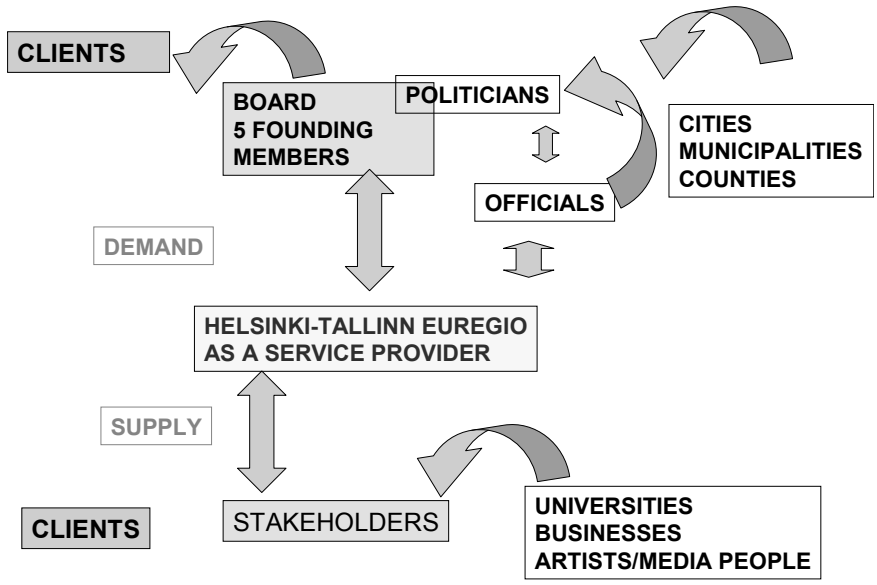

Figure 1: Euregio's supply and demand chart (composed by authors)

Euregio is the only regional level tool between Estonia and Finland which deals with contact making between universities, enterprises and local governments. This task is not given to any other institution in Estonia by law and not by general practice either. Helsinki-Tallinn Euregio is also the only institution between Finland and Estonia whose primary task is enhancing regional integration towards a joint region, in Euregio documents also referred to as a twin-city and twin-region.

Based on the analyses of the interviews we may conclude that the organization with the tasks to enhance regional integration would be a learning organisation as the tasks continuously vary and develop. Such organization should be developing itself – its systems thinking, personal mastery, mental models, shared vision and team learning. This is proved by the change in priorities from 1999-2001 when learning how to cooperate was stressed until 2009 when extended infrastructure projects are planned.

The stakeholders foresee the development towards a metropolitan knowledge CB region. As it is a complex task, knowledge management should be applied.

The twin-region of arts and science (knowledge region) has been stressed but the creation of no other joint institutional structures apart from Euregio are foreseen, e.g. joint city councils. Based on the elite interviews integration between the two regions will deepen – television and e- and m-services, integration of university and science institutions; joint city and regional planning activities; job mobility; joint festivals; joint marketing, joint television programmes.

The target status of Euregio could be as follows:

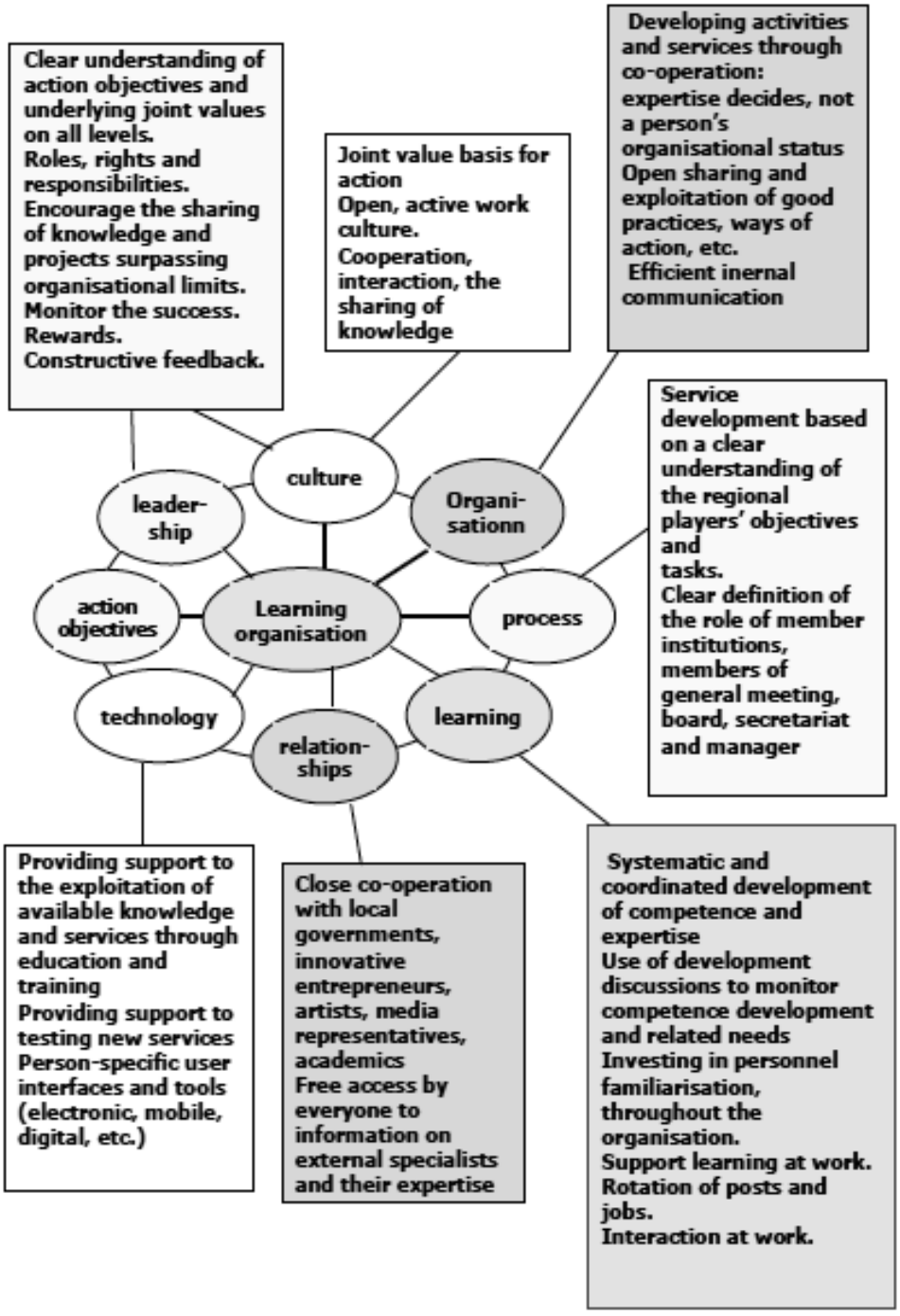

Figure 2: Euregio's target as a learning organization

In order to be a learning organisation, the authors forecast that with new and visible tasks Euregio should grow, both, in capacities and numbers of working force and should remain as one of the leading forces in promoting CB regional integration. Further regional development via joint projects developing joint services, common television, joint festivals and marketing is the most possible development for Euregio in the near future. Branding of a region is usually a task for national governments, but as cities play growing role in regional economic development, still a joint marketing system for the region should be established. Branding the region and the organisation is inter-connected. Euregio's brand is connected to fora, seminars, innovative festivals, innovation-promoting activities. Extended and visible projects, like tunnel/fixed link study, serve as branding actions.

Based on the investigations, the authors claim that regional integration should develop towards metropolitan knowledge CB region, meaning integration of higher education, high-tech entrepreneurship, services and new media and arts. They will serve as Euregio priorities in the near future.

Further research

Euregio's role as a change agent in knowledge transfer and open innovation requires further research.

Mutual understanding and acceptance of counterparts of triple helix – local authorities, academic circles and innovative entrepreneurs needs further study. There is a need for clarifying the triple helix concept and the added-value of developing such co-operation as well as developing common long term strategies for how to achieve it. For the Euregio staff the study of stakeholders indicated the necessity to repeat the questionnaire and organise interviews with key persons to find out more on Euregio's success ffactors and brand Euregio better. Institutional cooperation and coherence of strategy documents between Estonia and Finland for knowledge CB regional integration is needed.

Conclusions

The CB cooperation is one of the most recognised ways to develop border regions (Baldwin and Forslid, 1999; Brodzicki, 2002; Pitoska, 2006). The twenty first century new global economy seems to give metropolitan regions a new central role.

CB cooperation in general refers to "a more or less institutionalised collaboration between contiguous sub-national authorities across national borders" (Perkmann, 2003). One possible and wide-spread CB co-operation institutional structure is a euroregion. Euroregions are administrative-territorial structures intended to promote CB cooperation between neighbouring local or regional authorities of differ-

ent countries located along shared state borders (either land or maritime borderlines).

The authors of the article used the term *euroregion* and *CB cooperation (CBC) organisation* synonymously hereafter to denote an area of co-operation of local and regional authorities situated directly at the border, or close to it and collaborating in different sectors.

The goal of the article was to analyse knowledge management in creation of knowledge CB region, and how CB cooperation is enabled via CB cooperation institution using the example of Helsinki-Tallinn Euregio.

Our hypotheses were that an institution that aims at developing a CB region of knowledge, arts and science should be a developing learning organisation itself and according to the stakeholders there takes place development towards a metropolitan knowledge CB region.

Authors used Helsinki-Tallinn Euregio case for an empirical inquiry that analysed a phenomenon of the organisational development and goals within its real-life context. Case study research included qualitative evidence – two questionnaires, elite interviews and strategy documents of Euregio and its partners.

Euregio is the only regional level tool between Estonia and Finland which deals with contact making between universities, enterprises and local governments and whose mission is "to enhance CB integration between Helsinki-Uusimaa region and Tallinn-Harju county" and the role is "to promote and assist co-operation inside the twin-region, Euregio supports and promotes inter-regional development and competitiveness, aiming to strengthen the regional knowledge based economic development".

Euregio strategy documents set frames for Euregio as a learning organisation, using knowledge management. On the bases of the research it may be stated that Helsinki-Tallinn Euregio is expected to focus on innovation and education and new high-tech services, meaning knowledge dissemination and knowledge transfer, its influence provided through top-leaders. The main clientele being from the demand side founding members (board, top-politicians and top-officials, secretariat) and supply side being universities, innovative businesses, new media representatives, artists.

Strong connection to the respondents' profession or position was noted: university and art representatives did not mention official top-leaders; official top-leaders did not mention middle-level leaders and artists. It may indicate that for official city leaders' new developments in city entrepreneurship bases is not familiar and ideas of city economic bases are traditional. The under-estimation of the middle-level leaders surprised the authors as the majority of every-day practice is going on between the middle-level leaders.

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Euregio's success factors were connected with fora, seminars, projects, implementing new ideas.

The investigation via in-depth elite interviews showed that regional integration is expected to deepen between the two regions, still the self-identification of the region as a twin-region is not foreseen in the near future. Euregio development is seen by interviewees as continuing and strengthening but not transforming into any other type of organization. The number of respondents who believe in positive qualitative developments indicates that Euregio activities and goals correspond to interviewed partners' expectations.

Euregio's brand is connected to fora, seminars, innovative festivals, innovation-promoting activities. Extended and visible projects, like tunnel/fixed link study, serve as branding actions.

Based on the analyses of the interviews we may conclude that the organization with the tasks to enhance regional integration would be a learning organisation as the priorities continuously vary and develop. Such organization should be developing itself. This is proved by the change in priorities from 1999-2001 when learning how to cooperate was stressed until program period 2009 - 2013 when extended infrastructure projects are planned.

The stakeholders foresee the development towards a metropolitan knowledge CB region. As it is a complex task, knowledge management should be applied.

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Based on the investigations, the authors claim that regional integration should develop towards metropolitan knowledge CB region, meaning integration of higher education, high-tech entrepreneurship, services and new media and arts. They will serve as Euregio priorities in the near future.

Euregio's task in the near future is influencing actions via regional decision-makers to help overcome regional disparities.

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PART 4. CONCLUSIONS

4.1. Discussion of the research results

The main aim of this dissertation was to analyse the theories, methods and factors in developing a cross-border (CB) Knowledge Region (KR), utilizing the CB non-profit organisation Helsinki-Tallinn Euregio (hereafter Euregio) in the process. These factors are analysed in the context of three inter-linked theories: regionalisation and networking theories, knowledge creation theories developed by Nonaka et al., and knowledge transfer as a part of knowledge management, using triple-helix and Living Lab methods.

This approach made it possible to analyse how CB cooperation (CBC) organisations can enhance the use of complex tools and methods for the advancement of CB knowledge sharing. Also, how to develop a model of CB knowledge transfer, using the Living Lab method for enhancing development of a KR that, with limitations, could be multiplied in other CB regions**.**

The research process was divided into research tasks, each of them covered by one or several articles. In the research timeline, the first study was of Euregio with Living Laboratories and knowledge region research aspects developed in parallel. The dissertation analyses the evolution of a CB KR as the basic field of research.

The first research task (Study I) was to study the regional integration and knowledge creation and knowledge management (transfer) theories for the purpose of developing a Helsinki-Tallinn capital cities' cross-border KR. The Helsinki-Tallinn Science-Twin City study (2004), a questionnaire (2007), diagnostic interviews (2008) and the Evaluation Study (2009) were used for that. Also, data was generated by researching documents in universities and local governments' units. Additional interviews were conducted with experts, scientists, students and representatives of local and regional governmental offices from 2009-2011 to verify the results of previous research. The interviews, questionnaires and evaluation materials used in previous studies were re-analysed from the perspective of creating the Helsinki-Tallinn KR. Different theoretical viewpoints were collected from academic literature.

I. Theories of region-building were compared to Euregio's activities. Both old and new regionalisation are forms of differentiation based on the phenomenon that geographically close national states often share common history, common values, and common interests on a variety of issues, and they enter into coordination and cooperation for pragmatic reasons. This is true in the case of Estonia and Finland.

The theories focus on factors that drive integration: interest groups, political parties and/or decisions, role of governments and supranational institutions, the driving

force being self-interested groups and institutions. The basic question is whether or how economic integration leads to political integration, and if it does, what kind of political union would be the result. Euregio follows that path of development. Initially created (1999) as a network by "Estophiles" and "Fennophiles" for the principal aim of applying jointly for EU funding, as the sources available for Finland and for Estonia were different. By joining forces, new activity flow and beneficial results were expected. In the beginning there was no mention of any kind of integration, and the knowledge flow was mostly from Finland to Estonia.

A spillover effect refers to a process where political cooperation for a specific goal leads to the formulation of new goals, not intended at the beginning, in order to assure achievement of the original goal. This means that the original political agenda is extended over time in directions that were not intended. This was the case in Euregio. Very soon, directions were taken to overcome regional disparities, to prepare Estonia for joining the EU and for project work. By joining different working cultures, the founding members became represented through high-level officials and politicians: vice-mayors, regional mayors and CEOs.

Integration theories were based on strict plans and programs, but the funding sources, human resources, formal regional integration projects left little space for free flow of knowledge. Euregio's Secretariat and Board made sure that activities were in line with set strategies and that the participants in the process were local authorities and NGOs. Simultaneously, the influence of new regionalism surfaced. This is still the case whenever it is asked: by whom, for whom, and for what purpose regions are made and unmade. In Euregio, the questions used to be associated with CB regional development strategy and programs which led to institution-building. The result was that Euregio was established as a NGO during the developmental process. Thereafter, step by step new regionalisation approaches started to dominate, including the networking and loose ties theories. Since 2004 the main focus has been on knowledge intensive development processes where regional development is targeted for enhancing cooperation between academic circles, local governmental institutions, and innovative entrepreneurs.

An important aspect of Euregio's work is creating networks. The positive effect of networking depends largely on mutual trust. Creating trust between the stakeholders on two sides of the border has been one sub-goal of Euregio's activities. Networks are supposed to appear "between the boxes" and add to the region-building processes. Usually the universities or local institutions that collaborate have strong ties. Thus whatever information strong ties can provide, organisations are likely to have multiple access points to it. On the other hand, fewer ties with weak tie connections are a gateway to an abundance of information and possible favours and contacts which one can seldom reach otherwise, as would be the case, for example, in an attempt to build a network between cities, entrepreneurs, and research and development organisations. Cities and regional organisations on both sides of the Gulf have cooperation contracts with universities, but they seldom

have formalised ties with entrepreneurs, due to different reasons and severe public procurement terms being among them. In this respect, theories of weak ties help to organise different counterparts into a networking system. Weak ties play an additional role in uniting the regions into a CB (knowledge) region. In addition to spatial proximity, good past experiences, knowledge of each other, and successful past cooperation are important. Euregio has attempted to be a producer of weak ties to stakeholders, bringing together representatives from different spheres of life and from different countries.

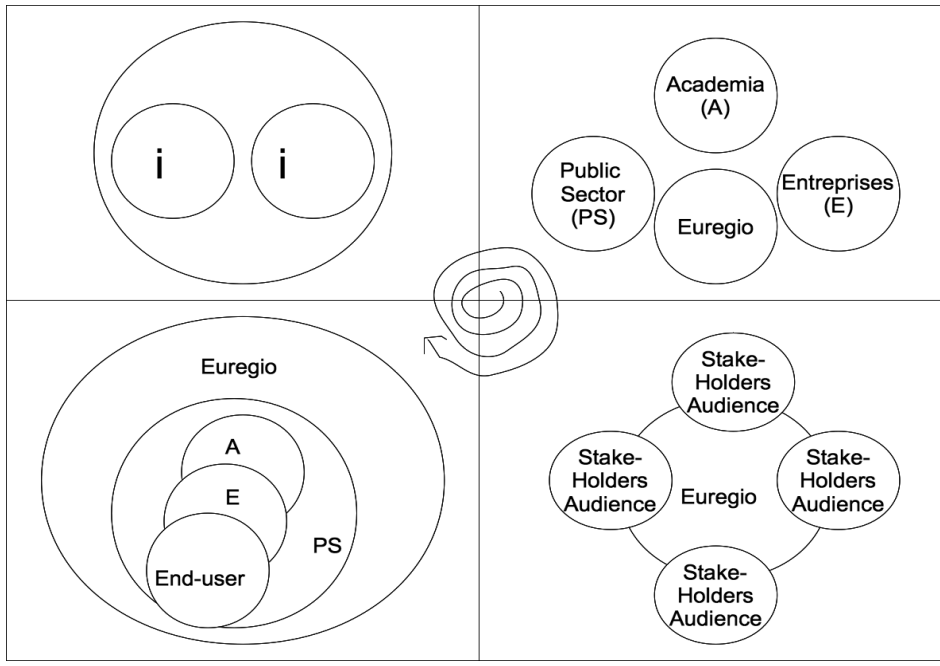
Interaction of Euregio and regionalisation theories is indicated in Annex 1.

