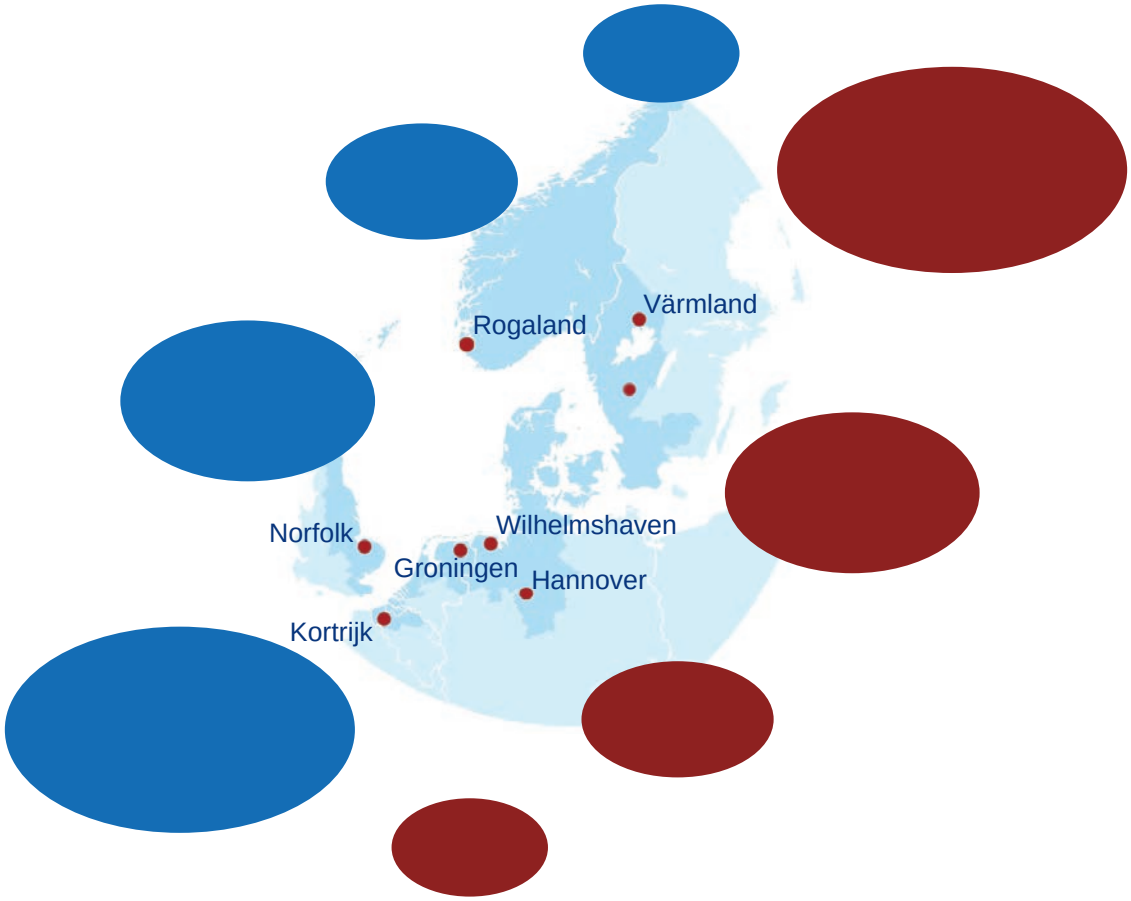
Highlights from the E-CLIC Final Report, March 2012

E-CLIC

Achievements, Results and Impacts



EUROPEAN UNION
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Investing in the future by working together for a sustainable and competative region

The Interreg IVB North Sea Region Programme

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Achievements

E-CLIC – A Connected Ring of Eight European Collaborative Innovation Centres

The E-CLIC project has been running from 1 September 2008 to 29 February 2012 and has brought together 16 partners from five Member States and Norway. Together they form a connected ring of eight European Collaborative Innovation Centres, located in the North Sea Region.

The overall aim of the E-CLIC project has been to stimulate innovation through the establishment of eight new European collaborative innovation centres for broadband media services, and to develop the capacity for growth and employment across the NSR through collaboration in a North Sea cluster.

The E-CLIC centres have been set up in accordance with the Triple Helix model, which is based on active participation and interaction between the public sector, industry and academia. All centres are placed in public buildings, such as universities, regional media centres or test labs, in order to create a place where people can meet and exchange knowledge and new ideas. The centres are innovative environments for ICT actors in the NSR. To gain top position in Europe, as the most advanced region in the development and provisioning of innovative broadband services, the establishment of a connected ring of collaborative innovation centres has been a crucial instrument.

Businesses, regional clusters, public bodies, universities and young talents in co-operation constitute the innovation centres and form the innovation network. All centres have complementary competencies. One centre working independently of centres in other regions/countries cannot achieve this position alone. Transnational co-operation is key to the further development of innovative broadband services.

Meeting Place

The aim of E-CLIC was to also bring students together with their different talents and fresh ideas, and let them work together with businesses on new innovative ideas in the field of broadband media services. The core of the E-CLIC centre is the meeting place, which is important to encourage a transfer of knowledge.

Through the involvement of students in the centres' regional and transnational activities, knowledge exchange is secured. After graduation, the students move on into new contexts of companies and organizations and thus disseminate knowledge from the E-CLIC cluster.

Europe 2020

The background of the E-CLIC project is the existing ICT/broadband infrastructure in the NSR. The infrastructure is however not utilized to its full capacity. E-CLIC partners have set up a strong NSR cluster in the area of broadband services, media technology and broadband systems to fulfil regional and national strategies together with the i2010 initiative and the Europe 2020 objectives of smart, sustainable and inclusive growth.

By working in accordance with the Triple Helix model, the public sector has been an important actor to spread the message of EU's economic policy, both to industry and academia within the project.

The way of working has been a success, which can be seen in the E-CLIC model; the partnership worked with the Lisbon and Gothenburg agendas in the beginning of the project period and is now preparing for the future Europe 2020 strategy by supporting the implementation of the Digital Agenda.

Rural Areas

There is also a need to find solutions for challenges facing rural areas, with an ageing population, and environmental issues. The development and provisioning of broadband services is by nature an interdisciplinary activity involving teamwork and international collaboration. In order to succeed in developing new innovative broadband services, a wide range of different competences from both national and transnational partners are needed.

Transnational Cooperation

The cluster of E-CLIC centres has worked to develop networks in order to stimulate the commercialisation of the participating regions' knowledge base, to support the implementation of the Digital Agenda for Europe and encourage the development of both new projects and new employment opportunities.

A particular priority has been to strengthen the links between research bodies and commercial companies in order to commercialise existing knowledge, inspire innovation, and develop new ideas that can be exploited through national and European research programmes. By securing transnational cooperation, the overall capacity of the NSR will be developed through effectively increasing the critical mass of available skills and experience. This will ultimately generate human capital for the NSR and stimulate economic growth in the NSR.

