

Tender
Part I
(anonymous)

ESPOON Project 1.2.3
**“Identification of Spatially Relevant Aspects of the Information
Society” (2005-2006)**

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TABLE OF CONTENTS:

I.	RESEARCH ISSUES – THE CONTEXT	3
II.	OBJECTIVES OF THE PROJECT.....	5
III.	PROJECT'S GUIDING PRINCIPLES.....	6
IV.	INFORMATION ON AWARD CRITERIA (CRITERION 14.1).....	7
V.	STRUCTURE OF THE PROJECT.....	8
	WP 0: MANAGEMENT & COORDINATION	9
	WP 1: REVIEW OF SCIENTIFIC LITERATURE.....	11
	WP 2: DEVELOPMENT OF OPERATIONAL CONCEPT AND METHODOLOGY.....	13
	WP 3: DATA COLLECTION	17
	WP 4: ANALYSIS AND ASSESSMENT OF SPATIALLY RELEVANT ASPECTS OF THE IS.....	19
	WP 5: RECOMMENDATIONS AND DISSEMINATION OF THE PROJECT RESULTS	22
VI.	LIST OF SELECTED REFERENCES	24

I. RESEARCH ISSUES – THE CONTEXT

The Information Society (IS) definition in literature and in official documents of the European Union is not explicitly formulated. On one hand the IS is described as a telecommunication society, from the other as a learning, innovative and creative society. Therefore the descriptions of the spatial impact of IS is determined by the adopted approach (Cornford, J., Gillespie A., Richardson R., 1999).

However, regardless of the diversity of definition we are certainly witnesses of important shifts in the global economy – from an industrial towards a knowledge-based or information economy. The recent observations and the wide range of literature indicate that one of the main characteristics of the modern world is the growing significance of knowledge and information in determining economic performance, which leads to a new economic paradigm where innovation processes play a fundamental role (Toffler A., 1997; Drucker P.F., 1999; Thurow L., 1999; Naisbitt J., 1997; Dunning J.H., 2000) simultaneously inducing new modes of knowledge production (Kujath H., 2005).

Against this background we can identify and describe several spatial trends observed in Europe. These are as follows:

1. In the knowledge-based economy (K-BE) paradigm the ability to create innovations and participate in multi-level networks have become the source of stable competitive advantage (Lundvall B.A, Johnson B., 1994). Those regions in which competitive, innovative firms are concentrated do attract new investment and are able to improve their technical and institutional infrastructure, as well as to offer good living conditions for the “world class” (Kanter R.M., 1995). The territories less accessible, with obsolete social and economic structures, are lacking these advantages and have to rely on competing with costs of production.

2. Therefore, the chances for such backward regions seem to be even smaller in the knowledge-driven economy than it had been the case in the previous model of industry-based growth (Malecki E.J., 1997; Gorzelak G., Jałowiecki B, 2000). Two factors seem most responsible for this change: the growing role of the companies, at the expense of the interventionism of the state, and the growing importance of the “innovative milieu” for innovation-driven businesses (Castells M., Hall P., 1994; Camagni R., 1999).

3. The last observation is strengthened by the fact that - as research proves (M. Castells, Oxford 2001) - the concentration of companies working within and for the Internet are even more concentrated spatially than the companies of other sectors. The expectations that the internet will allow for a more even spread of economic activities have not materialised. With the exception of computing- and call-centres (which, however, concentrate mostly skilled “digital-workers”, and not the highest professionals), most of Internet-related services are concentrated in big cities – i.e. where the customers of internet-providers are located. Consequently, metropolitan areas, in this context, are nodes of intra- and interregional networks of knowledge production (Schmidt, S., 2005).

4. Thus, in general, the metropolitan areas (identified within ESPON program as MEGAs – Metropolitan European Growth Areas) are the regions best prepared to develop the information and communication technologies and take advantage of the virtues of the knowledge-based economy and the information society (IS) (Gawlikowska-Hueckel K., Gdańsk 2003). However, according to the current experience, there is evidence that there are cases in which these areas seem to cut the ties with their regional hinterlands and with the more distant peripheral regions, and tend to increase the exchange within the global metropolitan network (Smełkowski M., 2001). Thus, the least advanced regions loose relative distance to the ones better endowed with the assets and skills needed for the K-BE and the development of the IS.

5. Given the actual almost saturation level of ICT – like the cellular phone and Internet - in most regions of Europe, the qualitative dimension of the use rather than the quantitative level of adopting these technologies is an important factor which influences the impact of the ICT on economic development. The business use of the Internet varies strongly across European countries and regions (ESPON 1.2.2 Final Report), as well as the spread of e-administration, e-education and e-culture. In the higher developed and technologically more advanced countries the use of the ICT is more profound and shapes the socio-economic process in a deeper way than this in poorer countries and regions, where the ICT is more used on the “consumption” (personal communication, passive use of internet for entertainment and communication) rather than on the “creation” side.

6. The national policies of the member states vary strongly with respect to IS implementation (including i.e.: ICT development, technology promotion and innovation support). Several countries have long ago recognised the importance of the wide and development-related use of ICT as a factor supporting their development and increasing their competitiveness due to greater technological and innovative potential. Some other seem to be delayed in this respect, and their activities rely more in programming than in real actions. Similar differences may be found in the policies introduced by particular regional authorities (Dabinett G., 2001; *The Structural Funds ...*, 2001).

7. It may be stated that the many members of the EU would rather resemble the second group of countries – which are more active in programming the accelerated creation of the knowledge-based economy and information society rather than being involved in real activities and actions.

8. The Lisbon Agenda (*eEurope, 2000*), although promising and challenging, has in fact be implemented at a very slow, unsatisfactory pace, and has had a much weaker effects on the EU on the whole and its member states than the national polices of the most advanced countries within the EU. The promising revision of the Lisbon Agenda is still to be implemented.