II. Applying knowledge creation theories in order to enhance the development of a CB KR is a new challenge for Euregio. New perspectives were found by using the three-element model developed by Nonaka, Toyama and Konno: (1) the SECI process, socialisation-externalisation combination-internalisation, the process of knowledge creation through conversion of tacit knowledge into explicit knowledge. Accordingly, SECI might serve as a knowledge transfer process using the Living Lab method; (2) *Ba*, the shared platform or context for knowledge creation that combines physical and intellectual space creating favourable conditions for knowledge generation: in my study, KR is based on *Ba* with some limitations, and (3) knowledge assets, the inputs, outputs and moderators of the knowledge-creating process. For example, mutual trust among organisational members is created as an output of the knowledge creation process, and at the same time it affects how *Ba* will function as a knowledge creation platform. Based on findings from the Euregio case, it can be concluded that various types of knowledge assets can be found in Euregio.

Ba, the shared platform or context for knowledge creation combining physical and intellectual space which in turn creates favourable conditions for knowledge generation, is integral to a KR in my thesis. Before acquiring the theories of Nonaka et al., the problem of the KR not fitting into known categories existed for me: *Ba* is more than a territory (place), it is space, mode, status, but also passage from one status to another. The spaces are seen as the physical, but also virtual areas in which the three environments of industry, academia, and government interact. The lack of theoretical clarifications influenced the programming processes as the goal was not clear.

Ba is the context shared by those who interact with each other. With *Ba* knowledge is never absolute, objective or free from the context. Instead, the knowledge creation process is always bound to some type of connection, it is a local process. Another possible word to describe *Ba* is connection. Being present in a place is not enough; what is required is to produce an interactive connection between people, and people with their environment. This context can be tangible, intangible or any combination of tangible and intangible elements. Nonaka et al., presented four types of *Ba*: originating, dialoguing, systemising and exercising *Ba*.

Figure 8 indicates the connections between SECI and Ba in Euregio's activities.



I – individual; A - academia; E - enterprises; PS – public sector

Figure 8. Combination of SECI and Ba in Euregio activities (Drafted by the author. Adopted from Nonaka et al. 2000).

Originating *Ba* is defined by individual and face-to-face interactions. It is a place where people share tacit knowledge: their experience, feelings, emotions and mental models are expressed at Euregio staff meetings, roundtables, any place or events where people have possibilities to interact face-to-face. Interaction is used to eliminate boundaries between people. At its best, *Ba* is characterised by love, care, trust and commitment, which provide the basis for knowledge conversion among individuals. Euregio's task is to nurture processes of mutual understanding. The SECI process starts from Originating *Ba*.

Dialoguing *Ba* is defined by collective and face-to-face interactions at Euregio forums, roundtables, and matchmaking events. Dialogue is used to promote feedback and the conscious sharing of mental models and skills between experts (peer-to-peer) as well as people's analyses of their own views occur in the processes of joint project preparing. The individuals' tacit knowledge is shared and articulated through dialogues among participants. The efficiency of *Ba* depends on selecting individuals with the right mix of specific knowledge and capabilities, and who possess the quality of generating an atmosphere of trust where knowledge is freely

given. In Euregio practice, the participants are selected as a result of a long negotiation process which usually guarantees the suitable participants.

Exercising Ba is defined as individual and virtual interactions. It offers a context for people to internalise knowledge. Euregio stakeholders process knowledge that they receive in a virtual form. They work on reports, project proposals, and on emerging trends descriptions. Board meetings, projects' focus groups' meetings, workshops with representatives from different fields serve as examples. Exercising Ba synthesises the transcendence and reflection through action.

Systemising *Ba* is defined as collective and virtual interactions where explicit knowledge is combined. ICT offers opportunities to transfer explicit knowledge to large numbers of individuals and groups of people at the same time. Databases on Euregio website and Facebook serve as some examples, but also newsletters, protocols of decision-making events can be used to share, process, and distribute knowledge. As knowledge creation follows the spiral model, the creation of a knowledge region should occur as a result until the process starts over and goes to the next level of development.

III Formerly knowledge was mainly analysed from the perspective of businesses. The application of knowledge concepts to cities (*ideopolis*) and regions is a phenomenon of the last two decades, bringing forth publications on relationships between innovation, learning, and regional economic development and places that are connected to them.

Different earlier concepts of knowledge-based territorial entities have been dedicated to the development of the concept of a KR: innovative milieu, industrial district and technopole, learning regions, overlapping concepts of knowledge city / ideopolis and KR or knowledge city-region. The latter is an emerging concept: though knowledge intensive regions have existed in Europe for decades, and are emerging all over the world, the phenomenon of KRs as a conscious interactive triple-helix set of policies and actions is only now emerging and lacks sufficient academic input.

There is no single opinion about what steps should be taken first or which preconditions should exist for enhancing a KR. Research shows that a group of initiators is always necessary: the initial vision and initiative to develop a KR begins with a very small group of people. Usually they are intermediaries or brokers, as individuals or as part of organisations, and sometimes they are political decisions-makers.

Other necessary conditions include strategy and strategic actions with stakeholders from academic circles, local governmental institutions and entrepreneurs involved in regional innovation and development strategies. Intermediaries like Euregio provide more complicated methods for developing a KR. KR acts for stakeholders as Ba – a platform for knowledge creation, storage and sharing.

It has to be noted that there are no universally applicable measures for knowledge-based regional development due to widely different conditions in different regions of the world as, for example, emerging vs. declining industrial regions, urban vs. rural areas. Contemporary best practice may not always be the most productive starting point for an aspiring region, as it sets the bar very high and often ignores the early developmental phases that may be more relevant to an emerging region.

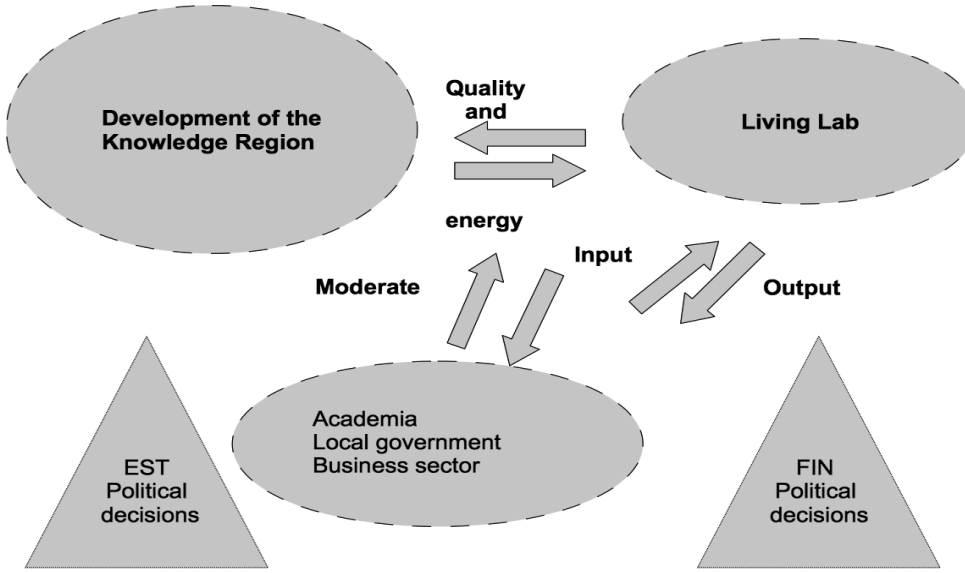


Figure 9. Factors in creating a KR (author's graph, adopted from Nonaka et al. 2000).

The use of SECI and *Ba* and assets gives a more flexible and dynamic model for developing a CB KR. Common place, space, movement and passage at one time are characteristic to KR development.

As a theoretical contribution, I developed a definition for a KR: it is a place, space and *Ba* in which physical and intellectual space are combined for creating positive conditions in order to generate, share, preserve, combine and transform tacit and explicit knowledge for increased well-being and competitiveness of a CB region.

The second research task (Study II) was to study complex forms of CBC, such as the triple-helix and Living Lab method, utilizing the advantages created by collaborating organisations. The international transferability of an innovative method of a Living Lab for CB knowledge transfer from one country (Finland) to another (Estonia) was studied.

Triple-helix cooperation has been the main attempt in the activities of Euregio so far. However, this type of cooperation has proved to be very difficult due to the different interests of the parties and to a large extent it has been dependent on the personalities involved in the processes. Hence the initiators at Euregio have searched for new forms of cooperation.

Living Lab method – a relatively new method in CB context – may have great potential and it could be the missing link in CB knowledge and innovation transfer. Relying on Finnish experience and studying the reasons behind Finland's economic success, it is evident that there has been consensus on the development of a goal-oriented innovation environment for about ten years: well developed institutions, systematic development of innovation environment and attention to R&D.

The process of application is complex, having many stake-holders, and the fact that the method is well-known and developed in Finland (seven Living Labs in Helsinki alone) and less known in Estonia adds to the complexity.

Living Labs are created in order to work out some innovations, but at the same time Living Labs constitute an innovation in working methods and in the system of cooperation by various stake-holders in comparison to the earlier methods in the field. Thus, it is possible to assume that the obstacles that must be overcome when implementing the method are close to other innovations that are tackled in the framework of innovation theory.

Findings of the study:

1) Due to the complexity of the method, barriers for implementation were identified:
   (a) Semantics: lacking previous experiences, Living Lab is not understood or grasped completely;
   (b) Differences in institutional and organisational behaviours between Estonia and Finland, but also between different institutions in the same country;
   (c) Lack of cooperation culture between the public sector and entrepreneurs in Estonia;
   (d) Differences in democratic inclusion processes in Estonia and Finland;
   (e) Differences in priorities and innovation strategies in Helsinki and Tallinn;
   (f) Lack of finances in some smaller companies who might be interested in Living Lab;
   (g) Apprehensions about the possibility of success, since the outcome is not known in advance;
   (h) No clear understanding about the details of the environment which would be most suitable for developing potential Living Labs.

2) Areas of potential use of Living Labs in Estonia were identified as follows: Two areas were considered as having equally high potential: transport (also including logistics) and media. Media includes multimedia and communication. Also, traditional media as well as interactive media were mentioned by respondents participating in the research. Several respondents also favoured security and tourism. Two respondents favoured other areas (design and architecture, health care, energy sector). As far as technological tools used in those areas, majority of the respondents mentioned ICT (in some cases ICT and in some cases IT, also as telecommunications and communication systems). The other technologies mentioned were measurement systems, detection devices and optical technology for use in cameras. Biotechnology was also mentioned in a few cases, but its concrete use in city areas was not covered.

3) Stakeholder participation in Living Labs
Some companies and universities were interested in using the Living Lab method. This is due to the differences in understanding of the method and its realisation possibilities.

4) Local leadership
Some interested local leaders were identified in Tallinn as having the same obstacles as the stake-holders, whereas local leaders in Helsinki city-region are involved in Living Lab – using it as a method as well as a created environment.

5) Role of citizens
Estonian citizens are interested in, and receptive to, new technologies and ICT. Thus citizens' and tourists' participation in developing of new solutions may be assumed to exist. The problem includes different traditions of involving citizens in democratic participation processes in Estonia and Finland.

Living Lab method can be derived from either the business sector, academia or the public sector. This study suggests that initiative should come from the public sector, which should identify the problem, work out the suitable method for its solution, and then call for the solution.

Euregio has been identified as a suitable organisation for advancing CB Living Labs as it has direct access to relevant decision-makers and universities in the region.

Based on interactions and interviews, conclusions have been drawn that in the event that the public sector is the promoter, knowledge transfer and sharing processes follow the model in Figure 10 below:

Figure 10. Model of a CB Living Lab advancement by the public sector (author's graph).

In the case of Helsinki-Tallinn CBC model, the knowledge transfer would include the transfer of knowledge on creating a Living Lab from Finland to Estonia. It would then be followed by the knowledge sharing process with the universities, enterprises and public sector working together. The end-user would be included in the phases of testing and improving the service.

The third research task was to analyse Euregio as an agent of change in the processes that advance regional cooperation and the creation of an innovations centred environment (Study III).

CBC organisations are well informed about local needs and problems of border territories, and they have a longstanding tradition of CBC on grassroots level. This knowledge and experience of CBC organisations are valuable for discussions concerning crucial challenges of the region. CBC organisations are important partners in the knowledge transfer process, being collective agents for managing knowledge production, integration and transfer (sharing).

I examined the case of Euregio as an empirical inquiry that analyses an organisational development phenomenon and its goals within a real-life context. Case

study research includes qualitative and quantitative evidence – questionnaires, elite interviews and strategy documents of Euregio and its partners, also background interviews that are not directly mentioned in the research. Unlike Lepik's research on the financial, legal, organisational and institutional aspects of a CBC, I have researched the knowledge transfer and sharing aspects of a CBC.

Euregio is a CBC organisation with five member organisations. Since 2001, the target field of cooperation has been innovation, science and arts co-operation (Knowledge arena), and competitiveness of the region. The advantages and drawbacks of Euregio in being a promoter of regional knowledge transfer are discussed, based on research carried out in 2008 and 2009 (questionnaire and elite interviews). In the questionnaire based on Euregio Secretariat memos, I studied what potential fields of activities Euregio should pursue according to the opinion of the respondents (Table 3), what are the channels of influence (Table 4), Euregio's role in society (Table 5), Euregio's success indicators (Table 6). Elite interviews were used for deeper insights for future development: developmental trends for Euregio (Table 7) and regional integration (Table 8).

Regarding terminology, it is noted that for a long time the cooperation field between Helsinki and Tallinn city-regions was known in strategy documents as "a science-twin-city" and later " a science and arts twin-city". The word "city" was replaced gradually with "region" and the term "knowledge region" is so recent that it was not used in the 2004 and 2007 interviews.

Statements and results:
Euregio's expected fields of activities were studied: general and spatial planning, environment protection, social services, education, regional development, energy economy, physical infrastructure.

Table 3. Euregio's potential fields of study:

Innovation:	28	87,50%
General and spatial planning:	27	84,37%
Environment protection:	1	3,12%
Social services:	24	75,00%
Education:	27	84,37%
Regional development:	25	78,13%
Energy economy:	0	0,00%
Physical infrastructure:	0	0,00%

Euregio's influence via stakeholders was studied: top leaders as mayors, deputy mayors, municipality leaders, middle-level leaders, officials, university representatives, artists and media people, entrepreneurs.

Table 4. Euregio's stake-holders as Euregio's channels of influence:

Top leaders (mayors, deputy mayors, municipality leaders, MPs, CEOs, etc.):	18	56,25%
Middle-level leaders (heads of departments, etc.):	0	0,00%
Officials:	0	0,00%
University representatives:	10	31,25%
Artists and media people:	13	40,62%
Entrepreneurs:	14	43,75%

To whom is Euregio necessary was studied: city authorities, artists and media people, entrepreneurs, politicians.

Table 5. Euregio's role in society – Euregio is a representation and cooperation organisation:

City authorities	6	42,85%
Artists and media people	5	35,71%
Entrepreneurs	3	21,42%
Common citizens	0	0,00%
Politicians	0	0,00%

What are Euregio's success indicators?

Table 6. Euregio's success indicators:

Forums, seminars, meetings (matchmaking)	31	97,00%
Projects	29	91,00%
Implementation of novel ideas	30	94,00%
Others	0	0,00%
Do not know	0	0,00%

What development trends are possible for Euregio?

Table 7. Future developmental trends for Euregio (elite interview):

Euregio as a strong networking and matchmaking organisation between Estonia and Finland.	8	57,14%
Euregio will continue working as it has so far and no significant changes happen. Awareness of the activities and results of Euregio remains low among stakeholders as well as target group.	3	21,42%
Euregio will be transformed into something else, like Öresund Committee	3	21,42%
Euregio might finish existing	3	21,42%

What development trends are possible for the regional integration?

Table 8. Cross-border regional development perspectives (elite interview):

Integration between the two regions will deepen in general	8	57,14%
Integration will not happen	2	14,28%
A new entity, a Helsinki-Tallinn twin-region will emerge.	4	28,57%
Science and knowledge/innovation based regional integration will dominate	8	57,14%
No innovation-oriented integration will happen	4	28,57%

Based on the research, it can be said that Euregio is expected to focus on innovation, education, and new high-tech services - meaning knowledge dissemination and knowledge transfer. Its influence is provided through top-leaders. The main clientele are from the demand side founding members (Board, top politicians and top officials, secretariat) and the supply side consists of universities, innovative businesses, new media representatives, artists.

A strong connection to the respondents' profession or position was evident: university and art representatives did not mention official top leaders; official top leaders did not mention middle-level leaders and artists. This could indicate that city leaders are not familiar with new developments in the city's base of entrepreneurship and that their ideas about the city's economic base are traditional. The underestimation of the middle-level leaders was surprising as most of every day practice goes on between middle-level leaders.