E-CLICs Work Packages

All the eight E-CLIC centres have had a number of work package projects running in different work packages and these work package projects, both regional and transnational, have resulted in a large number of case studies, prototypes for services and media productions. The E-CLIC partners have also together developed programmes for collaboration and exchange, organized transnational workshops and conferences, started up student and teacher exchanges and finally also evaluated results and tested prototypes and new services.

Work Package 1 – Project Management

In Work Package 1 three public conferences have taken place. The E-CLIC Kick-off Conference in Norfolk, UK, the Mid-term Conference in Hannover, Germany, and the Final Conference in Värmland, Sweden.

The E-CLIC Project was off to a flying start 24-26 September 2008 in Norwich, UK, hosted by the staff at the EPIC centre. The participants followed a busy schedule, including everything from deep discussions about E-CLIC's course of action to a relaxing river cruise. The E-CLIC Mid-term Conference in Hannover, Germany, 9-10 June 2010, was integrated into the Initiative D21's Annual Conference, and also hosted by D21. Initiative D21 was proud to present Federal Minister Dr. Thomas de Maiziére as keynote speaker of the conference, which theme was Data – The new key currency in the digital age? In the afternoon forum closing session, E-CLIC speakers informed the audience about the E-CLIC project, and the benefits one can get from being part of the project.

The E-CLIC final conference "Internet Innovations for the Future" took place in Värmland on 6-7 December 2011 and gathered about 150 people. The two days started off with an internal E-CLIC meeting, in which the 24-Hour event was introduced and set off. The County Governor of Värmland, Eva Eriksson, opened the conference. Her speech pointed out the importance of broadband access and content in the new media society we live in. She also showed gratitude to what E-CLIC has accomplished. The E-CLIC video was presented by the two students from Belgium who have travelled around the E-CLIC centres on their road trip. Each centre was given the opportunity to present some show cases. Two main attractions were the keynote speakers; Ben Woldring from Groningen, The Netherlands and Carl Fredrik Kastengren from Karlstad, Sweden.

The Groningen key note speaker Ben Woldring, an internet entrepreneur of the first hour, held an excellent speech about how to start an internet business, which students of Karlstad university as well as the international students from each centre followed with great excitement. The Värmland key-note speaker, Carl Fredrik Kastengren, is a Mobility Evangelist and Business Developer at Tieto Sweden. He told the audience about insights on the broadband market from a telecom perspective.

In parallel with the E-CLIC Final Conference, a 24-hour competition took place with ten students from four different E-CLIC partners taking part. The students were placed in three teams that competed against each other during 24 hours. The task, provided by Karlstad's Bergvik shopping centre, was to develop a smart phone app, to be used by the shopping centre's customers.

E-CLIC partners have also had the opportunity to promote the project and disseminate results during the Open Days in Brussels, at the NSR Annual Conferences and at different conferences/events such as CeBIT in Hannover and Multi Mania in Kortrijk. The project has invested considerable energy into producing high-quality promotion material in form of fliers, brochures, signs, roll-ups, booklets and newsletters, but also created a well functioning website, www.e-clic.eu, with a blog and connections to twitter and to the E-CLIC facebook group.

Work Package 2 – Regional and Transnational Collaboration and Development

In the comprehensive Work Package 2, Regional and Transnational Collaboration and Development, the main outputs are the establishment of eight collaborative innovation centres together with the set up of three LivingLabs and one incubator/business accelerator. Also the E-CLIC Model, showing how the project has been structured and how the established E-CLIC centres have been working as regional hubs with the aim to foster innovation in the field of broadband media services is an important output of the E-CLIC project.

E-CLIC centres with various kind of expertise

Within the framework of the E-CLIC Project, the E-CLIC partners have established an E-CLIC centre in each participating region, with the aim to provide a meeting point for universities, public authorities and SMEs, thus serving as a platform for innovation in broadband media services.

E-CLIC Värmland, Sweden

E-CLIC Värmland, Sweden, promotes innovation by running innovative and business driven research and development projects. The main focus within the centre is on mobile media services, broadband infrastructure for new media services and service development, and enhanced methods and processes for quality assurance. Located at Karlstad University, the centre offers a LivingLab with advanced wireless broadband networking technology and provides a place where people can be involved in tests of new prototypes in a natural working environment.

E-CLIC Borås, Sweden

In E-CLIC Borås, Sweden, research, business entrepreneurship, systems development and management are combined into one laboratory (InnovationLab), serving the system development needs within Academic Computing. The centre provides researchers and research groups with the tools and knowhow to produce artefacts in support of their research. Research results can be transferred into applications for validating purposes, into pilot-stage for multi-user testing or even into full production.

E-CLIC Hannover, Germany

E-CLIC Hannover, Germany, named Planet Mid LivingLab, stands for thinking and rethinking, changes and opportunities of the digital revolution concerning the future of media. Education, research and development for the media world of tomorrow are the key areas the centre is focusing on. The centre offers the technical facilities of a multifunctional utilization for education, events, discussion panels and video conferences.

E-CLIC Willhelmshaven, Germany

For E-CLIC Wilhelmshaven, Germany, the key focus area, beside researching the possibilities of Second Life and other similar platforms, is how broadband access possibilities can contribute towards the enhancement of eGovernment, Astronautics and Destination Management.

The main point of interest of E-CLIC Groningen, The Netherlands – cooperating with business companies, health care and educational institutions and the public administration – is to improve e-services for the citizens of the region. They are also active in extending the wireless broadband network to the whole city while carrying out research on further development of wireless city networks.

E-CLIC Groningen, The Netherlands

The main point of interest of E-CLIC Groningen, The Netherlands – cooperating with business companies, health care and educational institutions and the public administration – is to improve e-services for the citizens of the region. They are also active in extending the wireless broadband network to the whole city while carrying out research on further development of wireless city networks.

E-CLIC Kortrijk, Belgium

E-CLIC Kortrijk, Belgium, called The Studios, is a business accelerator, a meeting point for creative minds from the fields of industrial product design, new media and communication technology and digital arts and entertainment, offering fully-equipped offices, meeting rooms, seminar space brainstorming gardens, parking areas, a lively kitchen and even a basketball court. The centre is available to rent for external companies and organizations, but also offers monthly information sessions, debates, panel discussions, presentations, events and activities, all open to the public.

E-CLIC Norfolk (EPIC), UK

E-CLIC Norfolk (EPIC), UK, is a centre for the development of new and innovative digital ICT, broadband and media services. It is also home to a number of education and training courses; making state-of-the-art High Definition broadcast production facilities available to all. In addition, the centre provides incubation space to a number of new innovative digital ICT companies, with a view to supporting exciting collaborative projects.

E-CLIC Rogaland, Norway

The main area of research of E-CLIC Rogaland, Norway, has been researching new broadband technologies with special focus on enhancing e-learning. This has included research on podcasting and webcast systems, the development of a professional nursing BA, utilising modern media technology and also archiving older media material to make this available for researchers all over the world.

