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THE INFORMATION SOCIETY AND SPATIAL DEVELOPMENT

SCOPING STUDY

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Samandrag This document is prepared in order to facilitate a better understanding of different concepts of information society in a context of spatial development a draft version of the scoping study was prepared for a seminar on the topic "The Information Society and Spatial Development" held in Stavanger on January 23rd and 24th 2003. The draft scoping study formed a basis for the seminar discussions. An aim was to identify what potential Interreg IIIB projects within the field of information society could deal with to best contribute to coherent spatial development in the regions around the North Sea. The practical purpose of the scoping study is thus to guide project developers as regards the information society issues of the North Sea Programme.	
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Executive Summary

As outlined in the Community Initiative Programme (Interreg 2001) the central aims of the North Sea Region (NSR) Programme are: Economic and Social Cohesion, Sustainable development for the region as a whole, and Interregional and transnational co-operation. A number of priorities and measures have been defined to meet these aims. Three of the measures relate to information society issues. They are based on the need to ensure that all of the regions around the North Sea benefit from the opportunities for development and innovation offered by the information society. The three measures defined are:

- **Measure 2.4**: Improve the access of SMEs and society in general to information and communication technologies.
- **Measure 2.5**: Improve the application of information and communication technologies, with particular reference to public services.
- **Measure 2.1**: Effective and sustainable transport in rural and urban areas, including maritime areas, and in new rural-urban connections.

The first two (2.4 and 2.5) have their main focus on information and communication technology (ICT), while ICT plays a significant role in the third (2.1). This *scoping study* explores the conditions and contents of the three measures in further detail, but also other issues relating to information society and spatial development.

In order to facilitate a better understanding of different concepts of information society in a context of spatial development a draft version of the scoping study was prepared for a seminar on the topic "The Information Society and Spatial Development" held in Stavanger on January 23rd and 24th 2003. The draft scoping study formed a basis for the seminar discussions. An aim was to identify what potential Interreg IIIB projects within the field of information society could deal with to best contribute to coherent spatial development in the regions around the North Sea. The *practical purpose* of the scoping study is thus to guide project developers as regards the information society issues of the North Sea Programme.

In order to achieve a balanced spatial development there is a need to make sure that both urban and rural regions are developed; challenges are different in the different types of regions, and they need to be addressed separately. The strengths of each region need to be explored. For sparsely populated rural regions this often relates to the utilisation of natural resources in agriculture or fishing industries. In areas where one type of industry is the main employer their profitability may be maintained through ICT applications. At the same time it is also important to develop complementary and alternative job opportunities, where ICT may play a crucial role.

Another issue explored is the relation to social, economic and digital divides. The different parts of the North Sea Region have challenges relating to all types of divides. Social segregation is mostly an issue in larger cities. Unemployment may be the main reason, and is also a reason behind the economic divides. Diversification of job opportunities and creation of new opportunities are important in this respect. A digital divide can amplify such tendencies, it is therefore important to ensure equal access to infrastructure and knowledge in all parts of the North Sea Region.

The current situation and challenges throughout the NSR is the foundation for developing projects. With this foundation the study explores the topics identified in the NSR programme measures and their particular implications regarding area focus. The following focus areas are addressed: the need to educate users and access to education using ICT, the regional innovation system and infrastructure and the role of ICT in relation to individual and networks of SMEs, equal access to public services and eDemocracy, and issues related to transport and mobility management.

The study concludes by raising a number of issues which are important for potential project developers to be aware of. These issues have been developed during the whole scoping study process, as results from the discussions at the seminar on "The Information Society and Spatial Development", and through a continuous dialogue with the programme secretariat.

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List of Abbreviations

ESDP	European Spatial Development Perspective
EU	European Union
GIS	Geographical Information Systems
ICT	Information and Communication Technology
IS	Information and communication technology Systems
NSR	North Sea Region
PC	Programme Complement
R&D	Research and Development
SME	Small and Medium sized Enterprise

1. Introduction

1.1 Aim and purpose

In September 2002, Western Norway Research Institute was commissioned by the Interreg IIIB North Sea Programme Secretariat, to prepare a scoping paper on the topic "The Information Society and Spatial Development" for a seminar on this topic on 23 and 24 January 2003. The scoping study would form the basis for the discussions at the seminar.

The *aim* of the scoping study is to facilitate a better understanding of the different concepts of the information society in the context of spatial development. The aim is also to identify what information society related issues potential projects could deal with and in what way, to best contribute to spatial development in the regions around the North Sea.

The *purpose* of the scoping study is to be a user-friendly guide to assist those who are developing projects on information society related issues covered by the North Sea Programme.

As the North Sea programme covers many rural and peripheral areas, the paper *focuses* particularly on these areas and the opportunities information and communication technologies open up with regard to strengthening these regions. Although the European context is essential, the main focus of the scoping study is on the North Sea Region (NSR).

1.2 Approach

The scoping study is developed in collaboration with the Programme Secretariat. In an iterative process the study was provided for distribution prior to the seminar and the final version has been developed based on the feedback at the seminar. The focus of this document is on the opportunities or possibilities opened up by the use of information and communication technology as opposed to the factors that make it difficult to achieve a more balanced regional development.

The structure of the paper is as follows: Chapter 2 covers the issues of the information society in relation to spatial development as defined by a set of key strategy documents. Chapter 3 covers issues related to Information society for all and eLearning. Chapter 4 and 5 are the main sections in the paper and Chapter 4 covers the challenges in relation to small and medium sized enterprises (SME) while Chapter 5 covers issues related to eGovernment and eDemocracy. Chapter 6 covers the issues relating to transport. Chapter 7 concludes the paper. In addition examples of projects made under the Interreg IIC North Sea Region Programme addressing issues related to the information society and spatial development are included. There should be something to learn from the scope and experiences of these projects for present project developers.

1.3 Interreg IIIB North Sea Region

The North Sea Region Programme aims are to ensure that all of the regions around the North Sea benefit from the opportunities for development and innovation offered by the information society. This should contribute to the economic and social cohesion of the region. Today the countries of the North Sea region are among those at the forefront in applying information and communication technology (ICT) in Europe. But much more can be done to improve the quality of life for people living and working in the North Sea region by using the development opportunities of the information society.

It is important that these opportunities are exploited by all regions, whereby avoiding a division between the regions that are well integrated into the information society and those that are not. Measures should

therefore be developed to ensure that all regions have access to information and knowledge, assisted by ICT. Projects should especially target regions and groups of barriers to ICT take up.

However, it is evident that ICT structures alone are not sufficient to promote regional development. Accompanying measures in other policy areas, such as regional structural policy or training, are required to improve the spatial advantages of a region. In this regard, it is also important that interaction between regions, towns and cities is enhanced and that they develop complementary characteristics.

Spatial development is concerned with development that takes place in a defined area, even though the wider spatial and regional development implications should be considered. It is important to be aware of what sort of area a project will focus on (for example peripheral regions or rural towns) and how it will affect the areas/regions involved, in both short and long term i.e. what spatial impacts it will have. Projects are expected to integrate environmental, economic and social concerns in relation to spatial development.

The North Sea Programme is based on the aim of achieving a balanced and sustainable development integrating the economic, social and ecological dimensions. This is adopted from the European Spatial Development Perspective (ESDP) which states that sustainable development not only covers an environmentally friendly economic development but also a balanced spatial development. This implies that social and economic objectives for the development of an area must be measured in relation to ecological and cultural functions in order to achieve a balanced and sustainable spatial development. In the NSR programme, two measures have their main focus on ICT and in a third ICT plays a significant role, these are:

- **Measure 2.4**: Improve the access of SMEs and society in general to information and communication technologies, covered in chapters 3 and 6.
- **Measure 2.5**: Improve the application of information and communication technologies, with particular reference to public services, covered in chapters 4 and 3.
- **Measure 2.1**: Effective and sustainable transport in rural and urban areas, including maritime areas, and in new rural-urban connections, partly covers information society issues that relate to transport, including mobility management, and these issues are addressed in chapter 5.