Euregio was considered a representational and collaborative body for city authorities, and artists, media people, entrepreneurs; politicians and common citizens were not mentioned. It may indicate the fact that mayors and deputy mayors are not considered to be politicians, and the link to common citizen is understood directly.

University connected respondents tended to consider Euregio as a developer of a science and arts (knowledge) region via artists and people connected to universities, and they underestimated local governments' and politicians' roles. Respondents who were municipal or regional officials underestimated university cooperation and pointed out cooperation between local authorities.

Euregio's success factors were connected with forums, seminars, projects, and implementing of new ideas.

Analysis of in-depth elite interviews showed that regional integration is expected to deepen between the two regions although self-identification of the region as a twin-region is not foreseen in the near future. Euregio development is seen by interviewees as continuing and strengthening, but not transforming into any other type of organisation. The number of respondents who believe in positive qualitative developments indicates that Euregio's activities and goals correspond to interviewed partners' expectations.

The twin-region of arts and science (knowledge region) was stressed, but the creation of any other joint institutional structure was not foreseen, e.g., joint city councils. Based on the elite interviews integration between the two regions will deepen – television and electronic and m-services, integration of universities and science institutions, joint city and regional planning activities, job mobility, joint festivals, joint marketing, and joint television programs.

Challenges:

Understaffing is Euregio's drawback; the organisation has two to three staff members. This is a disadvantage when a large number of stakeholders is involved and larger knowledge transfer activities have to be conducted. The project and program managers are expected to be competent in all areas of activities and processes on both sides of borders. Hence they become knowledge banks and if one leaves, the organisation is at risk of not being sustainable. Explicit knowledge consists basically of minutes of meetings, project descriptions and annual reports, and all tacit knowledge – experiences, good or bad working relations, unofficial networks, contexts and inside information – does not exist in written form.

Until the fall of 2010, a complex challenge was whether to enlarge the Board membership, possibly, with individuals associated with enterprises and universities. It was considered that this step might increase the organisation's capacity to react to challenges posed by the enhancement of CB innovation and knowledge environment. Another consideration was increased financial resources, but at the same time, it would have made the harmonisation process of activities even more complex. As the decision was postponed, the enlargement question was dropped.

Based on a generalisation of the Helsinki-Tallinn case, several conclusions can be drawn. Euregio was created by representatives of local governments under conditions which lacked a broad strategy for integration of the two regions that defined the targets and the stages for activities. It is possible to speak of a general will for more integration of Tallinn and Helsinki areas and to find corresponding references in various development documents, but of no concrete strategy in that direction. Strategic direction for Euregio's activities is given step-by-step as initiatives by its partners (founders, involved stakeholders, Euregio employees) as they reach integration aspirations. Based on present information, such a situation can be considered quite typical also in case of other CBC organisations.

If Euregio's main activities initially included exchange of experiences in the area of local governmental activity, by now the focus is on topics like innovation and knowledge in all forms. Heretofore, those had not been included in the traditional functions of local governments and local governments have only recently embraced them. This is especially applicable in case of Euregio's Estonian partners.

The stake-holders and Euregio employees have suggested various important areas of activity and, in many cases, the ideas have been adopted. At the same time, achieving a wider scale effect and guaranteeing sustainability of the activities, which is done via corresponding strategies and action programs, requires their acceptance and financing by the Euregio Board consisting only of founding members who are local authorities.

In the case of an international organisation, strategic planning and the process of compiling development programs are a much more complicated and time-consuming process. It takes a lot of effort to balance and harmonise the interests of stakeholders. One of the key issues addressed in arranging CBC activities are different organisational cultures of the countries.

The development of Euregio's activities toward more complicated and knowledge intensive activities and connections to theoretical background are indicated in Annex 1.

4.2. Practical value of the studies

The research showed that the preconditions exist for the development of a Helsinki-Tallinn KR. Based on research and literature, the following steps are suggested:

Firstly, political decisions should be taken on as high a level as possible: in mayors' offices, but also on the central government's level. An existent initiating group alone is not enough as the policies co-construct the knowledge-based innovation systems by introducing infrastructure, human resources, and public demand into the innovation processes.

Secondly, following sub-goals should be adopted: knowledge transfer cooperation, using the triple-helix principle and from this, or in parallel, the use of the Living Lab method for creating the KR, that I refer to as *Ba*.

Thirdly, high level decision-makers and experts work out a CB joint strategy for the development of the CB KR. Until now Euregio has been the only institution tasked to enhance CB regional integration. Euregio-type organisations should be part of the process, either as initiators or intermediaries, and also, for finding innovative ways for knowledge transfer and regional development. However, they cannot take charge of the processes without given the authority and being sufficiently upgraded with financial and human resources.

Fourthly, an important trend to consider in the enhancement of innovation by the public sector should be innovation in the public sector itself and the enterprises belonging to it. Planned services should be designed not only to resolve a current problem, but also to restructure the whole sphere with innovative services. Several electronic and mobile phone services may be considered here.

Fifthly, an institution like Euregio would serve as an agent of change for CB innovation transfer and for speeding the process of moving from one innovation phase to the next one. The broader positive context includes the general Estonian-Finnish (Tallinn-Helsinki) knowledge transfer and exchange of experiences, which has produced positive results in several fields. Possible preconditions, obstacles and potential activities to advance a KR are presented in Table 9.

Table 9. Factors defining the formation of a KR (Drafted by the author)

Preconditions for creating a KR	**Obstacles for creating a KR**	**Potential activities in order to achieve the goal of KR**
1. leadership: initiators and brokers	Lack of leadership with dedicated well-known persons	Support the initiative group on the highest political level
2. critical mass of knowledge, skills, infrastructure	Uneven development of knowledge infrastructure on two sides of the Gulf of Finland	Raise the percentage of GDP for R&D to 1,6 by 2014; support horizontal cooperation between R&D institutions and entrepreneurs (OECD 2011)
3. Cultural attitudes, plus architecture and urban planning	Lack of cooperation in spatial planning, lack of tradition to unite strengths of two regions	Develop cooperative attitude and “out-of-the-box” way of thinking, develop strategies for CB integration

4. Strategy formulation: clustering, success factors	Differences in Estonian and Finnish clustering policies	Work out relevant integration strategy for the region
5. Key actions and institutions: lobbying, intermediaries	Lack of tradition to use joint lobbying in European power corridors	Use the EU level possible financial support systems to develop a competitive strategy for promoting main objects of the knowledge region
6. Universities	Rivalry for students and resources	Establishing a Gulf University; help to start 40 international spin-offs by 2014 (OECD 2011); raise the number of foreign students and professors in the region, raise the number of headquarters of international companies in the region.
7. Industry engagement	Needs further studies	raise the innovation orientated financing measures for Estonian enterprises to 2,5% of GDP (2014) and to the same level with Finland by 2015 (lobby on the national level)

The Figure 11 presents a model of traditional and non-traditional factors in developing a CB KR. A limitation for this model is the lack of different layers that is typical for an extremely complicated process like the building of a KR is.

The factors in the formation of a KR include different theories, approaches and actors. Traditional regional integration theories and new regionalisation together with networking theories serve as the platform for explaining and creating integration processes. Traditional CBC methods, combined with innovative and complex methods, might give faster and better quality results. However, it has to be noted, that the formation of a KR is time consuming. Developing a KR is an asset which contributes to the growth of knowledge-based economy, well-being, and regional competitiveness.

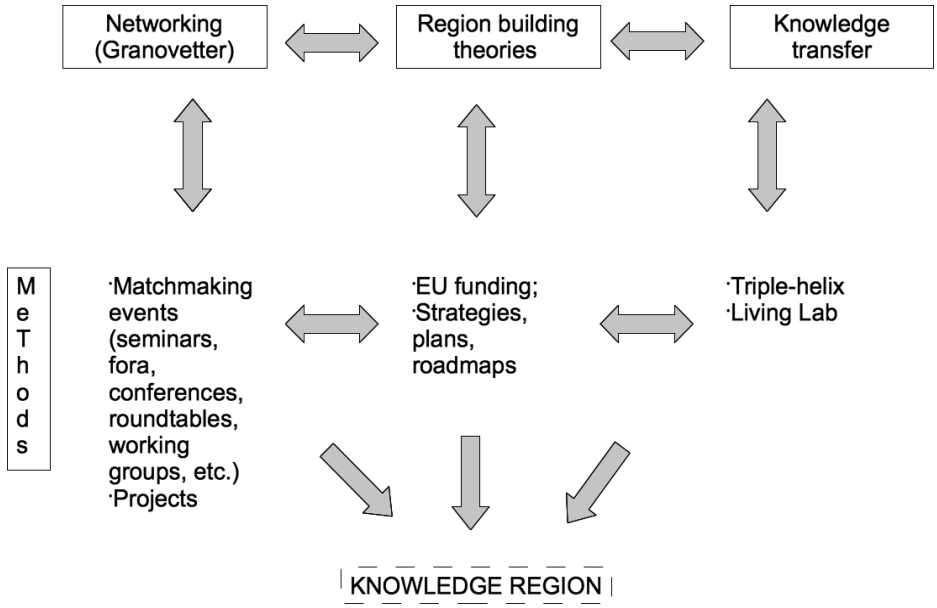


Figure 11. Factors in the advancement of a KR (author's graph)

4.3. Theoretical contribution

1. Region building and different theories of knowledge and knowledge management have been objects of academic research for decades. Applying knowledge concepts to spaces or places is a new phenomenon. KRs are insufficiently studied academically; even an acknowledged definition is lacking. This thesis adds to the body of knowledge as KR has been addressed in it in an original dynamic way by interlinking theories of regionalisation and networking, knowledge creation theories, including knowledge management and knowledge transfer, and using Living Lab method for enhancing regional integration.

2. The creation of a KR has been analysed in earlier literature mainly within the context of one country. To my knowledge the development process of a KR has not been addressed previously within the context of CB regions between different countries. CB regional integration processes have been covered by several OECD reports, but not with a focus on CB KRs. This thesis contributes to earlier research. To date, the role of a CBC organisation and theoretical debate on creation factors of a CB KR have not been inter-linked. This dissertation also tackles regional integration as a process of CB integration on the level of local authorities, rather than the known approach of integration between national or supranational states.

3. The focus of this research is on the factors in the development of a CB KR and knowledge transfer in cooperation, fostering of contacts of local authorities-uni-

versities-enterprises, and using the Living Lab method in the framework of CBC. The international transferability of the Living Lab method is investigated, using Helsinki and Tallinn as a geographical dimension or Place/Space/Ba. In this research, the promoters are local authorities and Living Lab is analysed as a method (not as an environment or approach).

The dissertation proposes a potential model for enhancing an integrated CB KR, based on the case of Euregio.

4.4. Limitations and proposals for further research

1. First research task

(a) When presenting the moderating factors, a question of leadership remains: who should lead the initiators group - the universities, local authorities or is Euregio strong enough to take the role? Entrepreneurs are less plausible for this activity. The role of local authorities in developing knowledge intensive entrepreneurship together with universities demands further research.
(b) Horizontal alliances between different public organisations, especially from different countries, are difficult to design and options to pursue this course need thorough research.
(c) The possible limitations to implementing the CB KR vision in Helsinki-Tallinn city-regions also requires further, thorough research.

2. Second research task: initiating a Living Lab method

(a) Empirical evidence presented in this paper was based on the experience in the Helsinki and Tallinn capital regions. I am of the opinion that findings and concepts of this research may be of wider interest. Two possible directions that could develop the research are presented.
(b) The results of the diagnostic research on obstacles and favourable factors for creating Living Labs, and on the transferability of the Living Lab method from one socio-cultural environment to another could have a more general character and, therefore, could be valid in a wider context than Tallinn/Estonia. This means that it probably would be advantageous to study whether these factors are applicable to other East European cities. It is not clear whether the research methodology is repeatable in this type of study. In this case, it was assumed that the interviewee is at least to some extent informed about the essence and functioning of the Living Lab. This was the case in Tallinn, as several events for introducing the method had taken place, but this assumption may not apply to many cities. One solution could be to make the interview methodology more operational towards greater formalisation, so that it would be possible to ascertain with an interview or questionnaire the presence of potential elements (for example availability of a high-tech com-

pany, cooperation experience between the authorities and the companies, innovativeness potential of citizens, potential activity in seeking solutions to environmental problems) for implementation even if the respondent does not have information on Living Lab method or implementation potentials.

(c) In the literature, creation of Living Labs is interpreted as a process that goes on within the borders of the same country. It is presumed that information spreads from one country to another, but the Living Lab operates in cooperation with one and the same city government and a technology company in the same country. This study proffers that combining opens other opportunities. If practice supports this position, new possibilities for the development of CB clusters of technology companies appear. As a result, an additional hypothesis can be advanced which identifies the combinations of basic factors relevant to creating Living Labs. In the case of Helsinki and Tallinn, cultural and geographical proximity are the fostering factors, but it is possible to build combinations on other basic factors.

3. The third research task: the case of Euregio

(a) The experience of the Helsinki-Tallinn region and several other regions shows that the existence of previous cooperation between bordering regions is of utmost importance in order to reach the innovation-centred cooperational level. However, the experience of Tallinn and Helsinki showed that prior experience is not enough to transfer cooperation to the innovation-centred area, but rather long-term previous working experiences including study visits, meetings, discussions are needed. An understanding about innovation, innovation policy implications, and organisational systems for dealing with innovation can be very different in partner cities/regions.

The list of methods for building a KR most likely is not comprehensive. This thesis proposes two methods - triple-helix and the Living Lab method, but there can be others.
Problems with such a list of methods could also cause some problems for the creation of a complete model for a CB KR, and the concomitant measures for achieving the goal. Although a comprehensive framework of characteristics for building a KR is lacking, the thesis nevertheless provides a good overview of the different aspects of a KR and it creates a suitable starting point for further research.

(b) The thesis addresses the local and regional level factors of knowledge enhancement. The national level factors are beyond the scope of this study. Future work should explore all levels of governance from the knowledge transfer point of view.

(c) In the context of the case study, more suggestions for future research in other capacities, as the case studies could be done in more countries. Future cases

could also try to evaluate more quantitatively the KRs by investigating the outcomes in economic terms.

(d) Long-standing innovation-related cooperation between Helsinki and Tallinn points out some difficulties in the implementation process: horizontal cooperation even within one institution's borders (e.g., city's different departments and agencies), the role of path dependency (i.e., how the institutions have developed over time, how the rules of the game were established, and the difficulties in breaking a "gatekeeper's" power), overestimation of cultural differences, and the different financial opportunities. Overcoming these barriers should be a subject for future research.

(e) CB regional branding has not been the primary objective of studies presented in this paper. It is worth noting, however, that in different roundtables and working groups the lack of shared information, or media, or knowledge space has been pointed out as one of the biggest obstacles to real Estonian-Finnish CB integration and to the use of knowledge available in the region. I see the development of new common knowledge space as the biggest and most important challenge for future research.

As a result of the studies implemented to find answers to the research tasks, a new complication for study surfaced. Based on the hypothesis that the first precondition for developing any regional integration is shared information and media space, sometimes called public space, it is necessary to study the space between southern Finland and northern Estonia. To my knowledge this space has not been studied and literature on CB public space is scarce, on the whole. The problem is even more complicated, if one considers that in both countries exist at least two information spaces: in Estonia, the Estonian and Russian speaking and in Finland, Finnish and Swedish speaking. The situation is more pronounced currently in Estonia, however. And in both countries the English-speaking population is growing. There is one more trend that has not been covered by academic research: according to the prognosis of the Helsinki Statistics department, the Russian-speaking population will be the second largest foreign language group in Helsinki by the year 2020.

Possible actors to influence public informational space and to serve as agents for change could be Tallinn TV and Stadi TV, plus the new media channels and the traditional and non-traditional social media. Common informational space might be the very first precondition for emergence of any regional integration, the KR included. This condition was not mentioned in studies on regional integration processes earlier and presents a broad field of study for the future.

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SUMMARY IN ESTONIAN

PIIRIÜLESE TEADMUSREGIOONI ARENGUFAKTORITE ANALÜÜS HELSINGI JA TALLINNA PEALINNAPIIRKONDADE KAASUSE NÄITEL

Doktoritöö eesmärk

Doktoritöö eesmärk oli uurida piiriülese teadmusregiooni arengufaktoreid. Analüüsitakse teooriate ja meetodite rakendatavust, mis aitavad kaasa Helsingi-Tallinna piiriülese teadmuspiirkonna väljakujunemisele. Muudatuste agendi ja protsesside algataja rollis on Helsinki-Tallinn Euregio.

Töö aktuaalsus

Teadlaste ja praktikute analüüsides valitseb konsensus, et „teadmus" ja „regioon" on jätkuvalt tähtsad piirkondliku konkurentsivõime ja heaolu kasvatamisel. Teadmus on võti innovatsioonile ja innovatsiooni peetakse majandusarengu olulisemaks komponendiks. Regioonide tähtsus on samuti kasvutrendis, olles kujunemas olulisteks üksusteks majanduskasvu saavutamisel, samal ajal aga võivad regionaalsed eripärad ja kultuuritaust olla takistuseks üle-euroopaliste arengustrateegiate elluviimisel.

Doktoritöös käsitletud teemade aktuaalsus on seotud üleminekuga ressursipõhiselt majanduselt teadmistepõhisele majandusele, mida võimendavad globaliseerumisprotsessid. Majanduslikud ja tehnoloogilised muudatused ning inimeste suurenenud liikumine tekitavad vajaduse regioonide parema toimimise järele: nad peavad suutma toime tulla majanduse kaasajastamise survega ning olema konkurentsivõimelised teiste regioonidega.

Alates 1990-ndatest ei kujuta teadus- ja arendustegevus ega innovatsioonipoliitika omaette valdkondi, vaid on vahendid saavutamaks laiaulatuslikke eesmärke nagu majanduskasv, konkurentsivõime tõus ja majanduslik võrdsus.