II. OBJECTIVES OF THE PROJECT

Based on above outlined research context, the proposed research project will basically focus on the following objectives:

1) Characterisation of the information society from a territorial perspective – identification of the information society's state and trends, typology development on the realisation of information society, relation between traditional regional competitiveness indicators etc. and information society specific indicators;

2) Analysis of the information society's territorial aspects at macro-, meso- and micro-level – effects of the information society on spatial development in different types of regions, relocation of economic activities in context with their effects on changing transport patterns.

3) Development of policy recommendations for macro-, meso- and micro-level – identification of possible policy initiatives supporting cohesion in terms of ICT availability and use.

In particular, an explanatory rather than a descriptive approach will be applied, and it will concentrate around the following hypotheses – which are to be further elaborated in the course of the project (see WP2):

1. The cohesion goals of European structural policies, such as social, economic and territorial cohesion, are likely to be achieved if the processes sketched in the section above will be countervailed by an accelerated development of potentials for the K-BE and IS in the less developed regions and areas, especially in the relatively less developed and technologically advanced countries.

2. Since the endogenous potentials for the development of the information-society and knowledge-driven economy in the peripheral, backward regions are relatively small, and relying solely on the external intervention will not lead to success, the most promising ways of increasing the chances of development of these regions is to link them into several networks of co-operation and information exchange, that can be made possible by the use of ICT. Also, the direct transfer of experience and its diffusion through ICT networks within these regions could be the most efficient means to achieve growth in the frame of their competitive advantage in the global economy.

3. Europe is undergoing a new territorial differentiation. ICT technologies and potentials for creating an IS differ spatially strongly. On the one hand some regions should be considered as the macro-regional systems which could play the role of positive examples of dense territorial networks of ICT and well developed information society. On the other hand, some regions, especially in the new member states can gain on examining and adapting some experiences delivered by the first group, providing also own inputs into the debate on the knowledge-driven economy, information society and means of their enhancement.

4. Depending on the kind of experiences different regions and parts of Europe have gathered with regard to ICT development and the introduction of the IS, successful examples can provide information for positively decisive factors from which less advantaged regions can benefit. However, also the experiences of such less advantaged regions can provide sound insights into the decisiveness of different socio-economic factors.

Therefore, the best examples - especially related to the impacts of the ICT developments on relocation spreading of economic activities (industry and services) to less developed regions – are of special importance. Also the effects of introducing the ICT to public administration and of leading education initiatives and households, as well as, to the reduction of transport demand and of traffic congestion, should be closely examined and their applicability for other less developed countries and regions evaluated.

As ESPON project 1.2.3 belongs to the first strand of the ESPON projects, covering thematic issues of major spatial developments, it holds an important position for the elaboration of the whole programme by contributing to the preparation of the common ground for the investigation of information society related themes in relation to the spatial structure in Europe. Among other new launched projects and due to the role of the IS in the context of the Lisbon Strategy, ESPON project 1.2.3 can be expected to serve as a strong scientific basis for the propositions of the Commission in view of the reform of post-2007 Structural Funds. To achieve such ambitious objectives, the findings of the project will be based on literature analyses, statistical comparisons and empirical studies. They will have a more general meaning for a broader context of the European spatial and cohesion policies, as well as for the national and regional development policies in the member states of the EU. The methodology applied in the project will fulfill all the requirements of the note on content in the Contract Notice, i.e. the indicators collected, data analysis, and references to earlier ESPON projects of special relevance to the current project.

III. PROJECT'S GUIDING PRINCIPLES

The approach developed by the Transnational Project Group for the purposes of the project bases on the four principles which are in line with the Term of References for the ESPON 1.2.3 project. That will assure the proper implementation of the contract, full realization of the contract objectives and high quality results. These principles are as follows:

- *Adaptation of European policy context* – Reference points for the evaluation of spatial trends and effects of the IS are set by the objectives defined in the ESDP as well as the observations and territorial specifications made in the Second and Third Report on Economic and Social Cohesion (CEC 2001 and 2004). Thus, the project assesses spatial trends and effects of the IS and ICT adoption in the light of a balanced and polycentric development and with reference to the different dimensions of cohesion, focusing on the third element, i.e. territorial cohesion.
- *Integrated research approach* – Project activities of the proposing TPG will be incorporated in the whole context of the ESPON programme, taking account not only of results available through other ESPON projects and common tools and methodologies but also of the complexity of territorial developments. Accordingly, the project needs to embrace outlines of ESPON guidance papers, in particular the application of the three level approach and short-, medium- and long-term elements as provided for in the Nijmegen Guidance Paper. For ESPON project 1.2.3, especially decisive factors related to the information society's contribution to a more polycentric development have to be recognised, supporting the formulation of related typologies on the basis of specific and suitable indicators. Furthermore, this also relates to the development of integrated policy recommendations aiming at a polycentric development of the IS.
- *Scientific approach* – While taking account of the policy relevance of the project, the research activities still need strongly to be based on a sound scientific basis, which allows to characterise principal territorial trends of the IS, by providing corresponding indicators, typologies and maps. Furthermore, analysis is to be based on a sound methodology, adopting tools and instruments commonly developed in ESPON.
- *Thematic coordination and networking* - All the activities undertaken by the proposed Transnational Project Group will strongly embrace finalised results achieved by already finalised ESPON projects as well as the ongoing research undertaken by still on-going projects. Furthermore, close links and partnership will be maintained with the Coordination Unit (CU), too.

IV. INFORMATION ON AWARD CRITERIA (CRITERION 14.1)

Information regarding the technical quality of the tender in relation to the services required has to be judged in the light of activities and comments presented mainly in part V Structure of the project, which contains description of work packages. Therefore, following information will highlight issues regarding the award criteria for the different elements of ESPON project 1.2.3. This will be undertaken with reference to the respective Work Packages.

