

# Innovative Cross-border eRegion Development: Possible Directions and Impact

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Regional development policy has to respond to the challenges of a global, informational and networked economy. In order to achieve a regional-innovation-focused competitive advantage it is important for the region to have the ability both to access and generate knowledge, and to access to knowledge networks faster than its competitive regions. In this paper, challenges in the area of eRegion development are discussed and some eRegion development initiatives are presented. Some activities from the period 2000-2006 are elaborated on, as are current initiatives in the Central Europe eRegion. Possible suggestions and some questions are concerning about a growing need in the eRegion for innovative ways of business, government and academic collaboration as part of a continuous process.

**Key words:** region, eRegion, cross-border, Central Europe, innovation, development, living lab, prototyping, information and communication technologies (ICT)

## Inovativni razvoj e-regije, ki sega prek državnih meja: možne usmeritve in učinki

Regionalna razvojna politika mora najti odgovor na izzive globalnega, informacijskega in mrežnega gospodarstva. Da bi dosegli regionalno inovacijsko usmerjeno konkurenčno prednost, je pomembno, da ima regija možnost tako dostopa do znanja kot tudi njegovega ustvarjanja, in sicer da lahko dostopa do mrež znanja hitreje kot njej konkurenčne regije. V tem prispevku so obravnavani izzivi na področju razvoja e-regij ter predstavljene nekatere razvojne pobude povezane z e-regijami. Obdelane so nekatere aktivnosti iz obdobja 2000-2006 kot tudi zdajšnje pobude v srednjeevropski e-regiji. Možne sugestije in nekatera vprašanja se nanašajo na rastočo potrebo v e-regijah po inovativnih načinih poslovanja, upravljanja in akademskega sodelovanja kot dela nepretrganega procesa.

**Ključne besede:** regija, e-regija, sodelovanje onstran meja, Srednja Evropa, inovacija, razvoj, živi laboratorij, razvoj prototipa, informacijske in komunikacijske tehnologije

## 1 Definitions

Although the *regional approach* is greatly stressed nowadays, there is no generally accepted definition of "region". From a geographical perspective, a *region* is a medium-scale area of land or water, smaller than the total area of interest (which could be, for example, the world, a nation, a river basin, a mountain range and so on), and larger than a specific site or location. A region can be seen as either a collection of smaller units or as one part of a larger whole ([www.Wikipedia.org](http://www.Wikipedia.org)). According to Cooke et al. (1996), a "region" is an intellectual concept. Sotarauta and Bruun (2002) view a "region" in terms of four criteria: 1) a region must not have a determinate size, 2) it is homogeneous in terms of specific criteria, 3) it can be distinguished from bordering areas by a particular kind of association of related features and 4) it possesses some kind of internal cohesion. The borders of a region are not fixed once and for all; they can change. The emerging network society is challenging the prevailing notions of region, space and time.

For the purpose of this paper, an information and communication technology (ICT) supported region, known as the *eRegion* is of interest. From a technological perspective, an eRegion integrates the issues of regional development with the opportunities and challenges coming from the latest technologies, such as the World Wide Web. (Pfirrmann 2003). The eRegion, as a concept, denotes initiatives supported by information technology (IT) that transcend traditional borders and boundaries (eRegion Emergence and Impact 2007).

The eRegion may be viewed from a political or an academic perspective (Bavec 2006). The countries or regions within the countries that are engaged, share the coordinated design, development, promotion and application of selected ICT services or data. The counties in the eRegion may or may not be neighbors. In the latter case, the eRegion may be referred to as a "*Virtual eRegion*", which is not exploiting the potential benefits of the "neighborhood". The fact is that people live in locations and so they perceive their space as location-based (Castells 1996, 413). The notion of places and regions is not based on a "border-oriented" administrative

view but on the networks and processes that flow within and through the region of the countries. Therefore, the space of these flows is not without location, although its structural logic is. Networks are linked up to specific places. Some of them are exchangers – communication hubs that play a coordinative role in the smooth interaction of all the elements integrated into the network. Other places are the nodes of the network. These are the locations of strategically important functions that build a series of locality-based activities and organizations around the key function in the network. As suggested by Kautonen (2006), the question is not whether regional development is national or local, but rather what kind of new interrelationships are emerging between the different actors and what the roles may be for different organizations in different contexts. The question is how development processes can be global, national and local at the same time.