Territoriaalne ühtekuuluvus (*territorial cohesion*) ja selle kasvatamise meetodid on jätkuvalt tähelepanu keskmes Euroopa Liidus (EL) peetavates debattides. Üheks enam tunnustatud viisiks arendada piiriäärseid regioone ning suurendada territoriaalset ühtekuuluvust Euroopas loetakse piiriülest koostööd. Kuna EL-s elab piirialadel 181.7 miljonit inimest (37,5% kogu rahvastikust), on piiriülese koostöö edendamine EL poliitikate seas olulisel kohal. OECD raportite kohaselt on tänu regionaalsele fragmenteeritusele piire ületav innovatsioon pärsitud.

Piiriülese koostöö vormid ja meetodid on väga mitmekesised ja ajas muutuvad. Paremaks koostööks on paljudel piirialadel loodud vastavad organisatsioonid (euroregioonid, euregiod jms). Helsinki-Tallinn Euregio kui organisatsioon loodi samuti eesmärgiga edendada piiriülest koostööd, hilisemates dokumentides integratsiooni. Alates 2004 on Euregio põhisuundumus innovatsiooni- ja teadmuspõhise koostöö edendamine.

Liikumine teadmuspõhisele majandusele tõi kaasa tõdemuse, et ainelistest ressurssidest olulisemad on majandusvälised suhted. Innovatsiooni ja teadmust loetakse kõige olulisemateks heaolu kasvatamise vahenditeks ja organisatsiooni konkurentsivõime võtmeks (Drucker 1988; Nonaka 1991; Morey & Frangioso 1997; Zwass 1999; Argote & Ingram 2000; Argote et al. 2000; Davenport & Prusak 2000; Lahti & Beyerlein 2000; Rulke et al. 2000). Sellega on kaasnenud akadeemiline huvi teadmuse genereerimise, säilitamise ja jagamise (või ülekande) vastu (Davenpor et al. 1998; Costa 1999; Marchand & Davenport 2000).

Lissaboni strateegia tõi teadmus-kesksed vaated rambivalgusse. Aastal 2000 vastu võetud ning 2004. aastal põhjalikult revideeritud Lissaboni strateegia ja selle rakendamise protsess on jätkuvalt tähelepanu ja uurimise objekt. Käesoleva dissertatsiooni seisukohalt on oluline, et revideeritud Lissaboni strateegias rõhutatakse kohaliku omavalitsuse ja regiooni tasandi olulisust innovatsiooni ja teadmusmajanduse juurutamisel – varem peeti seda riigi funktsiooniks (Kok 2004). Samas ei ole kasvanud rahulolu protsessiga. OECD on välja pakkunud mitmeid vahendeid, et innovatsioon ja teadmusloome Euroopas paremini edeneksid. Eriti oluliseks peab OECD mittetraditsiooniliste lahenduste leidmist, seal-hulgas lõpptarbijate *(end-users)* suuremat kaasamist. Uurida mittetraditsioonilisi vahendeid innovatsiooni ja teadmusloome edendamiseks oli ka käesoleva doktoritöö üks eesmärke.

Seoses globaliseerumisprotsessidega on asukoha tähendus muutunud. On väidetud, et infotehnoloogiate arenedes ei ole asukohal enam tähendust. Samas, teadmusprotsesside ja -kontseptsioonide uurijad täheldavad asukoha kasvavat kaalu ja tähendust, lähtuvalt teadmuse mitmemõõtmelisest olemusest. Regioon võiks olla poolel teel globaalse ja lokaalse vahel, teadmusregioon kohaks uue teadmuse loomiseks, säilitamiseks ja jagamiseks.

Doktoritöö uurimisülesanded

I. Esimene uurimisülesanne oli uurida integratsiooniteooriate ja teadmusloome teooriate rakendatavust Helsinki-Tallinn pealinnapiirkondada vahelise teadmusregiooni väljaarendamiseks.

II. Teine uurimisülesanne oli analüüsida keerukamaid piiriülese koostöö vorme nagu kolmik-spiraali tüüpi koostöö ja eluslabori meetod, kasutades piiriülese koostööorganisatsiooni poolt loodud eeldusi.

III. Kolmas uurimisülesanne oli analüüsida konkreetsemalt piiriülese koostöö organisatsiooni Helsinki-Tallinn Euregiot kui muudatuste agenti ja protsesside algataja rolli piiriülese koostöö edendamisel ja regionaalse innovatsiooni keskkonna loomisel.

Uurimistöö metoodika

Käesolev töö rakendab interdistsiplinaarset lähenemist, kasutades regionaaluuringute, juhtimisteaduse ning teadmusjuhtimise teooriaid. Töös on kasutatud nii traditsioonilise empiirilise uuringu kui ka tegevusuuringu (*action research*) meetodeid. Tänu autori pikaajalisele tööle organisatsioonis Helsinki-Tallinn Euregio on olnud võimalik läbi viia nn sekkuvaid aktsioone (algatused, konverentsid, foorumid, ümarlauad, seminarid, tegevuskavad, strateegiad), mille mõjusid on töös lähemalt uuritud.

Kõigi kolme uurimisülesande raames viidi läbi mitmeid väiksemamahulisi küsitlusi ja intervjuusid, mida töös käsitleti mitte niivõrd eraldiseisvate empiiriliste uuringutena, kuivõrd tegevusuuringu ja toetava uuringu kontekstis. Empiiriline materjal on kogutud viie uuringuga. Kasutatud on nii kvalitatiiv- kui kvantitatiivmeetodeid: küsimustikud, intervjuud, eliidi intervjuud ja diagnostilised intervjuud, mis on läbi viidud aastatel 2004 – 2011.

Uurimistulemuste saamiseks töötas autor välja alljärgnevad instrumendid:

- Helsingi-Tallinna teadus-kaksiklinna uuringu raames (2004) kogu uuringu metoodika ja intervjuu küsimused ning läbiviimise korra;
- Küsimustik Euregio partneritele ja asutajatele (koostöös Katri-Liis Lepikuga);
- Intervjuu küsimused eliidi intervjuude jaoks (koostöös Katri-Liis Lepikuga);
- Küsimustik diagnostiliste intervjuude jaoks eluslabori meetodi kohta (koostöös Erik Tergiga);

Töös on kasutatud Euregio Teadmusareeni hindamise resultaate. Hindamise viis läbi Läti firma Dea Baltica, autor koostas küsimuste blokid, millele vastust oodati, ja intervjueeritavate nimekirjad nii Eestis kui Soomes.

Lisaks on analüüsitud Euregio dokumentatsiooni, Tallinna, Helsingi, Harjumaa ja Uusimaa arengukavasid, erinevaid regionaalarengut puudutavaid plaane.
Helsinki-Tallinn Euregio puhul uuriti kvalitatiivsete tõendite (strateegiad, arengukavad ja tööplaanide täitmise raportid) alusel organisatsiooni töökorraldust ning toimimist muudatuste ja uute protsesside algatajana.

Doktoritöö põhineb järgmistel uuringutel:

1. Teadus-kaksiklinna uuring hõlmas õppejõudude ja üliõpilaste piiriülest liikumist, osalemist ühistes teadusprojektides, ülikoolide koostöö arenguperspektiive.

Mitmed ideed, mida hiljem kordasid “Kahe targa mehe” raportis (“Eesti ja Soome koostöövõimalused” 2008) Jaakko Blomberg ja Gunnar Okk, pärinesid sellest uuringust, näiteks piiriüleste ühiste doktorikoolide loomine, tipplektorite üheskoos regiooni toomine, ühismarketing Aasia suunal Helsingi ja Tallinna pealinnapiirkondadesse üliõpilaste toomiseks, “üle lahe” ülikooli moodustamine. Viimane ei tähendaks uut ülikooli, vaid teatud ülikooli funktsioonide ühendamist (uuring I ja III).

2. Helsinki-Tallinn Euregio võtmeisikutele, Euregio asutajatele ja partneritele esitatud küsimustik (32 vastust) hõlmas Euregio valitsemist − suhteid eri sektorite partnerite vahel, võimumehhanisme ning organisatsiooni rolli ühiskonnas (uuring I ja III).

3. Eliidi süvaintervjuud 14 eksperdiga (ülikooli, kohaliku omavalitsuse esindajad ja, ettevõtjad) korraldati ekspertidega mõlemalt poolt Soome lahte, et uurida regionaalse integratsiooni aspekte Helsingi ja Tallinna pealinnapiirkondade vahel, mis on euroregiooni Helsinki-Tallinn Euregio sihtalaks. Eraldi uuriti Euregio kui institutsiooni perspektiive ja arengutrende (uuring III).

4. Eluslabori rakendamiseks vajalikud diagnostilised intervjuud tehti 14 eksperdiga, kes on kaasatud või võiksid olla potentsiaalselt kaasatud selle meetodi juurutamisse Tallinna ja Helsingi piiriüleses koostöös (uuring II).

5. Osa uurimistöö tulemustest on saadud ühe objekti, Helsinki-Tallinn Euregio süvendatud analüüsi põhjal. Nende tulemuste tõlgendamisel on raske hinnata seda, kuivõrd need on laiendatavad teistele piiriülestele koostööorganisatsioonidele. Loogiliselt võiks eeldada nende laiemat rakendatavust, samas võivad seda piirata erisused erinevate euro-organisatsioonide arengutasemetes ja kvalitatiivsed erinevused nende vahel.

Töös esitatud uurimusküsimuste lahendamiseks on autor teinud uuringud, mille tulemused ja järeldused on avaldatud rahvusvahelistes eelretsenseerimisega teadusajakirjades. Doktoritöö võtab kokku kolmes artiklis avaldatud tulemused. Need uuringud on doktoritöös tähistatud rooma numbritega I−III:

Krigul, M. 2011. On Possibilities to Develop CB Knowledge Region: The Case of Tallinn (Estonia) and Helsinki (Finland). *Problems and Perspectives in Management,* Volume 9, Issue 1, pp 23-30. (Võimalustest välja arendada piiriülene teadmuspiirkond: Tallinna (Eesti) ja Helsinki (Soome) kaasus).

Lepik, K.-L., Krigul, M. and Terk, E. 2010. Problems of Initiating International Knowledge Transfer: Is the Finnish Living Lab Method Transferable to Estonia? International Journal of Technology Diffusion (IJTD), Volume 1, Issue 2, pp 75 – 85. (Rahvusvahelise teadmussiirde probleeme: Kas Soome eluslabori meetod on Eestisse ülekantav?

Krigul, M., Lepik, K.-L. 2009. Innovating through building a knowledge CB region. *Laurea Publication A-series*, Volume A70, pp 42-63. (Innoveerimine piiriülese teadmisregiooni loomise teel).

Teoreetiline raamistik

Teadmusregioon on interdistsiplinaarne ja mitmemõõtmeline kontseptsioon. Antud dissertatsioonis on uuritud uute ja vanade integratsiooniteooriate ja võrgustumisteooriate rakendatavust teadmuspiirkonna väljakujundamisele ja teadmuse ja teadmusjuhtimise erinevaid kontseptsioone. Töö teoreetilises keskmes on Nonaka ja tema kolleegide loodud teadmusloome teooria. Dissertatsioon käsitleb nii uuenduslikke meetodeid piiriüleseks koostööks kui ka täiesti rutiinseid rahvusvaheliste koostöösuhete loomise vahendeid.

Lähemalt uuritakse lõpptarbijat kaasava eluslabori meetodi rakendamisvõimalusi Tallinna pealinnapiirkonnas ja Soome teadmuse ülekandevõimalusi Eestisse.

Teadmusregiooni teke ei ole juhuslik protsess – nii Silicon Valley kui Route 128 taga on kellegi ammused õigeaegsed otsused ja kujunemistee tähelepanelik jälgimine (Etzkowitz 2010). Teadmuspiirkond kujuneb väga pikaajalise protsessi tulemusena (Reichert 2006, Luis 2010, Etzkowitz 2010). Ettevõtlike talentide, intellektuaalkapitali ja vaikiva teadmuse väga suur kontsentratsioon annab neile piirkondadele tugeva konkurentsieelise teiste arenevate piirkondade ees, tõmmates sinna talente ja investeeringuid.

Detsentraliseerimisprotsesside tulemusel Euroopa riikides on tunnetatav regioonide mõjuvõimu tugevnemine. Kohalikud ja regionaalsed omavalitsused püüavad mõjutada poliitilisi otsustamis-protsesse, et olla globaalse majanduse tingimustes konkurentsivõimelisemad. Regionaalses arendus- ja innovaatilises tegevuses osalevad erinevad organisatsioonid ja asjaosalised (*stakeholders),* kes koordineerivad omavahelist tegevust ja moodustavad koostöövõrgustikke.

Neo-funktsionalistlikud Euroopa regionaalse integratsiooni teooriad on välja arendatud vajadusest mõtestada Euroopa ühtekuuluvusliikumist. Integratsiooniteooriad rõhutavad vastastikust majanduslikku sõltuvust, suurte organisatsioonide võimekust lahendada konflikte ja luua riikideüleseid turuseadusi, mis järk-järgult asendavad riiklikke regulatsioone (De Lombaerde, Van Langenhove 2007). Hans van Ginkel (2003) toob tüüpiliste joontena esile, et selles protsessis riiklikud struktuurid kasvatavad erinevate aktidega integratsiooni majanduse, julgeoleku, poliitika, aga ka sotsiaal- ja kultuurisfääris.

Konstruktivistlikud ehk uued regionaliseerimisteooriad hakkasid levima alates 1950-60ndatest aastatest (Fawcett 1996, Hettne 2002, Wallis 2002, Söderbaum 2008). Peamine erinevus vanadest integratsiooniteooriatest seisneb nägemuses,

et mitteriiklikud struktuurid ja protsessid on siin olulisemad kui riiklikud. Regionaliseerimisse haaratakse kaasa rohkem tegureid. Sellest tulenevalt võib väga erinev olla ka regiooni mõiste. See võib olla (a) sotsiaalsüsteem, (b) regionaalne kompeks, (c) rahvusvaheline kooslus, (d) regionaalne ühendus või (e) regionaalne institutsionaliseeritud üksus (Söderbaum 2008). Oluliseks peetakse küsimusi, missugused tegurid neid protsesse mõjutavad, kes või mis kuulub regiooni, kes seda loob ja kelle või mille jaoks. Käesoleva töö aspektist on oluline regioon kui teadmusvahetuse, -loomise ja -jagamise (-siirde) koht. Regiooni ülesehitamisel on olulised nii plaanipärased tegevused kui juhuslikud kontaktid ja protsessid. Siin täidab lünga Granovetteri võrgustumise teooria: majandustegevus toimub võrgustikes. Asukohal on oluline tähendus. Kuna sidemed jagunevad Granovetteri järgi tugevateks ja nõrkadeks, siis tugevad sidemed on koha-spetsiifilised, nõrgad seevastu toimivad laiaulatuslikumalt ja katavad laiemat valdkonda ja territooriumi. Burt (1992) tegi olulise täienduse: kõige olulisem võrgustumise juures on see, missugust lünka täidetakse selle meetodiga. Tugevad koha-spetsiifilised sidemed aitavad kaksikpiirkonna moodustamisele ühemõtteliselt kaasa, nõrgad sidemed võivad olla olulisemad piiriülese teadmusregiooni aspektist, kuna haaravad laiemat ala teadmuse hankimiseks.

Teadmine, teadmistepõhine majandus ja ühiskond, teadmus – on muutunud moesõnadeks nii praktikute kui teoreetikute seas, millega kaasneb teadmuse definitsioonide rohkus. Käesolevas dissertatsioonis käsitatakse teadmust kui kontekstipõhist teadmist, milles sisalduvad teadja(te) oskused, kogemused, kultuuritaust jpm ning seda teadmist jagatakse asukohapõhiselt teadmuspiirkonna ülesehitamise protsessis osalejate vahel (autori formuleering). Veenvalt on tõestatud, et teadmus on üks kõige esimesi ja tugevamaid konkurentsieeliseid nii ettevõtluses kui valitsemises. Samuti on oluliseks peetud küsimust, kas teadmus on lokaalne või globaalne.

Olulise paradigma lõi Polanyi (1966), eristades "väljendatud" ja "vaikivat" teadmust. Seda kontseptsiooni arendasid edasi Nonaka (1994), ja Nonaka & Konno (1998, 2007). Väljendatud teadmust saab edasi anda (siirata, jagada) ja säilitada formaalse keele või sümbolitega, vaikiva teadmuse juured on ühistegevuses ja jagatud kogemustes. Vaikivas teadmuses sisalduvad indiviidi tunded ja vaimsed suundumused, mille abil interpreteeritakse ümbritsevat maailma. Vaikiva teadmuse all mõistetakse eelkõige töötajate töö käigus saadud oskusi ja kogemusi, mida on raske või võimatu teistele edasi anda. See hõlmab sageli kultuurilisi eripärasid ning organisatsioonis töötavatele isikutele teadaolevaid tavasid. Vaikiv ja väljendatud teadmus mängivad olulist rolli Nonaka, Toyama and Konno poolt väljaarendatud mudelis, mis koosneb kolmest elemendist: (1) *SECI* protsess (*socialization-externalization – combination - internalization* ehk sotsialiseerimine - eksternaliseerimine ehk välisustamine, – kombineerimine - internaliseerimine ehk inkorporeerimine), mis tähendab teadmuse genereerimise protsessi väljendatud ja vaikiva teadmuse vahel; *SECI*sse kuuluvad teadmuse siirde ja transformatsiooni protsessid (Nonaka 1994, Nonaka et al. 1994). (2) *Ba*, jagatud platvorm või kontekst teadmuse genereerimiseks, milles kombineeritakse füüsiline ja

intellektuaalne ruum (*space*), ka *ba'*sid on neli: algatav, dialoogi pidav, süsteemi loov ja rakendav *ba* (*originating, dialoguing, systemising and excercising ba).* (3) teadmuse väärtused, sisendid, väljundid ja vahendajad teadmuse genereerimise protsessis. Need kolm elementi on vastastikuses sõltuvuses, moodustades teadmusspiraali, millest luuakse uus teadmus (Nonaka 1991, 1994; Nonaka et al.1994; Nonaka & Takeuchi 1995; Nonaka & Konno 1998; Nonaka et al. 2001; Nonaka & Toyoma 2007).