1.4. Transnational development

Transnational Development projects involves at Interreg level international co-operation between participants in different countries but at different levels than the national state. The main motivation for initiating a transnational development project is that participants have a common interest or problem that they want to solve.

The cooperation can be between municipalities, counties, regions, NGOs or research institutes located in the different NSR countries. The minimum requirement is that at least two countries participate, it is also possible to have projects with participants from only one country, but then the operation of the project must have a significant impact on the other North Sea regions. Though, as the North Sea Programme has been developed especially to support transnational cooperation it is essential for all projects to have a strong transnational component.

Transnational projects are challenging, but operated appropriately they are also an excellent opportunity to share experience, knowledge, and to develop something for the common good. In the preparation of the transnational projects it is important to take into account that it takes time to construct good transnational partnerships and projects. In the process of writing the application and in the initial stages of the project is important to pay particular attention to these challenges. Though, past experience shows that it is possible to achieve real transnational cooperation. The main factor is that there is a willingness to develop truly transnational activities; to learn from each other, to encourage networks of cooperation, exchange of experience and transfer of knowledge.

The common aim of the North Sea Programme is to work toward a better territorial balance within the North Sea region. National borders should not be seen as barriers to collaboration between countries. Instead transnational collaborations should be composed in such a way that they have the opportunity to achieve a better territorial balance and a balanced sustainable development and integration.

Some parts of the NSR are more developed than others, both in economic and social terms. Reducing these differences relies on the ability to work together and to help each other at evening out the unbalance. It may be several weak regions working together or it may be regions that have different starting points but see a benefit in working together, learning from each other. Other types of projects that lend themselves particularly well to transnational cooperation are projects that deal with standardization issues and also benchmarking projects, the outcome of this type of project must have a direct impact on spatial development.

2. The information society in the context of spatial development

This chapter gives an introduction to the information society in the context of spatial development, these factors are important to bear in mind while developing a project for the North Sea programme. These aspects have been explored in relation to different spatial strategies and perspectives as well as in the eEurope and Information society literature.

This section will explore the relationship between the information society and spatial development in a number of European strategies, particularly aspects which relate to rural and peripheral areas and the North Sea Region, and the opportunities provided by information and communication technologies for strengthening these regions. The strategies that have been selected are the ESDP which was developed to encourage national development projects to work towards a common objective for spatial development; NorVision which is the spatial perspective of the North Sea Region, emphasises the future challenges and visions of the region; the eEurope strategies for making the European Union (EU) the most competitive and dynamic knowledge-based economy by 2010; and, to a lesser extent, the Northern eDimension Action Plan which has its focus on infrastructure and social development in the Baltic and Artic Sea regions and in North West Russia.

2.1 Balanced sustainable development

The aim of the NSR programme is to achieve a balanced and sustainable development integrating the economic, social and ecological dimensions. This is in accordance with the aim of the ESDP (ESPD 1999) and with the definition in the United Nations Brundtland Report[1]; sustainable development covers not only environmentally sound economic development which preserves present resources for use by future generations but also includes a balanced spatial development.

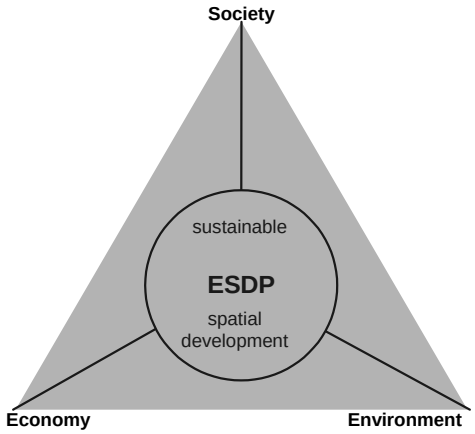

Figure 1 ESDP Objective triangle (ESDP 1999)

The information society initiatives must also be targeted towards meeting this aim, and the social and economic objectives for a development initiative must be seen in relation to the ecological and cultural functions in order to achieve a balanced and sustainable spatial development.

In the ESDP document the triangle to the left illustrates how the three fundamental goals of the European policy are linked together to meet the objectives, the three goals are:

- economic and social cohesion
- conservation of natural resources and cultural heritage; and
- more balanced competitiveness of the European territory.

To achieve this spatially balanced development all goals must be pursued at the same time and are of equal importance. A second aim is to even out the imbalance between regions whereby ensuring all regions have an opportunity to develop in an appropriate way. Poorer regions with

few current development opportunities should have similar development level as the more prosperous regions, ensuring that the divide between them does not develop further. This includes the social, the economic and the digital divides, which are at the core of the North Sea programme. ICT can be used as a tool in this process as it can facilitate the reduction of the digital and other divides. ICT is not the answer to all problems, but is a tool in achieving a certain goal. The application of these tools needs to be considered in each direct organisational and social context. In most cases ICT is only part of the solution, as much effort is required for motivation and education of the user wide population.

The eEurope plan[2], a part of the Lisbon strategy, puts emphasis on making the EU the most competitive and dynamic knowledge-based economy with improved employment and social cohesion by 2010. To create a knowledge economy, eEurope 2002 focused on extending Internet connectivity in Europe. In order to generate growth, connectivity needs to be translated into economic activities.

The new eEurope 2005 has set the focus on how to stimulate services, applications and content to create new markets and reduce costs and eventually increase productivity throughout the economy, eEurope 2005 aims at putting users in the centre.

The targets of eEurope 2005 can be summarised as follows:

> *By 2005, Europe should have (1) modern online public services including: e-government, e-learning services and e-health services. Europe should also have (2) a dynamic e-business environment and, as an enabler for these, (3) widespread availability of broadband access at competitive prices and (4) a secure information infrastructure.*

These targets correspond directly with the NorVision Perspective[3] and the Northern e-Dimension plan[4].

2.2 Urban and rural areas or regions

One important challenge in developing the NSR is balancing between urban and rural areas. The NSR covers a number of urban systems. Three national capitals are located within the region: Oslo in Norway, Amsterdam in the Netherlands and Copenhagen in Denmark. In addition it covers four German capitals of Federal States (Länder): Bremen, Hamburg, Hannover and Kiel, and in the UK, Edinburgh, the capital of Scotland, is in the eligible area. Though Hamburg is the only town in the NSR that belongs to the European core area (the pentagon defined by the metropolises of London, Paris, Milan, Munich and Hamburg) of polycentric and balances spatial development[5].

NSR also contains some major national urban agglomerations and several agglomerations of regional importance. These play an important role in the effort to improve the level of services and contribute to regional polycentric development, and with regard to employment. Small towns also play an important role in the growth of regional economic development in the NSR and are also regional centres for provision of services

Rural areas are important within the NSR and require special attention. They are diverse in nature, some highly dependent on agriculture or fishing industry, others depending on single industries often based on declining industry or one that through reorganisation can be run much more efficiently and therefore resulting in larger unemployment. Another worrying trend is that both general services and public services are becoming concentrated in larger cities or towns, regionalisation as opposed to local delivery of services. This can creates a loss in economic power in the rural areas.

This is also linked to the cultural diversity[6] of the North Sea Region. If too many services are moved out of the rural areas there is a danger of reducing the cultural diversity. This needs to be taken into account in development initiatives. Initiatives should not reduce the diversity. For ICT initiatives this is important in the design of systems, which need to take the cultural differences into account; one system can not be developed for all local contexts, but the thinking behind the development may be common which have different implementations or front ends dependent on the degree of common structure. This should not be looked upon as a hindrance but as an opportunity.

Many rural areas have successfully been able to adapt and have developed independently. In this regard access to infrastructure and knowledge has been a key factor. With good infrastructure facilities and access to information, rural areas have potential in terms of economic attractiveness and diversification. Diversification and plurality of activity are hard to achieve without assistance and exchange of experience, in this work the regional innovation system plays an important role.

It is anticipated that ICT can promote decentralised development to rural areas. So far there is most evidence of the opposite happening. Though there are promising approaches in relation to SMEs and also in relation to distance work. The success of these kinds of initiatives is often related to the degree of involvement of local stakeholders in the process, from when the initiative is taken until the process is finished. For the initiative to be sustained after the funded period the local organisations and communities must be involved.