From an organizational perspective, an eRegion is a totality of organizations – linked by eTechnologies – from nearby countries within a circle of 200 to 500 kilometers radius surrounding the point of observation, which depends mostly on the logistical capabilities. There are intensive flows of products, services and people in the eRegion, creating numerous business and/or government transactions and producing intensive cross-border data flows (Gričar 2004). Data flows are one of the major components of the network society, in which the movement from a space of locations to a space of flows is becoming obvious. From a very wide perspective, which may be hard to grasp, some think of a region as the territory within a circle representing up to five hours of airline flight – for example, for the Dubai Knowledge Universities seeing its region of potential students. The Emirates Airline plays a major role in the United Arab Emirates vision and actions (Gopinathan 2007).

A *cluster* may be closely related to an eRegion. A cluster is a geographically or virtually proximate group of interconnected companies and associated institutions in a particular field linked by commonalities and complementarities (Towards a Knowledge Society 2005, 3). A cluster (Porter 1998) is a geographic concentration of competing and cooperating companies, suppliers, service providers and associated institutions. Clusters usually consist of an array of linked industries and other entities important to competition, including governmental and other institutions such as universities, standard-setting agencies, think tanks, vocational training providers and trade associations.

In this paper we are focusing on the innovative eRegion. The classic definitions of *innovation* include (Wikipedia.org): the process of making improvements by introducing something new; the act of introducing something new: something newly introduced; the introduction of something new; a new idea, method or device; the successful exploitation of new ideas; change that creates a new dimension of performance. *Innovation in economics, business and government policy* means that something new happens, which must be substantially different, not a minor change. In economics, the change must increase the value, customer value or producer value. Innovations are intended to make someone better off; the whole economy

grows from the succession of many innovations. The term innovation may refer to both radical and incremental *changes* to products, processes or services. Since innovation is also considered a *major driver of the economy*, the factors that lead to innovation are also considered to be critical for policy makers. In the *organizational context*, innovation may be linked to performance and growth through improvements in efficiency, productivity, quality, competitive positioning, market share, etc. *All organizations can innovate*, including, for example hospitals, universities and local governments. While innovation typically adds value, innovation may also have a negative or destructive effect as new developments clear away or change older organizational forms and practices. Organizations that are not so effectively innovative may be destroyed by those that are.

Studies have shown that clusters stimulate innovation and growth in productivity, foster long-term business dynamics and generate new jobs and economic growth technologies, notably due to the strength of inter-firm co-operation (Clusters of Innovation 1998; ISTAG 2004; InnovateAmerica 2004; U.S. Competitiveness 2005; Aho 2006). Research, initiatives and experimental developments on both sides of the Atlantic are demonstrating a major increase of interest in innovative approaches to regional development based on exploiting the latest information and communication technologies. A *cluster approach* can be successfully implemented across a wide range of industry sectors, including both traditional and high-tech sectors. A framework was developed in the US from 1998 to 2001 to evaluate cluster development and innovative performance at the regional level (Clusters of Innovation 1998).

The *regional innovation system* approach (Kautonen 2006) has its origins in observations dealing with, for example, the geographical agglomeration of production and its effects or inter-organizational interaction and its dynamics in space. The regional innovation system approach is based on the relationships between industrial innovation and regional development. These models have had a remarkable impact on policy-making all over the world in the last ten years, also underscoring their social attraction.

The term *cross-border* refers to transactions across national borders involving at least two countries. It is assumed that national borders do make a difference in executing these transactions. This is important even to transaction between the countries of the European Union, where customs, for example, have been abolished. However, the borders in the people's minds did not vanish. Borders still mean differences in language, culture, legal regulations, procedures, trust and other aspects. From that perspective, a cross-border region differs from, for example, an inter-city region.

For the purpose of this paper, the term *innovative cross-border eRegion* is used, which refers to performance and growth through improvements to efficiency, productivity, quality, competitive positioning and market share in a cross-border environment. Cross-border refers to a group of neighboring countries. In the area of flows, companies are not the only global competitors; regions also compete globally. This means that within certain segments, regions

have to possess clear competitive advantages that they can offer to local operations, organizations and people. In an eRegion and its space of flows, capital, data and innovations move faster than ever from one place to another. In order to achieve a regional-innovation-focused competitive advantage it is important for the cross-border eRegion to have the ability to access and generate knowledge, and have access to knowledge networks faster than its competitors.

It seems that questions of why the innovative cross-border eRegion development is so relevant and timely require more attention.

## 2 Challenges in eRegional Development

An emerging question is how regional development policy can respond to the challenges of a global, informational and networked economy and how development processes are carried out over time, or rather, how they proceed (Sotarauta and Bruun, 2002). The globalizing economy and rapid technological progress has challenged the finding not only of new policies, but also of new ways of organizing policy-making and of managing policy processes. Therefore, we should have a more profound understanding of the ways in which various incidents, people, institutions and strategies (among other things) influence the course of development. The authors are drawing conclusions on how some Nordic city-regions have endeavored to raise their policy-making, management and innovative capacities. We are building upon their ideas in consideration of the challenges in eRegional development.