Suggestions of concepts and methodology can be found in the chapter I of this part of the Tender as well as in the description of WP 2. The evidence that the project is of a complementary character and will not duplicate existing work is provided in the description of WP 0, WP 1 and WP 4 (criterion 14.1 a).

Information regarding the data sources and qualitative information sources, which the tenderer intends to exploit for data-gathering is included in the WP 3. Additionally, in this part the account of the investigation work to be carried out is specified. The geographic scope of the project is described both in WP2 and in WP 3 (criterion 14.1 b).

Description of a few suggestions of territorial indicators that could be further developed by the tenderer within the focus of the research project can be found in part concerning WP2 and WP 4 (criterion 14.1 c).

The approach to developing territorial typologies is described in WP 3 and WP 4 (criterion 14.1 d).

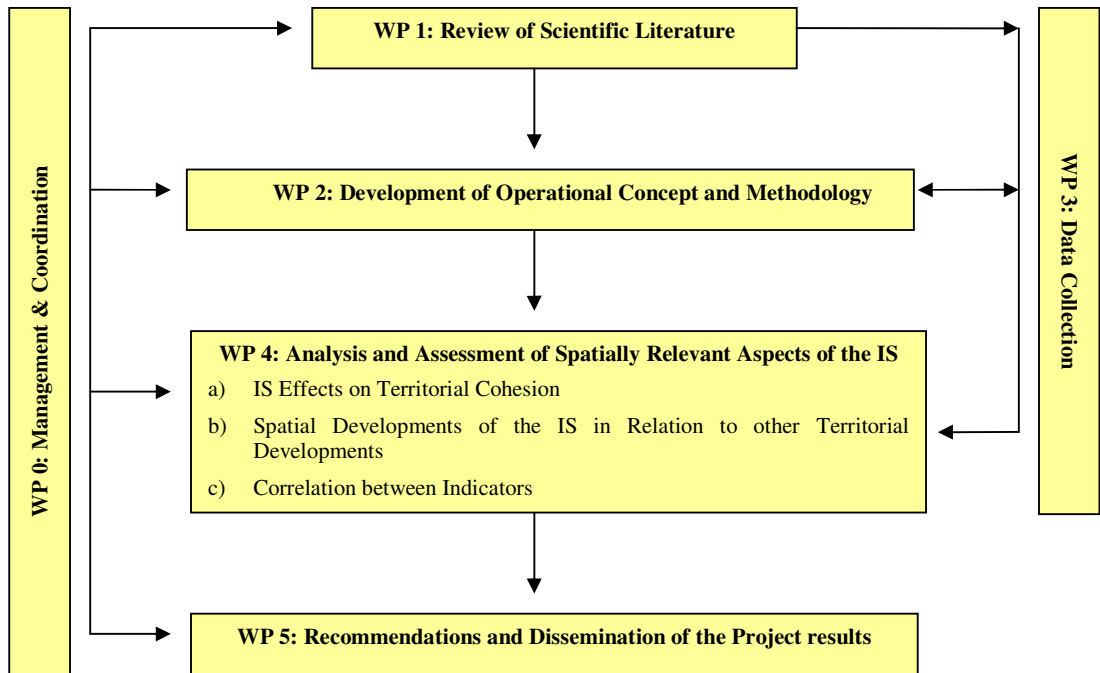
The approach to recommendations that could inspire policy development at Community, national and regional/local level in support of a better integrated spatial development of the enlarged European territory and of the achievement of the ESDP objectives is characterized in WP 5 (criterion 14.1 e).

The description of interaction intended for the thematic co-ordination and networking with other projects and the Coordination Unit is provided in in chapter II of this part of the Tender and in WP 0 and WP 5 (criterion 14.1 f).

V. STRUCTURE OF THE PROJECT

In order to obtain a clear and streamlined structure of the project, the tasks presented in the Terms of Reference and the award criteria in the restricted call for tender have been grouped into work packages.

Graphical presentation of the project's components



WP 0: Management & Coordination

Key Tasks	Key Partners	No of Days	Months
(1) Overall coordination (2) Interactions with other ESPON projects (3) Presentation of the output	LP, Partner	21	12
Deliverables:	(1) Effective running within the project (2) Effective dialogue with other ESPON projects, the CU and external institutions		
Timescale:	Months 1-12 (whole duration)		

This work package basically aims at an effective and efficient running of the project and to secure sound output and its dissemination. Based on these aims the activities in this work package can be summarised by the following key tasks.

Overall Coordination

The task of overall coordination refers to the fact, that different partners will be responsible for the satisfactory completion of the tasks of individual work packages. However, the project's LP will have to conduct a general review of each work package to ensure the overall scientific and technical quality of the work packages. These coordination activities also include coordination of:

- meetings within the project,
- networking with other ESPON projects and stakeholders in ESPON (CU),
- contacts to other related research outside ESPON.

All these contacts will be important and necessary elements for a successful running of the project and therefore need to be closely coordinated to guarantee effective and efficient use of the project's funds.

Interlinkages in ESPON

A strong cooperation with other ESPON projects and stakeholders in ESPON is considered to be an import element of this project (as already outlined in above section III-thematic coordination and networking). This appears to be important, among others, since the dissemination of information and the facilitation of a broad discussion going beyond the project team produces synergy effects.

