

This briefing document was written for people involved in the formulation of policies for development of the knowledge-based economy and society at regional level. The document first explains the basic challenge, namely the persistence of regional disparities in exploiting the potential of information and communication technology (ICT). It then shows how the concept of transformative use of ICT can best be understood in order to inform policy-making. The remainder of the document is taken up by discussion of a number of ways in which policy can help regions boost their capacity for transformative use of ICT, which – we suggest – implies the need to strengthen their regional innovation culture.

The Challenge

Development of the **knowledge-based economy & society** is among the major challenges facing European regions today. There is broad agreement that effective use of information and communication technology (ICT) has the potential to produce considerable social and economic benefits across all types of regions. So far, however, it appears that the degree to which different regions have actually been able to **translate ICT's potential into real progress** has varied significantly.

How, then, can regions best tap the full potential of ICT and the knowledge-based economy & society? And how should regions react to recent paradigmatic developments such as the rapid globalisation, the network society and the changing international division of labour – all of which are directly related to applications of ICT.

Until now, most efforts by regional policy-makers have focussed on laying the **infrastructure for ICT deployment**, and on fostering the **uptake of key ICTs** such as the Internet by private households, businesses, the civic sector and government. Across the EU territory, significant progress has been made on both accounts, as shown for instance in the regional data collected by the

Community Survey on ICT Usage in Households and by Individuals.

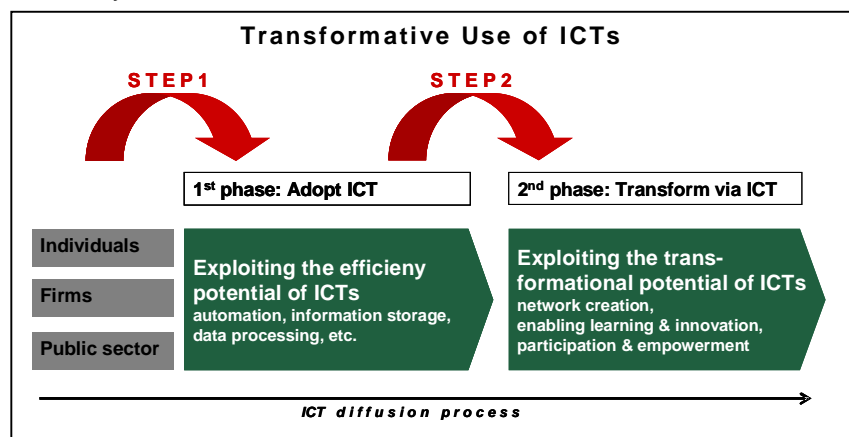
Indeed, there are reports of regions in Europe which seem to be able to take up new technologies and use them to change their economic and social prospects in positive ways. Available evidence suggests, however, that this is the exception rather than the rule.

Many EU regions appear to suffer from a **low capacity to make effective use of ICT**, for example to create new and successful products, overhaul processes and organisational structures, and foster social innovation. In other words these regions, while having taken up ICTs, fail to use them in **transformative ways**.

Making Sense of Transformative Use of ICT

Transformation as a particular kind of ICT-enabled change has recently come to the fore in the public debate. But how can we distinguish transformative uses of ICT from other, more incremental or supplementary uses of ICT?

'Transformative' is understood here as uses of ICT that open up substantially new ways for individuals, firms and governments to achieve their goals. In many cases, this refers to activities which **would not have been possible** without ICTs.



In order to demonstrate the difference between transformative and non-transformative uses of ICT, it appears useful to think of ICT diffusion as a two-phase process (see Figure).

In a first phase, ICT is adopted to do better what has been done before already, i.e. to increase efficiency (speed, throughput, output, variety, productivity, etc.). While significant improvements of **efficiency** can be obtained this way, the true potential of ICT to enable new ways of doing things is not being exploited.

The second phase is about **effectiveness** rather than efficiency, i.e. finding new ways to achieve the fundamental regional development objectives. This requires that traditional processes and structures are questioned.

The importance of ICT for regional development stems from the fact that its inherent qualities strongly **enable transformative change**, for example by making **network creation** much easier and more powerful, by improving the conditions for **continuous learning and innovation**, and by providing numerous ways in which people, in their roles as citizens, consumers, patients, learners, creators and so forth, can be **empowered**.