Three LivingLabs and One Business Accelerator

The three new implemented E-CLIC LivingLabs cover three different subject areas. The most universal area is filled by the Norfolk County Council Living Lab. By providing the latest high definition broadcast equipment and allowing a seamless media workflow it is not only possible to produce almost all kinds of media. In fact it is a tremendous instrument for dissemination, which in turn is not only extremely important for projects as E-CLIC. Advertising information, competences, findings, ideas and so forth are the first steps in establishing new networks, finding new contacts, competences, approaches and much more. The Norfolk County Council Living Lab expected more than hundreds of participants over the three years, and in fact schools have booked many groups with up to 15 students at a time that have passed through this LivingLab.

In opposite to the Norfolk County Council Living Lab, the Karlstad University Living Lab KAUMesh is a much specialised one. KAUMesh was smoothly started at September 2008, but the real implementation started on September 2009 so that the first version was ready to some parts and the team worked at on-going processes to improve all features.

The last new implemented Living Lab is the Living Lab of the University of Hannover, which is directly situated in the physical area of the new Campus Area of the University at the Expo Plaza at Hannover/Germany. The LivingLab Hannover, which implementation also started on September 2009, expects more than 8000 users per year, because of the size of the LivingLab (its direct integration at the new Campus Area) and the possibility to work there with student groups up to 200 persons per periodic lessons. Furthermore because of the linkage to regional networks and SMEs, the LivingLab Hannover expects more than 2000 external visitors from SMEs, networks (e.g. Hannover Impuls) or Start-Ups.

Howest University College West Flanders has, thanks to E-CLIC, been able to set up its first business accelerator, The Studios. The Studios was set up to stimulate entrepreneurship with bright young people. Business incubators like The Studios are not only launching points for new businesses but also places where ideas take off and are disseminated around so that entrepreneurship becomes a common word in the European vocabulary like it is in the American one. Places like The Studios can play an important role in knocking down all sorts of walls and barriers and in opening up European regions and countries, locally and internationally, to various, exciting entrepreneurial adventures. E-CLIC has given Howest the opportunity to expose students and staff at Howest to international speakers, students and ideas. This is essential to the process of becoming entrepreneurial and thinking more broadly, which is often required when it comes to starting up a creative business. Europe needs more entrepreneurs and The Studios at Howest is doing its part in encouraging students to turn their business ideas into businesses. The Studios is a great place to thrive for companies in the creative fields of new media & communication technology, digital arts & entertainment and industrial product design.

Regional and Transnational Collaboration

It is a fact that regional and transnational collaboration within and between the E-CLIC centres have led to new contacts and great results. As good examples of that could be mentioned the successful collaborations between E-CLIC Värmland and E-CLIC Groningen concerning the exchange of students and teachers between the two centres. In the E-CLIC WP3 project "Agile", Hanze University Groningen and Karlstad University collaborated and still collaborate. "Agile" resulted in a new WP3 project on "E-Readers", and so on. E-CLIC Kortrijk, Belgium, sent two lecturers to E-CLIC Värmland, Sweden, to hold a seminar on "Virtualization and hybrid clouds" for 21 IT entrepreneurs from Karlstad, which has led to new contacts and new collaborations. E-CLIC Kortrijk also sent four lecturers and four students to E-CLIC Norfolk for one week, filming and editing experiences, which has led to both the idea of the very successful E-CLIC Roadtrip and to the fact that a new 2Seas project between Kortrijk and Norfolk has been realized. Lecturers from E-CLIC Rogaland have visited both Värmland and Kortrijk to inform about their new concept for e-learning, based on the integration of Flash content in PDF publications. Several companies were very interested in the idea and were interested in buying their services. One student group from E-CLIC Wilhelmshaven went to E-CLIC Borås to test the usability of different E-CLIC prototypes, and thanks to that exchange, together with similar exchanges between E-CLIC centres in Sweden Germany and Belgium, E-CLIC Borås have successfully developed two mobile applications with aim to facilitate students in their daily lives. Wilhelmshaven also sent a teacher and a student to Värmland to visit Compare's Testlab and discuss the testing of their "Secure Voice over IP" prototype. The testing, made by a small company in Värmland, went very well and after some month Wilhelmshaven's prototype had been thoroughly tested.

Programmes for collaboration between centres, student involvement and student exchange, and company involvement have been set up, and a great number of regional and transnational workshops have been carried out. Examples of workshops are: Wireless 4D in Karlstad 2008, Entrepreneurship Week in Stavanger 2009, joint workshop with the Smart Cities project in Bremerhaven 2009, Design for Persuasion in Brussels 2009 and Ghent 2010, Flash in PDF 2010 and transnational student exchange workshops connected to CeBIT in Hannover 2010 and to Multi Mania in Kortrijk 2011.

Student/Teacher/Talent Exchange – Physical and Virtual

As outlined in application, the element "Student/Teacher/Talent Exchange" is an important part of the project. One of the basic components of WP 2 was to create and manage programs for collaboration between the centres, student involvement and student exchange, and company/public service and citizen involvement in the E-CLIC project. The aim of student involvement in E-CLIC is to gain access to high quality education, obtain assessment and assistance to innovation projects, participate in top projects and create a close link between students, businesses, industry and the public sector. The exchange of experiences between students, universities and industry and the virtual and physical exchange of students/talents/ teachers are part of WP 3, 4 and 5. Furthermore, the project teams, working in the eight E-CLIC centres throughout the North Sea Region are to be "formed by students, academic staff and young entrepreneurs".

To achieve innovation and utilize the centres' different expert competences, the centres have exchanged students, teachers and entrepreneurs. There have been video streamed lectures between the centres, but also smaller workshops and guest lectures in the different centres.

Physical Exchange

E-CLIC has created a platform for student involvement by signing bilateral agreements in the framework of the Erasmus Programme of the European Commission between the participating universities (Borås University, Stavanger University, Groningen University, Hanze University for Applied Sciences, HOWEST, Jade University Wilhelmshaven and Karlstad University).

The E-CLIC partners have exchanged information on courses taught in English (Master and Bachelor studies) between all the universities mentioned above, to enable students to visit other universities for a complete exchange programme of one or two semesters. In the frame of the E-CLIC project, students had the opportunity to work together during shorter periods, collaborate with industry and cooperate with their counterparts in the other partner countries to work on innovative ideas, turning them into real projects and business models, services or prototypes. The aim of E-CLIC was to create an inspiring international learning environment for students and teachers and to collaborate with companies to bridge the gap between academia and the business world.

One of the lessons learnt in E-CLIC was that student exchange is difficult under current circumstances – the Bologna Treaty has perhaps not changed student mobility enough when it comes to short-term student exchanges. The aim is to give greater access to learning or employment opportunities in different countries and encourage greater mobility – for individuals, businesses and other organisations. There are several related initiatives to help make qualifications, experiences and skills better appreciated and easier to recognise throughout the EU, but the crucial point is the different academic calendars in the participating countries. As long as these are not harmonised, student exchanges and collaboration between students in different countries is not feasible in the short-term.