All the activities undertaken by the proposed Transnational Project Group will strongly embrace results achieved by already finalised ESPON projects. In this context, among others, in particular the findings of ESPON projects 1.1.1, 1.1.2, 1.2.1, 1.2.2, 2.1.1 and 2.1.2 matter. Furthermore, the achievements of project 3.1 in the context of common tools, methodologies, indicators etc. are of high importance. However, networking is also important with regard to other ongoing ESPON projects in order to reach consistent project results within the ESPON programme. Apart of coordination activities with project 3.2, especially ESPON projects 3.3, 2.4.2, 3.4.1 and 3.4.2 are expected to reveal close relations with the research foreseen in ESPON project 1.2.3. Finally, close links and partnership will be maintained with the Coordination Unit (CU), too. In practice, this means the establishment and use of constant and

transparent communication channels, consultation on methods and approaches chosen, regular information of achieved progress and last but not least an open discussion and feedback on interim findings. The involvement of CU and the close cooperation with the mentioned ongoing ESPON projects will not only guarantee better fulfilment of policy related needs but also the relevance and feasibility of implementation of the proposed recommendations as well as more effective final dissemination of findings. Furthermore, this network under inclusion of the CU allows for an enhanced circular feedback with the Monitoring Committee.

As of the strong necessity to closely cooperate with a number of other ESPON projects, it will be necessary to coordinate this cooperation, in order to make efficiently use of it. This includes not only the participation in ESPON seminars but indirect and direct contacts with the stakeholders of the other relevant ESPON projects. As with regard to internal communication in ESPON project 1.2.3, also for external cooperation, an e-mail or web-based network will have to be established, which in the further development of the project might also be used for the dissemination of the project's results.

Output Presentation

With regard to the dissemination of the project's output, all participants will contribute to the interim reports, the executive summary of the main results of the research undertaken, the recommendations for policy developments and comprehensive presentations of interim results developed in the different work packages.

The main results of the project will be reported in the Final Report, though – in accordance with the ToR – preliminary findings will be published in the interim reports.

In addition, the role and function of the project during the half-yearly ESPON seminars and other meeting opportunities will be utilised in order to achieve a fruitful exchange with all research and policy communities in analysing and mapping developments and effects of the IS.

WP 1: Review of Scientific Literature

Key Tasks	Key Partners	No of Days	Months
(1) Review of results of finalised ESPON projects with regard to IS related findings	Partner 2, LP, all other Partners	38	3
(2) Review and exchange of interim results of other ongoing ESPON projects concerning issues closely related to the IS			
(3) Review of corresponding scientific literature outside ESPON			
Deliverables: (1) Summarising report with main findings of review of ESPON findings concerning issues related to the IS (2) Summarising report with main findings of review of IS related scientific literature on concepts and state of the art			
Timescale: Months 1-3			

Review of ESPON Results

Through a review of ESPON results, this work package will provide an analysis of the content and implementation of past developments, the present situation and expected future trends of the information society and its closely linked indicators. Here, especially a review of typologies developed by other ESPON projects will have to be undertaken to test them on their adequateness for relevance and utilisation in IS related research. To achieve this assessment, the corresponding activities will have to be linked with the respective indicator development activities in WP 2.

In this context, particular emphasis needs to be put to the finalised ESPON projects 1.1.1, 1.1.2, 1.2.1, 1.2.2, 2.1.1, 2.1.2. The typologies of these projects will allow to assess the findings with regard to the IS as related to issues such as their polycentric distribution, their distribution between regions characterised as being more rural or urban. Furthermore, the relation to transport issues should be used as starting point to highlight traffic trends. Finally, due to their immediate and obvious relevance for the IS, the utilisation of findings on ICT trends and supply as well as the allocation of R&D activities and their impacts will be of particular importance.

However, also initial findings which concern IS related indicators in still ongoing ESPON projects shall be reviewed. Here, in particular, individual indicators within the development of the Regional Classification of Europe (RCE) in ESPON project 2.4.2 should be worthwhile to investigate. With regard to expected future trends, especially a review of related scenarios developed in the coordination project 3.2 will have to be conducted, which should also lead to an enhanced scenario development in a circular process. Finally, a sound review and collaboration will also be ensured on the results of the cross-thematic project 3.3, dealing with the Lisbon and Gothenburg Strategies, as they are fundamental policy concepts under which territorial trends of the IS shall be assessed.

Review of Scientific Literature

To gain a sound overview of the state of the art with regard to IS related research, general scientific literature on this theme needs to be reviewed. This needs not only to be done for outlining the main territorial findings (supplementing to ESPON findings) but also to gain a broad understanding of methodology, concepts and theories applied for IS related research.

This has to be supplemented also by the corresponding policy related documents in order to put present IS developments and trends in the political context and discussion.

When reviewing scientific literature, particular care needs to be taken concerning the different spatial levels under consideration in ESPON. Such considerations will allow to properly structure the concepts on IS research and to find suitable territorial approaches. Particular attention needs to be paid to other studies covering large parts of or the whole European territory, while more region specific studies should mainly be regarded as valuable sources for later case study development and conduction (see WP 4).

While this review needs to concentrate on the latest available research to gather knowledge about the state of the art, it should also include a summarising overview on different approaches and definitions of the IS over time. This overview aims at a comprehensive understanding of IS concepts and definitions, which should support further concept development in WP 2.

WP 2: Development of Operational Concept and Methodology

Key Tasks	Key Partners	No of Days	Months
(1) Development of a common concept of the information society, taking account of socio-economic aspects	Partner 2, Partner 3, LP, all other	49	3
(2) Development of a methodology suitable for the identification of territorial effects of the IS	Partners		
(3) Development and identification of indicators to display territorial trends of the IS			
(4) Development and identification of indicators suitable for the measurement of territorial effects of the IS			
Deliverables:			
(1) Operational concept for the measurement of territorial aspects of the information society			
(2) Hypotheses on territorial aspects and effects of the IS			
(3) Assessment methodology: quantitative and qualitative approaches			
(4) Set of indicators for territorial trends and effects measurement with corresponding database structure			
Timescale: Months 2-4			

Concept for the Measurement of Territorial Aspects of the IS

On basis of the review undertaken in WP 1 operational ways for the development of a concept of the IS need to be developed. By building on the relatively broad database structure within ESPON, a concept shall be envisaged, which takes account of the variety of closely related elements important for the IS. In such a concept, technological issues – i.e. the role of information and communication technologies (ICTs) – represent only one part which, despite its importance, is to be complemented with other aspects. In particular, this regards general socio-economic developments as well as lately occurred and new forms of territorial organisation. Obviously, while the IS by utilisation of ICTs allows for a deconcentration of economic activities, depending on the kind of economic transaction, it could not overcome the need for spatial closeness.