In an industrial society, the borders between nations, institutions, organizations, regions, etc. largely determined the position of regions. In a global economy, however, borders are less defined than at any time in the past. Now the positions of both organizations and regions are determined by their competencies and skills at learning and developing within a continuous process. Consequently, local initiatives and an enterprising disposition are becoming increasingly important in regional competitiveness. Regional competitiveness is defined as an ability to: connect the (urban) area and its actors to the best possible networks as firmly as possible; maintain and develop the quality of life of local residents (services, education, the environment, etc.); attract new, competitive companies to the area; create such operational prerequisites that the existing companies of the area are able to maintain and develop their competitiveness.

In order to be competitive in the longer term as a whole, regions should be able to redistribute the attracted flows within the region to enhance wealth, social equity and the quality of life of the region as a whole. It is therefore also crucially important, among other things, to tie various activities to the region. Issues such as networks and learning are thus often seen as effective ways of disseminating and creating knowledge and tying together different issues and activities for urban competitiveness. Therefore, rather than emphasizing the competitiveness of individual firms, it has become habitual to focus on the clusters. As Porter (1998) suggests, the development of internationally competitive firms depends on the clusters that are able to exploit the

resources of their home region or country. The critical competitive factors are not just based on such factors as labor costs, the availability of resources and the general macro-economic environment, but also on qualitative factors of the local environment that are intensified through clustering. The benefit of clusters is also that individual firms may come and go, but clusters as a whole continue to create employment and generate wealth, and the region thus has the chance to continue to prosper.

Regions may be important, but the state still has a role to play. The role of the region in the accumulation of knowledge is relative and those commentators who only stress the regional innovation networks and/or learning do not see the role of national policies and decisions clearly enough. These observations seem to be valid, especially from the viewpoint of small countries such as the Nordic nations (Kautonen 2006). The Finnish innovation system is national-local in character. Therefore, the question is not whether regional development is national or local, but rather what kind of new interrelationships are emerging between the different actors and what the roles of different organizations in different contexts may be. The question is how processes of development can be global, national and local at the same time.

Adapting a more interactive and process-based, but at the same time purpose-oriented, way of generating regional development policies is not only a technical question. It is very much a matter of the policy-making culture. Regional development policies are still based on a fairly well established belief in the capabilities of the policy-makers to find the correct strategies for the future through rational planning. Once development strategies have been formulated, action is assumed to follow. However, the regional development policies are often programmed descriptions of the current state, through which it is not always possible to generate enough innovative means to develop regions. Sotarauta and Hukkinen (2002, 19) are stressing that the basic argument is that, instead of only finding solutions in fairly straightforward policies, we may also find them in the communicative and more or less self-organizing processes of decision-making, policy-making, co-operation, knowledge creation, etc. For the task of balancing the current focus of policy-oriented studies and practices, the following two observations are relevant: One, the various development processes are not understood deeply enough, and thus many of the shortcomings faced in regional development policy-making are largely due to the fact that the policy-makers do not have the capacities to manage development processes efficiently. Two, there is a need to create systematic, process-based approaches for regional development policy-making and for the management of regional development activities.

However, creating an environment with a supportive business-government partnership is not an easy task, Wessner suggests (2003, 1), since business-government partnerships are not commonly understood. In the United States, partnerships are sometimes controversial and therefore an objective analysis could lead to a better understanding of the contributions and limitations of these partnerships. They relate to the drivers of cooperation among industry, the government and universities. A special focus

is needed with respect to foreign government partnerships and opportunities for international cooperation and the changing roles of government laboratories, universities and other research organizations. Properly constructed, operated, and evaluated partnerships can provide an effective means for accelerating the progress of the transfer from the technology to the market. Knowledge of "best practices" may lead to positive guidance for future public policy.

Similar messages are coming from various conferences in recent times (Reding 2006; eBaltics 2006) as well as the initiatives of the EU institution. This includes the Commission presenting a Communication on improving the transfer of knowledge between the public research base and industry across Europe, which will provide guidance on how public authorities can address the main barriers which currently exist (Putting knowledge into practice 2006). The Commission will streamline its business support and information networks. This will encourage and facilitate the uptake of new ideas and their transformation into marketable products and services, especially by SMEs. In particular it will help ensure that the Innovation Relay Centers and Euro Info Centers provide top class business services to SMEs. The European universities are also expected to improve their performance, including more and more effective contributions to the innovation process. The key to this is granting universities sufficient autonomy to develop their own strategies. Structured and strategic partnerships between business and universities need to be strengthened. This requires increased possibilities for exchanging staff, teaching, the encouragement of entrepreneurship in the university and the establishment of science parks around universities with adequate finances available to support research spin-offs. This will help bridge the cultural gap that so often separates university research from business requirements. The development of links between universities and the local civil society would also be conducive to a better uptake of innovation at the local and regional levels.