Nonaka & Konno (1998) väidavad, et teadmuse saab transformeerida ühest vormist teise muundamisprotsessiga: sotsialiseerimise käigus omandab indiviid organisatsiooni vaikiva teadmuse, välisustamisega muundab oma vaikiva teadmuse väljendatud teadmuseks; kombineerimise käigus ühendatakse kollektiivne väljendatud teadmus; inkorporeerimise käigus muundab indiviid väljendatud kollektiivse teadmuse isiklikuks vaikivaks teadmuseks.

Ba on kontekst, mida jagavad need, kes omavahel suhtlevad. *Ba* jaapani keeles ei ole ainult koht või füüsiline ruum, vaid ka spetsiifiline kontekst, üleminek ja aeg. *Ba* rõhutab, et teadmus ei ole mitte kunagi absoluutne, objektiivne või kontekstiväline. Vastupidi, teadmuse loomise protsess on alati millegagi seotud, see on alati lokaalne protsess. Teine *ba* tähendus on seosed. Lääne teoreetikud kasutavad sarnases tähenduses ruumi (*space*) mõistet: Etzkowitz ja Ranga (2010) on edasi arendanud ruumi kontseptsiooni, mis väljendab ruumi, olekut, seisundit, aga ka üleminekut ühest vormist teise. Ruum on nii füüsiline kui virtuaalne, selles koostoimivad tootmine, akadeemia ja riigivalitsemine (Etzkowitz 2010).

Nonaka järgi on kolmas element - teadmusväärtused, -sisendid ja väljundid - hõlpsasti hoomatavad, koosnedes nii otse tegevustest või siis sümbolitega väljendatud teadmistest (nn meistri ja õpipoisi suhe), oskusteabest, organisatsioonikultuurist jmt.

SECI ja *Ba* võimaldavad analüüsida teadmussiiret (-jagamist). Ehkki teadmusjuhtimine on väga põhjalikult uuritud ja teaduskirjanduses käsitletud, on teadmussiire (-jagamine) selle protsessi osana vähem tähelepanu leidnud. Peamine tähelepanu on teadmussiirde õnnestumise või ebaõnnestumise põhjustel. Ipe (2003) toob välja neli peamist elementi, mis määravad teadmussiirde edukuse: 1) siiratava teadmuse olemus; 2) teadmuse jagamiseks motivatsiooni olemasolu või selle puudumine; 3) võimalus teadmust jagada; 4) organisatsiooni-kultuur. Teadmussiiret on käsitletud ühe maa piires. Rahvusvaheliselt on see veelgi keerulisem, sisaldades barjääre kahekordselt.

Teadmuse kontseptsioonide ühendamine asukohaga on hiline nähtus. Akadeemilisse kirjandusse ilmus viimase paarikümne aasta jooksul uuringuid ja käsitlusi innovatsiooni, õppimise, piirkonna majandusarengu ja nendega seotud asukohtade kohta: õppiv regioon (Florida 1995; Morgan 1997; Simmie 1997), regionaalsed innovatsioonisüsteemid (Braczyk et al. 1998), jätkusuutliku innovatsiooniala arenduspoliitikad (Glasmeier 1999; Glasmeier et al. 1998; Lagendijk and Cornford

2000), neile järgnevad kontseptsioonid innovatiivne miljöö (Aydalot1986; Maillat 1992), tootmisregioon (Becattini 1991; Piore, Sabel 1984) ja tehnopol (Benko1991).

Eelnenud ja osaliselt praegu edasiarenevad kontseptsioonid on andnud oma panuse teadmusregiooni kontseptsiooni väljakujunemisse. Kontseptsioon on akadeemiliselt vähe läbi töötatud, küll aga kasutatakse seda mõistet praktikas palju ja isegi EL rahastamisskeemid on nende toetuseks olemas. Kaksikpiirkonna arengut või arendamist on käsitletud teoreetilises kirjanduses palju, teadmus-piirkonda vähe, piiriülese teadmuspiirkonna arendamistegureid aga autorile teadaoleva info põhjal ei ole käsitatud, sellise piiriülese fenomeni arendamist Helsingi ja Tallinna vahel ei ole käsitatud. Dissertatsioonis tuuakse kirjanduse põhjal välja tegurid, mis on vajalikud kaksikpiirkonna ja teadmuspiirkonna väljaarendamiseks. Küllalt suur osa teguritest langeb kokku, seejuures on oluline arvestada konkreetse arendatava piirkonna eripärasid.

Dissertatsioonis käsitletakse alternatiivsete meetoditena „kolmikspiraali" ja eluslabori kasutamisvõimalusi teadmuspiirkondade väljaarendamise toetamiseks. Tihedat koostööd ühiskonna eri sektorite vahel, nagu erasektor, avalik sektor ja kolmas ehk mittetulundussektor, millele lisanduvad teadusasutused, nimetatakse "kolmikspiraali" tüüpi koostööks (Etzkowitz 1998; Leydesdorff et al. 2006; Johnson 2008). Need sektorid täiendavad üksteist innovatsiooniprotsessi käigus. Innovatsioon on otseselt seotud teadmiste leviku ja uute tehnoloogiatega ning piiriülesel koostööl on oma roll innovatsiooniprotsesside ning eluslabori kontseptsiooni edendajana, kus lõpptarbijaid kaasatakse uurimis- ja innovatsiooniprotsessidesse ning uute toodete, teenuste ja ühiskondliku infrastruktuuri loomisse. Eluslabor võib oma olemuselt olla nii keskkond (Ballon et al. 2005), meetod, käsitlus (De Leon et al. 2006; Eriksson et al. 2005) kui ka innovatsiooniplatvorm (Niitamo et al. 2006).

Käesolevas dissertatsioonis avatakse eluslabori olemus ja rakendusvaldkonnad ning analüüsitakse võimalusi ja barjääre selle meetodi rakendamiseks Helsingi ja Tallinna teadus-kaksikregiooni väljakujundamise protsessis.

Uurimistöö tulemused ja järeldused

Piiriülese teadmusregiooni ülesehitamiseks rakendatavate teooriate ja faktorite analüüsi tulemused (uuring I)

Doktoritöös analüüsiti integratsiooni- ja regionaliseerimisteooriate ning võrgustike-teooriate rakendatavust Euregiole teadmusregiooni arendamise käigus.
Fookuses oli integratsiooni edendavate tegurite analüüs: huvigruppide olemasolu, poliitiliste otsuste mõju, iseeneslik integratsioon läbi võrgustike, kolmikspiraali tüüpi koostöö areng eluslabori suunas, keerukamaks muutuvad ühistegevused ja -projektid.

Euregio loodi 1999. aastal koostöövõrgustikuna soome ja eesti sõprade vahel, pragmaatilise eesmärgiga taotleda Euroopa Liidu erinevatest fondidest finantsvahendeid. Peagi kujunesid uued eesmärgid: valmistumine Euroopa Liiduga liitumiseks, piirkondlike arenguerinevuste vähendamine, erinevate töökultuuride kokkusobitamine. Alates 2003 tegutseb Euregio mittetulundusühinguna. Alates 2004. aastast on peasuund tegevustes innovatsiooni ja teadmuspõhine koostöö, mis toimub kolmikspiraali tüüpi koostöövormis. Alates 2008 räägitakse piirkondlikust integratsioonist. Nii siis kui praegu määravad Euregio töö poliitilised eesmärgid kahelt poolt Soome lahte.

Teadmusloome teooriate rakendamine teadmuspiirkonna ülesehitamiseks on uus väljakutse Euregiole. Nonaka ja kolleegide loodud *SECI* protsess ja *ba* võimaldavad süsteemselt läheneda Euregio ülesannetele: *SECI*-t võib käsitleda kui teadmussiirde (-jagamise) protsessi, mis Euregio puhul tähendab eluslabori rakendamisvõimaluste otsimist, *ba* on käsitletav eesmärgina - teadmusregioonina. Teadmusregioon on rohkem kui füüsiline koht või virtuaalne ruum, see on üleminek ühest seisundist teise. *Ba* on kontekst, milles omavahelist koostööd teevad teadmusprotsessi osalised. *Ba* sõnum teadmusloomes on selge: teadmus ei ole mitte kunagi absoluutne, vaid alati kontekstipõhine, lokaalne, loodud inimestevahelises suhtlemises ja suhestatuses ümbritseva keskkonnaga. *Ba*'des toimuvad protsessid sageli üheaegselt ja mitu *ba'*d võib ka samades situatsioonides kattuda. Näiteks algatavas *ba*'s jagatakse vaikivat teadmust – osalejate kogemused, tunded, vaimsed mudelid leiavad väljenduse silmast silma kohtumistel – Euregio puhul koosolekutel, ümarlaudades, kontaktüritustel, teadmusregiooni loomise aspektist – Euregio korraldatud foorumitel, töökohtumistel, erinevatel kolmikspiraali osaliste kokkusaamistel. Ideaalis peaks loodama selles faasis usalduse ja mõistmise õhkkond. Algatavast *ba*'st stardib *SECI* protsess. Dialoogi pidav *ba* saab samuti olla töökohtumistel, foorumitel, kontaktüritustel, kuid sisuks on dialoog ekspertide vahel, kus saadakse tagasisidet oma vaadetele ja artikuleeritakse (väljendatakse) oma teadmust. Dialoogi pidamise edukus sõltub osalejate kooslusest. Rakendav *ba* sünteesib eelneva tegevustesse. Süsteemi loovat *ba*'d defineeritakse kui kollektiivset ja virtuaalset koostoimet, milles kombineeritakse väljendatud teadmused. Infotehnoloogia võimaldab lähetada väljendatud teadmuse paljudele inimestele korraga, näidetena sobivad Euregio veeb, andmebaasid ja infokirjad, aga ka otsuste langetamiseks korraldatud kohtumised, millel saab teadmust luua, töödelda või jagada. Kuna teadmusloome toimub spiraali mööda, on teadmusregioon vaheetapp, mis võib edasi areneda järgmisteks tasanditeks.

Uurijate seas puudub üksmeel, missuguses järjekorras ja missuguseid samme tuleks sellise piirkonna loomiseks astuda, sõltuvus piirkonna arengufaasidest on tähelepanuväärne. Antud töö kontekstis on tegemist kõrgelt arenenud pealinnapiirkodadega. Soome ja Eesti vahel on suur ühisosa, samas Uusimaal juba teadmuspiirkond eksisteerib ja see on ka liitunud vastavate rahvusvaheliste organisatsioonidega; ka on eelnenud pikad koostöökogemused Tallinna ja Helsingi linnavalitsuste ning Harjumaa ja Uusimaa omavalitsusüksuste vahel, mis loob soodsa

pinnase piiriülese teadmusregiooni kujundamiseks. Initsiatiivgrupi olemasolu on oluline, poliitilised otsused samuti. Alahinnata ei saa vahendajate rolli, kes akadeemilisi ringkondi, kohaliku omavalitsuse esindajaid ja äriringkondi kokku toovad. Teine vältimatu tingimus on strateegia ja strateegiliste plaanide olemasolu. Euregio-taoliste vahendajate plussiks on keerukamate meetodite rakendamise võimalikkus. Teadmuspiirkond toimib asjaosalistele kui *ba* – platvorm teadmusloomeks, - jagamiseks ja säilitamiseks.

Teadmuspiirkonda võib defineerida kui asukohta, atmosfääri ja *ba*'d, milles kombineeritakse füüsiline ja intellektuaalne mõõde, et luua soodsad tingimused teadmusloomeks, -jagamiseks, -säilitamiseks, vaikiva ja väljendatud teadmuse muundamiseks piiriüleses teadmuspiirkonnas konkuretsivõimekonkurentsivõime ja heaolu kasvuks.

Uurimistöö tõestas, et piiriülese teadmuspiirkonna loomine Helsingi ja Tallinn pealinnapiirkonnas on võimalik, ühendades integratsiooni, võrgustumise ja teadmusloome teooriaid ja eluslabori meetodi. Piiriülese teadmusregiooni teke edendaks Helsingi ja Tallinna pealinnapiirkondade konkurentsivõime kasvu, suurendades teadmusintegratsiooni ja teadmistepõhist majandust.

Teine uurimisülesanne oli analüüsida keerukamaid piiriülese koostöö vorme nagu kolmik-spiraali tüüpi koostöö ja eluslabori meetod, kasutades piiriülese koostööorganisatsiooni poolt loodud eeldusi (uuring II)

Uuringu käigus analüüsiti innovaatilise eluslabori meetodi ülekantavuse võimalikkust Soomest Eestisse. Diagnostilistest intervjuudest selgus, et kui meetod on Soomes küllalt tuntud, siis Tallinna esindajate tõlgendused, eriti küsimuses, kuidas piiritleda eluslaborit objektina, hajusid väga tugevalt. Osa intervjueeritavatest tõlgendas eluslaborit näiteks linnaosa või transpordisüsteemina, teised näiteks virtuaalse kogukonnana.

Kolmikspiraali tüüpi koostöö on olnud Euregio tegevustes valdav, kuid selle realiseerimine on olnud keerukas, kuna osapoolte primaarsed huvid on erinevad. Protsessi keerukus ja tulemuslikkus sõltub väga suurel määral konkreetsetest inimestest ja nende soovidest ja võimalustest sellist tüüpi koostööd arendada. Seetõttu on Euregio töötajad otsinud alternatiivset meetodit piiriülese teadmuse ülekandmiseks ja innovatsiooni edendamiseks. Eluslabor võib olla seni puuduv lahendus. Samas on tegemist keeruka meetodiga, piiriülene mõõde lisab komplikatsioone.

Eluslabori meetod kujunes välja innovaatiliste lahenduste loomiseks, kuid meetod ise on samuti innovatsioon, seetõttu võib eeldada, et takistused ja barjäärid selle meetodi rakendamisel on sarnased teistele teguritele, mis innovatsiooniuuringutes on kirjeldatud.

Uuring andis alljärgnevad tulemused:
valdkonnad, milles on meetodi rakendamiseks kõrge potentsiaal, on transport (sh logistika) ja meedia (nii traditsiooniline, multimeedia kui kommunikatsioon); esile toodi turism ja turvateenused, meditsiin ja tervishoid, energeetika, arhitektuur ja disain.

Fikseerida sai mitmete tehnoloogiafirmade huvi meetodi rakendamises osaleda, samuti Tallinna mitme ameti juhi soov sellega tegelda. Probleemiks on eluslaborist arusaamine: kui Helsingis toimib seitse eluslaborit ja linna juhtkond osaleb neis aktiivselt, siis Tallinnas ollakse siirdumas teadlikkuse faasist huvi faasi (Rogersi klassifikatsiooni järgi). Eeldada võiks elanikkonna ja ka turistide huvi arendada eelpool toodud valdkondades esitatud teenuseid – Eestis on tehnoloogiliste uuenduste vastu suur huvi, samas on inimeste kaasamise traditsioonid Soomes ja Eestis erinevad.

Sedastati ka barjäärid eluslabori rakendmiselerakendamisele:

a) suured erinevused institutsionaalses toimimises Eesti ja Soome ametiasutuste vahel, aga ka ametite vahel ühel ja samal maal; horisontaalse koostöö tekitamine on keeruline mõnikord isegi sama asutuse piires;
b) Eestis puudub sügav koostöötraditsioon avaliku sektori esindajate ja ettevõtjate vahel; finantseerimisküsimused ei ole selged – väiksematele firmadele võib kujuneda takistuseks esimeses toote arendamise faasis vajalik omafinantseering,
c) ei ole selgust töö tulemuslikkuse osas.

Kokkuvõtvalt võib öelda, et eluslabori meetod on ülekantav Helsingist Tallinnasse. Oluline on mudelis avaliku sektori juhtiv roll: vaja on identifitseerida vajadus (mitte igat probleemi ei saa ega tasu lahendada kõnesoleva meetodi abil), Tallinn või mõni teine Harjumaa linn pakub välja arenduspiirkonna või teise võimalusena linn identifitseerib lahendust nõudva probleemi ja pakub välja arendamiseks. Soomes on juhtunud küllalt sageli, et firma tuleb pakkuma esimesena oma lahendust, aga see ei pruugi olla parim või hinnakõlblikum. Seejärel suunata piiriülene koostööorganisatsioon (siin: Euregio) leidma partnereid nii Eestist kui Soomest, kaasates ülikoole, ettevõtjaid ning kohaliku tasandi esindajaid, ning algatama teenuse väljaarendamise protsessi. Lõpptarbija tuvastatakse ja kaasatakse vastavalt teenuse olemusele.

Soome oskusteabe kaasamiseks on otstarbekas luua Eesti-Soome institutsioon, kus arvestatakse võimalusega toode multiplitseerida teistes regioonides. Tulemuste korral – kui pole enam tegu eluslabori kui meetodiga, vaid kui keskkonnaga või isegi organsatsiooniga – tuleb läbi arutada vastastikku kasulikud omandivormid.

Meetodi tutvustamiseks käivitatud protsess näitas, et eluslabori meetodi rakendamine on keerukas, kuna see hõlmab peale tehnoloogiate ka muudatusi mõtteviisis ning institutsionaalse koostöö tavades. Samuti vajab see suurt poliitilist toetust ja sotsiaalsete võrgustike edendamist.