2.3 Social, Economic and Digital Divides

One of the political goals of the information society is that Europe will become the worlds most dynamic and competitive knowledge based economy by 2010. To achieve this there is a need to address the issues of digital divide in the implementation eEurope plan.

According to the ESDP document there is a slightly declining difference between “poor” and “prosperous” regions, though at the same time there is a growing disparity within most member states. The urban centres have relatively higher economic power then the rural regions and are therefore widening the gap between them. Furthermore it can be observed that formerly prosperous regions who are basing their economic power on a declining industry are showing weak economic dynamics compared to other regions who have managed to follow the general development.

Social segregation in cities is not a disadvantage in itself, but when combined with economic disadvantage, unemployment and social stigmatisation together with cultural and ethnical differences; the risk of social exclusion is reinforced. The efforts needed in this field are important and underline the importance of the social dimension of the sustainable development of Europe, relating to both urban and rural areas of the NSR.

The fight against unemployment is important in combating economic and social divides and is one of the most important challenges in Europe. Areas dependent on one type of employment, be it agriculture, fishing or industry, as its main source of income, have a relatively poor competitive position. In these areas diversification, plurality of activity and securing alternative sources of income are important goals that can best be achieved through assistance from development initiatives and exchange of experience. New information and communication technology can play a role in this work, which also requires additional efforts in creating good living environments for the inhabitants.

Statistical material[7] points to two main digital divides when it comes to e-business. The regional divide arising from different rates of progress in adoption of ICT, is generally perceived as a gap

between the Nordic/Western and Southern European member states. The picture is more complex than that, looking more closely at the Nordic countries there are also divides between regions in this area. Peripheral or rural regions are less developed than the urban regions. The second digital divide is one based on company size; there are significant gaps between SMEs and larger enterprises when it comes to the use of ICT, and especially with regard to e-business integration[8].

2.4 Access to infrastructure and knowledge

Efficient transport and adequate access to telecommunication infrastructure is a basic prerequisite for strengthening the competitive situation of peripheral and less favoured regions. But this is not sufficient on its own. Sufficient access to telecommunication infrastructure has a key role in strengthening the economic attractiveness of the different areas, both urban and rural and needs to be accompanied with measures in other policy areas, such as regional structural policy or promotion of education and training, or involving inhabitants and enterprises in the democratic or government processes in order to get an advantage compared to other areas.

Telecommunication networks play an important role in compensating for disadvantages caused by distance and low population density in peripheral regions. This relates both to access to services and to employment opportunities. Tele-liberalisation has caused a disadvantage for peripheral regions. The companies are “Cherry picking” the good areas, while the relatively small market volumes and high investment costs for telecommunication infrastructure in peripheral regions have in many cases led to lower technical standards and high tariffs, which makes the area less able to compete with other areas when it comes to innovation and entrepreneurship. Not only in these cases but also with regard to tele-working, distance education courses, tele-medicine etc., the provision of high-quality services at affordable prices is a key factor for regional development.

Access to knowledge has the same importance for the competitive situation of an area as access to infrastructure. Knowledge, education and training are becoming an ever more important factor for economic participation and success. Regions with limited or unsatisfactory access to information and knowledge, because of lack of further education, research and training facilities, are likely to have problems in maintaining the population and in particular, attracting people with higher education and more advanced skills to the region. Regionally interdependent labour markets and production and service locations require dynamic innovation systems; effective technology transfer; and institutions for training their workforces. There is still a spatial unbalance in access to knowledge and the capacity for innovation. The regional innovation and support system needs to be strengthened with regard to this. For most new enterprises in the service sector the delivery of non-material services is the case. These enterprises require more qualified employees. Also in traditional industries the expectation of increased productivity demands higher qualification of the employees as new and better products and processes are developed. Companies which are able to combine innovation and new organisational forms with a more highly qualified workforce are also able to position themselves better within the market in the long term, and can tap into the global market. Strengthened links between enterprises, research and education and public sector become important.

ICT can help to reduce deficits with regard to access to innovation and knowledge systems and in that way enable establishment of companies in rural regions. ICT can reduce the perceived distance to these services.

The public sector also needs renewing in accordance with the general development of the region. This is reflected in the degree that they apply tools and techniques to involve inhabitants and enterprises in the democratic and government processes, and in the way they apply tools to

facilitate this. For instance opening up the spatial planning processes in such a way that inhabitants and enterprises can contribute and participate in the process. This involves the use of ICT tools and in particular geographical information system (GIS) tools to visualise spatial plans and the effects on the area which is under development.

2.5 Implications for projects

All projects need to show how they contribute to fulfilling the aim of achieving a balanced and sustainable development integrating the economic, social and ecological dimensions in the North Sea region programme. The following list of considerations is modified from the Information leaflet on the Information Society.

Contribution to spatial development…
Spatial development is fundamentally concerned with where (in what area) development takes place. When outlining your project idea you should consider the wider spatial and regional development implications of your work. It is important that you are aware of what sort of area your project will focus on (for example peripheral regions or rural towns) and how it will affect the areas/regions involved, in both the short and long term (i.e. what spatial impact it will have). When formulating your spatial approach you should use the spatial development strategies for the North Sea region (presented in the NorVision document) and for the EU (presented in the ESDP document) as sources of inspiration.

Transnational characteristics…
Transnational cooperation is cooperation between countries on a level other than the national, for example on the regional and local level. There must be an apparent need to carry out projects transnationally. Projects are clearly transnational when outcomes could not have been achieved by the participating regions/towns on their own. Project partners should have a common starting point, for example wanting to improve public participation in spatial planning, from which common activities and outcomes should be developed.

Working cross-sectorally…
Exploiting the wide variety of development opportunities provided by the information society requires that you work cross-sectorally and involve all relevant sectors and policy areas. It is not enough to supply ICT connections and technology – projects should also create a 'demand' for them, for example, by creating innovation networks, providing education or developing supporting organisations.

Supporting sustainable development...
Projects are expected to integrate environmental, economic and social concerns. If, for example, you focus on improving regional competitiveness, you should consider how project activities and outcomes would affect environmental and social aspects. Projects should have no negative impacts on sustainability issues.

3. ICT and education

This chapter explores information society implications for spatial development in relation to those parts of Measure 2.4 and 2.5 that relate to education and training. In entering the information society education must be available to all inhabitants and enterprises either in classroom setting or using the technology to deliver the courses, tele-education. The ICT skills are determinant with respect to how well SMEs will be able to partake in the global market, with regard to how well the citizen will be able to partake and influence the democratic processes.

To enable members of society and in private and public organisations to take part in the development of the Information society in the North Sea Region it is important that all initiatives consider the need to educate the user. To be able to benefit from the initiatives and to access the information society they must be able to use the technology.

3.1 "Information society for all" – the need to educate users

Information society for all is a key goal of the Interreg Programme and other European programmes to ensure that Europe is not made up of information "haves" and "have nots". The information "have nots" are largely located in peripheral areas and in depressed urban areas. This is where the irony lies in terms of a balanced and sustainable development, those who have ICT skills in peripheral areas can utilise them to remain in the area. In depressed urban areas ICT skills can enable the unemployed to return to the labour force or at the very least improve their quality of life.

The education and training community in the information society spans a large user group covering primary, post-primary, third level, adult, and third age education and vocational, in-service and life long learning. ICT skills should be incorporated in all educational and training programmes as a fundamental aspect to increase the ability to access the information society; a particular focus should be on regions which are lagging behind.

In order for members of society to take part in the information society and further their education in other areas through the use of ICT, it is imperative that basic training on technology is given, whereby providing them with skills to partake in the information society as a first step.

NordNet

The project aims to remove some of the obstacles to the development of peripheral regions by improving access to high level services and cooperation networks through the use of information and communication technologies. Main activities were to develop networks for coordination of planning activities, exchange of experience and common initiatives. Further to create video conferencing activities for long distance communication and networking.