This raises the question on which kinds of – information society related and other economic – activities can be deconcentrated and for which distance still matters. Furthermore, also the effect of additional concentration might be observed. Reasons for such processes may for instance lie in the geographical distribution of ICTs. As Sassen argues, all cable related ICT dispersal is largely oriented along already existing infrastructure, thereby contributing to existing concentration processes. This regards in particular ICT equipment with large capacities. While there is competition about such capacities in metropolitan regions (MEGAs), especially many peripheral regions do not have access to any comparative capacities and even equipment. In addition, as other analyses (see e.g. FR ESPON 2.2.2) point out, even if the latest ICT is installed with large capacities in peripheral regions, they might not be used appropriately due to a lack of other resources or demand for these technologies, which again is due to different economic structures in the different types of European regions.

Consequently, a closer view on the territorial distribution of economic activities needs to be undertaken. This is related not only to the distribution of employment in primary,

secondary and tertiary sector, but also needs to include the intensity of economic activity. It might be assumed, that in particular societies which are moving from an industrial to a more information based society experience unemployment and mismatching labour markets, because qualification patterns are not adequate anymore. Furthermore, sectoral distribution of economic activities should further differentiate, taking for instance special account of R&D related or other knowledge intensive activities. Yet, this requires comparable data for economic sub-sectors on regional NUTS 2 respectively 3 level across European countries. Considering the difficulties with sector related employment, here NUTS 2 level data already appear to be highly demanding.

Independent of the distribution of IS related activities in different sectors and ICT availability, this kind of data still do not answer the question of how to measure achievements towards the objective of an IS. These data can only identify in which regions ICT supply is better than in others and in which regions more activities are IS related than in others. Yet, it does not give a clue about an 'optimal' distribution or share of such activities, according to which a region could be classified as being an IS. Therefore, existing concepts will have to be further elaborated in order to try to find appropriate reference systems for the identification of IS. To achieve this objective, also the consideration and analysis of other types of indicator sets – not commonly used in ESPON so far – might be helpful. This relates in particular to different kinds of flow data, as the different kinds of flows not only indicate the importance of one or another flow but can also provide hints for new measures of the IS and therefore contributing to a reference system.

Such flows need to differentiate especially between goods flows, flows of services, data and human capital. With the invention of goods distribution centres goods related logistics have spatially changed considerably. Service related flow data need to reflect in particular business passenger development in different transport modes, in particular aircraft and railway traffic. Information on data flows are of imminent interest as these can contribute to an understanding of the utilisation of the internet and related technologies. It can help to differentiate between IS related activities for which distance still matters respectively not matters anymore. Finally, human capital flows are reflected in mobility and migration data – partially available and analysed in ESPON – and need to be further differentiated according to educational attainment and employment of the mobile labour force.

While data on goods flows can be expected not to be too difficult to gather, the other flow data categories appear to be much more difficult to assemble on regional NUTS 2 or 3 level, at least on basis of a European wide quantitative approach. However, for many individual questions research has been undertaken covering one or another part of the European territory at different scales. Examples for such analyses are airport specific passenger reviews or research on international labour mobility. These data problems ask for a dual approach which combines quantitative methods with qualitative assessments in the frame of case studies, as is described below.

Based on the preliminary hypotheses the concept development – under consideration of the different kinds of data to be recognised – shall further enhance hypotheses development. A concept as comprehensive as outlined above with the different access points should allow to develop territorially relevant hypotheses along different lines, i.e. not only in relation to 'achievements' of IS in different types of regions but also with regard to the relation between different kinds of indicators in dependence possibly of regional specifics.

Assessment Methodology

As pointed out above, the assessment of the IS – apart of the apparent difficulties without a precise reference system, which should be approached in the frame of above operational concept development – will strongly rely on a combination of methodological approaches, i.e. bringing together quantitative and qualitative methods.

Quantitative methods appear to be practical as far as data are concerned which can be collected for the whole ESPON territory (EU 25 + 2 + 2) on regional level. As already stressed, this is not likely to be realistic for all kinds of envisaged flow data. Therefore, quantitative methods including ESPON wide mapping, most likely, will be related to a limited number of IS related indicators taking account of the availability of data. For these indicators also correlation analyses are envisaged to allow for a better understanding of the relation between traditional socio-economic indicators and specific IS related measures – this is further stressed in WP 4c.

However qualitative analyses have many disadvantages, it is worthy to stress the usefulness of this kind of approach in this particular project. As the key results of ESPON 1.2.2 shows national specificities are crucial in understanding the territoriality of telecoms and factors explaining regional differences are complex and vary between technologies, thus case studies allows to explain the spatial pattern beyond the national effect. Another reason for conducting case studies is complement missing quantitative data through qualitative approaches.