Kolmanda uurimisülesandena analüüsiti Helsingi-Tallinn Euregio kui muudatuste agendi ja innovaatiliste protsesside algataja rolli nendes protsessides piiriülese koostöö edendamisel ja regionaalse innovatsioonikeskkonna loomisel (uuring III)

Küsimustiku, intervjuude ja dokumentatsiooni analüüsi põhjal võib väita, et Euregio teadmussiirde tegevused innovatsiooni, hariduse ja regionaalarengu ja uute teenuste vallas vastavad huvigruppide ootustele. Samas seostatakse Euregio mõjukanaleid kohaliku omavalitsuse tippjuhtide, innovaatiliste ettevõtjate ja akadeemiliste ringkondadega, kuid vastaja taust omab siin suurt kaalu, kalduvusega rohkem tähtsustada enda organisatsiooni, millest võib järeldada, et horisontaalne koostöö ei ole mõtteviisis juurdunud. Euregio nn kliendibaas nõudluse poolelt on asutajaliikmed (juhatus, tipp-poliitikud, -ametnikud), pakkumise poolelt ülikoolid, innovaatilised ettevõtjad, uue meedia esindajad ja kunstnikud. Just viimased omistasid Euregiole protsesside algataja rolli teadmuspiirkonna arendamisel, kuid alahindasid kohaliku omavalitsustasandi osa.

Süvaintervjuudest ilmes, et piirkondlikku integratsiooni peeti tõenäoliseks, kuid kaksikpiirkonna teket lähiajal mitte, samas on integratsioon ja kaksikpiirkond Euregio juhtkonna retoorikas alates 2008. aastast. Intervjueeritavad nägid „kunstide ja teaduse kaksikregiooni“ (väljend, mida kasutati Euregio dokumentatsioonis aastatel 2004 – 2008, selle vahetas väljas „teadmusareen“) arengut, kuid muid institutsionaalse integreerumise võimalust peeti väga väikeseks. Integreerumisprotsesse mõjutavad olulisel määral televisioonide ühisprogrammid, piiriüleste teleteenuste, elektrooniliste ja mobiiliteenuste kasv, ülikoolide ja teadusasutuste süvenev koostöö, ühisfestivalid, ühine turundus ja bränding, eriti Aasia suunal. Euregio nõrkuseks peeti liiga väikest põhitöötajate arvu. Võrgustik on suurem, kui kaasata asutajaliikmete esindajate hulgast vajaduse korral ametnikke, kuid nii ulatuslike ülesannete jaoks on praegune koosseis liiga väike. See kujutab endast ohtu ka teadmusjuhtimise seisukohast – suurem enamus teadmusest on vaikiv ja ohus lahkuda koos isikkoosseisu muutumisega.

Teine väljakutse on juhatuse koosseis – praegu on need asutajaliikmed, kes on eranditult avaliku sektori esindajad, avalikule sektorile omase toimimisloogika ja otsustusmehhanismidega. Arutluse all on olnud Euregio juhatuse laiendamine ülikoolide või teadusasutuste esindajatega ja innovaatilise ettevõtluse esindajatega või ettevõtlusliitudega, kuid see muudaks juhtimise oluliselt keerukamaks. Samas oleks vaja vähendada kallutatust ainult avaliku sektori huvide esindamise poole.

Helsinki-Tallinn Euregio arenguloo üldistamise põhjal võib formuleerida mitmeid järeldusi. Euregio lõid kohalike omavalitsuste esindajad olukorras, kus ei olnud olemas üldisemat strateegiat kahe regiooni lõimimiseks, mis määratleks täpsemalt sihtseisundi, kuhu tahetakse jõuda, ja etappide järjekorra. Võib rääkida üldisest taotlusest Tallinna ja Helsingi piirkondade senisest suuremaks integreerimiseks ja leida sellekohaseid viiteid mitmesugustes arengudokumentides, mis ei asenda aga

kindlasti veel konkreetset sellesuunalist strateegiat. Strateegilised tegevussuunad, mille alusel üldine integratsioonivisioon järk-järgult sisuga täitub, kujunevad välja pigem Euregio töö käigus tema osaliste (asutajad, kaasatud asjaosalised, Euregio töötajad) initsiatiivina. Olemasoleva informatsiooni alusel võib taolist olukorda pidada küllalt tüüpiliseks ka teiste euro-organisatsioonide puhul. Kui jätta kõrvale Helsinki-Tallinn Euregio algperiood, mil tegeldi valdavalt kogemuste vahetamisega omavalitsuste traditsioonilistes tegevusvaldkondades, on tegevuses keskendutud innovatsioonile selle eri vormides, mis ei ole kuulunud omavalitsuste traditsiooniliste funktsioonide hulka ning millega kohaliku omavalitsuse üksused on hakanud tegelema alles viimasel ajal. Eriti kehtib see Euregio Eesti poole kohta. Seega saab väita, et Euregio raames edendatav ühistegevus avaldab teatud mõju ka omavalitsuste tegevusmustrite kui terviku moderniseerimisele.

Helsinki-Tallinn Euregio tegevuses on toetutud küllalt laiale osaliste ringile, mis loob eeldusi, et suuresti just nende tegevuse kaudu mõjutataksegi tegelikku regionaalarengut ja innovatsiooni. Samas näitas küsitlus, et tegevuses osalejad peavad põhiliseks regionaalarengu mõjutajaks ikkagi Euregio asutajate, st. omavalitsusorganite ja nende liitude omavahelist mõju.

Huvigrupid ja Helsinki-Tallinn Euregio töötajad on välja pakkunud olulisi tegevussuundi, paljudel juhtudel on neid tegevusi ka käivitatud. Samas eeldab taolise tegevusega laiema mastaabi saavutamine ja tegevuste järjepidevuse tagamine strateegiate ja tegevusprogrammide kaudu seda, et neid tegevusi aktsepteeriks ja neile annaks finantseerimisloa Euregio juhatus, kuhu kuuluvad vaid asutajatest omavalitsustegelased.

Rahvusvahelise organisatsiooni puhul on strateegiline planeerimine ja programmide koostamine keerukas ja aeganõudev, vajadusega saavutada juhatuses esindatud eri poolte huvide tasakaalustatus ja kooskõlastatus. (Näiteks küsimus, kui suur osa tegevuses saab olla Soome mõnes valdkonnas arenenuma tegevuspraktika ülekandmisel Eestisse, kui palju peavad strateegiad ja programmid sisaldama muud tegevust.) Kui majandusorganisatsioonides on tavapärane, et väliskeskkonnas tekkinud muutustele reageerimist takistab struktuuriüksuste tasandil avalduv inerts, siis Euregio tüüpi rahvusvaheliste organisatsioonide puhul on probeleemiks initsiatiivide läbisurumine strateegiates ja programmides kinnituse leidmise tasandile.

Uuringute praktiline väärtus

Uuringud tõestasid, et teadmusregiooni väljaarendamiseks vajalikud tegurid on Helsingi-Tallinna pealinnapiirkondades olemas. Selleks on võimalik astuda järgmised sammud:

Esiteks, langetada otsus kõige kõrgemal poliitilisel tasemel – linnapeade ja volikogude tasemel, mida peaksid toetama ka riiklikud teadus-arenduskavad.

Teiseks, tuleb kokku leppida kolm alaeesmärki: teadmussiirde (-jagamise) tüüpi koostöö peaks jätkuma, kasutades kolmikspiraali ja eluslabori tüüpi koostöövorme ühise teadmusruumi *ba* väljakujundamiseks.

Kolmandaks, strateegia ühise teadmuspiirkonna arendamiseks tuleks välja töötada kõige kõrgema taseme juhtide ja tunnustatud ekspertide osavõtul. Siiamaani on Euregio olnud ainus organisatsioon, kelle ülesandeks piirkondliku integratsiooni teostamine on. Euregio-tüüpi vahendusorganisatsioonid peavad kindlasti sellises protsessis osalema, initsieerides innovaatilisi lahendusi ja vahendades teavet, kuid nii suuremõõtmelise protsessi juhtimine vähemalt praeguse inim- ja finantsressursi tingimustes ei ole reaalne.

Neljandaks, avaliku sektori roll innovatsiooni edendajana peaks kujunema innovatsiooniks avalikus sektoris endas, väljatöötatavad teenused peaksid mitte ainult lahendama olemasolevat probleemi, vaid looma tervenisti uut tulevikulist süsteemi.

Viiendaks, Euregio-tüüpi vahendusorganisatsioon peaks toimima kui üks mitmest piiriülese teadmussiirde tugisüsteemidest, kiirendades liikumist ühest innovatsioonifaasist teise, ja vahendades mõlemal pool lahte toimuvaid innovaatilisi lahendusi.

Kokkuvõtvalt võib öelda, et teadmusregiooni loomiseks on vaja:
selget liidrite gruppi, kuhu uuluvadkuuluvad initsiaatorid ja vahendajad, kriitilist massi teadmust, oskusi ja toimivat infrastruktuuri; kultuurieripärade arvestamist; strateegia formuleerimist; lobitööd ja vahendamist; ülikoolide ja tootmise kaasamist.

Barjäärideks on väga tuntud inimeste puudumine selle protsessi juhtidena; teadmusinfrastruktuuri erinev arengutase Eestis ja Soomes; jõudude ühendamise traditsiooni puudumine nii ühe maa piires kui üle piiri; harjumuse puudumine ühendada jõud lobitööks Euroopa struktuurides; ülikoolide koostööd pärsib konkurents üliõpilaste ja ressursside pärast.

Võimalikud tegevused teadmusregiooni väljakujundamise heaks: toetada initsiatiivgruppi kõige kõrgemal tasemel; toetada horisontaalset koostööd ettevõtjate ja teadus-arendusasutuste vahel sihipäraselt ja rahaliselt; toetada mittetradistsioonilist mõtlemist piiriülese koostöö edendamisel; töötada välja integratsiooni strateegia, mille alusel kasutada Euroopa Liidu finantsilisi tugisüsteeme; luua „Lahe-ülikool“; kasvatada välisõppejõudude ja üliõpilaste osakaalu, kes liiguvad üle Soome lahe.

Tuleviku keerukaks dilemmaks on küsimus juhatuse liikmete koosseisu võimalikust laiendamisest näiteks teatud ettevõtlusliitude või ülikoolide esindajatega. See võiks suurendada organisatsiooni võimet reageerida väljakutsetele ja võimalik, et suurendada ka organisatsiooni tegevuseks vajalikke finantsressursse, samal ajal aga teeks see tegevussuundade kooskõlastamise protsessi veelgi keerukamaks.

Uurimistöö uudsus

Doktoritöö raames tehtud uurimuste uudsus väljendub alljärgnevas:

1. Uudne oli seostada klassikalised regionaalse integratsiooni teooriad ja uus regionaliseerimisteooria ning võrgustumisteooriad teadmuse kontseptsioonide rakendamisega asukohale ning teadmusjuhtimise erinevad protsessid, kasutades selleks alusteooriana Nonaka jt loodud teadmusloome teooriatest tuntud kolme-elemendilist *SECI, ba* ja teadmusväärtuste mudelit. Teadmussiirde meetodina uuriti eluslabori rakendamisvõimalusi. Varem ei ole analüüsitud regionaalseid integratsiooniteooriaid, teadmuse kontseptsioone ja eluslabori meetodit teadmuspiirkonna ülesehitamise protsessis koos. Helsingi ja Tallinna pealinnapiirkondade vahelise teadmusregiooni loomise tegureid ei ole eelnevalt uuritud.

2. Käesoleva doktoritöö eesmärk oli analüüsida teooriate, meetodite ja tegurite rakendamist, mis aitavad kaasa Helsingi-Tallinna piiriülese teadmuspiirkonna väljakujunemisele. Analüüsiti tegureid, mis mõjutavad rahvusvahelise tähtsusega innovatsiooni- ja teadmuspõhise kasvupooluse loomist teadmusregiooni näol oludes, kus integreeruma peaksid osalevate riikide oluliste arengukeskuste hulka kuuluvad pealinnapiirkonnad. Teema on asjakohane, kuid selliseid faktoreid on vähe uuritud.

3. Autor töötas välja uue definitsiooni teadmuspiirkonnale:
Teadmuspiirkonda võib defineerida kui asukohta, atmosfääri ja *ba'*d, milles kombineeritakse füüsiline ja intellektuaalne mõõde, et luua soodsad tingimused teadmusloomeks, -jagamiseks, -säilitamiseks, vaikiva ja väljendatud teadmuse muundamiseks piiriüleses teadmuspiirkonnas konkurentsivõime ja heaolu kasvuks. Teadmusregiooni ülesehitamise protsess hõlmab nii uusi kui vanu integratsiooniteooriaid ja võrgustumisteooriaid kui ka *SECI'*t.

4. Autor arendas edasi eluslabori meetodi rakendamisvõimalusi ning analüüsis selle kasutamispotentsiaali Helsingi-Tallinna pealinnapiirkondades, mida ei ole varem tehtud.

Edasine uurimistöö

Käesolevas dissertatsioonis ei ole uuritud ühise teadmusregiooni või üldisema regionaalse integratsiooni üht primaarsemat mõjutajat – ühist meedia- ja inforuumi. Ühise avaliku ruumi loomine on suuremaid väljakutseid lähitulevikus. Probleem on mitmemõõteline, kui võtta arvesse erinevaid kogukondi nii Eestis kui Soomes, Eestis eesti- ja venekeelsed, Soomes traditsiooniliselt soome- ja rootsikeelsed; nüüd on kasvanud ka eestikeelsete ja venekeelsete kogukonnaliikmete arv Soomes. Mõlemal maal kujuneb kiiresti välja ka ingliskeelne kogukond. Enamus nende kogukondade liikmetest ilmselt ei mõjuta tugevalt teadmusregiooni väljakujundamist, küll aga üldist integratsiooni.

CURRICULUM VITAE MERLE KRIGUL

Date and Place of Birth:	December 23, 1954, Tartu
Citizenship:	Estonian
Address:	Mere tee 6, Tabasalu, Harku municipality, Harju County, Estonia
Phone:	+372 56465405
E-mail:	mkrigul@gmail.com

Education

2005 – now	Estonian Business School; Management Institute, Ph.D. student in Management Science
2000 – 2004	Estonian Business School; Management Institute, Master studies in International Business Administration
1983 – 1988	Tartu (State) University; Chair of Pedagogy, post-graduate studies in andragogics
1973 – 1978	Tartu (State) University; Department of Languages, student, Estonian philology and literature

Special Courses

1990 – 1992	Top Leaders Reserve course, organised by the State Chancellery of the Government of Estonia
1999	Lewis Seminar on Cross-Cultural Differences
2000	Tony Podesta Courses (Washingtin D.C., USA) in political marketing
2000 – now	several courses in Estonia and abroad on regional and political marketing and branding of the Baltic Sea region, regional competitiveness, innovation management and strategic planning

Work experience

2010 – now	Helsinki-Tallinn Euregio; program manager
2007 – 2010	NPO Helsinki-Tallinn Euregio; manager (substitute)
2005	State Chancellery; Counsellor for the Prime Minister
2004 – 2007	NPO Helsinki-Tallinn Euregio; project manager of Knowledge Arena
1997 – 2000	Tallinn City Office, Head of the Department of Foreign Relations
2000 – now	partly self-employed: consultancy and lectures (in EBS, Nord Academy, Audentes)

1992 – 1995	Member of the Parliament of Estonia, Commission of International Relations
1991 – 1992	State Chancellery; Counsellor for the Government of Estonia
1990 – 1991	State Chancellery; Counsellor for the Minister without Portfolio, Acad. E. Lippmaa
1981 – 1989	Tallinn Pedagogical Institute/now: Tallinn University; lecturer, senior expert, aide to the Rector

Administrative responsibilities

WIIS (Women in International Security) Estonian branch; president
Estonian European Movement; founding member
Estonian Association of Family Planning; founding member, president twice
Honours & Awards
1991: National Forum Foundation (USA) Civil society and human rights' program, alumni, scholarship from the US Government Administrator
1994: Salzburg Seminar, alumni, scholarship from Salzburg Seminar
1995-1997: Kokoomus electoral training program, scholarship from Kokoomus party
2000: Vital Voices training program, alumni. Scholarship from the Senator Hillary Clinton electoral foundation

Field of research

Knowledge related cross-border cooperation, linkages between universities, enterprises and public sector; knowledge transfer in CBC and integration, regional innovation and competitiveness, marketing in the public sector and international marketing, place-marketing

List of Publications

Krigul, M. 2011. On Possibilities to Develop CB Knowledge Region: The Case of Tallinn (Estonia) and Helsinki (Finland). *Problems and Perspectives in Management,* Volume 9, Issue 1, 23-30.

Krigul, M. 2010. *Estonia's Routes to Innovation and Convergence with the Lisbon Process*. LAP LAMBERT Academic Publishing. 73 p.