During the duration of the E-CLIC project, partners have had to rethink and redesign this important part of the project completely. The partners started to create smaller events especially for student participation, or made use of on-going big events like the CEBIT in Hannover to combine this with a student exchange of 3-4 days. Even that was not easy, given the different academic calendars as described above. The new planning had effects on the travel budgets as well as on the way of co-operation between the students. Examples follows:

Entrepreneurship Week in Stavanger 2009

The Entrepreneurship Week in Stavanger took place on 12-16 October 2009 with student and company involvement. 47 students participated in the entrepreneurship week, 14 of them were students from other partner regions. The students were given certain assignments to work on during the week, based on the work packages within E-CLIC. The students came up with highly inventive presentations at the end of the week at the University of Stavanger. Students from Groningen have evaluated the student exchange at Stavanger and one conclusion from the report is that the students need to have common tasks to achieve an improved exchange.

CeBIT 2010

The idea with common tasks to achieve an improved exchange was adopted at the CeBIT Trade Fair conference in Hannover in March 2010. 28 participating students were divided into four international teams to produce films about innovation. The task was to research a field of interest presented at the CeBIT and find out all about the latest innovations. To develop, based on these innovations, a new product or business idea that uses as many aspects of the E-CLIC subjects as possible was the aim of this exercise. The student exchange at CeBIT resulted in three joint student reports and a number of videos

Multimania 2011

During the Multi Mania conference in Kortrijk, Belgium, 23-27 May, the E-CLIC Centres of Groningen and Kortrijk organized a 4 days student workshop. Students from all participating universities were invited to come to Kortrijk to follow lectures and work on assignments in multinational and multi-disciplinary project teams. Together with E-CLIC Kortrijk, E-CLIC Groningen had developed assignments for the students and a plan for guidance. The student teams consisted of students from the Hanze University Groningen (NL), the University of Groningen (NL), HOWEST (BE), Karlstad University (SE) and University of Borås (SE). Although the universities in Norway and Germany could not send their students because of their exam weeks in end of May, the exchange in Kortrijk was a great success. Each multinational project group was coached by a lecturer from one of the participating universities. The assessment of the deliverables was done by jury members made out of the present E-CLIC members and representatives from the Multi Mania conference and the city of Kortrijk. The students benefitted from the workshop on Entrepreneurship, which was in particular arranged for them, and from the atmosphere during the Multi Mania Conference with hundreds of students from all over the world.

Virtual Exchange

E-CLIC Hannover has designed the virtual extension of Planet MID, a place in cyberspace where students, faculty members and project partners can meet and cooperate. In order to achieve the goal of virtual exchanges, several approaches were considered and tested in prototype systems. A group of students designed the virtual extension of the Planet MID on an acquired Second Life island. The virtual Planet MID in Second Life was presented on two occasions at public events. There, it was successfully used to attract young people to get interested in studying information management at the University. Several students have been active in the work done so far. The different approaches were executed by advanced students. For the Second Life prototype, a group of fifteen undergraduate students collaborated in a joint design effort. The system has reached a stage of development where other groups can use the Second Life island as a platform for communication.

E-CLIC WP2 Reports Exchange

Within the framework of E-CLIC, three master theses have been written by students from the University of Stavanger, and one bachelor thesis has been written by a student from Karlstad University. One master thesis about entrepreneurship and broadband media services, was written after the student exchange during the CeBIT fair. The other two master theses were “Criteria of success for new ventures in times of crises by utilizing new opportunities in communication technology and broadband” and “Investigation into broadband-based investment: What are the main drivers?”. The bachelor thesis from Karlstad University was about “Definition of Security Evaluation” and was collaboration about test and quality assurance in collaboration with Compare Testlab.

During the E-CLIC project the German partner Initiative D21 developed a study around six user types in comparison. This study, which resulted in a report called ”The Digital Society”, explained the different user types with a comparison from the years 2009 to 2011and gave conclusions to the digital potential, which is composed of infrastructure, capacity and knowledge. The digital society can be divided into six types of users. These user types are: Digital outsiders, occasional user, professional user, trend user, digital professional and digital avant-garde.

The E-CLIC Model

One of the main outputs in WP2, besides setting up eight E-CLIC centres, three LivingLabs and one business incubator, is the E-CLIC model (see the full model on the next page), which is a tested and evaluated model for regional and transnational collaboration in the field of innovation, applied research and development of broadband media services. The model shows how the project has been structured and how the established E-CLIC centres have been working as regional hubs with the aim to foster innovation in the field of broadband media services. The model has been developed and tested during the three and half years that the Interreg IVB North Sea Region Programme project E-CLIC has been running. Based of this model the E-CLIC project’s results will help to implement the Digital agenda in the North Sea Region.