Qualitative approaches have to take account of several dimensions. First the spatial dimension of covered regions (NUTS 2), second the selection of regions and third coverage of questions to be answered through a kind of case study approach. Starting with the last dimension, it is suggested to take into consideration aspects quantitatively covered to search for the findings' approval respective rejection and to supplement this with topics not possible to cover quantitatively. Therefore, such case studies should contribute to a region specific understanding and appearance of the IS, by asking for the availability of potentials for IS development and the appearance of IS related activities. For instance, with regard to rural or geographically handicapped regions this means, to ask for possible means to use deconcentration developments for these regions' participation in the IS. Thus, it needs to be asked, what kind of IS activities can be found in the region (state of the art) and then, why are these activities in this region (causality) – for instance, is there specific human capital, how standardised are these activities, are there specific potentials in the region? To comply to such research questions, sound desk research covering e.g. relevant region specific studies needs to be done before selected additional interviews can be conducted. To make these case studies comparable allowing for a broader understanding than only related to each study region a case study template shall be developed in the frame of this WP. Furthermore, asking for the causalities can contribute to future support of territorial cohesion in the context of IS development, not by dispersing IS activities 'equally' across regions but by stressing region specific advantages in the IS.

Coming to the selection of regions and spatial coverage, it should be noted, that region selection is crucial to comply to the projects' needs, especially as of quantitative data limitations. Here different criteria need to be considered. Above all, different types of regions, which apparently participate to different extents and in different ways in IS developments, as there are FUAs (or even MEGAs), rural regions and geographically handicapped regions, need to be included. In addition, different specialisations of the IS in different European regions could matter as well as different concentration respectively deconcentration trends. To take account of the different occurrences of spatial trends, types of regions etc. some six to eight case studies are envisaged so far.

Indicator Development

Such concept and methodological development allows principally for a two sided differentiation of indicator development. First, static indicators describing employment structures, ICT availability, traffic modes etc. can be differentiated from above introduced indicators expressing different kinds of flows. And second, either kind of indicators can be more appropriate to indicate IS related spatial trends or effects of the IS, e.g. in terms of

relocation of economic activities. Apart of the additional differentiation between quantitative and qualitative indicators and their respective availability this proposes a 2x2 matrix as outlined below.

Indicators matrix

Indicators	Static	Flow
on territorial trends of the IS	S&T (science and technology): R&D expenditures (GERD per capita, in % of GDP, structure), number of patents, publications, citations, invention indicator (number of patents per 10 000 inhabitants); share of innovative firms, number of scientific degrees awarded, ,	Export and import of hi-tech goods (share, in % of GDP), FDI in high-tech sector, transactions relating to trade in techniques (transfer of licenses and patents in enterprises), international research cooperation
	ICT: expenditures on ICT, number of computers, computers users, hosts, cellular phone subscribers, internet users, use of information technologies in enterprises	e-government (regional level), e-learning, e-commerce
	HC (human capital): employment in R&D, average years of education, pre-school education, number of students, educational structure of population, share of computer technology specialists and engineers, long-life education	international students exchanges (e.g. Socrates-Erasmus, Leonardo), the share of the employed foreigners,
describing territorial effects of the IS	regional GDP per capita, consumption per capita, economy structure (the share of “information sector”), unemployment rate and structure, number of new enterprises (branch structure), labour productivity, regional clusters, local productive systems, urban areas,	aircraft and railway passenger traffic; accessibility (roads, railways, airports, harbours) mobility, migrations (population with tertiary education for permanent residence), efficiency of use EU structural and pre-accession finds

The table provided should be regarded as first overview of possible indicators and therefore their application in quantitative respectively qualitative terms will have to be examined at the beginning of the project. Then it will also be necessary to make a suitable selection among indicators (especially for quantitative research), however, this can also imply the development of additional indicators (possibly also developing combined indicators).

To come to a sound indicator selection, which takes account of the otherwise excessive amount of data, an inductive approach shall be utilised, which either through hypothesis development or by means of correlation analysis allows to omit unnecessary indicators and thus reduce total number of indicators to a convenient number. Furthermore, it has to be differentiated between data which are readily available through the existing ESPON database and which have to be gathered in the context of ESPON project 1.2.3. or in collaboration with other ongoing ESPON projects (see also WP 3).

WP 3: Data Collection

Key Tasks	Key Partners	No of Days	Months
(1) Compiling a list of data to be collected respectively adjusted	Partner 1, Partner 3,	70	7
(2) Collection of quantitative data	all other		
(3) Collection of case study related information	partners		
(4) Developing provisional IS related trends typology			
Deliverables:	(1) List of data to be collected from different sources and to be adjusted from the ESPON database		
	(2) Quantitative data suitable for developed indicators		
	(3) Compilation of information and data relevant for case studies		
	(4) Provisional typology on IS		
Timescale:	Months 2-8		

As of the importance to collect additional data and information not readily available within ESPON so far, considerable resources will have to be attributed to data collection activities. This the more, as of the above described data limitations, especially with regard to flow data and an envisaged coverage of quantitative data of the whole ESPON territory, including the EU 25 plus the Candidate Countries of Bulgaria and Romania as well as the non-EU countries Norway and Switzerland.

Quantitative Data Sources

Based on above listed indicators (see table in WP 2) and their enrichment data availability in ESPON and from other European data sources (especially EUROSTAT but also in collaboration with the respective DG) need to be identified first. In some cases it might be suitable to simply adjust existing ESPON data to the specific needs of the project, while in other cases a detailed review of EUROSTAT databases is necessary. Nevertheless, in particular with regard to different kinds of above listed flow indicators, they can be expected to be available from national statistical offices (some possibly only in some countries) rather than at comparable European level. In order to ensure comparability, however, first the European level data review shall be conducted before turning to additional national data sources. Furthermore, close collaboration with the responsible DG is envisaged to contribute to improvements of quantitative and comparable data availability for the whole territory under consideration.