Collaboration is a prerequisite for an eRegion to be innovative and competitive (Aho 2006). The importance of collaboration was stressed by Vivien Reding (2006), saying that Europe needs to "team-up". Collaboration is a well recognized European asset because people can master it so well. Research conducted by individuals or teams of scientists in ivory towers or remote research labs is no longer the order of the day. Competition among researchers was once how science advanced while technologies were developed in the isolated labs of major corporations. Today, in the globalized, highly competitive and increasingly complex world, it is collaboration and networking between excellent teams at the top of their fields, as well as with the best equipment and facilities, which counts. It is through coordinated and concerted action that Europe will be able to maximize the benefits of European ICT research and innovation on society and the economy. Aligning the efforts at the European level is the key to staying competitive. Small and fast developing countries who are open to innovation may perhaps accept the challenge more easily. They could be described as "small countries with big footprints", given that eTechnologies are allowing relative independence from

the geographic and demographic constraints that have historically affected the use and diffusion of technology (Vogel & Gričar 1998).

### 3 eRegion Initiatives

Several eRegion related activities are in place today. They are briefly described below. Most probably other eRegions have emerged and it is expected that more will follow. Investigating the current eRegion initiatives and analyzing their similarities and differences may be a relevant direction of future research, exploiting the opportunities of inter-eRegion eCollaboration.

**The TeleRegions Network (TRN)**, <http://www.TeleRegionsNetwork.org>

The Tele Regions Network (TRN) was created by regions in Austria, Belgium, France, Germany, The Netherlands, Finland, Sweden and the UK in 1996. Its objective is to promote the development of Information Society Technologies in European Regions. This objective is expected to be realized using several means, such as: the execution of projects; with the help of industrial partners and the European Union; conferences for the dissemination of best practices; the coordinated development of an Information Society infrastructure in the regions concerned.

**NeDAP - Northern eDimension Action Plan**, <http://www.riso.ee/en/nordic>

The Northern eDimension Action Plan (NeDAP) is meant to play an important role in the follow-up of the Lisbon strategy to make the European Union the most competitive and dynamic knowledge-based society in the world by 2010, with improved social cohesion and employment. Still, some challenges are waiting to be met. A fundamental one is the construction of an open, inclusive and democratic Information Society in all parts of the region. It is also of the utmost importance to create the optimal framework conditions for investments and business development in the ICT sector, as well as in the field of research. NeDAP can also play the role of a test-case for investigating the initiation, development and evaluation of EU regional cooperation initiatives.

**The Baltic Development Forum**, <http://www.bdforum.org/download.asp?id=704>

The Baltic Development Forum is an independent non-profit networking organization with more than 2,500 representatives from large companies, governments, major cities, institutional investors, business associations and the media in the Baltic Sea Region and beyond. Its vision is to make the Baltic Sea Region the most dynamic and prosperous economic centre in Europe and the world through integration, innovation and partnerships. Its mission is to position the Baltic Sea Region on the global map by advancing growth and competitive potential through partnerships between businesses, governments and academia, as well as by developing strong ties with the rest of the world. The core activities of the Baltic Development Forum include: organizing the annual Baltic Development Forum Summit – the leading platform for cross-border, cross-sector and cross-level networking in the Baltic Sea Region; facilitating the Baltic Sea Region brand process to

build a global trademark for success by 2010; producing the State of the Region Report; influencing the Regional agenda; profiling the Baltic Sea Region in the media and within decision making at large; co-operating with partners; organizing thematic seminars and roundtables.

**The Central European Initiative – CEI**, <http://www.CEI.net.org>

The Central European Initiative (CEI), established in 1989, is composed of 18 Member States: Albania, Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Hungary, Italy, Macedonia, Moldova, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia and Ukraine. One of the CEI's objectives is to bring the countries of Central and Eastern Europe closer together and assist them in their preparation for EU membership. The organization operates through various structures: the annual meeting of the CEI Heads of Government; the annual Meeting of the Ministers of Foreign Affairs, Ministers of Economic Sectors and other ministerial or sectorial events; monthly meetings of the Committee of National Co-coordinators as well as meetings and other activities of the CEI Working Groups; the co-financing of numerous other events (conferences, workshops, training courses etc.). Among CEI activities are the CEI University Network and the CEI Science and Technology Network. The subsections include the following areas relevant to eRegion development: Interregional and Cross-Border Co-operation and Local Development; Human Resource Development and Training; Information Technology; Small and Medium Sized Enterprises; Tourism; Transport.

