WP1: State of the Art Review, Synthesis and Case Studies

– D1.5: WP1 Synthesis Report –

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Abstract:

The document presents the synthesis of WP1 of the TRANSFORM project, which consisted of (a) the desk research based state(s) of the art(s) analysis of transformative, information society related change and regional innovation culture; and (b) twelve case studies of selected NUTS 2 regions across Europe, based on in-depth interviews with regional stakeholders and independent experts. This revised version includes a number of changes made to address comments from representatives of the target audiences, mainly experts involved in regional information society policy making.

Keyword List:

Information society, knowledge economy, transformative change, case studies, comparative method, regional development, regional disparities, innovation, social capital, networks.

*Type: PU-public, RE-restricted, CO-limited to Commission Services,

**Nature: R-Report, P-Prototype, D-Demonstrator, O-Other
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Executive Summary

The overall aims of the TRANSFORM project are to understand why some regions seem better than others at using ICT to ‘transform’ their economic and social prospects and to understand what kind of indicators can help policy makers, at regional and European levels, to encourage and support ICT-based transformational change in European regions. We focus predominantly on the former aim in this report.

The key hypotheses behind our approach to addressing these aims are that variations in regional development outcomes can at least partly be explained by variations in transformative use of ICTs by some regional actors and that differences in such transformational use are at least partially rooted in regional innovation ‘culture’ or ‘soft infrastructure’. What is of significance for TRANSFORM, therefore, is the uses which social actors make of ICT and how those uses can promote (or hinder) the social and economic development of regions.

The term transformation is used in a variety of settings and for a range of purposes in the literature, and in practice. Drawing on a range of literatures, however, we suggest that a number of common elements emerge. First, transformation is contrasted with an alternative, usually prior, position that is argued to be too narrow or too partial. Second, the open-ended nature of the transformation process stands in contrast to more programmed approaches. Third, the term tends to be used to encompass explicitly social and cultural change, not merely technical and organisational change. In terms of the literature specifically addressing ICTs and change, social and cultural explanations of change are also moving to the centre ground (though, so far, with limited impact on policymakers).

Drawing on the literature we have developed a multi-dimensional ‘ideal type’ definition of the transformational use of ICT. Transformational use of ICT is:

- multi-level: the effective use of ICTs implies a coordinated set of changes, not just in technologies, but also in organisational forms, business processes, working practices and ultimately cultural values and attitudes;
- multi-agency: transformative use of ICT is dependent on the collective adoption of technologies by a number of agents – collaborative and co-operative use of ICT;
- multi-domain: in its ideal form, transformational use of ICTs is a usage that spans traditional domains, forging lateral connections across the traditional ‘silos’ between industries and between different branches of the public services.

We can, of course, think about minimal and maximal notions of transformation in terms of these three criteria. Put simply, however, we conceive transformative use of ICTs as a collective action problem, requiring co-ordinated changes in behaviour by a range of actors who are not under any clear central control.

The literature on transformation tends to be under-territorialised and this is something we attempt to address in this report. There is no reason of course that the territorialisation of transformation discourses should focus on the regional dimension. Nor is the region uniquely placed as a laboratory in which to explore the transformational use of ICT. Indeed much of the literature on ICTs and the Information Society explicitly emphasises the global and the supranational rather than the local or regional. Nevertheless, and while not denying the importance of these spatial levels, we argue that the region represents an important scale at which to explore the transformational use of ICTs. This is particularly the case in respect to ‘services of general interest’ and in other areas of public sector intervention (including, for example, intervention to galvanise ‘under-performing parts of the private sector) where transformation requires the joining up of actual service planning, provision and evaluation.

The relationship between regions and the transformative use of ICTs is, of course, not simple and requires an understanding of complex and effectively unbounded and only partially structured social ensembles (regions), and their relationship with wider territorial spaces (notably the nation state) as they grapple with the possibilities and limits of a powerful, highly flexible and rapidly changing set of technologies. We can identify at four kinds of transformational use of ICTs at the regional level:

- Transformation for the region, transformation processes undertaken by public and private actors within and beyond the region have a positive outcome for the region in terms of the region’s official goals, but the region remains a non-existent or weak actor in the process, reaping the benefits of change in a passive manner. The region is passively buoyed up by the wave of change.
Transformation in the region, is a less beneficial outcome where the outcomes of transformational change processes are either irrelevant to or negative in relation to regional goals and the region is a weak or non-existent actor in such initiatives. In this version, the region is simply a space, within which, or through which, elements of transformation take place. To keep the wave metaphor, in this quadrant the region is tossed about and may be drowned by the wave of change.

Transformation in spite of the region, the region is constituted as a strong actor, but as one that is struggling with the outcomes of transformational change which are acting against the region. In out metaphorical terms, we might describe this as swimming against the tide or battling against the waves.

Transformation by the region, the region is constituted as a strong actor in the transformation process and then outcomes of transformation are relatively well aligned with regional goals. This is what we might think of as successfully surfing the wave of change.

The latter kind of transformational use of ICT is of primary interest to TRANSFORM, though it is acknowledged that the various kinds interact and can build on each other.

The central methodological issue for our research was the best way to establish the causal conditions which generate transformative use of ICT at the regional level. In order to do so we developed an iterative and comparative design which worked through the development and ‘testing’ of theoretical statements against data gathered in 12 regional case studies. These regions are not, of course, meant to be in any way statistically representative of European regions, but the case studies do cover a range of regional circumstances. The twelve regions are set out below:

### Table 1: Selected Case Study Regions

<table>
<thead>
<tr>
<th>Country</th>
<th>Place in European space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>Schleswig-Holstein Old North</td>
</tr>
<tr>
<td></td>
<td>Thüringen Region incorporated into Old North</td>
</tr>
<tr>
<td>Italy</td>
<td>Emilia-Romagna Old South</td>
</tr>
<tr>
<td>Poland</td>
<td>Pomorskie New Member State</td>
</tr>
<tr>
<td></td>
<td>Malopolskie New Member State</td>
</tr>
<tr>
<td>Slovakia</td>
<td>Bratislavsky Kraj New Member State, capital region</td>
</tr>
<tr>
<td></td>
<td>Východné Slovensko New Member State</td>
</tr>
<tr>
<td>Spain</td>
<td>Navarra Old South</td>
</tr>
<tr>
<td></td>
<td>Extremadura Old South</td>
</tr>
<tr>
<td>Sweden</td>
<td>Mellersta Norrland Old North</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>South Yorkshire Old North</td>
</tr>
<tr>
<td></td>
<td>East Anglia Old North</td>
</tr>
</tbody>
</table>

Source: The authors

In our State(s) of the Art(s) (D1.1) we tentatively identified 5 ‘clues’ which might help us explain why some regions are better than others at bringing about transformational use of ICT. These were 1) networks and networking, 2) leadership and followership, 3) collective learning, 4) narratives and visions, and 5) openness and closure (the findings from the last clue have been incorporated into the other four clues in this report, thus reducing the clues to four). We also left space in our approach for additional factors to be suggested so as not to entirely pre-judge developmental causes. These clues are, of course, inter-linked, but were separated out for analytical purposes. The report explores the findings individually, but also attempts to make links between them, as causes are likely to be both cumulative and combinatorial.

There are, of course, as with any methodological approaches certain limitations. Transformational use of ICT usually represents a moment in a much longer story of struggle to mobilise both social actors and technologies. We would argue that regional development through transformative use of ICT is most fruitfully thought of as a kind of open-ended and always provisional and experimental innovation ‘journey’ rather than the procession through a predetermined set of stages towards a common destination. While transformational change through ICT can often seem almost instantaneous – the recent take-off of social networking technologies is one good example – this is usually revealed, on
closer inspection, to be far from the case. This suggests, of course, that, ideally, one would adopt an
in depth longitudinal study following this journey. Unfortunately, time and resource constraints meant
that this was not an option when exploring 12 regions. We overcame problem to some degree, by
asking expert respondents to reflect on trajectories over time, as well addressing the current situation,
but, of course, we cannot provide more than a snap-shot, albeit one which attempts to be sensitive to
cultural, economic and technological history.

Moving to the findings from our empirical studies, we sought to explore transformational use of ICT
‘through’ regions in a number of different regional settings. Unsurprisingly, there were significant
differences across the regions in terms of the ‘innovation journey’ around ICTs. Each started the
journey at a different time, and had different technological, institutional and legal competencies. The
clearest differences in these resources were between the ‘old member state bloc’ and the ‘new
member state bloc’, though there is also variation between states in each ‘bloc’ and, indeed, within
states. This suggests that although ‘inheritance’ is important there is room for agency. So, for
example, some NMS regions were clearly addressing the IS agenda in relatively sophisticated and
enthusiastic ways, some regions in the older member states appeared to doing little, at least in a
coordinated way.

Drawing together our five clues, the following general points emerge. Both networks and institutional
and individual leadership were seen as important by the majority of respondents. The public sector
took the lead on ICT policy in most of our regions. In some cases, this was because it was felt that
there was no alternative source of leadership. Where the public sector did not take the lead, beyond
their formal responsibilities for preparing regional plans, we could find no other source of leadership,
outside particular isolated domains. Similarly, the public sector dominated ‘overarching networks’
(those networks which bring together actors from a number of domains) and at least animated or
facilitated most of the other networks which we came across, the main exception being project
networks which drew their funding from outside the region.

Political leadership by key individuals was seen as crucial to ICT developments by most respondents
and its absence was lamented in regions where it was not seen as present. The potential to exert
political leadership, of course, varies from region to region. In some regions effective leadership may
depend on formal political positions (for instance, an elected regional president); in others there is no
regional level political structure to provide a leadership voice. In these places, the case for collective
action was more pronounced.

Networks were also seen as important. Of course, this to some degree reflects a general tendency
towards regional ‘governance’ as opposed to ‘government’. Networks may be more important in the
ICT/IS policy area than in other policy areas. In many policy areas there is a clear institutional,
departmental or professional home from which to exert influence. This is not necessarily the case in
respect of ICT or the wider information society agenda. It is true that there is an increasing body of IT
professionals many of whom have a base in IT departments, but what we are interested in here is the
development of an ICT and social and economic development community. Such a body of people is
not necessarily recognised and often has to carve out space in which to operate. Here, networking is
very important in bringing together a ‘critical mass’ of individuals.

There was a general view amongst our respondents that inclusive networks, which brought together a
range of actors and reached out to end users, would be beneficial in creating an environment in which
transformational use of ICT could occur. It must be said, however, that we found no examples of such
an inclusive network approach in place. Emilia Romagna probably came closest, but even here there
was concern about the extent to which end users were integrated. The main absentee mentioned by
our respondents was the SME community. This absence was noted in nearly all regions, including
those which are generally acknowledged to have history of strong business networks. Even where
inclusive networks do exist in the formal sense, there are of course power asymmetries, based on
differentiated resources and so it is difficult to give equal weight to all.

On some interpretations, the concepts of networks and of leadership would seem to be at odds, the
former being used to suggest non-hierarchical complex systems, the latter to infer a degree of
hierarchy. In reality, of course, physical networks have key nodal points and may need to be built in
hierarchies (or forms of precedence) in order to run smoothly. Similarly, in social networks, not all
points in the network are necessarily equal, in terms of resources and capacities, though each point is
important for the network’s overall effect. Often, leadership is required in networks, for example: to
form a non-organic network; to give direction and impetus to networks; to help give structure to
networks; to make links to other networks. In the more formal networks, institutional leadership or
leadership (titular or otherwise) from an individual who has seniority in a recognised institution can give voice to the network in the general policy community, taking the network’s ideas to regional or extra-regional resource networks.

In less formal networks, leadership is often, of course, collective and the issues are sorted out through discussion. But an animator may be required from time to time to keep the network going. It is also likely that if these networks are to be effective they will need to link into both resource networks and expertise networks.

Networks also form important sites for learning and for information and ideas exchange. As such, they can provide a source of expertise upon which leaders can draw when creating and pushing forward the ICT agenda. Overarching networks and cross-domain networks also provide learning opportunities for those engaged in project and initiative development and can provide opportunities do develop joint projects. Projects and initiatives, themselves form a further locus around which learning can occur. Indeed, ‘learning by doing’ was seen as very important by the majority of respondents, the general view was that a number of factors stood in the way of the learning process; these include the short term nature of projects, the narrow ‘tick box’ way in which projects are evaluated, the ‘fear or failure’ and the fact that funders and policymakers do not want to hear ‘bad news’.

Although cross domain networks were uncommon, it was generally recognised that bringing different actors together – say the public sector, universities and the private sector – had the potential to lead to more profound learning. For example, university research whether technical or socio-economic, can be used to help ‘explain the region’ or to draw in experiences from elsewhere. Assuming that this can be tailored to the region rather than ‘cut and pasted’, there are said to be clear benefits. We found examples of both formal and informal relationships between these sets of institutions (and between individuals working across institutions) which were beneficial. This axis does not, however, always work as well as it could. One problem is that some academics feel that the region is not interested in their work and that they also misunderstand the purpose and values of the academic world. From the opposite perspective, some regions find it difficult to engage their universities which are funded from outside the region and whose focus is the global rather than the local.

Including end users into networks through ‘co-design’, as opposed to merely ‘exit questionnaires’ handed out at the end of projects, was also regarded as key to lesson learning, though we found few examples of this process.

Turning to our narrative and vision clue, there were significant differences across regions and within regions as to how important this is in general and as to whether there is a need for a single narrative, and indeed, what that narrative should be. The IS and ICT agendas clearly have a future oriented narrative, characterised by change and discontinuities from the past. ‘Second worlds’, cyber-spaces, virtual communities and electronic cottages are envisaged. In the policy sphere, it is interpreted as better futures with ‘more and better jobs’, more efficient markets and better (as well as more and cheaper) public services.

In some regions, a clear story was felt necessary in order to overcome ‘historical pessimism’ and to provide narrative to this still relatively new policy area. It was seen by some as an opportunity to ‘leapfrog’ other regions or to overcome the disadvantages of distance and to revalorise local resources. Creating a credible vision and narrative may also help to overcome the weak statistical and empirical bases which make it difficult to demonstrate the effectiveness of ICT policy. It was also generally felt, however, that narrative has to be flexible and must be combined with or bend to technological developments and to contingencies which arise and might need to be grasped opportunistically.

In some regions, leadership is important in creating or giving voice to narrative. It was noted, however, that it is important that an individual should be able to communicate that narrative to institutions, as well as to the general community, otherwise the narrative disappears with the individual. Networks were also important in creating and sustaining narratives as to the transformational power of technology. Individuals within networks, particularly semi-formal and informal networks, seemed to have a shared narrative.

On the other hand, in some regions, such visions, though not unquestioned, seemed to have gained hegemony. In other regions, however, there appeared to be a strong degree of ‘vision fatigue’. The ICT vision was also perceived to be unfulfilled in many regions, with people still pointing to the ‘dot com’ bust, past infrastructure failures, digital divides, including spatial divides, and the negative impacts of ICT facilitated globalisation.
A key question for policymakers, in all regions, and particularly those suffering from vision fatigue, is how to balance the promises of the IS agenda against past promises and against present realities. There was no ‘settled view’ as to the need for a single regional statement or document setting out a regional IS vision. Where the ICT agenda was relatively mature, the mainstreaming of policy and the insertion of ICT into policy areas, or appropriate domains, meant that there was no need for an overarching policy or a single IS policy agenda. Other respondents suggested that a directional narrative was important to bring a wider population on board. It was also felt by some that the need for an articulated narrative may vary along the journey towards an IS. This does not suggest a linear process, but that there may be moments when the narrative has to be restated or restructured. One commonly held belief was that it was important that narrative should not get too far out of touch with reality, ‘keeping the vision real’, and a key element in reconciling narrative and reality was through concrete ‘demonstration’ by means of projects and initiatives that deliver.

One point which emerged is a need for a balance between institutional capacity, networks and other forms of collective action and the role of the individual operating within, across, and in the interstices between, these collectivities. Those individuals, whether leaders, individuals involved in projects, ‘networkers’ or ‘network spanners’, play an important role in the development process. Such individual have some affinity with Castells’ and Himanen’s ‘social hackers’, but tend to have some institutional affiliation. These individuals tend to be ‘enthusiasts’ and ‘believers’. They utilise their own resources, but may also require space in which to operate and be able to draw down ‘redundancy’ in the overall eco-system. These individuals (and their networks) may be more important in ICT/IS agendas than in other policy areas as they do not always have a recognised institutional, professional or departmental home. In these circumstances individual agency may gain greater weight. Successful, informal, and even formal, networking also requires this spare capacity. This space may not be available in all regions, of course. So, for example, in some New Member States, system and resource constraints do not allow the leeway for, and do not have mechanisms to reward, such additional activity. A key question is how such individuals can be articulated with institutions, and how they can be incorporated into institutions which reward their initiative, but without losing their innovative and perhaps freewheeling attitudes.

We do not deal with policy in any detail in this report (it will be dealt with in a separate report). We do, however, sketch out some initial ideas. Although we have focused on general points emerging from our studies in this summary, it is necessary not to lose sight of the differences across regions when considering policy. As we pointed above, we purposely selected regions to underline the variety of types of region and of regional circumstances within Europe. The historical and geographical situations clearly differ, but so do the future visions generated within our regions (for example, some regions stress conservation of values and of quality of life, others emphasise economic growth), albeit that they are constrained to some degree by the ‘Lisbon vision’, global processes and the naively positive technological narratives that tend to abound. These differences lead us to agree with those commentators who stress that a one-size-fits-all is not appropriate to address the regional variety found in Europe. We suggest that what is required is a methodology rather than a single set of prescriptions, an improved process which can relate existing regional endowments (what we have), specific regional competencies (what we are able to do) and regional values and aspirations (what we aspire to be). We conclude that the main requirements for regions which aspire to successful transformative use of ICT to serve regional development goals is improved social competencies for ‘mobilising’ social actors, particularly through networking, leadership and narrative, and to combine these competencies with technological competencies and capacity.
1 Introduction

This document is the synthesis of WorkPackage 1 (WP1) of the project “Transform: Benchmarking and Fostering Transformative Use of ICT in EU Regions”, funded under the EU’s Sixth Framework Programme for RTD.

1.1 Purpose of the Document

The overall aims of the TRANSFORM project are: to understand why some regions seem to be better than others at using contemporary ICTs to ‘transform’ their economic and social prospects (WP1); and, to understand what kind of indicators can help policy makers, at regional and a European levels, to encourage and support ICT-based transformational change in European regions (WP2). On the basis of this understanding the project seeks to develop relevant and practical policy recommendations for policy makers (WP3) and to disseminate the findings of the project as a whole (WP4). This document is the culmination of work in WP1 of the project and therefore concentrates on improving our understanding of why some regions are better at fostering ICT-based change than others. However, the document has subsidiary objectives linked to the other project workpackages. A second objective is to link the theoretical and empirical material synthesised here with the work undertaken in WP2 (addressed in Chapter 6) and the policy work in WP3 (see Chapter 7).

1.2 Nature of the Problematic

The TRANSFORM project has approached the issue of ICT-enabled transformative change from two perspectives, represented by the two main empirical workpackages, WP1 and WP2. These are shown in Figure 1 below which is a simplification of the basic structure of Transform (as shown in Appendix 1).

Figure 1: The Simplified Transform Basic Structure

In this simplified model there are two sets of partial dependencies. First, variation in regional development outcomes – economic development, social inclusion, environmental sustainability and so on – can be at least partly explained in terms of variation in the transformative use of ICTs by (some) regional actors (individuals and households, firms and other organisations, regional public authorities) and this relationship is expected to become even more relevant in the future. But, this leaves us with
the question of what causes the regional variation in transformative use of ICT? A second hypothesised dependency is then that inter-regional variation in the capacity to bring about transformational change through the use of ICT is at least partially rooted in differences in regional innovation “culture” or “soft infrastructure.”

There is considerable evidence for the first of these claims, at least within the economic sphere. The small but significant pick up in productivity growth which began around the middle of the 1990s, first and strongest in the United States and then spreading slowly and unevenly to the rest of the developed world, and perhaps some of the ‘developing’ world, has been persuasively linked to investments in ICT (Jorgenson, 2001; 2003; Jorgenson and Vu, 2006; Colecchia and Schreyer 2001; 2002). However, while this work has more or less laid to rest the classical productivity paradox, it has replaced it with a new paradox – why have these increases in productivity been so uneven, both sectorally and geographically. Why do some industries and some places seem to be able to extract greater benefits from ICTs than others? This diversity is often presented in terms of a stark variation between a successful United States and more sluggish Europe (Gordon, 2004a; 2004b; van Ark and Inklaar, 2005; Soete, 2006). Systematic evidence – as opposed to hyperbole – of equivalent impact of ICT in more social, rather than economic, terms is less widely available but studies do suggest that ICT-based transformation is beginning to have significant, if ambiguous, impacts in the field of government and public services such as health and education (See e.g., Dunleavy et al. 2006; Castells and Cardoso, 2006). The picture overall, then, is more subtle than the simple “US Good/Europe bad” dichotomy derived from studies of national productivity suggest. It clear that there are both more and less successful countries – in their own terms – in all continents. For example, Cardoso (2006) points to the very different ways which Southern California, Singapore and Finland have each sought, with some success, to bring about ICT-based social transformation (see also Castells and Himanen, 2002, on the Finish case). This picture echos more general findings on innovation. As Andrés Rodríguez-Pose (1999) has shown, while there is a strong positive relationship between spending on R&D and economic growth, some regions seem to much better able to extract the value of R&D spending, in terms of economic growth, than others. When the amount of investment in R&D is taken in account, some of the regions that appear to be particularly good at turning R&D into growth may come as a surprise: ‘most innovation prone areas are, however, not among those with the highest stock of R&D’ (1999: 94).

One of the key problematics which WP1 of TRANSFORM seeks to address – the roots of transformative use of ICT in a regional innovation culture – has been thought of in at least two distinct ways. Generalising and idealising for emphasis we might first think in terms of a model based on the classical engineer’s or planner’s notion of ‘fit for purpose,’ in which the purpose is well established at the start of the process and actors are able to test and compare various approaches against well established and calibrated measures to find the approach which fits best with a given purpose. We can contrast this approach with a more experimental and processual outlook – what we might call the process of finding a ‘purposeful fit’. In this second approach, the purpose of change is one of the products of the change process itself. Of course, in real processes of social change, including those around ICT, both kinds of change take place. However, as we argue below, transformational use of ICT, because it is both predicated upon, and generates, uncertainty, requires actors to include more of the processual quest for a ‘purposeful fit’ and to move away from traditional planning models. We address this below in Chapter 4 under the rubric of an ‘innovation journey’.

One consequence of adopting this position is that we would expect to find a wide variety of different kinds of transformative use of ICT, dependent on specific contexts and reflecting a number of incomplete ‘social experiments.’ This is certainly the case at the wider national level and with respect to the rather broader notion of ‘the information society’. As Castells and Himanen, have argued:

…..the information society can exist, and indeed does exist, in a plurality of social and cultural models in the same way that the industrial society developed in very different and even antagonistic, models of modernity. (2002: 2)

The problematic which TRANSFORM addresses is challenging: understanding the development of complex and effectively unbounded, only partially structured social ensembles (regions) as they grapple with the possibilities and limits of a powerful, highly flexible and rapidly changing set of information and communications technologies. Regions cannot be thought of as discrete members of a well bounded population, varying only in terms of a number of abstract variables (size, level of GDP per head, etc.). Nor can they be thought of as simply the sum of the economic and social actors located within a particular bounded space. Rather, regions are something that are produced and reproduced (or not) through social action – a more or less fragile achievement rather than a pre-given
entity. Similarly, Information and Communication Technologies are not a single and monolithic entity, but are rather an increasingly diverse set of hardware and software governed by a wide range of de jure and de facto standards and evolving at a rapid rate. Indeed, ICT has been seen as unique among technologies in this respect. For example, David Edgerton, the historian of technology, argues that the rate of technological progress in ICT, as captured by Moore’s Law, is “unprecedented” historically and in terms any other contemporary field of technology (Edgerton, 2006: 203).

What is of significance for us in the TRANSFORM project is the uses which social actors make of ICT and how those uses can promote (or hinder) the social and economic development of regions. Research has been driven to take more and more account of the use of ICT for a range of reasons. Firstly, it has become apparent statistically that the mere presence of a given technology in a firm, a household or a region does not automatically mean that it is actually being used (or used for the purpose for which it is intended). Second, is it clear that contemporary information and communication technologies, as “general purpose” technologies can be used in a variety of ways – for example, the widely used distinction between using ICTs to ‘automate’ tasks or to ‘informate’ work (Zuboff, 1988; and more recently Wilcocks, 2006). More complex taxonomies of use can be constructed and below we develop our own, multi-dimensional model of what we call transformational use of ICT to distinguish it from other kinds of ICT use. Finally, it is clear that the use of ICT by actors is strongly and directly interdependent. That is, the benefits of much ICT usage to an individual, household, firm, organisation or government are dependent on complementary usage by other agents. At its simplest, this is represented by the well known network effects of communications network such as the telephone – that the utility of the network to any one subscriber is dependent on the number of subscribers (see e.g., Shapiro and Varian, 1999). More complex interdependencies arise in the development of e-health, e-education, e-government and e-business: in these cases co-ordinated changes in attitudes and behaviour are required by both doctors and patients, both teachers and learners, both citizens and public servants, both buyers and sellers. Of course, the reality of these developments is more complex, but the general point is that contemporary ICT requires complex and complementary changes across a range of different actors who are not under significant centralised control.

There is broad agreement about some of the core requirements for successful mobilization of the information society. Castells and Himanen (2002: 46) make the point well: ‘behind these innovations are – regardless of whether we talk about innovation in the private, public, or citizen sector – educated people, a functioning financing system and [a] culture of innovation’ (see also Mansell and Steinmuller, 2000). We do not wish to play down the significance of an effective financial system, nor of the presence of least a core cadre of educated individuals. However, in the TRANSFORM project we have been concerned mainly with the last of these items – a regional culture of innovation. Unlike the first two of Castells and Himanen’s terms, there is, however, less agreement about whether, or the extent to which, a regional ‘culture of innovation’ exists and can be effectively abstracted from national, corporate or more localised alternatives, to give just a few of the alternatives.

All three of Castells and Himanen’s terms reflect a significant inheritance from the past and an insertion into a wider economy and society. Educated people today imply investments in education over the past couple of decades, at the very least, and a connection into the wider, increasingly global, world learning. A functioning financial system, similarly requires connections into the main national and international financial flows, connections that take years to build up. Culture, and therefore a regional innovation culture is, in part, a connection to the past as well as a connection outwards towards national and international world of ideas. It may be tempting, then, to see history and geography as fate. However, the case of Finland that Castells and Himanen (2002) discuss, a country far from the traditional core of European economic development, and one which was, until relatively recently, more concerned with physical survival than most, has been able to organise and react in the face of crises and emerge with a strong socio-economic model in the network society. Of course, we might see this as luck or serendipity, but that would be to abandon analysis and, as the old adage has it, make our own luck. In our own findings, reported below, we were often surprised by the extent to which the more conventionally economically advanced regions were often not the most active in terms of conscious policy for transformational use of ICTs (although they were not the least active either). Among the less well endowed regions, in the New Member States and in Southern Europe, it was often the regions which was less developed in conventional terms or in terms of ICT adoption (Extremadura, Malapolska and perhaps Slovensko) which showed more ambition and activity in terms of transformative use of ICT compared with their apparently better endowed partners (Navarra, Pomorze, and perhaps Bratislava) – see Chapter 4. In this respect, our findings echo those of Rodríguez-Pose (1990) on the transformation of R&D funding into growth: some regions appear to be
able to make a lot out of a little, in terms of their ICT endowment, while others appear to make a little out of a lot.

We have explored the emerging literature on the relationship between notions of national or regional culture, variously defined, and various aspects of innovation, technology investment and ICT adoption. Nowhere in this literature is the usage of ICT and its relationship to regional innovation culture systematically addressed (See Transform Deliverable D1.1. for more details). Researchers have examined correlations between indicators of regional culture (generally drawn from the five part model of Hofstede or models based in the social capital literature) and either innovation and growth (e.g., Beugelsdijk van Schaik, 2005a; 2005b; Beugelsdijk, van Schaik, and Arts, 2006) or the adoption of technologies (Erumban and de Jong, 2005). In particular, Erumban and de Jong (2005) used Hofstede’s five cultural categories to explore the national level variation in ICT adoption (measured as the share of ICT expenditure in GDP). They conclude that ‘apart from the generally considered economic factors, the attitudes of societies and their cultural environment do have important consequences for the differences in ICT adoption across countries’ (2005: 22). Specifically they find that high ICT expenditure share is correlated with low Power Distance, low Uncertainty Avoidance and high Individualism. The results for the other two dimensions of Hofstede’s model are more subtle. There is a small correlation with the femininity pole of the Masculinity/Feminity construct and little correlation at all for the Long Term Orientation construct.

A second body of work has tried to link cultural categories (social capital, values) to general measures of growth or innovation. Sjoerd Beugelsdijk and Ton van Schaik (2005a; 2005b), for example, examined the relationship between various measures of social capital and economic growth in 54 European Regions. Controlling for a range of variables they found that growth was positively associated with social capital, defined as associational activity but conclude that ‘our analysis also suggests that it is not the mere existence of network relationships that stimulates regional economic growth, but active involvement in these relationships’ (2005a: 301). Unfortunately, this work makes no direct reference to ICT. Equally intriguing is Beugelsdijk, van Schaik and Arts (2006) exploration the relationship between economic development and cultural values. They contrast the predictions of modernisation theory, which stresses the convergence of values, with culturalist theories, which stress path dependence and the persistence of regional cultural specificity. Their findings broadly support Inglehart and Baker’s (2000) model of the relationship between economic development and cultural values at a regional level in which development is in the same direction but on parallel paths. They conclude, in line with Inglehart and Baker, that ‘economic development is an important driver of value change in these regions, but also that there are cultural processes of path dependency at work’ (ibid.: 325).

There are, then, in these systematic variable oriented approaches, some valuable clues to the basis of ICT adoption, or of innovation, but none of this work directly addresses the ways in which the use of ICT varies between regions. The main value of this literature may be to caution against any simple attempt to link indicators of cultural traits to innovation or adoption outcomes.

There can be no simple answers. The comparative political scientist Charles Ragin, (1987: 27) has noted that ‘rarely does an outcome of interest to social scientists have a single cause’, that ‘causes rarely operate in isolation’ and finally that ‘a specific cause may have opposite effects depending on context’. This situation obviously raises challenges for traditional ‘statistical’ analysis with its focus on the correlation of variables. As Ragin argues, it is not simply the number of variables that often overwhelms such analysis, rendering it either trite or so complex as to be uninterpretable. Rather it is the lack of combinatorial logic..

Social phenomena are complex and difficult to unravel not because there are too many variables affecting them, although the number of causal variables is certainly important, but because different causally relevant conditions can combine in a variety of ways to produce a given outcome. In short, it is the combinatorial, and often complexly combinatorial, nature of social causation that makes the problem of identifying order-in-complexity demanding (Ragin, 1987: 26).

The overall argument of this paper is that the notion of transformational use of ICT represents a culminating moment in the ‘socialisation of information and communication technology’ and that this calls for an equivalent ‘socialisation’ of the conception of ICT and therefore of the ICT indicator base. Finally the paper suggests a way forwards for regional policy to support transformational change and for the development of indicators of ICT based transformation.
1.3 Methods and Methodology

1.3.1 Case study selection and data collection methods

In selecting the case study regions we have sought to ensure broad geographical coverage of the European space, including old member states, both north and south, and new member states. We have also sought to ensure a degree of diversity of regional types across Europe as well as variation within individual countries. In order to achieve this we have utilised a number of selection criteria. These include a statistical exploration of existing data on the uptake and use of ICT in the European regions, which explored the relationships between ICT adoption and GDP per capita and between ICT adoption and GDP growth. Through this process we construct a four-fold typology of regions, namely: vanguard or leading regions, potential regions, sluggish regions, and lagging regions. We supplement this approach through the use of a range of other sources and established classifications, in each case seeking to cover the full range of types of regions. Finally, we discussed the possible case studies with a experts drawn from the TRANSFORM Regional Innovation Cultures Expert Group (RICEG) and beyond to assess the viability of the chosen regions as case studies (for more detail see TRANSFORM Deliverable D1.3).

Through this process we have selected 12 case study regions in seven countries. The regions (at the NUTS 2 level) are:

- Schleswig-Holstein, Thuringia (Germany),
- Emilia Romagna (Italy),
- Pomorskie, Malopolskie (Poland),
- Bratislava, Východné Slovensko (Slovakia),
- Extremadura, Navarra (Spain),
- Mellersta Norrland, (Sweden),
- South Yorkshire, East Anglia (UK).

The section of two regions from within the same country in the cases of Germany, Spain, Poland, Slovakia and the UK enabled us to test for country effects. It should also be noted that there is only one capital city –Bratislava – within the regions selected. Throughout the case study selection, our aim was to choose regions which would be representative of the broad range regional experience in Europe rather than being statistically representative of the population of European regions as a whole. Finally, unlike similar studies (cf. Keating, Loughlin and Deschouwer, 2003), we have not only chosen regions with well established, or at least well documented, regional cultures, but have rather chosen a range of regions from those with well defined boundaries and a strong regional cultural to those that have a weaker identity.

For each case study there were four main stages of data collection. Stage 1 involved key data capture and analysis (both soft and hard), including information on potential initiatives, regional ICT strategies and the structures of regional governance. Stage 2 used a snowball methodology with multiple ‘seeds’ to identify key actors within our case study regions, who in turn helped to identify initiatives and key informants. We classified our informants into four relatively discrete groups:

- Type 1 informants, concerned with broad regional policy issues;
- Type 2 informants with a strategic overview of the ICT developments in our priority domains (e-government, e-health, e-business and e-learning);
- Type 3 informants, directly involved in managing ICT initiatives; and,
- Type 4 informants, relatively independent critics (often academics).

In stage 3, the case study visits, explored a range of research questions, using a semi-structured interviews at the regional, domain and initiative levels as well as with the ‘critics’. Prior to researchers going out into the field the methodology was piloted and further developed by the workpackage leader (for more details see Deliverable D1.4). Individual case study documents were prepared but have been retained within the consortium to protect the confidentiality of individual participants. Short summaries of the case studies are appended to this document.
1.3.2 Analysis methods

Methodologically, this synthesis is based on an iterative and comparative design which works through the development and “testing” of theoretical statements against the data gathered in the 12 regional case studies. Specifically, we have drawn on the recent work of comparativists in the social sciences who have sought to build a comparative, case-based method which combines some of the subtlety of qualitative research, and its concerns with complexity and contingency, with some of the rigour and formalism of statistical techniques. In particular we have drawn on the work of Charles Ragin (1987; 2000; 2008).

The central methodological issue here concerns the best way to establish the causal conditions which generate transformative use of ICT. The overarching research design has incorporated a set of regional case studies, drawn from across the European Union. By applying a common research protocol in each region, although allowing some flexibility to examine issues of specific interest, we have both the individual case studies, which can stand alone, and the opportunity for some comparative analysis. This analysis can compare each case with the other cases, but also with a gradually elaborated theoretical model of regional transformation based on effective use of ICT. Our approach thus incorporates both cases studies (Yin, 203a; 2003b) and comparative analysis (Ragin 1997; Tilly, 1984). This kind of approach is not unknown in regional development studies (e.g., Keating, Loughlin and Deschower, 2003) but is surprisingly rare. Our raw material is the twelve case studies of European regions and the theoretical ideas and models which we have been able to draw from the States of the Art and subsequent work.

Charles Ragin (1987; 2000; 2008) has made a useful and powerful contrast between two schools of thought within social science on how to conceptualise causality, the ‘variable oriented’ approach and the ‘case oriented’ approach. According to Ragin, conventional ‘variable oriented’ social science conceives of causality primarily in terms of (multiple) correlation and regression. In this perspective, the task is to identify what “proportion” of the total causality – the variance in the dependent variable – to allocate to each of the independent variables. Total causality sums to 100% and each independent variable can account for some portion of that, usually with a large residual component. Indeed, in general, the approach is to explore the effect of each variable independently, controlling for the other variables. The mathematical model for manipulation here is essentially statistical, and ideally parametric with cardinal scales ideally with a true zero. The result of this perspective is that each case is seen through only one possible ‘lens’ at a time, in effect making the case itself merely the bearer of a bundle of ‘variables’ (and implicitly a representative from a presumed known underlying population).

In contrast to the variable oriented approach, the case oriented approach sees causality as cumulative and combinatorial. From this point of view it is the specific combination of causes that generates the outcome. This focus on combinations means that each case is seen as a whole, a complex web of interacting causes and outcomes. Within this tradition, the relevant mathematical operations are not statistical but set theoretical. Fundamentally, causes are envisioned as dichotomous variables (independent and dependent) – present or absent, 1 or 0 – in the manner of set theory. While this appears to be a ‘reduction’ of complexity from the statistical point of view, it is better understood as a ‘redirection’ of complexity away from issues of measurement (the struggle to create, and cost-effectively implement, meaningful equal interval scales) and towards a concern with combinatorial or conjunctural complexity. In any event, many of the significant variables of social science theory are not amenable to interval scales and their construction can provide a misleading and spurious sense of accuracy. What does it mean to argue that a country is 0.75% democratic, or that a region is has a ‘Catholicity’ score of 0.3? Even with classically ‘measured’ variables such GDP per capita, the accuracy and the meaningfulness of such terms as experienced or ‘felt’ by the inhabitants of a country or region is in doubt. Similarly, geographical indicators such North and South in a European context are not easily reducible to simple measures of latitude.

Without denying the utility of the variable oriented approach, Ragin (1987: 15) argues that the comparative case-based approach is superior to the variable oriented approach ‘in several important respects’. Here we quote him at length:

First, the statistical method is not combinatorial; each relevant condition is typically examined in a piecemeal manner…. The examination of large numbers of statistical interactions in variable oriented studies is complicated by collinearity and by problems with scarce degrees of freedom…. Second, applications of the comparative methods produce explanations that account for every instance of a certain phenomenon. True, these explanations may include interpretative accounts of the particularity of one or more
deviating cases, but at least the comparative method automatically highlights these irregularities.... Third, the comparative method does not require the investigator to pretend that he or she has a sample of societies drawn from a particular population so that statistical tests of significance can be used. The boundaries of a comparative examination are set by the investigator.... Finally, the comparative methods forces the investigator to become familiar with the cases relevant to the analysis" (1987: 15-16)

Set theory points us to the idea of necessary and sufficient conditions. The notion of necessity is familiar from ‘stage’ models and ‘readiness assessments’ which specify the necessary conditions for movement from one stage to the next stage. The aim here is to examine those conditions – causes in the language adopted above – which are always present in cases exhibiting the specified outcome, although they may also be present in other cases. The relevant test to suggest necessity is that there is no case with the specified outcome which is lacking the cause. A sufficient cause is one which can, regardless of other causes, bring about the specified outcome. The test for this condition is therefore the demonstration that, regardless of the presence or absence of other causes, the presence of the sufficient condition in a case is associated with the specified outcome. Note, however, that the sufficient cause may not be the only way in which an outcome can be brought about (see next paragraph). Up to this point we have been discussing single causes, but, as we have already said, it is combinations of causes that are typically of interest in comparative social science. We can extend the notion of necessity and sufficiency to such combinations. Finally, we should note that these two concepts are particularly powerful when they are themselves used in combination – the ultimate challenge is to specify the full set of necessary and sufficient conditions.

There are, we are assured by the old saying, many ways to skin a cat. It is clear that a particular outcome can be brought about in a number of different ways. This is where set theoretic approaches really come into their own with a capacity to model the various combinations of causes that can bring about the specified outcome. Traditional set theory works with what are known as “crisp sets”. With a crisp set there is no ambiguity about membership of the set – each item is either a full member (signified by 1) or a full non-member (signified by 0). For many situations this makes a great deal of sense – for example, regions are either in or, not in, the set of regions that are part of the accession countries. For much social data, however, set membership is more ambiguous. For example, while some regions are fairly unambiguously ‘catholic’ in terms of the dominant religion or historical formation this does not preclude having sizable active protestant (or Jewish or Muslim or atheist) minorities. At the same time, some regions are quite unequivocally not ‘catholic’ in their dominant religion or historical formation (in spite of containing an active catholic church and community). However, other regions, maybe the majority, exist between these two conditions. Fuzzy set logic works by allowing memberships of sets to vary between 0 and 1 and then, in an explicitly theoretical move allocating cut off values for full membership and full non membership. More recently, Charles Ragin has popularised the use of ‘fuzzy sets’ in comparative social science. This approach has recently seen considerable technical development (e.g., Smithson and Verkuilen, 2006) and is beginning to be more widely used, for example by Dunleavy et al. (2006) in their comparative study of e-government in a number of countries.

The notion of fuzzy sets brings a useful concern with thresholds that makes an intuitive sense in the context of our research problematic. It is clear that the kind of conceptual causes that we tentatively identified in the State(s) of the Art(s) document – the five clues – are not likely to vary monotonically with transformative use. That is to say, it is not the case that ‘more’ networking, learning, leadership, vision or narrative or active openness to influences from outside is always ‘better.’ We mean this in two senses. Firstly, each element is more likely to have a threshold level at which at which it becomes, in conjunction with other causes, ‘sufficient.’ Above this threshold level, it may make little sense to seek to increase the ‘amount’ of the cause. Indeed, it may be actively harmful to do this. Think, for example, of leadership (or, more correctly, the leader-follower dynamic). A situation in which there is no source of leadership to mobilise and guide a coalition (or where there is little propensity to follow a regional leader) is very unlikely to generate meaningful transformational change. But it is also the case that a situation in which there are many sources of leadership may also find itself paralysed and unable to bring about transformational use of ICT. Rather than a monotonic function, we should rather see the function as having a ‘sweet spot,’ below and above which transformational change becomes more difficult or impossible (See Table 2). Second, we cannot see these elements as wholly independent of one another, but rather should see them as mutually modifying each other, reinforcing, substituting and possibly conflicting. The metaphor which comes to mind is that of the strings of a guitar or violin which must be tuned together to form a harmonious sound, but for which a number of possible tunings is possible.
Table 2: Insufficient and Excessive aspects of the five clues

<table>
<thead>
<tr>
<th>Clue</th>
<th>Insufficient</th>
<th>Excessive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Networks</td>
<td>Actors remain isolated, poor information circulation</td>
<td>Information overload; exclusion</td>
</tr>
<tr>
<td>Regional Collective Learning</td>
<td>Repeating mistakes of the past</td>
<td>Pure scholasticism, ‘perpetual piloting’</td>
</tr>
<tr>
<td>Regional Leadership/</td>
<td>Failure to mobilise</td>
<td>Confusion and conflict</td>
</tr>
<tr>
<td>Followership Dynamic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Vision/Narrative</td>
<td>No sense of direction</td>
<td>Inability to react to changing conditions</td>
</tr>
<tr>
<td>Openness and Closure</td>
<td>Failure to spot opportunities and threats arising externally</td>
<td>Global fad chasing; mindless adoption of ‘best practice’</td>
</tr>
</tbody>
</table>

Source: The authors

In using set analysis, we have made use of contingency tables. For example, we have used the experience and expertise of the research team to group the cases into those in which ICT-related activity is ‘well connected’ and those in which it is not so well connected. We can compare regions on this basis with other dimensions such as the extent to which effective use of ICTs is ‘one of the four or five central issues in regional economic and social development’ or just ‘one issue among many.’ The following matrix (Table 3) shows the results.

Table 3: Exemplar of Set Analysis

<table>
<thead>
<tr>
<th>ICT activity well connected at the top, by project managers or at several levels</th>
<th>Kosice, Malopolskie Extramadura, Emilia Romagna, S Yorkshire</th>
<th>E Anglia</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT activity not well connected, only connected by users, or not much activity</td>
<td>Bratislava, Västernorrland, Pomorze, Navarra, S Holstein</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Effective Use of ICTs is the main issue or one of the four or five most important issues for the region</td>
<td>Effective use of ICT is just one among many issues or is not an issue at all</td>
</tr>
</tbody>
</table>

Obviously, this table indicates that ICT activity is more likely to be judged as connected where it is also judged to be one of the more important issues. The onus is then on returning to the case studies and explaining the isolated case of East Anglia, either by appealing to a further cause of variation or by revising our judgement of how to classify that region (that is, recalibrating our judgement). The result is an iterative analysis that swings between detailed examination of individual cases and comparison across cases.