E-CLIC
European Collaborate Innovation Centres for Broadband Media Services

THE E-CLIC MODEL

A connected ring of European Collaborative Innovation Centres

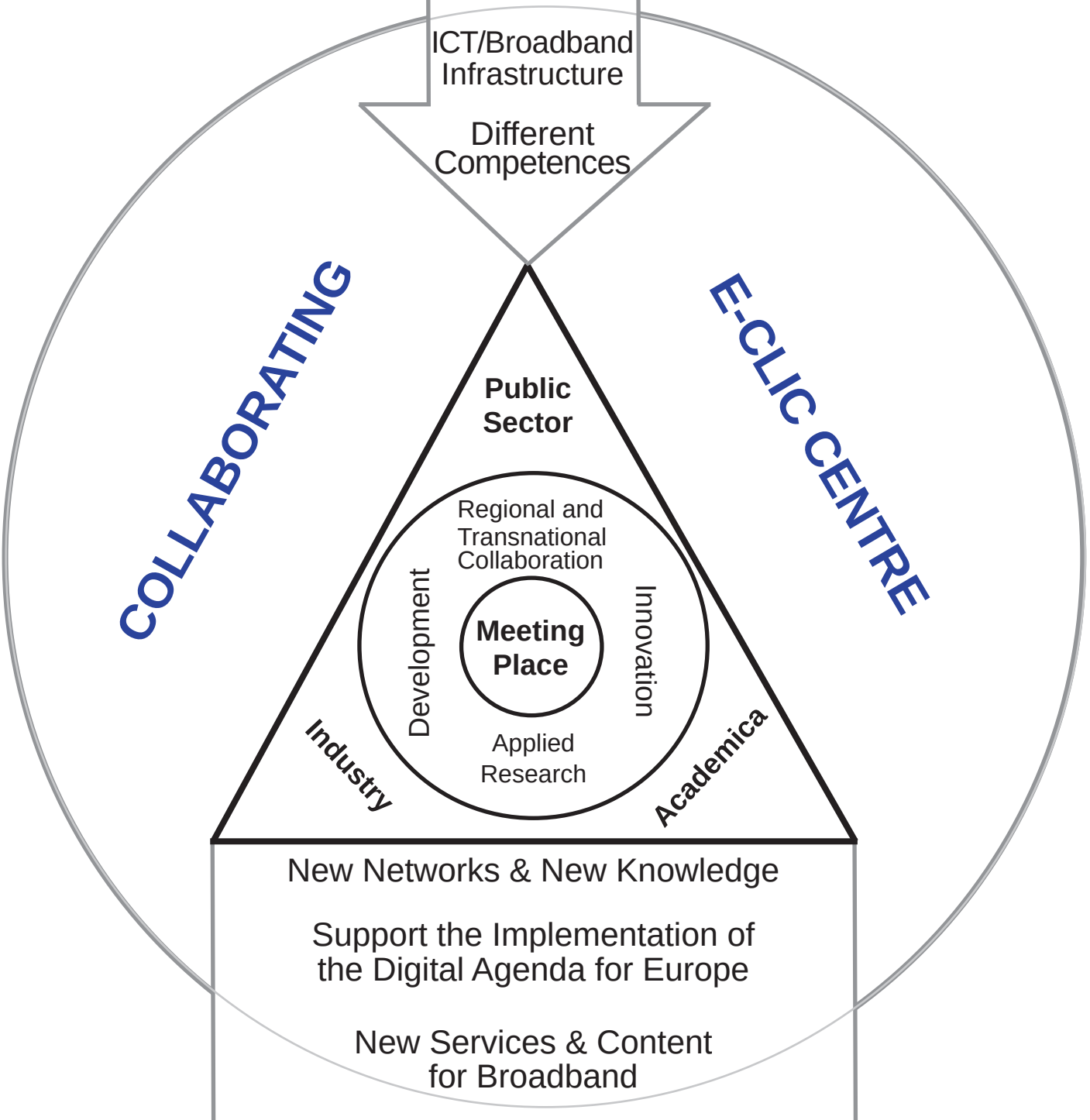
Challenges

European Strategies

National and Regional Strategies

ICT/Broadband Infrastructure

Different Competences



New Networks & New Knowledge

Support the Implementation of the Digital Agenda for Europe

New Services & Content for Broadband

Human Capital for NSR

New Ideas/Projects

New Companies

Economic Growth

The Interreg IVB North Sea Region Programme

Investing in the future by working together for a sustainable and competitive region

Development of Case Studies, Prototypes and Media Productions

Regarding the development of e-services and media productions, a great number of WP projects have been running within and between the centres during the project's lifetime. These WP projects have resulted in case studies, prototypes and productions. In Work Package 3 Services Development, WP4 Content Production and WP5 Broadband Access, a total of 71 Case Studies have been developed, together with 21 prototypes for new services and some 20 different media productions. Some of these are transnational outcomes, and some have been developed regionally, within the centres. Most of them have been developed together with both students and companies. Several Case Studies and Prototypes have also been presented at different conferences around Europe. An E-CLIC collaboration between E-CLIC Borås, Sweden, and a national project called ISSI was awarded second best contribution at the international e-challenge 2010 Conference in Warsaw, Poland, with the joint WP3 project "Citizen Centric Public Service in Sparsely Populated Areas".

Work Package 3 – Services Development

In WP3, 37 Case Studies and 21 Prototypes have been developed in a various areas.

One example of a WP3 Services Development Project is E-CLIC Värmland's study on user friendly e-privacy. In the case study, Karlstad University presented the results of their explorations of biometrics which can enhance the security of smart phones with touch screens. This aspect is increasingly important as the use of mobile smart devices for storing sensitive information and accessing online services, delivered by governmental and commercial organisations, is increasing. This project was conducted in cooperation with the companies Gemalto in Gothenburg and Nordea in Copenhagen.

An example of a WP3 Prototype is E-CLIC Groningen's finalized prototype for enhancing the inclusion of visually and mentally disabled persons. A system is developed to motivate this target group to increase their physical exercise during spinning. This system consists of a laptop, a smart phone, a router and a Bluetooth heart rate meter. Depending on the heart rate of the client, he/she receives his/her favourite music on his/her smart phone. This prototype was developed in collaboration with Royal Visio, an organisation which supports people with severe visual and mental disabilities.

Work Package 4 – Content Production

Work Package 4, which deals with Content Production, has seen a shift towards live production. This has included both live music performance, with various bands playing live and streamed to the Internet, and more dramatic performance with the EPIC studios hosting a celebration of live performance from young entertainers destined for greater things. The project has also seen some ideas relating to Internet TV tested, with a view to bringing something new to an Internet based audience. Live is the big thing on the internet right now. Live was not really possible for so many people when the E-CLIC project started. This will become the norm as the project comes to a close and we look forward to where the E-CLIC legacy takes us next.

A great number of content production activities (WP4 Projects) have been carried out within WP4. Some 20 different media productions have been produced together with 12 case studies. An example of a successful WP4 activity was the Pitching competition at EPIC, Norfolk, were six finalists, including teams from the UK and Sweden, pitched their new programme ideas to a panel of industry professionals before facing questions from the judges. Other examples of good WP4 productions are the two animated films from E-CLIC Borås about "Cup online" and "Innelandet", and the two videos about student life in Norfolk which is a result of several exchanges between Kortrijk and Norfolk. The WP4 project High Energy Schools Challenge, organized within E-CLIC Norfolk, gave children an opportunity to participate in an energy quiz that was recorded for distribution and for later use on the internet.

Nettop, the department for e-learning at the University of Stavanger, has produced an interactive PDF-concept pilot as part of the University of Stavanger's digital learning resources catalogue. A bridge between traditional books and digital e-learning tools is provided through interactive PDFs. The Bachelor in nursing at the Institute for Health Studies is one of the first degrees currently benefiting from this initiative. Interactive PDFs include text like a normal document, but contain added embedded features. The objectives are easily produced in Acrobat CS5 In Design and Flash programmes, with no additional programming. The Flash elements can include film, animation, mini game solutions and quizzes as well as simple interactive illustrations. As a total package, this solution gives the students the best of both worlds: media rich e-learning for on-screen use and a print on demand illustrated text document.

A joint media production is the E-CLIC Video, which is a result of the E-CLIC Roadtrip, there two students from the E-CLIC centre in Kortrijk, Belgium, travelled around the North Sea Region, equipped with film cameras from the E-CLIC centre in Norfolk, UK, to visit all centres, meet partners and students from the different centre regions to make interviews and to film the centres' activities. The video, which can be found on the E-CLIC website, shows very well what the E-CLIC project has been about, and the results that have been achieved in the different centres.

Work Package 5 – Broadband Access

During the years of the E-CLIC project, WP5, Broadband Access, has brought us some very interesting case studies and new developments. 22 case studies have been finalized within WP5, together with one report on regional broadband coverage in Värmland. Partners in Germany, Jade Hochschule among others, have developed a prototype of a new antenna system for AIS (Automatic Identification System) for ships. In addition, they have developed and built an AIS receiver system using SDR technology. SDR is an interesting approach to implement radio technology in software. The benefit of this approach is the rapid prototyping as a result of the software implementation and the reduced cost due to the implementation of the algorithms on generic chips.