**ALADIN – ALpe ADria INitiative Universities' Network**, <http://www.ALADIN-Net.eu>

ALADIN was initiated after a very resounding Business and Government Executive Meeting: "Regional Cooperation in eCommerce Development" at the 14th Bled eCommerce Conference on June 25, 2001. The ALADIN Network was formally created by signing a Letter of Intent in Ljubljana, Slovenia on October 23, 2002 by the rectors or vice-rectors of: the Karl Franzens University at Graz, Austria, the University of Rijeka, Croatia; the University of Trieste, Italy; the University of Maribor, Slovenia. At the time the universities reached the following understandings: One, the universities will create an international network, at a regional level, sharing common ideas and knowledge in teaching and research activities in the field of eCommerce. Two, they will facilitate the mobility of students and professors, providing common lectures, creating virtual teams of students from different universities and having professors lecturing at different universities, in order to harmonize with global and international eCommerce activities. Three, a Steering Committee was created and each university designated two representatives. On June 5, 2005 in Bled, Slovenia, a second version of the ALADIN Letter of Intent was cosigned by four additional universities who joined the Network: the Corvinus University, Budapest, Hungary; the Technical University, Košice, Slovakia; the BW University, München, Germany; the Novi Sad Business School, Serbia. Following that, the Prague University of Economics in the Czech Republic and the Medical University of Graz, Austria, have expressed interest in joining ALADIN. Currently ten universities in nine countries are active in

ALADIN with an interest in eIntegration, particularly in eBusiness, eGeomatics, eGovernment, eHealth, eLearning, eLogistics and eCollaboration in Disaster Relief. The George Washington University in the United States is also a member of the extended eALADIN. So far, ALADIN has proved to have an impact on the activities of each of the member universities in Central Europe (Gričar et al. 2005; Bačanović and Jošanov, Doucek, Gábor, Katzy, Gričar and Kljajić, Inchingolo and Ukovich, Petrovic and Kittl 2006).

**The eHealth Initiative**, <http://www.ehealthinitiative.org>

In 2004, the eHealth Initiative and its Foundation launched a range of activities designed to provide direct technical assistance to states and regions in the United States who are interested in improving the health and healthcare of their citizens through health information technology and health information exchange. While many national policies and standards are emerging to improve health and healthcare with the help of information technology, healthcare remains local and each state or community has its own particular challenges and market characteristics. In addition, many policies still remain at the state and local level. Through the State and Regional Policy Initiative, it raises awareness of existing and emerging national public and private sector policies related to health information exchange among leaders at the state and local level.

**The New Silk Road, TRACECA – TRANsport Corridor Europe Caucasus Asia**, <http://www.traceca-org.org/default.php?l=en>

The TRACECA corridor is a renowned and high-profile alternative transport system steadily improving and developing. It is a restoration of the "Historic Silk Road". Nowadays, as that old thoroughfare falls into disrepair and oblivion, regions along it are also suffering. They are falling victim to poverty, isolation and even terrorism. TRACECA was established in 1993 during a conference in Brussels, originally by 8 Nations but now covering 13: Armenia, Azerbaijan, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Romania, Turkey, Turkmenistan, Ukraine, Uzbekistan and Tajikistan. They are aiming to improve trade and transport along the Europe-Caucasus-Asia Corridor. At the beginning, the TRACECA institutional structures were financed by the European Union, though financing has been taken over step by step by the member states since 2004. While TRACECA holds the potential for great improvements in continental trade, little has so far come out of the project.

**The Virtual Silk Highway - the 'SILK Project'**, <http://www.SilkProject.org/project.htm>

This project originated as a NATO funded network infrastructure project. The Silk project plan was approved in November 2001. The project has evolved since then into a broad initiative aiming at creating sustainable National Research and Education Network organizations in three Southern Caucasus and five Central Asian countries (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan). Along with the NATO Science Division and the academic communities in each of the eight countries, partners such as CISCO, DESY, GEANT, the SOROS Foundation, UNDP, the State Department of the USA, the World Bank, University

College London and the University of Groningen are also coordinating the efforts to accomplish this goal.