1.4 Structure of the Document

In the next chapter of this document we address directly the notion of transformative use of ICT and examine some of the main strands of thinking that are associated with the idea of transformation. The chapter culminates in an ‘ideal type’ definition of ICT-based transformation and contrasts it with other notions of ICT-based change. In Chapter 3 we seek to explore the linkage between ICT-based transformation and space and time. First, we examine the link between transformational use of ICT and regional development agendas, arguing that the region is one important context, medium and outcome in relation to ICT-based transformation, but it is by no means the only or necessarily the dominant scale. Then we shift the focus from space to time, exploring the notion of transformation as a process or, a better and less teleological metaphor, a journey. In Chapter 4 we link the notion of transformation to the notion of a regional innovation culture, building specifically on some of the themes which we first loosely developed in D1.1 (the State(s) of the Art(s)). Chapter 5 seeks to extract the core insights, lessons and questions from our analysis for policy development and indicators of
both transformative use of ICT and indicators which might help policy makers to identify the conditions of such transformation.
2 Transformative Use of ICTs

Firm level studies … suggest that use of ICT has positive impacts on firm performance and productivity, but that benefits occur primarily, or only, when accompanied by other changes and investments (for example, where skills have been improved and organisational changes have been introduced) (OECD: 2007: 11).

Acting on the developmental potential specific to the network society requires a combination of initiatives in technology, business, education, culture, spatial restructuring, infrastructure development, organisational change, and institutional reform. It is the synergy between these processes that acts as a lever of change on the mechanisms of the network society (Castells, 2006: 17).

2.1 From Technology Adoption to Technology Use

Our focus is the transformational use of ICT in a regional context. The need for the qualifier transformational has arisen because it has become clear that contemporary ICT technologies can be used a number of ways, or that their use can have a variety of outcomes dependent on what they are used for and how that use is conceived and executed. The overall argument of this section of the synthesis is that the notion of transformational use of ICT represents a culminating moment in the ‘socialisation of information and communication technology’ and that this calls for an equivalent socialisation of the conception of ICT and therefore of the ICT indicator base. Finally the chapter suggests a way forwards for the development of indicators of ICT based transformation.

2.2 The “Transformation” Literature

We need to clear the ground by establishing the emergence of the term ‘transformative use’ in a historical sense and distinguishing ‘transformative use of ICTs’ from other uses of transformation. Historically we can trace the use of the term, in a variety of contexts, as way of signalling a new or more intense period of change which develops a critique of, but also builds on and goes beyond, an earlier change process. To clarify the core meaning of the term “transformation” we have examined its use in a number of contexts. Specifically, we have looked at the literatures on “Business Transformation”, “Transformational Leadership”, “Transformational Government” and the use of [the] Transformation in debates about post-communist Eastern Europe.

2.2.1 Business Transformation: Transformation vs Re-engineering

Perhaps the earliest notion, and most influential, that we can identify is that of ‘business transformation’. ‘Business transformation’, one of the roots of the notion of transformative use, builds on, but critiques earlier attempts at Business Process Re-engineering. One of the earliest, and most widely cited papers on Business Transformation, Davidson (1993) was entitled ‘beyond re-engineering: the three phases of business transformation’ and argued that success came from building on ‘structured automation and re-engineering’ (phase 1) by ‘enhancing and extending the original business’ (phase 2) and then ‘creating new business’ (phase 3) (1993: 485). Thus, in a technical sense, the idea of business transformation was positioned as both the culmination of ICT-enabled business change based on re-engineering, associated with automation and quantitative efficiency improvements, but also going beyond this idea of new ways to achieve old goals and to the elaboration of wholly new goals for the business. In this sense, then, transformation was distinct from re-engineering in its ambition – novelty of goals as well as means, a more creative and open-ended notion of the end point of the process.

“Transformation” can also be distinguished from re-engineering in another dimension. Transformation sought to expand the narrow focus on processes within the re-engineering literature to provide a more holistic view of organisational change. Galliers and Baets (1998: 12), writing on Information
Technology and Organisational Transformation, are particularly eloquent: ‘if we do not include the social dimension in IS-driven change processes, we will have failed to learn from past experience,’ They conclude that ‘variety, involvement, a non-prescriptive attitude and a learning mode are identified as keys to success’ (ibid.). The fairly extensive literature on ‘organisational transformation’ is similar to that on business transformation, although less concerned with technology, and again stresses the notions of complexity and the importance of skilled practice over formulaic recipes (see e.g., Campbell-Hunt, 2007 for a recent overview). The relationship of business/organisational transformation to technology was most clearly established by Eric Brynjolfsson and Lorin Hitt (2000), who argued clearly that the economic impact of information technology relied on how it was deployed and a range of complementary organisational and cultural changes, at a firm level, which were essential to ‘unlock’ or ‘release’ the potential of new ICT – that firms should go ‘beyond computation’ in their understanding of how to deploy ICT.

2.2.2 Transformational Leadership: Transformation vs Transaction

Another source for the increasing popularity of transformation comes from the leadership literature. The key distinction here, initially made by Burns (1978) and developed by Bass (1990; 1998; Bass and Avolio, 1994), is between transactional and transformational leadership. Transactional leadership is characterised by exchange relations between leaders and followers, narrowly focused on changing behaviours. Transformational leadership, by contrast, is concerned with establishing and sharing vision, motivation and optimism – ultimately with a higher order, moral agenda. Clearly, this version of leadership builds on older notions of charismatic leadership, but extends these notions by emphasising the scope for creativity and intellectual stimulation that is offered to followers, as well as leaders, in this mode. Transformational leadership can be seen as being concerned with establishing leadership in a context where there are not clear material rewards immediately available to followers who are asked to participate on the basis of shared belief and values. Thus the focus is on the shared values of the work team.

2.2.3 Transformational Government: Transformation vs E-government

Most recently, the term transformation has become linked with the reform of the Public Sector under the rubric of ‘transformational government’ (Cabinet Office, 2005; 2006; see also McLoughlin and Cornford, 2006). The term ‘transformation’ is increasingly widely used in respect public service change (see, for example, United Nations, 2004). It is perhaps in the UK where the term is most liberally used and on which we mainly draw our examples from here. The notion of “transformational government,” clearly drawing on the Business Transformation literature, places ICT at the heart of the process – in the words of the 2005 strategy document it is ‘enabled by technology’. However, the focus is on the “uses” that are made of that technology

 better using technology to deliver public services and policy outcomes that have an impact on citizens’ daily lives: through greater choice and personalisation, delivering better public services, such as health, education and pensions; benefiting communities by reducing burdens on front line staff and giving them the tools to help break cycles of crime and deprivation; and improving the economy through better regulation and leaner government (2006: 3).

The core focus of the strategy has been in three areas: making sure that services are designed around citizens and business; the move to a ‘shared services’ culture in government involving standardisation, simplification and sharing of information and support; and a new professionalism in the planning and delivery of IT enabled change. Further, the strategy stresses a move away from simple transactional services towards better support for front line public service professionals (a move that could be seen as a shift away from the automation of processes and towards the informatisation of public service work).

The stresses in the transformational government documents are also on systems which cut across traditional organisational boundaries to support joined-up or multi-agency working between public agencies coupled with a culture of information sharing within and between public services, as well as a strong concern with efficiency. Although only implicit, it is hard not to see this as a critique of the limitations of the UK government’s prior e-government programmes which were focused on getting
'government onto the web' without really taking advantage of the wider organisational potentials of the technologies to reshape public services and the relationship between the public and the state (on this kind of critique see Dunleavy et al. 2006; Fountain, 2006).

A useful notion, linked to the idea of Transformational Government in the UK has been the notion of transformation design. The idea of Transformation Design (Burns et al. 2004) has been developed and pushed by the UK Design Council and is particularly associated with Hilary Cottam. This approach seeks to distinguish itself from traditional design approaches, which tackles complicated problems through breaking them down into a number of discrete, smaller problems, which could then be solved. Transformation Design, by contrast, focuses on complex problems where there are many interdependencies, ambiguities and unintended consequences, and which resist easy breaking down into discrete chunks. Like earlier traditions of user-centred design, Transformation Design begins from the needs and perspectives of users, but, unlike traditional user-centred design, it incorporates a much wider conception of who the ‘users’ are, an approach that seeks to break down professional, organisational and conceptual boundaries (‘silos’).

2.2.4 Transformation in Eastern Europe: Transformation vs transition

The term ‘transformation’ has a particular meaning in the post-socialist context of Central and Eastern Europe. Most commonly it denotes a social, economic and political transformation encountered by former state-socialist countries following a collapse of the old regime. The term is often used interchangeably with a term ‘transition’, but there are important differences in the meanings that are attached to these two terms. ‘Transition’ implies that a linear and programmatic change that has a ‘starting point’ and ‘destination’. In this vein, economic transition is understood as a change from centrally-planned economy to market economy and political transition represent the change from single-party polity to democratic society. The simultaneous enactment of both economic and political transition was expected to lead to an ideal-type liberal-capitalism characterised by prosperity, freedom and integration with Western Europe (see, Figure 2). This was coupled with an expectation that such a ‘transition’ can be completed ‘overnight’. However, the reality on the ground proved that the process of systemic change has been much ‘messier’ and more prolonged, and that the outcome of the process cannot be guaranteed (Figure 3). The concept of ‘transformation’ therefore emphasises the non-linearity of the change and problematises the notion of a ‘starting point’ and a ‘destination’. Rather it considers the variety of post-socialist legacies and transformational paths, reflecting different cultural, social, institutional, political and economic contexts found in Central and Eastern Europe as well as the evolutionary nature of capitalism. In this light a ‘transformation’ can also be seen as path-dependent and path-shaping process contingent on historical legacies of particular places. The concept of ‘transformation’ thus also pays attention to local and regional contexts, networks and linkages and their role in producing a diversity of ‘transformations’ and economic practices. In essence the difference between ‘transition’ and ‘transformation’ can be encapsulated in the phrase that the new system is built not only on the ruins, but from the ruins of the old system (see Stark, 1992; Stark and Bruszt, 1998; Pickles and Smith, 1998; Sokol, 2001; Smith and Stenning, 2006; Smith and Rochovská, 2007). Although the literature on the transition from communism makes little direct reference to ICTs, it might be suggested that at least some former communist states have enrolled ICTs, both practically and narratively in breaking with their pasts, Estonia being a case in point.
2.2.5 Commonalities and Differences

Clearly these various ‘transformation’ discourses have both commonalities and differences. For example, business transformation, and its offspring transformational government, has quite an explicit focus on ICT as the key enabler of change. The notions of transformation found in the leadership literature and in the critique of models of ‘transition from communism’ tend to make no direct reference to ICT.

Perhaps the most important commonality is the form of critique: contrasting transformation with an alternative, usually prior, position that is argued to be too narrow or too partial. Thus transformation implies a process of building on but going beyond. The four transformation perspectives might also be seen have a common content to their critique. Two issues in particular stand out. First, the critiques tend to stress the open-ended nature of the transformation process in contrast to more programmed approaches in which the outcome of change is established from the start. A second common characteristic of transformation is that it encompasses explicitly social and cultural change, not just technical and organisational change. It is a matter of new attitudes, mindset, perhaps even values, as well as change in organisational structures and processes or working practices.

2.3 Social Transformation?

A common theme of the transformation literatures identified above is an increasingly ‘social’ understanding of how technology is implicated in social and economic change and perhaps even an increasingly “social” understanding of technology itself. We can register this “socialisation” of technology at a number of levels.

The Information Society Technologies Advisory Group’s 2006 report on Shaping Europe’s Future is concerned with ‘unlocking the transformational effects of ICT for Europe’s future growth, welfare and sustainability’ (European Commission 2006: ii). Here again we find the focus on the social and organisational ‘context’ of the technologies, although this is associated rather thinly with the ‘user perspective’:

*Often in the past ICT systems were developed with no reference to the social or organisational context in which they would be used. More recently, greater efforts have been made to accommodate user requirements, including drawing on inputs from the social and behavioural sciences. If we are to unlock the transformational effects of ICT we need to move further and faster in accommodating the user perspective (2006: 4)*
Transformational use of ICTs can be seen as the development of an increasingly socialised notion of what it is to which ICTs should be applied. Early models focused on the automation of *tasks*; this focus was built on and partially replaced by the re-engineering of *processes* (‘Don’t automate, oblitrate’) (Hammer and Champy, 1993) and subsequently the informatisation of *work* (following Zuboff, 1988 but actually coming somewhat later – see e.g., Brown and Duguid, 2000). From this point of view, we might see transformation as being applied to *ecologies* or *environments* (Nachira, 2000; Nachira, Dini, and Nicolai, 2006; O’Callaghan, 2006). Thus we can see an evolving and deepening interaction between the technical and the social elements of the socio-technical ensemble (cf. Cornford, 2003). Something similar to this notion of the ‘socialisation’ of ICT has been suggested by the theorists of ‘digital ecosystems’ and explicitly linked to a regional perspective (although with a strongly industrial focus that tends to exclude households and individual citizens). For example Nachira and his colleagues have argued that ‘Digital Ecosystems research refers to the balancing effect that a greater level of integration of the social and cultural context with the economic life of a region is assumed to have on its long-term economic viability’ (Nachira et al., 2007: 7).

It might be objected that contemporary ICT use is, far from increasingly “social”, increasingly anti-social and isolating leading to loneliness. From this point of view, the contemporary ICTs are used to avoid contact with other perspectives and points of view and thus with the break down of a ‘public sphere’. A major strand of research has explored this, beginning with the well know paper of Kraut et al. (1998), which tentatively identified the internet as ‘a social technology which decreases social involvement and psychological well being.’ Subsequent research, including that by Kraut and his colleagues (2001) showed that these negative effects, while real, dissipated over time that that the real picture was better captured by what they described as a ‘rich get richer’ model (that is those with more support benefited more from their Internet use). As they summarise this research: ‘Those who are already effective in using social resources in the world are likely to be well positioned to take advantage of a powerful new technology like the Internet’ (2001: 24; see also DiMaggio et al. 2001; Hampton, 2007).

Another objection to our vision of Transformative use of ICT as socialisation is to point to the increasingly personalised nature of contemporary ICT-base services – they are about customisation for the individual, personalised to take account of individual characteristics and increasingly predictive and ‘leading’ (“if you liked *that* then you will probably like *this*”), Yet this notion of personhood or individualism is itself generally a network construct based on relationships (prior purchases, membership of other groups, and so on) and it is increasingly ‘social’ in the sense that much of its value arises from the conjoint usage of technologies by diverse groups of individuals. This is, perhaps, what both Castells (2001), and Barry Wellman and colleagues (2003) have called Networked Individualism, the notion that greater individuality arises precisely from “increased” social interaction. We might also link such notions to more recent developments labelled variously as Web2.0 or social networking and broadly understood as incorporating social networking sites (e.g., Facebook, Myspace, Bebo), Blogs (e.g., blogger.com), Wikis (e.g.,the Wikipeadia), social bookmarking or tagging sites (e.g., del.icio.us) and so on.

### 2.4 A Definition of Transformational Use of ICT

We are now, we believe, in a position to put forward a multi-dimensional definition of the transformational use of ICT. This is, of course, an ideal type definition: its value is not as a description of an empirical reality but as a lens which can help us to focus on the relevant aspects of an empirical reality that will almost always fall short of the ideal. For us, then, ideal type transformational use of ICT is 1) Multi-level, 2) Multi-Agency and 3) Multi-Domain. Let us explain each of these terms in turn.

1. **Multi-Level**: a central theme of both the transformation literature addressed above and the literature on the impact of ICTs is the need to set ICT use in a wider social context. That is, the effective use of ICT implies a co-ordinated set of changes, not just in technologies, but also in organisational forms, business processes, working practices and ultimately cultural values and attitudes. Transformational use of ICT, then, is never a “merely” technical matter even when it may appear so. It always involves complementary changes in other fields.

2. **Multi-Agency**: a second strong theme from the transformational literature and from recent work on technologies suggests that transformative use of ICT is not simply a matter of the application of ICT to a single agency – be that a firm, a household or government bureaucracy
– but is dependent on the collective adoption and use of technologies by a number of agents. In this sense, then transformational use is collaborative and co-operative use of contemporary ICT.

3) Multi-Domain: finally, a theme which arises from the literature, perhaps less clearly than the others, is that transformational use is, in its ideal form, a usage that spans traditional domains, forging lateral connections across the traditional ‘silos’ between industries or between different branches of the public services.

In this sense, then, transformative use of ICT is the ‘collective’ use of ICTs – it is actors (which might include households, firms, government bodies, schools, universities, hospitals, clinics or third sector organisations) using technologies ‘to do things together’. Thus transformation builds on the network of interactions from which we began at the start of the TRANSFORM project, stressing not the distinctions between actors (state, enterprise, household) but rather their connectedness (See Figure 4).

Figure 4: TRANSFORM Model of regional interaction

Finally, because transformative use of ICT seems to imply this collective use of ICT, we can see it as a specific kind of collective action problem – transformative use requires co-ordinated changes in behaviour by a range of actors who are not under any clear central control. In general, what we have seen is varied particular combinations of these approaches. The traditional approaches to collective action – usually labelled as markets, networks and hierarchies – provide a rich pallet for addressing innovation, each with its strengths and weaknesses.

2.5 Conclusion: A fruitful concept?

2.5.1 Strong and Weak Transformation

How fruitful is the notion of transformation through ICT? What can it offer to policy makers? What are the threats or dangers associated with using the term transformation? Clearly the use of the term transformation is often hyperbolic. There are dangers in using this term that we appear to be claiming more than can be empirically sustained or that we are buying into the hype of the information age too strongly. There is the danger that the use of the term transformation can raise expectations that cannot be met, leading to cynicism. However, much of this weakness arises from the under-specification of transformation. Adopting our three part definition enables us to define more clearly both minimal and maximal notions of transformation in terms of our three criteria. Thus an initiative or action that is minimally transformative would need to have at least,

- a degree of organisational, cultural or attitudinal change associated with technical
implementations;

- more than one organisational actor involved; and,
- involves interaction between actors in at least two traditional ‘silos.’

In this sense, then, many – perhaps most – initiatives are weakly transformative, at least in intent. However, we might also envisage a strong version of transformation. This would be characterised by:

- a strong programme organisational, cultural and attitudinal change associated with technical implementations;
- many, tending towards all, social actors involved;
- the building of strong lateral linkages across all traditional “silos”.

While such a model may appear empirically rare, we might point to core ICT innovations such as the World Wide Web or mobile telephony as operating at this kind of level. Most of the time when we are talking of transformation, we are concerned with activity which is positioned somewhere between these two extremes. For policy-makers, then, we feel that the notion of transformation, and more specifically the transformative use of ICT is, if properly specified, a useful concept.

2.5.2 Transformation: The socialisation of technology?

Conceptually, transformation is best seen, we believe, as a reflection of the socialisation of ICT. By the socialisation of ICT we mean its extension from specific spheres – first science and the military, then business, health, and education, to become a ‘normal’ way of doing things in all spheres of life, part of the unquestioned background, the infrastructure of everyday life. Of course, this process is not totalising – most use of ICT remains internal to organisations, bound up in limited functional applications and narrowly tied to functional silos. Yet, technologies such as the internet, World Wide Web and mobile telephony have become so widely diffused and widely used for such a range of task and functions – economic, political, social, cultural, spiritual – that they have begun to be talked of almost as natural resources whose ubiquity, while never achieved in practice, is, like human rights, assumed as both a goal and a norm against which to measure progress. Of course, the mere presence of the technologies is not, as we have argued, enough to bring about transformational change. Rather it is the increasing range of novel uses to which those technologies are put that eventually, through imitation and adaptation, leads to transformation.

The most explicit indications of this are in the realms of what has been broadly described as ‘social software’ – that is, social networking sites, blogging technologies, tagging technologies and so on – in which the usage of the technology is simply to produce more ‘society’ (understood as more, but not necessarily more varied, social relationships). These are only loosely ‘new technologies’ but are better thought of as new practices with technologies – the internet protocols and the World Wide Web – which are at least a decade old. This socialisation of technology is just a fact, not necessarily a pleasant or desirable fact. Much of what ‘social software’ is used for is at best narcissistic and a worst illegal and immoral. In this, it more or less accurately reflects our society or societies. Yet it is precisely this normalisation of information and communication technologies that radically increases the potential for transformational change on a large scale.

We have defined transformational use of ICT as specific combination of characteristics. How, then, does the transformational use of ICTs – conforming to a greater or a lesser extent to our ideal type definition – work out spatially and in particular at a regional scale? What are the particular affordances and possibilities, but also limitations and constraints, which a regional perspective brings to the transformational use of ICT? And how does transformation unfold over time? What kind of process is implied in the transformative use of ICT?
3 Territorial and Temporal aspects of Transformational Use

3.1 Transformation as a Regional Agenda

As we have noted in the State(s) of the Art(s) (D1.1) the notion of transformation change has not been strongly articulated in the regional studies literature. We thus turn our attention to what transformation through ICTs might mean at the regional level. More specifically, as we shall see, we also ask what it means for the regional scale.

The first point to make here is that our concern in the TRANSFORM Project has been with the relationship between transformational use and regional social and economic development. The question of the significance of the region, either as a context in which to explore the transformational use of ICT or as an actor (or set of actors) who can effect (or affect) the transformative use of ICTs, is, of course, problematical. This issue has been discussed both within the TRANSFORM consortium and in the two RICEG (Regional Innovation Culture Expert Group) workshops, the first of which was held at the beginning of the study and the second held after the production of the draft version of this current approach. A number of issues were raised most notably the bounded (or partially bounded) nature of regions which are, of course, social constructs and to what extent regions can be seen to have agency in the field of ICTs. We discuss both the value of, and limitations to, using regions as a context for exploring the transformational uses of ICTs in the following sections.

3.1.1 The region as a vehicle for transformative use

In today’s language, regions are a product of networked flows and relations fixed in a more or less provisional manner…. Rightly or wrongly, however, political institutions lend themselves to the language of territory, fixity and boundaries (Allen and Cochrane, 2007: 1162)

All of the transformational concepts articulated above are territorially infused. Indeed one of the common themes is that they are reacting to under-territorialised, space-less and place-less conceptions such as Business Process Re-engineering, New Public Management and Transactional Leadership. Part of the critique which the transformation discourses reviewed above tend to mobilise is the notion that there is a need for a much stronger contextualisation of change, including a stronger territorial contextualisation. However, there can be no automatic leap from acknowledging a territorial dimension of transformation to asserting a regional dimension – many other geographies or territorial configurations are possible and perhaps, from the point of view of individual actors, preferable.

Much of the ICT use literature stresses not the regional, but rather the nexus of relatively disembedded ‘global’ processes of standardisation, technological regimes and trajectories and mass market development with highly embedded ‘local’ specificities of application – all mediated through national and supranational regulatory regimes. Here again one of the earliest and clearest elaborations can be found in the work of Manuel Castells (1993; 1996; 1997; 1998). The core relationship which Castells identifies in his Network Society is that between the (global) net and the (local) self. The network for Castells overshadows traditional social actors – classes, states, corporation:

For the first time in history, the basic unit of economic organization is not a subject, be it individual… or collective (such as the capitalist class, the corporation, the state). As I have tried to show, the unit is the network, made up of a variety of subjects and organizations, relentlessly modified as networks adapt to supportive environments and market structures (Castells, 1996: 198; emphasis in original).

Yet the ‘relentless modification’ of ‘subjects and organisations’ which Castells identifies – and which we might think of as rooted in the Transformational use of ICT – takes place in very specific territorial configurations.

One significant issue concerns the ways in which responsibility for transformational use of ICT is distributed across scales. In most countries, the regional or local is seen as an important scale for supporting the transformational use of ICTs (as opposed to supporting the roll out of infrastructures,
regulation and standards or support for R&D activity related to ICTs – which are generally focused at a national or even European scale). Local and regional actors, it is argued, are more attuned to the local requirements. Transformational use can, therefore, be related to the notion of the “rescaling” of regional development – the shifting of powers, responsibilities and capacities between different nested scales of organisation – global, continental, national, regional, local. Transformational use of ICT clearly builds on developments in each of these domains.

From this perspective, the most important significance of the region for transformation relates to the organisation of service provision, in particular, so called “services of general interest” – that is, those services which are either universal (or aspire to universality) or which are provided very widely. Of course, the public sector is the dominant player and thus, as Castells has argued, ‘the public sector is at present the decisive actor to develop and shape the network society…. Thus, the reform of the public sector commands everything else’ (Castells, 2006: 17) These services, whether public or private, retain a strong face-to-face component and are, in spite of some new spatial flexibility linked to the use of ICT, generally delivered through some regional structure. This is clearest in the case of public services, but is also true of many private services. Where transformational use of ICT bridges organisational “silos,” it often does so territorially. If transformation requires the joining up of actual service planning, provision and evaluation then the regional scale is one critical component.

As we have argued, the region represents just one possible context for transformational change. For any particular actor within the region, there are alternative options. Global networks have their attractions as do highly localised initiatives and the powers of the national state means that certain functions are generally reserved to its sphere. Thus, regional approaches to transformative use of ICT must co-exist – complement and compete with – policies and initiatives at a number of other scales. Clearly, these are shaped by the formal institutional structures and sets of legal powers and responsibilities. This may affect the regional scale directly – with explicit powers (and accompanying resources) – or indirectly, by failing to directly allocate responsibility for transformative use of ICT and therefore allowing the regional public agency to take on that responsibility for itself. In a number of our case studies the more active and ambitious public agencies have developed their role in the absence of any official legal responsibility.

3.1.2 Summary: Transformational change and the regional scale?

What is clear is that transformational change does not need to be organised at a regional scale nor does it need it be beneficial to a particular region or aligned with the region’s development goals. The network orientation and multi-scalar nature of most ICT-based transformation processes imply that regions are just one of several possible institutional contexts. And, of course, ICTs have been used by many private actors precisely to ‘disembed’ themselves from a particular territorial configuration – for example, through offshoring call centre jobs. These strategies have not, of course always been successful: that such changes have often been followed by a process of on-shoring (relocating jobs back to the host country), does not change the impact of the original decision. Similarly, e-government, e-health or e-learning initiatives may or may not encompass a regional dimension and may or may not align with regional goals. We therefore want to distinguish between four kinds of transformational change, dependent on two factors – the degree to which any particular transformation initiative involves the constitution of the region as a significant actor and the extent to which the transformation initiative is aligned with regional goals. This gives us a two-by-two matrix as in Table 4.

Table 4: Four Models of Transformation and the regional scale

| Higher/positive alignment with regional goals | 1 | Transformation for the region (Buoyed up by a wave of change) | 4 | Transformation by the region (Surfing the wave of change) |
| Lower/negative alignment with regional goals | 2 | Transformation in the region (Drowned by the wave of change) | 3 | Transformation in spite of the region (Swimming against the tide) |
| Region not constituted as actor/weak actor | Region constituted as strong actor |

Source: the authors

In the first quadrant, transformation for the region, transformation processes undertaken by public and
private actors within and beyond the region have a positive outcome for the region in terms of the region’s official goals, but the region remains a non-existent or weak actor in the process, reaping the benefits of change in a passive manner. The region is passively buoyed up by the wave of change.

The second quadrant, transformation in the region, is a less beneficial outcome where the outcomes of transformational change processes are either irrelevant to or negative in relation to regional goals and the region is a weak or non-existent actor in such initiatives. In this version, the region is simply a space, within which, or through which, elements of transformation take place. To keep the wave metaphor, in this quadrant the region is tossed about and may be drowned by the wave of change. In quadrant 3, transformation in spite of the region, the region is constituted as a strong actor, but as one that is struggling with the outcomes of transformational change which are acting against the region. In out metaphorical terms, we might describe this as swimming against the tide or battling against the waves. In quadrant 4, transformation by the region, the region is constituted as a strong actor in the transformation process and then outcomes of transformation are relatively well aligned with regional goals. This is what we might think of as successfully surfing the wave of change.

The first two quadrants concern transformational change which happens “in” or “for” the region – that is transformation that involves individuals, companies or organisations which are located, or partly located in the region but which does not relate to the region as an actor or only as a weak actor. While this kind of transformational use has varied implications for the region, these implications are in a sense collateral or unintended. In policy terms, it is important to recognise whether the region is generally being buoyed up or drowning in the context of transformational change and to strategise and plan accordingly, but any strategy implies moving to the second pair of quadrants – transformation by or in spite of the region – in which some regional actor, generally (but not always led) by political and/or professional leadership from the public sector, emerges as a strong actor in relation to ICT.

This second response to transformational use of ICT, one that operates “through” the region as a significant actor, or that constitutes the region as an actor which is able to relate transformational change to regional goals, strategies, and objectives. This kind of transformational use of ICT is of primary interest to the TRANSFORM project.

Of course, these are highly abstract ideal typical definitions which are hard to distinguish in practice. They interact and can build on each other (or, perhaps, cancel each other out). We might associate transformation in and for the region more, but not exclusively, with private economic motives and transformation by or in spite of the region more with the government and public service, although this is a matter of degree rather than an absolute. Successful development does not in any case rely on setting these processes against each other but rather in seeking to monitor and move between them, and identifying new opportunities arising from their interaction and establishing and developing regional coalitions – collective actors – to exploit those opportunities.

The key point here is to stress that ICT-based transformative change can relate to the region scale in a number of ways, that the region is just one possible actor in the transformation drama, and that the region can play more active or more passive roles within that drama.

### 3.2 Regional Transformation through ICT as a Process or Journey

We have examined transformational use of ICT as a spatial concept, and its relationship to the region, but the notion of transformational use must also be seen in a temporal or processual context. The core argument in this section is that regional development through transformative use [of ICT] is most fruitfully thought of as a kind of open-ended and always provisional and experimental innovation ‘journey’ rather than the procession through a predetermined set of stages towards a common destination. While transformational change through ICT can often seem almost instantaneous – the recent take-off of social networking technologies is one good example – this usually revealed, on closer inspection, to be far from the case. Rather, transformational use of ICT usually represents a moment in a much longer story of struggle to mobilise both social actors and technologies. It is, of course, tempting to focus only on the moment of take-off of transformational uses of technologies. Yet taking this point of view generates a very misleading impression of development by failing to pay attention to the long periods of gestation of transformation processes and typically ignores the large number of failed or stalled attempts.

How then can we characterise this temporal dimension? Drawing on the large scale and longitudinal Minnesota Innovation Research Programme, researchers have drawn up the notion of an “innovation
journey”. Andrew Van der Ven and colleagues (Van der Ven, et al., 1999) characterised innovation not as a linear staged process but rather as a complex, non linear multi-level process that cannot be characterised, on the one hand, by a rigid linear stage model of innovation, nor, on the other hand, by economic models that see innovation as essentially random.

Non linear dynamics tells us that the innovation journey is neither stable and predictable nor stochastic and random, that unpredictable behaviour does not imply randomness that the innovation journey may be extremely sensitive to initial conditions (path dependence), and that managing the innovation journey may be much more complex than simple cybernetic mechanisms imply (Van der Ven et al. 1999: 5-6).

This non-linear dynamics approach challenges many of the basic assumptions about the innovation process (See Table 5).

Table 5: Assumptions and observation about core innovation concepts

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<tr>
<th>Literature implicitly assumes ...</th>
<th>But we see this ...</th>
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<td>Ideas</td>
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</tr>
<tr>
<td>One invention, operationalised</td>
<td>Reinvention, proliferation, reimplementation, discarding and termination</td>
</tr>
<tr>
<td>People</td>
<td></td>
</tr>
<tr>
<td>An entrepreneur with a fixed set of full time people over time</td>
<td>Many entrepreneurs, distracted, fluidly engaging &amp; disengaging over time in a number of roles</td>
</tr>
<tr>
<td>Transaction</td>
<td></td>
</tr>
<tr>
<td>Fixed network of people/firms working out details of an idea</td>
<td>Expanding and contracting network of partisan stakeholders who converge and diverge on ideas</td>
</tr>
<tr>
<td>Context</td>
<td></td>
</tr>
<tr>
<td>Environment provides opportunities and constraints on innovation process</td>
<td>Innovation process creates, and is constrained by, multiple enacted environments</td>
</tr>
<tr>
<td>Outcomes</td>
<td></td>
</tr>
<tr>
<td>Final result orientation, a stable new order comes in to being</td>
<td>Final result indeterminate; many in-process assessments and spin-offs; integration of new orders with old</td>
</tr>
<tr>
<td>Process</td>
<td></td>
</tr>
<tr>
<td>Single cumulative sequence of stages of phases</td>
<td>From single to many parallel and divergent paths; some related, others not</td>
</tr>
</tbody>
</table>

Source: adapted from Van der Ven 1999: p.8

3.2.1 Steps, Stages and Pitfalls

As we have argued, this process is neither wholly random, nor firmly structured. We can, however, identify some typical moments in the journey. Paul Benneworth (2007) has recently suggested the following simplified model of what he refers to as the regional innovation journey cycle (see figure 5) and identifies a number of “critical moments” in the innovation journey cycle. Specifically, Benneworth sees the model as being animated by some widespread perception of crisis or challenge, leading to the formation of a cadre of enthusiasts (Stage A) who may go on to form an agreed vision or strategy (Stage B) and then to pilot novel activities (Stage C) which are subsequently mainstreamed (Stage D), before going on to establish a (re)new(ed) vision (Stage E) associated with a new regional leadership generation or another internal or external crisis. This is not, of course, a determinist model – there is nothing to guarantee that the sequence will be worked through. More typically, regions can become “trapped” at particular stages. Benneworth mentions six specific failure modes: 1) failure to mobilise a cadre of enthusiasts; 2) failure to agree a vision; 3) failure to mobilise resources for pilot or demonstration actions; 4) failure to scale up to mainstream roll out of innovation (or constant replioting); 5) failure to adapt to new developments/situations; and 6) failure renew the vision (See Figure 5).
What we should note in this account is the significance of a vision, or more broadly a narrative, in this process. We develop this point in relation to the case studies below.

3.2.2 Starting points

Another point that the journey metaphor highlights is that each region starts from a particular location spatially and historically, with a particular set of endowments and challenges. Because we see the innovation process which is embodied in transformational change as highly path dependent, where you start from matters to the outcome of the process. But it also matters to the process and the typical challenges which innovating coalitions face. Tödtling and Trippl (2004: 21), for example, writing in the mainstream regional innovation literature, identify typical innovation weaknesses of range of types of regions. We can summarise this crudely in terms of three types of regions. Less developed regions, those which have avoided extensive industrialisation, are particularly prone to what Tödtling and Trippl (2004) call “organisational thinness,” the lack of key innovation institutions and weak connections between those that are present. In this context, the challenge is to establish an institutional structure for innovation and to develop key institutional elements such as research institutes, commercialisation activity, skills development, financing and so on. By contrast, older industrial regions, with a strong inheritance of institutions from their industrial past, are seen prone to “lock in” with structures and strategies that were developed for a past industrial structure dominating the innovation landscape and ‘outcompeting’ alternative uses of resources. In this context the challenge is to unpick the established order and to re-orientate institutions to new avenues of innovation. Finally, they identify metropolitan regions, centres of government activity and producer and consumer services — often capital cities — which face the challenge of “fragmentation” of activity and lack of co-ordination between the various actors in the innovation process. In this context, the challenge is to hold an innovation coalition together in a context where each actor has many other opportunities and to manage the associated ‘information overload’. The advantage of this approach is that it avoids the simplistic classification of regions into a one dimensional scale of weak and strong regions in terms of innovation and focuses on the practical challenges which innovation coalitions face.

Coalitions seeking to promote the transformational use of ICT might face a similar set of challenges to other kinds of innovation coalition. In the context of less developed region, the main challenge may be to develop pilot new uses of ICT and experimentation across the various social actors and to establish
core institutions to promote such developments. In older industrial regions, by contrast, where the availability of technologies and basic levels of adoption may be higher, and where there is often a well-developed institutional framework for regional development, the challenge is to ensure that transformative use of ICT is seen as a legitimate element of strategies and initiatives and that it is able to compete with more traditional kinds of policy instruments for resources and attention. In metropolitan regions, where we might expect to find higher levels of experimentation in relation to transformative use of ICT, the challenge takes the form of attempting to harness that experimentation for regional development goals.

The protean and open-ended nature of transformational use of ICT means that identifying successful transformative use of ICT requires a reference back to the local goals and values, and the prior resource endowment, of those involved in the project. In the essential process that McLaughlin and her colleagues (1999) have called ‘valuing technology’ – the prior values of the community count. It may appear easy to relate the success of transformative use to widely shared and relatively non-contentious goals such as growth, social cohesion and environmental sustainability. However, the relative weight given to these goals varies by region. A region with a high valuation on the maintenance of a particular settlement pattern or environmental values will evaluate the success of transformation differently from one which values economic growth or job creation higher. We must, therefore, be careful.

3.2.3 Outcomes and Problems of Measurement

What are the outcomes of transformational use of ICT?

As we argued in the State(s) of the Art(s) document (Cornford et al. 2007), transformational change was best thought of as an emergent process. We characterised this as one that arose from the interaction of the plans of many actors, a process that can be only partially centrally co-ordinated and that requires the constant readjustment of individual plans. The original vision or impetus for transformational change may bear little resemblance to the eventual outcome. For example, many early models of telework envisaged it as a mainly home-based activity located in a rural ‘electronic cottage’. What has arguably been much more important is the phenomenon of the hyper-mobile, laptop toting “road warrior” working in metropolitan transport hubs or hotels (for more examples of contrary outcomes of ICT-based innovation, see the Box A).

Box A

Predicting digital outcomes

In 2006, Statistics Canada published Our Lives in Digital Times (written by George Sciadas). The study used official and non-official statistics to examine the extent to which past predictions about the impacts of ICT had eventuated. The predictions tested included:

- Reduction in physical mail as the incidence of e-mail increases.
- Increase in e-commerce at the expense of ‘bricks and mortar’ retailing.
- Reduction of fixed line phones and their use in favour of mobile phones; and
- Increase in Internet use and reduction in time spent on other activities.

Some findings

- Reduction in physical mail. While communication by ICTs in Canada (in the form of faxes, e-mail, text messages etc) is increasing greatly, the volume of physical mail moved is also increasing (albeit much more slowly) (Statistics Canada, 2006).
- E-commerce versus ‘bricks and mortar’ retailing. ‘E-tailing’ in Canada is growing fast but is still very small; normal retailing is growing as well (Statistics Canada, 2006).
- Reduction of fixed line phones and their use in favour of mobile phones. In the United States and Canada, both are growing strongly (though in Finland there is a trend towards households having only a mobile phone) (Statistics Canada, 2006; Statistics Finland, 2006a).
• Increase in Internet use and reduction in time spent on other activities. Among Canadian Internet users, time spent watching TV has decreased slightly but is not offset by the increase in time spent on the Internet (Statistics Canada, 2006). In Finland, in 2005, slightly fewer than half of medium to high Internet users reported a decrease in TV watching; about two thirds reported no change in time spent reading or talking on the phone; 90% reported no change in time spent with friends (Statistics Finland, 2006a). Time use data for the United Kingdom are presented earlier ... indicate that time spent using the computer at home is accounted for by less time spent on a variety of activities, including watching TV (ONS, 2006).

Statistics Canada makes the point that the reasons for such predictions not coming true are diverse and complex, involving changes in patterns of human behaviour as well as other factors such as price changes.”


The point here is that the outcomes of transformational change are often different, sometimes disappointingly different, from those envisaged at the start of the process. In measuring the outcomes of transformational change we need to be careful to update not just our technical knowledge but also our criteria of success, being constantly open to the wide range of unintended consequences that will arise in any complex change process. We have argued elsewhere that such an approach to the outcomes of transformational change is not, in any event, helpful. Positive outcomes in terms of economic growth, social inclusion and environmental sustainability are relatively well catered for in terms of indicators but these indicators emerge both too late, and too causally distant from direct ICT funding to be useful to policy makers. Rather, as WP2 of the TRANSFORM project has proposed, the proximate outcomes of transformational use of ICT are better thought of in terms of demonstrable contributions to the elaboration of linking and bridging social network dimensions, effective individual and institutional learning and individual empowerment. That these elements also appear as supporting further transformational use of ICT is wholly reasonable and in line with the long tradition of cumulative and self-reinforcing processes in regional development studies.
4 Regional Innovation Culture and Transformative Use of ICTs: Evidence from the Case Studies

4.1 The Resonance of the Transformation Concept in the Case Study Regions

As we argued in the TRANSFORM State(s) of the Art(s), the notion of transformation as a particular kind of change has recently come to the fore in private business and in public sector and institutional agendas and it usually includes a strong, if complex ambiguous, reference to ICT as a key enabler of transformational change. (We also noted that ICTs could, for example through technology lock-in, be a barrier to transformational change). For example, the UK government’s latest e-government document is entitled Transformational Government (Cabinet Office, 2005). The term has also entered the European Union policy discourse, for example, in “Shaping Europe’s Future Through ICT”. This report from the Information Society Technologies Advisory Group (ISTAG, 2006) which presents a ‘vision’ of the ‘transformational effects of ICT for Europe’s future growth, welfare and sustainability’ can be unlocked, thus bringing about a ‘paradigm shift’ involving a series of step changes.

Notwithstanding the ubiquity of the term in some circles, it was suggested, both internally within the TRANSFORM research team, and externally by some RICEG members, that the term ‘transformation’ arises very much from an Anglo-American discourse and may have little resonance outside that environment, particularly in relation to ICT. One practical affect of this claim was to sensitise researchers to the need for care in trying to explore the extent to which ICTs were, or were perceived capable of being, used to facilitate fundamental changes in terms of regional development, testing in the interview situation the relevant language through which to explore the concept of transformational change in different places.

Our research suggested that there was, indeed, variance between places in the extent to which the term ‘transformation’ resonated, and, also in the notion of transformative change through the use of ICTs. Other related concepts such as ‘learning region’ were difficult to convey in some regions, notably in Germany.

Unsurprisingly, the term had strong resonance in the English regions where the use of the term has become commonplace in a number of domains. In South Yorkshire, the term was used as part of the wider regional development narrative, effectively a synonym for ‘modernisation’, involving a transformation from a region based on traditional industries to a knowledge-based economy; within policy circles ICTs are seen as central to that process. Interviewees in both European regions also acknowledged the importance of ‘joined-up’ (multi-domain) approaches to policy in general, including IS policy. Most of our interviewees agreed that the transformative use of ICTs, in the context of regional development (which seeks both economic and social transition) would depend on such working. This joint working takes place on a formal and informal basis, the latter appearing more effective. On the social side, in both English regions the modernisation of public administration and service delivery, through the effective use of ICTs, is being taken forward under the national government’s Transformational Government agenda. Although this represents a less profound use of the term, the e-government agenda leaks into and, in terms of additional spending, can free up resources to address, wider transformational issues. In the case of South Yorkshire the economic agenda was clearly based around the concept of transformation and modernisation. Assuming that these technologies can have that (transformative) effect in service delivery the question will be how the money freed up is to be spent. Will it be spent on more service, in line with the regional desire to build on social democratic traditions or will it be withdrawn by central government, working within the current neo-liberal orthodoxy?

In Emilia Romagna the term ‘transformation’ is also understood within a changing socio-economic context, though the term is ‘far from entering into the language of the social and economic development community’. ICTs are seen as central to processes of updating the sectoral composition of the region in order to develop knowledge-based businesses and to update firms in the existing industrial sectors (mainly manufacturing) in order to improve their competitiveness. On the social side, the main principle seems to be to sustain and underpin the ‘civic’ traditions of the region through using ICT. So ICTs are seen as a means of urgent, but, evolutionary change on the one hand and a means of preserving of current norms, through improved service on the other hand. This dual approach might be seen as ‘evolutionary conservatism’. The regional plans and actions clearly mix the technological
(including broadband infrastructure) and the softer factors (for more effective use).

In Extremadura, the rhetoric of transformation is very apparent in regional policy and in IS policy, perhaps even more so than in our UK regions. Again the focus is on the economic and the social. Whereas on the economic side Emilia Romagna seeks to update a successful industrial structure, the Spanish region had no industrial structure to speak of, and seeks to move directly from an agricultural region to a knowledge-based economy. Economic policy is balanced with social concerns. ICTs are seen as a transformative mechanism in this process. Again, both technological strategy (through the ‘marco tecnologico’) and social factors (through the ‘marco strategico’) are in place.

Many of the processes that New Member States (NMS) are going through, particularly deindustrialisation and attempted regeneration, in the context of globalisation, are similar to those faced by some of our west European regions. There are key differences, however: they started later, the impact was more sudden; the scale of the problem is larger and is complicated by the wider political, social and economic changes taking place. For example, while the German regions formerly belonging to the GDR are striving to become more like Western Germany in terms of employment levels and job quality, the Western German labour market itself has started to move away from the model of jobs for life and traditional employment relationships towards more flexible, often precarious types of employment.

In the NMS the term transformation is used in public debate, but it is used to refer to the transition from “a planned, command and control economy to a regime of late capitalism coupled with parliamentary democracy.” Amongst academics and policy makers the term used is ‘Transformationsprozess’.

Even within each NMS there are nuances: for example, in the German context transformation is also associated with the eastern Länder catching up with the west. In the Slovak context it is associated with independence and establishing a new country. In all the NMS regions, ICT are seen as instruments in the change process. The importance attached to them, however, varies. The clearest examples of ICTs being associated with positive change (by at least some actors) are in Kosice and Malopolska. In both places there is a degree of ’joined-up-ness’, with cross-domain organisations both at a strategic level and at project level. Kosice has a vision to develop an ‘intelligent region’ and has established Kosice IT Valley. Malopolska has established an IS Council. There are also a number of cross domain projects.