This project focused mostly on the use of video conferencing; it illustrates how this could be used as a tool in education and also for developing networks between enterprises across distance.

NordNet had many positive results in developing this kind of initiatives in the future projects should take a wider approach to contribute more specifically to the spatial development of the peripheral regions.

Interreg IIC project
Source: Interreg IIC North Sea Region – The Projects (2001)

Relation to North Sea programme

This section relates both to measure 2.4[9]: *Improve the access of SMEs and society in general to information and communication technologies and measure* 2.5[10]:

Improve the application of information and communication technologies, with particular reference to public services. The education of users either in classroom settings or actually using the technology to deliver (tele-education) the course, are included in preparing for the information society. Citizens, SMEs and public sector face the same challenges, and need to improve the ICT literacy to avoid a polarization between ICT users and non ICT users.

Implications for projects

Implications for projects in delivering general education and training to members of society are included in the implications for projects under the appropriate measure. Preferably initiatives should be integrated with the regional development measures covered by the North Sea Programme to make a strategic contribution to spatial development.

3.2 Accessibility to education through ICTs

Information and communication technologies such as the Internet have opened up a new market for distance education, tele-education. Easy access to education such as access to courses and information on available tele-education initiatives allows for individuals, businesses and also public organisations to improve their skills. Through the use of ICTs, people can have access to courses and course material from their homes; whereby negating the need to travel to attend courses and embark physically on major investigation of available courses which are deterrents to pursuing further education. This less intrusive way of education is more flexible in terms of time, location and mode of learning**,** learners have the choice of time, location and mode to pursue further education whereby encouraging a greater level of take up in the community. This allows for learners to make room in their daily schedule and to pursue education at times which suits them. These advantages are particularly relevant for those living in rural areas with long distances to learning centres. On-line learning allows the opportunity for people to take courses at a regional, national or even international level which previously may not have been feasible.

For the advantages to be realised there is a clear need for a focus on user friendliness in the delivery platform and also to develop appropriate delivery platforms to support the learning experience. There is also a need to develop support for curriculum development and new teaching methods; online delivery of education should provide support to the student in a new way compared to traditional classroom teaching. In the classroom the student feels a degree of belonging to a group and the group dynamics often play an important role in the learning experience. This needs to be carried over to the tele-education platform but a different and innovative approach will be required.

Relation to North Sea programme

This section relates both to measure 2.4[11]: *Improve the access of SMEs and society in general to information and communication technologies and measure* 2.5[12]: *Improve the application of information and communication technologies, with particular reference to public services.* The education of users either in a classroom setting or using technology to deliver (tele-education) the course is essential in preparing for the information society. In improving business opportunities in these regions it is important to provide access to a wide variety of training courses, offering flexible ways of participation. Tele-education may be one way to deliver this education to all parts of the North Sea region. Many activities, whether in private households, in education or in businesses, "location" is becoming less important due to the advances in ICT. The educational system needs to adopt these technologies and creativity needs to be applied to the delivery and content presentation of the courses offered. Included in this is also the development of user-friendly interfaces which allows novices to partake.

Implications for projects

Project initiatives in this area should preferably be integrated with other regional development measures covered by the North Sea Programme to make a strategic contribution to spatial development. Future Interreg initiatives in this respect could include but are not limited to:

- Distance learning initiatives in adult and continuing education and lifelong learning,
- Regional portals providing information on all available distance learning courses,
- Development of ICT-based teacher support networks and parent - teacher relations to ensure the educators are involved and comfortable with the technology, this also has the knock on effect of encouraging lifelong learning,
- Public sector initiatives to promote awareness of the availability of on-line learning in their regions,
- Development of on-line courses in co-operation with education providers in the region ensuring they are on suitable platforms.

4. More competitive SMEs - Strengthening regions

This chapter explores the information society implications for spatial development in relation to Measure 2.4: Improve the access of SMEs and society in general to information and communication technology. Emphasis is put on how to improve the regional innovation system and infrastructure and on how the individual and networks of SMEs can face the reflexive nature in current business environment.

4.1 Regional Innovation System and Infrastructure

The *regional innovation system* is the core component in strengthening regional development. The main characteristics of the regional innovation system are traditionally learning and innovation as part of interactive processes between organisations in the so called triple helix; universities and research, government and industry[13]. For a long time the linear innovation and diffusion model was dominating, but it has by many been found to be too simple[14]. Various research emphasises that these processes are influenced by a number of factors, both at micro and more aggregate levels. The term *regional innovation system has* therefore been introduced to explain part of this complexity.

For the regional innovation system to be effective it must support the establishment of regional organisations and networks that enterprises can participate in and which supports their innovative capability. Having meeting places and network activities are important for knowledge development and diffusion of new ideas, new technology and improved production or business processes. Results from studies show that the innovative capability of enterprises is highly dependent on their ability to come in contact and co-operate with other actors, such as customers, suppliers, competitors, research and development (R&D) organizations and public sector.

In rural areas there are often few opportunities for occasional meetings in order to exchange ideas; there is therefore a need for assistance in establishing these meeting places where businesses can meet the support system (R&D and public sector). In most rural areas the innovative ability is low due to the proportion of micro enterprises; in addition the local market potential is limited, and the low competitive pressure does not drive the enterprises to develop further.

Central in this is the co-operative processes between private business and industry, R&D and public sector activities which are closely linked to the development of the community's capability to innovate. This includes the ability to use the available knowledge resources in the community, to utilise the relational resources and the capability to mobilise[15] in order to achieve innovation or other form of development.

Technology has only recently been considered a distinct actor[16] in this interplay, and can be seen as a third layer in addition to territories (spatial regions) and organisations. In such a structure, technological change is recognized as one of the drivers in changing spatial patterns of economic development, though in the social context. In addition the organizations are not only dependent on spatial contexts of physical and intangible inputs, but they have greater or lesser proximity to each other. The innovative activity is partly seen as a local and regional phenomenon that represents a new theoretical understanding of how the innovation processes occurs. An understanding that is concretized in the interactive innovation model[17], which defines

innovations as interactive, non-linear knowledge development and transfer: technology and knowledge flows freely between R&D activities, the industry and other stakeholders.

While the regional economics literature traditionally views technology as a generic factor, new research shows that the specific characteristics of distinct technical systems and infrastructures influence the implementation, adoption and adaptation of ICT-based systems (IS) in organizations. The point being that the outcome of IS implementations is dependent upon both characteristics of the technical solutions, as well as the system development processes and various organizational and contextual factors[18]. There are a number of studies on IS diffusion to small organizations, which emphasis the characteristics of the software[19], as well as the quality of the infrastructure and support systems. This seems particular important for IS diffusion in small, rural enterprises that are lacking necessary competence and resources.

Traditional development and use of ICT infrastructures have been regarded as a predominantly technical endeavour; there is now an expanding body of literature addressing issues of social, economical and institutional nature. Recent research emphasizes the importance of understanding the infrastructures as 'multi-layered' systems including technical, organisational and human components, and its ability to support various types of inter-organizational structures, e.g. both horizontal and vertical networks.

Relation to North Sea programme

This section mainly relates to measure 2.4[20]: *Improve the access of SMEs and society in general to information and communication technologies*. Stimulation of innovation and deployment of new technology by SMEs requires that they have closer interaction with the regional innovation system. For this to take place there is a need to strengthen the regional innovation system. The quality and capacity of the innovation system will have a decisive influence on how the enterprises in turn are able to cope with the challenges. The innovation and support system will benefit from interaction across borders as the challenges are similar and there are clear benefits in sharing experience, knowledge and also to collaborate with regard to training and education.

Implications for projects

Future Interreg initiatives in this respect could include:

- Initiatives strengthening the regional innovation & support system particularly in rural areas
- Initiatives linking different regional innovation and support systems
- Initiatives related to polycentric development
- Initiatives taken by public authorities related to infrastructure planning (not cables), structuring and application and service development. How to ensure access to sufficient infrastructure at low cost
- Initiatives taken by public sector in collaboration with key actors (triple helix). Challenge communities without third level educational institutions – use of ICT to connect them to the other parts of the triple helix.