The KAUMesh LivingLab in Värmland, Sweden, is an experimental test bed with advanced wireless mesh networking technology. Researchers, students and partner organizations use KAUMesh to develop and evaluate next-generation WLAN and wireless mesh solutions. Wireless mesh networks are a promising technology for providing cost-efficient wireless Internet access. The technology provides new opportunities to developing countries, where a wireless network can be rolled out within a short amount of time, or where the terrain makes it difficult to deploy wired networks. The E-CLIC centres of Rogaland, Värmland and Groningen have worked together in a case study with the aim to combine existing technologies to create an industry need for new services and applications in the offshore oil and gas sector. Wireless technologies such as WiMax in combination with mesh technologies will enable better bandwidth coverage, increased capacity, higher speeds and boosted range – to a lower cost.

Case studies in E-CLIC Värmland continue with technical advancements in the area of wireless mesh networks. One interesting case study is proposing new algorithms for selecting download peers for Bittorrent style resource dissemination in multichannel mesh networks. Several scientific publications have been submitted to international conferences depending on the impact of the E-CLIC project's work in the research community.

Work Package 6, Evaluation, Exploitation and Validation

Finally, in Work Package 6, several tests of services have been carried out, a method for quality assurance has been developed and several evaluation and exploitation reports have been written. The E-CLIC project has been evaluated in a mid-term evaluation which involved all partners and all centres. An evaluation of LivingLabs has also been carried out by E-CLIC Hannover together with an evaluation report and an exploitation plan on the E-CLIC Model.

The purpose of the exploitation plan on the E-CLIC model was to outline the future of the E-CLIC project and the sustainable use of the connected ring of established E-CLIC centres, as well as the valuable knowledge gained from it; for instant, develop strategies and ways to exploit E-CLIC results by involved partners. The exploitation plan contains details about exploitation activities, e.g. dissemination activities.

E-CLIC in the Future

It is already a fact that the E-CLIC project will live on in many ways. The E-CLIC centres are in place and they will continue to be meeting places for students, businesses and other regional stakeholders. The results from the project, case studies, prototypes and media productions will be used both in the different E-CLIC regions, in new contexts, and in new projects.

The cooperation and participation of businesses, regional clusters, public bodies, universities and young talented students during and after the official project run-time explain this successful story. All participating institutions are willingly to pursue the targets of the E-CLIC model and continue to work together to make the North Sea Region a better place to work and invest in.

One good example of this is the new cluster project DANS (Digital Agenda for the North Sea) where E-CLIC project results will be developed further. The DANS project connects the Interreg IVB projects Creative City Challenge, Smart Cities and E-CLIC, with an impact beyond the project partnership and reaching the whole North Sea Region. The three projects will combine their expertise, contacts and network in producing a new powerful cluster, which will focus on the link between local and regional strategies to the Digital Agenda for Europe, identify implementation barriers and point out synergies. E-CLIC partners look forward to continuing the work started in E-CLIC, within the framework of the Digital Agenda.

The now running iTract project is also a direct result of E-CLIC and has partners from the E-CLIC partner regions Värmland, Groningen and Rogaland. The accessibility of regions is a clear advantage in terms of their socio-economic development. iTract intends to develop and test innovative tools for efficient user- and environmentally friendly transport networks across the NSR. The project will focus on the development and use of novel ICT applications and brings together technology experts – in the fields of ICT, satellite, wireless broadband and sensor technology, with socio-economic experts.

Results and Impacts

On the following pages E-CLICs main result will be presented. The most important project results will be shown and to each of them examples will be given showing new products and services, strategies, innovative tools, transnationalality, etc. Each result will be devided into three headlines:

Description of result:	a brief describtion of the result.
Results used by:	an explaination of to whom these results were used by during the lifetime of the project, i.e. local politicians, EU organisations, other partners etc.
Impact of result:	describing the impact of the result, i.e. the implementation of the results, the commitment towards them in the longer term. You may describe any impact matching your result, some examples for impacts are shown in the table available above.

Main Result

The Establishment of 8 E-CLIC Centres Around the North Sea Region

Description of result:

The overall aim of the E-CLIC project has been to stimulate innovation through the establishment of eight new European collaborative innovation centres for broadband media services, and to develop the capacity for growth and employment across the NSR through collaboration in a North Sea cluster. The E-CLIC centres have been set up in accordance with the Triple Helix model which is based on active participation and interaction between the public sector, industry and academia. All centres are placed in public buildings, such as universities, regional media centres or test labs, in order to create a place where people can meet and exchange knowledge and new ideas.

Result is used by:

The centres are innovative environments for ICT actors in the NSR. To gain top position in Europe, as the most advanced region in the development and provisioning of innovative broadband services, the establishment of a connected ring of collaborative innovation centres has been a crucial instrument. Businesses, regional clusters, public bodies, universities and young talents in co-operation constitute the innovation centres and form the innovation network. All centres have complementary competencies. One centre working independently of centres in other regions/ countries cannot achieve this position alone.

Impact of result

Transnational co-operation is key to the further development of innovative broadband services. The cluster of E-CLIC centres has worked to develop networks in order to stimulate the commercialisation of the participating regions' knowledge base, to support the implementation of the Digital Agenda for Europe and encourage the development of both new projects and new employment opportunities.

Main Result

The E-CLIC Model

Description of result:

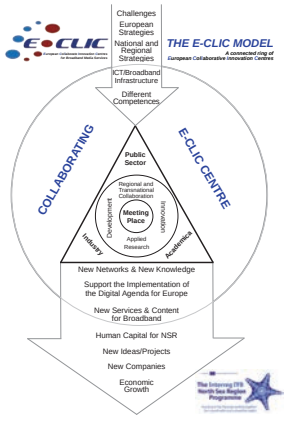
One of the main outputs in WP2 is the E-CLIC model, which is a tested and evaluated model for regional and transnational collaboration in the field of innovation, applied research and development of broadband media services. The model shows how the project has been structured and how the established E-CLIC centres have been working as regional hubs with the aim to foster innovation in the field of broadband media services.

Result is used by:

The core of the model is the meeting place within each centre, which is important to encourage transfer of knowledge. By involvement of students in the centres' regional and transnational activities, knowledge exchange is secured. The students move on into new contexts of companies and organizations and thus disseminate knowledge from the E-CLIC cluster.

Impact of result

The model has been developed and tested during the three and half years that the Interreg IVB North Sea Region Programme project E-CLIC has been running. Based on this model the E-CLIC project's results will help to implement the Digital agenda in the North Sea Region.



Main Result

LivingLabs Equipped with Mesh Networks, Eye Tracking Equipment and Routines for Student Involvement

Description of result:

LivingLabs have the task to make results and facilities of the E-CLIC Centres tangible and accessible. They are open research units of the E-CLIC Centres, where services and products are developed and at the same time accessible for different user groups from specialists and students to the SMEs and the interested public. Basic idea of the LivingLabs is a user centric co-design/co-creation process. Each LivingLab is user-centred and has a special focus and a special role in the network according to the specialist field of the E-CLIC Centres. The three new LivingLabs used the best practices from other E-CLIC partners, which had already existing kinds of LivingLabs. The creativity at the development of the new LivingLabs at Hannover, Karlstad and Norfolk are solutions on the basis of broad experience and transnational collaboration. Experiences are gained and views are broadened over the project lifetime.