Not all regions saw profound change as a goal or at least not in all areas. In several regions, the goal was to modernise aspects of the economy, but also to conserve and continue traditional practices. Here, there is a positive attempt to retain certain aspects of the current situation, and to use ICT as a tool in the process. Emilia Romagna has already been mentioned. Extremadura also takes this approach. Even in the English regions there was a degree of conservatism (in the sense of valuing conservation rather than an expressly political sense) in the balance between the changes that ICT could be expected to facilitate and aspects of quality of life that it is hoped to preserve. So, for example, in East Anglia one interviewee suggested that the region’s vision is:

“... about landscape. It’s about heritage in terms of culture and history. It’s about lifestyle....There is an agreement about what is important and what is important to preserve and an agreement about the local success.”

4.2 Exploring the Regional Innovation Culture through the Five Clues

In our State(s) of the Art(s) document we identified five loose but broadly empirically verifiable “clues” – aspects of the regional innovation culture – which would help us to understand why some places seem to be better able to support transformative use of ICT. The five clues – areas for empirical focus – were the structure of regional networks (in particular those bridging domains), organisational learning capacity, the dynamics of leadership and followership within the region, the extent to which the region enjoyed a shared vision or narrative linking ICTs to regional goals, and finally the pattern of interactions between the region and the wider world (what we called openness and closure). In the analysis which follows we have combined the first and the last of these clues under the rubric of domain spanning networks as we found it hard in practice to differentiate between distinct inter- and intra- regional networks.
4.2.1 Domain Spanning Networks

Introduction

Perhaps one of the least contentious themes when undertaking our literature review, presented in our State(s) of the Art(s), was the significance of certain types of networks. For Castells (1996), for example, the ‘network’ defines the age. For Castells, the most important or powerful of these are not bounded by regions or by other socially constructed territorial units, but span the globe:

The global trend is for the informational economy to connect to its network those who are valuable to it (and to add further value to them) but to disconnect those who are valueless (and thus further weaken their chance of acquiring any value) (Castells and Himanen, 2004: 6).

Castells and Himanen (2004: 118-120) do address ‘local networking for regional development’ in the Finnish context, albeit in a rather superficial way, and notions of ‘network’ are also central elements in both Learning Region and Social Capital literatures.

The importance of networking in our regions

Some form of network was developed around ICT in all of our case study regions, although their form and strength varied across regions. What we term ‘overarching’ networks, those which stretch across a number of domains, were few and far between. The importance of networking was widely recognised by our respondents, whether or not strong networks were present and working in their own region. There was also general agreement that functioning networks would be crucial in order to develop the information society and transformative use of ICT at the regional level (though it was also acknowledged that the requirement for inclusive networking can slow the decision making process and retard progress):

Digital inclusion simply cannot work without partnership. We need to involve all sectors including the private sector and communities in design, planning and delivery.¹

Lack of functioning networks was seen as problem in those regions which did not have them and policies were in place in most regions to strengthen networking, though these efforts were mainly directed to networking within sectors and domains (principally the economic). Only in a few regions were efforts made to promote cross domain networking.

The acknowledgement of the importance of networking by our respondents is not surprising given that the dominant discourse in most of Europe is the shift from ‘government’ to ‘governance’ (Ferry, 2003). The concept of governance implies a “shift from a hierarchical mode of organisation...to forms that are based on networks and collective action” (Ferry, 2003: v). Ferry is referring to new forms of relationship emerging between the nation states and regions, but the same processes can be seen to be occurring between regions and sub-regional institutions and actors (see Pike et al, 2007, Chapter 4). Although a similar ‘direction of travel’ towards networked governance can be seen across our regions, at least at the rhetorical level, they appear to be at very different stages² and the balance between actors in the various governance systems currently in place are not the same across regions. There were also different balances between formal and informal networks across our regions.

Our focus, of course, is on networks relating to IS policy and to promoting transformative use of ICTs. Several respondents suggested that the rhetoric of the Information Society specifically pointed in the direction of cooperation and networks at the regional and other levels, but not all were clear that this actually worked out in practice. European policy and structural funds also gave impetus to this process. However, echoing the general point made in the previous paragraph regarding networking, networks relating to ICT also differed across regions. In some regions we could identify networking around ICTs and both economic and social policy, but in some only those relating to the economic. Again, there were differences in the balance between formal and informal networks. It should also be noted that the importance accorded to ICT differs between regions and this will, of course, impact on the likelihood of researchers uncovering networks functioning around this issue.

¹ South Yorkshire Group 1 respondent.
² In employing the term ‘stages’ we are not suggesting a linear process or a developmental trajectory towards a single end point in terms of governance.
The impact of historical, cultural and institutional factors on networking

A number of explanatory factors for the varying development of networks and networking were identified. These factors are discussed below. We separate them out for analytical purposes but, of course, they are often closely inter-related.

Different historical-cultural starting points

In all our case study regions the past hangs heavily on the present, in some regions more so than others (see also usable past section in narratives and vision section). The process of moving from agricultural or industrial based societies to knowledge-based societies itself results in discontinuities. In the New Member States and Thüringen (NMS+T) (a Länder which up until 1990 was part of the German Democratic Republic) the discontinuities between the past and present are sharpest, as they move from state-socialism to capitalism, but a similar story could be told in Spain with the end of the Franco dictatorship. This transition process has had implications for networking as a whole and networking at the regional level, though, as we will note later, there appear to be differences within nation states despite the shared heritage. Whether these differences suggest cultural nuances between regions or ‘agency’ overcoming ‘structure’ in some, but not others is a mute point.

Respondents in all the case study NMS(+T) regions referred to the impact on the transition process when discussing networking. In the economic sphere, for example, there has also been a radical change in the type of networks which are effective. For example, because of the difficulty of gaining access to scarce goods and services in the planned economy (in which money was often of little relevance for allocation of goods), personal networks were of utmost importance in the GDR (Grabher 1994). This applied in particular for businesses which rely on intermediate inputs, particularly small businesses which later were to form the bedrock on which entrepreneurial activity developed and which rely personal networks. Many of these networks became worthless or were destroyed in the aftermath of reunification. The deterioration of such social capital after the demise of central planning is a common feature of all post-socialist countries within Europe (Field, 2003). The NMS(+T) regions therefore have had to re-build network capital in order to enable collaboration between the businesses and public sector organisations which make up a region’s economy.

Our respondents argued that the period of state-socialism also created a culture where the ability to network was attenuated by the command structure of economic activity (and associated social structures). In the aftermath of state-socialism it was argued that networking was inhibited by the association of collective activity with the former regime. Furthermore, a ‘new individualism’ which some respondents argued had emerged post-socialism also impinges on collective action:

After 1989 [the fall of state-socialism], people do cherish their independence, but sometimes this goes at the expense of co-operation.4

As noted above, it is not only the NMS which have undergone profound economic and social transitions during the relatively the recent past. Spain has also undergone such a process, moving from dictatorship to democracy in a very short time. It was suggested that the dictatorship period led to individualism, secrecy, envy and tolerance of individual leadership (a man with a vision) and acted as a barrier to collective action and to personal initiative; and that remnants of this environment can still be detected.

There were also ‘different ways of doing things around here’ based on cultural-historical practices. So in Spain, for example, family and extended family remain very important in terms of networking on both the social and economic fronts in a way that, in the UK, for example, they do not. Similarly, it was suggested, some Spanish regional governments have a ‘circle of friends’ which it is difficult to break into. These forms of network may have strengths in terms of social cohesion, but it was argued that they can mitigate against new ideas, openness and innovation.

Despite these general points, however, our research did suggest that there were differences in attitudes towards, and realities of, networking across NMS regions and even within NMS countries. To

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3 There are, of course, differences between NMS and between NMS and eastern Germany which was incorporated into the a united Germany, not least the massive funding transfers in the latter case.

4 Slovakia Group 1 respondent
take Poland as an example, our field work suggested that whereas in Malopolska networks around ICT were clearly in place, in Pomorze networking was limited in this policy area. This suggests a degree of independent regional agency, albeit within a historical context that has been shared for the past 60 years.

*Maturity, institutional setting and coherence of the regions*

A number of other factors could also be said to impact on networks at the regional level:

There are significant differences in the length of time which the case study regions have been in existence in their current form. Some have a historical coherence which they can call upon (see narrative section), while others have been pushed together recently for administrative reasons with few functional or historical linkages or little common identity.

The time that the regions have existed in their present territorial form ranges from 1920s to the late 1990s/early 2000s in Poland and Slovakia. The length of common territorial heritage might be expected to be a binding factor, although this, of course, will depend on a number of issues, such as the degree of compulsion involved.

The maturity of a region might be expected to have an impact on installed capacity, including network capacity. In several countries the regional structure is still evolving, with uncertainty as to what the relationship between the region and state will be (e.g., Sweden) or what the intra-regional distribution of powers and competencies will be (e.g. England) in the coming years.

The relationships with the central state also impacts on the way internal networks operate (see Leadership section); sectoral approaches at national level – with little departmental cooperation – can also impact on regional networking; the industrial and firm structure of a region may also mean that functional linkages are outside the region; so, for example, in Sweden it was suggested “the rules [and] the money come through the sectors in a centralised system” from the central government. It is expected that efforts will be coordinated at the regional level, but it is not easy to bring these separately funded entities together at the regional level. A similar picture could be described in England.

Several of our regions seemed to be galvanised into action by the feeling of marginalisation and by the depth of the ‘shared problem’ faced by the region; the feeling that ‘something has to be done’ to overcome marginalisation. This seemed to act as a basis for the formation of formal and informal networks. It is not easy to explain how this effect is engendered in some regions but not in others which seem objectively to be in the same degree of difficulty. It may be that where some form of ‘local patriotism’ or regional solidarity can be invoked it is easier to set up networks5.

The geography of a region – both its internal geography and its relationship to the external world – may be important. The question of size was seen as important for some respondents. It was suggested that sparsely populated regions, with poor communications and which lacked a ‘critical mass’ would be poor spaces for networking. It is not always actual physical distance or communications infrastructure deficiencies which are important, but ‘mental maps’. So, for example, our interviews suggested that networking within Schleswig-Holstein suffers from the perception of large geographical distances between locations when compared to the situation in neighbouring Hamburg. In practice, though, it may take as long to travel between two parts of the Hamburg agglomeration than it takes to travel from Lübeck to Kiel, the two largest cities within Schleswig-Holstein.

It was suggested that populations of a certain size may work better for proactive networking. Sundsvall in Västernorrland, for example, was seen as a good size for cooperation, ‘not too big [and] not too small’:

> That’s the strong side of the city [of Sundsvall] that you have many networks between people … And it’s so big that you have some monies and muscles to do something … but it’s so small that you can know people [in a personal way] … So we can have personal networks between organisations…Here you get strong personal networks…you get power also.

5 Keating et al (2003) intentionally focused on culture and development in regions with a recognised strong cultural identity. TRANSFORM refrained from doing so.
On the other hand, despite its physical size Extremadura seems to be strong in terms of networking, at least across the public sector and related organizations. It is suggested that for the relatively small group of actors involved in IS networks Extremadura was like a “neighbour’s courtyard” where everyone knows each other:

We are so few and have been so many times in the same places talking about the same issues, that everyone knows what the other is doing and thinks about things.  

In short, regional IS networking is related to a number of factors, some structural, some psychological or perceptual, some physical. And these vary between places. Any attempt to improve networks and networking will have to take the relevant factors into account. Another point to be made is that different solutions may be required to engage different types of actors in networks. To take the example of Extremadura cited above, although policy-network actors may see the region as a ‘neighbour’s courtyard’ based on frequency of meeting, ordinary citizens, who policymakers may wish to enrol into networks, will not necessarily see it this way.

**Description of networks**

Having explored the complexity of networking and the different starting points in our regions, we now turn to look at the range of networks which existed in the regions. We specifically distinguished between what we term overarching networks, those which attempt to draw together actors from a number of IS domains at the regional level project-based or initiative-based networks and semi-formal and informal networks. We hypothesised that such networks would play different roles.

**Overarching networks**

Looking first at ‘overarching networks’ in the IS field, we found some examples of these but they were not common. In some cases these overarching networks came together in what might be termed ‘soft institutions’. Two examples of this were the South Yorkshire e-forum and the IS Council in Malopolska. The former brings together a range of actors from the Regional Development Agency and the local authorities, the black, minority and ethnic community (BME), the voluntary and community sector, the police and education. Similarly the Malopolska IS Council brings together a range of organisations.

**Table 6: Institutional Representation on the Malopolska Information Society Council**

<table>
<thead>
<tr>
<th>Category of organisation</th>
<th>Examples of organisations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Government</td>
<td>Marshall of Voivodship Office - head of the council and Head of Information Society Department</td>
</tr>
<tr>
<td></td>
<td>Governor of Malopolska</td>
</tr>
<tr>
<td>Central Government</td>
<td>Ministry for Science and Information (responsible for computerisation)</td>
</tr>
<tr>
<td>Other administrations</td>
<td>Union of Polish Counties, Forum of Mayors, Borough Leaders and Presidents, Forum of South Poland Local Offices Secretary</td>
</tr>
<tr>
<td>Higher education</td>
<td>Jagiellonian University, University of Science and Technology, Pedagogical University, Technical University; representatives of private universities in Krakow</td>
</tr>
<tr>
<td>Business</td>
<td>Private computer and telecommunication companies from the Malopolska region, National Economic Chamber of Electronic and Telecommunication, Polish Computerisation Society, Polish Chamber of Computerization and Telecommunication</td>
</tr>
<tr>
<td>Other</td>
<td>Joint Commission of Local Governments and Economic Associations of Malopolska; Malopolska Council of Public Benefit, Police, Regional Job Centre, Malopolska Agency of Regional Development (MARR), local associations connected to IT and ICT activities (CYFRONET), Malopolski Cluster of Information Technologies</td>
</tr>
</tbody>
</table>

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6 Extremadura Group 1 and 4 respondent
Overarching networks are also apparent in Emilia Romagna, but these seem to have a more organic character, having grown up over a number of years. The sheer density of interconnections, as well as the elements of coordination (from ASTER, an agency of regional government) allow us to talk about an overarching network. Respondents in Emilia Romagna generally claimed that cooperation and networking was a fundamental feature of the region, a feature which has been enhanced by the development of regional structures. “The ability to work together and to be open to work with other networks is one of the main characteristics of the region.” This meant that strong integrated networks became the ‘natural way’ to address IS issues. By contrast, IS networks in South Yorkshire come partly from an external imperative, networking and partnership being the English government’s preferred form of governance, partly as a result of the need to mobilise resources to take advantage of European Funding – ‘a resource seeking regime’ as one respondent put it⁷, and partly from a bottom up impetus provide by enthusiastic actors interested in the social and economic potential of ICT. A similar point was made regarding the importance of funding as a motivational force behind networks.

Extremadura also seems to be developing an organic approach to networking. It has, of course, some way to go to catch up with Emilia Romagna but is seeking to generate networks through policies, particularly in relation to the use of ICT; partnership working practices are now a fundamental condition for accessing support from the regional government.

**Domain networks**

In all our case regions there were several examples of domain networks. By domain networks, we mean networks operating within a particular area such as e-health, e-education, e-government or e-business. These generally do not link up with other domains within the region (except through fora described in the previous section), though they often link with networks outside the region.

Cluster policies or sectoral polices which required joint working are also a key focus for policymakers in most regions. In several places these were chiefly about trying to create networking and partnership. For example, in both Thüringen and Schleswig-Holstein, whose economies are strongly dominated by SMEs (with a tendency to the smaller size classes), economic development policy is very much focused on networking and cluster-related policy. As most SMEs lack the resources for strategic planning, networking and innovation, they can easily suffer from inability to engage in collaboration, which would cause a competitive disadvantage against larger companies which have a much larger capacity to invest in networking. A number of agencies have been created to address this issue involving the Länder and the Federal State (particularly in Thüringen) and public foundations established by the Länder. In Thüringen it is an explicit objective of innovation and ICT related policy making to address the specific disbenefits which may result from the small sizes-dominated structure of Thüringen’s economy through the creation of networks. This is also the case in both the Spanish regions considered in this report.

**Project and initiative networks**

Project or initiative networks seem to be important in that they provide a clear focus for activity. They are often time-limited and thus the nature of commitment expected is known. They can play a strong role in making linkages to partners beyond the region and for importing ideas and expertise into the region. Regionally constructed projects can also improve networking within the region. Successful projects can provide a focus from which to draw in a range of actors, including those with resources, into the IS networks, not least of all as they seek to obtain some of the credit for success. This, of course, requires several factors. First, a project must be successful (or become perceived as successful). Second, it must make itself known to a wider community, and not just remain internally focused; this implies a communications strategy. Third, there also needs to be a plan in place to build on the project and widen its impact and to take applications more widely. A key point for projects is also how to enrol the end user (see learning section).

**Semi-formal and Informal networking**

Many formal and project networks are underpinned by semi-formal or informal networks. In some

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⁷ South Yorkshire, Group 2 respondent.
regions, informal networking has had great resonance among interviewees when looking to distinctive attributes of the regional modes of work. In Emilia Romagna, it was suggested that parallel to every formal network there is an informal network. These informal networks are based on common work experience or on common projects. These networks appear very tight, but not closed, and they have an extra-regional extension. In Emilia Romagna these networks were said to be extensive. More generally, however, although these semi-formal and informal groups were seen as very important, they were not extensive, and the members could easily be identified. In some regions these groups comprised both higher level actors and those further down the hierarchy. These people attended the same workshops and conferences were always present at meetings.

...Informality of relations brings agility to communication and that makes it easier to understand problems and find the solutions and options to be taken.

There are, however, different degrees of informality. In England, having a beer or a coffee after work seems to be a common practice, with people in networks being recognised for the personal capacities they bring to a network. This is not the case everywhere. Firstly, such a degree of informality is not apparent in all regions; people didn’t ‘go for a beer’ and informal networks tended to build up though co-presence in formal regular meetings. Secondly, in some regions the relationships seem to be based on institutional affiliation rather than personal relationships per se. In all cases, these networks seem to be based on the enthusiasm of particular individuals.

Our fieldwork suggests that in all regions where there were high levels of activity around promoting ICTs and their transformative use the enthusiasm of individuals was crucial. This is, of course, true at leadership level (see leadership section), but is also true further down the hierarchy. There seem to be a group of ‘networkers’ and ‘network spanners’ who play a key role within individual networks and in providing a bridge between networks. These people act as a ‘glue’ or an ‘oil’, holding networks together or acting as a lubricant between networks. The value or effect of such individuals may, of course, change over time and with the maturation of structures of which they are part. Relative stability, trust and a certain tolerance to failure along with the perspective of open-ended improvements (as opposed to rigid planning and ‘tick-box’ evaluation) were suggested as important contextual factors which might nurture the emergence of such individuals.

To a degree, these individuals can be compared to Castells and Himanen’s ‘social hackers’ concept; those authors contrast social hackers to computer hackers in that they apply “the hacker model of sharing resources to some social goal instead of software” (p97, italics added). They describe the computer hacker process as starting with “an individual who has a great idea and some personal resources. Then, this individual announces his or her idea to others. Those who believe in the same vision join in the realisation of the vision by contributing complementary resources” p99); the authors suggest similar processes for social hackers, but operating in the physical as well as virtual world. They argue that in Finland social hackerism has had an important role to play “where strategies of government have been unimaginative or slow to be realized and where commercial interest has been lacking” (p97).

The individuals we have observed in our case studies have some similarities with ‘social hackers’. They often have ideas; they also “share resources to some social goal”. They do so by taking on additional tasks – ‘going the extra mile’ – in order to apply ICT to social and economic agendas and to promote the transformative use of ICTs. For example, we came across individuals whose main role was to run internal IT administration departments. These people, by applying personal resources, as well as seeking out additional resources, created spaces in which to develop and deliver more clearly socially orientated ICT applications. There were also examples of such people operating in universities and in the private sector. They do play a ‘substitution role’, in the sense described by Castells and Himanen, by getting projects started where government does not seem interested or by pushing policies. These actors, through the networks described above and through their own activities – often demonstration activities – are also able to make a contribution to strategy and policy. The nature of our research did not allow us to delve as deeply as we would have liked into characteristics of these actors. Nonetheless, some common factors seem to be apparent:

- Enthusiasm for ICT and a belief that it can be applied for transformative social ends
- An understanding of ICT’s potential to transform, but not necessarily deep expertise regarding the technical capacity of ICTs (though many did)}

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8 Extremadura Group 4 respondent
A varied history in the sense that they tended to have worked in several environments, for example (and commonly) having worked in both the private sector or the third sector and in public administration; this brings broad experience of varied networks

Leadership qualities, particularly leading by example and by demonstration and the ability to persuade; these qualities were important as these individuals were not necessarily (and not usually) high up in their organisations

An affiliation to an institution, usually directly employed by an important regional organisation or with some strong link into one.

There are also clear differences with Castells and Himanen’s ‘social hackers’, however, in so far as we understand the position of these authors. Whereas, Castells and Himanen seem to be referring to the role of ordinary citizens in the networked society, we are describing people who already have clear linkages into the system which controls resources. Castells and Himanen describe how “a father of two and enthusiast for school-home cooperation” kick-started a successful Net literacy programme gaining support from a range of institutions and actors for both funding and implementation. In other words, this person was able to link an idea with a resource network (to gain funding) and with an expertise network (to implement the ideas). The mechanisms through which this individual gained access to and mobilised these networks is not made clear.

It is clear from our research, however, that an idea, alone, no matter how brilliant, will not mobilise the wide resources required to fund and implement it. These are long-term processes needing long-term commitment (albeit with the need to be opportunistic). Ideas are likely to be a product of collective action, or at least collective debate. Building an ideas network itself takes time. Network building, gaining trust, finding commonality and bringing the network (whether formal or informal) to a position where it can act as an underpinning support mechanism, but also act as a forum for open debate, where constructive criticism can be voiced also takes time. These networks also need to be sustained.

Ideas networks or individual generators of ideas also have to be able to link into resource networks and expertise networks, whether these are regional or extra-regional networks. This again is not automatic and takes time. It also requires experience in designing bids and costing proposals. The evidence from our studies suggests that there needs to be a connection to institutions - or key actors within institutions - in order to mobilise resource and implementation capacity. The nature of the relationship between these networks may vary between regions – the intensity of the linkages, the role of individual leaders versus formal institutions – but the linkage is important for sustained action towards the transformative use of ICTs. These institutions can seldom be casually approached. Networkers or hackers will need access to ‘gatekeepers’ who can open doors and unlock resources. Exactly who can play the gate-keeping role will vary from region to region (see leadership section, below and the networker will need to know whom to approach and who to build relationships with. Figure 6 tries to capture this relationship diagrammatically.

**Figure 6: Ideal type network intersection**

![Diagram](https://via.placeholder.com/150)

*Source: The authors*
Limits to networking

The evidence from our fieldwork suggests that generally networks are seen as a ‘good thing’ and that the trend is towards the development of networks to address the transformative use of ICTs. This is not always a straightforward process, however, and there are a number of common limits to networking. We now address these.

First is the problem of the network inclusivity. It was clear from our research that the majority of networks uncovered are relatively narrow and/or shallow. In the ICT arena, they often depend on a small number of enthusiasts. They are mainly driven by the public sector and it is not easy to bring all communities on board. Public sector networks seem to be most coherent. This might be explained in part as being due to the non-competitive nature of these sectors by contrast with the private sector. The ease with which different public sector institutions can work together should not, however, be overestimated. For example, in some regions linkages between the region and the key cities do not seem strong and networked relationships between different tiers of government or across public sector domains are not always apparent, beyond the formal structures. As one respondent put it:

Don’t underestimate the politics of keeping four local authorities in the same room together…All are coming with different priorities. Doing it for a short period is one thing, over a longer period is more difficult.9

Second, even in those regions which had had some success in creating an overarching network, drawing in those beyond the public sector was not easy. Even in formal networks, which are constituted to be inclusive, there remain questions of power/influence symmetries. In regions where there is a strong interest from elected politicians in the transformative use of ICT, their voices are likely to dominate. Where the political voice is absent or not strong (either as a result of the governance structure of a region, or through lack of political interest in this policy field) other actors may dominate. In South Yorkshire, for example, one respondent suggested that an ‘elite’ had emerged within the overarching network, namely those who might be described as ‘information society professionals’. These people are not necessarily IT professionals, but have day-to-day involvement in IS policy and implementation. As in any field, specialists and experts tend to dominate. The degree of influence of other participants was said to be limited unless the groups are “fully engaged”. For many interest groups, it is very difficult to have a “persistent voice”, because of limited resources and wide responsibilities (a point picked up on below). It often depends on there being an individual with a special interest in ICT/IS to effectively articulate the needs of third sector groups.

The resource issue is a crucial one. This relates not only to financial resources, but also to time and expertise. As one respondent put it:

These days, people co-operate on an ‘ad hoc’ basis, according to common interests, or for implementation of common concrete projects … I don’t know, perhaps I am too sceptical, but in general in the current times, the creation of platforms or discussion forums has to be very attractive if people are to be devoted to them in addition to their day-to-day workload.10

This suggests there needs to be a degree of ‘redundancy’ in the ‘ecosystem’ and in all parts of the system if truly inclusive networks are to be developed.

A potentially important element in regional networks is the universities. Their participation, however, varied from region to region. They were very important and well integrated in Malopolska, but although Pomerze has strong universities they seem to stand separate from each other and from the regional administration. In South Yorkshire they are engaged in innovation, but also play a role in regional networks (albeit not as strong as some would like), while in East Anglia they tend to be outward facing.

In some regions, universities seem to be excluded from networks while in other regions they exclude themselves. Often, these linkages depend on only a few people; in others, there are ‘science city’ (South Yorkshire) and ‘triple helix’ (Vasternorrland) initiatives with more formal linkages.

An apparently intractable problem across nearly all our regions is the issue of including the private sector in overarching networks which seek to take a regional perspective. There were examples of large companies, particularly multinationals, becoming engaged in overarching networks and Chambers of Commerce and other industry representatives also sometimes had a presence. Often,

9 South Yorkshire, Group 4 respondent
10 Kosice, Group 4 respondent
however, this depends on the particular interests of individuals and the same people tend to come to meetings. There were a number of examples of firms, particularly large firms, becoming involved with the public sector on a partnership basis around issues of particular interest to them. For example:

ü In Kosice, a relatively strong partnership between the public sector, the private IT sector and the universities has emerged under the name Kosice IT Valley Association. Although as the name suggests this network is clearly focused on a particular sector, wider economic development initiatives are being developed under its auspices, notably IT training.

ü Also in Kosice, the CISCO Network Academy, part of a network with a national brief, has a strong presence, with the Technical University and a number of major IT companies working together with secondary schools in the region.

ü In Yorkshire (including South Yorkshire), an informal partnership has been created between the regional development agency, a number of large multinationals (some of which have only a limited presence in the region), and one or two smaller IT companies in the region. The aim of this network is to increase the number of SMEs using ICTs and also to try to encourage strategic (and therefore it is hoped transformative) use of the technologies from the start up phase;

ü In Malopolska, a ‘Network of IT Companies Acceleration’ has been established and seeks both to stimulate the growth in IT companies and also cooperation between them.

ü In Navarra, the role of the ICT sector association (ATANA) as a key enthusiast for the development of the ‘Cluster CIT’ initiative, which also (although not exclusively) intends to act as an overarching platform for all those who have an interest in the development of the regional IS.

Importantly, given their perceived importance to growth and competition, SMEs were commonly absent from networks. This was most obviously the case in relation to overarching, project and informal networks. Even where networks were specifically designed to attract SMEs, a number of difficulties were noted.

First, the immediate relevance of networks, narrowly defined by turnover and profit:

“They [businessmen] are not able to see the advantages of cooperation, what is important for them are the profits, profits that have to be measurable and material, such things like knowledge about the market or local determinants is not important for them.”

Second, industry representatives who attend networking events tend always to be the same, while the majority of SMEs appear to take little notice of the offer for support.

Third is the rivalry between small companies which makes cooperation very difficult. This rivalry seemed to be particularly pronounced in the NMS(+T), perhaps related to the recent development of capitalism, but even in those regions where SMEs are generally recognised as having networks in the economy there were problems. For example, in Emilia Romagna, which is traditionally a very well networked region, famous for its ‘industrial districts’ based on SMEs cooperating, these firms were the hardest set of actors to engage in networks around ICTs. Similarly in the German Länder, practitioners from the regions consistently report that it is difficult to reach SMEs with networking activities. While networking in well defined supply chains is one of the cornerstones of the German “Mittelstand”, it appears that the willingness to engage in more open, less formalised “value networks” is still low. There is some evidence that SMEs in East German länder are starting to engage in networks, but that they derive fewer benefits than their counterparts in the west. This may suggest that it takes time to build trust in networks. One example where ICTs may actually get in the way of networking also comes from Germany. It was reported from the Logistics Portal Lübeck, a newly established network for the logistics industry in the Lübeck area, that ICT-based applications meet with limited enthusiasm wherever they require more transparency of market-related data.

Fourth, the ‘mentality’ of owners is seen as an issue. Many owners do not desire outside input into their businesses.

It may be inevitable, given the issues that characterise small businesses, that only those businessmen who have already been successful and who either sell up or retire, or who establish a business infrastructure that makes the firm less dependent on their presence\(^1\), can or will contribute to wider

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\(^{11}\) Pomorze, Group 1 respondent

\(^{12}\) These people often ‘want to give something back to the region’. We did not come across such people during this research, but this has been noted in previous research – for example, in the ASPECT project.
regional networks. Constructing these attractive networks, of course, takes time. It also requires that the ‘offer’ must be clear. The ability of the public sector to make initiatives and networks relevant to firms was questioned by some of our respondents. This lack of articulation was commonly understood as one of the main issues to be addressed in order to be able to communicate more clearly with the end-user/beneficiary and thus to make the initiatives more effective and the overall regional approach more credible / integrated. There is an overall perception that enterprises end up confused about which agencies to go to for help. Again, this varies between regions and countries. Even on individual initiatives it is difficult to engage SMEs, but the general message is encapsulated from a Polish respondent speaking about the Malopolska IT company acceleration network:

…it was not easy to convince them for cooperation, but as soon as they realized that it is profitable and they can get advantage from cooperation and advertising together they are keen to cooperate.13

This is a general point which emerged from several respondents. To some extent, this seems to challenge the argument that ‘trust’ often seems to be the key factor underpinning networks. ‘Enlightened self-interest’ facilitates certain networks. Of course, generalised trust remains an important issue and it will be more difficult to draw firms or other actors into networks where this is low. It would also be hoped that trust would be built through networking in networks whose initial impetus is self interest. Another trust issue relates to the transparency of the actions of those who hold funds. In one region, where the regional administration is seen as having a ‘circle of friends’, this attitude was said to exclude outsiders and also certain institutions (universities and firms) and it was suggested that this was at the expense of cohesion and innovation.

Summary

Our research suggests that networks are widely regarded as being important in constructing the Information Society and in putting in place structures to promote the transformative use of ICTs. The development of networks varied across our case study regions, in terms of types of networks and the relationships between them. Some of this can be accounted for by the individual histories, cultures, and institutional and identity issues. These ‘structural’ factors cannot alone explain the differences between regions; we also have to take into account the agency of institutional actors and indeed individual actors.

We found networks working towards increasing the transformative use of ICTs in all regions. Again, however, there were differences. We found few ‘overarching networks’ which seek bring together the various information society domains. There were a couple of examples of this process being ‘formalised’ through the creation of new soft institutions (see leadership section); in other places, they seemed to grow organically, with dense networks emerging over time. Some regions took particular policy actions to try and promote these networks, notably making resources dependent on networking and partnerships.

Single domain networks were relatively common as were project networks. Semi-formal and informal networks are by their nature harder to track down, but they appeared to play an important role in several of our case regions. There were differing degrees of informality from region to region, in line with local cultural norms. Where semi-formal and informal networks did exist, respondents saw them as very important.

All networks, particularly project, semi-formal and informal networks, seemed to rely heavily on key individuals or groups of individuals, who formed a ‘community of believers’, individuals who are committed to the social use of ICTs and who go ‘above and beyond the call of duty’ to try and push the agenda. These people form a bridge across networks. To a degree, these individuals can be compared with what Castells and Himanen (2004) call ‘social hackers’. A key difference, however, is that whereas those authors appear to be referring to ‘ordinary citizens’ we argue that it is those people who are already well placed in networks who are more likely to be able to access or give direction to resources and to draw down resources to implement ideas. We argue that the transformative use of ICTs will require the coming together of idea, resource and expertise networks.

There are, of course, limits to networking. In most of our regions, networks lacked inclusivity. One of the most important absentees from the networks we looked at were SMEs, even where networks were

13 Malopolska Group 3 respondent
specifically constructed to benefit them. This is worrying given the weight of expectation placed on SMEs in creating a dynamic knowledge economy. It would appear that the best hope for enrolling these businesses into networks is through demonstrating how a project or initiative will benefit them in the short term. This suggests that, initially at least, ‘enlightened self interest’ rather than trust issues are the most important.

Even when networks were formally inclusive, however, uneven power/influence symmetries were apparent. This is a result of the unequal resources which institutions and individuals can bring to the network and it is not easy to envisage how this can be addressed.

4.2.2 Leadership and Followership

In our State(s) of the Art(s) we suggested that leadership may be particularly important to the effective use of ICTs at the regional scale because they have important threshold effects and first-mover advantages. The role of leadership has been largely neglected in the regional development literature, though there is a well developed management literature which has recently focused on collective leadership.

Regions and ICT policy in the national and European context(s): Regional autonomy to lead innovation?

Our research, of course, focuses on transformative use of ICT at the regional level. Regional issues, however, including the question of leadership within regions must take into account wider relationships. This, of course, does not just apply to the ICT or IS agendas. The question of regional autonomy has been widely written about and we do not have the space here to enter those debates in any profound way. We will restrict ourselves in this section to the question of how different levels of autonomy may impact on the potential for leadership in our case regions in terms of innovation, and around IS agendas in particular. We focus here on political autonomy and the relationship between region and state, and also briefly consider relationships to the EU. There are, of course, wider issues of autonomy, outwith formal governance structures. An important instance of these in respect to potential leadership may be a region’s place within the global production complex: what leadership potential exists within large private sector organisations and to what degree these organisations are local facing. We turn to this latter point as one element of our discussion on private sector leadership, below. First, we focus on political autonomy in relation to leadership. This focus is justified by the fact that in almost all our regions the public sector was the key actor driving (or failing to drive) the IS agenda.

As can be seen from Table 7, there are considerable differences in the formal relationships between regions and national states in our case study countries. As pointed out by Ferry (2003), the legal status of regions and their financial competencies will be crucial in determining their ability to develop and implement regional policies. In addition to this formal relationship, the degree of intervention and control, through targets and other managerialist procedures may vary from state to state. These factors are likely to impact on the degree to which leaders or potential leaders (and indeed other actors) within a region are circumscribed in their ability to try to regionally innovate, as opposed to regionally interpreting policies handed down from above. Innovatively interpreting and quickly implementing national or European policy is, of course, one area in which leadership can be exercised and regional or sub-regional leaders can use national policy to give impetus to their own IS agendas (as we will explore below).

Table 7, of course, attempts to capture the essence of national governance systems and the role of regions within them. It should be noted, however, that there are also formal differences in legal status and competencies between regions within some of our countries. The most obvious example is in Spain (and to a lesser extent Italy) where regions have different constitutional settlements; our two case study regions Navarra and Extremadura provide examples of this. Informal differences can also be noted within countries; the eastern German Länder, although having the same formal status as those in the west, have a higher degree of dependence on the Federal Government because of the level of budgetary transfers. An additional point to be made here is that the extent to which regional leadership is developed may depend on the length of time which credible regional structures have been in place - as it takes time to build leadership structures (and networking and learning structures). A final point is that a region’s historical leadership inheritance appears to be an important factor.
Several respondents were critical of the lack of leadership in their region or their country more generally. This was particularly (though not exclusively) the case in the New Member States. Many claimed that this was a result of state socialism’s lack of respect for individual initiative, but also the lack of a regional tier of government. Interestingly, in Pormorze, it was claimed that lack of leadership was partly a by-product of the strong leadership role played by the region during the final years of the communist regime. This, it was claimed, led to the departure of many leading figures to take key political roles in Warsaw, thus undermining leadership potential regionally. At the regional level, it may also be that the ‘followership’ is lacking, again based on history. Again, in the case of our NMS regions, it was suggested that longstanding mistrust of leaders, taken together with a ‘new individualism’ post-socialism, means that people are often not prepared to be led.

Table 7: Classification of regional governance structures in Case Study countries

<table>
<thead>
<tr>
<th>Type of state</th>
<th>States</th>
<th>Regions</th>
<th>Right of region to participate in national policy</th>
<th>Control over sub-national authorities</th>
<th>Representation, budgetary and legislative powers of regional institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>Germany</td>
<td>16 Länder</td>
<td>Yes</td>
<td>Yes (not absolute)</td>
<td>Wide-ranging powers: elected parliament; budgetary powers; legislative powers; right to levy taxes</td>
</tr>
<tr>
<td>Regionalised unitary</td>
<td>Italy</td>
<td>5 autonomous regions, 2 regions with specific status and 16 ordinary regions</td>
<td>No</td>
<td>Yes</td>
<td>Advanced powers: political regionalisation: elected parliament; limited budgetary powers; limited right to levy taxes</td>
</tr>
<tr>
<td></td>
<td>Spain</td>
<td>17 autonomous regions</td>
<td>Yes</td>
<td>Yes</td>
<td>Limited powers: regional decentralisation: elected parliament; limited budgetary powers and substantial financial transfers from central government; limited right to levy taxes</td>
</tr>
<tr>
<td>Decentralised unitary</td>
<td>Sweden</td>
<td>Regions have a district/department/county status. Groups of counties have regional and planning functions</td>
<td>No</td>
<td>No</td>
<td>No powers: regionalising without creating a regional government: no elected parliament; no right to levy taxes, no budgetary powers and all powers and financial resources transferred from central government</td>
</tr>
<tr>
<td></td>
<td>Slovakia</td>
<td>8 self-governing regions</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poland</td>
<td>16 self-governing regions, with counties and communes</td>
<td>No</td>
<td>Yes (not absolute) – financial and approval of bills/laws</td>
<td></td>
</tr>
<tr>
<td>Centralised unitary</td>
<td>UK (England)</td>
<td>Non-regionalised state (one tier, two levels)</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted and elaborated from Loughlin 2000, cited in Ferry 2003

Another set of governance relationships which are important in terms of where leadership (territorial level) in a region and the type of leadership (individual or collective) can be exercised, is the distribution of formal powers within a region. Looking at Table 7 as a continuum, at one end England has no elected regional government but there are elected local authorities. Competencies are (relatively unclearly and in constantly shifting ways) divided between these agencies (and other actors). A partially formalised sub-regional (intermediate layer) has also been created. In this context, regional leadership does not have a clear expression when considering cross domain policies and has to be negotiated. At the other end of the continuum, the German Länder have wide ranging powers; of course, there is a degree of negotiation even here, and, for example, important cities may still exercise considerable power and local leadership which may be at odds with or, may at least skew regional
policies including innovation policy (particularly in the context of the growing acceptance of the ‘city-region’ concept in European urban and regional planning).

Turning specifically to the relationship to the ICT and IS agendas, the relationship between the ‘centre’ and the regions is extremely complex.

On the one hand, we have Emilia Romagna which, although clearly placing policy in the context of European and national development agendas, has the autonomy and institutional capacity to develop its own IS policy. On the other hand, the Slovak regions have no formal powers over IS policy and, if they wish to exercise such powers, need to carve out action spaces, together with mechanisms, in which to operate. Our research also suggests that formal powers at the regional level, although they may be useful for strategy development, do not necessarily engender leadership particularly in relation to collective action around ICTs; so, for example, both our German regions have significant competencies to develop policy, but both were criticised by respondents for lacking leadership in this field.

Where regions have limited autonomy, national IS policy will also impact on the space in which innovation can take place and the directions in which leaders can influence policy. Generally speaking, there is a national IS strategy that has been articulated in our case study countries (though in Slovakia it is only now emerging). The coherence of such strategies will obviously impact on regions. At present, the regional and local actors may be more affected in their policy and policy priorities towards ICT, by the priorities of their ‘parent’ ministry(ies) who fund them and set their targets. So, for example, in Poland, e-government is clearly a priority action area and significant amounts of local resource are allocated to this. Sudden changes in priorities and targets from central government, a regular occurrence in England, can also impact on a region’s autonomy to innovate; this can be turned to advantage if local IS leaders are able to marshal resources in support of local priorities in a creative and opportunistic way.

Increasingly, following the Lisbon Agenda and associated instruments, in many important policy areas, a European layer must be added to the national. In relation to ICT, obviously, Europe has developed a relatively coherent policy and has enumerated the key areas which it regards as priorities and placed them within the context of the Lisbon Agenda. Clearly, this is an important factor for regional policy directions. Again, however, the situation will vary across regions, with those regions requesting Structural Funds perhaps being the most influenced (or most directly influenced) by European policy.

Leadership in IS agenda in TRANSFORM case study regions

The above section sets a general context for looking at leadership in our case study regions, pointing out that the discretion for leadership of the IS agenda at the regional level varies depending on the formal and informal relationships between the region and the nation state and Europe. These impact on the policy process, both generally and specifically in relation to ICT and IS. Although the Information Society agenda is stated as a key policy area in all our countries, the degree of enthusiasm for policies in this area may wax and wane. This may impact on the regions. In some countries, even where there is an Information Society Strategy, coordination at the national level is not always apparent. Again, if national government adopts a silo mentality, with ministries in effect adopting their own approaches to technology, then this will impact on regions particularly in less decentralised states. And, of course, it may be that a partnership approach involving the national level is required in order to achieve extra-regional efficiencies, for example, in applications such as electronic patient record systems which, as pointed out in the case of a small Swedish region, cannot be developed alone. These points may be more important in the context of ICT and IS agendas since, partly because they are relatively new, and partly because they are relatively diffuse, they do not necessarily have a single ‘institutional’, ‘departmental’ or ‘professional’ home. The formal power allocated to the regions around the ICT agenda do not necessarily always follow the model of autonomy set out in Table 7, above. In Slovakia, for example, the regions do not have formal powers in this area.

Forms of leadership within regions around ICT will also vary in relation to how formal and informal power is distributed within the region and how much control the regional administration has over important domains such as the health service, and how much is either nationally or locally managed; this varies significantly between our countries.

We now turn to look at the importance of (forms of) leadership in different regional contexts, drawing on our case studies. We attempt to draw out the important common messages and the differing ways
in which leadership works in different places.

**Institutional Leadership**

One clear message from our case studies was that where a coordinated approach to transformational change was being adopted it was being driven by the public sector. In most cases, leadership was provided by the regional administration. This is unsurprising given this level is often where competence lies to create or coordinate development strategies and plans, including plans concerned with IS and ICT, though not all regions had actually developed IS or ICT plans (see narrative section). In addition, in several of our regions, the public sector felt that there was no alternative source of leadership and they took this role on by default. As one respondent in South Yorkshire, a region with a relatively small private sector and where key leadership pillars of the industrial society (the coal board and the miners’ union) have disappeared, said: “if we don’t do it, it won’t be done”. This remark was echoed in other regions. A similar situation was described in rural Extremadura where it was perceived that there was no credible alternative to the public sector:

> “The leadership has been taken by the Junta (Regional Government) and it has been fundamental … it’s true that this is a political leadership is being sustained by a technical capacity, but we could have made a project twenty times better and we wouldn’t be talking about any of this if such political leadership didn’t exist … It was and keeps being essential.”

A similar picture emerges in Kosice, both in relation to infrastructure investment and to softer factors:

> “We consider the development of informatisation as our responsibility….we won’t have it happening spontaneously, we won’t leave it to the market only – which would mean that some villages would never get the Internet because a provider would never go there”

There were, however, regions (in spite of plans and strategies being in place (whether single or multiple)) where our respondents suggested that there was little sign of leadership activity from the public sector. In one such region, the passivity of the regional government was seen as a real barrier to development “as nothing takes place in the region without the blessing of the regional government”.

As suggested above, institutional leadership of the IS agenda does not necessarily equate to the degree of autonomy in this policy area. Several of the regions with the highest levels of autonomy were reported as being least active in this respect. By contrast, in Slovakia, where regions do not have formal powers in IS, Kosice has developed an action space within which to develop initiatives, demonstrating the importance of agency even in unpromising structural circumstances. This, to some degree, mirrors developments in some EU-15 regions in the 1990s where the structures, and even in some cases the awareness, were not in place to encourage regions to develop an ICT or IS agenda. Institutions or often individual actors, took the initiative (for examples of this phenomenon, see, for instance, Hughes, 2001).