4.2 Individual and networks of SMEs

A new economical paradigm often called the digital economy or the network society, affecting all either directly or indirectly, is emerging. In the NSR prosperity is unevenly distributed, large areas and population groups are in danger of being excluded. The fundamental asymmetry affects the level of integration, the competitiveness and the ability to benefit from economic growth. To avoid marginalization it is particularly important to support SMEs in peripheral and rural areas to stay abreast of the development of this new economic development.

The European economy is based on SMEs[21], 66% of European employment and 65% of the European turnover comes from SMEs. There are now more then 19 million[22] SMEs in Europe, and they have also been the main generator of new employment[23]. The number of ICT related SME's has doubled during the last five years, though not all new SMEs are involved with ICT, they are dominating the service sector. Not only for the ICT sector is access to telecommunication infrastructure important, more and more sectors are dependent on this access to infrastructure. Within fishing, aquaculture, oil and gas sectors and tourism industries access to infrastructure is essential. These sectors are all among those of economic importance in the NSR[24] and in particular in the rural or peripheral areas. In many cases access to infrastructure is decisive when it comes to locating enterprises and also in larger organisations sales or head offices.

For SMEs location is important, access to knowledge and infrastructure may be determining the location of a new SME. The quality of the regional innovation and support system will be important in this respect. In addition access to a qualified labour force is another of the determining factors. Even though new SMEs are the main source of new employment opportunities and many of these new establishments are in the ICT sector; few of them are ready to utilise the Internet as a business tool to its full extent. The main bulk of start-ups are reluctant to jump into the digital age. There are a number of barriers and challenges for SMEs in adapting to this new economic paradigm.

Knowledge Flow Network for IT-related Businesses

The goal of this project is to prepare for the creation of regional e-business support centres for small and medium sized enterprises. eBusiness could make a contribution to regional socio-economic and spatial development. It offers a new opportunity that particularly peripheral SMEs may benefit from. Focuses on missing know-how and capability to carry out this kind of initiatives in these SMEs. The possible support centres could offer services to the enterprises to overcome these challenges.

Interreg IIC project
Source: Interreg IIC North Sea Region – The Projects (2001)

The conditions for enterprises, both small and large, are changing. This change is related to the way technology is used to improve the efficiency in production. Production used to have a more additive nature, while it now has a more reflexive nature. Reflexive here implies that the process of innovation is speeding up because both the raw materials and the end products are based on information, which is more easily fed back to the production and innovation process. The result is a need for a restructuring of economic activities which influences how the enterprises and the regional innovation system must function; this can be characterised as a reflexive network. The reflexive form of production and innovation is a challenge for rural areas and SMEs to cope with. Important factors are access to information and processing capability. Processing capability may become a problem if the "brain drain" continues; this is also affected by the more immediate problem of access to sufficient "infrastructure" which affects enterprises ability to participate in the reflexive networks.

To be able to follow the development SMEs need favourable conditions and a strong regional innovation and support system to make the transitions into this new economy. Otherwise the identified digital divides may develop further.

The main obstacles are[25]:

- Shortage of knowledge, skills, entrepreneurship
- Lack of technological solutions and interoperability
- Investments/Costs
- Complexity of regulations
- Shortage of capital

E-business is seen as the gateway for SMEs to the digital economy; global businesses and markets. SMEs are often lacking resources, such as money and skills, to make organisational changes; they should be able to be more reflexive because of size and therefore have the opportunity to adapt to changes more quickly then larger organisations. Though looking at practice they more frequently stay in a state of inertia as opposed to choosing a reflexive network.

One measure of this is the adoption rate of different Internet-based technologies. This can be described as a number of transition stages or as sequential steps of evolution[26], see Figure 2 for one such model.

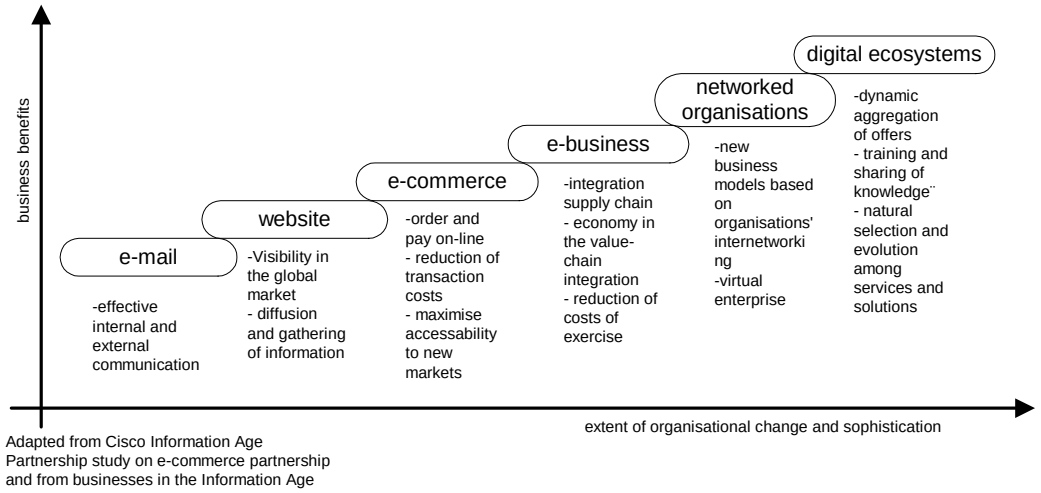

Figure 2 Sequential steps of ICT adoption

In the early stages the Internet is seen as a tool for information search and communication through e-mail and websites. Later as the enterprise adopts the technology, e-commerce (order and pay online) and e-business (integrated supply chain) take over. Moving into a networking organisation does not necessarily require a full e-business platform, but having this in place aids some of the interaction in the network. The growth of the networked organisation is a result of the process of moving from mass production to flexible production and the crisis of the large corporation, together with the resilience of small and medium sized firms as agents of innovation and sources of job creation. The networking structures can be a mix of vertical and horizontal; it is vertical through subcontracting relations between a central coordinating enterprise and the SME that make up the production and distribution channels. It is horizontal if there are independent links between the enterprises in a broader sense than through the sub-contracting agreements. In these kinds of networks the enterprises can be distributed independent of the location of the other enterprises in the network[27].

Another form of organisational flexibility can be seen in multidirectional network models enacted by SME and large corporations alike. In these networks enterprises seek collaboration with similar or complementary enterprises, where no single enterprise leads the network; instead it is a flexible structure where closer alliances are made on a project basis between the enterprises. In this way they may establish themselves in a market niche and gain competitive advantage. As this is occurring the enterprises move toward the last step in the evolution if ICT adoption, the digital ecosystem. This is a dynamic network of organisations working together, which are sharing business, knowledge and infrastructure.

Relation to North Sea programme

This section mainly relates to measure 2.4[28]: *Improve the access of SMEs and society in general to information and communication technologies.* SMEs are fundamental to both the NSR and

Europe's competitive position and job creation. The SMEs are facing many challenges and they need to face them with a constant focus on innovation and development. In this process they should include innovation and development in their strategies. In addition innovation and development needs to be brought into the business networks where the SME belongs.

In this process the regional innovation and support system also needs to take into consideration that the SMEs may belong to networks not necessarily located in the same geographical area. An important strategy for making connections across borders will be the networks of regional innovation systems; this can be an important source of international contact that will contribute to development of the enterprise and can further be a gateway to new markets and business opportunities. To be able to handle this kind of interaction it is important to support enterprises with training and education technology, and to support non-ICT companies in the uptake of ICT and e-business development. This can be done in common training programs developed within a partnership. Knowledge and experience sharing between enterprises will also be important. To benefit from these kinds of initiatives the infrastructure to be sufficiently developed for them to be able to fully utilize the new technological solutions.