If, then, some regions find it difficult to make the step from simple adoption towards transformative uses of ICT, but other regions do not: How can such differences between regions be explained?

The evidence indicates that ICT investment alone is insufficient to achieve transformational outcomes – it needs to be accompanied by other changes in structures, processes, practices and attitudes, as well as an enabling environment. The former include, inter alia, organisational change, willingness to experiment, development of appropriate skills, innovation and effective change management. This is where the notion of **regional innovation culture** comes into play.

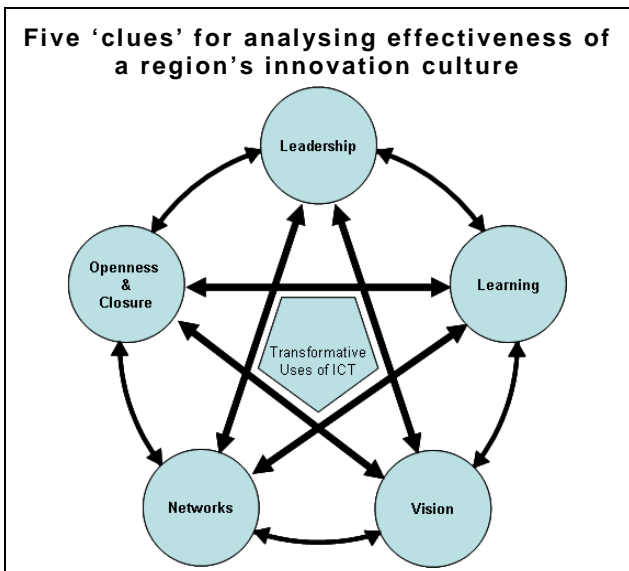
The Role of Regional Innovation Culture

Regional Innovation Culture is understood as the habits and routines ('how things are done around here'), plus the institutions which underpin innovation-related developments, in a region. Social and cultural explanations of change have in recent years attracted increasing interest among researchers of regional development but have had, so far, only limited impact on policy-making.

Research in TRANSFORM established five key factors which help explain the different degrees of regions' success in the knowledge-based economy & society. These 'soft' factors comprise networking, the development of shared narratives and visions, (regional/collective) learning leadership and the propensity and willingness to follow, and openness & closure.

These five 'clues' reflect the innovation culture with which a region is endowed and thus influence

the likelihood that a region can successfully adopt ICT to bring about transformational change (doing things in new ways, doing new things, developing new markets).



Using the five 'clues' as an analytical device, the TRANSFORM case study research identified a number of **good practices** as well as typical weaknesses.

Our evidence suggests that where **networking** is successful, it is not treated in a casual ad hoc manner. Rather it needs to be strategic, well planned and professionally executed. Networking as a device for regional development is most powerful if it involves the interaction of idea networks, expertise networks and resource networks. Unfortunately, social networks tend to be underfunded in practice, as investment decisions continue to target 'hard' infrastructure more than anything else.

Developing **visions** plays an important part in building shared objectives or 'common purpose' and the creation of appropriate (social) structures may help increase the willingness of key actors to cooperate and collaborate. Regions need to be sensitive, however, to signs of 'vision fatigue': The stimulating effect of a widely communicated vision can quickly evaporate if progress is perceived as too slow, or if it is perceived as favouring some segments of the regional population at the expense of others.

Collective and lifelong learning are important for underpinning a region's capacity to develop transformative uses of ICT. If knowledge is the most fundamental resource in the contemporary knowledge-intensive economy, then learning is the most important process. Experimentation is important in achieving transformational change through ICT but this implies taking increased risks – so regions have to be willing to learn to encourage experimentation and 'learning by

doing', becoming less risk-averse and more tolerant of failure.

Regional development is a particularly complex multi-agency change problem which necessitates **effective leadership** which, in turn, is an important dimension of a region's social capital. In particular, public sector bodies must be willing to exercise a dynamic leadership role in the absence of alternatives. Note that effective leadership also requires willingness to follow, i.e. a favourable leader-follower dynamic.

Regions that have **openness** in their institutional environment and in people's mindset often perform better since they tend to be receptive to new ideas, better able to adapt, and to become leaders in innovation processes. What seems important here is that a region is both open to the flows of people, technologies, ideas and images, but also capable of keeping a certain distance from that circulation, having the capacity to distinguish between those globalised ways of doing things and 'the way we do things here' – thereby maintaining a sense of **closure** by preserving their regional identity.