Where the public sector, however, was not providing this role, or facilitating other actors in providing the role, then there was generally little coordinated action, though there may have been significant firm-based or sector-based (by sector we include sectors of general interest such as health or education) activity taking place.

**Universities**

The role of universities in regional development has received much attention in recent years (see, for example, Charles, 2005; OECD, 2007; Etzkowitz, 2008). Universities are considered in more detail in the networking section, where it is pointed out that universities act in very different ways depending on their own histories and there own regional contexts. This is also true of their contribution to leadership. In several case study regions, there were examples of universities becoming part of the collective leadership, often through joining the new soft institutions referred to below. The universities were

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14 Extremadura, group 1 respondent
15 Kosice, group 1 respondent
16 Navarra, group 1 respondent
important actors in Emilia Romagna, in taking forward a large number of projects looking at particular potentially transformative areas such as ICT and ageing; in Kosice, giving impetus to Kosice IT Valley; in Malopolska, and in South Yorkshire in helping develop soft institutions and projects (Box C). They could not, however, and did not try to, substitute for public sector leadership. Importantly (see networks) they did provide a base from which leaders were generated, for instance in Malopolska and Emilia Romagna. Individual academics also played a key role in pushing forward the agenda in several regions (see section on individual leadership, below). In Pomorze, there were a small number of academics who were named as important leaders, but this seemed to be in the context of trying to get the wider IS agenda accepted as a policy priority. An important example of a university taking a leadership role and building linkages, both with the private sector and the public sector, both within and beyond the region is Kosice Technical University (see, Box B).

Box B
CISCO Network Academy – Kosice, Slovakia

CISCO Network Academy is a good example of a transformative use of ICTs in the area of eLearning within an ICT sector itself. It is also a good example of how regional conditions influence the process through a mobilisation and co-operation of numerous partners, which is often so difficult to achieve in the context of new member states.

CISCO Network Academy in Slovakia is, in essence, a successful network of IT training places, which relies on a wide “ecosystem of partners” consisting of about 20 – 25 IT firms, 4 universities and over 50 secondary schools. While the ecosystem operates at the national level, Kosice region played a pivotal role in it. Indeed, the initiative to establish this network (ahead of neighbouring countries) was driven by people from Kosice (based at the Technical University of Kosice), the first ‘regional academy’ in Slovakia was created in Kosice and most schools (‘local academies’) that are part of the networks are in the region. The founder and co-ordinator of the network admits that the process of creating such a network is a “long-term matter”. However, 9 years of his life spent on the project are bringing their fruits and the Network received high recognition both in Slovakia and abroad. Using IT-based courses, the network produces several hundreds of experts for the IT industry every year. This has transformative effects on the regional economy. Indeed, the availability of well trained IT workforce locally in turn creates conditions for more investment in the IT sector in the region. One of the reasons why IT firms are investing in Eastern Slovakia is related to the fact that Cisco Network Academy seem to be doing an excellent job in producing well prepared people through its network of training ‘academies’ at universities and secondary schools. As the Cisco Network Academy representative has stated:

“We have information … from concrete firms that they came as IT investors to Slovakia, and that they were choosing Slovakia and Eastern Slovakia, thanks to the fact that this network have been created here and … that it guarantees to produce every year a number of people [with skills] that are generally scarce…”

Through the human capital formation, Cisco Network Academy in Eastern Slovakia, thus also contributes to one of the aims of the Kosice IT Valley Association that has been set up recently to foster a transformation of Kosice region into a knowledge-based economy.

The success story of Cisco Network Academy in Eastern Slovakia, however, is also telling from the point of view of regional conditions and mobilisation of actors. In the case of Kosice, the economic challenges facing the region themselves seem to have a mobilising effect. Indeed, there is a strong feeling among regional players that Eastern Slovakia is geographically, economically and/or politically marginalised. In essence, a geographical distance from major poles of economic development creates a situation where there aren’t that many opportunities and so all emerging opportunities need to be seized. The following comment was made in the context of successful penetration of Cisco Networking Academy in East Slovakian schools, but the principle has a wider validity:

“Those opportunities were so small and there were so few of them, that people were simply going after any opportunity, if they did not want to leave [the region].”

Mobilisation of, and co-operation between, various players, necessary to carry out complex projects (such as launching a Cisco Networking Academy) is often difficult to achieve. But in a number of instances Kosice region seem to have succeeded, perhaps also lubricated by the sense of regional togetherness in which a sense of regional identity plays a catalytic role.

Private sector

As with the universities, our research suggests that the private sector is becoming involved in soft institutions, and thus making a contribution to collective leadership, in a number of regions. This is mainly at the level of Chambers or other representative bodies, though some individual companies do get involved. These tend to be larger firms. Although they are involved in collective leadership through
this arrangement, they seldom drive the process, outside their own particular firm or sector. Also, there was a tendency for private sector firms not to cooperate amongst each other in many of our regions (see network section).

We did, however, find examples of the private sector, whilst clearly primarily acting in their own sectoral interests, helping to galvanise regional policy around ICTs. Kosice IT Valley, where the private sector was ‘pushing at an open door’, has already been mentioned. In Navarra, the ICT related private sector was reported to be becoming more organized and with a growing institutional capacity to influence policy making. The role of the regional association of enterprises in the ICT sector (ATANA), created in late 2002, seeks to develop relationships with key regional ‘policy-making’ actors and to “talk with all possible interested actors” in order to raise the policy importance of IT and show its relationship to economic competitiveness, the feeling being that existing industrial interests dominate industrial support policy.

Beyond the Chambers and other associations representing business, we came across few examples of SMEs playing any role in leadership. There are, of course, well known reasons for this: lack of capacity, particularly time and spare management resource and this is not unreasonable, though, perhaps in our German regions, where the Mittelstand has been seen as a crucial element in development, and in Emilia Romagna which is famed for its model of economic development based on SMEs, we might have expected SMEs to play a greater role. More disturbingly, in nearly all our regions there is little evidence of ‘followership’ amongst the SMEs (see section on networking).

As mentioned above, there is evidence of new soft ‘governance’ institutions emerging, bringing together actors in order to take forward the IS agenda. Again, these tend to be organised or facilitated by the public sector, but involve the private sector, academics and other institutions. This suggests that there is a need for ‘collective leadership’ even in those regions where there is a clearly constituted governing body. This may be even more so in (sub) regions such as South Yorkshire where competencies are shared between the sub-regional and regional levels, and where there is distributed power (with four elected local authorities of similar size) at the sub-regional level, and no clearly constituted leading institution. In all cases, it is difficult to gauge to what extent the emergence of these collective leadership structures is a response to the particularities of ICT policy or to a more generalised trend towards partnership working (see Ferry, 2003, for discussion of this latter phenomenon).

**Box C:**

**Examples of emerging soft leadership institutions in the Information Society**

The Kosice IT Valley Association is a ‘triple helix’ type entity which involves the regional administration, the private sector IT firms and the Technical University of Kosice (TUKE). This body is concerned specifically with building up the IT sector, but also developing policies supporting development the knowledge economy and information society based on the concept of a learning region and implementation of digital ecosystems;

The Information Society Council in Malopolska is a soft institution which brings together actors from a range of institutions within (and beyond) the region, from other government agencies, third sector agencies, the private sector and universities. The Council acts as an advisory body to the Regional administration (Voivodship). The impetus behind this body comes from the administration in an attempt to address what was perceived to be limited cooperation in the region.

The e-forum in South Yorkshire brings together representatives of the four local authorities within the sub-region, together with universities, the voluntary and community sectors and the private sectors to discuss a range of matters relating to the Information Society. The forum has no executive powers, but creates a focus to discuss important matters in a relatively informal environment. It acts as a sounding board for policy ideas and also plays an advisory role to policymakers.

**The importance of Individual Leadership**

It was generally agreed by our respondents across the regions that individual leadership was an important element in creating the conditions for transformational change. They were not only referring here to leadership at the highest level, but at a variety of levels from strategic to project level. In most regions, there was a structural understanding of leadership in the sense that the individual’s leadership position was associated with either their (elected) political role or their position in a bureaucratic hierarchy. These features, however, combine in different ways across our regions.
One common assertion was the importance of political leadership from an elected politician. Such leadership was by no means apparent in all our regions, but where it was present it was seen as an invaluable element in pushing forward the IS agenda and for achieving transformative change at a given territorial level. In Extremadura, for example, it was suggested that the President had got behind the IS agenda and this had a significant impact. It was:

“… precisely because this leadership comes from the top political level [the President] this has facilitated that everything that was done was taken in a credible way”\textsuperscript{17}.

Not all regions, of course, have an elected regional level, never mind a symbolic elected politician. Important developments can still take place in regions without significant political buy-in, but in regions which lacked this type of leadership lack of political support was seen as a barrier to progress. One frustrated senior administrator fumed while being interviewed:

There isn’t a single local politician who you could name who is on this agenda, who thinks this matters, that it is important – not one.\textsuperscript{18}

In yet another region where interviewees suggested that there was a lack of leadership, one respondent suggested:

What’s missing is somebody who would get on everybody’s nerves by insisting on the relevance of ICTs for the region\textsuperscript{19}

There are, of course, limits to ‘personalised’ individual political leadership or indeed individual leadership of any description. First, ICT or the IS agenda is not necessarily a vote winner. Where resources are particularly scarce, and the need for investment in other areas is particularly pressing, as in our NMS+T regions, the political salience may be low.

Second, there are limits to what an individual can do to ‘spread the word’ and to translate goals into actions. A politically elected leader or even a senior administrator may be able to galvanise actors in his/her own organisation. Being a collective action problem, however, regional transformation through ICT will require ‘a coalition of the willing’ and leaders will have to have the capacity to reach and persuade, rather than merely give orders.

Third, the process of developing the transformative use of ICTs is likely to be a long-term process and, as such, will require sustained leadership. A point that came up in interviews in several regions is the need for stability over time. This, again, is likely to require either ‘hard’ or ‘soft’ institutional sustenance. An administrative or technicist-bureaucratic IS cadre may oil this process. Political stability is very important in terms of keeping this ‘human resource in place’. The potential to do so again varies from region to region, depending on the political system and cultural norms. For instance, in regions with a ‘politicised bureaucracy’, where senior bureaucrats are dependent on elected politicians for their appointment, they are likely to be displaced when these politicians leave office. The ability to create a stable environment for promoting the transformative use of IS is, of course, made difficult in regions/countries where there is no agreed political settlement and there are deep differences about the direction of travel.

Another problem is that, in at least some of our regions, there was no ‘departmental’ home for ICTs or the IS agenda. Those interested in how ICT could be used in transformative ways had to address these issues in addition to their ‘day job’. So, for example, the main job of a number of actors was in the IT department of regional or local authorities, their primary role being to manage internal networks. Those who sought to do go beyond this role, and to address how ICT might be used in transformative ways for the region on the social or economic front, often had to carve out a space to do so. This makes a leadership role difficult to sustain.

Relative institutional weight may increase over time as policy comes to be seen as a mainstream issue. There are clearly benefits to the institutionalisation of the IS agenda, in the sense of establishing the IS agenda as a core policy area with the concomitant structures and this had been achieved in a number of regions, but to varying degrees; for example, FUNDECYT in Extremadura and ASTER in Emilia Romagna. Even in these relatively developed institutional settings, however, the importance of continuing high level leadership remains important, both in terms of agenda profile and

\textsuperscript{17} Extremadura, group 1 respondent
\textsuperscript{18} South Yorkshire, group 1 respondent
\textsuperscript{19} Thüringen, group 3 respondent
coordination of activity. The level and type of leadership might vary over time. It was suggested, for example, that during the early years of rebuilding in the NMS, charismatic and forward looking leadership was required to create a narrative, where past narratives were no longer usable. This, of course, requires that followers are prepared to come on board (see narrative section). There may be time where a respected coordinator is more appropriate than an agenda setter and vice-versa. In more ‘mature’ settings where levels of knowledge are high generally (at least amongst policymakers and implementers) coordination of views will be required to avoid ‘stagnation through ideas’. Debate will need to be encouraged, but people must be able to ‘get on board’ when resources have been distributed around certain projects.

It was also widely believed that in order for leadership to translate into action, a combination of high level leadership and leadership in the field is required. In South Yorkshire, the key senior actors are the local authority chief executives. These actors, of course, do not have the time resource to dedicate themselves to particular policy agendas. In practice, of course, it is up to more junior people to lead the agenda on a daily basis. They can, however, provide a remit to the more junior players, acting as ‘gatekeepers’, opening pathways for the professionals ‘on the ground’. One Chief Executive described himself as:

...a path clearer to allow some of these people to prosper more than they otherwise would do.\(^20\)

The mirror view was described from more junior professional:

“It’s about the chief execs and if the chief execs start to get interested…to be able to be say the chief exec has asked me to come along and speak to you. Once you’ve got their trust things begin to happen.”\(^21\)

The backing of such senior figures is also seen as important allowing professionals to be creative and more ambitious in their outlook. One respondent reflected on the differences that such backing made in multi-agency working-meetings:

“You can feel the difference when the leader is going for it. They feel that they are part of a winning team. If you feel you are going forward, you are going forward. If you feel you are treading water….It also reflected in meetings. Those with support will be very open the others tend to be more submissive, very little eye contact, but see no point: ‘I’ll just be seen as a radical’. [It’s a] question of ‘creating space’ and providing ‘buy in’. Consistency of support is also very important.”\(^22\)

Most of our respondents viewed individual leadership as crucial at both levels and that interconnectedness between different levels was important. There was general agreement amongst the respondents who felt able to proffer a view on the topic as to what leadership involved, whether at the senior level or more junior level. In general, leaders were seen to need to have the following attributes: charisma is important (though never well defined), enthusiasm, knowledge about the issues, the ability to plan ahead, to be able to communicate both the passion and the plan in the way people want to follow, and in doing so, the ability to stimulate the growth of new enthusiasts and leaders. “[A] good leader is someone who you listen to and are moved by” (see also networking section).

**Summary**

The nature and exercise of leadership varies across our case study regions. This depends in part on the degree of autonomy which individual regions enjoy within their national structures of governance, their legal status and their relationship with central government. This varies considerably across our regions. Leadership potential is conditioned partially by the time which regional structures have been in place. The history of individual regions will also condition leadership potential. The structure of governance within regions will also be important. An elected ‘president’ or other elected executive, can provide a degree of ‘command’ leadership which may not be possible in regions where such a figure is absent. The territorial level at which leadership can be exercised and the type of leadership,
institutional or personal, individual or collective, is also likely to be affected by the distribution of power and competencies in a region; the potential for ‘followership’ may also be heavily conditioned by this factor.

All these general points are relevant to the IS agenda and the transformative use of ICT within regions. The national and European agendas may act as a platform from which innovation in respect of ICT can be generated. Several or our regions had clearly received (or interviews suggested they were about to receive) significant impetus to their IS policy as a result of European direction and funding. This was particularly the case in the NMS regions, but also in some EU-15 Objective 1 regions where funding gave direction to policy and generated collective approaches. These impacts, however, take time and have to be managed. More than one respondent in the NMS regions pointed to their disappointment with the results of the European programming period which had just ended at the time of our fieldwork. At least some regions seem to have learned lessons from that process and had developed different models for the next round (see learning section). National policy can also act as a platform from which to create impetus towards the transformative use of ICTs – by giving policy direction, by providing political support and by delivering additional resources. In order for this to have a regional effect, as opposed to merely an effect around a particular application or domain, there must be flexibility, lateral thinking and opportunism, and leadership (at some level) to translate this into wider benefit.

It can be argued that European and national priorities also have the potential to handicap regionally-generated innovation, through prioritising policies which are not in line with actual regional requirements. The lack of a clearly articulated national policy can also impact negatively on leadership direction at the regional level. Moreover, continued ‘silo’ thinking at the national level can distract from integrated policy approaches and integrated leadership at the regional or local levels.

We suggested above that the degree of regional autonomy could impact on potential for the exercise of leadership (and the innovation process in general). Regional autonomy does not necessarily translate into high levels of leadership in IS. Some of the most apparently passive regions in this policy area, according to our interviews, were those which had the highest levels of formal autonomy. By contrast, one region which had no formal powers in this area was very proactive. This suggests that, at least to some degree, agency is important, though, of course, lack of formal power is likely to be accompanied by limited financial and other resources.

It was generally the case across our regions that where there was a high level of activity looking to foster the transformative use of ICTs, a mixture of institutional and individual leadership was apparent. In virtually all our regions where some degree of coordinated leadership was apparent, it came from the public sector. In some cases leadership was exercised in default of any perceived alternative. There was some evidence of other institutional actors playing a leadership role; universities in some regions were heavily involved in collective leadership, and also were important players at the project level; there were fewer examples of business taking these roles, though we did find cases in which their activity within their own domain of interest helped mobilise a wider leadership or to push passive regional leadership into action. New ‘hard’ institutions were created to lead policy development and the leadership of these institutions becomes very important (for example, Aster in Emilia Romagna). New ‘soft institutions’ had emerged around the IS agenda in several regions, bringing together a number of actors, though, in all cases these were led or facilitated by the public sector (see network section).

It was generally agreed by our respondents that individual leadership was important in creating the conditions for the transformative use of ICTs. Such leadership is required at a number of hierarchical levels, or if we take a network approach, at a number of points in the network. The potential to provide such leadership varies according to the political structure of the region. In Extremadura, the personal interest of the President was very important; in South Yorkshire, by contrast, no such titular politician exists at the regional or even local level. In regions where there is no clearly identifiable political leader, or such a leader is not engaged, leadership from senior administrators may be able to play a similar role, though such administrators to whom we spoke felt the lack of political support as a barrier to progress and in some regions such an approach was declared impossible.

Developing the transformative use of ICT is, of course, a long-term process. A degree of continuity and stability (see also the section on learning) is also required, though without stagnation. The personal or office based leader has, of course, to be able to mobilise followers in order to turn rhetoric into action. In the short term this may be achieved by charisma or by the leader’s ability to mobilise actors through his/her office or through creating a strong narrative (or inserting the ICT agenda into an
existing narrative). Personal visions not translated into wider support structures can fade or even disappear with the loss of the leader (as we found in Schleswig-Holstein). Over a longer period, however, a combination of sustained personal and institutional leadership will be required. Over time, institutional weight is likely to increase, but even here personal leadership will be required to successfully steer coherent policy. In some regions, this stability may be provided by technical bureaucrats or administrators who remain in power when politicians leave. In other regions, this resource is not available as senior administrators leave with political leaders.

Our main focus has been levels of strategic leadership. It is clear from our interviews, however, that leadership is required at a number of levels. We consider this in more detail in the section on networks: nevertheless, it is worth repeating here that without a combination of strategic leadership and leadership ‘in the field’, the transformative use of ICTs are unlikely to be realised. At both levels, charisma, enthusiasm, the ability to communicate and persuade – both passion and plan – are required, plus the ability to tie a plan or vision together with some demonstration in reality, which, in turn, implies access to resources.

To conclude: neither personal leadership nor institutional leadership alone can explain leadership which successfully mobilises capacity around the transformative use of ICT. Rather, it is the coming together of an individual (or groups of individuals) who is clearly signed up to the IS agenda and who has the status imbued by their institutional standing and the capacity that institution provides, together with the ability to reach beyond a narrow base to attract a wider ‘followership’ or even collective leadership. The latter requires that ability to persuade other actors of the importance of the agenda and also, access to the resources to provide concrete demonstrations. This is likely over time to require a mixture of leadership and networking.

4.2.3 (Collective) Learning and Forgetting

Introduction

In our state(s) of the arts, we drew on a range of literatures to suggest that there is a need for individual, institutional and collective learning in an effective culture of innovation. We pointed out that the implications of this were far from clear as learning takes place in a number of forms, formal and informal, accredited and unacknowledged. We stressed the importance of the complex mixing of theoretical and practical knowledge in networks and communities of practice. It should be said that we found this ‘learning’ clue perhaps the hardest one to translate into a language which could be understood by our respondents. Notions such as a ‘learning region’, which are well articulated and commonly alluded to in the academic and policy literature, were not necessarily understood at the policy maker or project level in our case study regions. The term ‘learning’ was most closely associated with formal institutional educational capacity – schools, universities and so on – and researchers found it not easy to steer respondents away from this topic which, although important, was not the core object of this element of our study. The concept of ‘institutional learning’ was also alien to many of our respondents. Notwithstanding this difficulty, a number of interesting findings emerged.

In general terms, almost all our regions are on a steep learning curve. All our regions have, of course, been subject to considerable change over the past twenty years or so as the ‘information revolution’ has impacted on the essentially agrarian or industrial economic bases (of at least part of their region). Even successful regions such as Emilia Romagna are coming to terms with economic change and having to learn new ways to do things. Most of the case study regions are relatively recently constituted as regions and the process of creating regional structures, and concomitant competencies within which institutional learning processes can operate.

In the NMS regions, this is perhaps even more so than in EU-15 regions, due to the historically extreme centralisation under state socialism. Here, “notions of learning and forgetting gain a special meaning” (Sokol, 2002: 31). The sharp disjuncture between ‘before’ and ‘after’ can close off avenues to learning from recent history and actors may become over-dependent on lessons from other places which may or may not be appropriate to their region. So the degree and scale of change that the NMS regions have been subject to needs to be remembered. As one respondent put it in the Slovak context:

[In general] people in Slovakia don’t like change. On the other hand, what they have managed to absorb in the last 20 years is something unique. That has not happened to
Scotland or England or others that everything changed in 20 years. Indeed, other nations took many more decades if not centuries to get from somewhere to developed capitalism. That is the fact which people abroad underestimate. We had a completely different starting point. But I have noticed that in the West they don’t take this into account at all. They have no idea what has happened here and what is happening.23

Similarly in Thüringen, respondents commented on the huge amount of learning that has had to be absorbed across society as a result of the large-scale changes in the economic and social structure. Some of these regions are also facing a ‘brain drain’ as young people leave the region, negatively impacting on the ability to learn and the ability to translate high levels of education into productive capacity. Again, this is not unique to the NMS – respondents in South Yorkshire, Västernorrland, Extremadura and Navarra pointed to this phenomenon in their own regions – but the effect was particularly pronounced in some of our NMS regions.

**Types of learning in the case study regions**

For our case study work we broke the regional learning system down into four types of learning for analytical purposes:

- Learning through research
- Learning by doing
- Learning through exchange
- Learning from the end user (in fact, a sub-category of learning through exchange, but important enough and rare enough to be considered separately).

Only in Emilia Romagna was there a consensus amongst our respondents that the region could be conceived as a ‘learning region’. Only here did our research suggest that the range of components which together might amount to a regional learning system were in place. In terms of research, there is a regional observatory which includes a department dedicated to the IS. A number of bodies, including the observatory and the main coordinating body for innovation policy, ASTER, look outside the region, both to monitor the performance of other regions against which it can compare itself. It is also at the forefront developing benchmarks and indicators of the IS through which to gather intelligence about the situation within the region. University research is fed into policy through ASTER and other policy bodies. In terms of learning from projects, Emilia Romagna has a wide range of IS projects, including those focusing on the transformational use of ICT. It was also suggested that the region is prepared to approve ambitious projects and to ‘learn from failure’ and to build these lessons into future projects; learning from previous strategies and from individual projects appears to be part of the approach. The region plays a leading role in several pan-European projects. The importance of wide consultation including civic organisations and associations in developing plans and strategies was emphasised. A healthy exchange ‘system’ also appears to be in place with a range of formal and informal fora for exchanging experience and ideas. In addition to these, ASTER provides a coordinating and exchange mechanism. This approach is said to be underpinned by a deep culture of coordination (or concertation) which has developed over many years in the region and pre-dates the current regional structures. Even this system has its weaknesses, of course, the main two identified being how to learn from the end user and the lack of engagement by SMEs. Respondents admitted that gaining useful input from end-users is a cause for concern. A few individual projects can be pointed to where such a process is being developed, but it is acknowledged more work must be done here. A related weakness is that it is very difficult to engage SMEs in the learning processes. This is disturbing given the economic weight of SMEs in the Emilia Romagna system and Ervet (the regional research centre) and Enea (the national research centre) are attempting to address this issue which is common to all of our regions. Another caveat is that the learning system can be seen as rather hierarchical and in part dependent on Ervet and ASTER, through which lessons will diffuse; those projects (and project lessons) which are in line with overall policy perhaps gain more attention than others.

Other regions, even those where respondents saw their region as a learning region, had some elements of such a system in place, but they also were deficient in certain aspects. We do not go into

23 Kosice, group 3&4 respondent
detail here of the missing elements in individual regions but instead we try to draw out some general key issues around the various forms of learning which affected our case study regions.

Learning through research

Most regions undertook research on ICT, but this was seldom on a programmatic or coordinated basis. Several of our regions had regional observatories, but only Navarra and, more recently, Extremadura (in addition to Emilia Romagna) had specific institutions for undertaking IS research. Other regional authorities undertook regular studies on the performance of particular sectors or on SMEs and these tended to be used in terms of developing policy responses. Specific research was carried out into particular policy issues, often drawing on examples from elsewhere. This was considered important in order to show policymakers and those holding the purse strings ‘what is being done elsewhere and ask why it can’t be done here’. For example, both South Yorkshire and Malopolska carried out extensive research into how broadband had been developed in other European regions and beyond. Respondents in both regions stressed the need to tailor the findings of these studies to local requirements rather than simply ‘cutting and pasting’ them. A number of regions (Emilia Romagna, Mellersta Norrland, South Yorkshire) had been involved in a common European research project, UNDERSTAND, and had found the process useful in helping to gain a picture of their respective regions vis-à-vis other European regions. All maintained an interest, but not all found it easy to obtain local funding on an on-going basis. Resources remain a key issue in creating research capacity, so that even in those regions which appear to be pro-active in establishing an IS agenda and addressing the transformative use of ICT, it appears to be difficult to fund research: for example, in Kosice, which is acknowledged as the most advanced region in Slovakia in this policy field, the main research capacity on ICT seemed to be a not for profit research organisation employing only seven people.

One of the key issues which emerged in several regions was the dissemination of research results. One respondent commented that ‘valuable studies end up in drawers’. Others suggested that information from regional observatories tended to be of interest only to policymakers or was not disseminated widely enough to attract the attention of others. Universities were undertaking a range of research, both technical and, less usually, on the socio-economic impacts of ICT. There were few examples where this research crossed over to policymakers on a consistent basis.

Learning by doing

Learning by doing was commonly seen as the most important way of learning by our respondents. This approach tended to be related to a project approach and ‘getting things done’, the general view being that there was a need to demonstrate in order to move forward towards transformation.  

As one respondent put it:

I tend to get on with the job rather than do research. You can spend years researching this stuff, but, I just say build it then you can research it.

There are advantages to this approach, but the difficulty of ‘just getting on with it’ is that the lessons are not learned and, if they are, they rest with a few people and do not spread to other actors. As one interviewee suggested:

It is difficult to get the different actors involved reflecting on their work in order to improve what they are doing.

There are limits to learning within projects and also taking lessons forward into future projects and influencing other projects or impacting on policy. The barriers identified by our respondents include:

- A lack of funding resource to allow those involved in projects to ‘draw breath’ and take a reflexive learning approach
- The nature of the project cycle, where time-limited ‘soft money’ budgets with tight deadlines and

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24 In some regions identifiable projects are only beginning to emerge and it is too early to judge what can be learnt and too early to expect detailed learning processes to be in place.

25 South Yorkshire group 3&4 respondent.

26 East Anglia, group 2 respondent.
targets mean that the first year is spend recruiting and planning, the second year doing the research, and the third year searching for new funding or for a new job. ‘No continuation funding money often equals learning lost’.

A related issue is turnover of staff which impacts on institutional memory. One respondent suggested that: *because we’ve had a fair degree of stability, those networks and that institutionalised learning are stronger [in this organisation]….We can remember what we did six months ago or six years ago.*

Resource issues often mean that it is left to individuals to carry across lessons and spread the word. This depends on the goodwill and enthusiasm of individuals. Project evaluation was regarded as being inadequate to capture lessons and may even act as a barrier to learning lessons. In some regions, it was suggested that evaluation was not undertaken properly. In NMS regions, it was hoped that EU funding would improve evaluation mechanisms. In other regions, where formal evaluation of projects is now routine, these were seen as often being mechanistic ‘check box’ exercises and often undertaken post-facto as a contractual obligation and too late to learn lessons, with the focus on compliance rather than on learning.

Finally, the fear of failure which draws projects towards narrow instrumentalism in order to meet targets. Respondents in some regions expressed the view that policymakers and funders did not want to hear ‘bad news’.

We have already referred to this last point in our discussion on Emilia Romagna above. The importance having some leeway to experiment was touched on by several respondents. For example, the manager of an initiative widely recognized as being successful, the e@syconnects project in South Yorkshire, suggested that one of the main factors behind its early success and subsequent development was, ironically, that it was ‘given permission to fail’ by the initial funders. This created an atmosphere in which those engaged in the project could be reflexive when considering what genuinely worked and what did not. In turn, this allowed for improved design in follow up projects.

Some projects, such as e@syconnects, have managed to translate lessons into a wider community and broaden the enterprise. This was partly the result of demonstration and partly the result of establishing common interests.

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### Box D:

**The easyconnects Programme in South Yorkshire**

The e@syconnects programme has been in place for around eight years and during that time has won a number of European and national awards, and is widely seen as representing ‘good practice’. The programme involves a number of partners, who provide core funding: three local authorities, the Regional Development Agency, the Passenger Transport Executive and the Fire and Rescue Service; and, a range of ‘associate members’, mainly from the public sector (e.g., health and police), but including the private and voluntary sectors.

e@syconnects provides a single technology platform through which a number of organisations can deliver a range of public services electronically. Services are delivered through a range of media – touch screen kiosks, the Internet, digital TV and mobile telephony. The program delivers a number of ‘e-government’ services, but has a focus on social inclusion. Services include: facilities for the payment of council tax and other direct charges; a 24/7 GP appointment service; a jobs service, where jobs and training opportunities can be tracked and application made from home; real-time information on atmospheric pollution; a facility to raise e-petitions; and, information on local events and travel. An example of interactive real-time services provided through e@syconnects takes place between schools and parents, where problems such as unauthorised absence and keeping parents informed of a late returning school trip can be addressed via a messaging service which operates via Internet, including text messaging to mobile telephones. The key to reaching out to a range of users is to utilise existing established technologies, which, if not universal are certainly widespread, rather than continually piloting yet more ‘cutting edge’ technologies.

Transformation is a gradual process, but it can be said to have taken place, or to be in train, at at least two levels in respect of e@syconnects. First, at the level of the e@syconnect partnership. Here the shared technology platform has acted as one important factor in drawing together the organisations to work more collectively. This approach has now spread to other programmes. Bringing together actors from a number of organisations brings a number of benefits including: economies of scale, in terms of spreading the cost of expensive technologies and in generating sufficient mass of demand through the multiple services offered to attract the number of customers.

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27 East Anglia, group 3 respondent
required, and, in terms of attracting investment; avoiding duplication, each partner can be tasked with developing or updating a particular function, which can then be adopted by the rest of the partnership; finally, it produces ‘economies of ideas’ by establishing an environment where creativity can be stimulated and where ideas generated individually can be exchanged and discussed – it also allows partners to think beyond their individual organisation, widening horizons and giving fresh consideration to priorities. The second level at which transformation through ICTs is happening is in the ways individuals interact with various public services, whether it be the elderly lady who makes an appointment on line outside surgery hours and without spending a long time hanging on the phone, the parent being warned that their child will be late home, or the asthmatic knowing not to venture into town as pollution rates are particularly high that day.

A similar, though even more ambitious, example of a project expanding through spreading learning has occurred in Extremadura with the use of the Linux open system which was initially applied relatively narrowly. The regional government, through combining strategic thinking with learning by doing, have expanded the project into a region-wide multi-domain project.

**Box E: LinEx – Extremadura**

It can be argued that the LinEx project emerged as a result of reflexive thinking and proactivity by Extremadura’s Regional Government. The LinEx is a customized distribution of the Linux Open Source system to provide common software solutions for a range of organisations in the region. Initially, the LinEx project was not part of the regional strategy. Rather it was a practical attempt to be able to successfully achieve the objectives of the Region’s IS strategy for the domain of education – one of its key pilars. As a result of the regional government’s capacity to quickly pick up on the success of that process, through reflexively looking at projects and quickly taking on board and acting upon lessons emerging from these projects, LinEx became, defacto, part of the Region’s IS strategy. By considering projects and actions as part of evolving ‘structures’ which can be shaped and adapted according to emerging circumstances the Region has developed the ability to share solutions across domains. LinEx is now used: in education to keep the 70,000 computers of the regional public schools working without having the need to renew the licenses of proprietary software; in public telecentres (NCCs); in small enterprises; in the public administration; and, in the regional health system. In effect,! LinEx has evolved from a ‘project solution’ to a widespread ‘regional technological tool’. The distinctive feature of involvement of end-users in the development of each of its thematic distributions (education, public administration, SMES, etc) seems to represent a paradigmatic shift from the notion of the end-user as a passive consumer to the notion of the end-user as a co-producer and active co-deliverer of the Region’s IS strategy.

*Learning through exchange*

We argue in the TRANSFORM State(s) of the Art(s) that transformative change at the regional level is a collective action problem. A key element in addressing such a problem is the exchange of ideas and experiences between actors, within ICT domains, across ICT domains and from ICT experts to non-experts. There was a general acknowledgment of a need for interaction and collective action. In most regions there was some formal or informal exchange process, but this was seldom well developed. We have already mentioned the Emilia Romagna case where exchange took place through a range of formal and informal routes, but with a coordinated approach by key institutions. One or two other regions, notably Extremadura, took a similar, if less developed approach. In some other regions, there
is evidence that ‘soft institutions’ are emerging to address this problem – examples included the e-forum in South Yorkshire, the IS Council in Malopolska and Kosice IT Valley Association in Kosice. The degree to which these soft institutions function to coordinate and lead policy was questioned by some respondents. They do, however, appear to provide an important forum for intelligence and experience exchange and as a bonding mechanism for actors across IT domains within regions where there are not necessarily ‘hard institutions’ to play such roles.

In most regions, however, learning takes place across a relatively small number of people (see also the section on networks). Learning takes place within regions, but a complex set of factors prevents this learning from being spread.

First, there is a general tendency for people to operate within their own domain; for instance, within health. In several of our regions, some of these key domains operated in a hierarchical manner, within national structures, with domain expertise being national and international rather than regional. Conferences and other exchange mechanisms again are more likely to take place outwith a particular region. Crucially, funding streams will come from outside the region.

Second, the ‘absorptive capacity’ to take on board lessons is not always available in a region; for example, it is difficult for administrators to take on board findings from research in or beyond the region, and turn them into meaningful policy.

Third, it is also difficult to translate findings or advice around ICTs to the private sector, particularly to SMEs. The reluctance of SMEs, particularly micro-businesses, to adopt ICTs, never mind to use them transformatively, is well known, and seems to be a general culture, rather than region specific, although it may reflect regional sectoral structures and markets. Although progress has been made in Europe regarding take up, our respondents still regarded this and the transformative use of ICTs by SMEs as a major issue requiring significant levels of resource to achieve an impact. The key message is that interventions have to be made relevant to the individual firm, showing how such an intervention will affect turnover and profit.

In addition to these factors, in some regions there appears to be ‘advice fatigue’; that this is partly a reaction to earlier experience of consultancy and advice overkill in the 1990s. Thüringen is a case in point, but is probably representative of other eastern German Länder. According to one interviewee:

_In Thüringen, as in the rest of East Germany, many businesses in the 1990s soaked up everything they could get in terms of suggestion and advice, only to realize that many offers were worthless. This has resulted occasionally in a very critical attitude towards all kinds of advice from externals._

This is a similar phenomenon to ‘vision fatigue’ discussed in the visions and narratives section, but is more worrying in some ways as it prevents practical advice being given and undermines what is potentially a key source of information. The lack of active demand for advice voiced by the region’s SMEs makes it more difficult to design technology transfer and training measures which meet the real needs of the target group (SMEs).

There was evidence, however, that SMEs were learning through exchange (and indeed by doing) through their integration into supply chains. The examples we found related primarily to the manufacturing sector. A similar picture could also be imagined for the ‘export-oriented’ service sector and indeed retail and agricultural producers which have relationships with larger firms. The importance of supply chains in technology transfer is well documented in the literature. This may come from within regional clusters, but is as likely to come from outwith a particular region. This reflects a point emphasised at the second RICEG workshop that although SMEs may not be part of the transformation ‘through the region’ process (which we primarily focus on in this study) they may still be ‘transforming in the region’ making important changes to their businesses, either voluntarily or through external pressure from customers. This process was very clear within the German regions, for example, and was seen as an important channel for learning. It also created a more competitive attitude between firms, however, which could lead to greater productivity, on the one hand, but may also undermine trust relations and room for cooperation, on the other hand.

**The role(s) of Universities in the learning process**

Universities are conceptualised in much of the literature as a resource upon which regions can draw in order to give momentum to the knowledge based economy (see, for example, OECD, 2007; Etzkowitz, 2008). As discussed in the networking section of this report, the contribution of universities based in
particular regions cannot be taken for granted. The role of universities varied across our case study regions. Some regions, notably Emilia Romagna, again, and to a lesser degree, Malopolska (see also networking section) Kosice, and the German regions were able to engage their universities well; others, notably East Anglia, could not. One mechanism through which universities potentially bring learning to the region is through engaging in external projects with other universities from other parts of Europe and beyond. Very often these opportunities are funded by the European Commission. As pointed out below these lessons are not automatically transferred into a region and require internal networks and absorptive capacity. We found a few examples where these relationships, which on the one-hand spanned Europe and on the other hand involved practical engagement within the regions, these included the Webocracy project in Slovakia (see Box F).

**Box F:**

**Webocrat/Webocracy – Kosice, Slovakia**

Developing and supporting local democracy in the post-socialist context can be a formidable challenge, but ICT-based solutions may be an important mechanism in assisting this process, as demonstrated by the example of the Webocrat application in Kosice region, Slovakia. An innovative web-based eGovernment/eDemocracy portal has been developed with the financial support of the EU IST programme between 2000-2003 (budget of 1.8 mil EUR with EC contribution 1.5 mil EUR). The project ‘Webocracy’ involved eight partners in the UK, Germany, Finland and Slovakia and was led and co-ordinated by the Technical University of Kosice, Slovakia. The key aim of the project was to develop a system providing effective, user-friendly and secure tools, working methods and support mechanisms to ensure efficient exchange of information between citizens and public administration institutions. The system supports new types of communication flows and services between public bodies and citizens and businesses while ensuring the increased efficiency, transparency, quality of services, accessibility of public institutions and participation of citizens in democratic processes. The Webocrat system allows publication of documents; communication and discussions; opinion polling on questions of public interest; and convenient, secure and user-friendly access to relevant information. The Webocrat system is an open source solution and its main innovative feature rests with the use of knowledge management technology – improving access to information/knowledge, integrating all modules of the Webocrat system and enabling personalisation of services.

One of the biggest successes of the Webocrat system is its adoption by two local authorities within the City of Kosice: Tahanovce and Dargovskych hrdinov:


It could be said that the application of Webocrat system in these two local authorities is having transformative effects both in term of ‘changing lives’ of local citizens and changing organisational processes of the local administration. New types of communication flows emerged, with the Mayor of Tahanovce, for instance, becoming involved in communication with his constituency, which was greatly appreciated by the local people. In the case of Dargovskych hrdinov, new types of services to local citizens and businesses have been introduced, such as submission of requests and complaints with a possibility to track their processing status. Again, the change has been well accepted by the users. In both cases, changes in organisational processes in the workings of the local authorities have been observed where the responsibility to publish information on the web (previously a sole responsibility of a network administrator) has been passed to mainstream departments within the local authorities concerned (who now both produce and publish the information).

The Webocrat system has many advantages. Thanks to knowledge management support it offers intelligent retrieval and access mechanism. It is also an open system which enables easy integration with an existing legacy system. It has customisable user interface and multilingual support and is platform independent (tested for Linux and Windows).

As such the Webocrat system received a Europe-wide recognition. The European Commission selected Webocracy project as the “Project of the Month” in November 2003 and the EU commissioner for Enterprise and Information Society Erkki Liikanen praised it as “an example of successful e-Government Project”. In 2004 the project also received a national award at the ITAPA 2004 Conference in Bratislava, Slovakia.

**Sources:**

- Tomas Sabol, personal communication

There were a number of reasons for these examples which include the following.
In some regions, there was little real research or knowledge capacity in universities, or it was limited to specialisms which did not meet the requirements of the local economy. In others, there was no market for research; for example, ‘branch plant’ (manufacturing or service) inward investment does not necessarily require high levels (or in some cases any) R&D expertise in the host region.

In some (most) regions, the universities remain plugged into the national and international systems and “the whole [University] system is vertically managed [and] horizontal linkages at the level of the region are missing”. Academic peer groups remain national and international as does much funding. Even in countries like England where central government and the funding bodies have put pressure on universities to engage with their own regions, only limited success has been achieved and the situation varies between regions and institutions. So, for example, in South Yorkshire there are several examples of universities engaging with the region, albeit not as much as government would like. By contrast, with one partial exception, in East Anglia it is said to be very difficult to get the region’s universities to engage with the local economy/community– they have closer links to California than to East Anglia.

Our sample was too small to say whether or not the status or prestige of universities impacted on their relationships to the region or locality. It was suggested that in the German regions that we considered the universities were not amongst the most prestigious in the country and are more likely to take a more pragmatic view. It is not clear that we can generalise from this, however, and it is likely that a range of factors such as technical-non-technical nature of institutions, historical linkages with local firms and society, government policy and so on will be important.

There is often a lack of a common language or mindset through which to facilitate exchange. There tend to be differences in view of what the purposes of universities are; for example, is the priority to provide a general education or produce a labour force to meet local employer demand? This is more pronounced in some regions than others. As one respondent put it:

\[\text{companies do have expectations towards the universities, they want us to help them, they want us to train individual specialists for them [...] and it's a total misunderstanding of the educational process.}\]

Another issue is the degree to which academics are incentivised to engage beyond academia and in what ways. In the NMS regions (with the partial exception of Malopolska), it was generally reported that academics do not have spare capacity to become involved in knowledge transfer. Knowledge transfer, in the sense that the policy literature focuses on, is not necessarily seen as something which academics or universities should be engaged in; academics are paid to do their day job, e.g., teaching. Academics are poorly paid, so any spare capacity is likely to be used in supplementing personal income rather than undertaking unpaid work contributing to the overall regional good. In many territories, the ‘softer’ knowledge transfer processes – or co-learning – relies on the unpaid goodwill and enthusiasm of academics and their counterparts. This requires ‘redundant resource’, i.e., enough capacity in the system for people to carve out spaces to operate in ways which, from the narrow perspective of a particular institution, seem sub-optimal but may contribute to the overall regional system. In some western regions, this is possible, albeit that the major resource input comes from the individual. In the New Member States, the resource constraints make this more problematical.

Examples of a ‘triple helix’ approach in which universities work together with businesses and regional administrations to exchange ideas and ‘co-produce’ initiatives, and which seek to be transformative can, however, be found. We have already referred to work in Emilia Romagna and in Kosice. There are also interesting examples in Malopolska and Mellersta Norrland (see Box G)

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**Box G:**

**The ‘Parent-Teacher Meeting’ (Föräldramötet), Sweden**

The ‘Parent-Teacher Meeting’ (Föräldramötet in Swedish) is an e-Service that enables everyday electronic contact between the school, teachers and parents using a simple web-based interface. It has been developed through a partnership between the Municipality of Sundsvall (Västernorrland county, Sweden), CITIZYS Research Group at Mid-Sweden University, Akroken Science Park and an IT-consultant company WM-Data. As such it has been praised as a ‘triple helix’ project. Functioning as a permanent virtual parent-teacher meeting, the service

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28 Pormorze, group 2 respondent
allows teachers to disseminate school-related and pupil-related information more efficiently, while giving parents a feeling of being more engaged in their children’s everyday schooling. It is expected that better communication between the school and parents and higher engagement of parents in school affairs should result in better educational achievements of pupils.

The Parent-Teacher Meeting interface is accessible via log-in and consists of the following key parts:

* A calendar (where all events and important dates could be found);
* A weekly newsletter (with information from teachers about the last and the coming week);
* A photo archive (where teachers can upload photos from the daily life of school);
* A discussion forum (for a discussion between parents and between parents and teachers);
* A file archive (containing back copies of weekly newsletters alongside other important documents, meeting minutes etc.); and
* A link archive (where teachers can upload useful hyperlinks).

The system is completed with an e-mail alert system which sends e-mails to all users once new information has been added to the site.