Implications for projects

Future Interreg initiatives in this respect could include:

- Initiatives that will facilitate SMEs entry to for the digital economy, i.e. moving up the ICT adoption ladder, including training and to improve skills and knowledge.
- Initiatives that will improve the quality of the regional innovation and support system, to improve their ability to support the enterprises.
- Initiatives that create opportunities for SMEs in the global economy, including elements like: Meeting places for SMEs at a transnational level, network and links between enterprises in the NSR, educating and networking initiatives in e-business and digital economy, development of training for enterprises.
- Promotion of European Computer Driving License (ECDL) or equivalent accreditation within the regions – this promotion could be done through companies and/or community groups in the regions.
- Initiatives should consider specially adapted training courses, particularly in rural areas or underdeveloped urban areas to involve and educate the community in the Information Society services.
- Initiatives should consider use of school projects where children are educated and can grow up with the Information Society. The benefits of remaining in their region can be combined with the use of ICT to be part of the global society.
- Initiatives should consider to train the trainers, so that these can be used to train the others in their company.
- Initiatives could include IT training for SMEs

5. E-government

This chapter explores information society implications for spatial development in relation to Measure 2.5: Improve the application of Information and communication technologies, with particular reference to public services. Emphasis is put on how to ensure equal access to public services and eDemocracy.

5.1 Equal access to public services

The EU mission statement regarding eGovernment stated in the eEurope plan is:

> *"e-Government is about bringing administrations closer to citizens and businesses. The idea is for people to be online, not in line. To achieve this, eEurope proposes online access to government and Commission services, fast-track procedures to set up a company and wider use of electronic signatures and open source software."*[29]

To be able to measure to what degree the public sector is providing e-Government services two classification systems have been developed. One step-wise process; using four stages which measure the developmental stage of an e-Government service, and a second which groups related services into four service clusters: income-generating services, registration services, permits & licenses and returns. These two classification schemes are utilised together to benchmark e-Government development.

The four-stage development model[30] is a step approach utilising four stages of on-line development as shown in the diagram below (Figure 3). Stage 1, presenting information about the public sector and the services it provides. Stage 2, presents information and are making forms available for downloading. Stage 3, presents information and offers the user simple transactional services, including two way interactions between the user and the public sector, and integrated with the internal case handling systems in the public sector. Stage 4 is where services are fully available in electronic form, use of electronic forms, and where the user/customer for instance can trace the status and where their case is within the system, and where there is collaboration between different public sectors and in the processing of a case.

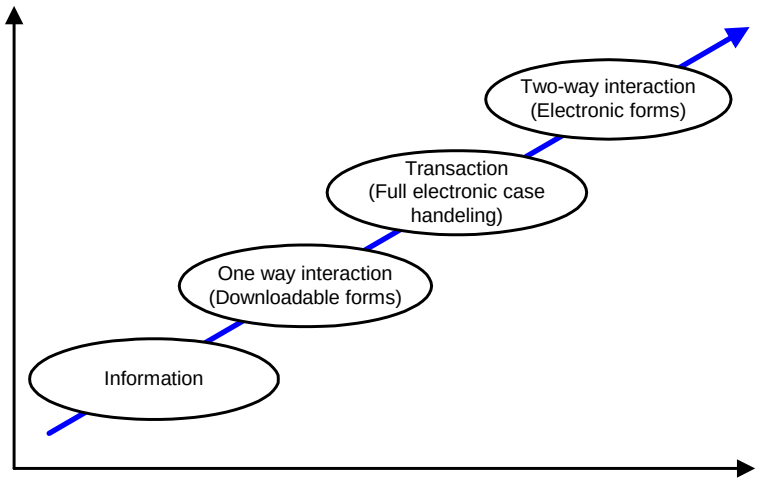

Figure 3 The four stages development model

In April 2002 the European Commission published a report[31] which benchmarked the public services of the 15 EU member states, plus Iceland and Norway. The measurement was the percentage of basic public services available online. The objective of this exercise was to enable member states to compare performance, and to identify best practices in order to stimulate progress in the field of eGovernment.

In order to identify common trends within groups of related services, four service clusters have been created. They are:

- *Income-generating services*: services where finance flows from citizens and businesses to the government (mainly taxes and social contributions)
- *Registration services*: services related to recording object- or person- related data as a result of administrative obligations
- *Returns*: public services given to citizens and businesses in return for taxes and contributions
- *Permits & licences*: documents provided by governmental bodies giving permission to build a house, to run a business etc.

These are then related to the staged development model. Scores above 75% (see Table 1 below) mean that many of the services have reached a full transactional phase. For the NSR countries only Sweden has reached this level, while the others are scoring between 25 and 75%, which means that they are evolving from information to interaction.

Datashare – Integrated City and Area

The Datashare project developed and tested geo-reference data-sharing intranets in order to facilitate integrated planning. They tested and assessed the effectiveness of the developed data management system and developed a common pilot model for data management. As more and more data and information are becoming available digitally there is a need for data management tools to avoid the duplication of data. When data in addition is scattered across different platforms and in different formats it becomes difficult to share and exchange data. With the data management system this is going to get better, and information from different systems can be integrated accessed from different platforms and for different purpose. An important learning in the project is that the success of technological changes depends heavily on the ability and willingness also to implement the necessary organisational changes.

This key learning should be taken into account by other projects in applying the tools and methodology for spatial development purposes.

Interreg IIC project
Internet: www.datashare.org.uk
Source: Interreg IIC North Sea Region – The Projects (2001)

Table 1 eGovernment scores per country for the NSR countries[32].

Country	Apr2002	Oct2001	Growth
S	81%	61%	20%
DK	69%	59%	11%
NOR	63%	63%	0%
UK	63%	50%	13%
D	46%	40%	6%
B	43%	23%	20%
NL	42%	37%	5%

Relation to North Sea programme

This section mainly relates to measure 2.5[33]: *Improve the application of information and communication technologies, with particular reference to public services*. Access to services is one of the key factors; independent of where you live one should have equal access to public services through user friendly interfaces adapted to the users' skill level. Different regions and countries have developed in different directions and speed. There will therefore be potential

benefits of working across borders the aim being to reduce the unbalance between regions, through sharing of knowledge and experience.

Implications for projects

Future Interreg initiatives in this respect could include:

- Initiatives developing eGovernment services, and the escalation of the services according to the four stage development model.
- Initiatives need to be user oriented and need to involve a number of different government organisations.
- Technology should not be the main issue but be balanced with organisational and user issues. Focus on the needs of people and not only on the needs of technology.
- Initiatives should aim at changing the unbalance between regions, by moving up the eGovernment service steps.
- Initiatives should where appropriate aim at involving use of geographical information systems (GIS), as part of the service delivery, 70-80% of all data in public sector databases have a spatial relevance. Such initiatives should also include measures for the implementation of the GIS by the organisations they are developed for, in order to have a spatial effect.
- Initiatives should where appropriate include integration between different public sector organisations and levels (local, regional and national).
- Initiatives using GIS as a tool in benchmarking to illustrate differences between regions.
- Promotion of European Computer Driving License (ECDL) or equivalent accreditation within the regions – this promotion could be done through companies and/or community groups in the regions.
- Initiatives should consider specially adapted training courses, particularly in rural areas or underdeveloped urban areas to involve and educate the community in the general Information Society services and with a particular focus on the eGovernment services.
- Initiatives should consider use of school projects where children are educated and can grow up with the Information Society. The benefits of remaining in their region can be combined with the use of ICT to be part of the global society.
- Initiatives should consider to “train the trainers”, so that those again can train local members of the community.

5.2 eDemocracy

People are participating less and less in the formal democratic process including voting in elections. eDemocracy initiatives are aimed at giving people a range of opportunities to participate in the democratic process. The traditional ways to seek the opinion, knowledge and experiences of citizens are becoming less used; new ways need to be found. eDemocracy has developed in an attempt to take advantage of the potential offered by new technologies in encouraging inhabitants to take part in the democratic process. Many citizens are prepared to devote time, energy and expertise into the democratic process when it involves issues that matter to them.