**The eSilk & eAmber Road Regions Think Tank: Business & Government Executives & Professors Commitment To Making A Difference,**

<http://www.BledConference.org/eAmber&eSilkRoad>

The eSilk & eAmber Road Regions Think Tank was initiated by a panel at the Bled eConference (Vogel et al. 2002) and through a follow-up paper (Vogel et al. 2003). The re-establishment of business and government relations between the nodes of the Silk and Amber Roads aiming towards the creation of the eSilk & eAmber Roads presents both challenges and opportunities (Pinder et al. 2005; Vogel and Gričar 2006; Pinder et al. 2006). Although the challenges are many, the potential rewards are also great. Common opportunities are based around the Internet to provide the chance to regain our awareness of these regions and the goods and services that a renaissance of the Silk and Amber Roads can provide. The Think Tank's objectives are to: establish contact with like-minded people (researchers, administrators, policy makers and advisers, businessmen, and other stakeholders); raise awareness among such people of contemporary issues related to "e"; begin building a network of institutional links and researchers for further collaboration in joint activities; obtain first hand experience with existing applications of eCommerce in the Region; establish an indication of the level of awareness of eCommerce issues and opportunities in the Silk & Amber Road regions; identify opportunities for continued collaborative research into both the problems and possibilities for expanding eCommerce in the region; stimulate inter-university cooperation in the area of eCollaboration along the eSilk & eAmber Roads; suggest an agenda for future collaborative research and development activities intended to further the aims of the meeting.

**Towards a Knowledge Society - the Nordic Experience,**

[http://europa.eu.int/comm/regional\\_policy/sources/docconf/gothenburg/index.cfm](http://europa.eu.int/comm/regional_policy/sources/docconf/gothenburg/index.cfm)

The Ministerial Conference "Towards a Knowledge Society - the Nordic Experience" (Gothenburg, Sweden, November 14-15, 2005) and its Conference Declaration have provided strong messages about the urgently needed inter-region eCollaboration. Over the last two decades, economic development in the Nordic countries, especially Finland and Sweden, has been driven by strong public-private partnerships involving larger firms working with governments (both national and local), research centers and universities and clusters of smaller firms operating in specific fields of technology (notably ICT). This 'triple-helix' model has been essential in strengthening the Nordic competitiveness based on the creation and diffusion of knowledge. The conference has provided suggestions on how the evolution towards knowledge-based economies can be fostered and funded and how sustainable cross-border cooperation can be enhanced. In this context, representatives from the new EU Member States need to examine to what extent the Nordic experience can be transferred or adapted to their specific circumstances and how the EU Structural Funds can assist the development of ICT. Slovenia's delegation has expressed interest in

eCollaboration with the countries of the Nordic Region (Bešter 2005; Gričar 2005b).

## 4 The Central European eRegion

The idea of eRegional development in Central Europe was presented by the Slovenian Delegation of the Information Technologies Society (IST) Committee, Directorate-General Information Society, at the meeting in Brussels on September 20, 2000. The meeting was chaired by Dr. Rosalie Zobel of the European Commission. The delegation proposed that a cross-border regional development exploiting eTechnologies may be very relevant to the development of the countries preparing for European Union membership. In November 2000, the Department for International Cooperation, Ministry of Education, Science, and Sport, Republic of Slovenia, sponsored a meeting in Ljubljana based on that idea. In this meeting, a survey on issues was initiated on cross-border eCommerce as perceived by the executives of selected organizations in Slovenia. The results of the survey (Bračun and Gričar, 2001) triggered two workshops preparing for regional development projects envisioned as the "Organizational prototype of cross-border Business-to-Business and Business-to-Government eCommerce in Central Europe". In March 2001, the workshop was sponsored by the Research and Development Division, Ministry of Education in Budapest, Hungary. In May 2001, the workshop was sponsored by the Intereuropa and ATNET companies in Koper, Slovenia.

The workshops have led to an "Executive Sellers & Buyers Meeting: Regional Cooperation in eCommerce Development", a component of the 14th Bled eCommerce Conference in June 2001 (<http://eCenter.FOV.uni-Mb.si/Proceedings>). The purpose of the meeting was to bring together business and government executives involved in cross-border transactions, as well as the facilitation and simplification of business process. The eTechnology providers and academics were also involved. The objectives of the meeting were: to encourage top executives to conduct business electronically; to motivate the use of the latest eTechnologies; to prepare proposals for joint cross-border eCommerce projects in the region of the neighboring countries. The meeting was the first in a series of business & government executive meetings on cross-border eCommerce development, which have taken place in Slovenia twice a year since then (in June and November). They have played a visible role in cross-border eRegion awareness and creating action.

In March 2002, the Electronic Commerce Center of the University of Maribor, Faculty of Organizational Sciences & the Government Center for Informatics, Republic of Slovenia, sponsored a Workshop on "Building A Mega-Portal For Regional Economic Development" (Boyson and Gričar 2002; Gričar 2002). Over 40 participants have attended, representing businesses, governments and universities in Slovenia and the neighboring countries of Austria, Croatia, Italy and Germany. Involved were the researchers of the University of Rijeka, Croatia; the University of Graz, Austria; the University of Trieste, Italy and the University of Maribor, Slovenia, all interested in the development of

cross-border regional eCommerce. They became a core group of ALADIN – the ALpe ADria INitiative Universities' Network. It has been confirmed in the discussion at the workshop that the Mega Portal concept is important to the region since both the Pan-European transport Corridor No 5 (Lisbon, Portugal to Kiev, Ukraine) & No 10 (Hamburg, Germany to Istanbul, Turkey & Thessaloniki, Greece) crossing in this region. There is also significant sea traffic to/from Central Europe through the North Adriatic ports of Koper in Slovenia, Trieste and Venice in Italy, and Rijeka in Croatia to/from the Middle East, Asia and Australia.