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CB Cooperation Structures in the Spatial Development Process in the Baltic Sea Region (Lithuania, Latvia, Estonia, and Russia). Tallinn: Kontaktihaldus Llc

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ANNEXES TO THE DISSERTATION

“AN ANALYSIS OF FACTORS IN DEVELOPING A CROSS-BORDER KNOWLEDGE REGION: THE CASE OF HELSINKI AND TALLINN CITY-REGIONS”

BY MERLE KRIGUL

Annex 1: Development of Euregio activities in the framework of the theories of this Dissertation

Theoretical concept	Priorities/ Objectives	Activities planned	Activities implemented	Obstacles /Restrictions	Changes
Strategy Framework 2009-2013					
Constructivist Regionalisation and networking; neo-functional regional integration	1. Increased Interaction in spatial and regional planning	To incorporate ideas of strategic plans of both regions: exchange of experience in providing public services on the local and regional government level; Creation of cooperation networks between the institutions of the regions' local governments; Initiate co-operation in waste management, recycling and energy saving; Evaluation of socio-economic feasibility of the Helsinki-Tallinn rail connections.	Euregio 7th Forum 2010: Helsinki-Tallinn Capital Regions' Common Info Space; Roundtable Rail Baltica and Helsinki-Tallinn Twin-City development	Helsinki and Tallinn media are different – in main topics, and ways of producing the news and stories; Incompatibility in institutional systems; inflexible systems and difficulties in changing long-term firmly established structures (e.g. Transferring e-ticket from Estonia to Finland); lack of tradition in this field.	Attention to the needs of common info space, cooperation agreements between Stadi TV and Tallinn TV; Project which aims at a joint road-map on joint infrastructural projects in the future;

Regionalisation and networking	2. Innovative and a barrier free region with common well-functioning markets	Start-up support for small enterprises – exchanging regional information and experience in supporting enterprises.	Projects: Helsinki-Tallinn transport and planning scenarios, mobile positioning in tourism; development of e-, m- and digital services, European Straits; Interregional roundtable 2010: Gulf of Finland – Baltic Sea transport hub in 2020; Brokerage 2009: Innovative health services; seminars 2009: Tallinn – Turku – Helsinki – Riga interoperable ticketing cooperation planning events; together with EVA a seminar 2007: The Baltic Twins?	Conflicting interests between the capitals and the surrounding regions.	Helsinki-Tallinn transport and planning scenarios project which aims at the research on mobility of people between Estonia and Finland, and services needed; Focus on the Straits in the next EU programming period in the EU Interreg programme;
Regionalisation	3. Twin-region of Arts and Sciences	To boost the co-operation of universities; To develop common region of cultural and media services; To support cross-regional new creative industries.	Publishing a book "Talsinki-Hellinna"; preparation of the project on development of e-, m-, and digital services	Lack of awareness of the other side of the gulf about the achievements and possibilities in R&D development, Euregio's small capacity to raise the awareness .	Twin- region as an acknowledged concept was taken into common use

Euregio Strategy 2007-2009					
Region-alisation, networking, knowledge transfer	1. Sustainable regional plan-ning	Environmental awareness-raising actions; Participa-tion in the Baltic Eurore-gions Network's strategy group and project	Support Tallinn' initiative on European Green Capi-tal, Seminar on functional food; several seminars in connection with the BEN project; Preparations for EU Straits project; small-harbors revi-talisation project	Small harbors project was considered to be a bilateral project be-tween Harju County and Uusimaa Region as it was seen a project capable of develop-ment of joint space; The Finnish side wanted to disseminate information but the Estonian side wanted infrastructural projects in ports.	The European Green Capital concept was allocated to EU struc-tures for implementa-tion on the EU level; Improved dialogue between euroregions and central authorities, improved information exchange between the euroregions, improved capacities of eurore-gions, Recommenda-tions for increase of the role of Eurore-gions/cross-border cooperation structures in the spatial develop-ment process in the Baltic Sea Region (Lithuania, Latvia, Estonia and Russia), handbook and strategy on euroregions, e-library with materials on euroregions.

Region-alisation, knowledge transfer, networking	2. Common business environment	Establish permanent contacts between the departments of Economic development in Helsinki and Tallinn and Helsinki Metropolitan Region's Marketing Office, Organize workshops between companies and other players from Centre of Expertise; Together with Enterprise Estonia: Launch a campaign to Finnish investors in technology areas; Produce a publication to Finnish companies to introduce Estonian investment environment; Produce a research to Estonian enterprises introducing Finnish entrepreneurship, taxing and employment regulations; Familiarization visit to Finnish economic journalists to Estonia and vice versa	Workshop between companies and Centre of Expertise for Digital Media and Content Production; 3 Brokerage events for biotechnology, material sciences and nanotechnology; Tallinn Entrepreneurship Day, „Finnish-Estonian seminar and workshop on Design".	Parallel structures dealing with development like Enterprise Estonia, Tekes, Sitra	Enlarged network for supporting business services

Regionalisation and networking	3. Common twin-region of arts and science	Joint branding initiatives	The first Knowledge arena event 2006: "Helsinki and Tallinn Knowledge Arena"; Euregio 6th Forum 2008: "A Twin-region: Dream or reality?"; Euregio 5th Forum: Renewal of local governance and services in CB context for developing Helsinki-Tallinn as the top twin-region in mobile technology – forming a strategy group for developing the services; Nordic Forum on Regional Branding; participation in Baltic Metropoles project as an observer, Working meeting between Helsinki and Tallinn (with regions) developers of entrepreneurship and branding; Uusimaa Region's municipality leaders visiting their colleagues in Harju County	Tallinn is branding itself on a very concrete level; Helsinki is aiming at Beijing, Tokyo, Soul - asymmetric situation between capital regions.	Cooperation groups for discussing the possible common branding; Inclusion of young talents in activities with local and regional government stakeholders.

Networking	4. Joint services	Development of joint services	Living Labs working meetings in Helsinki, Wellness for Seniors seminar with Culminatum and Laurea in Espoo; Tallinn-Turku-Helsinki-Riga interoperable ticketing cooperation, „Finnish-Estonian seminar on Digital Media", Urban research seminar in Helsinki: living labs and service delivery, Arabianranta experience	Living Laboratories became objects of interest, but lack of money and also resistance to innovative methods have left the process in not active situation.	Awareness raised on Living Labs and potential users interested and waiting to start the processes in a new way.
Networking and regionalisation theories	Initiatives of Euregio officers	Initiatives of Euregio officers	Knowledge arena events City as a Creative Stage" 2007; a knowledge arena seminar day in the PLEKTRUM festival: Are we living in happy cities?	Lack of interest from the top-leadership, cooperation traditions between local governments and young talents are week on both sides of the Gulf.	Inclusion of young talents in activities with local and regional government stakeholders, deep and fresh ideas were discussed and communicated to interested parties, the topic became essential for art and philosophy students, via Euregio were established contacts between "young and angry" and local authorities.

Euregio Strategy 2005-2007					
Regionalisation and networking	1. Regional Competence and Knowledge Base 1.1 The development of the concept, brand name and project activities in the Twin-Region of Art and Science.	1.1. Development of Art and Science Twin-city from a concept towards a programme.	Elderly well-being related preventive services, practices and R&D	Lack of money, big interest in establishing a center similar to Espoo Well Life Center, money questions on Tallinn side, theory and practice moving forward on Finnish side.	Art and Science Twin-city from a concept towards a programme developed – Concretised set of projects and activities, role of Euregio defined. Espoo is moving forward, bringing in new partners (Siemens), contacts with Tallinn officials are good. Tallinn put the center into the political governance program.
Region building and networking	1.2 Information dissemination across the border on activities and opportunities in education and training.	1.2. Initiate Finnish-Estonian information service on education and training. Euregio's possible role to provide information to the partners and to the public via mailing lists and electronic newsletters.	no	no capacity	no

Networking, knowledge transfer	2. Planning and development of functional cross-border co-operation 2.1 Organising dialogue, exchange and collaboration between urban and regional planning organisations.	2.1. Challenges of twin-regional development - Facilitate spatial planning cooperation and coordination of regional planning; Euregio's role to organise round table debates and seminars. Coordination of Huuta project - prevention of drugs and decreasing of diseases in the common region	Huuta project - prevention of drugs and decreasing of diseases in the common region; Cooperation in drug prevention – to learn from the Finnish experience in planning as well as implementing drug abuse prevention programmes and in training the civil servants; to enhance the exchange of information between organisations engaged in drug prevention.	The Interreg programme demanded similar activities on both sides in the Huuta project but the development levels were different.	Atoll centre for rehabilitation was created in Tallinn
Networking	2.2. Facilitating exchange activities between public sector actors, aiming for functional co-operation.	2.2. Coordination of Pilet project – common public transport ticketing (CPTT) system.	Activities implemented according to the project plan	Both sides had extremely complicated transportation systems, first step to implement was to re-construct systems on both sides of the Gulf, after that planning of joint system	Expectation to create joint ticketing system, but time perspective not too close.

Networking (Granovetter) and regionalisation	3. Cross-border political dialogue on common interests 3.1. Facilitation of communication on common interests and political dialogue between decision makers of Harju and Uusimaa counties.	3.1. Euregio Forum in May 2006 in Tallinn. Organisation of round table debates, study visits, gatherings for politicians, brokerage events for leaders of the municipalities; Euregio Intranet for effective information exchange and policy work.	Activities implemented according to the plan	Prejudice that systems are too different to enable real joint activities.	Understanding that differences are not that big
Networking (Granovetter)	3.2. Lobbying common interests, especially concerning the EU. Strengthening of the organisational capacity of Euregio.	3.2. Composing of proposals concerning the new EU programming period and funding programmes for cross-border cooperation activities.	Lobby process with national institutions	Lack of trust from the national institutions towards a non-profit organisation.	Development of working culture

Action Programme 2003-2005					
Networking (Granovetter) and integration	Further intensification of all kinds of interaction across the border and to fully exploit new potentials for economic and social development.	Increasing public awareness about the twin-region – to develop Euregio into a regional trademark; to initiate targeted international marketing activities.	Euregio 4th forum: A region with Twin Excellence; Euregio 3rd forum: "Enlarged EU: New Challenges for CB Cooperation"; innovative event 2004 "Black box, open mind"	Asymmetric situation between Helsinki and Tallinn	More awareness of Euregio as an innovation oriented organsiation
Networking (Granovetter) and integration	1. To increase the cohesion of administrative procedures in local authorities;	Improving the administrative capacity of local authorities – to learn from the Finnish experience: organising and funding the cooperation of local authorities; preparing the local authorities for fulfilling the duties and making efficient use of emerging opportunities related to the accession to the European Union;	Developing the rules of procedures for Euregio	Asymmetric situation between Helsinki and Tallinn	Standards developed; working regulations.

Networking (Granovetter) and integration, Knowledge transfer	2. To enhance cooperation between universities, research institutions, enterprises and local authorities;	Cooperation in research and research intensive enterprising – introducing and implementing the Helsinki-Tallinn Science Twin City concept; Start-up support for small enterprises – exchanging regional information and experience in supporting enterprises; Continuing exchange of experience in rescue work – organising joint rescue operation trainings with the help of Helsinki and Tallinn - Harju County, but also with national institutions and other interested partners;	Brokerages in Helsinki and Tallinn between universities, local governments and innovative entrepreneurs	Financial possibilities were very different	Cooperation was mainly between bigger international organisations, appearing understanding of usefulness of bilateral cooperation
Networking (Granovetter), knowledge transfer	3. To enhance cooperation in the fields of general and vocational education, youth and social work;	Cooperation in vocational education – establishing joint vocational study centre(s) of excellence to facilitate learning by doing	Seminars in Estonia on vocational education in Finland	The issue of vocational education was beyond the capacity of Euregio to proceed further	Awareness of the vocational education system in the other country

Knowledge transfer and neo-functional regional integration	4. To improve the administrative capacity of local authorities and the co-ordination of activities at applying for funding for regional development.	Cooperation in regional development – comparative analysis of the planning methods, goal setting, monitoring and evaluation in partner organisations; designing joint development visions for the region; exchange of experience and working out joint planning projects.	Working on the rules of procedures, information exchange on the mechanisms of the EU	Knowledge transfer from Finland to Estonia only	Enlarged EU as a topic was brought into the picture, preparations for Estonia's membership
Action programme 2000-2002					
Networking (Granovetter) and knowledge transfer	Development of business environments	Transfer of experiences in business development; co-operation and cohesion in security policies; common information services to SME's; networking and co-operation between SME's.	Founding of Non-Profit Organisation Euregio 07.11.2003; Euregio 1st Forum:"Two Capitals, fifty municipalities – one future?", Euregio 2nd Forum in 2001:" Helsinki and Tallinn Innovation Bridge";	Euro-language was not understood in the same way on both sides of the Gulf	Common region was mentioned for the first time; Mart Saarma called to build a Knowledge Bridge between Helsinki and Tallinn. This was the starting point for the Knowledge Arena

Networking (Granovetter)	Co-operation between research, technology and development centres	Research co-operation; exchange of know-how and technology	Helsinki – Tallinn Twin-City promotion event	Very early for achieving mutual CB understanding: Estonian side rapidly developing these competences, Finnish side confirmed that they are in front; common learning phase	Networking across the borders was mentioned for the first time
Knowledge transfer and networking	Exchange and co-operation in education	Co-operation between universities and schools; exchange of students and teachers; production of materials and creation of common modules in educational programmes; improve language skills.	A special grant was established for supporting students to study on the other side of the Gulf	Grant remained as a one-time award due to the lack of experience for joint triple-helix cooperation across the Gulf	Awareness raised on new CB opportunities
Neofunctional region building/ integration	Developing local and regional administrative capacities and interregional connections	Related to the Single Market and acquis communautaire; short term placements of specialists in local administrations and utility companies; awareness raising on European affairs; supply of information and consultation in EU contacts & project opportunities, exchange and training	Prime Minister Juhan Parts visited Finland 26.01.04 to discuss science, innovation and knowledge related cooperation, first meeting of Science Development Councils; Vision Project "Helsinki-Tallinn Twin-Region"	High ambitions on the Estonian side towards R&D cooperation with Finland	Topics of science and innovation raised in the national level agendas with a potential of positive consequences in advancement of Estonian-Finnish joint innovative and science projects.

Neofunctional region building/integration and knowledge transfer	Protection of the environment	Exchange and consultation in waste management plans, regulation and training; co-operation in rescue services; exhibitions, campaigns	An attempt to use helicopter in oil-spill discovery	In Finland rescue is a local government's task, in Estonia it is a national level function	An example of bringing together local and national authorities to solve a common problem
Networking (Granovetter) and neofunctional region building	Transport connections and tourism	Development and marketing of tourism products for international market; development of sailing tourism through joint activities of coastal municipalities;marketing of cultural events across the Gulf of Finland	Science conference: "From Universities to Entrepreneurs"	Asymmetric situation between Helsinki and Tallinn	Contacts between tourism supporting institutions were established
Neofunctional region building/ integration; knowledge transfer	Telecommunication and development of the Information Society	Evaluate and eliminate barriers of e-commerce development; create IS strategies for spatial planning; create Internet communication strategies for local administrations; support actions for building interregional virtual networks and information systems	Several working groups and roundtables	Very early for achieving mutual CB understanding: Estonian side rapidly developing these competences, Finnish side confirmed that they are in front; common learning phase	First common working groups formed giving raise to some mutual understanding

Annex 2: Map of the territory of the Helsinki-Tallinn twin-region (Helsinki/Uusimaa and Tallinn/Harjumaa)

Annex 3: Questionnaire for diagnostic interviews

1. How do you understand the concept of a Living Lab?
2. Who should lead the process?
3. What fields of urban life are suitable for this method?
4. Do companies interested in this method exist in Tallinn/Helsinki?
5. What kind of problems may face implementation of Living Labs?
6. Is there interest towards Living Labs in Tallinn/Helsinki city government?
7. What are problems for the public sector?
8. Is the method transferable from Finland to Estonia?
9. How is the method transferable?

Annex 4: Questionnaire to study Helsinki-Tallinn Euregio developments

1. Euregio should influence decision-making of city governments and state governments in the following policy areas:
   innovation
   general and spatial planning
   environment protection
   physical infrastructure
   social services
   energy economy
   education
   regional development
   Other, please specify…….

2. Helsinki-Tallinn Euregio should influence changes in society through:
   Top-leaders (mayors, deputy mayors, municipality heads, MPs, CEOs, etc.)
   Middle-level leaders (heads of departments, etc.)
   Officials
   University representatives
   Artists and media people
   Entrepreneurs

3. Helsinki-Tallinn Euregio is a representation and cooperation organisation for:
   Politicians
   Common citizens
   University professors and students
   Artists
   Entrepreneurs
   Others: .....

4. Please describe what indicates Euregio's success?

Annex 5: Questionnaire for elite interviews

1.Which scenario do you predict to happen?
   - integration between two regions will deepen;
   - joint integration will not happen at all;
   - a new entity Helsinki-Tallinn twin-region will emerge
   -regional integration will happen in a form of knowledge region/science and arts region /technology region/ functional region/ virtual region
   - How to brand the twin-region and Euregio?

Annex 6: Interview questionnaire for studying Knowledge Arena

1. Strategic focus of Knowledge Arena

- Have the priorities set so far within each of the Strategies been clear and specific?
- Were these priorities relevant to activities/objectives of your organization?
- Have the priorities of Knowledge Arena been clearly outlined in the Strategy of Euregio?
- What would be the top three priority directions of Knowledge Arena for the upcoming three years?
- How to make Knowledge Arena flexible and easy adaptable being able to respond quickly to the global changes?
- Partnership:
  - Has it worked well?
  - Have interests of both regions in Estonia and Finland been respected equally?
  - Should it be extended to balance the number of partners on both sides of the border?
  - Should associate partners have a more formalised role in the network?
  - Should more additional partners join the network? Who?
  - Should the partnership be more integrated, i.e., organisations work more closely?
- Has Knowledge Arena been visible to other factors and to wider public? Do you think it is recognisable outside the network?

2. Concrete activities and projects

- Name and assess the main activities of Knowledge Arena and their results?
- To your opinion, have these activities been successful?
- How these activities are linked with the activities of Euregio?
- Has your organisation participated in any of the activities or projects and what has been the outcome for you: new contacts, joint projects, etc.? How are these results utilised now? Any problems encountered?
- What should be the main Knowledge Arena activities in the future?

3. Management and work of the Knowledge Arena

- Assessment of the overall quality of the management of Knowledge Arena – communication, access to information, events, coordination of activities, networking, etc.?
- Which of the main operational instruments of Knowledge Arena have been the most successful? Why?

- What instruments could be applied for improvement of the work of the Knowledge Arena in the future?
- What to your opinion have been the main limitations to managing the Knowledge Arena activities in the most effective way – e.g., capacity, financial resources, know-how, etc.?
- Has satisfaction of the network participants been assessed and monitored?
- Any suggestions for improvement of the management and its efficiency in the future?