Result is used by:

The LivingLabs' size, as well as the staff working there, the available work stations and the general equipment, which caters the special needs and tasks of the particular LivingLab, vary from LivingLab to LivingLab, but are satisfying in the partners' opinion. Access restrictions are unusual. All three founded LivingLabs represent regional innovation environments focusing on wireless broadband experiments. Besides this technological aspect, the LivingLabs allows insight on to the human understanding of the technology, which is the most important key to the societal deployment of new technologies.

Furthermore LivingLabs allow the evaluation and testing of first services and innovative practices. This is one of the main points why the founded LivingLabs offer a research and innovation platform which can support industries etc. to apply user-driven innovation practices and why these LivingLabs are getting so interesting for regional networks and other institutions.

Impact of result

Three new LivingLabs have been successfully established within the E-CLIC project lifetime, which means that the project has reached the target number according to the project plan of the E-CLIC project. Their general aims are, in the partners' own words, to "enable wireless broadband experiments", to facilitate "access to professional studio environments", to improve "services for citizens/SMEs in sparsely populated regions, and the "development and testing of services" in a trans-sectorial co-operation.

Main Result

Business Incubator "The Studios" in Kortrijk

Description of result:

Students' introduction to entrepreneurship is often happening too late. Therefore, The Studios is starting to integrate the concept into the curriculum from the moment the students begin their studies and expect more entrepreneurial activities and results by the time the final year comes. In terms of integrating entrepreneurship teachings into the curriculum, the classic lecture approach is avoided and replaced by a more hands-on workshop principle with lessons coming from real entrepreneurs that the students can relate to. This allows students to learn from peers, who started their own businesses and have first-hand inspiring experiences to share. The idea is that by the end of the final year, students will be influenced and inspired to start up their own companies. By then, they will also have become familiar with The Studios so the step from student to start-up at The Studios will feel quite natural.

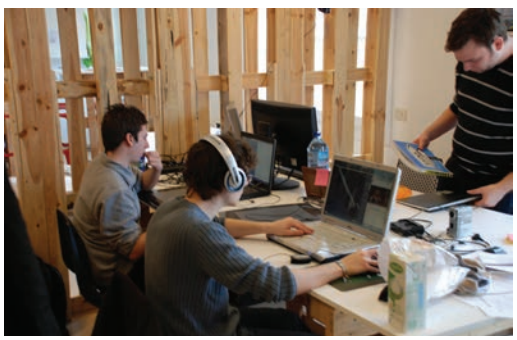
The Studios brings a mix of innovative people together, eager to build successful companies. With Howest as a neighbor, companies have loads of resources, knowledge and facilities, research access, a library and more. The Studios is a fully equipped, dynamic setting with affordable offices, meeting rooms, a hall of fame display area, seminar space, brainstorming gardens, parking areas, a lively kitchen and even a basketball court. Inspiration and innovation are in every corner.

Result is used by:

Europe needs more entrepreneurs and The Studios at Howest is doing its part in encouraging students to turn their business ideas into businesses. The Studios is a great place to thrive for companies in the creative fields of new media & communication technology, digital arts & entertainment and industrial product design.

Impact of result

E-CLIC Kortrijk's incubator "The Studios" knows how important it is for students to open their minds and widen their horizon. E-CLIC has given Howest the opportunity to expose students and staff at Howest to international speakers, students and ideas. This is essential to the process of becoming entrepreneurial and to thinking more broadly, which is often required when it comes to starting up a creative business.



Main Result

Prototypes of New Services

Description of result:

During the three and a half E-CLIC years, 21 prototypes of new services have been delivered; among them are several prototypes of new services for e-government, e-commerce, e-learning and e-health. Some of the prototypes are already in use, in the universities or in public organisations. Several prototypes have also been presented at different conferences around Europe.

Result is used by:

An example of a WP3 Prototype is E-CLIC Groningen's finalized prototype for enhancing the inclusion of visually and mentally disabled persons. A system is developed to motivate this target group to increase their physical exercise during spinning. This system consists of a laptop, a smart phone, a router and a Bluetooth heart rate meter. Depending on the heart rate of the client, he/she receives his/her favourite music on his/her smart phone.

Impact of result

This prototype, for enhancing the inclusion of visually and mentally disabled persons, was developed in collaboration with Royal Visio, an organisation which supports people with severe visual and mental disabilities.

Main Result

New Media Productions

Description of result:

Several new media productions have been produced in the E-CLIC project. One example of a good production is the Interactive PDFs for e-learning. Nettop, the department for e-learning at the University of Stavanger, has produced an interactive PDF-concept pilot as part of the University of Stavanger's digital learning resources catalogue. A bridge between traditional books and digital e-learning tools is provided through interactive PDFs.

Result is used by:

The Bachelor in nursing at the Institute for Health Studies is one of the first degrees currently benefiting from this initiative. Interactive PDFs include text like a normal document, but contain added embedded features. The objectives are easily produced in Acrobat CS5 In Design and Flash programmes, with no additional programming. The Flash elements can include film, animation, mini game solutions and quizzes as well as simple interactive illustrations.

Impact of result

As a total package, this interactive PDF solution gives the students the best of both worlds: media rich e-learning for on-screen use and a print on demand illustrated text document.

Main Result

Case Studies in a Variety of Areas

Description of result:

Regarding the development of e-services and media productions, a great number of WP-projects have been running within and between the centres during the project's lifetime. These WP-projects have resulted in case studies, prototypes and productions. In Work package 3 Services Development, WP4 Content Production and WP5 Broadband Access, a total of 64 Case Studies have been developed, together with 21 Prototypes for new services and some 45 different media productions. One example of a WP3 Services Development Project is E-CLIC Värmland's study on user friendly e-privacy. In the case study, Karlstad University presented the results of their explorations of biometrics which can enhance the security of smart phones with touch screens. This aspect is increasingly important as the use of mobile smart devices for storing sensitive information and accessing online services, delivered by governmental and commercial organisations, is increasing.

Result is used by:

Some of these case studies are transnational outcomes, and some have been developed regionally, within the centres. Most of them have been developed together with both students and companies. Several Case Studies and Prototypes have also been presented at different conferences around Europe. The case study about friendly e-privacy was conducted in cooperation with the companies Gemalto in Gothenburg and Nordea in Copenhagen.

Impact of result

An E-CLIC collaboration between E-CLIC Borås, Sweden, and a national project called ISSI was awarded second best contribution at the international e-challenge 2010 Conference in Warsaw, Poland with their joint WP3 project "Citizen Centric Public Service in Sparsely Populated Areas". In the example about user-friendly e-privacy, the security of smart phones is increasingly important as the use of mobile smart devices for storing sensitive information and accessing online services, delivered by governmental and commercial organisations, is increasing.