The universities proved to be very helpful in opening up related contact in their respective countries. In recent years, ALADIN – the ALpe ADria INitiative Universities' Network – has become involved in the following annual events:

- The International Workshop on the LivingLabs in the Innovative Cross-border eRegion, <http://eCenter.FOV.Uni-Mb.si/eLivingLabWorkshop> (each November since 2004).
- The Merkur Day 2007, Undergraduate and Graduate Students eConference, <http://eCenter.FOV.Uni-Mb.si/MerkurDay> (each November since 1999).
- Business & Government Executive Meeting on the Innovative Cross-border eRegion, <http://www.bledconference.org/ExecutiveMeeting> (each June and November since 2002).
- eUniversity Forum: eIntegration Challenges for Rectors & Deans: Cross-border Cooperation in the Innovative eRegion, <http://www.BledConference.org/eUniversityForum> (each June since 2003).
- Bled eConference, <http://www.BledConference.org> (each June since 1988).

The eBSN – European e-Business Support Network for SMEs, E-business, ICT industry and services, Enterprise and Industry Directorate-General, European Commission – is supportive of the eRegion approach (Preparing 2006). Currently, several eRegion (cross-border) initiatives are in progress in Central Europe.

In Austria, the Ministry of Economic Affairs and Labor, in cooperation with the Chamber of Commerce (ICT Security 2005), has launched an initiative for standardizing a common eInvoicing (e-billing) interface. A second call is opened for Cooperation in Innovation and Research with Central and Eastern Europe (CIRCE 2006). "eSchwechat" is a concept that gives Schwechat, a town at the edge of the Vienna Airport, a specific profile as an "Information Society City" (Fazekas and Koch 2006). The Austrian government is sponsoring a conference on networking and cooperation across borders (eGovernment in Austria 2007) with a target audience of representatives of governments and governmental organizations from countries in Central and Eastern Europe and Central Asia.

In Slovenia there are two initiatives in progress: One, a project initiative for eInvoicing in the eRegion involving companies, banks, government agencies, municipalities, development agencies, universities and technology providers (eInvoicing 2005). Two, a project initiative for the interoperability of information systems for organizations involved in major disaster relief in the eRegion (Safe and Secure eRegion 2006, Information Systems Interoperability

2006). Both initiatives were reported at several conferences and workshops (Gričar 2005a, Gričar 2005b, Gričar 2006).

The eInvoicing initiative is in line with the development in the Nordic countries (Helsinki Manifesto 2006). The Finnish Presidency has given priority to the need to strengthen the European global competition and innovation in the framework of a revitalized Lisbon strategy, the i2010 policy and the European Programme for Competitiveness and Innovation (CIP) through essential structural reforms and the more efficient use of information and communication technology (ICT). , a list of the proposed twelve most supported measures to boost European competitiveness and innovativeness is very relevant to the development of the eRegion. In particular the following measures:

No 1. The implementation of a European Network of Living Labs, a user-centric platform for products and services in the co-creation processes.

No 2. Reap the benefits of re-using banking infrastructure: realize eInvoicing with interoperable standards.

No 9. Intensify the integration of the retail banking market with the full and prompt implementation of the Payments Services Directive (realize a single market in payments) and the integration of the key financial market infrastructure (Target2-Securities).

No 10. The implementation of a Europe-wide compatible eInvoicing system with common standards and definitions.

The interoperability issues of information systems of the organizations involved in a major disaster relief effort are challenges of the regions (Harrald 2004). The recent and proposed expansion of the European Union dramatically increases the geographical area and economic domain that will join the evolution towards openness, integration, harmonization and sustainable economic growth. This evolution will not occur, however, if emerging risks are not identified and managed. These emerging risks include natural disasters (which is increased by the admission or consideration of countries in higher risk areas), terrorism, supply chain security, financial security, cyber-security, corruption, technological hazards, safety of transportation and others. It is, however, also very important to have related eSolutions ready in the case of a major disaster in any country in the region. The countries in Central Europe are prone to natural disasters such as flooding, earthquakes and fires, as well as road, rail and tunnel accidents. Additionally, all regions are prone to man-made disasters and terrorism. In order to be more effective at handling major disasters, the eRegional approach is a must since disasters do not recognize geographical or political borders (Memorandum 2005). From a wider perspective of the security picture, the EU's interests in the region are even broader. Cornell et al. (2006) are discussing a range of developments over the past few years that have attracted increasing attention to the emergence of the Wider Black Sea Region as a new hub of European security.