4. Involvement of your organisation:

- What is the main reason for your organisation being interested in the Knowledge Arena activities?
- What are the main motivators/key gains why your organisation is participating in the network? Are there any de-motivators/obstacles limiting full-fledged participation of your organisation?
- Assessment of your involvement in the previous activities of Knowledge Arena? Do you consider that your organisation has been actively involved? Should it be more active?
- Has Knowledge Arena met your expectations so far? Please name them.
- Have your organisation fully utilised the potential offered by Knowledge Arena?
- What are your expectations from co-operation with other partners of Knowledge Arena?
- What role do you see for your organisation within Knowledge Arena?
- What are your expectations and needs for the Knowledge Arena activities in the future?

Annex 7: Euregio planning documents and implemented activities 2000-2013

Priorities/ Objectives	Activities planned according to planning documents	Activities implemented according to the Annual Activity Reports
Strategy Framework 2009-2013		
1. Increased Interaction in Spatial and regional planning	• To incorporate ideas of strategic plans of both regions • Exchange of experience in providing public services on the local and regional government level • Creation of cooperation networks between the institutions of the regions' local governments • To initiate co-operation in waste management, recycling and energy saving • To evaluate socio-economic feasibility of the Helsinki-Tallinn rail connections	*Activities implemented in 2007 and 2008 are reflected under "Euregio Strategy 2007-2009" (see below)*
2. Creation of innovative and a barrier free region with common well-functioning markets	• To activate discussion on barriers restricting mobility of services and people • To assist in developing public services for mobile people • To support development of cross-border living lab environments for enterprises	
3. Development of Twin-region of Arts and Sciences (Knowledge Arena	• To boost the co-operation of universities • To develop common region of cultural and media services • To support cross regional new creative industries	
Euregio Strategy 2007-2009		
Sustainable regional planning	Support Tallinn' initiative on European Green Capital	This initiative became acquiered different level after sending it for implementation to EU structures
	Environmental awareness-raising actions	2009: PLEKTRUM bicycle presentation (September 28) 2008: Mobile services developing groups formed within the framework of Twin City services project (working permanently at present). Environment awareness activities implemented in cooperation with Forum Virium Helsinki

Priorities/ Objectives	Activities planned according to planning documents	Activities implemented according to the Annual Activity Reports
Strategy Framework 2009-2013		
	Participation in the Baltic Euroregions Network's strategy group and project	2008: BEN project completed (spatial development report developed for Estonia, Latvia, Lithuania, St.Petersburg and Finland) 2007: within BEN project: (1) BEN strategy elaborated, (2) Partic. In seminar "Cross-border Cooperation and Regional Development-spatial planning, infrastructure and regional development strategies in cross border cooperation perspective, Malmo, Sweden (Aug.2007), (3) BEN future discussions Tallinn, Estonia (Sep.2007) (4) BEN project completed in 2008
		2008: Fixed link (tunnel) Feasibility Study Euregio Forum: "Twin Region: dream or reality"
1. Creation of common business environment	Establish permanent contacts between the departments of Economic development in Helsinki and Tallinn and Helsinki Metropolitan Region's Marketing Office	2008: Seminar "Development of small harbours and sea tourism between Estonia and Finland", Tallinn (network of entrepreneurs created, common interests confirmed, joint projects identified) 2007: (1) Brokerage event between Greater Helsinki Promotion Office, Helsinki and Tallinn Departments of Economic Development: on enhancing entrepreneurship and new marketing tools May 2007. (2) Working group between Harju Entrepreneurship Development Centre and Uusimaa councillors on rural entrepreneurship, Apr. 2007 (rural entrepreneurship, small seaport development). (3) Finland as a Business Partner – More Fun Together/Seltsis segasem" Oct. 2007 (Tallinn Day of Entrepreneurship and study visit of Estonian entrepreneurs to Finland, together with Enterprise Estonia, Chamber of Commerce, Finpro, supported by the Embassy of Finland.
	For developing Helsinki-Tallinn as the top twin-region in mobile technology – forming a strategy group for developing the services	2009: Digital media seminar within the framework of project Twin-City Services

Priorities/ Objectives	Activities planned according to planning documents	Activities implemented according to the Annual Activity Reports
Strategy Framework 2009-2013		
	Joint branding initiatives	2009: Book Helsinki/Tallinna- Helsingi/ Tallinn published
	Participate in the research on functional cooperation in the twin-region Helsinki-Tallinn	2009: Research of functional cooperation launched in October (cooperation among municipalities in metropolitan regions)
	Organize workshops between companies and other players from Centre of Expertise for Digital Media and Content Production or Brokerage event for Centres of Expertise leaders	2008: Study visits of Tallinn and Harju County representatives to Forum Virum Helsinki to introduce Living Lab concept in both counties Study visit to Well-Life Centre (Espoo, Finland) – Living Lab concept in social services and TV based social services.
	Brokerage event for cluster developers	The proposal was made by Enterprise Estonia to organize event for cluster developers, but it was declined by Euregio stakeholders
	Together with Enterprise Estonia: • Launch a campaign to Finnish investors in technology areas; • Produce a publication to Finnish companies to introduce Estonian investment environment; • Produce a research to Estonian enterprises introducing Finnish entrepreneurship, taxing and employment regulations; • Familiarization visit to Finnish economic journalists to Estonia and vice versa	A seminar to Finnish entrepreneurs in Tallinn Journalist visit to Tallinn Journalist visit to Uusimaa cities Leaflet together with Enterprise Estonia
2. Promotion of human resources	Development of Twin-region of arts and sciences via knowledge arena	2008: Seminar "Do we live in a happy city?" within the framework of PLEKTRUM festival, Tallinn (development of city space friendly for citizens, involvement of citizens in development of city space) 2007: within BEN project: (1) Presentation "Science and arts in cross-border cooperation" Final Conf., Jelgava, Latvia, Oct.2007
	Skills development for sustainable communities	2007: EURES (European Employment Services) network meetings for creation of joint Cross Border projects in October in Tallinn and December in Helsinki, presentation on Euregio's role in enhancing cross-border talents' movement.

Priorities/ Objectives	Activities planned according to planning documents	Activities implemented according to the Annual Activity Reports
Strategy Framework 2009-2013		
	Wellness for Seniors seminar with Culminatum and Laurea in Espoo	2007: Seminar on Elderly well-being related preventive services, practices and R&D in Helsinki-Tallinn Twin Region
	Seminar on functional food	2007: Planning meeting for the seminar and workshop on Healthy / Functional Food: Fair Trade seminar in Tallinn
	Masters of Arts Festival	Seminar "My space" in Tallinn in the framework of the festival PLEKTRUM in Tallinn, Sep. 2007. Themes: creative cities-what constitutes them?; how to create creative city? Technologies of location.
	„Finnish-Estonian seminar on Digital Media"	-
	„Finnish-Estonian seminar and workshop on Design".	-
	City as a Stage: urban environment - Knowledge Arena Forum	Knowledge Arena Forum "City as a stage" in Helsinki in May. Topics: ideas and inspiration; citizens and their city; technology and the city-how can new technologies create innovation in cityscape. 2007: Round table: How innovative city is Tallinn? Feb.2007 (Within BaltMet Inno project)
	Urban research seminar in Helsinki: living labs and service delivery, Arabiaranta experience	Mapping urban studies groups and connections between Uusimaa-Harjumaa 2007: (1) Lisbon: SIMA seminar, presentation on job mobility between two regions: focusing on mobility of top experts in the Helsinki-Tallinn metropolitan regions. (2) Tallinn City officials visit to Culminatum Ltd.: (Working principles of Culminatum, Living Lab concept introduced)

Priorities/ Objectives	Activities planned according to planning documents	Activities implemented according to the Annual Activity Reports
Strategy Framework 2009-2013		
Euregio Strategy 2005-2007		
1. Regional Competence and Knowledge Base 1.1 The development of the concept, brand name and project activities in the Twin-Region of Art and Science.	Activities 1.1 Art and Science Twin-city from a concept towards a programme developed – Concretised set of projects and activities, role of Euregio defined.	2006: (1) Forum "Knowledge Arena" organized in March for local governments and universities. Topics: new media, urban research welfare and recreation. (2) Mapping of knowledge intensive businesses services for Robert Huggins' "European Competitiveness Index 2006". (3) Finnish-Estonian seminar on Design "Estonian Challenge for Design and Creativity" (23.08.2006, Helsinki). 2005: Project "Helsinki-Tallinn Twin-City of Science" (INTERREG III A project finalized in Apr.2005). Main results: piloting of Twin-Bic Incubator and Business Centre's office/ contact point in Tallinn Technology Park. (1) Cooperation among universities: event held by Culminatum Ltd. in Helsinki (Apr. and Aug. 2005) 13 university and college representatives participated: interest in joint cooperation, further bilateral consultations held. (2) A preparatory meeting of such an event was organised by the manager of Euregio and Culminatum (Nov 2005) result:: objectives set and themes identified for common university forums.
1.2 Information dissemination across the border on activities and opportunities in education and training.	Activities 1.2 Initiate Finnish-Estonian information service on education and training. Euregio's possible role to provide information to the partners and to the public via mailing lists and electronic newsletters.	2005: Research on joint databases on education carried out: FIN: www.opintoloutsi.fi; EE: www.smartEstonia.ee

Priorities/ Objectives	Activities planned according to planning documents	Activities implemented according to the Annual Activity Reports
Strategy Framework 2009-2013		
2. Planning and development of functional cross-border co-operation 2.1 Organising dialogue, exchange and collaboration between urban and regional planning organisations.	Activities 2.1 Challenges of twin-regional development - Facilitate spatial planning cooperation and coordination of regional planning; Euregio's role to organise round table debates and seminars. Coordination of Huuta project - prevention of drugs and decreasing of diseases in the common region	2005: joint planning of INTERREG IIIA project "Harjumaa-Uusimaa scenario project" – but was not submitted 2006: HUUTA project "Prevention of drug usage and sexually transmitted diseases in Helsinki and Tallinn" (INTERREG III A finished in 2006)
2.2 Facilitating exchange activities between public sector factors, aiming for functional co-operation.	Activities 2.2 Coordination of Pilet project – common public transport ticketing (CPTT) system.	2005: Pilet project: feasibility study for CPTT, strategy for implementation of it, first phase of implementing CPTT, experience exchange, ticket revenue collecting system development. 2006: Pilet project "Cross-border public transport network and ticket system" (INTERREG III A finished in 2006)
3. Cross-border political dialogue on common interests 3.1 Facilitation of communication on common interests and political dialogue between decision makers of Harju and Uusimaa counties.	Activities 3.1 Euregio Forum in May 2006 in Tallinn. Organisation of round table debates, study visits, gatherings for politicians, brokerage events for leaders of the municipalities	2006: Baltic Euroregional Network (BEN project) co-funded by INTERREG III B. Seminar "Renewal of local Governance and Services in Cross-border Context". Seminars, roundtables and WGs organized for working out Euroregions' strategy for next 10 years.
3.2 Lobbying common interests, especially concerning the EU. Strengthening of the organisational capacity of Euregio	Activities 3.2. Composing of proposals concerning the new EU programming period and funding programmes for cross-border cooperation activities.	2005: (1) Participation in the Ministry of Internal Affairs of EE on next programming period, (2) Discussion on CBC Programmes 2007-2013 (Stockholm, Dec 2005), (3) Formulation of Euregio common standing vis-a-vis the Central Baltic Programme
	Euregio Intranet for effective information exchange and policy work	Euregio Intranet established and operational

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Strategy Framework 2009-2013		
	Participation in the Baltic Euroregional Network (BEN) coordinated by the Nordic Council of Ministers	2005: (1) INTERREG III B BEN project launched sep., 2005, (2) At 1st national roundtable in Tartu organized by Peipsi Centre for Transboundary Cooperation Helsinki-Tallinn Euregio activities were presented, (3) Seminar "Promoting Science and Innovation through CBC" 2005 Topics: Innovations in public admin. And local authorities, in cultural industry, in entrepreneurship and science and research in CBC coop. Questionnaire among 35 BEN members distributed and data collected on main problems in Euroregion, strategies and roles in regional development.
Action Programme 2003-2005		
Further intensification of all kinds of interaction across the border and to fully exploit new potentials for economic and social development.	increasing public awareness about the twin region – to develop the H-T Euregio into a regional trademark; to initiate targeted international marketing activities to increase the awareness of the twin region.	2004: The Euregio 4th Forum "A region of Twin-Excellence" Nov, 2004 Helsinki. Topics: (1) innovative, knowledge based region, (2) internationalization of research and education; (3) connectivity, content and training; (4) R&D; (5) mobility; (6) advantages of bigger region versus small municipalities. WGs (1) Political dialogue in EU; (2) Developing Science Twin-City; (3) Structural changes and employment strategies; (4) Lifelong learning as a tool for growth of regional excellence. 2004: Helsinki-Tallinn Euregio brainstorming event: to create joint action plan for a science twin-city concept
1. To increase the cohesion of administrative procedures in local authorities;	improving the administrative capacity of local authorities – to learn from the Finnish experience: at organising and funding the cooperation of local authorities; at preparing the local authorities for fulfilling the duties and making efficient use of emerging opportunities related to the accession to the European Union;	2004: Baltic Palette project: WG on ICT: ICT and polycentric planning.

Priorities/ Objectives	Activities planned according to planning documents	Activities implemented according to the Annual Activity Reports
Strategy Framework 2009-2013		
2. To enhance co-operation between universities, research institutions, enterprises and local authorities;	cooperation in research and research intensive enterprising – introducing and implementing the Helsinki-Tallinn Science Twin City concept;	2004: Science Twin-city project (since 2002): 3 brokerage events for business sector took place: (1) in May promotion of Helsinki-Tallinn Twin City Programme, promoting IT sector cooperation; (2) life science and biotechnologies brokerage for R&D and business; (30 ICT brokerage for business and technology partnering. 2004: Seminars organized/attended by Euregion: (1) 'E-learning - challenge for higher education' (2) Tallinn University of Technology's information day, (3)CB Information Society Conference for sustainable development; (4) Meeting of R&D Councils of Estonia and Finland; (5) Tallinn Development Forum and Day of Entrepreneurship; (6) Human Awareness and Behaviour in a Changing World; (7) Tallinn Vision Conference, (8) Innovative City, (9) European Neighbourhood Policy; a Wall or a Bridge. 2004: Estonian Days in Finland 2004: Innovation awareness and knowledge transfer event 'BlackBoxOpenMind' (top leaders and decision makers in private and public sector in innovation and ICT area gathered)
	continuing exchange of experience in rescue work – organising joint rescue operation trainings with the help of Helsinki and Tallinn - Harju County, but also with national institutions and other interested partners;	2004: Several working group meetings organized after formation of the working group in 2002 organized. Membership in the working group: Tallinn, Harju County, Copterline. When the system was restructured in Estonia, the working group was dissolved.
	start-up support for small enterprises – exchanging regional information and experience in supporting enterprises;	2004: brokerage events for enterprises and a visit to business incubator in Helsinki organised

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Strategy Framework 2009-2013		
3. To enhance cooperation in the fields of general and vocational education, youth and social work;	cooperation in vocational education – establishing joint vocational study centre(s) of excellence to facilitate learning by doing	2004: Seminar on cooperation in vocational education in Helsinki gathering vocational education leaders of both regions
	cooperation in drug prevention – to learn from the Finnish experience in planning as well as implementing drug abuse prevention programmes and in training the civil servants; to enhance the exchange of information between organisations engaged in drug prevention	2004: Huuta project (INTERREG III A): cooperation among relevant institutions and authorities against illegal drug use and spreading of blood and sexually transmitted diseases
4. To improve the administrative capacity of local authorities and the coordination of activities at applying for funding for regional development.	cooperation in regional development – comparative analysis of the planning methods, goal setting, monitoring and evaluation in partner organisations; designing joint development visions for the region; exchange of experience and working out joint planning projects	2004: Seminars organized/attended by Euregio: Regional cooperation in managing urban sprawl.
Action Programme 2000-2002		
1. Development of business environments	• transfer of experiences in business development; • co-operation and cohesion in security policies; • common information services to SME's; • networking and co-operation between SME	Activities implemented were related to formation of the network and establishment of the cooperation framework, for example: - Studies on the existing situation and on the potential of cooperation carried out resulting in 27 fields of cooperation/objectives included in the 1st Action Plan. - No specific initiatives were implemented in the period in the identified seven fields. - 21 Management meetings were organised. - Trip to Euregio Pomerania and Øresunds – ideas generated and contacts established. - In 2003 Euregio became a legal body.
2. Co-operation between research, technology and development centres	• research co-operation; • exchange of know-how and technology	
3. Exchange and co-operation in education	• co-operation between universities and schools; • exchange of students and teachers; • production of material and creation of common modules in educational programmes; • improve language skills.	

Priorities/ Objectives	Activities planned according to planning documents	Activities implemented according to the Annual Activity Reports
Strategy Framework 2009-2013		
4. Developing local and regional administrative capacities and interregional connections	• related to the Single Market and acquis communautaire; • short term placements of specialists in local administrations and utility companies; • awareness raising on European affairs; • supply of information and consultation in EU contacts & project opportunities, • exchange and training in issues.	
5. Protection of the environment	• exchange and consultation in waste management plans, regulation and training; • co-operation in rescue services; • exhibitions, campaigns.	
6. Transport connections and tourism	• development and marketing of tourism products for international market; • development of sailing tourism through joint activities of coastal municipalities; • marketing of cultural events across the Gulf of Finland.	
7. Telecommunication and development of the Information Society	• evaluate and eliminate barriers of e-commerce development; • create IS strategies for spatial planning; • create Internet communication strategies for local administrations; • support actions for building interregional virtual networks and information systems.	