For those accustomed to using the Internet, it will also be natural to use this as a tool in the democratic processes. The government should therefore

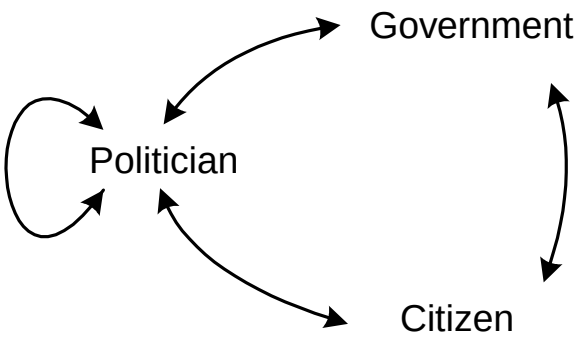

Figure 4 The relationships in the democratic processes

SEAGIS – GIS and Costal Zone Management and Planning

The goal of the SEAGIS project is to provide the groundwork for developing a common frame of reference in GIS-based coastal zone management and planning in the North Sea region. The project wants to improve the way GIS is used as a tool in costal zone planning, how it can be used to collect, analyse and distribute costal zone data. There was no expectation of developing a common tool, but the expectation was to generate best practices in the use of GIS. Standardizing concepts and developing a network of users and uses of GIS, it is anticipated that the costal zone planning process will be enhanced.

This project is an example of how ICT tools (here: GIS) can be used within a specific field (here: ICZM, integrated coastal zone management) and thus relating more directly to spatial development.

Interreg IIC project
Internet: www.hordaland-f.kommune.no/seagis
Source: Interreg IIC North Sea Region – The Projects (2001)

open up the democratic process to allow the citizen to have a role in shaping policies and influence decisions that affect then. This is not as much about technology but about how to alter the democratic processes to allow for this kind of interaction.

The democratic process involves four relationships, the relationship between the citizen and the politicians, between the citizen and the government, between the government and the politician, and between politicians (politician to politician), as illustrated in Figure 4. Deeply embedded in this is the need for equal access to infrastructure which allows the citizen to participate in the democratic process. It is particularly important for those living in the peripheral areas; they should also be able to take advantage of this more open democratic process, as it will allow them to participate on equal terms without having to travel from their home location to the location of the political and governmental offices. The UK government, have issued an eDemocracy initiative with three objectives[34]:

- *"Facilitating participation in the democratic process: making it easier for people to collect public information, follow the political process, discuss and form groups on political issues, scrutinise government and vote in elections.*
- *Broadening participation by opening up a range of new channels for democratic communication - may enable involvement from people who in the past may have felt excluded from the democratic process or unable to participate.*
- *Deepening participation by creating a closer link between citizens and their representatives. "*

In their policy they have two tracks which firstly involve getting the citizens to use their civil right to vote at elections, and second getting them to interact more with the politicians and the government between elections.

In particular in relation to spatial development can ICT be a useful tool in the attempt to involve the citizen more in spatial strategies, planning and policies. ICTs can be used to make plans visible and possible. Tools can be developed to open up the possibility to give direct feedback to the plans for those interested and in particular those directly affected by a decision. If the

technology can be used to give equal access to such processes independent of the citizens location in relation to public offices it will be an important contribution. Though such development will be highly dependent on the available technological infrastructure.

Relation to North Sea programme

This section mainly relates to measure 2.5[35]: *Improve the application of information and communication technologies, with particular reference to public services*. Increased access to information and the possibility to partake in decisions and planning processes while influence ones own situation will strengthen the democratic process. Opening up the process has the potential to improve public participation in planning. The focus needs to be on end users needs. Interaction between politicians (elected), the government and the citizen is important. Use of GIS systems may be one way to facilitate this, as it makes it possible to integrate information from several sources as layers in the map, making it easier to relate to the location of the planning process.

Implications for projects

Future Interreg initiatives in this respect could include:

- Initiatives should involve a broad set of users; inhabitants, politicians, public sector employees.
- Initiatives for voting/polling.
- Initiatives should stimulate an inclusive information society, i.e. make sure everyone can participate and contribute. Balancing different (technical and non-technical) channels of interaction.
- Initiatives for people to start using eDemocracy services. Initiatives should consider their role in day to day democracy.
- Promotion of European Computer Driving License (ECDL) or equivalent accreditation within the regions – this promotion could be done through companies and/or community groups in the regions.
- Initiatives should consider specially adapted training courses, particularly in rural areas or underdeveloped urban areas to involve and educate the community in the issues relating to the Information Society and eDemocracy services.
- Initiatives should consider use of school projects where children can grow up with the Information Society. The benefits of remaining in their region can be combined with the use of ICT to be part of the global society.

6. Information Society issues that relate to transport

This chapter explores information society implications for spatial development in relation to Measure 2.1 'Effective and sustainable transport in rural and urban areas, including maritime areas, and in new rural-urban connections' in addition to relating to issues in Measure 2.4 and 2.5. Emphasis is put on how to ensure sustainable transportation of passengers and freight applying mobility management tools.

Information and communication technologies have a proven effect on transport. The potential for reducing traffic volumes is accepted but there may also be a reverse effect whereby increasing transport demand. The impact of the information society on transport should therefore be studied further.

E-commerce and teleconferencing are promoted as means of reducing the need to travel, whilst route guidance systems and signalling technology make it possible to increase infrastructure capacity and thereby increase mobility. The development and use of ICT has made it possible for many people to start using their home to conduct activities that earlier was not possible[36]; the parallel increased use of mobile phones and portable computer equipment have redefined the way we work, do business and participate in activities. In doing so it also influences the way we travel and the passenger transport sector. The freight transport sector has been affected by the development in ICT, more effective use of vehicles through the use of communication technologies, coupled with specialised routing and scheduling, vehicle monitoring, maintenance and record keeping software.

Passenger transport will potentially be reduced as people start using online services to carry out tasks that normally require short but frequent trips, such as shopping groceries and household goods. Grocery shopping has not caught the market yet to any large extent, while banking services and shopping for books and music are among the most successful online services. Software, hardware and electronics, and in addition clothing and travel arrangements are following up. Even if the online services do reduce passenger transport, it affects in a negative way freight transport; the material goods still have to be delivered to the buyer, while the immaterial services can be delivered over the available infrastructure. There is a need to find the right balance between online service delivery, personal and freight transport.

Other services such as government services may also influence transport needs; access to online information and opportunity to register for services and apply for permits and file taxes are all services that can easily be delivered online and which will reduce the need for transport. This is particularly the case for citizens in peripheral and rural areas located far form public service centres. With the regionalisation of service provision, eGovernment services become an important step.

Delivery of ICT based services may also reduce the need for transport in areas such as telemedicine, distance learning and entertainment. This will require a well developed infrastructure with broadband access in all areas to ensure equal access. Increased use of teleworking, telecommuting, self employment and flexible working can reduce the need for transport although this will also often require quality broadband access.

There are also social consequences to consider; a workplace is also a social meeting place, and the local shop is a valuable social arena particularly in small communities. The local shop as a meeting place is very important to inhabitants that do not have other casual social meeting places e.g. tele-workers and also retired persons.

In freight transport ICTs influence how transport flows through shipment size, co-ordination and consolidation of freights. This requires a new and improved organisation of the transport market together with traffic management and driver information. It will further the need for vertical and horizontal coordination in logistical chain and third party logistics for buying and selling freights.
This new organisation is one approach belonging to the mobility management area, which is based on information, communication, organisation and co-ordination. Mobility management can be defined as:

> *"Mobility Management is primarily a demand-oriented approach to passenger and freight transport that involves new partnerships and a set of tools to support and encourage a change of attitude and behaviour towards sustainable modes of transport. These tools are usually based on information and organisation, coordination and require promotion."* [37]

TARGET - Travel Awareness Regional Groups for Environmental Transport

TARGET sees congestion, air pollution and decreased district vitality as major problems of urban decay. Many rural areas, such as tourist sites, also suffer from heavy car traffic. The project aim is to develop a new regionally co-ordinated approach to multimodal transport and to minimise the need to travel, the use of private cars and the environmental impact of travel and congestion. By integrating approaches to transport with spatial planning, it is possible to achieve increased accessibility, enhance commercial and social vitality, and improve the quality of life where we live and work.