While it is too early to judge the overall impact of this electronic ‘Parent-Teacher Meeting’ it could be argued that the relationship between teachers and parents has been ‘transformed’. The survey undertaken showed a high level of satisfaction among both teachers and parents. What started as a pilot project in several schools and pre-
school establishments in April 2006 has now been rolled out to all pre-schools in the Municipality of Sundsvall, a testament to its perceived success. Föräldramötet has been nominated for the 2006 Golden Link award for the best e-service in Sweden. Built using open source software with easy conversion into other languages it has raised interest in Europe and beyond. Föräldramötet also featured among the ‘best practice’ projects in the 2007 European eGovernment Awards.

What is particularly interesting about this e-Service is that it has been developed with no formal budget. The development of the system took place through an informal ‘network of people’ from the above mentioned organisations within an ongoing project ECHOES (Everyday communication between home and school). Each partner has contributed various ‘pieces’ of work within an atmosphere of trust and win-win spirit. What has been important in making the system successful was an extensive engagement with potential users (both parents and teachers) in what has been described as a ‘citizen-driven’ development approach.

Learning from end users

In all our regions, it was generally accepted that involving end users was a good thing and that there were advantages to doing so; positive feedback from users appears to be becoming increasingly valued as a critical success factor for projects. We found few examples, however, of systematic engagement with the end user. It occurs in some domains such as e-health where strong feedback loops are required to monitor the success of applications, but we found few examples in other domains or cross-domains.

In general, interviewees were dissatisfied with the feedback loops being utilised. The general approach is through questionnaires, usually at the end of a project or occasional surveys of particular populations such as SMEs. These were found either to deliver results too late to impact on the project or too general or too narrow, in line with sponsor targets, to be helpful. Several respondents favoured more discussion with end users on an on going basis and involving end users as co-producers rather than merely beneficiaries. It was felt that this would provide greater insights and opportunities to adjust projects in real-time, and, from a different perspective, create greater demand for services developed and thus increased resilience to ‘negative’ changes in leadership which can compromise the project’s transformative potential. There were few examples of this in practice. In South Yorkshire, one project was very concerned to integrate end user responses, but this involved the project officer going out and meeting with users and taking on board their ideas. This turned out to be very useful, but it was very labour intensive and depended on the commitment of a particular individual. Such approaches are likely to require (a) a greater commitment from end users and (b) building trust between project members and beneficiaries, which takes time, suggesting either that projects have to be longer or better designed from the beginning. In Extremadura, a factor assumed as critical for the success of the LinEx project (see Box E) is the ability to ensure the active involvement of end-users/beneficiaries in the design of any given LinEx domain distribution (e.g. education, health, public administration, SME’s). This goal has been partially achieved, but respondents suggest that it is an ongoing process which is ‘best not to take for granted’ and which is something which requires an ambitious paradigm shift regarding the role of the end-user: from consumer to co-producer of the service.
Summary

We found evidence of learning processes in respect of ICT in all our regions, but only in Emilia Romagna could we identify a developed ‘learning system’. In other regions, there were fragments of such a system; the components in place and the degree of articulation varied considerably. For analytical purposes, we broke down research systems into four elements: learning through research, learning by doing, learning through exchange and learning from the end user.

Most regions undertook research, but this was seldom done on a programmatic or coordinated basis. The research capacity varied across regions and was directed in different ways. One of the key issues which emerged was the tailoring of research to the specific region, even when drawing upon evidence from outside the region. Another key issue was the relevance of research to actors beyond the policymaking community and dissemination of research results.

Learning by doing was generally seen by our respondents as very important. This may, to some degree, reflect the number of people to whom we spoke who were engaged in projects, but there was also a more general desire for demonstration projects in order to create transformative use of ICTs. There are, however, limits to learning within projects and in taking lessons forward into other projects and into policy more generally. These include: a lack of funding resources (in general) and in resources specifically dedicated to learning; the nature of the ‘project cycle’ which means project workers are engaged in looking for extension funding or exit strategies for a significant part of the project lifetime; turnover of staff in this uncertain environment can also act negatively on learning; project evaluation methods tend focus on compliance rather than learning; the fear of failure or delivering ‘bad news’ affects ability to learn wider lessons.

One of the potentially most important areas of learning is learning through exchange. We did find some evidence of this process occurring, though again it differed between regions. Some regions had developed ‘soft institutions’ which acted as fora through which exchange took place, though it was not clear what impact they had on policy. There are, however, a number of barriers to this form of exchange. The general tendency for people to operate within their own domains which tend to be constructed in a hierarchical manner and are often more closely related to national structures (or even, as in the case of higher education, international) rather than regional. Language, mind-set, attitudes and expectations between different sets of actors create barriers to exchange. An example of this is the role of universities which the literature suggests are a key asset for a regional knowledge economy. In all regions, universities played an important role in generating human capital, though there was some dispute in most regions as to whether the type and quality of supply met business demand. Beyond this, other roles ascribed to universities in economic development cannot necessarily be taken for granted. In some regions, universities do not have the required R&D capacities to make a major contribution to regional learning. In others, there is little demand, either from SMEs or from large inward investors who bring in basic employment. There are also different cultural attitudes and different understandings of what the role of universities should be. This varies from country to country, but also is nuanced from region to region and, even, it should be said, from university to university.

Another important issue which affects all actors, which might be expected to play a role in the learning exchange process, is resources (time and money). In order to learn and exchange learning and experience, there needs to be a degree of ‘redundancy’ within the regional system. If we look at the components of the so-called ‘triple helix’ – the successful IT entrepreneur needs to find space from his/her business to pay attention to the host region which might not be his/her key market; administrators have to have the resource (and permission) to go beyond their strictly defined duties to promote ICTs; the same applies to academics. Such requirements, which always rely on the goodwill and dedication of individuals, become more difficult where the resource cannot be freed up, because of the low level of overall resources (a particular problems for NMS regions), where there is not a culture of cooperation within or beyond a sector and/or where institutions are excessively inward looking or, indeed, outward looking but beyond the region.

Learning from the end user was probably the weakest point of all our learning categories. Amongst those interviewees who had considered the issue, it was generally accepted that involving end users was a good thing and some regions were attempting to develop methods for successfully doing so. It was felt that current approaches, where questionnaires are distributed at the end of the project in order to measure satisfaction or usefulness, had little value in terms of learning. Instead, there was a need for users to become ‘co-producers’, being involved in projects from the beginning and contributing throughout the project (design, delivery, satisfaction, usefulness).
4.2.4 Narratives and Visions

Our literature review presented in the TRANSFORM State(s) of the Art(s) suggested that the innovation process generally requires some degree of shared vision as to 'possible futures' in order to reach desired outcomes, though space should be left for experimentation and debate. It was hypothesised that, in the field of ICT, in the regional development context, such a vision or narrative might be particularly important, given, on the one hand, the uncertainty around the emerging and evolving roles, and indeed images, of ICT, and, on the other hand, the complexity of the development processes and the range of actors involved. This is particularly so given that our starting point (based on our findings from the literature) is that the transformative use of ICT is a 'collective action problem'.

Table 8: IS Narratives in Case Study Regions

<table>
<thead>
<tr>
<th>Region</th>
<th>Central IS Narrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bratislava</td>
<td>Absence of vision or coordinated strategy at national level (where strategising is now emerging under EU pressure) is reflected at regional level (but, c.f., Kosice, below). Broad realisation that ‘scientific and research potential’ will be key, but IS agenda nationally only just emerging and limited regional element and limited regional powers</td>
</tr>
<tr>
<td>East Anglia</td>
<td>Fragmented vision, but overall ‘vision’ amounts to ‘intelligent use’ of technology to address the twin problems of overheating and underdevelopment, through spreading economic growth; also a role for ICT in preservation of place-based quality of life. No single IS strategy, but elements of IS prioritised in Regional Economic and Social Strategies. National priorities in some areas such as e-govt. More coherent narratives at a local level.</td>
</tr>
<tr>
<td>Emilia Romagna</td>
<td>Preserving status as a leading European region by adapting existing systems, and building knowledge-based economy on current strengths, using ICTs; continuing to develop a socially and territorially cohesive society, using ICTs to support this process. ICT Plan has been in place since 1999 (now third version). Focus on infrastructure (digital divide), but well developed applications/initiatives across a range of domains. Plans aligned with EU and national, but regional autonomy gives scope for regional planning and initiatives.</td>
</tr>
<tr>
<td>Extremadura</td>
<td>From a traditional rural economy to a knowledge-based economy, ameliorating peripherality – ‘a new window being opened to the world, based on the possibilities of new technologies’; Strategic Plan for IS developed in late 1990s: equal opportunities for all – spatial and social – in access and capacity to use; taking into account regional specificities and quality of life. Using recent autonomy to address underdevelopment, IS a key part of this narrative, driven internally, using EU and national strategies as ‘contextual guidelines’.</td>
</tr>
<tr>
<td>Kosice</td>
<td>“Catching up through creating an ‘intelligent region’ – an innovating, high value-added, knowledge intensive economy, based on retaining and utilising young people; ameliorating peripherality; IS as a ‘noble ideal’, improving local democracy, output and transparency. No formal regional responsibility for IS, but developing a ‘vision’ and projects despite this. ‘Held back’ by underdeveloped national strategy (now emerging in OP)</td>
</tr>
<tr>
<td>Malopolska</td>
<td>A “region of opportunities” promoting the comprehensive development of its people (a ‘human centric’ approach) and a modern economy, drawing on heritage and keeping its identity. ICT as a key tool to develop the economy (in the IT sector and beyond); developing human capital; intra-regional cohesion. Some key priorities (e.g., e-govt) set by National Govt, but region going beyond the basics in this and other (e.g., e-Health) domains. Much IS activity around a region-generated developmental and IS narratives. Malopolska regional chamber has recently approved ‘Directions of information society development for 2007-2010’ which effectively brings an IS strategy into play.</td>
</tr>
</tbody>
</table>

60
**Region** | **Central IS Narrative**
--- | ---
Mellersta Norrland/ Västernorrland | A cohesive and competitive region: ICT as tool for extending/embedding egalitarian culture; increased competitiveness and renewal in a global and knowledge-oriented economy – clusters and innovative systems. ‘Common hope’ that ICTs will enhance business and institutional growth, but concern about the impact of ICT on centralisation (c.f., Kosice where ICT is seen as opportunity to ameliorate peripherality). No formal ICT strategy, though in preparation at time of fieldwork.

Navarra | Regeneration and diversification of industrial base and growth of knowledge-based services; ICTs as one tool in this process; ICT viewed instrumentally rather than strategically. Second IS plan period finished 2007: focused on economic development and competitiveness, social and territorial cohesion, and ambition and leadership. No third IS plan at time of fieldwork. There are also a number of other plans which relate to the IS strategy (e.g., now on third technology plan). Overall IS narrative relatively fragmented. EU and national strategies are seen as ‘contextual guidelines’.

Pomorze | Achieving cohesion, competitiveness and accessibility. No single IS strategy: agenda (partly) expressed through Regional Development Strategy and Regional Innovation Strategy; ICT seen as a tool for assisting in these processes, together with development of human capital etc.; two of the pillars of the new ROP are SME development and innovation and knowledge society, which has a strong infrastructural element. ROP may take on a narrative character, due to accompanying funding.

Schleswig Holstein | From a region (historically) dominated by agriculture into a future oriented region, based on technology; industrial competitiveness so as not to be ‘left behind’; ICT a driver and response to competitiveness problems, No (longer a) single IS strategy, but a number of inter-related IS support programmes.

South Yorkshire | From a traditional industrial region to an advanced knowledge based and socially and spatially inclusive (sub) region; ICT as a key tool underpinning this process, but with range of accompanying soft measures. Moribund single IS strategy at regional level (at the time of fieldwork), IS priorities reflected in Regional Strategies; ‘IS framework’ at sub-regional level. Priorities relate to national and European priorities, though signs of initiative taking the region ahead of national norms, both infrastructurally and in some areas of social aspects of IS agenda.

Thüringen | Vision unclear and an ‘anti-vision’ culture has emerged since 1990s. Instrumental approach to ICTs. Supporting and developing existing firms. Moving towards growth pole approach - strong existing sectors and developing new sectors; no integrated IS strategy. Innovation strategy exists and is evolving. More coherent narratives at a local level around RIS, involving ICT (e.g., Jena).

**An overview of key foci of narratives, visions and strategies in the case study regions**

By visions and narratives we do not simply mean those formally expressed in strategies, or plans or political statements, but also more tacit narratives which appear to be part of the ‘mental furniture’. It was, of course, easier to explore the formally expressed narratives than the more tacit narratives, though not as easy as might have been anticipated. However, it is only by understanding how the two interact that we can start to understand the overall situation. Table 8 brings together our analysis of documentary evidence and our interviews to give an impression of the vision/narrative in our case study regions.

As can be seen not all of our regions have a formal IS strategy or plan encapsulated in a single document, though some were in the process of preparing such a document during the period covered by our fieldwork. In most cases, such a ‘strategy’ must be traced through a range of documents. The

In several regions, unearthig plans and strategies took a considerable amount of effort. In many cases there was no single IS strategy and a range of plans had to be consulted, in others strategies were in production. This in itself suggests a lack of coordinated planning around IS and fragmented vision and narrative.
lack of a single vision does not necessarily reflect IS development and some respondents argued that moving away from a single document actually demonstrates a maturation of the IS process.

A number of key issues emerge in all of our regions. Generally, the most important is the modernisation of the economy. This is hardly surprising given the global narrative regarding ICT and the ‘new economy’ and the narrative of ‘competitive region’ as reflected in European and national policies, both of which constrain regional visions and policies to varying degrees. Of course, some of our regions are moving from industrial to ‘post-industrial’ economies, others from mainly agricultural (in widest sense) to ‘post-industrial’, these different realities will be reflected in different narratives.

In some regions, the narrative is also very clearly about social and spatial inclusion. Although social concerns are also reflected in European IS policy, the impression was that these values (when present) more clearly articulated local concerns, often based on national or regional cultural norms; for example, interviews in Västernorrland, South Yorkshire and Emilia Romagna all reflected the importance ascribed to social democratic values and inclusivity.

Our starting point in the research was the transformative use of ICTs. We did not place any boundaries in policy direction when conceiving the notion of transformative use. It was interesting, nevertheless, to note, that for some regions (or parts of regions) the transformative use of new technologies was envisaged both in developmental terms (as envisaged in the modernist discourse), but equally in terms of a means to conserve perceived ‘goods’ in the region. This desire to conserve (again real or imagined) quality of life, such as the values associated with small town and close community living, to the modernist might appear anti-developmental. This conservationist approach was, however, part of the narrative of several of our regions; for example, East Anglia and Extremadura.

Most of the regions go beyond simple ICT/infrastructural questions and towards a focus on the broad factors and several respondents repeated, almost mantra like, ‘it’s not (or no longer) about the technology’. Addressing a range of softer factors has become a part of the vision in several regions. Nevertheless, and as explored later, technology still plays a key part in several narratives, albeit a contested one.

One interesting question which the literature throws up in respect of regional economic development is the presence of a usable past (Keating et al., 2003). When focusing on ICT and the Information Society, reflecting on a usable past becomes slightly more difficult in that the ‘grand narratives’ of the information society tend to be about ‘pre’ and ‘post’, about ‘fracture from’ rather than ‘continuity with’, about moving forward and imagining new possibilities, rather than reflecting on the past. Several of our regions, however, although buying into the progressive information society ‘meta-narrative’ also utilise their past (imagined or real) as a cultural resource to give impetus to development. These may be at odds with each other. It was claimed in some regions that policies focused too much on industries which have been historically important. For example, the focus on optical engineering in Thüringen or on the remnants of the steel industry in Sheffield (in both cases still important industries in terms of output) was criticised by some respondents. In the latter case, it was claimed that this focus actually got in the way of innovation, in that these firms were essentially conservative.

The importance of vision and narrative

‘..if you don’t have a clear narrative, a simple story to tell, you can’t get the people involved….This needs to be an inspiring narrative…. the vision and regional IS strategy has been very important in fighting “historical pessimism”’.

The above quote, from a key respondent in Extremadura, encapsulates the view of many of our respondents across the regions. There was general agreement across our regions that strong narrative(s) or vision(s) could be important in promoting the IS agenda, and that such a narrative could provide impetus to support the use, and transformative use, of ICTs. Creating and selling a credible vision of what ICTs might contribute to territorial development was held to be particularly important because of the weak (statistical and empirical) evidence base which can be called on to justify investment on a cost-benefit basis alone. In all cases, however, it was felt that a vision could only work if it was mirrored by actual demonstrations of ICTs, through projects and initiatives. It was also felt important that the two should not become disconnected, with vision moving too far ahead of reality.

The trouble in articulating a far reaching vision is that many people will be sceptical. You’ve got to be real about what you can achieve and when. This is back to an
evolutionary cycle. If you express a view too early to too many people, it will be self-defeating; you’ve got no chance of getting there. You’ve got to be pragmatic. The vision or strategy you write down can’t just sit on the shelf. It’s got to be something you’ve got the ability and wherewithal to achieve.\textsuperscript{30}

This does not, however, mean the absence of narrative, as those pragmatically implementing policy also need to gain buy-in from funders, potential project partners and end users. Here, as at a more strategic level, the power of demonstration is very important.

In most regions, there was general agreement that a regional (or sub-regional) narrative was important in guiding collective action and facilitating joint working. There was some debate as to the benefits of a single IS statement, vision or strategy. In some regions, notably Extremadura, the fact that the regional President had articulated such a vision was seen as a major galvanising force (see also the section on leadership), perhaps as important as IS strategic documents. It can, however, be difficult to maintain such a vision over time and there are dangers that if this vision is associated with a single person (or small group of people), then it will not be sustained. In the case of Schleswig Holstein, for example, a strong vision was articulated by a particular key individual in the 1990s. This vision now appears to be forgotten. In South Yorkshire, one of the key people pushing forward the IS agenda also pointed out the dangers of a vision being associated with an individual who was always ‘banging on’ about it; on occasion, this could prove counterproductive.

As can be seen from Table 8, several regions do not have an IS strategy, or have just created one; in others, such a strategy exists, but appears to be ‘on the shelf’. In most regions, the IS agenda manifests itself across a range of strategy documents. It was argued by some respondents that this reflects a more mature approach to the IS agenda and also demonstrates a degree of mainstreaming. Where ICTs and the broader IS agenda have been on the regional policy radar for a number of years, it is natural that they should be tailored to those policy areas which are seen as key in the region and can be translated into goals and achievable targets and some respondents argued for policies tailored to separate stakeholder groups or priorities. This approach was said by one respondent to help ‘demystify’ the role of technology and make uptake and use, (and eventually) transformative use, more likely. The danger of this approach, however, is that people will tend to work in their functional silos, failing to become aware of, or take action around, collective problems.

It may, of course, be that a different level of balance between vision and ‘pragmatism’ is required depending on regional circumstances, for example:

\begin{itemize}
  \item The ‘mentalité’ of a region (or at least of those involved in policymaking and implementation) may be important. For example, it was suggested that a history of engineering may incline people to more pragmatic, rather than visionary, approaches.
  \item Importantly, the appropriate balance may be determined by the IS ‘development cycle’. As suggested above, regions with longer-standing experience of the IS agenda, and where the agenda appears to be mainstreamed, may benefit from a more diffuse articulation of an IS narrative. Time, of course, will be a factor in this process. So, a region such East Anglia which has long been involved in IS issues may feel less need for a clearly articulated vision than say Malopolska, though it should be noted that Emilia Romagna, which is probably the case study region which has the longest-standing and most sustained commitment to the IS agenda (and appears to be very successful), retains a vision (and visionaries), but also a number of pragmatic ‘followers’ able and prepared to debate and disagree with the dominant vision.
  \item However, the ‘maturation’ process is not necessarily linear, and it may be that at some stages a re-articulation of the importance of the IS agenda is appropriate even in more ‘IS mature’ regions. The emergence of broadband might be one such development where there may be the need to ‘re-kick start’ IS development through narrative. It was clear from our research that significant investment is still being made in ICT infrastructure under the rubric of regional competitiveness and/or social and spatial inclusion. The costs involved mean that politically a new (or revived) narrative is required. Several regions were investing heavily in broadband or were considering doing so on the assumption that the market would not provide – including, South Yorkshire, Malopolska and Emilia Romagna. In most cases, this approach is contested, the key arguments being that: existing technology is sufficient; improving the use of existing technology through spending on softer factors would be more appropriate; that the market would provide (an
\end{itemize}

\textsuperscript{30} South Yorkshire, group 3 respondent
argument that appears to have less resonance amongst policy makers than in previous years).

Of course, the vision or narrative may not cover the whole of the region which is, of course, a ‘construct’. Visions may be articulated at a more local level, perhaps calling on a ‘useable past’. For example, in Thüringen, Jena can and does call on its association with the engineering tradition symbolised by Carl Zeiss. A question is whether the narrative constructed around this essentially local symbol can (or should be) drawn upon by the rest of the region, or does it become a symbol of further intra-regional division?

Another point which emerged from our fieldwork was the role of contingency. As a number of commentators (e.g., Jacobs, 1984; Castells and Hall, 1994; Hall, 1998) have shown, there has been a significant element of contingency in the beginnings of ‘successful’ regions such as Silicon Valley, whether it be William Shockley moving to Palo Alto or the concentration of central government defence spending in a particular place. These contingent events only have an economic impact over time, whereas, increasingly, the economic development community seeks quick returns. Contingent events must therefore be recognised and seized upon so that they can be transformed into development opportunities. This requires opportunism, but also the ability to marshal actors to develop opportunities. This point emerged in several of our regions; for example, the adoption of Linux in Extremadura was initially largely by chance. Over time, however, it has taken on both a practical and symbolic importance which helps to provide the region with a distinctive narrative on IS.

Perhaps the clearest example of one of our case study regions seizing and developing a contingent opportunity is Kosice (see Box H).

Box H:
Contingency and seizing opportunity: the case of Kosice

In Kosice, probably the most developed region in Slovakia in terms of regional policy development for the IS, the creation of Kosice IT Valley came about largely as a result of an informal conversation between a senior academic at the Technical University of Kosice and a senior representative of a US inward investing IT service firm (see also universities and leadership section and informal networking section).

“Back in December 2005, I was sitting over a cup of coffee in the Hotel Slovan [in Kosice] with the Vice-President of T-Systems. Then and there, the following idea was born. He said that he would be happy if [one day] flying from Kosice to the USA, he would open the Financial Times, or other newspaper, and find an article about ‘Kosice IT Valley’ and its success… So he was the engine of this … and I was there too.”

The Technical University then facilitated a meeting to set up a ‘Development Forum’ involving the two regional universities, the region and the ten main IT companies (inward investors), from which the notion of the IT Valley was developed. The initiative is widely perceived as successful within the region. We are not commenting here on the success or otherwise of ‘the valley’, but pointing out that from a narrative perspective it has become a key part of the IS story, which can be drawn upon, by at least some actors, as a tool for the internal and external promotion of the region, as modern and progressive. Contingency is important here, but also important is the presence of people who could ‘envision a future’ based on already existing assets (IT firms and networking capacity), and provide leadership. Kosice IT Valley is described as a ‘gravitational force.’

Barriers to narrative gaining motor power

It has been suggested so far that narrative, though seldom on its own, can form an important part of the process through which ICTs uptake and use can be promoted. It would appear that there are some territories or some circumstances where narrative is not a powerful tool and where its use might even be counterproductive. We can conceptualise this as narrative fatigue and break it down into three types. These can, of course, be interrelated, but we separate them out for analytical purposes:

- **Strategy fatigue**: This merely relates to the number of strategies emerging. These strategies may or may not be in conflict, but, at the very least they have to be read and digested by policymakers and practitioners and may prove a barrier to ‘getting on with the day job’. This problem is very clear in England where new strategies seem to appear with deadening regularity. Actors in other regions also expressed the view that there are too many strategies.

- **ICT promise fatigue**: Here, promises made by both government and by the IT and telecommunications industries over the last twenty years or so can be seen to have impacted
negatively on the IS agenda. This is underpinned by expensive failures (well covered in the media) in areas such as e-government and also by issues such as IT-facilitated outsourcing; in this latter case, the degree of mistrust, of course, varies from region to region, depending on whether a region has been on the receiving or sending end of the process. For some regions, there is also the question of lived-experience versus the dominant IS narrative. If we take, for example, the impact of ICT on peripherality, different experiences (perhaps based on different stages of IS or economic development) may determine different attitudes. So, for example, whereas Kosice has experienced an ‘opening up’, with relatively strong inward investment, coming at the same time as increased regional autonomy, leading to a general view of the information society providing opportunities for peripheral regions, Västernorrland’s experience (according to our interviewees) is of ICT as a tool for greater concentration and centralisation of economic and governmental activities.

Vision fatigue: This is probably the most troubling issue. ‘Vision fatigue’ can be conceived of as systems level burn-out, as a result of either a single vision (around a single event) or a succession of visions or narratives, which have had strong backing amongst elites and may have caught the public’s imagination, but which have failed to live up to their billing. In such cases new visions appear to have little power to motivate and are viewed extremely cynically. A similar, though less deep rooted, phenomenon was also reported in South Yorkshire where a number of regeneration ‘flagship’ projects in the late 1990s failed to have the positive impact envisaged. In the South Yorkshire case, however, the problems were not on the same scale as in eastern Germany and the role of vision appears to have recovered to some degree, with, for example, a sub-regional Digital Region vision emerging and a Sheffield Creative City being articulated.

Box I:

Vision Fatigue in Thüringen

The most pronounced example in our case study regions was Thüringen, where the failed promises of the 1990s on growth and ‘catching up’ with western Germany appear to have infected the region with a very pessimistic view of future possibilities. Ambitious models are frowned upon and a degree of scepticism was expressed as to the relevance of any guiding vision statement. Here, the IS agenda, which for reasons set out above, requires some buy-in to a vision or narrative, is caught up in the wider disenchantment with the visionary. Additionally, however, the updating of ICT infrastructure which took place in the early years of integration with western Germany, became part of the narrative of modernisation, so became more closely related to the period of failure. The Thüringen case probably reflects the situation for many of the eastern German Länder. It is notable, however, that certain parts of the region, the city of Jena, for example, is attempting to detach itself from the wider ‘east German’ problem and to promote itself as a centre for engineering excellence, drawing on its usable past, on its engineering reputation. This, again, underlines the difficulties of generalising at the regional level.

These various forms of ‘fatigue’, particularly generalised ‘vision fatigue’, may present a particular hurdle for policymakers wishing to generate activity in IS where the amount of convincing evidence which can be brought to bear, as to the impact of investment in hard and soft infrastructure is limited in both the economic and social fields.

Summary

Visions and narratives are clearly important tools in giving direction to policy and forming a basis for strategy. Their importance seems to vary from place to place and over time. These tools are particularly important in policy areas such as ICT and IS where empirical evidence for their efficacy is limited. Vision will be articulated in different ways and by different actors according the regional culture. In some regions, it appears important that a vision is articulated by a political leader, in others things move ahead without any apparent (elected) political leadership (see section on leadership). As in other policy areas, contingency is important but the agency must be in place to grasp the opportunities emerging and to make these relevant to the particular region.

Perhaps the clearest message which emerges from our fieldwork is that a narrative which will be sustainable over time has to be flexible and has to mirror ‘reality’ to a significant degree. Vision and reality may diverge at particular periods, but should not do so too much or for too extended a period. The power of demonstration, itself of course a narrative tool, seems to be an important element in sustaining direction, and perhaps providing a ‘reality check’ on these visions (see learning section). Visions tend to be contested. Given the lack of evidential base and the leap of faith required in the
area of IS, this is generally a valuable process, though if too strong a contestation occurs at the early stages of agenda development it is potentially damaging. Within a more mature environment where there is a range of sources of expertise, contestation can provide a corrective to a too far-reaching vision, particularly if what we might call a ‘deep narrative’ has been established, with general agreement on the direction of regional travel and the ways in which ICT can contribute those ends. In such a setting, debate and discussion around issues like the relative merits of heavy investment in ‘next generation broadband’ versus further spending on, say, the development of human capital, can take place.

4.3 Conclusion

In our introduction we explained how we arrived at our five clues (reduced to four in this report as openness and closure are integrated into the remaining clues) and why we regard these as important. Of course, these five clues are closely connected and were separated out for analytical purposes. In concluding this chapter, in addition to summing up the key points emerging from our clues, we explore briefly how they interconnect.

It has been pointed out in several places in this report that although our regions have similarities, there are also differences. These range from socio-economic status, industrial structure, maturity of the region, autonomy of the region, the relationship of the region to the nation state, the internal political structure of the region and comparative powers and responsibilities within the region, and the institutional capacity of the region. Although there were differences amongst regions in the old member states and amongst regions in the new member states, the biggest cleavage overall was between those two ‘blocs’. However, some NMS regions were clearly addressing the IS agenda in sophisticated and enthusiastic ways. The key difference was levels of resource. These differences should be borne in mind when reading the following conclusions.

Both networks and institutional and individual leadership were seen as important by the majority of respondents.

The public sector took the lead on ICT policy in most of our regions. In some cases, this was because it was felt that there was no alternative source of leadership. Where the public sector did not take the lead, beyond their formal responsibilities for preparing regional plans, in which all at least mentioned the importance of ICT, we could find no other source of leadership, outside particular isolated domains. Similarly, the public sector dominated the ‘overarching networks’ and at least animated or facilitated most of the other networks which we came across, the main exception being project networks which drew their funding from outside the region.

Political leadership by key individuals was also seen as crucial in many regions, and lamented by those interested in IS when it was absent. So, for example, in some regions effective leadership may depend on formal political position (for instance, an elected regional president); in others there is no regional level political structure to provide a leadership voice. In these places, the case for collective action was more pronounced.

Networks were also seen as important. Of course, this to some degree reflects a general tendency towards regional ‘governance’ as opposed to ‘government’. Networks may be more important in the ICT/IS policy area than in other policy areas. In many policy areas there is a clear institutional, departmental or professional home from which to exert influence. This is not necessarily the case in respect of ICT or IS. It is true there is an increasing body of IT professionals many of whom have a base in IT departments, but what we are interested in here is the development of an ICT and social and economic development community. Such a body of people is not necessarily recognised and often has to carve out space in which to operate. Here, networking is very important in bringing together a ‘critical mass’.

There was a general view amongst our respondents that inclusive networks, which brought together a range of actors and reached out to end users, would be beneficial in creating an environment in which transformational use of ICT could occur. It must be said, however, that we found no examples of such an inclusive network approach in place. Emilia Romagna probably came closest, but even here there was concern about the extent to which end users were integrated. The main absentee mentioned by our respondents was the SME community. This absence was noted in nearly all regions, including those which are generally acknowledged to have history of strong business networks. Even where
inclusive networks do exist in the formal sense, there are of course power asymmetries, based on differentiated resources and so it is difficult to give equal weight to all.

On some interpretations, the concepts of networks and of leadership would seem to be at odds, the former being used to suggest non-hierarchical complex systems, the latter to infer a degree of hierarchy. In reality, of course, physical networks have key nodal points and may need to be built in hierarchies (or forms of precedence) in order to run smoothly. Similarly, in social networks, not all points in the network are necessarily equal, in terms of resources and capacities, though each point is important for the networks’ overall effect. Often, leadership is required in networks, for example: to form a non-organic network (for instance, the soft institutions which bring people together around ICT issues which we describe earlier); to give direction and impetus to networks; to help give structure to networks; to make links to other networks. In the more formal networks, institutional leadership or leadership (titular or otherwise) from an individual who has seniority in a recognised institution can give voice to the network in the general policy community, taking the network’s ideas to regional or extra-regional resource networks.

In less formal networks, leadership is often, of course, collective and the issues are sorted out through discussion. But an animator may be required from time to time to keep the network going. It is also likely that if these networks are to be effective they will need to link into resource networks and expertise networks. One avenue to these is to have the ear of sympathetic leaders in the wider policy arena. Such a relationship is likely to be most effective when it is longstanding and on-going. It was put to us by one senior policymaker that a combination of himself as ‘gatekeeper’ and an influential ‘networker’, who was able to use the policymaker’s authority to open doors, formed an affective combination in an environment where the ICT agenda was one of many policy areas seeking resource.

Networks also form important sites for learning and for information and ideas exchange. As such, they can provide a source of expertise upon which leaders can draw when creating and pushing forward the ICT agenda. Overarching networks and cross-domain networks also provide learning opportunities for those engaged in project and initiative development and opportunities do develop joint projects. Projects and initiatives, themselves form a further locus around which learning can occur. Indeed, ‘learning by doing’ was seen as very important by the majority of respondents (see narrative below). However, the general view was that a number of factors stood in the way of the learning process; these include the short term nature of projects, the narrow ‘tick box’ way in which projects are evaluated, the ‘fear or failure’ and the fact that funders and policymakers do not want to hear ‘bad news’.

Although cross domain networks were uncommon, it was generally recognised that bringing different actors together – say the public sector, universities and the private sector together – had the potential to lead to more profound learning. For example, university research whether technical or socio-economic, can be used to help ‘explain the region’ or to draw in experiences from elsewhere. Assuming that this can be tailored to the region rather than ‘cut and pasted’, there are said to be clear benefits. We found examples of both formal and informal relationships between these sets of institutions (and between individuals working across institutions) which were beneficial. This axis does not always work as well as it could, however, according to our respondents. One problem here is that some academics feel that the region is not interested in their work and that they also misunderstand the purpose and values of the academic world. From the opposite perspective, some regions find it difficult to engage their universities which are funded from outside and whose focus is the global rather than the local.

Including end users into networks through ‘co-design’, as opposed to merely ‘exit questionnaires’ handed out at the end of projects, was also regarded as key to lesson learning, though, as suggested above, we found few examples of this process.

Turning to our narrative and vision clue, there were significant differences across regions and within regions as to how important this is in general and as to whether there is a need for a single narrative, and indeed, what that narrative should be. The IS and ICT agendas clearly have a future oriented narrative, characterised by change and discontinuities from the past. ‘Second worlds’, cyber-spaces, virtual communities and electronic cottages are envisaged. In the policy sphere, it is interpreted as better futures with ‘more and better jobs’, more efficient markets and better (as well as more and cheaper) public services.

In some regions, a clear story was felt necessary in order to overcome ‘historical pessimism’ and to provide narrative to this still relatively new policy area. It was seen by some as an opportunity to
‘leapfrog’ other regions or to overcome the disadvantages of distance and to revalorise local resources. Creating a credible vision and narrative may also help to overcome the weak statistical and empirical bases which make it difficult to demonstrate the effectiveness of ICT policy. It was also generally felt, however, that narrative has to be flexible and must be combined with or bend to technological developments and to contingencies which arise and might need to be grasped opportunistically.

In some regions, leadership is important in creating or giving voice to narrative. It was noted, however, that it was important that an individual should be able to communicate that narrative to institutions, as well as to the general community, otherwise the narrative disappears with the individual. We found an interesting example of this in Schleswig Holstein which had been perceived as at the forefront of the information society in Europe in the 1990s. This narrative is now largely forgotten. Networks were also important in creating and sustaining narratives as to the transformational power of technology. Individuals within networks, particularly semi-formal and informal networks, seemed to have a shared narrative.

On the other hand, in some regions, such visions, though not unquestioned, seemed to have gained hegemony. In other regions, however, there appeared to be a strong degree of ‘vision fatigue’. On different scales, this was true of Thüringen where the promises of benefits through integration into the larger Germany are perceived to have been largely unfulfilled, and in South Yorkshire where a number of flagship projects had been perceived to fail. The ICT vision was also perceived to be unfulfilled in many regions, with people still pointing to the ‘dot com’ bust, past infrastructure failures (e.g., technology investment in East Germany which was overtaken by market developments in a short period), digital divides, including spatial divides, and the negative impacts of ICT facilitated globalisation.

A key question for policymakers, in all regions, and particularly those suffering from vision fatigue, is how to balance the promises of the IS agenda against past promises and against present realities. There was no ‘settled view’ as to the need for a single regional statement or document setting out a regional IS vision. Where the ICT agenda was relatively mature, the mainstreaming of policy and the insertion of ICT into policy areas, or appropriate domains, meant that there was no need for an overarching policy or a single IS policy agenda. Other respondents suggested that a directional narrative was important to bring a wider population on board. It was also felt by some that the need for an articulated narrative may vary along the journey towards an IS. This does not suggest a linear process, but that there may be moments when the narrative has to be restated or restructured. One commonly held belief was that it was important that narrative should not get too far out of touch with reality, ‘keeping the vision real’, and a key element in reconciling narrative and reality was through concrete ‘demonstration’ by means of projects and initiatives that deliver.

One point which emerged is a need for a balance between institutional capacity, networks and other forms of collective action and the role of the individual operating with, across, and in the interstices, between, these collectivities. These individuals, whether leaders, individuals involved in projects, networkers or ‘network spanners’, play an important role. This may be true in other policy areas, however, as pointed out above in relation to networks, ICT/IS agendas do not always have a recognised institutional or professional champion and so individual agency may gain greater weight. In exploring all our clues it became clear that innovation in ICT/IS relies, partly at least, and often heavily, on the goodwill and enthusiasm of individuals, in the public sector, in academia, in business and the community. This requires that ‘redundant resource’, i.e., enough capacity in the system for people to carve out spaces to operate in ways which from the narrow perspective of a particular institution seem sub-optimal, but may contribute to the overall regional system. To give an example, we found individuals working in public sector administration IT departments whose main role was to provide internal expertise to their institutions. However, they managed to extend their role to develop wider social uses for ICTs. This required a combination of the individuals ‘gaining permission’ to take on additional responsibilities, but also using their own personal time to the ‘project’. This, of course, suggests a favourable policy concerning ‘local’ management and policy environment, but also some ‘redundant’ or ‘spare’ capacity in the regional eco-system. Successful, informal, and even formal, networking also requires this spare capacity. Many of these individuals also use their own spare time, i.e., their personal resource. This may not be possible in all regions, of course. So, for example, in some New Member States, respondents working in IT departments complained that they were extremely short staffed and had incredible workloads and thus had no time to take on additional tasks, paid or unpaid. Similarly, in universities, academics spoke of the need to take on additional (paid) work to gain a decent standard of living. They had not the time to engage in additional (voluntary) tasks. A
crucial question is how can individuals be engaged in the knowledge-sharing and how can resources be mobilised to achieve this. Another question is how individuals are articulated with institutions, and how they can be incorporated into institutions which reward their initiative, but without losing their innovative and perhaps freewheeling attitudes.
5 Policy Implications and Linkage to Indicators and Benchmarking

This report is a synthesis of the theoretical and empirical work in WorkPackage 1 of the TRANSFORM project. Our considered regional policy recommendations and indicator development work is reported elsewhere. We, however, briefly set out in this chapter the three key points that we believe our work suggests for policy makers and the community developing indicators. We believe that we have taken significant steps towards clarifying the concept of “transformative use of ICT,” its relationship to the regional scale, and some of the features of the regional innovation culture that facilitate such uses. We have established, at a basic level, the content validity (that is, the logical coherence), the construct validity (that is, the congruence of the concept with studies in the field) and the face validity (that is, the acceptability of the concept by relevant lay groups as demonstrated by our case studies) of our model.

The various policy implications arise directly from our model of transformational use of ICT. We have stressed firstly that transformational use of ICT is a multi-agency change process or collective action problem. Traditionally social scientists have identified three broad strategies for solving collective action problems – hierarchical or bureaucratic solutions; market-based or individualistic solutions; and network-based solution – usually with these solutions combined in some way. What we have theorised, and had empirically supported in our case studies, is a strong preference for network-based approaches to transformational change. While this does not mean that markets and hierarchies do not have a role to play in the development of transformational change – they clearly do – they are subordinate logics, at least at the regional scale. Because transformational change is an ‘open-ended’ or emergent process, requiring experimentation and encompassing a high degree of ambiguity, it is not amenable to the detailed planning and rule-based approaches typical of a hierarchical solution. While all agents involved in transformation can and do make plans, no agent has the necessary knowledge or power to make a single master plan. Yet because transformation requires the exchange of complex information and the simultaneous, mutual adjustment of many dimensions, strong informational and power imbalances and a holistic model of change, it is often not amenable to pure individualised, market-based approaches. What we seem to have observed in the field is not a pure network approach to bringing about regionally beneficial transformative use of ICT, but rather various hybrid formats – networked-bureaucracies and networked-markets – but always with the strong network component.

5.1.1 One Size does not fit all?

The argument is that the model of an information society that every society builds, or that every business firm or individual contributes to, depends upon the values that people, firms, and governments put forward. Within the same techno-economic paradigm (informationalism) there is considerable room for political choice based on values (Castells and Himanen, 2002: 10)

We have seen from our provisional analysis of the 12 regional case studies that there is considerable variation across the regions in a number of dimensions. In all cases, the specificities of history loomed large over the region. This was clearest in those regions struggling with the legacy of Fascism and Communism. But it is also clear in those regions struggling with various forms of industrial legacy (South Yorkshire, Navarra, Emila Romagna), or those which had substantially avoided classical industrialisation (East Anglia, Extramadura, Schleswig-Holstein, Vasternorrland). Geography also loomed large in many of the case study regions. Proximity to major cities in East Anglia (London) and Schleswig Holstein (Hamburg) presented a particular set of issues. Conversely relative isolation from urban centres – Extramadura and perhaps Vasternorrland – generated other problems. Each region has entered upon transformative use of ICT with a very different endowment.

If the historical position of the region looks backwards and the geographical looks outwards, then we also want to stress a further aspect of variety among the case study regions – their vision or future

31 See TRANSFORM Deliverable 4.1
perspective. Here too there is variation, as well as some agreement. Common goals – economic growth, job creation, social cohesion, health, educational attainment, environmental sustainability, quality of life – are widely shared and can, at first blush, give the impression of little variety. However, the precise configuration of these goals, the priorities accorded to each, the ways in which they are measured, and the level of internal social support for each of them, varies widely.

We stress this variety of social experience because it strongly limits the potential for simple generalisations about policy. With regard to the transformative use of ICT we would strongly endorse the recent arguments of Phil Cooke and his colleagues when they argue that:

> given the complexity of the challenge, this report offers not ‘one-size-fits-all’ recipes but rather a policy methodology and perspective. This is appropriate in a Europe characterised by large scale and developmental diversity (Cooke, Asheim, et al. 2006: 13)

A diversity of approaches, linked to local endowments and local values and vision is a necessary precondition for progress. As David Edgerton has recently reminded us:

> While copying existing technology is very sensible, imitating innovation policies may be a mistake. For if all nations, areas and firms agreed about what the research should be, by definition it will no longer be innovative (Edgerton, 2006: 210)

In a Network Society, the goal is to find a unique niche or set of network relations, rather than mimicking an ideal role model. Importantly, this search is not a one-off process that can be signed off as ‘successful’ but is, rather, a constant requirement.

### 5.1.2 A process, not a set of policy prescriptions

We have conceptualised transformative use of ICT as a complex collective action problem that involves the mobilisation and co-ordination of a diverse range of actors across a diverse range of dimensions (technical, commercial, cultural, etc.). Such problems are, in spite of the rhetoric of the ICT industry, seldom amenable to quick “solutions”. Rather, our case studies show that where the regions had mounted sustained attempts to promote transformative use of ICT, these efforts built upon a history of interaction and collaboration. The precise chain of events by which the various actors have come into contact with each other and had developed the necessary vision or narrative varied across the case study regions. In many cases there were more or less fortuitous events that had led to the development of coherent attempts at promoting transformation through ICT. Yet these regions were not just lucky. Rather they appear to have ‘made their own luck’ by using events in a frankly opportunistic manner. Thus while we are reluctant to prescribe a precise set of activities that would lead to transformational outcomes, we might suggest that any process which systematically brings together actors from what we have called the ideas, resource and expertise networks around a positive agenda for change can dramatically increase the potential for such an outcome.

### 5.1.3 Social Competencies as well as technical competencies

What we see as the main requirement for regions which aspire to successful transformative use of ICT to serve regional development goals is improved social competencies for “mobilising” social actors. The fields that we have stressed – networking, leadership, learning and narrative – are social competencies. The European Commission’s Information Society Technologies Advisory Group has argued

> as ICT becomes more deeply embedded into the fabric of European society it starts to unleash massive and far-reaching social change. It also creates opportunities for innovation, creativity and progress that lead to growth and new jobs. The next waves of the digital transition, on which we are just engaging, are likely to have an even bigger transformational impact than the first (European Commission, 2006: 29).

If regional actors are to be able to exploit these opportunities for innovation, creativity and progress, they will need to mobilise broad coalitions of interests in the regions. Andrew van der Ven, discussing complex innovation processes in industry, makes the point well

> Many different actors in public and private sectors make important contributions to developing the industry infrastructure by recombining inherited practices, technologies,
and institutions to address their own unique and partisan interests. Because the inter-
organizational field in which the collective action takes place is pluralistic, success
requires not only technical and rational competence but also political savvy to understand
and mobilize the interests of other players with stakes in an emerging industry. Technical
savvy is necessary, but not sufficient for success; also needed is political savvy (van der

Finding effective ways of developing and mobilising such hybrid technical and political skills is likely to be a priority for regions which want stimulate transformational use of ICT.