TRANSFORM recommends that these five 'clues' are used by regions not only as an analytical tool for exploring their own strengths and weaknesses, but also as a structuring device for debating regional development strategies among stakeholders.

Importance of the Regional Level

We argue that the role of the regions in delivering transformation in the context of i2010 and successor initiatives is central. The integrating mechanisms, the networks and the resources do not exist at other levels. Without the regions, we believe that Europe's hopes for transformation through ICT will not be delivered.

Regional policy making is vital in most regions to ensure effective planning and implementation of effective programmes, including those for the development of a knowledge-based economy and society.

In a few regions, the market is strong and can be relied upon to ensure progress (with respect to investment in ICT, but also in innovation etc). In most regions, however, the market has weaknesses and cannot be relied upon. There are many aspects of regional planning and development that simply do not work if left to market forces alone. For example, ICT related investment can sometimes have negative impacts if not countered by appropriate public policy responses and initiatives (including exclusion, agglomeration etc.). At the same time, if the benefits of the Information Society and ICT investment are to be realised, the public

authorities usually need to take some steps in terms of formulating policy and seeing it implemented (acting as catalyst, leader, exemplar, coordinator, partner etc.).

This is true especially for regional Information Society development and investment in ICT. The IRISI and RISI initiatives demonstrated the importance for regions to develop and maintain Information Society strategies. Indeed, largely as a result of these initiatives, the Commission decided to request all regions receiving Structural and Cohesion Fund support in the last programming period to prepare and submit a regional Information Society strategy. As a follow-up for the programming period 2007-2013, the Commission required Member States and regions to ' earmark' the budgets they allocated in support of the Lisbon objectives – including investment in ICT and Information Society (i2010) goals.

It is said that most people lead their lives (live, work, rest and play) for most of the time in their local/regional environment. Accordingly, the levels of government most relevant to most people are the local and regional levels. It has been suggested that people (in general) obtain as much as 80% of public services from the local level. Thus local and regional government are better aware of and can meet more sensitively (than central governments) the needs and requirements of their citizens.

For this reason, it is important to develop Information Society strategies below the level of the Member State. However, while central governments tend to be overburdened with national policy and priorities, the local level can be too fragmented to achieve coherent, integrated Information Society strategies. So, the region is deemed the level best suited for shaping and managing Information Society strategies.

Regional authorities tend, therefore, to be best suited to the task of ensuring that regions do indeed develop suitable Information Society strategies and policies and for seeing these implemented through appropriate programmes. However, it is important to acknowledge (a) that (in larger Member States, at least), national policies and framework can and often do have a significant influence in shaping ICT-related policies and strategies at the regional level and (b) that with regard to policy strategies and components 'no one size fits all', one reason being that there is considerable variation in the powers and competences of the public authorities (national, regional and local) across Europe.

Finally, if regional policy is partly shaped by Member State (and EU) policy on the Information Society, then the effectiveness of implementation at national and European levels is in turn shaped by what is done in the regions and by the regions.

Thus, we argue the need for a multi-layer governance process for European Information Society development in which the regional level has some voice.

How EU regions can contribute

Policy-making at the regional level can play a key role in improving a region's innovative performance. Regions need to plan their (overall) development in an integrated and strategic manner, concentrating above all on creating a favourable environment (framework conditions including a supportive innovation culture), in which ICTs will doubtless play an important role.

Since every region is different, each must adopt a strategy and plan that is specific to itself and its own peculiar circumstances and context(s). There is no one-size-fits-all solution. At best, there is a series of issues to be addressed and a set of collective social attributes to be further developed.

A key recommendation derived from research in TRANSFORM is that policy-makers need to understand their region's innovation culture and try to make ICT policies work, as far as possible, with the grain of that culture. Each region has to find its own (regional) solution to its problems, according to its own values, endowments and other competences.

History, geography, culture and other 'soft' factors matter greatly, and so each region needs to carry out a careful analysis of its 'endowments' and act accordingly. While it is true that "the historical trajectory of a region sets serious limits to the windows of opportunity with regard to relevant policy options"¹, regional culture must not be used as an excuse for inaction, but rather should be taken as a starting point for development of an innovation policy which is tailored to the particular cultural traits of the region.

We therefore recommend that regions apply the five 'clues' discussed above for the purpose of self-analysis and for focussing the debate among regional stakeholders.