As indicated in the Helsinki Manifesto (2006), the Living Labs may be considered a vehicle for an accelerated innovative development in the area of Collaborative Working Environments (CWE) and enabling technologies (Cornwell and Salmelin 2006; Salmelin and Gričar 2006; European Network of Living Labs 2006). In order to achieve

the expected results, the following recommendations may have to be considered (van Bemmelen and Fusco 2006): supporting sectorial collaborative application research involving innovation centers with practical experimentation and field trials; supporting the mobility of researchers as an immediate benefit of working environment virtualization; creating synergies of experiences across different sector Living Labs; ensuring wider access to results; addressing interdisciplinary issues; developing virtual centers of excellence in various CWE topics; measuring the performances achieved; assessing the maturity for a large scale CWE initiative.

The development of the eRegion is strategically important for Slovenia. Accepting the messages of the ministerial declaration of the Gothenburg Conference (Towards a Knowledge Society 2005), and considering the level of information and communication technologies and eSolutions implemented in Slovenia, the possibilities are great for an accelerated development of intensified links with the neighboring countries. As stressed by the Minister of Economy of Slovenia (Vizjak 2006), the development of the eRegion is beneficial for Slovenia's development. Slovenia can provide a tangible example of e-cooperation to the countries situated in a certain geographical area of the European Union in order to increase the competitiveness of each of the countries participating and the eRegion as a whole. The eRegions will contribute to the implementation of the Lisbon Strategy and so the cooperation between research units, laboratories, organizers, companies and governmental organizations is therefore indispensable.

## 5 Suggestions

Since the eRegion is a relatively new concept, it is difficult to come up with a firm set of conclusions. Rather we would like to provide some suggestions that may indicate directions for further research, development and action.

A cross-border eRegion covering the neighboring countries may be an important area for observation, research, development and action. Based on the results achieved, the region of the Nordic countries deserves serious attention. Opening up possible contacts with businesses, government agencies and universities in the Nordic region may be useful for countries of any region, including Central Europe. The Nordic experience is just too good to be kept a secret.

Considering the nature of experimenting (prototyping and proving concepts) in an area of rapid environmental changes and technological opportunities, all parties involved will have to work together more closely. Business, government, and academic representatives will be continuously looking for the new ways for eCollaboration. They will be experimenting with how to work in an accelerated mode and in an increasingly complex environment. Living Labs may prove to be a convenient common working environment.

Perhaps eRegion development may be considered as a model for the creation of desirable, convenient and beneficial environments for all parties involved: business, government and academic. It could be recommendable

to consider the creation of a country-wide Living Lab in order to experiment with cross-border inter-organizational systems within an interdisciplinary environment. A small and fast developing country open to innovation may perhaps accept the challenge more easily.

It would be necessary to define and elaborate on the eRegion catalysts, a list of the critical factors for success. For example, a standard of living foundation, government structure, societal openness, culture, the level of education, entrepreneurial spirit, common history, trust, common language, access to technology and more.

The current environment of 27 countries in the European Union is providing wonderful eCollaboration opportunities for organizations of all types in all the member states. In the EU countries in the Amber Road regions, for example, improved interrelated business and government standards may lead to accelerated development. In the eSilk Road regions on the other hand, countries in which these standards would not apply so soon, a lower rate of development may be expected. However, the experience and good practice gained in the counties of the eAmber Road regions may help those in the regions of the eSilk Road.

Once created, the eRegions may be e-connected to each other. Their mode of operation (best practice) may perhaps be copied to other parts of the world. Perhaps we will see some EU countries that are good not only at a cross-border innovative eRegion development but also at innovative ways of exporting innovative cross-border eSolutions.

Several questions remain. Which components, solutions or operations that are successful in one eRegion could be copied, which just followed and which are not applicable at all in another eRegion? Can some guidelines for successful inspiration be defined and generalized for improved understanding of the potential of the eRegion as a concept and a practice? How relevant are the outstanding business, government and academic leaders in the increase of awareness, in policy making or the implementation of solutions? How can the success of an eRegion be measured? What are the impacts of information and communication technologies on eRegion development? To what extent is an eRegion's environment more favorable to the development of innovative information and communication technologies, compared to a region where no particular attention is paid to "e"? Can the countries in regions facing tensions, conflicts and closeness gain benefits if helped in, or pushed into, eRegion development?

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