The project is among other trying out information systems that inform individuals, businesses and schools about alternative sustainable travel arrangements.

This project is a good example of how ICT can be used effectively within a spatial development field, namely improving travel awareness to get a shift to more sustainable transport.

Interreg IIC project
Internet: www.eu-target.net
Source: Interreg IIC North Sea Region – The Projects (2001)

An important part of mobility management is the provision of the right information at the right time. Information and communication technologies can be a valuable tool in this context.
The objectives of Mobility Management are among others to[38]:

- encourage greater use of sustainable transport modes
- improve sustainable accessibility for all people and organisations
- increase the efficiency of use of transport and land use infrastructure and,
- reduce traffic (growth) by limiting the number, length and need of motorised vehicle trips

Traditionally information has been aimed at existing public transport users[39]. With mobility management the aim is to encourage new users to utilise more sustainable forms of transport; this can among others be done through the creation of integrated and effective information systems. This information system needs to make it easier for the individual or organisation with a transport need to get access to sufficient information to make a choice. This use of information, made available through different means and access points, to new groups of users, may lead to better informed travel choices, among others to do away with the private car. Information about public transport made available in an electronic public transport information system may support the use of more sustainable, intermodal modes of transport and to manage transport risks.

Relation to North Sea programme

This section relates mainly to measure 2.1[40]:*'Effective and sustainable transport in rural and urban areas, including maritime areas, and in new rural-urban connections'*. The section is also of importance when discussing conditions for living and operating in rural areas, it therefore also influence the issues raised in measure 2.4 and 2.5. Inhabitants need sufficient and sustainable public transport and SMEs still need to transport their products to customers.

Implications for projects

Future Interreg initiatives in this respect could include but are not limited to:

- initiatives exploring local and regional consequences of more frequent use of online shopping
- initiatives looking at social consequences of monitoring and surveillance in the freight sector
- initiatives applying GIS in management of freight transport
- initiatives exploring mobility management issues

7. Concluding remarks

"An Information Society for All"[41] is the aim of the eEurope strategy plan; this is also the aim of the North Sea region and its programme. This is a particular challenge as the NSR covers large rural areas, and as the rural areas play such important roles. Technological development is posing both threats and opportunities for rural areas. The opportunities are related to the way in which ICTs enable individuals and SMEs to operate from rural areas. However, there are also risks of increasing the differences between the regions in economic and social terms; groups of the population in both urban and rural areas are at risk of being left behind.

Implementing the Interreg IIIB North Sea Region programme with projects that address these issues is vital to improving the conditions for citizens and for the competitive advantage of the SMEs in the region. It will also be an important tool in relation to economic and social cohesion; reducing disparities will be at the core of a balanced sustainable development.

From the Information Society and Spatial Development Seminar, which was held on January 23-24, 2003 seminar at Sola Strand, it was clear that there were many project ideas being developed to cover issues related to Measure 2.4: *Improve the access of SMEs and society in general to information and communication technology*. Many of the project ideas were developed to such an extent that the aim and partners were identified, and only to a small degree did new partnerships seem to evolve. Some similar project ideas began discussions to merge the proposals. Project ideas relating to Measure 2.5 *Improve the application of Information and communication technologies, with particular reference to public services* were fewer and far less developed. In relation to Measure 2.1 *Effective and sustainable transport in rural and urban areas, including maritime areas, and in new rural-urban connections*, the interest was low at the seminar. For future calls emphasis should be put on developing project ideas relating to Measure 2.1 and 2.5. To achieve a harmonious development of the North Sea Region and avoid new social, economic and digital divides between public sector and private sector it is important to also focus on these measures.

Below is a list of issues which should be taken into consideration when developing new projects.

Focus on the possibilities...
It is important to keep a focus on the possibilities and the opportunities that open up. If appropriate, technology should be used as a tool in achieving the possible development. If the impossible tasks are kept in focus nothing can be achieved.

Involve the user...
Developing services for the information society requires close cooperation between the provider and the user of a service. The approach needs to combine bottom-up and top-down activities. For delivery of eGovernment services, who and where is the user of the service? eCommerce services, who and where are the customers? What is the motivation for developing the service? and for using it? Does it facilitate the process of getting the "off-liners" on-line? Don't let the technology determine the development of the service strive for a balanced socio-technical development.
Plan how the initiative will involve the user. How will the initiative contribute to involvement of users in the spatial development plans, decisions and policies? Are all relevant stakeholders in a region included in the process?

Identify the beneficiaries[42]...
The project should identify the beneficiaries of the initiative. Projects should aim at balanced development. How does the project plan include those normally excluded? Does the project contribute to evening out a social, economic or digital divide? How can the results of the project benefit other regions?

Measure the outcome...
It is important to evaluate or measure the outcome of initiatives, but it is not easy. You need to consider what kind of evaluation you will use to evaluate or measure the result of activities in a project. What kind of information will be used (qualitative or quantitative)? How will you establish a baseline to measure against? How will you monitor progress in relation to the baseline? What results are expected from the project and towards the end of process how is the result in relation to the expected result?[43]
In relation to the eEurope plan the commission have developed 23 indicators[44] measuring the practical outcome of the eEurope action plan. Many of these are relevant but we will in particular point to the indicators relating to "Working in the knowledge-based economy" (indicator 11 – 13) and "Participation for all in the knowledge-based economy" (indicator 14 – 15) but also other indicators are relevant such as those relating to eCommerce (16), eGovernment (17-19) and to the inclusion of youth in the digital age (7). Initiatives should therefore consider including these in their set of measures and indicators.

Integrate ICT related initiatives with spatial planning and strategies...
ICT related activities/initiatives need to be integrated with the spatial strategies, plans and policies of a region. Consider if the role of ICT related activities is sufficiently acknowledged in the organisation and plan to increase awareness and understanding for this role through learning and knowledge exchange.

Consider alternative programme areas...
In developing your project you should also consider other policy areas, such as the European Research Area programmes; including 6th framework programme, Eureka, COST and national research programmes, and the eEurope programme, other policies might also apply dependent on the theme of the project. Possibilities to combine project funding from different policy areas should also be explored.

Contribution to North Sea Region...
The regional aspect of the programme is important; in transnational collaboration under the North Sea Programme it is important to pay attention to the local development in each site, but it also needs to be scaled up and to contribute to the North Sea Region development and possibly also have a global relevance. In doing this it is important to learn from other (previous and current) projects. It is also important to look for links to other policy measures in the North Sea Programme in addition to those which particularly focus on ICT.

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Notes

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[5] See ESDP 1999
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[7] See Nachira, Francesco 2002
[8] See eEurope 2002
[9] See Interreg IIIB 2002a
[10] See Interreg IIIB 2002a
[11] See Interreg IIIB 2002a
[12] See Interreg IIIB 2002a
[13] See Leydesdorff, Loet and Etzkowitz, Henry 2001
[14] See Lundvall 1992; Malecki 1991; Rogers 1995
[15] See Putnam 1993 and Healey et.al. 1999
[16] See Storper 1997
[17] See Asheim and Isaksen 1997; Isaksen 2000
[18] see e.g. Damsgaard, Rogaczewski, and Lyytinen 1994; Kraemer et al. 1989; Larsen and MacGuire 1998; Lyytinen and Damsgaard 1998
[19] See e.g. Cooper and Zmud 1990; Gross and Ginzberg 1984; Kwon and Zmud 1987; Lees 1987
[20] See Interreg IIIB 2002a
[21] See ESDP 1999
[22] See Nachira, Francesco 2002
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[37] As defined by the EU project MOST - mobility management strategies for the next decades http://mo.st/ Deliverable 3 Report on monitoring, evaluation and state of the art http://mo.st/public/reports/d3%20final.zip [accessed November 29, 2002]
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[39] http://www.eu-target.net/target1/workpackages/mobility.htm [accessed November 29, 2002]
[40] See Interreg IIIB 2002a
[41] See eEurope 2000
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[43] See SPECTRE (2002) Strategic Planning Guide
[44] Benchmarking eEurope http://europa.eu.int/information_society/eeurope/benchmarking/indicator_list.pdf