Once the strengths and weaknesses of the region's innovation culture are understood, action can be taken in a clearly targeted way. Some of the areas which are most likely to deserve policy attention are outlined below for each of the five 'clues'.

Networking

We recommend that regions devote particular attention to the creation and development of social networks which are able to build bridges

across domains, levels and actors from diverse parts of the economy and society. Of particular importance is the interaction of what we have called idea networks, expertise networks and resource networks: specifically, that each on its own will fail. Expertise and resources without ideas are prone to set off cautiously and conservatively – it may achieve something but nothing very transformative. Ideas and resources without expertise generate interesting but ultimately failing projects that can lead to cynicism about the potential for transformation, while ideas and expertise without resources lead to promising pilots, plans and schemes but without follow through and impacts.

Networking requires commitment to invest, over a longer duration, a certain amount of resources. It is important to remember that resources refer not only to financial resources but also to (peoples') time and 'political legitimacy' and that expertise is not just technical and quasi-technical (e.g. financial and project management) expertise but also needs to include domain expertise in fields such as health, education, social inclusion etc.

Networking benefits from firm albeit dynamic and open structures. Such structures can help avoid a situation where the success of networking in a region depends on the engagement of single key persons, after whose departure networking activity can then easily grind to a halt.

But while structured systems for networking should to be implemented, this needs to be balanced with informal networking. Capturing information and knowledge in a formal network is feasible to a certain extent, but innovation often relies also on informal interactions and networking in which capturing, sharing and extending learning is very much more difficult.

Fortunately, it has become more feasible to create appropriate environments for this purpose, as Web 2.0 applications and related technology provide powerful tools for sharing of information and knowledge in a more informal fashion. Indeed, anecdotal evidence suggests that social networking sites can act as a powerful supporting mechanism to such informal groupings.

Taken together, we recommend that regions take stock (carry out an audit) of the various networks in which they participate and seek to map the ways these inter-relate and the expertise domains that they cover. In the light of such analysis, a region can begin to make better sense of what it has and where the gaps might be. On the basis of such an assessment, we recommend regions should develop a strategy and action plan – with the important proviso, of course, that its development involves all main stakeholders and secures their commitment to the plan. The strategy and action plan need to be framed within

¹ Cooke, P. (ed)(2006) 'Constructing Regional Advantage – principles, perspectives, policies'; Report prepared by an independent expert group for the European Commission.

the context of, and be consistent with, higher-level plans (e.g. the wider regional development plan and, where relevant, the Regional Operational Programme).

Vision-building

Developing shared visions can be difficult and may take time – but the time taken will pay off. We recommend starting the process with an awareness-raising campaign which should help to establish major aspects of regional identity and identify who the key actors might be. At the same time, a debate should be raised about issues of regional development in general (the end goals) and transformative uses of ICT in particular (and their potential benefits). The ultimate objective is to generate shared perceptions about the priorities for development and to secure the commitment of the key actors to them.

Regardless of the degree of autonomy/self-government capabilities of each region (and likely to be of more importance in those ‘regions’ where formal powers and competences are not well consolidated), the success of Information Society related programmes and/or projects seems to be linked to the ability to achieve widespread mobilization and continuous motivation of actors – ‘deliverers’ and ‘end-users/beneficiaries’. Regions should develop their capability to communicate clear messages, which involves identification of those that are recognized (within each region’s own governance arrangements) as the legitimate actors to ask for the commitment of others – typically, although not necessarily exclusively, elected politicians.

According to a collective action perspective, the regional level is the optimal level to get all relevant actors involved, trying to solve, conciliate and coordinate their needs and expectations in a process to develop consensus about priorities and formulation of specific strategic plans. This perspective requires long-term policies, as independent as possible of the local electoral cycle.

Leadership

The key issue in leadership is to create a favourable leader-follower dynamic, as it is of little help if there are too many leaders and not enough followers! Our research suggests that a region either has good leaders or it doesn’t. If it doesn’t, then the region needs over time to try to develop individuals to assume such roles (grooming) or else to use the (labour) market place to buy someone in (head-hunting). Neither scenario is ideal: one is slow to bring results and the other risks failing to understand the region or failing to deliver a commitment to it. On the other hand, we advocate the importance of collective leadership

and its usefulness in situations in which individual leadership may be absent.