Case Study Related Information

In order to ensure high quality case study research, data collection which supplements the above described quantitative data for these case studies shall be realised simultaneously. To some extent this could provide additional insights into one or another quantitative indicator available only for individual cases. In addition, such an interlinked process could provide stimulus for enhanced indicator development in the search of appropriate data. Finally, apart of the methodological issues outlined in WP 2 for case study selection, such interlinked data collection process also allows for advanced case study selection.

Provisional Typology of IS

Based on the gathered data covering the whole ESPON territory a provisional typology of the IS – probably on NUTS 2 level – shall be developed. This typology shall allow to gain a first overview of the spatial distribution of possibly different aspects of the IS and could therefore provide an important extension to the respective thematic maps of the RCE. Furthermore, such a tentative typology can be used as starting point for the following analysis in WP 4 by displaying the current situation of IS related territorial disparities.

WP 4: Analysis and Assessment of Spatially Relevant Aspects of the IS

Key Tasks	Key Partners	No of Days	Months
(1) Assessing territorial effects of the IS with respect to its contribution to territorial cohesion	LP, Partner 1 , all other partners	137	6
(2) Reviewing the relation of the IS to other aspects of territorial developments			
(3) Assessing relations between IS related and other more traditional indicators			
(4) Analysing of different types of regions with respect to their contribution to territorial objectives in the IS and in relation to other ESPON typologies and on different spatial levels			
Deliverables:			
	(1) Assessment of IS related effects on territorial cohesion (maps, case studies)		
	(2) Assessment of IS in relation to other territorial developments		
	(3) Correlation analysis between IS specific and other spatially relevant indicators		
	(4) Assessment of IS contribution to territorial objectives in relation to other typologies and different spatial levels		
Timescale: Months 5-10			

While all sub-work packages are related to the analysis and assessment of spatially relevant aspects of the IS, this division has been proposed, in order to stress the different levels of analysis and to comply to the different aspects addressed in the ToR. To some extent these sub-WPs, furthermore, even ask for different methodological approaches as will have to be developed in WP 2, especially when causalities are to be analysed. Yet, at present, it seems however reasonable, to refer in the case studies to all different aspects to be covered within this WP, thus making the case studies rather comprehensive but simultaneously allowing for a sound supplement to the respective quantitative approaches for each of the assessment elements.

IS Effects on Territorial Cohesion (4a)

General spatial developments of the IS need to be related first to other spatial trends in order to identify their interrelation and thus the information society's potential to strengthen territorial cohesion. If such a potential can be observed – at least with respect to some types of regions – support to IS development could be instrumentalised to contribute to a more balanced and sustainable development of the European space. In order to achieve such an identification of territorial trends a twofold analysis is proposed.

Firstly, on quantitative level, IS specific indicators and trends need to be compared to those of other spatial indicators, in particular those generally acknowledge as measures for cohesion (e.g. GDP per capita, employment rates). Such a comparison has to be achieved on a rather specific level in order to identify differences between different types of regions, especially taking account of FUAs, rural and geographically handicapped regions. Yet, even acknowledging different extents of IS related activities and possibly related general disparities, this does not imply that IS activities could easily be 'implemented' in less

advantageous regions achieving the same economic effect as for instance in important FUAs or MEGAs. Therefore, causalities need to be examined as well, which not only ask for the relation between different spatial indicators reflecting the IS and other developments, but also with reference to realistic possibilities to make considerable achievements with regard to the IS in all kinds of regions. This is where case studies become of particular importance.

Thus, the second analytical part assessing spatial effects of the IS, needs to be conducted in the frame of selected case study regions. Apart from a more detailed quantitative and qualitative review of IS and other spatial trends, for instance interviews with important stakeholders shall enable the identification of possibilities to support the development of the IS in different kinds of regions – if a relation between IS activities and territorial cohesion achievements can be assumed.

Spatial Developments of the IS in Relation to other Territorial Developments (4b)

Apart of overall cohesion related indicators, further relations of the IS to selected spatial developments need to be investigated as well. This refers in particular to the relocation of economic activities in different sectors, of households and the development of traffic demand. In this context it has to be asked, whether there are specific economic activities which are relocated and if so, which activities are concerned in which way and why they are affected. Such relocations as well as the changing traffic demand might be influenced in a positive way (in reference to cohesion objectives) but they could also show rebound effects, which are either unintended or unforeseen or even implying unwanted effects contradicting the objective of a sustainable information society.

Such relations are also envisaged to be examined in the context of both, quantitative – statistical – review and qualitative case study assessments. However, the focus is likely to be different, as the quantitative analysis needs to be particularly strongly related to existing ESPON results and the achievements of other ongoing ESPON projects. Furthermore, this task can be utilised as an important preparatory step towards achieving typologies which display the IS and other relevant ESPON typologies as described below. The inclusion of these issues also implies additional needs for case study analysis, since specific thematic questions, such as the relocation of economic activities, traffic demand, changing mobility patterns etc. need to be covered appropriately. Apart of sound desk research, this will most likely also ask for additional information gathered from respective stakeholders.

IS Spatial Developments at different Spatial Levels (4a & 4b)

Above all to find appropriate opportunities for different types of regions, especially for rurally dominated and geographically handicapped regions, to participate in the information society it is important not only to conduct the analysis at European level but also to assess the information society with regard to spatial objectives and its influences on related themes at lower spatial levels. For instance, not only traffic demand between MEGAs is likely to be influenced by IS related air traffic but also local and regional mobility can be influenced, e.g. through a relocation of economic activities. Therefore, both analysis foci need to reflect not only European level developments but meso and micro levels as well. Especially the latter appears to be best included in the case study approach, where regional specifics and not widely available data can be better taken care of rather than on the more general quantitative level.