5.1.4 The role of indicators, and benchmarking and bench-learning in the
transformation process

In one sense, regional policy makers have good indicators of transformational change in the standard measures of social, economic and environmental development. Indicators such as regional value added, Gross Domestic Product per head, jobs created, educational attainment, quality adjusted years of life or tonnes of carbon dioxide produced can provide outcome indicators for transformative use of ICT at a regional or project/programme level. However, such measures are of limited use as policy indicators because they typically arrive too late, after decisions have been made, and are hard to link causally to initiatives or interventions.

More useful for policy makers in the field are more proximate indicators of “transformational potential” or “transformational promise”. Using such indicators, together with more traditional project or programme appraisal methods, might help policy makers to prioritise and order projects as well as stimulating fresh ideas for projects. The core elements of our definition of transformational change are not hard to crudely quantify as, for example, the proportion of budgets dedicated to various aspects of change management, the numbers and types of organisations involved and number of “domains” addressed.

A second concern, as a recent OECD report stresses, is that the social side of ICT-related indicators remains underdeveloped.

For economic impacts, arguably the important questions of micro- and macro-economic impact are being addressed and are reasonably measurable. The questions in respect of society are less well defined and are likely to be harder to measure” (OECD, 2007: 17).

Our case studies have repeatedly identified specific individuals, or occasionally small teams, that have proved capable of mobilising a much larger coalition through having both “technical” and “social” competencies. It is, we believe, these “hybrid” actors and the networks that they are able to bring together and mobilise which are the key to bringing about regional transformational change. Elsewhere (e.g., TRANSFORM Deliverable D2.1) we have suggested that much can be done by bringing together existing measures of social capital and networking, innovation and learning and participation and empowerment as a key framework for the development of such social indicators.

5.2 Last Words

The core message of this synthesis report is that Transformational use of ICT, as we have defined it, represents a broad “socialisation” of the Information Society agenda and that, if policy makers are to be better able to support this kind of change they will need new skills, tools and indicators which reflect this fact.
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Annex: Summary Overviews of Findings from the Case Study Research

South Yorkshire (England)

Context

Overview of South Yorkshire

South Yorkshire, historically was dominated, economically, by heavy and extractive industries and its current urban structure was built upon these industries.

Although manufacturing still plays a significant role in the economy its contribution to employment has declined significantly. The mining industry has all but disappeared. In employment terms public sector services and routine private sector services now dominate.

The sub-region thus faces the well known problems of industrial decline and regeneration and economic and social policy is directed at facilitating transition from a traditional economy to a ‘knowledge economy’.

SY performs poorly against the UK and EU averages on a range of economic measures, including innovation and human capital formation and there is an underdeveloped private sector.

Industrial decline is reflected in high levels of economic inactivity (though not high unemployment in EU27 terms) in certain areas and concentrations of social deprivation.

South Yorkshire: in what sense a region?

South Yorkshire must be placed in the wider regional context of England: historically regional level governance in England has been weak to non-existent and still has no ‘constitutional’ status. Modern English regions were established mainly for administrative and statistical purposes. There is no elected authority at regional level. Since 1997 the regions’ powers have increased, in a ‘deconcentrated system’, in which “central government unbundles its organisation, but not its authority regionally.”  Powers and responsibilities are continually evolving at the regional level, within a complex web of ‘partnerships’ and plans. At the time of writing, appointed Regional Development Agencies are charged with coordinating regional development policy, with a much weaker social remit. Local authorities, of which there are four in SY, are the key elected bodies within the regions (and sub-regions). These authorities are concerned with social and economic policies. So regional powers are weak in relation to some European countries.

South Yorkshire (SY) is a NUTS2 sub-region of Yorkshire and Humberside (Y&H), one of 9 NUTS1 designated Regions in England. South Yorkshire is not a region from a political or administrative viewpoint. Nor is it a clearly bounded functional region. Neither does there appear to be a shared perception of a ‘South Yorkshire’ identity.

There are, however, some important factors that appear to ‘bind’ the various parts of SY to a degree that most other English sub-regions are not bound:

From a political and administrative viewpoint South Yorkshire was briefly represented by a Metropolitan Council, which was contentiously abolished by the then Conservative government. Certain inherited structures remained in place.

Currently there is a degree of joint planning and decision making through a Sub-Regional Partnership, the main actors in which are the 4 local authorities, who remain key players in the decision making process generally and around IS policy (see Leadership section).
Joint planning in Operational Programmes in respect of Objective 1 status for 2000-2006 (phasing in status in current Programme period) has both driven and enhanced some partnerships.

A shared industrial heritage around male dominated heavy manufacturing and extractive industries and a shared set of problems resulting from that common heritage.

A shared political identity around labourist and social democratic principles, though these shared factors are not necessarily sufficiently strong to overcome particularist concerns and local policy priorities.

Notwithstanding these functional linkages and affinities, construction of a sub-region is said to be an ‘on-going conversation’ and relationships remain ‘highly competitive’, ‘dynamic’ and ‘moving’.

**Regional understandings of ‘TRANSFORMATION’**

The term transformation had a strong resonance and is a key part of the sub-regional discourse in SY. It is also part of the development discourse (or at least rhetorically) in England more widely.

In South Yorkshire the term is used to refer to the process of modernisation of the economy, from one based on traditional industries to a ‘knowledge-based’ economy; in this sense it refers to a long-term and continuing process, which still has some way to go.

In respect of ICTs transformation has two main meanings. First, the role which ICTs can play in constructing an economically competitive and socially inclusive society process. Second, and more narrowly, the transformation of public services – Transformational Government – which involves restructuring process systems around ICTs and the development of ‘e-government’.

**ICT and IS in South Yorkshire**

Installed network capacity is high in South Yorkshire in terms of current communications technologies, with high levels of competitive provision, mainly reflecting the urban structure and population density of the sub-region.

In line with the rest of the UK, however, ‘next generation’ broadband supply is problematic.

In terms of uptake SY has high levels of mobile penetration, but below national average uptake of broadband.

Uptake of ICTs amongst businesses is growing, with micro-businesses the main laggard. A key concern is lack of sophisticated use of ICTs among SMEs.

Sub-regional IS policy is both driven and constrained by European, national and regional policy. There is, however, evidence of regional and local initiatives, which in some areas are ahead of the national norm – examples here include the proposed Digital Region broadband intervention and ‘e@syconnect’.

The information society and knowledge economy agendas feature within the various regional and sub-regional strategies and plans, but statements on these topics fall within ‘functional policy areas’ rather than being articulated in a single IS strategy document. There are, however, examples of well developed cross cutting plans, an example being the Digital Skills Action Plan. At the sub-regional level and e-Strategy Framework has been developed and an e-forum established.

IS ‘policy’ mixes both infrastructural and softer factors, though a plan to develop next generation broadband for South Yorkshire clearly has symbolic significance and distinguishes the sub-regional approach from that of other places.

IS policy addresses both economic competitiveness and social inclusion, the two being seen as intertwined, though the social inclusion focus is perhaps stronger than in some other places, as a result of the scale of the problems faced and the socio-political culture of SY.
7.1.2 The Five Clues

**Networking**

Partnership is now the accepted form of governance in England and at the formal level networking and partnerships are strong in SY. This national trend has been heightened in SY by the need to access grant money from national and European sources, for whom partnerships are increasingly expected. The formal partnerships are relatively inclusive in terms of composition, though power within networks is, of course, correlated with resources.

The dispersed nature of institutional power and concomitant resources, with four relatively strong urban centres, and their history of working together, also underpin the tendency towards networking.

As regards the IS agenda, networks are seen as essential to deliver policies with transformative ambition. Again these networks tend to be inclusive, but are mainly public sector led. The small business sector is largely absent from these networks. The key formal network IS network in SY is the e-forum. At the project level, those involved in the more successful projects emphasised the importance of reaching out to include a range of people particularly in delivery, but also in feedback processes.

Networks are perceived to have a number of advantages for innovation around the IS agenda: economies of scale (in the context of a fragmented power and resource structures); ‘economies of ideas’, i.e., different individual and institutional perspectives; greater freedom to think and act ‘outside the box’, beyond the institutional context, where formal targets may take priority – seeking answers that are useful to all (or most) partners.

Less formal networks are also important and these exist within the public sector and to a lesser degree between the public and private sector and the public sector and ‘third sector’ groups. In most cases these networks are public sector led. In respect of IS, there is what might be termed a ‘believers’ network’ – a small group which tends to take the lead and attempt to force the pace of IS related change.

Both formal and informal networks appear to be linked and galvanised by a small number of ‘networkers’, who have a particular commitment to the IS agenda (see Leadership, below).

Although networking is relatively strong in SY there are a number of limitations: as in all networks there are power/influence asymmetries, with experts and those with resources tending to dominate; it is very difficult to engage the SME community; it is very difficult to engage the SME community; there are disconnects between those involved in the broader IS agenda and those in ‘domains’, such as education, affected by this agenda; there are also disconnects between ‘ideas networks’ and ‘resource networks’; finally, there may be over-reliance on a small number of ‘networkers’ around whom much network activity tend to revolve.

**Learning**

In general terms there were mixed views on the Y&H’s or SY’s respective learning capacity, and the overall impression was that there are ‘elements of learning’, but that the region could not be seen as a ‘learning region’.

In the field of IS there was some evidence of learning, particularly around projects and through information exchange at both formal (e.g., the e-forum) and informal exchange levels, bi-laterally between individuals or in small groups. There is also research based learning behind major projects, but this may be more instrumental (i.e., to prove a business case) than open learning, but shows the ability to draw on evidence from elsewhere.

SY’s strength seems to be in ‘learning by doing’ or ‘learning by innovating’, through project development and implementation, reflecting a culture of ‘getting on with it’. There is attachment to successful demonstration as a galvanising mechanism (see Narratives, Visions).

There were also example of learning from the end user within particular projects, though it is not clear how common this is. The main example of this process involved using existing community groups to help deliver services and to create informal feedback loops from these groups and from individual end users.

A number of barriers to learning were identified: the ‘tick box’ evaluation process favoured by sponsors is not conducive to deep learning; similarly the ‘soft money’ that many projects rely on
together with typical short project cycles, impact negatively on learning and leave little room for cross-
fertilisation between projects and there is seldom a dedicated budget for learning and reflection;
fragmentation of budgets across a range of small projects, rather than an integrated approach, though
attempts to address this are underway (e.g., Making IT Personal) – suggesting a degree of leaning,
but also reflecting emerging budget constraints.

**Narrative, Visions**

At the sub-regional level there is a generally shared development vision namely: The area is in a
process of moving from an industrial structure to a diverse and sustainable, high growth economy,
which should be inclusive; technology and innovation are at the heart of this process. Investment must
be made in physical infrastructure and in softer factors to reach these goals.

It is generally agreed that progress has been made, but there is still some way to go. There is
divergence as to why progress has been made (national or regional factors), how much progress has
been made, the degree to which technology will play a role and the balance between technological
infrastructure investment and investing in human capital

In terms of IS/KE, there is no single document at regional level which puts forward a coherent
narrative, though reference to ICTs and the Knowledge Economy and ‘digital economy’ across a
number of documents suggests a shared story about the importance of these concepts.

There is a disconnect between a (relatively) small group of strong believers in the IS agenda (see
network section), who have a collective sense of direction (though with internal debates) and those
less convinced. Plans, projects and initiatives do not, therefore, get automatic buy-in from all actors
and must be negotiated along with other priorities.

Views were mixed on the efficacy of a big vision, as opposed to an agreed overall direction of travel,
but the main message was that vision must go hand-in-hand with reality – it must be real and relevant
to the audience. Failure to do so may result in the perception of ‘broken promises’ and resistance to
future steps. Overall, pragmatism was seen as more important than ‘grand narratives’.

Even ‘believers’ in SY expressed caution about throwing “the latest technology at the problem”. The
general view is that there is that current technologies (the internet, mobile telephony, etc.) need to be
more effectively utilised in the non-specialist community. The key is to develop capacities and services
around these widely spread and generally understood technologies. This “anti-gizmo” pragmatic
culture was contradicted to some extent by the faith placed in the Digital Region, which requires
significant investment in ‘next generation’ broadband.

**Leadership**

In terms of institutional leadership SY relies heavily on the public sector, mainly the RDA in economic
areas, and the four local authorities more generally. The distributed power structure in the sub-region
means that there is no single institution which can claim leadership over the others. Further, the need
to pull together a number of agencies in the partnership environment (see Networking section, above)
means that collective leadership, or negotiated leadership is important.

The public sector is also the main employer in some localities and a significant employer throughout
the sub-region. There is also said to be a culture of expecting local authorities to take a lead,
particularly in those places where the main alternative power/action sources – the National Coal Board
and the National Union of Mineworkers – have disappeared.

Turning to IS, both the RDA and the local authorities (to varying degrees) take leadership roles in
some domains. We found little evidence of elected political leadership (unlike in some other case
study areas). Beyond, the e-forum, which is mainly deliberative, there is no single structure which
takes charge of IS policy.

There were, however, a number of people at officer level (i.e., people within the bureaucracy) who
take a lead on the issue, including two of the four chief executives. The key point which emerged is
that a combination of those at senior level (who clear the path and open doors) and knowledgeable,
enthusiastic and proactive people at the lower level are required to push forward policy and
implementation. Many of these people appear to addressing the wider IS issue in addition to their
main role.
There are also leaders (in the sense of pushing the IS agenda) outside these public sector bodies, but ‘institutional affiliation’, or at the very least, informal connections to leaders within key institutions are required in order to have an effect.

**Openness and Closure**

External linkages were reasonably well developed in the UK and EU, though external networking involving trips abroad were still viewed suspiciously by some.

Questions were raised as to whether the region had the absorptive capacity to take on board and effectively translate messages from outside the region.

**Other factors**

The key factor which arose in terms of the transformative use of ICTs was the long term nature of the project. ICT and the IS agenda more broadly rises and falls on the regional political agenda, reflecting the complexity of the problems facing the region and the limited resources available to address the various elements of those problems. There is a need, therefore ‘to keep banging away’ – over the longer term. This long term persistence requires some kind of longer term vision of the transformative potential of ICT, but translated into a context (probably around policy targets) which are meaningful to local and regional actors, accompanied by a degree of opportunism at key moments.

### 7.2 East Anglia (England)

#### 7.2.1 Context

**Overview of East Anglia**

East Anglia is a very diverse sub-region in socio-economic terms. The southern part is wealthier due to its functional connection with London whereas the north is essentially a rural territory, with a high proportion of its workforce still working in agriculture when compared with the rest of the UK.

Historically the area was never very industrialized: it was mainly a rural and agricultural region, with most of its industries related to processing the yield from the primary sector. Only in specific places were there some examples of major industrial development, but still the majority of the activities were relatively light in nature.

In recent decades it has however witnessed one of the highest rates of population growth within the UK.

In the southern corridor, especially around Cambridge and to a lesser extent in Ipswich, a significant amount of “knowledge-based” activities have emerged. Some efforts have been made to spread this success but results have so far been modest.

East Anglia has had an unemployment rate below the national average, but again with internal asymmetries between the north and the south, with the latter performing better. The same can be said for other economic indicators, such as GVA growth or human capital formation.

**East Anglia: in what sense a region?**

East Anglia is a sub region of the East of England, administered by the East of England Development Agency (EEEDA). This is however not an elected body. Its main function is to devise a strategy adapted to local needs that fits into National and European levels policy orientations. The UK has historically
been a highly centralized state and even if the creation of the Regional Development Agencies in 1997 has given some powers to regional authorities, their role in determining policy is still very limited. East Anglia is a fragmented region and its inclusion into the East of England has only accentuated this fact.

Many of the activities happen at the level of local councils, depending on the functional connections of each. For instance, authorities in Cambridge or Peterborough will very likely be more interested in their connections with London than with Norfolk.

At the level of the East of England region (East Anglia plus six local authorities) there are some initiatives, either coordinated by EEDA or by regional networks, such as the East of England Broadband Network.

Within East Anglia most activities tend to be coordinated by local councils. There are nevertheless some projects involving more than one local authority, such as the Cambridge-Ipswich High Tech Corridor, that aims to spread the growth around Cambridge alongside this corridor.

The only factor apparently connecting the region is its conservative political culture. With the exception of the 1945 general election, a majority of constituencies elected Conservative MPs for the national parliament. In 1997, when the Labour Party won the general election after almost 20 years in opposition, its score improved in East Anglia but the Conservative party remained the biggest political force and its predominance has been increasing again since then.

Nevertheless, even regarding this last issue there are some internal differences, with the urban areas traditionally voting for the centre left party (Labour Party).

**Regional understandings of ‘TRANSFORMATION’**

There is a sense in the region that more benefit might come from making better, more intensive, more intelligent, more sophisticated or just more effective use of the existing technologies – that is to say there is a general interest in transformative use of ICTs.

There is in the public sector an awareness, even if sometimes a very faint one, of the government’s Transformational Government agenda. This has sought to refocus the ICTs within public services away from the technology and on to the main organisational goals of efficiency, citizen/customer-focus and a more "joined-up" approach to service provision.

The expectation that ICTs may have a transformative impact on society also seems to be enhanced by the internal regional disparities. The wealth and success of the southern areas of East Anglia exacerbate the need to transform the more ‘disconnected’ northern areas.

**ICT and IS in East Anglia**

The East of England (i.e. NUTS 1 region where East Anglia is integrated) is well supplied in terms of ICT provision. Some 99.8% of the region has broadband (2-8Mb) access although there are some internal inequalities between urban and rural areas and between the more affluent and the less affluent.

In terms of household penetration of ICTs it is in general at or just above the UK average. Households are more likely than the UK average to have a PC (74%) and an internet connection (66%) although broadband take-up (47%) is not higher than average.

In terms of ICT adoption by businesses the data available shows that the region is in line with the UK average.

Notwithstanding the fragmented character of the region there are some initiatives being developed at the East of England level. One of these is the East of England Telematics Development Trust (EETDT) whose mission is “to increase the competitiveness of the East of England through the development, demonstration and adoption of ICT systems, services and networks” (EETDT website). Another example is the East of England Broadband Network (EEBN), whose aim is to use broadband to raise the standards in teaching and learning across the East of England. The latter was implemented under central government’s guidelines.

At the sub regional level of East Anglia most of the ICT-related projects are developed at county level.
The emphasis on ICTs and the nature of the projects depends on each local authority. In Norfolk (northern part of East Anglia) there is a bigger emphasis on the importance of ICTs. On the other hand Cambridge and Ipswich city councils tend to integrate them under wider strategies to promote economic competitiveness.

It is possible that East Anglia puts less emphasis on ICT related policies than for instance South Yorkshire due to its relative success in using these technologies. The policies that exist are to a certain extent also constrained by central government and European Union’s guidelines, especially at the regional level.

However at local level they are more determined by the specific needs of each authority. For instance the high tech cluster in Cambridgeshire has enough dynamic to connect directly with Silicon Valley and Tokyo, whereas other places are more dependent on local resources.

7.2.2 The Five Clues

Networking

A number of more or less formal networks exist at the scale of the broader region (East of England) and at more local, sub-regional scales, mainly at the county level but also at a city level. There appear to be no formal networks that operate at the level of the case study region (i.e., East Anglia) although the three counties are sometimes mentioned as the most active players within networks organised at the East of England Level.

More informal networks also exist and a number of the interviewees spontaneously mentioned each other. However, there appeared to be quite limited interconnections between the various networks. The East of England Development Agency (EEDA) appear to have recognised this and have sought to build formal links between the ‘sub regional’ (i.e., County) partnerships and, for example, the Digital Partnership.

There are also some doubts about the effectiveness of some of the networks. Some interviewees argued that the more formal networks had been more successful in dealing with relatively hard and technical goals such as the installation of broadband and less effective in dealing with softer issues such as sophisticated usage of ICTs.

Local authorities are often in competition with each other for funding and thus can find it difficult to collaborate. In this respect East Anglia is not similar to South Yorkshire where there seems to be more cohesion between them. However this may again be explained by the relative success of some areas, as it allows them to develop projects using only their own resources.

Further ICT related networks are often fairly well focused and do not always interconnect in terms of domains (e.g., across Health, Education, Business Development, etc.). This may be the result of a high rate of staff turnover in some of the region’s institutions which inhibit the development of informal networks.

The general picture with networks was of a large number of networks, often only very loosely connected, often localised or domain specific, and with sometimes limited reach into rural areas and smaller organisations.

Learning

The formal infrastructures of observatories exist and appear to be operating to centralise and coordinate statistics, research and intelligence at the regional and sub-regional scales. However, many of those whom we interviewed were doubtful that the full value of these repositories had been extracted.

The use of formal evaluation of projects has now become routine in the public sector. However, there was a concern that many evaluations were mechanistic, ‘check box’ exercises, undertaken as a ‘contractual obligation’ and often carried out post facto and too late to provide useful lessons.

However, most interviewees did feel that there was learning taking place within projects but that a complex set of factors prevented this learning being taken up and spread. Barriers included the tendency for people running successful projects to move on out of the region, taking their learning with
them.

There are also some attempts to build links with Universities and research institutes in the region. However there were doubts about whether the knowledge produced was ‘trickling down’ to SME, social enterprise and local community sectors.

In general, then, there were moves towards better organisational learning in the ICT domain and better sharing of learning, but there were also concerns that this was not always effective and that the region had a long way to go in developing a learning culture.

**Narrative, Visions**

The fragmented character of both the East of England (NUTS 1) and East Anglia (NUTS 2) regions hinders the existence of a vision or a narrative common to all actors. One of the interviewees stated that in the northern areas of East Anglia some people were not even aware that they were part of this region.

On the other hand agents in the more affluent parts of East Anglia are more interested in their links with London or with international partners than with local institutions.

The Regional Development Agency has been attempting to develop a vision of the region, but they tend to focus around fairly generic high-level objectives. They have increasingly sought to wrap this up in a focus on the region as a place of “ideas” or creativity, as well as a place that is adaptable. The extent to which this has been successful is debatable.

Within the formally presented visions and narratives, ICTs have a significant, but poorly defined place. There seems to be nevertheless a shift from a focus on ICTs as an economic sector towards understanding them as something that touches most activities and that requires increased organisational and managerial sophistication.

ICTs are also seen by some actors as a tool to address the internal disparities in East Anglia. These are, however, fairly generic shifts in focus. Economically and socially there seem to be some ideas of where the region is going and what role ICTs can play in this, but they are not very well worked through.

**Leadership**

The case study region has no formal leadership position and even at the scale of the wider East of England scale, formal leadership is institutional rather than personal – coming from the Regional Development Agency (RDA) and perhaps the Government Office rather than from elected politicians.

Opinions on the role of the RDA are divergent: some people considered that it had garnered some leadership capital. Another informant however said that their main contribution was the fact that they have not been obstructive.

However at the more local, county level, networks were thought to exhibit strong collective leadership. For example, Norfolk seems to have at least one stable formal network that has been running for the past 11 years. At the centre of this network is a key individual who, to a certain extent, is also referred as a key actor across the region.

Leadership of the ICT agenda in the region seems to be improving but remains a problem. Many of the larger and more sophisticated actors – multinational companies and the universities – have little commitment to following a regional lead. On the other hand local public sector service providers are more focused on local issues and are sometimes unwilling to follow a “regional” lead.

**Openness and Closure**

The Draft Regional Economic Strategy elaborated by the RDA for the region explicitly aspires to an ‘open economy’ including not only trade links but also a wider cultural and technological openness. However, in terms of the openness of the region to new ideas and its capacity to address those ideas critically, the picture is mixed.

For some actors in the region – in particular those associated with ‘the Cambridge phenomenon’, but
also other foci of ICT activity (such as the University East Anglia, the BT Labs in Martlesham) – there was a strong external orientation. These links are likely to benefit the institutions involved but it is questionable the impact that they have in the wider region. The lack of strong regional links mean that whoever is not directly connected to these networks will find it difficult to benefit from them.

A similar orientation to global and perhaps national networks can also be observed in Norwich associated with the University and with larger players such as BT near Ipswich. The proximity to London in the South and West of the region also seems to provide a conduit for new ideas to flow into the region.

This situation however is in contrast with that in the more rural areas of Norfolk, Suffolk and North Cambridgeshire where there was perceived to be a suspicion about new ideas from outside and greater conservatism or pragmatism. Nevertheless people in these areas have sometimes engaged with projects around ICT, such as when Norfolk undertook a bid for the Digital Challenge. According to one interviewer the problem is not that people are not capable, ‘it’s about having a space to [engage with new ICT-based ideas] and a reason to do that.’

**Other factors**

A key feature which emerges in this case study is the shadow/halo effect of proximity to London. The entire region is oriented towards London and the London property and labour markets have significant effects on much of the region. There is however a fairly clear distance-decay effect such that the South and the West of the region is clearly within the London orbit.

Concerning ICT, arguments for the more effective or transformational use of ICT seem to be relatively neglected because policies are too closely associated with infrastructure – specifically 2-8 MB/s broadband. Thus, for some in the region, because broadband rollout was seen as having been achieved, the major ICT questions had been ‘solved’.

### 7.3 Schleswig Holstein (Germany)

#### 7.3.1 Context

**Overview of Schleswig-Holstein**

Schleswig-Holstein, which is both a NUTS 1 and a NUTS 2 region, is the northernmost Bundesland of Germany, and from 1949 to 1990 belonged to the West German state. It shares a border with Denmark to the north.

The region lies between the North Sea and the Baltic Sea, and as such has traditionally been of great importance for transport. The most important transport routes include a highway route to Denmark, ferry routes to the Nordic and Baltic countries as well as Russia, and the Kiel canal connecting North Sea and Baltic Sea.

Schleswig-Holstein has a strong functional relationship to Hamburg, the city bordering it to the south. Hamburg makes up an own Bundesland (NUTS 1 region). Whereas Hamburg is best seen as an economic powerhouse, often appearing at the top of EU rankings of economic well-being, Schleswig-Holstein’s economic performance is considerably weaker. A large part of the working population in the southern part of the Bundesland commutes to Hamburg to earn their living.

The region’s economy is strongly dominated by SMEs, and sector-wise by shipbuilding and related maritime industries as well as the transport & logistics industry. Tourism plays a strong role, while the formerly central agriculture and fisheries sector has lost in importance. Performance in terms of growth and employment has been somewhat below the German average in recent years, although no long-term trend is observable.

The are significant regional disparities between the north and south and the east and west of Schleswig-Holstein. The north-western sub-regions have been strongly affected by the demise of old industries (mainly shipbuilding) and by the diminishing role of agriculture, while the southern part has
benefitted from the proximity to Hamburg

In the 2000-2006 programming period, parts of Schleswig-Holstein received support from the Structural Funds under Objective 2. In the period 2007-2013, the whole territory falls under the Competitiveness and Employment objective. In addition, the northern and western parts of the region will receive support under the European Territorial Cooperation objective (formerly INTERREG III).

**Schleswig-Holstein: in what sense a region?**

Under the German federal system, Bundesländer have far-reaching political powers as well as a strong role in national legislation through the Bundesrat (Federal Council) by which they are represented at the federal level. The region has extensive responsibilities in education, culture, justice and internal security. It also has quite some power to shape economic, environmental health and social policy.

In terms of functional relationships in space, Schleswig Holstein and neighbouring Hamburg (together with the parts of Niedersachsen which border at Hamburg to the south) form a functional region. In the southern-most parts of Schleswig-Holstein, a large share of workers commute daily into Hamburg for their living.

Relations with Hamburg are ambiguous. While there is a broad consensus that the economy of Schleswig-Holstein can only benefit from strong co-operation with Hamburg because of the latter’s central role in Germany’s economy, day-to-day policy-making is made difficult by occasional conflicts of competence and rivalry.

Unification of Hamburg, Schleswig-Holstein and Mecklenburg-Vorpommern into a single Bundesland (sometimes called “Nordstaat”) would make sense as it would create a region which is more in line with functional relationships at the local and municipal level (e.g. commuting patterns). The proposal has been on and off the public debate ever since reunification, and it is generally seen favourably by politicians from Hamburg, whereas it has little backing from stakeholders in Schleswig-Holstein. For political reasons, it is unlikely to be achieved in the foreseeable future.

The people of Schleswig-Holstein are likely to feel an identity with “northern Germany” rather than with Schleswig-Holstein. Only the rural and more backward parts display a strong sense of identity with their sub-region. At the local level, the population of both Kiel and Lübeck set themselves apart from Hamburg, and there is also some sense of rivalry between Kiel and Lübeck.

Both Lübeck and Kiel were important members of the medieval Hanseatic League, which was an alliance of trading guilds that established and maintained a trade monopoly over the Baltic Sea and most of Northern Europe between the 13th and 17th centuries. This legacy is today is eagerly exploited by the cities in question (as well as Schleswig-Holstein at large) for promotional and image-building purposes. Arguably, it still plays some role for the region’s innovation culture.

**Regional understandings of ‘TRANSFORMATION’**

The term “transformation”, translated directly (“Transformation”) or paraphrased, is not recognised as a wide-spread notion by stakeholders in Schleswig-Holstein. Uses of the term which come closest are applied for sub-sections of the economy which undergo a process of conversion (e.g. military bases) or deindustrialisation (e.g. shipyards).

One of the most widely shared visions apparent in Schleswig-Holstein is the wish to complete the process of transforming a region which historically has been dominated by agriculture into a future oriented region based on technology and export oriented companies.

With respect to innovation in general, and to effective use of ICT in particular, the basic goal seems to be to keep the status quo, which implies attempts to withstand competition and to catch up, where needed, with developments in the rest of Germany. There is very little pro-active initiative outside of the narrow economic goals relating to the region’s industrial base.

The region’s priorities seem well in line with the revised Lisbon agenda’s focus on growth and jobs. There is an awareness that the Lisbon objectives require policy intervention in a region such as Schleswig-Holstein, which is at risk of falling behind.
ICT and IS in Schleswig-Holstein

Rates of Internet and broadband uptake in Schleswig-Holstein are above the German average, with higher figures only to be found in the city states (Berlin, Hamburg and Bremen) and Hessen. In particular take-up rates among women, older citizens and people with low educational attainment are significantly higher than in all other German regions.

Availability of broadband is limited, however, in the more peripheral parts of the region for technical reasons. In October 2007, there were still at least 100 municipalities not covered by broadband Internet supply.

Schleswig-Holstein was among the first regions to implement a comprehensive information society strategy (InfoSH) in 1996. The region made successful use of funding from the EU through the Innovative Actions programme (RISI 1, RISI+).

The InfoSH initiative came to a close in 2001, after which information society related policy making seem to have dropped from the policy agenda. ICT-related policy-making became part of the more narrowly defined field of policy for fostering technological innovation within the economy.

The information society domain was integrated as one of the cornerstones of the operational programme for the period 2000-20006, the Regionalprogramm 2000. This includes as a central element “support for the efficient use of ICT within the economy”.

Another element of the Regionalprogramm 2000 was “measures to upgrade the telecommunication infrastructure in order to improve the locational quality for SMEs”. This objective has been taken up by the recent “broadband directive”, a programme for the financial support of municipalities that want to offer their inhabitants and local business broadband access. Unfortunately, the initiative does not foresee incentives for demand aggregation, which will arguably limit its positive impact.

The eRegion Schleswig-Holstein PLUS programme, which ended in 2007, provided financial support to ICT-based innovation in the region. The main focus of the programme were knowledge transfer between science and SMEs, and innovative applications and pilot projects in order to create incentives for modernisation of the region as business location and for development of forward-looking so-called TIMES applications (telecommunications, IT, media, entertainment and security) across all areas of society (including eGovernment, eHealth, eContent, eEntertainment, data security and privacy, usability, and Internet accessible for all).

The regional government has built a dense network of institutions providing technology transfer, and has recently started to emphasise the role of sectoral clusters for regional development. In a process including several rounds of consultation with stakeholders, a number of clusters were defined. Among them is an ICT & media cluster which aims to network the region’s stakeholders in the wide area of ICT and content industries. Evaluation of the region’s cluster policy is ongoing, and has already contributed to the identification of strengths and weaknesses. The latter will be taken into account for future policy decisions, e.g. regarding industries eligible for investment subsidies.

Some attempts to use ICT to tackle the specific problems of the region, such as the peripherality of parts of its territory vis-à-vis the centres of the EU economy, have not been successful. An example is the intention to support peripheral of the Land by encouraging the establishment of tele-workplaces.

7.3.2 The Five Clues

Networking

Schleswig-Holstein lacks an overarching strategy or widely shared vision about the role of ICT for the region’s economic and social development. As a consequence, ICT-related activities appear to be fragmented, with little effort being undertaken to coordinate policy-making across domains. This contrasts to the 1990s when Schleswig-Holstein was one of the first German regions to define an information society strategy (InfoSH), with an experienced strong leadership by single individuals committed to advance the ICT agenda.

The one domain in which ICT-related policy making is still high on the political agenda is the economy. Our research suggests that the region of Schleswig-Holstein recognises the importance of networking and cooperation in respect to the economy, and has created a range of formal institutions in an
attempt to embed the practice of networking. These have had some success, but there is still much work still to be done to engage the region’s SMEs, who would be expected to be the motor of a knowledge economy given the industrial structure of the region.

Publicly-funded research centres and universities, of which there are few in the region, are well connected to the business sector, as indicated by strong personal links between both spheres and by a large number of spin-offs from universities and colleges.

There are a range of formal network structures. Some of these are clearly inward facing, and some observers believe that Schleswig-Holstein should better connect itself with organisations representing the Hamburg conurbation.

Networking activities are driven by private-sector initiative, much of which is informal and led by a small number of “usual suspects”, and by certain agents with a formal brief to foster networking, such as the Chamber of Commerce’s WTSH. The fact that the WTSH tends to employ staff with experience in a number of areas, including in business management, enables it to develop ties between the region’s SMEs, which in general tend to be sceptical about policy initiative. Reluctance of SMEs to network is strong, but may be even stronger here than in other parts of Germany because of the indigenous population’s mentality, which is supposedly shunning sociability. Practitioners from the region consistently report that it is difficult to reach SMEs with networking activities. While networking in well defined supply chains is one of the cornerstones of the German “Mittelstand”, it appears that the willingness to engage in more open, less formalised “value networks” is still low.

Among the public sector, there is evidence that intra-regional networking is underdeveloped, which is partly explained by traditional rivalry between sub-regions (e.g. Kiel and Lübeck) and partly by a lack of regional identity vis-à-vis Hamburg.

**Learning**

The notion of a “learning region”, as a region which continuously enhances its ability to reflect, discuss and develop strategic policy-making in order to adapt in the best possible way to changes in the environment, is not shared widely in Schleswig-Holstein (as in the rest of Germany). Learning is still very much considered to be an individual-centred activity, the responsibility for which is in the hands of the learners themselves as well as – to a lesser extent – the employers (vocational education).

Participation in lifelong learning in Schleswig-Holstein compares well with the rest of Germany, especially when it comes to self-learning. The region’s education strategy takes due account of the importance of digital literacy and ICT being reflected in curricula, but ICT is considered as element of the general development of education rather than as a paradigm-changing influence in the role of and approach to education in present day society. As in other spheres, the emphasis is on continuity and enlarging the social groups which enjoy the fruits of progress, rather than on the transformation of structures and goals.

With regard to reflexivity, our research found that the regional government makes strong use of formal evaluation and processes of consensus-finding, which suggests a well developed evaluative approach especially in respect of economic and sectoral questions. There is an extensive and well developed research and evaluation capacity, though this is mainly based on employing consultants.

The question remains how the findings from such analyses are translated into knowledge that can be utilised by policy-makers. Moreover, there is very little prospective or ex-ante analysis carried out, and the willingness to learn from other’s experience is sometimes low, as in the example of the Broadband Directive.

Sources of information for learning about ICT-related developments affecting the region are arguably under-developed. There is no information society observatory in place. The Regional Statistical Institute for Hamburg and Schleswig-Holstein does not offer any data on ICT-related issues. The regional government also has no information society directorate or section.

**Narrative, Visions**

In German colloquial language, the term “transformation”, translated directly (“Transformation”) or paraphrased, is not used much. Stakeholders in Schleswig-Holstein did understood the notion only when applied to sub-sections of the economy which undergo a process of conversion (military bases,
the significance of which for Schleswig-Holstein has decreased since reunification) or deindustrialisation (e.g. shipyards).

This reflects the fact that there is no agreed narrative on ICT or the knowledge-based society. Instead, there is only a general understanding that ICT will be implicated in the goals of modernising economy and industrial competitiveness. Concerning regional development in general, a deep-seated vision is necessary to complete the process of transforming Schleswig-Holstein from a region which has historically been dominated by agriculture into a future-oriented region based on technology. In particular the more peripheral parts of the region have not yet accomplished this goal.

While this would suggest a possible application field for ICT – as technologies which can potentially reduce the negative impacts of geographical peripherality – very little of such thinking is in evidence. Public sector efforts to boost the application of telework in the more rural parts of the region have been undeveloped and met with little interest.

Leadership

Schleswig-Holstein was very actively pursuing an Information Society strategy in the 1990s, strongly influenced by the leadership exerted by a single person, then director of the Technologiestiftung Schleswig-Holstein and responsible for the region’s information society initiative (InfoSH). The late 1990s also witnessed an intensive activity in the field of international networking. Once the person in charge left, the holistic approach towards information society related policy making seems to have got lost.

A reason for this may be that too many of the activities of that period depended on individual commitment, and that no institutions were built to formalise ICT-related policy development, with the exception of the economic sphere where already established business development infrastructure managed to maintain the momentum. As a result, ICT-related policy-making has become part of the more narrowly defined field of policy for fostering technological innovation within the economy.

Currently, leadership in policy-making related to the knowledge-based economy and society seems, according to the evidence collected for the present study, completely absent. As one interviewee put it, “there are glossy brochures, but politicians are not acting in concert”.

Recent developments, however, may indicate that this situation is to improve somewhat in the near future. The merging of the Ministry for the Economy and the Ministry for Education into a single unit, the Ministry for Education, the Economy and Transport (MWWV), represents what may be called a paradigm shift. It signals the intention to bring the region’s economy and its system of educational institutes closer together, with the overall objective of improving human capital structures and the ability of the region to generate innovation. It is too early yet to judge whether the step will help achieve this goal.

Again, directly ICT-related issues have played a minor role in this policy process until now. Moreover, there is no evidence of coordination across ministries with regard to ICT-related policy-making, for example between eGovernment policies and eBusiness related activities.

Openness and Closure

While the general self-perception of stakeholders in Schleswig-Holstein is that the region is good in taking on board ideas from outside, our research found that the region has many characteristics of a rather conservative society. One example of the poor ability to learn from outside experience is the case of the Broadband Directive, a measure to provide financial support for municipalities which are willing to invest in broadband infrastructure. The Directive does not foresee effective incentives for broadband aggregation, which indicates that insufficient attention was given to the EU-level discussion about broadband aggregation and its importance for connecting sparsely populated parts of the European territory.

On the other hand, our research found evidence for openness and learning from outside, such as in the context of EU research programmes. A particularly impressive example is given by the Independent Centre for Privacy Protection Schleswig-Holstein (ICPP/ULD), which has a successful track record in participating in EU-funded research, and feeds back knowledge gathered through a number of channels which it uses for communicating with its target audience, i.e. Schleswig Holstein’s citizens, businesses, and public sector organisations.
7.4 Thüringen (Germany)

7.4.1 Context

Overview of Thüringen

Thüringen lies at the centre of the unified Germany, roughly midway between Frankfurt am Main and Berlin. The territory between 1949 and 1989 belonged to the German Democratic Republic, which was part of the Warsaw Pact group of nation states. Major cities include Erfurt, the capital with somewhat more than 200,000 inhabitants, as well as Gera and Jena.

With a total of 2.4 million inhabitants, Thüringen is one of Germany’s smallest Bundesländer. The population is heavily concentrated along an urban line stretching from west to east and including the agglomerations of Erfurt, Weimar, Jena and Gera. Thüringen has a long border with the former West Germany (Bayern, Hessen, and Niedersachsen).

As in the rest of the former GDR, the process of deindustrialisation, which followed introduction of the market economy in 1990, had an overwhelming impact. Two thirds of all old jobs were destroyed between 1989 and 1995, and employment rates fell rapidly in this period; they have by no means recovered to earlier figures yet. Unemployment in 2005 was 17%, and large parts of the workforce are in involuntary part-time work, so-called mini jobs, or in job-creation schemes.

Household incomes in eastern Germany have been maintained at socially acceptable levels by transfer payments which flow from the western German Bundesländer to the new Bundesländer. These transfers are to be gradually reduced from the end of the decade, until they cease altogether by the end of 2019 (if plans go ahead, which some observers doubt). Transfer payments also have the effect of artificially sustaining acceptable levels of employment.

As with the other New Länder, Thüringen has received considerable financial support from the Structural Funds. It was an Objective 1 region in 2000-2006 and falls under the Convergence Objective in the new programming period. GDP per head is roughly three quarters of the EU average.

The region has a number of “pockets of prosperity”, based on successful, export-oriented businesses in optical engineering, automobile construction, electrical engineering, glass, ceramic and pharmaceutics. These sub-regions have built on Thüringen’s long tradition of precision engineering and innovation.

Thüringen: in what sense a region?

As part of the GDR, Thüringen as an administrative unit was abolished in 1952 and its territory distributed into three districts (Bezirke), Erfurt, Gera and Suhl. The State of Thüringen was restored as a Bundesland in 1990.

Under the German federal system, Bundesländer have far-reaching political powers as well as a strong role in national legislation through the Bundesrat (Federal Council) by which they are represented at the federal level.

During the GDR regime, policies were targeted to support the reduction of regional disparities between the north and the south of the country, as well as between urban and rural areas in general. In contrast, the development or persistence of specifically regional identities were seen as a threat to the stability of centralised policy-making, and as such were repressed. This continues to have an effect, as the population does not appear to have a significant sense of regional identity. Feelings of identity appear to be limited to towns and cities rather than larger geographical units.

The post-reunification years have been marked by a presumed loss of orientation and by perceptions of heteronomy, leading first to resignation and later to a search for new identities. There is a heated debate going in Germany whether there is something like an “East German identity”. Some evidence suggests that local and regional identities suffered rather than benefited from these developments; neighbourhood and friendship networks have lost while the family has gained in significance.
Thüringen has, however, a very strong cultural history, as it developed over many centuries into one of Central Europe's most historically significant regions. Today this is noticeable in certain sub-regions (cities) which try to capitalize on their urban history.

The fact that today's regional innovation culture in Thüringen is strongly influenced by the heritage of the 40 years of existence of the GDR means that, although differences between the regions of eastern Germany should not be neglected, they often appear to be minor in comparison to this shared legacy.

**Regional understandings of ‘TRANSFORMATION’**

The term "transformation" is used in the public debate about the future of Thüringen, but it refers to the process of transformation from a planned, command-and-control economy to the present regime of late capitalism coupled with parliamentary democracy. The word is used mainly by academics and policy makers rather than in colloquial language, usually in the form "Transformationsprozess".

Transformation in practice means mainly to catch up with western Germany in terms of economic status quo, household incomes, and living standards.

People’s perception of their economic situation is based on western German regions being their point of reference. Experts have suggested that efforts should be undertaken to make eastern Germans compare their level of income to the situation in Germany’s eastward neighbour states, but this is unlikely to ever happen.

**ICT and IS in Thüringen**

Thüringen does not have an information society strategy. A coherent ICT policy is only in evidence in the economic sphere. The key policy framework here is the "Technology Conception Thüringen 2002", which is currently being updated.

Core policy objectives underpinning the Technology Conception are: extension and modernisation of technology-oriented infrastructure; establishment and extension of clusters and networks; further development of business support programmes; stimulation of human capital.

The main instruments in the area include subsidies to individual enterprises which invest in ICT; subsidies to joint R&D initiatives involving the private as well as the public sector; support of so-called innovation assistants, which provide well-tailored, innovation related know-how to SMEs; consulting services; special funds for public sector R&D which is adapted to the needs of business; provision of infrastructure in the form of business incubators and technology centres; technology transfer activities, e.g. through technology transfer and competence centres; a support programme for business start-ups (GetUp and EXIST); and deficiency guarantees which increase the capability of SMEs to take innovation related risks.

The Thüringen Competence Centre eCommerce (TheCK) is one of the main instruments for transfer of ICT to SMEs. It was implemented in response to an initiative by the Federal Ministry for the Economy and Technology (BMWi), and is part of a network of 25 regional competence centres in Germany.

Cluster policy has been established as a separate policy priority in recent years, based on the realisation that Thüringen’s economy with its heavy emphasis on SMEs could potentially benefit from an initiative to strengthen networking between regional players in industries which are of particular relevance for Thüringen’s economy.