In particular, the public sector must be willing (where necessary) to offer strong dynamic leadership – but this should be tempered with an inclusive, open-governance approach to decision making. Bearing in mind that initiatives to bring about transformative uses of ICT are seen as collective action problems, it will pay to reward participation with shared responsibility – thus forming a part of a ‘collective leadership’ approach.

We have said that initiatives which induce and encourage transformative uses of ICT will not simply happen. They call for explicit efforts of mobilisation and, for this reason, in addition to agreeing overall leadership responsibilities, we recommend the creation of a regional forum or steering committee in which the main actors are represented. The steering committee should be charged with overall responsibility for the initiative, its progress and direction.

We advocate also the setting up of a secretariat (or management unit or similar) to take care of the day-to-day organisational requirements and to help maintain progress. This secretariat should have an initiative director as well as one or two other staff who can take care of promotion, awareness-raising, arranging meetings, support for the steering committee etc.

Collective Learning

It may be necessary for regions to develop new or additional structures or mechanisms to facilitate regional learning. In the context of specific projects, we strongly recommend earmarking some of the funds for reflection and learning and for the codification (documentation) of that learning so that others can share the experience and the knowledge that comes from it. Too often, those who create innovation and generate good practices are too busy with their next project to devote time to communicating with and ‘educating’ others (e.g. through documentation and other means). Only a certain degree of formal knowledge management can help avoid the loss of experience. The regional level appears optimally suited for this activity.

It can be argued that successful learning regions should have an ability to ‘learn ahead’ – a collective capability of regions not so much to adapt to change as to anticipate it and change accordingly. We therefore suggest the need to promote and support further the use of regional Foresight initiatives (through the Structural Funds and other means). Foresight projects may also be used as a tool within a wider strategy for enhancing regional debate among stakeholders

with the aim of agreeing on a strategic vision for the future development of the region (see above).

It is clear that ICTs have the potential to dramatically change people's lives and create promising, disruptive business models, but these opportunities have until now only been superficially realised, either economically or socially. We believe that this can be attributed in part to lack of interdisciplinary understanding of the various elements which are required to effectively utilise technologies across a number of spheres. There is a need for more interdisciplinary training in order to create a cadre of ICT researchers and practitioners who recognise the complexity of the processes involved in the creation, implementation and transformative use of these technologies, and can bring a set of technological and social competencies to bear in a number of spheres where ICTs are (or could be) present.

Analysis of the TRANSFORM Internet user survey found that people who make extensive use of 'participative Web' applications are (other things being equal) more likely to have strong social capital than people who do not use such applications. Our research findings also suggest that civil participation at regional level – in the form of active engagement in decision-making in local or regional groups, clubs, societies etc. – is greatly facilitated by use of ICT. Given the importance which scholars ascribe to social capital as a factor that facilitates regional learning, these findings suggests that regions should foster uptake of the Internet and other ICTs for the purpose of social networking. An initiative in this area would need to establish and communicate good practice by identifying successful applications within a regional context, and by raising awareness about the benefits to be derived from participative web applications.

Openness

Openness is a vital part of networking and regions should create ways to ensure they are open to new ideas, new knowledge, new technologies etc. This implies having an open attitude with respect to inward migration, business networks, and political relationships and in embracing ideas from elsewhere, not adopting them slavishly, but interpreting them in the particular regional context.

In practice, regions are recommended to build formal structures for exchange of knowledge and experience with other regions, as well as to explore the extent to which informal linkages exist which could be exploited for co-operation. Regional politicians are recommended to set an example for open-mindedness by openly identifying and discussing experience from other regions, and by inviting a public debate about the

extent to which experience from other regions can be transferred to their own region's context.

Regions are recommended to make fullest use of those opportunities for sharing good practices that already exist. The 'not invented here' syndrome appears to have a substantial number of adherents but this only results in the 're-inventing of the wheel', wasting scarce resources on the one hand, and failing to take advantage of good practices that can be adapted and adopted thereby accelerating development at a lower cost on the other hand.

Transforming peripheral European regions into dynamic 'learning regions' remains a formidable challenge. US scholar Richard Florida² argues that creativity has become the critical economic resource and that economic development and prosperity at national, regional and urban levels is now dependent on developing, but more so attracting, what he terms the 'creative class'. This school of thought argues that regions need to retain their graduates and attract new ones, which requires policy action for fostering "talent, technology and tolerance".