Main Result

Report on Broadband Coverage

Description of result:

Värmland is a rural region with many households located on the countryside. Access to high-speed internet is not something that is taken for granted, neither now and nor in the future. Compared to other regions in Sweden, Värmland lacks behind in access to fibre optic broadband. The municipalities have the overall responsibility in broadband development planning. Unfortunately, not all 16 municipalities in Värmland have yet adopted the Swedish broadband policy. In Sweden, the Government has pinpointed the market actors as responsible to make sure that the households get access to high-speed broadband. In rural areas, market profitability is low and investments therefore suffer as a result, which indirectly means that not all Swedes will have access to fibre optic broadband. Hence, it is important that regional and municipal actors work together to prioritise rural areas and create attractive living conditions for households in Värmland.

Result is used by:

Through the E-CLIC project, the County Administrative Board of Värmland, together with the ICT cluster Compare, set up a regional partnership in spring 2010, with Region Värmland, the 16 municipalities, to map fibre optic broadband coverage in Värmland. At that moment no regional actor had a comprehensive picture of fibre optic broadband coverage in the region. If there is no knowledge where existing fibre optic broadband is located, it is difficult to find the areas that the market find unattractive; areas where public actors need to invest. To map fibre optic broadband information and to form a comprehensive regional picture was one step to assist the municipalities in planning for a robust future ICT infrastructure and to reach the national broadband policy goals to 2020.

Impact of result

The co-operation within the E-CLIC project has consisted of two parts. First of all it was for highlighting the importance of fibre optic broadband access for all households in Värmland for policy makers in the municipalities and the county.

Second, it was to map the existing fibre optic broadband information in the municipalities into one comprehensive map for the whole of Värmland. The map of the fibre optic broadband coverage is presented in an annex of this report. The aim of the report is to use it (especially the map) as discussion material for policy makers in Värmland's sixteen municipalities, to demonstrate synergies on how they can co-operate across municipal borders.

Main Result

Guideline on e-Services for Rural Areas

Description of result:

Living, acting or running business in remote or sparsely populated areas (SPA) is quite different from other more densely populated areas. These global differences have both positive and negative impacts on everyday life and business, and are challenges to overcome. These conditions raise demands for the municipality as well as county and governmental authorities, while societal functions like schools, social services, and communications are supposed to be upholding to equal levels even in the SPAs. Access to health care, public transport, labour market, education, and broadband, to mention a few, are restricted outside the cities and municipality centres. On the other hand SPAs offer cheaper housing, nearness to nature, less stress, and other human values.

The rapid spreading of the Internet and mobile communication has offered new possibilities to work and live, in remote regions. Sweden, the other Scandinavian countries, the UK, Canada and Australia, are all examples of early adopters of technology in the public sector which have led to a highly developed technical infrastructure, a broad range of e-services, and a high penetration of IT among the population, but have not been able to achieve the desired levels of transformation of public administration. One bottleneck is that the services still often are developed for the public administration and not so much from the citizen's perspective. It is also notable that high-capacity communication infrastructure and bandwidth in sparsely populated areas are far from the penetration in the cities and the municipal centres.

Result is used by:

In general this guideline can be used for the development of e-services in remote or sparsely populated areas.

Impact of result

The development and introduction of different e-solutions is often a complicated puzzle while the users are a group full of nuances and the solutions often have an impact on peoples' every-day life. Therefore it has attracted attention from policy makers, the private sector, and the research community. All E-CLIC-project partners have, after transnational discussions or with the review of other documents,learned that e-services are important to overcome barriers of remote or sparsely populated areas.

Main Result

Tested Services

Description of result:

Test driven development is a systems development method that focuses on small iterations of development integrated with testing. The idea is that a developer writes a unit test first, that will fail. The developer then writes the code to make the test pass, and as a last step is refactoring the code to an acceptable state. Then repeat. This phase is known as red-green-refactor and is a very small iterative process that is used to create very stable components.

The E-CLIC WP6 project "DISE" was a cooperation between Karlstad University and Compare Testlab and has engaged two students. The purpose of the project was to define at least one generic method for security testing, including definition of test protocol, definition and implementation of a preliminary test environment, and to evaluate the test protocol and the test environment by performing a pilot test.

Result is used by:

The system was intended to be used when testing services/products/prototypes within the E-CLIC project. The final report is valuable for Compare Testlab and will be a useful reference in the area of security testing. The report is also a degree project and was approved at Karlstad University 2009-06-03.

Impact of result

Within the framework of E-CLIC several tests have been made on different prototypes developed by the E-CLIC partners. There have, for instance, been several tests made on the prototype "Secure Voice over Internet Protocol" developed by E-CLIC Wilhelmshaven. Compare Testlab has completed the testing of Secure VOIP for Wilhelmshaven, made the necessary analysis and produced a final test report.

Main Result

Exploitation Plan for E-CLIC Concept

Description of result:

The purpose of the exploitation plan on the E-CLIC concept was to outline the future of the E-CLIC project and the sustainable use of the connected ring of established E-CLIC centres, as well as the valuable knowledge gained from it, as for instant develop strategies and ways to exploit E-CLIC results by involved partners. The exploitation plan contains details about exploitation activities, e.g. dissemination activities.

Result is used by:

The project tries to meet the needs of specific target groups. By making difference between the target group which contains potential partners for an E-CLIC centre and the target group for mere dissemination. As described at the Midterm Evaluation of the E-CLIC project the main instrument for the dissemination of the project is its own external website (www.e-clic.eu). Main target groups of this website are, in decreasing importance for the project partners: business partners of the project, researchers, other – similar – projects, decision makers, students, and the interested public. A second central instrument for dissemination is the project's newsletter, which is published twice a year. Project partner, researcher, other projects, business partners and students are regarded as the main target groups of the newsletter.

Furthermore, all partners published information about E-CLIC on their particular partner level: the most common dissemination measure was to provide the project's contents, objectives and ideas on local or regional meetings with different actors, e.g. at Chambers of Commerce. The installation or enhancement of the partner-specific website with E-CLIC related contents, the publication of articles in newspapers or magazines and own regional flyers were also important instruments for a promotion of the project.

Impact of result

All in all, the E-CLIC outcomes and particularly the implementation of E-CLIC centres are of great interest for the following user groups, which are described more in detail in the WP 6 Output: Evaluation of the E-CLIC model:

- Academia, because E-CLIC offers a wide array of benefits to the academic world (faculties, students, academic institutions). Keywords are: student exchange, real-life applicability, test-beds, virtual and physical meetings, new curricula. Academia is also an interesting target group, if there are other universities (e.g. outside the North Sea Region), which are planning to implement centres referred to the E-CLIC concept or to cooperate with the existing connected ring of centres. The E-CLIC concept gives students the opportunity to gain relevant experience, to create networks and it also makes it easier for the industry to recruit competent future employees.

- Industry, especially SMEs and young entrepreneurs. Industry or business society is one of the main beneficiaries of the outcome of E-CLIC, referring to new technology based on broadband development. Keywords are: new services, test-beds, student workforce, internships.

- Public sector, because of local, regional and transnational networks. Keywords are: best practices, collaboration with other institutions. It is important to provide the public sector with necessary information about the E-CLIC model and the different outputs to raise awareness of policy makers for the progress of broadband expansion.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