Reflecting the growing public demand that public aid to eastern Germany should be concentrated on growth poles, from 2007 onwards Thüringen will concentrate public support for R&D, technology and innovation on a number of more narrowly defined areas: measurement and monitoring systems; ICT and media; new materials; optical engineering and opto-electronics; production technology and process engineering; micro and nano-technology; biotechnology; medical technology; environmental technology and regenerative energies. These areas are directly related to the cluster developments identified by policy.

Outside of the economic sphere, ICT-related issues do play some role in policies for public administration (eGovernment), education (digital literacy, skills for the information society, ICT related qualifications), culture (exploiting ICT for preserving and promoting the cultural legacy), agriculture (ICT for modernisation measures), environment (environmental information systems). There is very
little coordination between these policy activities.
Policy does hardly address ICT’s potential to support social inclusion, apart from labour market oriented training which includes ICT as subject.

Diffusion of the Internet among private households in Thüringen is considerably lagging behind western Germany, and growth of broadband uptake is modest. Available data suggest that this is indicative for the general status of ICT diffusion in the region, with the exception of the well performing urban growth poles including Jena and Gera.

7.4.2 The Five Clues

Networking

ICT related networking activities in Thüringen are very much dominated by the economic sphere. In fact, we were not able to identify any larger ICT-related networking activities outside of the economic sphere, e.g. in social policies.

In the economic domain, cluster-based policy-making and other initiatives for boosting collaboration between SMEs, and between businesses and the educational sector and public administration, have received a lot of attention. Indeed, networking within industrial clusters appears to be strong, but often limited to sub-regions (such as a number of well-performing urban agglomerations).

Survey evidence suggests that SMEs are as likely in Thüringen as in western Germany to be engaged in business collaboration, but there are some indications that collaboration is not as effective yet. This may be explained by the length of time it can take for informal collaboration networks to create the kind of trust and commitment that are needed to produce real benefits.

The region’s institutional infrastructure for supporting the transfer of know-how and fostering network building is comparatively well developed, but coordination of activities leaves a lot to be desired. There appears to be a strong degree of rivalry between the stakeholders involved.

Networking seems to be most effective where it is supported by co-location and where there is a critical mass of activities to allow self-sustaining industrial clusters. According to an evaluation by Prognos, this is the case for the optical engineering industry and the polymer industry, and – to a lesser extent – also for the automotive, solar technology and pharmaceutical industries. The ICT and media sectors and the micro technology industries do not qualify for fully-fledged clusters.

In spite of the strong development of the optical engineering industry and the good conditions for networking, our analysis of the OptoNet Competence Database showed that ICT’s potential for enabling collaboration is not yet exploited sufficiently. A part of the problem is the low willingness of local companies to share information which may be of critical importance for their business. The fact that most successful SMEs in the region are closely integrated in national or international supply chains, but have limited forward or backward linkages within the region, may be partly responsible for the wide-spread feeling of competition between SMEs. It certainly appears that value chain-related collaboration activities – usually determined by the organisation of the value chain which tends to be managed from outside of the region – are more wide-spread in Thüringen than less formal networking and collaboration activities with other organisations in the region itself.

Collaboration and network-building between stakeholders from the public sector also suffer from rivalry and low willingness to work with each other for a common good. This appears to be the case in spite of the small size of the region which means that “everybody knows each other”, as interviewees repeatedly stated.

Learning

Thüringen shows some indications of developing into a “reflexive region”, but learning from experience – including learning from failure – have not become common practice in the region yet, as far as can be judged from analysis of information society related developments.

There appears to be a general willingness to learn from other’s experience and to critically reflect on own past behaviour. External evaluation is used extensively as a tool for policy development, although lack of funding sometimes puts a limit to such efforts. The use of quantitative evaluation criteria is not
yet considered very successful by the stakeholders interviewed.

Unfortunately, stakeholders in the region have grown somewhat wary of being subjected to external advice and consultancy, which is a result of negative experience with the offers available in the 1990s, many of which were of little practical value. In addition, there is some feeling of disillusion stemming from the failed hopes of a fast catch-up process in the 1990s, which Thüringen tried to achieve through the painful process of adopting the political, legal and regulatory framework from the former West Germany almost over night.

Moreover, defensive attitudes have become increasingly common as a result of the call for an end to financial transfers from western to eastern Germany. Such opinions have been voiced publically more and more often since early in the present decade, almost exclusively by representatives of the richer western German Bundesländer.

There is frustratingly little initiative in the region to exploit ICTs potential to address some of the region’s non-economic challenges, such as the low voter turnout and wide-spread disengagement with anything to do with politics.

On a more positive note, rates of entrepreneurial activity are if not outstanding, then at least not below the western German average.

Participation in lifelong learning is not yet as high as in western Germany. Part of the reason is the low capability of employers to invest in staff training. The public sector infrastructure for further education, however, is well developed, and engagement in country-wide programmes towards modernising the lifelong learning system, such as the “Learning Regions” initiative, has been strong.

Narrative, Visions

Thüringen does not have a widely shared vision of how to develop an information & knowledge society in the region. Most stakeholders, when questioned, refer exclusively to Thüringen’s policy-making in support of the regional ICT & media industry, and to initiatives which aim to increase the take-up of ICTs by SMEs. While the former is about strengthening the region’s assumed growth pole industry (Thüringen was location of the GDR’s microelectronics industry, and was also home to the most successful German Internet company during the height of the Internet boom around the turn of the century (Intershop), the latter is about modernising the large number of smallish local companies, many of which suffer from a lack of equity capital and therefore tend to shy away from investments in technology which does not produce an immediate return. Both policy objectives are hardly visionary in character.

There is also no evidence of any kind of effort to jointly develop scenarios for the future development of the information society in Thüringen. Scenario building, road-mapping and other future-oriented strategic activities are limited to sectoral development, e.g. within the cluster initiatives which have received a lot of attention in recent years. Cluster related policy-making is not, however, specific to Thüringen, as most German regions have embraced the notion of cluster development lately.

It appears that “visions” and “grand narratives” for regional development in general, and for development of a knowledge-based economy and society in more particular, have lost any appeal to Thüringen’s policy-makers (as well as large parts of the population) because of the wide-spread frustration about the slow catch-up process after reunification, and the equally wide-spread perception that the room for self-determined policy-making in Thüringen is very limited, since the Bundesland relies heavily on financial transfers from federal sources, and on multinational companies which are headquartered outside of the region.

Having said that, it is those approaches and concepts which are most in line with an engineering mentality that receive most backing from stakeholders today. The success of Thüringen’s growth poles, which is based to a large extent on world-class competences in engineering, can be considered a good explanation for the emphasis of “down-to-earth” approaches over grand visions.

The Technology Conception, the main policy process addressing ICT and innovation, was developed in a concerted effort involving more than 150 external experts and stakeholders (mainly from the regional business community), who contributed their views on the regions potentials and the future development of key markets.

Similar to other post-socialist countries, the term transformation is indeed used in the public debate about the future of Thüringen, but it here refers to the process of transformation from a planned,
command-and-control economy to the present regime of late capitalism coupled with parliamentary democracy. ICTs are not considered to be of much importance in this process – they were seen merely as basic infrastructure for the modernisation of Thüringen’s economy as well as its society (in 1989, provision of the GDR’s population with private telephone extensions did not come anywhere close to meeting demand).

**Leadership**

Thüringen was home to one of the most prominent leader figures in post-reunification regional development in eastern Germany, namely Lothar Späth, former prime minister of Baden-Württemberg, who – in his role as CEO of Jenoptik (one of the most well-known companies in Thüringen) between 1991 and 2003 – was an avowed supporter of the transformed engineering industry in Thüringen and eastern Germany in more general. In hindsight, opinions about Späth’s legacy are decidedly mixed, with some remembering fondly how the man rescued almost single-handedly, it seemed, Jena’s optical engineering industry and turned the former VEB Carl Zeiss Jena into a much-admired, globally active provider of engineering expertise. Others stress that he was only able to do so because he was allowed to spend €1.8 billion of public money, but still rescued only 1,200 of the 20,000 jobs in the company he took over.

In contrast, at the moment we found very little evidence of strong leadership in Thüringen in the area of ICT-related policy-making. There are reasons to believe that the time for leader personalities such as Lothar Späth to guide developments in Thüringen (or other parts of the former GDR) has passed. It remains to be seen whether another type of leadership can establish itself in the coming years. Currently, though, there appears to be a wide-spread distaste of leader personalities. The extent of rivalry our research found between stakeholders indicates that lack of leadership has negative impacts on the region’s ability to achieve self-determined regional development in the information society.

**Openness and Closure**

In 1990, Thüringen had little alternative than to be wide open to external concepts, ideas and approaches, namely those underpinning or accompanying the legal, regulatory and political framework of the former West Germany which it was asked to implement. An overwhelming majority of Thüringen’s citizens had voted to become part of the Federal Republic of Germany, and consequently there was a wide-spread willingness to be convinced by the advantages of the western German “way to do things”.

However, there is a limit to the time to which such openness can be maintained, as indicated by the TRANSFORM State(s) of the Art(s)’ emphasis on openness having to be accompanied by a certain degree of “closure”. The time when this limit became apparent was in 1997, when the stage of rapid catching up with western Germany came to an end. Since then, Thüringen has searched for its own identity and also become more selective in accepting or seeking knowledge from abroad.

Our research suggests that a culture of openness, which would also stretch down to the attitudes and behaviour of the people which make up the region’s innovation system, is not fully established, but a pragmatic attitude towards learning from other’s experience predominates. Although knowledge transfer between western and eastern Germany plays less of a role today than in the 1990s, exchange of experience still takes place and is usually one-directional. There is a general willingness to accept the need to adapt to changing conditions in the broader environment.

In the economic realm, problems arise from the strong sense of rivalry between companies in Thüringen. Companies which have managed to achieve satisfactory economic performance tend to be averse to sharing knowledge and information with potential competitors. There is a low awareness of the value that can be derived from open collaboration and networking.

Firms, however, often have strong international linkages due to their high degree of specialisation and their integration in global supply chains, especially in the manufacturing sector. These linkages are being mobilised to bring in innovations from outside. Since these are largely restricted to sector specific issues, more general experience about how to achieve self-determined regional development in the information society is seldom touched upon.

Another channel for bringing in innovations concerning the knowledge-based economy and society are the universities, especially through their involvement in projects funded by Federal Ministries or the
EU. Again, areas of application are typically highly specialised, with a focus on the exchange of engineering and processing expertise.

7.5 Emilia Romagna (Italy)

7.5.1 Context

Overview of Emilia Romagna

Emilia Romagna, historically was dominated, economically, by an industrial system based on districts and small firms operating mainly in agriculture and the manufacturing sector. The economic base is spanned by four supply-chains (mechanical, agro-industrial, building and housing and fashionwear sector) that represent over the 60 per cent of non-agric workforce.

The population is largely white Italian. The BME community stood at 7 per cent of the total population and it is the second largest BME population in Italy. The population of the region grew mainly due to national and international inward migration.

The population data shows that ER faces two key issues in terms of demography: an ageing population and high levels of immigration.

Manufacturing still plays a significant role both in terms of employment (35.4 per cent, seventh in Europe) and GDP (8.9 per cent of national output). Agriculture still has an important role (4 per cent of regional workforce and 3.2 per cent of GDP) because of the process of structural reorganisation, high-quality products and the strong ties with manufacturing industries. The service sector has a marginal but increasing role in the regional economy and it is strongly linked to manufacturing and fostered by public administration. The close interplay between the three sectors makes them essential to the economic development of the region.

ER performs well against the national and European averages on a range of economic measures, including education and human capital formation. The level of R&D and innovation are above the Italian average but below the EU average and far short of the Lisbon target. However, the performance on R&D is improving rapidly.

ER is characterised by a strong social cohesion as measured by levels of employment and unemployment. In fact, the unemployment rate for women and young people are below the European and national average. In the same way the long-term unemployment rates are below the national average. Furthermore, it has the lowest regional deprivation index in Italy.

Emilia Romagna: in what sense a region?

Italy has traditionally had a weak regional structure due to the need to consolidate a nation made by many states after unification. To avoid fragmentation, Italy opted for a highly centralized system and ignored the demand for federalism.

From the mid of 1990s, Italy has extensively decentralized the provision of public services to lower levels of government (with the major exception of education). A key debate in Italian political mirrors is the fiscal decentralization of the state. In 2001, a major devolutionary reform was enacted with the introduction of the principle of constitutional subsidiarity and legal parity between central and regional governments. This reform remarkably widened the competences of the regions, however this process of decentralization is expected to last until after 2010.

The role of regions in Italy has become progressively stronger since 2001, however according to OECD (2007), the decentralization process has to face a big problem, on the financing side. The “fiscal federalism” has a long way to go. There is a need for a radical transformation of funding arrangements to provide a better match between spending responsibilities and taxing powers and allow some scope for tax competition.
ER is one of the 20 Italian regions. Italian regions are classified as NUTS 2 level regions. The boundaries of all the regions are largely based on historical and cultural grounds and geographical location. The regions map on to territories with a strong internal functional relationship.

ER has a shared and strong political identity based on Socialist principles that separate it politically from the rest of the north, which, with the exception of Liguria and partially of Tuscany, is mainly centre-right party. For this reason, ER is referred as a ‘Red Region’ because of this strong and long political tradition. The Communist and Socialist political community formed between the 1950 and 1970 is still important to understand the regional social cohesion and the negotiation attitude at every political level of the region (Capecchi, 1990).

Notwithstanding, the left leaning political culture, recently an increase in representation of the right was observed, but without apparent interruption of main policy directions.

Regional understandings of ‘TRANSFORMATION’

In plans and policies the term transformation is used to point out the passage from a manufacturing to a research/knowledge based region.

The term appears to be more related with the new ICT plan (2007/9), however it is not used in an explicit way.

In the interviews the most common expressions are: “create new ICT services” and “fill the broadband” so the idea of transformation is embedded in the in regional discourse.

In respect of ICTs transformation has two main meanings. First, the role which ICTs can play in constructing a stronger regional research and innovation system/network. Second, the importance of ICTs in fostering the evolution of SMEs in a more knowledge oriented enterprises.

ICT and IS in Emilia Romagna

The uptake of ICTs is in line with the rest of Italy. Household use of the internet is lower than average of Understand regions, though growth is line with Understand trends. The main factors associated with up-take were income and education level. Overall firms are high users of the internet. However it is important to note that they are below average for Understand regions in terms of advanced application of internet (SCM, ERP, CRM, ...). Company size and sector are the key factors.

Notwithstanding, the uptake of the internet, especially amongst businesses, there is little evidence of use of ICTs for transformative purposes in private sector.

There is a National Plan which sets guidelines for regions, but these are in line with the European agenda. Regions are reasonably free to develop initiatives.

ER is starting to see IS as a priority since 1999. In that year the first ICT Regional Plan (1999-2001) was released. This sought to foster new activities and projects as well as the training of public administration employees.

From 2001 the IS policy started to focus on a reorganization of services and a new relationship with citizens and firms and a socially inclusive region in terms of ‘access for all’ and overcoming the digital divide.

The ICT Regional Plans are jointly developed in a process including all levels of administration and all the most influent actors at regional level.

The main planning document that sets the regional priorities is the PTR (Piano Territoriale Regionale). PTR highlights the importance of ICT and knowledge. ICT is implicated in welfare development, in contributing to economic growth, networking places and people within and beyond the region for the exchange of knowledge, etc. In the regional agenda there is space for both infrastructure and knowledge issues related with ICT.

In the last ICT plan the focus moved from infrastructure to supporting measures. It has four main elements: (1) overcoming territorial digital (broadband) divide ‘defining the minimum level of services that has to be available to all population”; (2) increasing the use of ICT and advanced solutions by firms – partly through e-admin services for firms (3) regional healthcare system (4) building new relationships through ICTs, including e-democracy.
7.5.2 The Five Clues

Networking
The political history and the tradition of ER is such that every significant economic and social change is made with a multi-agency and/or partnership working. The regional authority has taken this historical attitude to cooperate and make system as pillars of the development strategy.

A myriad of regional, sub-regional, local and sectoral associations have characterized the socio-economic history of ER. It is hard to say which partnership has the most important role because of a deep-rooted attitude toward concertation.

With regard to the IS agenda, there was a general agreement that networks involving all sectors are important in order to develop and deliver long-term policies which are transformative in ambition, particularly around core policies such as the digital divide and knowledge divide. It was generally agreed that these formal networks tend to be inclusive in the sense that they are constructed to include all groups.

The regional authority is the fulcrum of these networks and acts as the organizational driving force. Ervet and Aster are key organizations. The president of Aster is said to be a key actor with Aster’s strategy being very much in line with his own priorities.

Universities very important, particularly in relation to local level firms. Bologna plays a lead role in particular projects such as e-health.

Local and sub-regional authorities have room to pursue their own projects as long as it is in line with the regional plan.

The polycentric nature of the region allows for activity across the region’s cities.

There are difficulties in enrolling SMEs in ICT projects, notwithstanding the inclusive structures in ER, the presence of trade unions and firm associations, and the efforts of key players to involve SMEs. The SME networking within the region is high in general terms, but one of the challenges identified by policy makers is the involvement of SMEs in ICT projects that require cooperation with public infrastructure or with research centers.

Difficult to involve SMEs – particularly important in ER context. SMEs are the weak link in networks – insufficient resources but also ‘cultural’ reasons.

The region is clearly a region where everybody knows everybody else. Parallel to every formal network there is an informal network. These informal networks are based on common work experience or on common projects. These networks appear very tight, but not closed and they have an extra-regional extension.

Learning
The region is described as a learning region by all the interviewees and by literature. This vision is largely based on the great capacity of the region to compare itself with other Italian and European regions and on the effort to build a network between universities, research centers and industries.

The information flows are very high.

Concerning IS, the learning process is strong and also deeply embedded in the region. In fact, the current process is influenced by both the cultural tradition (embedded in the territory) and the long-term plan, which people are aware of, and which is delivered through effective policies.

One important route to learning is research, both in terms of looking at what is being done elsewhere (potential policy lessons) and in terms of what is happening within the region.

Monitoring and benchmarking of ICT performance is advanced in the region.

In ER, it is not possible to refer to bottom-up or top-down processes because the extensive process of coordination aggregates multiple voices.

Seems to be multiple methods of learning – not just learning by doing, but systematic feedback loops, collective planning, based at least part on research (internal and external) and monitoring.
The engagement of SMEs in learning process is difficult but in progress. Similarly, engaging end users in terms of citizens and stimulating e-participation is a great challenge but policies implemented have given some results.

**Narrative, Visions**
Generally shared narrative: the region is seen as a leader, but under pressure from external forces and needing to adapt. This process is based on introducing the knowledge economy and adapting existing systems through the fostering of research, innovation and ICT.

In key policy documents and interviews the term transformation is used to point to the passage from an economy based on manufacturing to one based on research. However, the term transformation is far from entering the language of the social and economic development community. In the same way, it is important to notice that the idea of evolution toward a region based on research, innovation and ICT is strongly present.

There is not a shared understanding on policy priorities. A divergence of opinion emerges on the public investment made in large scale ICT infrastructure investments.

The regional attitude is characterized by both critical and pragmatic approaches.

There appears to be a vision which is understood amongst policymakers and practitioners. Even though the vision is not yet explicitly communicated and shared, at least some terms are common and a common language is detectable. There is some dispute as to (a) whether this vision is visionary enough or merely a roadmap (b) whether this vision is the correct one – or whether it focuses too much on technology and not enough on services (c) the extent to which the vision is articulated and communicated to a wider public.

There seems to be general agreement, based on success in reaching many of the objectives set in the previous ICT plan, that there is the possibility to build a digital region characterized by high value services. The only issue that is surrounded by a slight skepticism is the possibility to foster the adoption of advanced ICT solutions to SMEs. This feeling emerges especially from practitioners.

**Leadership**
In the IS field, public sector is the leader in the adoption and promotion of leading edge technologies and it has a crucial role.

The Regional administration is a center of power well coordinated with sub-regional institutions and oriented to work together with all the most important regional actors.

Networking and ‘concertation’ are crucial to the decision making process in ER. This does not imply, however, that leadership is not also crucial. Interviews also suggest that there is a need for the leaders to be charismatic in order to be able to manage the concertation process in a successful way. This is particularly true in the case of long-term projects or highly debated projects: this type of leadership is fundamental to coordinating and sustaining the project and the vision behind it. Interviewees saw the need for leaders to be passionate about the subject, but also knowledgeable about the issues. It is only by having this combination of attributes – institutional presence, passion and knowledge - that they can gain respect from all the actors involved in the decision making process. Therefore, it is important to observe that the high level of cohesion does not mean a poor system of selection (low meritocracy) of leaders because the leadership is strongly based on this combination of attributes.

It is important to note that in ER the key elected politicians are strongly involved in the IS process.

**Openness and Closure**
The evidence suggests that ER is very open in a number of ways:

- Accepting of migration and encouraging skilled migration;
- Administrative linkages to other places in Italy and Europe;
- In line with European and national visions.
The region has engaged with many external networks. Three reasons were given for this. First, it is a way to compare ER performances and practices with other regions. Second, it is best to have knowledge of new projects and new ideas. Finally, it is a way to improve the competences of all the people involved in these projects.

These external networking activities are the result of a culture and a policy oriented to promote cooperation and comparison. The work required to build these links is seen as fundamental for the development of the region and for the achievement of the best results in projects.

Other factors

There is a widely perceived need for there to be longer ICT projects (time dimension) in order to achieve satisfactory outcomes. These must be accompanied by sustained leadership. This need for long-term plans and projects, in part at least, comes from the need to produce cultural change.

The region has a high degree of cultural homogeneity. There is a common belief in the cooperative process and mediation can be accessed. This common belief in cooperation appears to be deeply entrenched and ‘cultural’ rather than imposed or purely instrumental.

There is a regional pride and belief in achievements though these may be sometimes underplayed. It is possible to perceive a sort of underestimation of the real value and performance of the region. This attitude appears to be a mechanism to assure continuous growth.

There is a process of benchmarking in place based on the Understand experience. However, there is a need to improve monitoring of projects and also of the wider situation at the regional, national and European levels.

References


7.6 Pormorze (Poland)

7.6.1 Context

Overview of Pormorze

Pomorze played a key role in the centralised communist economy and until the late 20th century the region’s economy relied heavily on shipbuilding.

The largest cities of the region (Gdańsk and Gdynia) are also the largest Polish harbours. During the communist era Pomorze was seen as Poland’s window on the world.

With the fall of communism the shipyards lost their protected status and struggled to compete in a market economy. The region is now trying to find a new economic rationale.

Unemployment is a problem in rural areas.

Pomorze suffers from a low skills equilibrium and also from a shortfall in levels of education with up to 30% of the region’s inhabitants having only a primary level education. Rural areas suffer from additional difficulties in that physical access to schools is often problematic.

Pomorze is one of the few regions in Poland with a rising birth rate, it has a positive internal migration balance, but has a high negative external migration balance.
**Pomorze: in what sense a region?**

Pomorze is one of sixteen voievodships, created by Poland’s decentralising reforms of 1999. Voievodships are categorised as NUTS 2 level European regions.

There are currently four levels of government: national; voivodeship (regional/provinces); powiat (counties); gmina (communes/local).

Sub-national government, in any true sense, is relatively new in modern Poland and the various tiers of government have been through a steep learning process and to some extent, institutions, networks, power structures and so on are still ‘bedding-in’.

Government at the regional level lies with the Governor and the Marshall, the former a non-elected executive who acts as a “minister” for the region, appointed by national government, the latter is elected and the Marshall’s office is the highest level of ‘local’ or ‘self-government’ in a region.

Pomorze was the birthplace of the Solidarity movement and is the location of the trade union headquarters, but it is debatable whether this has been of benefit from a regional perspective (see section on Leadership)

Distinct urban and rural split between the tri-city agglomeration of Gdańsk, Gdynia and Sopot and the rural areas

**Regional understandings of ‘TRANSFORMATION’**

As with other new member state regions the term transformation is understood in the Pomorze context to refer mainly to the process of social, political and economic transformation underway since the fall of communism.

The term appeared to be not well understood in the context of the IS agenda which is the focus of the Transform project.

Nevertheless, the role of ICT infrastructure was accorded some importance in addressing these issues, particularly the economic.

Although there were some public sector driven initiatives in this field it was not clear how highly this was prioritised and the extent to which investment should be left to the market.

**ICT and IS in Pomorze**

Pomorze is considered average in Poland in terms of ICT absorption (and IT investments), however Poland nationally is the least advanced country in European context (ESPON Information Society Index is low in Pomorze).

The region’s connections to national and international networks suffer from poor technical quality and broadband coverage is insufficient.

Despite this the region fares well in comparison to the rest of Poland with a higher percentage of households with computers and access to the Internet.

There is a significant difference in accessibility to computers and the internet between urban and rural areas, with rural areas suffering from a lack of infrastructure and higher prices for internet access.

All local government offices in the region have internet access, however in the context of developing public e-services only the largest cities in the region have advanced solutions of ICT (e-Gdańsk project, e-Sopot).

Pomorze does not have an Information Society Strategy.

The Marshall’s Office constitutes the Information Society Unit but suffers from a lack of staff.
7.6.2 The Five Clues

Networking

Cooperation and networking in general and more particularly in the context of the Information Society agenda is rather weak in the region.

There is no overarching network in the region.

There is the potential to create networks through the region’s Science and Technology Parks, however attempts thus far have yet to claim any major successes.

There are a lack of linkages between administration, universities and the private sector.

Networks that do exist appear to be project based and once the project is completed the networks are not sustained.

Major actors dealing with IS issues admit that there is lack of networks devoted to ICT development, however they are not able to give a clear explanation for this shortage.

One explanation that has been suggested is the lack of a strong leader with the institutional background and vision for IS development based on networking.

There appears to be a lack of understanding that cooperation can be beneficial and attempts at cooperation are hampered by a lack of trust.

Competition is much more strongly recognised than cooperation.

Learning

There seems to be a general perception that Pomorze is a ‘learning region’. But this appeared to be in relation to the general higher educational potential of the tri city region.

This perception was also heavily influenced by the change in views about the value of a good education following the collapse of communism (in terms of access to better paid jobs etc).

Higher education is not matching market needs

IS research is taking place within the region’s universities and the National Institute of Telecommunications

There is potentially a role for The Pomeranian Economic Observatory, but as yet it is not researching IS issues.

Some evidence of learning by doing through projects

Project evaluation is generally very narrow and mechanisms for exchanging lessons learned from projects are lacking.

Narrative, Visions

Articulated vision of overall trajectory of regional development

Regional Development Strategy in place and a high degree of awareness among respondents.

Regional Innovation strategy, which includes IS issues is in place, but is perhaps less well known throughout the region.

The strategies tend to be used in an instrumental way by regional actors in relation to bidding processes.

Generally perception that the region does not have a clear vision of IS development as well as the mechanisms that would be able to generate such visions.

Leadership

Pomorze suffers from a lack of leadership, both in terms of institutional leadership and personal leadership.
The region has a history of generating leaders, such as past Polish presidents Lech Wałęsa and Aleksander Kwaśniewski in addition to the present prime-minister Donald Tusk.

However, in terms of leadership the region appears to be a victim of its own success, in that successful people and potential regional leaders have left Pomorze for Warsaw and roles in national government and administration.

There is no official political leadership in IS.

There are a lack of motivational structures in key institutions.

There are some key individuals who are pushing the IS agenda, but they do not claim to be ‘leaders’.

**Openness and Closure**

Historically Pomorze, and in particular Gdansk, was seen to be Poland’s ‘window to the world’.

The region is well networked into Warsaw, possibly because many people from the region are now working in national government positions in Warsaw.

It is also connected through the Hanseatic League

The region is open to inward investment

**Other factors**

As with all new member states, the Pomorze region has a number of resource issues that in turn impacts on the IS agenda (and indeed other agendas).

Again in common with new member state regions there is a competitive bidding process whereby infrastructure such as roads and in the case of Pomorze, maritime infrastructure, may take precedence over IS infrastructure.

7.7 Malopolska (Poland)

7.7.1 Context

**Overview of Malopolska**

Poland is relatively poor in the European context and is still undergoing a profound process of social, economic and political transition (or transformation) in the post-communist period.

Poland is also undergoing changes in the context of accession to the EU, including coming to terms with the EU policy and culture and in drawing the benefits from membership, including structural funding.

In term of progress towards an information society and knowledge economy, again Poland and its regions face considerable challenges and the country currently comes towards the bottom of the European league on a range of indicators.

Malopolska has a GDP per capita below the national average, though its capital, Krakow, stands well above the national average.

It has a relatively diversified economy, based largely on small and medium sized enterprises, though there are a number of large firms in the region, many of them inward investors.

Employment rates are similar to the Polish average. Employment in knowledge intensive services and in high tech services is slightly above the average.

Maloposka is distinctive in that it has a growing population and has a positive internal migration.
The region is fairly homogenous in terms of ethnicity, language and religion, though there are a range of small minority ethnic and religious groups.

**Malopolska: in what sense a region?**

In administrative terms, since the reforms of 1999, there is a clearly demarcated region called Malopolska.

The regional authority is elected and has a relatively clear set of powers.

As the process of decentralisation is so recent there are still a number of practical developments to be worked out in terms of relationships with both the sub regional (county and local) levels and with the national level.

The region historically has been designated as a region as early as the 9th century. It can be seen as part of the wider territory of Galicia which has been identifiable as a distinct unit for several hundred years, although the current region is not co-terminus with that area.

In addition Krakow has a symbolic importance as the first capital of Poland and as a cultural and religious centre.

There are, of course, divisions within the region, notably an urban-rural divide, in areas such as educational levels, per capita GDP, industrial structure.

Equally importantly in the context of this study there is also evidence of a differential in terms of investment in ICT infrastructure, particularly broadband and the market appears not to be fully working in rural parts of the region.

**Regional understandings of ‘TRANSFORMATION’**

As with other new member state regions the term transformation is understood in the Malopolska context to refer mainly to the process of social, political and economic transformation underway since the fall of communism.

The term appeared to be not well understood in the context of the IS agenda which is the focus of the Transform project.

Nevertheless, the role of ICT infrastructure was accorded some importance in addressing these issues, particularly the economic.

Although there were some public sector driven initiatives in this field it was not clear how highly this was prioritised and the extent to which investment should be left to the market.

**ICT and IS in Malopolska**

In terms of the Information Society, as with the rest of Poland, Malopolska has much ground to make up. It does appear to have some elements on which to build.

From an economic perspective, a number of IT inward investors have entered the region and are providing employment. There is little evidence, however, to suggest that these firms are creating supply chains or clusters, using local suppliers.

Evidence of some activity in local firms, including SMEs, particularly spin-off companies from the region’s university.

The presence of a number of universities may also mean that the region’s ability to build knowledge capacity may be greater than in other regions. in terms of providing an educated workforce, as an engine for creating SMEs and as an institutional player in the governance of the Information Society agenda.

There is also evidence that in Polish terms firms have been relatively quick to grasp at least some ICTs.

There is also a degree of research and development capacity in the region and is the second highest
in terms of spend on R&D, though well behind the leading region Mazowieckie.

### 7.7.2 The Five Clues

**Networking**

Some evidence of important networks is emerging.

A small number of examples of formal or semi-formal networks of cooperation in different areas related to ICT or to the knowledge economy which cover the whole Malopolska region. This may reflect the relatively short history of regionalisation in Poland, as well as the particular form of centralisation which preceded the current regime.

Cooperation is very often made on the basis of the needs raised out of project requirements.

The overall impression is that networking is a process which still has to be learned by the region as a whole – not only in the area of Information Society.

However, formal networks are emerging, between the public sector and universities. Universities play an important role in both formal processes and as a basis for informal networks and contacts.

There is some evidence of links between inward investors and government, but a limited relationship between SMEs and government and universities.

SMEs have enrolled in networks or at least in cooperative undertakings when it has been demonstrated that it is in their short-term interests to do so.

External networks are developing.

Networking is still very much an emerging process.

**Learning**

Respondents believed Malpolska to be a learning region. But these perceptions were based on the formal education system rather than on institutional or organisational learning as these terms are not well understood in Poland.

The processes of institutional learning is not fully adopted in Poland, although from the descriptions of the work of various organizations and institutions it could be seen that some experiences of particular members (not only top management) are influencing the shape of organizations (like ‘IT w Krakowie’) – which is one of the elements of ‘institutional learning’. Although it was difficult to find organizations which fully work according rules of ‘institutional’ or ‘organizational’ learning.

There is some evidence of learning by doing in terms of project based learning, building on previous projects.

Research backed plans and initiatives at regional level

Some learning and exchange with extra-regional organisations

However, there is no IS observatory and project evaluation is underdeveloped and focused on sponsor targets.

**Narrative, Visions**

The region has a reasonably coherent vision for the region based around opportunity, modern economy drawing on its heritage.

Malopolska is seen both from within and beyond the region as a place which is offers advantages for high-tech manufacturing and R&D.

Development of the ICT sector (and especially IT) is a central issue for the region.

Malopolska has its own Regional Strategy of Innovation which aims to increase competitiveness of the knowledge based economy in the region by the creation of mechanisms which will increase innovativeness of public and business institutions in the region.
However, it is not clear that the strategic vision was shared by all. This was identified during interviews with regional experts, with the exception of those connected to regional administration.

**Leadership**

It is clear leadership is being exercised in respect to the IS agenda. At the centre of this is the Regional Authority (the Marshall’s Office). This organisation clearly takes a leadership role in pushing forward the IS agenda. It does so in terms of IS plans and placing the plan in the context of the Regional Plan.

The Marshall’s Office also takes a lead in building institutions to address IS issues, most notably the IS Council which seems to act as a focal point of IS activity and as a template for other actors wishing to set up similar (particularly sectoral) organisations.

The IT Department within the Marshall’s Office seems to be prepared to break out of its narrow functional role serving the internal needs of the organisation to develop a wider external social and economic role. The difficulties of doing this, in an environment characterised by budgetary constraints and considerable internal targets should not be underestimated, but it may bring critical capacity to the IS building process.

The Region also appears to be leading by example in the field of e-government, which comes within its own competencies. It can, of course, be argued that regions and communes have no choice but to implement e-government measures given the priority given to this issue by the EU and by the Polish government. There is evidence, however, that Malopolska is going faster in implementing national policy (e.g., Gateway Malopolska) and taking the initiative in extending this process below the regional level, attempting to link commune level into a single system.

The universities as a group play a key role and have organised a forum modelled on the IS Council to share and exchange.

The region has a range of leaders from different institutional backgrounds (e.g. e-health and project level). However, leadership seems to depend on a limited number of enthusiasts in the requisite institutional slots.

**Openness and Closure**

Historically Krakow has been very open in terms of trade and the influence of its art and architecture. Malopolska as a region, is a reasonably open in many respects.

The regional government is involved in number of international agreements with other regions and cities and international projects in education culture, tourism, and in European cooperation relation to EU/structural funds.

The region is attempting to cooperate with its neighbours (though aware at the same time of a competitive element). For example, it is trying to work together with three other regions in the south of Poland to develop a project Highway New Technology Companies, which will be linked by the A-4 motorway, a model based on Silicon Valley.

In line with many other regions, the Malopolska Regional Strategy seeks to draw in foreign investment. There is an inward flow of people including young students.

The region is very open in terms of tourism, with a burgeoning tourist market particularly in Krakow fuelled by the opening up of the country post communism, the cultural heritage of the region and low cost flights. The tourism strategy is one of the key elements in the region’s development strategy for the coming years.

**Other factors**

A major issue in the development of ICT in the region concerns human capital in that there is a lack of a qualified labour force that would have the ability to work with ICT. However action is being taken to develop such a labour base.
There is competition for resources and other governmental investment priorities. There are investments in core infrastructure that take priority over those in ICT. Poland as a whole is still lacking investment in education, the health care system and the basic physical infrastructure of economic development, especially transport.

7.8 Bratislava (Slovakia)

7.8.1 Context

Overview of Bratislava region

Bratislava region is one of the most prosperous regions in East-Central Europe (second only to Prague) with a per capita GDP above the EU average (measured at purchasing parity power).

Following the collapse of state-socialism in late 1980s and the removal of the ‘Iron Curtain’ Bratislava region has capitalised on the new opportunities, attracted a lion’s share of Slovakia’s inward investment and maintained low unemployment. Vibrant, diversified and increasingly services-dominated regional economy is the engine of the national economic growth. While the expectations of the ‘Silicon Valley of Eastern Europe’ did not fully materialise, the region hosts an emerging cluster of IT service operations of major multinationals such as HP, IBM, Accenture and Siemens.

The region contains the largest Slovak city, Bratislava, which is an educational, scientific, cultural and administrative centre of Slovakia. In 1993, Bratislava became the capital city of the independent Slovak Republic.

Bratislava: in what sense a region?

Bratislava region (Bratislavsky kraj) is both NUTS 2 (SK01) and NUTS 3 region (SK010). It is one of the 8 regions of the Slovak Republic created during the territorial-administrative reform in 1996. Through the second phase of the reform introduced in 2001 the either regions have been transformed into self-governing regions.

Bratislava region is thus a fully-fledged self-governing region with an elected Regional President and a Regional Parliament. The regional capital of Bratislava region is the city of Bratislava. Administratively, Bratislava region is subdivided into 8 districts. Districts Bratislava I - IV are urban districts of the capital city. Districts of Malacky, Pezinok and Senec form the city’s hinterland.

Given its short existence, it is hard to talk about a strong regional identity. Rather, identity is fragmented into 3 distinct micro-regions outside Bratislava city: Zahorie, Malokarpatsky and Podunajsko – some of which stretch beyond the administrative boundaries of the region.

Similarly, the economic pull of the region goes well beyond its current administrative boundaries. Indeed, Bratislava region together with neighbouring Trnava region, could be seen as the core of the Slovak economy (otherwise characterised by the sharp East-West regional disparities).

Regional understandings of ‘TRANSFORMATION’

The term transformation has a particular meaning in the post-socialist context of Central and Eastern Europe. Most commonly it denotes a social, economic and political transformations encountered by former state-socialist countries following a collapse of the old regime.

The term ‘transformation’ is often used interchangeably with a term ‘transition’ – i.e. a change from a centrally-planned economy to a market economy. Such an economic transition combined with a political transition (a change from single-party polity to democratic society) was expected to lead to an ideal-type liberal-capitalism characterised by prosperity, freedom and integration with Western Europe. However, the reality on the ground proved that the process of systemic change has been much more
difficult than expected – in turn creating a challenging environment for the implementation of Information society (IS) policies.

**ICT and IS in Bratislava region**

Reflecting the difficulties of socio-economic transformation and the priority of building an independent nation, Information society (IS) policies in general and ICT policies in particular, are relatively underdeveloped in Slovakia – at both national and regional levels.

The level of informatisation in Slovakia is very low in comparison to both the Old Member States and the New Member States. Penetration of broadband Internet is among the lowest in the enlarged Europe, and so is the provision and use of eGovernment and eBusiness. On the supply side, access to broadband infrastructure is limited and eServices are poorly developed. On the demand side, low IT skills and relatively low purchasing power exacerbate the problem.

The percentage of households with Internet connection is very low nation-wide and stood at 27% in 2006. There are significant regional disparities within Slovakia, however. The highest Internet penetration was recorded in the region of Bratislava (34%). Kosice region is the second best with 32% of households. It is assumed that the leading position of Bratislava and Kosice regions is due to the effect of the city of Bratislava and Kosice respectively.

The latest detailed sub-regional breakdown is not available at the moment but within Bratislava region one can expect a relatively high penetration in the city of Bratislava and comparatively lower penetration in the hinterland.

Slovakia is hoping to address its Information Society deficit during the EU programming period 2007-2013 through an Operation Programme: Informatisation of the Society, for which some 993 million Euros have been allocated. It remains to be seen how much of these resources will find its way to Bratislava region and what impact it will have.

In the meantime, the region’s capacity to advance the IS agenda seems to be limited, in terms of both statutory powers (regions in Slovakia do not have a formal responsibility for informatisation), administrative capacity or financial resources.

Objective 2 status of Bratislava region further constrains the options available.

At present, the region does not seem to have a comprehensive IS strategy, although various aspects of knowledge society, innovation and IS are partly covered in a number of strategic documents. The implementation of these objectives will largely depend on the availability of Structural Funds.

In the meantime, the IS agenda is being advanced with a small number of isolated projects.

### 7.8.2 The Five Clues

**Networking**

Networking, at best, can be described as embryonic. There are no signs of a systematic networking.

Without doubt, networking is critical for unlocking the R&D potential of the region, however. Bratislava region has a solid knowledge base, but the links within the R&D system are weak.

Attempts to introduce networking and/or partnership arrangements to address this have been done in the past – not least during the preparation of the Regional Innovation Strategy commissioned by the region. Echoing the spirit of ‘triple helix’, BIC Bratislava (who was in charge of the project) managed to put together an impressive collection of stakeholders representing both private sector and public institutions including the Slovak Academy of Science, and two ‘local’ universities. However, upon the completion of the project, the network faded away and the implementation of the recommendations has been hampered by the lack of resources.

More recently, a memorandum of understanding has been signed between Bratislava region, City of Bratislava and key universities based in the region, but it remains to be seen if/how this partnership will works in practice.

Several factors seem to be playing a role in the current state of affairs. First, in general, networking in Slovakia is seen as a luxury requiring extra time and resources that few can afford.
In the case of Bratislava, however strong economic performance of the region creates a situation where networking is not seen as a matter of urgency among regional stakeholders. Indeed, potential partners in both private sector and public sector (e.g. universities) are perhaps too strong to feel that they need each other.

Further to this, dynamic economic growth experienced in the last decade or so, may foster the sense of complacency. This is compounded by the limited access to Structural Funds (given the Objective 2 status of the region) which translates into a reduced incentive for regional partners to work together.

**Learning**

The notions of learning (and forgetting), gains a special meaning in the post-socialist context. Depending on definition, it could be argued that ‘learning’ in Slovakia is either rather limited or massive.

Institutional learning, for instance, could be seen either, as constant and massive (in terms of changing institutional structures), or as limited (precisely due to a quick change – in which ‘forgetting’ is far too fast). The regional governance structure itself can be seen as a good example of this.

In terms of learning ahead there is no evidence of any systematic approach – e.g. no formal economic or technology intelligence unit (and this remains a problem at the national level too).

Learning from projects is also limited and this is true even for EU funded projects. The situation is improving though and the EU funds are seen as a vehicle for the improvement.

Learning from other regions clearly exists although it is not systematic.

**Narrative, Visions**

A coherent vision is difficult to define in a post-socialist country where the past, present and future are intensively contested. This applies to both national and regional levels.

At the regional level, various strategies do exist. The three most relevant are: The Programme of Economic and Social Development of the Region (formally required by the Slovak law), Regional Innovation Strategy (ad hoc project supported by the EU) and Operational Programme for Bratislava).

The co-ordination/links between the above documents are not clear, although it seems that they all point broadly to the same direction. They promote the vision of Bratislava region as a knowledge-intensive, learning region, comparable to the most advanced regions of the EU. It remains to be seen whether the reference to a learning region is only a ‘lip service’. The reference to the knowledge economy is in part a response to EU agenda in general, and to the Lisbon agenda in particular.

It is also worth noting an emerging vision of Bratislava region is that of being part of a wider central European region (Centrope) involving Eastern Austria (Vienna), North-West Hungary and South-Eastern part of the Czech Republic (the core of which is a bi-city Bratislava-Vienna). The problem with the realisation of the Centrope vision is that it is heavily dependent on the EU financial support.

**Leadership**

The self-governing region of Bratislava assumes a formal leadership on general regional development issues, but in practice it has few implementation tools at its disposal to implement regional development agenda.

Further to this, there is no apparent or clear leadership on the ICT front (which is not a formal statutory competence of the region). There does not seem to be a consensus on the need for intervention, and ICT development is left to the market.

While ‘lip service’ to the knowledge economy is being made, most regional players are acting alone (although see above for the emergence of embryonic networks).

Meanwhile, a project of a Science and Technology Park (CEPIT) is led by a private Western investor and without a formal support of the region.
Openness and Closure

A high degree of openness to new ideas has been reported.

In part, external linkages are enhanced by the geographical location of the region – on the border with Austria and Hungary which clearly encourages the openness (see also Centrope above).

Bratislava is seen by some as a Slovak gateway to the West. However, as mentioned earlier, there is no systemic mechanism for learning from abroad.

Importantly, Bratislava region is absorbing labour force and knowledge workers from other parts of Slovakia. On the other hand, the region is also losing skilled labour to more developed regions in Europe and beyond;

Other factors

There is a host of other factors that should be taken into consideration when examining the case of Bratislava region. Among them are:

The scale of economic, social and political transformation after the fall of state-socialism and the time needed to establish functioning institutions;

The importance of a favourable political environment and/or the lack of it (e.g. politically divided regional parliament, or tensions between the regional parliament and the regional president – which in part can reflect tensions within the national political landscape);

The importance of formal competencies of regional authorities and their implementation capacity (including budget);

The importance of awareness of ICT issues/challenges by regional authorities;

The importance of a co-ordinated approach towards a definition of common technical standards by the national government (which would make ICT expenditure more effective);

The role of EU Structural Funds in advancing the IS agenda and helping to implement it.