Correlation between Indicators (4c)

Based on the above developed methodology and indicators (see WP 2) correlations between IS specific indicators respectively indicators describing different aspects of the information society and other traditional indicators demonstrating territorial trends of regional

competitiveness and different relevant themes shall be identified. In this frame it needs to be asked, in which way these indicators are interlinked and whether traditional indicators are still suitable to depict regional competitiveness etc. appropriately. For instance, such an analysis should cover in how far traditional productivity measures are adequate to portray the competitiveness of the IS related sectors, or is it necessary to more strongly differentiate between different productivity measures or even to introduce new measures not relating GDP to employment but to e.g. flow values?

Apart of such questions related to regional competitiveness and general cohesion objectives, also correlations between IS developments and other closely related thematic fields need to be reflected. This, in particular concerns different aspects of human capital (educational attainment, age structure, mobility), which is profound for an analysis of the information society.

While, in principal, this analysis is to be based on quantitative statistical methods, supplementing information might be gathered through case study research, e.g. through focused case study questions, which explicitly take account of the themes under consideration. Nevertheless, also on quantitative level, it will have to be tested in how far correlations between these indicators might differ between different types of regions. For instance, indicators might not to be significantly correlated at first sight, when considering all regions, while correlations become apparent for specific types of regions, if the indicators' relations vary with the type of region.

IS Spatial Developments and other ESPON Typologies (4)

Based on the indicators selected and applied in the previous sub work package typologies will be developed which reflect the development and spatial impacts of the IS. Different aspects of the IS such as the underlying physical infrastructure (ICT), functional characteristics of IS related economic activities (effects on sector structure, regional human capital development, side effects on traffic demands) as well as the institutional setting shaping the IS will have to be regarded. Thus, the developed typologies will likewise point towards a synthesis of the projects quantitative and qualitative findings with regard to spatial developments of the IS and its contribution to the achievement of ESDP objectives.

In order to validate the projects results and provide integrated analysis other typologies developed in ESPON projects, in particular ESPON 1.2.2 , 1.1.1, 1.1.2, 1.2.1, 2.1.1, 2.1.2 as well as those used in the fields of European spatial policies will be taken into consideration for the development of ESPON 1.2.3 typologies.

WP 5: Recommendations and Dissemination of the Project results

Key Tasks	Key Partners	No of Days	Months
(1) Synthesis of good practices of support for the IS within strategies for territorial development on all three levels	LP, Partner 1, Partner 2, all other partners	48	4
(2) Development of policy recommendations for interventions in particular groups of territories			
(3) Consultation on the projects results and policy recommendations with selected stakeholders			
Deliverables:			
(1) Policy recommendations for enhancing impacts of the IS on spatial cohesion			
(2) Recommendations for supporting integrated spatial development on all spatial levels			
(3) Dissemination of interim results and draft policy recommendations to selected stakeholders			
Timescale: Months 8-11			

This work package makes recommendations for future institutional settings and instruments which support integrated spatial developments of the IS on all three spatial levels and thus contribute to the introduction and use of ICT in order to overcome geographical disadvantages related to remoteness and low density of human activity.

The key tasks of this work package include:

- Synthesis of good practices of support for the IS within strategies for territorial development on all three levels
- Development of policy recommendations for interventions in particular groups of territories
- Consultation on the projects results and policy recommendations with selected stakeholders

Policy recommendations will be based on all preceding findings taking into account quantitative analysis as well as case study results. The latter will provide the basis for identification of best practices of interventions which support the development of the IS. This concerns institutional settings as well as instruments for the integration of IS related activities as well as ICT development in territorial development strategies. In order to derive integrated policy recommendations for different types of regions results of the quantitative analysis will be taken into account as well. Special regard will have to be paid to different territorial impacts of the IS in FUAs, rural regions, geographical handicapped regions as well as other types of regions identified in WP 4. Targeted proposals for policy interventions will be developed according to spatial development objectives on different levels – from regional to European level – as well as to different time horizons short, medium and long term perspective. The reference to the different spatial levels will be crucial in as far as not all types of regions can be expected to participate in a similar way in the achievements of the IS. Instead, recommendations will have to take account of the different possibilities these regions have. As research¹ indicates, specific activities of the IS strongly tend to concentrate in metropolitan areas. Therefore, policy recommendations need to review what kind of IS related activities

¹ See numerous references in Part 2 of the tender.

could be supported in other regions outside the metropolitan areas and especially in rural and geographically handicapped regions. While activities appropriate for these regions might not have the originally intended impact on European level cohesion, however, they might contribute to the introduction of the IS at local and regional level, thereby contributing to micro- and meso-level cohesion. Consequently, it is such questions and recommendations which will have to be developed in ESPON 1.2.3.

Furthermore, with regard to the time horizon, quality of IS related activities can be expected to change over time through the evolution within the respective sectors, similarly to the evolution of the industrial sectors observed in the past. Therefore, also spatial shifts of the respective activities can be expected as some kinds of regions tend to move on towards the latest and most innovative aspects of the IS while others could be described as 'follow-up' regions which adapt IS activities from the pioneering regions. Hence, policy recommendations need to take account of these anticipated changes by differentiating between short-, medium- and long-run recommendations.

While differentiation between these different dimensions of types of regions, spatial levels and time horizon is very important for drawing recommendations which also identify possible conflicts at different places and times, policy recommendations are also anticipated to come up with ideas how to identify and characterise examples of good practise, e.g. by developing appropriate indicator settings. Such proposals could lead into the development of recommendations for an assessment of IS realisation.

In order to ensure high quality of policy recommendations as well as significant relevance with regard to realization of proposals draft recommendations will be discussed with selected stakeholders within and outside the ESPON community. Continuous and active discussions with the contractor (e.g. in the frame of ESPON seminars and meetings) as well as other ESPON TPGs will be of particular importance. Thus, ESPON project 1.2.3 will at the same time provide input for achievements of the horizontal projects under ESPON priority 3.

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