7.9 Vychodne Slovensko (Slovakia)

7.9.1 Context

Overview of Kosice region

Kosice region is part of Eastern Slovakia which was, historically, the least developed part of former Czecho-Slovakia. Until the Second World War, the area was characterised by poor standards of living, high unemployment and emigration.

Under state-socialism, alongside other underdeveloped regions, Eastern Slovakia was targeted by socialist planners for major development, mostly through the process of that could be termed ‘forced industrialisation’. During this period, the region experienced a rapid pace of development and dramatically improving living standards (in part at the cost of environmental degradation), within a framework of overall regional convergence within Czecho-Slovakia.

However, following the collapse of state-socialism in 1989, the region of Eastern Slovakia was among the hardest hit by the ‘transitional’ shocks. The collapse of industrial production and the disintegration of socialist agriculture had devastating effects on the regional output and employment. Eastern Slovakia quickly became the most problematic area of the newly independent Slovak Republic. The region found itself at the losing side of the east-west divide that (re)emerged within an increasingly polarised space-economy of Slovakia, with the cities of Kosice and Presov providing perhaps the only major growth poles there.

Kosice region is still recovering from a painful restructuring, during which most industries were
privatised and socio-economic landscape transformed. The region secured some important investments, including the U.S. Steel investment in the former East Slovak Steel Works.

More recently, the region secured the investment of several IT (service) firms including T-Systems, NESS and Microsoft, thus opening a door to a new service economy.

**Kosice region: in what sense a region?**

From the point of view of territorial statistics Kosice region (Kosicky kraj) is a NUTS 3 region. Together with a neighbouring region of Presov (Presovsky kraj), it forms a NUTS 2 region of Eastern Slovakia (Vychodne Slovensko).

While Eastern Slovakia has some resonance in terms of regional identity, acted as an administrative unit under the state-socialist regime, and may be more meaningful in terms of economic functional linkages (see below) there are currently no governance structures that would cover the whole NUTS 2 region. Consequently, it is more appropriate to focus on the NUTS 3 level (Kosice region), which provides a framework for regional action.

Indeed, Kosice region is a fully-fledged self-governing region with a directly elected regional President and regional parliament. Kosice region is one of the 8 regions of the Slovak Republic created during the first phase of a territorial-administrative reform in 1996, gaining a self-governing status following the second phase of the reform introduced in 2001.

The regional capital is the city of Kosice with population 236,000 which is the second largest city in Slovakia. Other important urban centres are much smaller – Michalovce and Spisska Nova Ves (both have a population of about 40,000). Administratively, Kosice region is subdivided into 11 districts.

Due to its short existence the self-governing region does not have any strong regional identity attached to it so far. Cultural identity operates mostly at the level of the entire Eastern Slovakia or at the level of micro-regions. At the level of Eastern Slovakia, the identity of ‘Vychodniari’ (Easterners / Eastern Slovakians) is alive and strong and has an important bearing on the actions of regional players. At the micro-level, the identity works at the level of historic (long dissolved) counties (župy). Some of these historic micro-regions straddle the current regional boundaries between Presov and Kosice regions.

Economically, development corridors and labour market basins also seem to cross the regional boundaries, especially between the regional capital cities of Presov and Kosice (located only 30 km from each other). However, attempts to instigate a closer co-operation between the two neighbouring regions has so far had limited impact.

**Regional understandings of ‘TRANSFORMATION’**

The term transformation has a particular meaning in the post-socialist context of Central and Eastern Europe. Most commonly it denotes a social, economic and political transformation encountered by former state-socialist countries following a collapse of the old regime.

The term ‘transformation’ is often used interchangeably with a term ‘transition’ – i.e. a change from a centrally-planned economy to a market economy. Such an economic transition combined with a political transition (a change from single-party polity to democratic society) was expected to lead to an ideal-type liberal-capitalism characterised by prosperity, freedom and integration with Western Europe. However, the reality on the ground proved that the process of systemic change has been much more difficult than expected – in turn creating a challenging environment for the implementation of Information society (IS) policies.

**ICT and IS in Kosice region**

Reflecting the difficulties of socio-economic transformation and the priority of building an independent nation, Information society (IS) policies in general and ICT policies in particular, are relatively underdeveloped in Slovakia – at both national and regional levels.

The level of informatisation in Slovakia is very low in comparison to both the Old Member States and the New Member States. Penetration of broadband Internet is among the lowest in the enlarged Europe, and so is the provision and use of eGovernment and eBusiness. On the supply side, access
to broadband infrastructure is limited and eServices are poorly developed. On the demand side, low IT skills and relatively low purchasing power exacerbate the problem.

The percentage of households with Internet connection is very low nation-wide and stood at 27% in 2006. There are significant regional disparities within Slovakia, however. The highest Internet penetration was recorded in the region of Bratislava (34%). Kosice region is the second best with 32% of households. It is assumed that the leading position of Bratislava and Kosice regions is due to the effect of the cities of Bratislava and Kosice respectively.

When it comes to broadband Internet, Kosice region is a leader in Slovakia with 19% of households connected (mostly via cable or UTMS connection). Bratislava region is the second best with 14% of households. The national average in 2006 was 12%.

The latest detailed sub-regional breakdown is not available at the moment but within Kosice region one can expect a relatively high penetration in the city of Kosice and much lower penetration in the rural hinterland.

Slovakia is hoping to address its Information Society deficit during the EU programming period 2007-2013 through an Operation Programme: Informatisation of the Society, for which some 993 million Euros have been allocated. It remains to be seen how much of these resources will find its way to Kosice region and what impact it will have.

In the meantime, the region’s capacity to advance the IS agenda seems to be limited, in terms of both statutory powers (regions in Slovakia do not have a formal responsibility for informatisation), administrative capacity or financial resources.

Despite this, the IS agenda is being advanced by the regional administration and via a ‘triple helix’ partnership ‘Kosice IT Valley’ (see more below).

7.9.2 The Five Clues

Networking

In general, networking in Slovakia is seen as a luxury requiring extra time and resources that few can afford.

However, in Kosice region, the challenging socio-economic situation creates a sense of urgency that pushes regional actors to get their acts together.

The flagship initiative is ‘Košice IT Valley’ which could be seen as a ‘triple helix’ partnership of private sector (ICT companies), regional government and universities. The initiative quickly evolved into a formal association. Within the association, there is a growing sense that mutual co-operation is better than competition.

Košice IT Valley association is unique and has no parallel elsewhere in Slovakia (not even in Bratislava);

The sense of urgency to seize opportunities as they arise has also been driving a number of other projects and initiatives requiring a networking capacity. This includes a CISCO Network Academy in Slovakia, a successful nation-wide network of IT training places co-ordinated from Kosice, which relies on a wide “ecosystem of partners”.

Learning

The notion of learning (and forgetting) has a special meaning in the post-socialist context. Depending on definition, it could be argued that ‘learning’ in Slovakia is either rather limited or massive.

Institutional learning, for instance, could be seen either, as constant and massive (in terms of changing institutional structures), or as limited (precisely due to a quick change – in which ‘forgetting’ is far too fast). The regional governance structure itself can be seen as a good example of this.

In terms of learning ahead there is no evidence of any systematic approach – e.g. no formal economic or technology intelligence unit (and this remains a problem at the national level too) – although the Carpathian Development Institute based in Kosice aspires to act as an independent, regional forward-looking body and produces discussion papers on knowledge economy.
The extent to which ‘learning from projects’ is taking place is hard to assess – given that key initiatives/projects are under implementation, while others are planned.

Kosice region is perhaps the most active among Slovak regions in terms of membership in international networks, including eris@ and IRE (Innovating Regions of Europe). Learning from other regions thus seems to be more systematic than elsewhere in the country.

**Narrative, Visions**

A coherent vision is difficult to define in a post-socialist country where the past, present and future are intensively contested. This applied to both national and regional levels.

At the regional level, there is a proliferation of various strategies. The co-ordination between them and their implementation, however, remains problematic.

Perhaps the most powerful regional vision that is currently emerging is the one advanced by the Kosice IT Valley association. It has explicit resonance with Silicon Valley although Kosice IT Valley members also use terms such as ‘intelligent region’, ‘knowledge economy’ and ‘triple helix’.

The social inclusion/e-Inclusion dimension has been recognised from the outset as one of the objectives of the association - but it remains to be seen whether this will be translated into practice.

The vision of the ‘knowledge economy’ for Eastern Slovakia is also advanced by the Carpathian Development Institute.

The overall Programme of Economic and Social Development of the Region (formally required by the Slovak law) is currently under review/update. It remains to be seen to what extent it will reflect the above narrative and vision.

**Leadership**

The self-governing region of Kosice assumes a formal leadership on general regional development issues, but in practice it has few implementation tools at its disposal to implement regional development agenda.

Despite this, Kosice region provides impressive leadership on the ICT front recognising it as its informal area of responsibility (although not having a formal/statutory competence over the issue).

In part, this is thanks to enlightened Head of IT Department and the Regional President who gives him ‘free hands’.

More importantly still, collective leadership emerges from Košice IT Valley – where regional authority is an active member alongside key ICT firms and universities. The leadership within the association itself is still crystallising, although business sector is perhaps emerging as the strongest player.

**Openness and Closure**

While ‘Easterners’ (Eastern Slovaks) see themselves as more conservative (in comparison to the rest of their country-fellows), they also see themselves as being friendly and local patriotic. The latter feature can be an indication of certain level of closure, but on the other hand, it is perhaps helping to foster the networking, within and beyond the region.

The networking beyond the region is mostly directed Westwards – the region sees itself as geographically ‘imprisoned’ among peripheral and poorly performing regions surrounding it, in the north (Poland), east (Ukraine) and south (North-East Hungary) and thus fosters a feeling that development impulses can come from the Western direction only.

Active membership in various European networks perhaps provide this window to more developed parts of Europe.

On the other hand, the increasing openness within the Europe labour market causes problems in terms of exodus of young graduates (to Bratislava, Prague and beyond) which is seen as a major problem (and was partly behind the reasons for setting up the Kosice IT Valley).
Other factors

There is a host of other factors that should be taken into consideration when examining the case of Kosice region. Among them are:

The scale of economic, social and political transformation after the fall of state-socialism and the time needed to establish functioning institutions;

The importance of formal competencies of regional authorities and their implementation capacity (including budget);

The importance of awareness of ICT issues/challenges by regional authorities (Kosice region seems to be one step ahead of other Slovak regions);

The importance of a co-ordinated approach towards a definition of common technical standards by the national government (which would make ICT expenditure more effective);

The role of EU Structural Funds in advancing the IS agenda and helping to implement it.

7.10 Extremadura (Spain)

7.10.1 Context

Overview of Extremadura

Extremadura is located in a relatively peripheral position regarding the main historical Spanish centres of political and economic power.

The intensification of functional relations between Madrid, Lisbon and Seville is understood as a relevant issue for the alleviation of the region’s peripheral condition – by increasingly becoming a node of the communications network which articulates the three metropolises.

With regard to its economy, historically Extremadura has been characterized by the dominance of its agriculture sector – farming and livestock with low usage of intensive exploration techniques.

Although subject to efforts towards improving its competitiveness, the weight of the primary sector has been significantly downsized (GVA and employment) and the services sector is currently the main source of employment.

Comprising a vast territory the region is sparsely populated, presents a low urbanization rate and preserves a predominantly rural character. Lacking a large city which fulfills the role of a central regional metropolis, the urban services are delivered by a set of medium sized cities.

With a relatively underdeveloped private sector characterized by low levels of entrepreneurship and capital absenteeism, the main issues which the region faces are related with the diversification of its economic base, the decrease of unemployment and the ability to attract and retain population. This to be achieved within the framework of a territorial balance between urban and rural areas.

Notwithstanding the visible convergence path initiated in the last two decades, within the context of Spain and Europe the region still performs poorly on most of the indicators regarding its overall socio-economic performance. Innovation and human capital formation assume particular relevance in the wider regional development policy.

Extremadura: in what sense a region?

The weight of Spanish regions in the country governance framework has been the subject of different policies throughout time. After the Spanish Constitution of 1978 the regional governance level gained an outstanding significance. Based on the country’s historical regions, Spain is currently organized
into 17 Autonomous Communities – i.e. regions with their own Government, Parliament and Statute of Autonomy (‘regional constitution’) and self-governing competences in most of the policy domains. The later division of the country into NUTS2 followed the country’s organization into Autonomous Communities.

References to the ‘region’ of Extremadura have existed for some time, however it is after the Spanish Constitution of 1978 that the concept of a functional self-governing region emerges and starts to be developed. The formalization of the Autonomous Community of Extremadura takes place in late 1983 with the approval of its Statute of Autonomy. The transference of competences from the national government is a process which has taken place progressively and lasted until the early years of 2000.

Although (The Autonomous Community of) Extremadura results from the union of two provinces - a common regional identity, based in previous socio-cultural heritages and actively fostered after 1983, clearly underpins the two sub-regional territories.

The creation of the Autonomous Community of Extremadura is therefore a significant landmark - both by enabling the region with self-governing competences and a significant space for defining and pursuing its strategic development options; as by fostering the sense of regional identity and bringing a new impetus for the regional actors to more actively participate in policy-making and engage in the delivery of the regional policies.

**Regional understandings of ‘TRANSFORMATION’**

Along with terms like transition, implantation and revolution, the rhetoric of transformation is often used by regional actors to describe the process of change which the region has gone through in the last years. The more distinctive drivers of this change are: the consolidation of the regional self-governing capabilities and the progressive shifting from a predominantly rural socio-economy to a services based economy in which IS/KE play a significant role.

The aimed transformation of the regional socio-economic system is assumed as a challenge to be necessarily addressed through collective action, and is ultimately related with acting upon cultural attributes of the individuals and institutions (prospects, self-esteem, optimism and pro-activity). This is understood as an open-end, evolutionary, process.

Within the overall rhetoric of the regional socio-economy transformation the use of ICTs and IS development play a/the central role.

Initially seen under the instrumental perspective of contributing to such transformation by ensuring that all the individuals and institutions have the same opportunities regardless of their geographical context, soon it became a motto for the collective mobilization towards addressing the regional goal of ‘producing’ a ‘new Society for a new Era’; and, more narrowly, a dynamic driver for the development the regional R&D and Innovation system (which development is sought under the ‘triple helix’ notion).

**ICT and IS in Extremadura**

The geographical attributes of Extremadura – vast territories sparsely populated – combined with an unfavourable national regulatory framework determined that the lack of aggregated demand raises significant problems for achieving a competitive provision of telecommunications infrastructures. The action of the Regional Government has been and will continue to be of utmost importance to minimize the market inefficiency.

Broadband coverage of the region is currently achieved, although in the inferior limits of what can be considered broadband. Penetration of mobile technologies in the region is amongst the highest in national terms.

Bearing in mind the ‘point of departure’ of the region, i.e. regions have different capabilities and attributes which being relevant to explain the performance in terms of Information Society development are however pre-existent to it; significant progress has been achieved in the last years in terms of uptake and use of ICTs. The education sector is the domain where more progresses have been made – ratio of computers per student is the highest in Spain.

Currently the region performs poorly in terms of the national context; a path of convergence with leading regions seems to be clear and relatively sustainable. Access capacity by the households and increased use of ICTs by enterprises – mainly micro and small dimension – are the key issues.
The regional Information Society and Knowledge Economy agenda is a centrepiece of the wider regional development policy of Extremadura since the late nineties. It is explicitly aimed at addressing both social inclusion and economic competitiveness dimensions - the definition of the education sector as a key strategic vector of the IS policy is a significant reflection of this.

Although there is a ‘Strategic Plan for the Information Society’, which being somehow dated still provides the overall dimensions of the strategy, the IS/KE agenda is disseminated in a number of thematic plans. The strategy is structured in terms of two key frameworks: the ‘technological’, which addresses the infrastructural issues; and the ‘strategic’ which addresses the ‘soft’ issues (e-literacy and promotion of use, organizational change, etc). Interestingly one flag-project of the region - LinEx - blends the two frameworks of the strategy.

The European and national IS policies are considered as ‘contextual guidelines’ and, expectedly, sources of financing opportunities. Despite the role of European policy in stimulating the definition of the region’s development policy, the region has large space to draw upon its own specificities and adapt the policy guidance’s into the regional context and the development options it pursues.

7.10.2 The Five Clues

Networking

Due to a number of reasons largely related with the regional governance framework in place until the Spanish Constitution of 1978, from a historical perspective the region’s ability to ‘think’ as a region and, moreover, to develop networking capabilities has been very limited.

The creation of the Autonomous Community, along with the EU integration (and what this meant in inducing organizational changes to access funding opportunities since 1986), have been relevant landmarks in the region’s ability to build upon practices of networking and working in partnerships. The instigation of these practices is in most cases done by the public sector, namely the regional government structures. It is generally considered that significant progress is still to be made regarding the consolidation of practices of partnership working.

In terms of IS, networks are seen as a key asset to be able to: communicate the strategy and articulate it within the overall regional development strategy; and deliver the projects which translate it into action by being able to involve all relevant actors and build upon their active contribution. Due to its innovative methodologies the EU Regional Innovative Action Program – eExtremadura, played a significant role in demonstrating to the regional actors the need and benefits of working in partnership; the Regional Government is currently seeking the conditions to deliver a follow-up of the initiative.

The character of the networks related with the regional IS, is fairly open and inclusive, being clear the efforts of the Regional Government related structures, namely FUNDECYT, to sustain and extend the number of involved actors. Propensity for networking seems to be greater within the civil society entities than within the private sector, the perception being that, currently, the first (e.g. IdenTIC) are more mature than the second (e.g. Cluster del Conocimiento).

Although networking is actively promoted, significant progress is understood as desirable to take greater value added out of the efforts made so far, namely in those networks which have ‘general purposes’ and with a more horizontal character (e.g.: Thematic Clusters); by opposition to the ones created under the context of a specific project and with a more vertical character, thus, with more objective purposes (e.g.: PAT & NCCs (Tech. Literacy Plan)).

No outstanding overarching formal network for the domain of IS exists in the region. However, within the context of a region commonly described as a ‘courtyard of neighbours’ informal networking assumes great relevance and seems to minimize the lack of a formal transversal platform.

Learning

The concept of “learning region” seemed to have little resonance among the regional actors. However the analysis of the mechanisms through which learning takes place, as well as the understanding of the IS agenda evolution, shows that there is a learning capacity which induces changes in policy-making.

The most relevant learning mechanism in the region seems to be ‘learning by doing’ – that is to say
the capacity of learning from successes and failures enabled by an attitude of alertness towards the changing contexts and continuous monitoring of projects outcomes. In this context the LinEx initiative is a paradigmatic example.

The relevance of ‘learning by doing’ is also visible when considering the evolution of the wider IS strategy over time and how it has been shaped by the Regional Government ability to learn – politically, organizationally and technically – and to adjust the agenda accordingly.

In a number of cases ‘learning by doing’ overlaps with other learning mechanisms which also assume relevance, namely: ‘learning from end-user’, due to the significant involvement of the end-user/beneficiary in project design and implementation; and, although to a lesser extent, ‘learning through exchange’ due to the informal networking which takes place between the actors involved in delivering the different IS related projects. Space for improvement was however considered to exist regarding the effectiveness with which lessons from the end-user are mobilized to inform policy-making.

**Narrative, Visions**

In overall terms there is a shared understanding by the regional key actors about the process of socio-economic change which the region is going through in recent years. The regional narrative on Information Society is significantly embedded in the vision for overall regional development and plays a central role in it.

To a large extent the globally generated Information Society rhetoric along with the European favourable pull, converged in the ‘right’ momentum for the newly created Region of Extremadura to find the ‘suit made to measure’ which would potentially address many of the regional challenges and goals for future development. An opportunity that the Presidency of the Regional Government has grasped and converted in a flag of the wider process of transformation it envisions for the regional socio-economy.

The main messages of the narrative are: equal opportunities for all in terms of access and capacity of use of ICTs regardless of their geographic location (a sensible issue in the context of Extremadura territorial equilibrium between urban/rural areas); to be achieved independently of market led tendencies and avoiding the adoption of foreign regions development paradigms which may clash with the regional specificities and further compromise the endangered sustainability of the region’s quality of life.

The need for an effectively shared narrative is acknowledged as an instrumental asset of the regional IS strategy for achieving successful delivery, being well reflected in the diverse tools to communicate it and mobilize stakeholders. More narrowly, the existence of an ‘inspiring narrative’ is understood as an intangible economic growth factor: the recent location of software factories and R&D facilities by large foreign companies is not dissociated from the ability to project an image of ‘favourable context’.

The narrative on IS has still however to progress to become widely incorporated by all regional actors - for a number of actors the narrative is already supported by tangible direct outcomes while for others that’s not so much the case, namely the private sector.

Despite relevant achievements in some domains (education, health, ‘e-access’) which point to the sustainability of dynamics of change by the means of ICTs; the regional IS strategy is still considered to be very much dependent on the political strength behind it.

**Leadership**

Extremadura socio-economic attributes determine that most of ‘what takes place’ in the region is instigated and driven by the Regional Government and lower layers of public administration. Although being the object of policies aimed at inverting / balancing this context, public administration in Extremadura remains as the main driver of regional growth and economic activity – commonly described as the biggest employer of the region and the main client of the private sector.

In terms of the development of the regional Information Society agenda, leadership comes mainly from the Regional Government and it started as essentially political – arguably because it could hardly have been of any other kind, in a context characterized by scarcity of financial resources (where the IS agenda competes with other policy domains) and a germinal ICT private sector.
Political leadership has begun in a very much personalized basis, provided by two top-level policy makers – President and Minister of the Regional Government. Roughly ten years after the beginning of the regional strategy this leadership is still considered essential, but it’s now more widespread and with a more institutionalized and ‘distributed’ character – both thanks to a greater appropriation of the vision/narrative by other key policy makers and to the maturity of the IS policy support structures and teams.

The issue of political stability along with the ‘weight’ of the Regional Government and overall public administration were considered critical factors for the success of some of the most ambitious and politically risky initiatives of the region, namely, the eExtremadura (Regional Innovative Actions Programme) and LinEx.

It is acknowledged that the leadership (and hence the narrative) provided by the Regional Government finds obstacles to reach a part of the regional actors, namely those of the private sector. This was suggested to be not only due to the policy fields of intervention to which was given priority so far, but also due to a more deeply rooted cultural understanding about the ‘two worlds apart’ which do not relate with each other (private and public sectors).

This ‘fragility’ is furthermore relevant in a framework that aims for a stronger regional private sector which: (1) takes more direct benefits from the regional government actions and know-how in terms of IS and, (2) can take the lead or play as a co-leader in many domains of the wider regional development agenda. Recently, actions started to be taken in this respect and the most clear evidence would be the recent shifting of the IS dossier to the Ministry of Economy, Commerce and Innovation.

**Openness and Closure**

The region seems determined to exploit the opportunities brought by a network of extra-regional relations which allow it to overcome the downside of its physical peripheral condition.

In terms of IS, the region is actively involved in thematic networks and projects developed in partnership with other regions – both at the national level, European and international level, namely South-America. The outcomes achieved so far are highly valued by policy-makers and IS practitioners.

**Other factors**

Alertness to changes of context mixed with an attitude of not let be bounded by rigid formal plans appear to be a relevant factor in the regional capacity to make evolve the regional ‘strategy’ and build upon unexpected (innovative) outcomes.

Combination of long-term and short-term results. Short-term results as demonstrators and sustainers of leadership and narrative credibility; and the notion that transformative uses of ICTs are outcomes expected to appear in the long-term and in a rather open-end perspective, i.e., need to be provoked but ultimately depend on how the end-users appropriate and ‘customize’ the tools to answer their specific (individual and collective) needs and expectations.

End-user/beneficiary perspective. In several aspects of the regional strategy there is a change the ‘typical’ positioning of the end-user/beneficiary in the projects/initiatives - being more involved and re-positioned in all the moments of the project. The fragilities and obstacles ‘perceived’ by the end-user become the ‘real’ issues to be addressed by the project management teams.

### 7.11 Navarra (Spain)

#### 7.11.1 Context

**Overview of Navarra**

Historically, the economy of Navarra has been characterized by the dominance of the agrarian sector. Since the mid 1960’s the region has made a successful transition to an industrial economy which, characterized by significant foreign investment (automotive sector), granted the region with a sustained economic growth in recent decades. Currently the regional economic structure differentiates
from the national average due to the superior weight of its industrial sector and the lesser weight of its tertiary sector. Agriculture has both a sociological meaning and relevance in providing the relevant (regional) agro-industrial sector.

Nowadays Navarra is among the Spanish regions with greater levels of wealth, social well-being and employment. In terms of the European average the region also performs well in a number of indicators. Spending in R&D and Innovation being closest to the European average than to the, lagging, national average.

The regional industrial specialization (automotive sector; machinery and equipment), perceived until recently as a competitive advantage is now regarded as a weakness in the long term. Due to the perceived menaces of the ‘global economy’, made explicit by the late enlargement of EU, since the last years the region is seeking to diversify its industrial base, reducing its dependence on foreign investment; and develop its tertiary sector.

Relevant investments in R&D and Innovation and human capital formation underpin the above objectives. To this end, the region is investing in a number of sectors considered to have potential competitive advantages, namely: bio-medicine & bio-technologies, nanotechnologies, renewable energies. A large amount of this expenditure comes from the private sector, although being significantly co-financed by the Regional Government.

Navarra: in what sense a region?

The weight of Spanish regions in the country governance framework has been subject of different policies throughout time. After the Spanish Constitution of 1978 the regional governance level gained outstanding significance and Spain is currently organized into 17 Autonomous Communities – i.e. regions with its own Government, Parliament and Statute of Autonomy (‘regional constitution’) and self-governing competences in most of the policy domains. The later division of the country into NUTS followed the country organization in Autonomous Communities to define the level 2.

Notwithstanding, given its historical past as an independent Kingdom (later ‘merged’ within the Kingdom of Spain), in terms of policy-making Navarra didn’t need to wait until 1978 and, within the framework of its specific historical rights, always enjoyed of large degree of autonomy in relation to the Central Government policies. Currently the Comunidad Foral de Navarra still retains increased levels of autonomy as compared to most of the remaining Autonomous Communities, namely in the domains of administration, finances and economy.

Inherited from its long history and the protection of its traditional values the region shows a strong sense of identity and social cohesion and “views itself as ‘being different’”.

Regional understandings of ‘TRANSFORMATION’

The term ‘transformation’ has relative resonance in the regional discourse about the changes related with the region socio-economy.

The term is used along with ‘transition’ but often preferred to this one when referring to the relevant changes occurred in the region over the decades of 60 and 70 which largely determined the current regional socio-economy – “Industry has been the driving force behind this transformation”.

Although frequently used, the rhetoric of transformation assumes less relevance in the discourse regarding the future challenges posed to the region socio-economy. More than a ‘transformation’, understood in the region as a profound change, the challenges ahead seem to be considered in the framework of the necessary ‘evolution’ of the perceived transformation initiated decades ago.

The use of ICTs and the wider IS development are one aspect, among others, which is understood to play a role in shaping the evolution of the regional socio-economy. ‘Transformation’ is seldom present
in this discourse, with 'promotion' (of an IS and KE) being preferred; when it is used, it’s mainly in order to set the context about the impacts of ICTs in organizational issues of businesses and institutions.

**ICT and IS in Navarra**

In terms of ICTs uptake (access), within the Spanish context, the region performs averagely to relatively well in a number of indicators. This performance is slightly worse when observing indicators of use.

Due to its territorial configuration in terms of urban/rural areas (outstanding differences in population densities) and its topographical attributes, the region placed significant investments in addressing ICT access issues and ensuring equal delivery of telecommunications services throughout the region. Currently the vast majority of its territory is considered to be well supplied with these services, namely in terms of broadband coverage.

In terms of capacity of use the key concerns are mainly related with relatively low intensity of use in households, associated with digital divide issues (geographical, socio-cultural); and the low levels of 'e-business readiness', namely within the micro and small enterprises.

The regional policy for IS, is the object of a dedicated Plan. This Plan is then articulated with two other plans which are more focused in the domains of the KE (Regional Technological Plan and ICT Sector Strategic Plan). Due to the methodology of delivery of the IS policy, other thematic plans and strategies also consider the theme of IS, namely education and public administration.

The IS policy addresses both infrastructural and 'soft factors' concerns. Although more visible progresses have been achieved in the domain of infrastructures.

The agendas of economic competitiveness and social inclusion are both present in the IS rhetoric. Notwithstanding, most likely due to the dominant political culture, economic competitiveness appears to be object of more active and resourceful efforts.

Although, recently, the IS/KE theme is gaining 'effective' space within the overall regional development agenda, the more critical views suggest that region reacted rather late and timidly, and that significant progress needs to be made to achieve the performance which would be expected when considering the position of the region in terms of its wider socio-economic development.

National and European IS related agendas are mainly understood as ‘contextual guidelines’ – i.e. valuable instruments to establish the overall framework of concerns, but of limited relevance in driving or constraining the region specific options, projects and initiatives. Notwithstanding, the European agenda (and associated financing opportunities) had played a role in bringing the IS theme into the regional agenda, and the self-evaluation of the region macro performance in often done in terms of compliance with EU policies and objectives (e.g. Lisbon Agenda).

**7.11.2 The Five Clues**

**Networking**

Most likely due to both its geo-demographic attributes and its historical past of 'socio-cultural autonomy' and self-government, in general terms Navarra appears to be relatively well 'networked' in the general sense.

Both the civil society and private sector are understood to be relatively well organized and pro-active; and the Regional Government features a number of intermediate structures which facilitate the engagement of these in policy-making and delivery. Involvement and participation levels are understood to be, in general, satisfactory.

In a general sense, building and joining regional networks is considered to be relatively easy, although possibly over-dependent on previous informal, personal-basis, relationships.

In terms of IS, there is a common understanding about the need for improved coordination among the key entities delivering projects and initiatives, most of which are Regional Government related structures, and the shortcoming this means in terms of communicating a clear, integrated and credible narrative to the end-user/beneficiaries.
This relative lack of coordination is considered to result, at least in part, from a relative disconnect at the political level (in terms of IS) which doesn’t favour an integrated action by overcoming the weight of the different entities individual agendas (and ‘tick boxes’ to check). Nevertheless, the public entities, third sector and the regional ICT private sector (increasingly more organized and proactive), are conscious and seem to be progressively committed to develop working in partnership (both formally and informally).

Although the region features some formal networks which aim to assemble regional actors from the public, private and third sector in order to increase and widen the debate in overall regional development matters, Information Society is not among their key domains of concern. Among IS regional key actors the need for such a platform seems relatively consensual; interestingly the leadership for its development seems to come mainly from the ICT private sector regional association – also a key enthusiast on the development of the so called ICT Cluster and the project “Ciudad TIC Navarra”.

Work in partnership is mainly developed at the project level. Although it has not been so much the case until recently, there is a common understanding by those delivering IS related projects that this is the desirable way to deliver successful projects. The development of partnerships with the regional actors which are more closely related with the end-user/beneficiary is lately assuming increased relevance.

In the absence of more formal network platforms, informal networking is understood to play a significant role in the ability for IS related actors to interact. This seems to be equally relevant in a horizontal perspective as in a vertical perspective, although the extent to which the political level effectively integrates the messages brought by the project management level and end-users/beneficiaries is, in some cases, questionable.

**Learning**

From an overall perspective the region puts efforts and resources for being able to learn – either from past experiences or from looking ahead. Evidence can be found on the ability to self-evaluate its relative context, identify challenges and mobilize to change trajectories. The relative pro-activity of both civil society and private sector (namely industry) seems to play a role in this domain.

For the domain of IS the above applies widely. The relative lack of active support for this theme in the regional development policy agenda, however, should be noted – as it limits the resources allocated to it, arguably, putting also limits to the effectiveness of learning processes outcomes.

More than at policy-making level, learning efforts and processes seem clearer at project level and intermediate structures; although in some cases regarded as under-exploited, there is evidence in learning outcomes in shaping ‘follow-up’ projects or designing new ones.

Learning by doing, by experimenting and accumulating know-how, is a more relevant mechanism in inducing changes and improvements in the action of regional actors delivering IS projects. Within project delivery, learning with end-user/beneficiary is the object of attention. Although existent and increasingly valued, both learning through exchange of knowledge with other actors, and learning by research seem to have had limited relevance so far.

**Narrative, Visions**

The overall regional development narrative is still significantly linked to the model of industry based economic growth which Navarra started developing in the last three decades. With a view to keep its competitiveness and overall sustainability. The perceived need to act upon this model is mainly translated in the discourse of progressively base economic growth upon endogenous development of technological capacity – both to regenerate mature activity sectors (automotive) as to develop emergent sectors in which potential competitive advantage is assumed to exist.

In terms of economic competitiveness, rhetorically (i.e. from textual analysis) ICTs are seen both as a strategic emergent sector of the regional industrial base, as well as relevant tools to be used by businesses in general within their wider efforts of modernization and innovative capacity. Some regional actors consider though that a clear gap exists between rhetoric and the ‘narrative’ which is ‘readable’ from the actions being delivered.
In the widest sense, the emergence of the Information Society paradigm seems to have been regarded by the Regional Government (the actor which would be expected to take leadership and spread enthusiasm among other regional actors) rather passively. Furthermore it seems to have been essentially understood in its more instrumental dimension – i.e. tools to be used depending on specific needs rather than opportunities to promote significant changes within the overall regional development model.

The ‘Plan for the Promotion of Information Society’ defines a vision for the IS development in the region and provides some elements of the regional narrative. The understanding of a number of regional actors, however, suggests it as a relatively ineffective tool in terms of promoting the collective idea that a determined and resourceful approach from the Regional Government in terms of Information Society is being pursued.

**Leadership**

In a general sense, institutional leadership in Navarre is mainly provided by the Regional Government. For the specific domain of IS the leadership it is however understood to have been relatively weak so far – lacking a clear ‘political level’ dimension, leadership form Regional Government comes mainly from the intermediate structures which deliver projects and initiatives.

Rather than a strong actor providing enthusiastic leadership, in Navarre the case seems more to be a set of diffuse and smaller leaderships which come both from the public (regional and local) and private sectors.

This context of ‘shared leadership’ is understood by regional actors to have significant limitations if not supported by political top level leadership - desirably stable over time, based upon a vision and endowed with adequate financial resources, this type of leadership is regarded as essential to provide greater credibility to plans and initiatives, instigate coordination among IS actors and shared narrative which increases collective mobilization.

The acknowledgement that stronger political leadership is needed doesn’t however exclude the need for complementary leaderships, suggested as equally desirable, namely those who come from the private sector, third sector, local governments and civil society structures. Indeed the first is regarded as an essential factor for these to more easily emerge/consolidate and play their roles more efficiently within a coherent framework.

**Openness and Closure**

Partly due to rooted cultural attributes, the region’s ability to draw upon the external relations that go beyond pure commercial trade is acknowledged as relatively limited.

Being identified as an obstacle to the development of a Knowledge Economy, efforts are being deployed to promote changes and minimize the shortcomings of these attributes and promote greater interaction of the region with the outside.

In terms of information Society related matters evidences can be found about increased efforts by the regional actors (public and private sector) to cooperate with similar actors and foster the participation in thematic networks with relevance for this domain, both at national and international levels. Outcomes of these efforts seem however to be still relatively limited.

7.12 Mellestra Norrland (Sweden)

7.12.1 Context

**Overview of Västernorrland**

Västernorrland county is part of a NUTS 2 region Mellersta Norrland (together with Jämtland county). Mellersta Norrland is located in northern Sweden and comprises 15 municipalities. It is a heavily forested region. It has the second lowest population density in Sweden and, therefore, one of the lowest in Europe, and is home to only around 4% of the Swedish population, with most of its
population located on the coast. The region’s population is in secular decline. In European terms, it is classed as an extremely peripheral region. The region had objective 1 status during the 2002-2006 programming period even though the region has well above EU15 GDP average and performs better in this respect than several Swedish regions.

Västernorrland county itself comprise of 7 municipalities. 74% of its land is forested. The county is sparsely populated (11.3 inhabitants per square km). The total population of Västernorrland was nearly 244,000 in 2006. Since 1970, the population of the county declined by 23,400 people. The population is ageing.

Traditionally, the region relied on agriculture, fishing and forestry which still account for about 1/3 of total employment. The inherited industrial structure is based on large enterprises (pulp and paper industry and chemical industry) which helped to foster an “employee culture” (as opposed to an “entrepreneurial culture”). The employment structure is increasingly dominated by service jobs.

Unemployment in the county of Västernorrland stood at 3.6 % in 2006. This is above the national average figure of 3.2%.

Västernorrland: in what sense a region?

Västernorrland county forms part of a NUTS 2 region called Mellersta Norrland (Central Norrland) that also comprises the county of Jämtland. Apart from sharing a Brussels-facing office (Mid Sweden Office), however, there does not seem to be much going on between the two counties. It is therefore more meaningful to focus on the county level.

Västernorrland county is a fully-fledged region in a sense that it has its both regionally elected structures (County Council) and state regional administration body (County Administrate Board).

The County Administrative Boards have a unique position in Swedish democracy. They provide an important link between people and municipalities on the one hand, and the government and central authorities on the other. The County Administrative Board of Västernorrland has a responsibility for regional development and the preparation of a “Growth Programme”, in co-operation with other regional players.

Despite having important governance functions, Västernorrland county does not have a strong regional identity attached to it. Instead, the county could be said to have three sub-regional identities – revolving around three old historic micro-regions (no longer in existence), broadly constructed around valleys centred on the urban centres of Sundsvall, Härnösand and Örnsköldsvik.

There is a degree of uncertainty with regard to the future of counties and the shape of regional governance in Sweden more broadly. A new regional reform that is being prepared by the current government may abolish current counties and merge them into much bigger regions.

Regional understandings of ‘TRANSFORMATION’

The term transformation in relation to ICT use has been recognised in the region. However, there is an awareness among regional players that ICT can bring both benefits and challenges for the region (see also below). In particular, this applies to the “transformational government” which is difficult to implement in the context of small municipalities and within the framework of egalitarian and caring society.

Also there is a recognition of the fact the ICT facilitate new forms of spatial organisation of both private businesses and public administration, some of which may have adverse effects on the region.

ICT and IS in Västernorrland

In part thanks to significant investments made by the Swedish state, the availability of broadband is very good across the county.
The availability of infrastructure translates into very high broadband penetration in households. However, there is a recognition that there is a relatively poor broadband penetration and the use of ICTs by small businesses, which in turn may impact on their productivity and competitiveness.

There is a growing recognition that investment in infrastructure alone is not sufficient and that significant investment should be made in ‘changing peoples minds’ – especially in relation to SMEs.

There is no formal Information Society governance structure as such, although the County Administrative Board has a responsibility for infrastructure in the county including broadband.

There is no formal ICT Strategy at the moment, although one is currently being drafted.

In the meantime, the governance of various IS domains (eLearning, eHealth, eBusiness, etc.) correlates with formal responsibilities of organisations involved, e.g. the County Council is involved in implementing eHealth applications and municipalities are engaged in promoting eLearning. Meanwhile, the Association of Local Authorities provides important impulses in eBusiness and eGovernment domains, especially via EU/international projects.

7.12.2 The Five Clues

Networking

Formal networks at the regional level are primarily organised around the Västernorrland’s County Administrative Board which holds the responsibility for regional development.

The County Administrative Board is in itself a partnership-type body. It is appointed by the government and consists of 13 representatives from various political parties, large and small companies, and education/research institutions.

There are two levels of partnership involving the County Administrative Board and other key regional players. First, there is a “small partnership” which serves as a “growth secretariat”. It includes Västernorrland’s County Administrative Board, the County Council, the Association of Local Authorities and the Labour Market Agency. Secondly, there is a “big partnership” that also includes the representatives of the Mid Sweden University, ALMI business support agency, the Chamber of Commerce, a body representing SMEs and trade unions.

These partnerships play a key role in formulating the county’s “Growth Programme” and partake in EU Structural Funds planning.

However, networking is challenging in Swedish regions due to a strongly centralised sectorisation in the Swedish society. Formal networking, in other words, is clearly an uphill struggle, although anecdotal evidence suggests that fighting “sectoralism” in Västernorrland is perhaps more successful than elsewhere.

At the local level (e.g. Sundsvall municipality), local informal networks do exist between key individuals driving local ICT agenda and producing a number of interesting projects.

Learning

In terms of ‘learning ahead’ there is no permanent formal economic or technology forward-looking intelligence unit, but key regional indicators (economic, demographic etc.) are being published annually by the Västernorrland’s County Administrative Board.

Learning from projects is considered as very important. For instance, the participation in the (EU) UNDERSTAND project is perceived as having a critical effect in understanding (learning) where the region is in terms of ICT usage and what needs to be done.

In terms of institutional learning a significant shift is expected in the near future in a form of a new administrative-regional structure that is being prepared by the current government (this may include a completely new institutional landscape – including the abolition of current regions/counties and their re-grouping within much larger regions).

Two key national bodies, both involved in promoting eLearning have currently important operations in the region (both in Härnösand) – the Swedish Agency for Flexible Learning and the Swedish Agency
for Networks and Co-operation in Higher Education. However, both organisations face an uncertain future under the reorganisation plans of the current government.

**Narrative, Visions**

The Swedish law promulgates that all citizens are treated equally and all have equal access to services. This egalitarian ethos permeates the narratives, visions and policies of all institutions. Many ICT initiatives are derived from this egalitarian drive and from the efforts to provide quality services to citizens.

The issues of social inclusion, gender equality, integration of immigrants, environmental sustainability etc., seem to be more prominent than issues of business development or competitiveness.

This does not mean that competitiveness agenda is forgotten. Indeed, the county’s “Growth Programme” has an overall objective defined as “increased competitiveness and renewal in a global and knowledge-oriented economy – for more jobs, more companies and higher incomes”. The programme, inter alia, seeks to support clusters and innovative systems including advance information systems and company services.

The “Vision Västernorrland 2010” published by the Västernorrland’s County Administrative Board indicates “a route to an even more attractive and competitive Västernorrland” under the motto: “Västernorrland offers opportunity and diversity”. The vision identifies seven development goals. These include goals such as favourable business climate and growth of clusters, lifelong learning and skills, alongside more socially and environmentally-oriented objectives.

There is no crystallised vision with regard to ICTs, but a formal ICT Strategy is now under preparation. There is a ‘common hope’ that ICTs will enhance company and institutional growth, but there are also concerns about the impact of ICT on centralisation.

**Leadership**

Västernorrland’s County Administrative Board is formally leading on the issue of regional development and has a co-ordinating role in relation to the Structural Funds. More recently, it is also been involved in the drafting the overall ICT strategy which is in preparation.

Other key players in the region are leading within their areas of formal responsibilities (e.g. the County Council has been very active in developing ICT solutions for Health Care; municipality of Sundsvall has been working on ICT solutions for primary schools and pre-schooling institutions).

It seems that in most cases, enlightened individuals take a leadership role and push the agenda forward.

The two nationally-funded bodies located in Härnösand (the Swedish Agency for Flexible Learning and the Swedish Agency for Networks and Co-operation in Higher Education) provide an important leadership role in eLearning nationally (and perhaps internationally!). Their direct impact on the host region is hard to estimate though. Despite their apparent success, the future of these two bodies remains unclear (see above).

**Openness and Closure**

There is a feeling that a certain degree of ‘shyness’ or ‘humbleness’ may be present within the region – especially with regard to international openness.

This may be based on an overly critical self-appreciation coupled with modesty.

However, participation in international (especially European) activities has been growing recently, e.g. active participation in eris@ network (UNDERSTAND, IANIS) and Northern Periphery projects.

Other factors

National Swedish investment in broadband infrastructure means that Sweden is one of the top performers in Europe in terms of broadband penetration. This also offered Västernorrland a huge advantage vis-à-vis other EU peripheral regions which struggle with basic infrastructural issues.
Regardless, the transformative use of ICTs in Västernorrland faces a number of challenges including:

- **Demographic:** long-term de-population and ageing population (with lower competence & interest in ICTs);
- **Policy:** until recently, the policy support for the use of ICTs has been underestimated. There is a growing recognition that a change of people’s minds is necessary (e.g. in SME sector).
- **Geographical:** remoteness of many areas makes it harder for policy makers to institute cultural change that require face-to-face contact.
- **Political:** introduction of ICT solutions may lead to job losses that many local/regional policy makers are trying to avoid.
- **Technical:** unification of technical standards/platforms used by various players within the region can be challenging.
- **Funding:** ICT projects (focusing on the use of ICTs) implemented so far seen as “a drop in the ocean”.

Systemic institutional changes that are being prepared at the national level will have significant effects the functioning of institutions in the region (in both positive and negative ways). Some fear that negative effects (in part supported by ICT deployment) will prevail.