Florida, is, of course, chiefly concerned with the economic sphere and this school of thought remains hotly contested. Similar creativity must be applied in the sphere of social policy (and links between creatives and creativity in the two broad policy areas must also be developed to create synergies).

To summarise, there is much that regions can do to help themselves including adoption of an explicit and strategic approach to inter- and intra-regional networking, development of systems for collective learning, addressing leadership (and followership) issues, creating shared visions and narratives through consensus and partnership building, and fostering openness to lesson learned from outside the region. Some tangible 'structures' (e.g. steering committees, secretariat, etc.) will be needed for supporting such efforts.

How the European Commission can contribute

The main EU policy instrument for supporting information society development within the context of the Lisbon Agenda is the i2010 strategic framework. Among EU regions, there is widespread agreement regarding the Lisbon goals. Progress towards achieving them, however, has been hampered, in our view, by ineffective implementation. In part, we suggest this is the result of the overly technocratic and

² Florida, R. (2002) *The Rise of the Creative Class*, New York: Basic Books.

'less appealing' nature (to regions) of the i2010 policy initiative.

i2010 is based on three pillars, the first two of which ("creation of a Single European Information Space" and "strengthening innovation and investment in ICT research") can be expected to create a level playing field, which favours those regions with a head start in ICT uptake, research and innovation. In contrast, the third pillar ("supporting inclusion, better public services and quality of life") opens up space for the 'ordinary' regions – the vast majority that have neither leading ICT research nor strong business services and media sectors that might be expected to benefit from the first two pillars.

We stress the need for the successor to the i2010 initiative to cover the medium to longer term; in the process, we suggest taking stronger account of the development of appropriate social capital at regional level, as well as the conditions necessary to achieve transformational uses of ICT, and to do so in more appealing ways that will attract the interest, support and participation of the regions.

We conclude that the successor of the i2010 strategic initiative should adopt a multi-scalar approach (see figure) – encompassing multi-level and multi-agency cooperation – involving EU, national, regional and local level actors, and corresponding levels of governance. Up to now, the regional (and local) level has been inadequately included in the process – and most regions continue to be inadequately equipped to develop and adopt appropriate indicators and benchmarking.

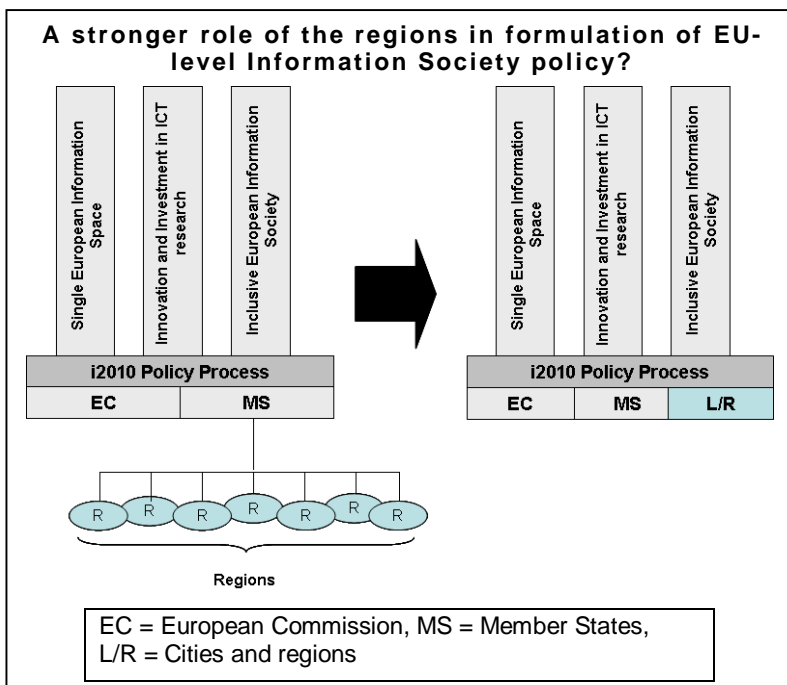
Within the context of regional development and cohesion policy, investment in ICT infrastructure has moved from being largely taboo to being a key policy tool. We support this 'change in mood', but emphasise that such investment will need to be supported by a range of other measures if Europe and its regions are to utilise the technologies to their fullest extent.

Support for ICT investment as a means to achieve the knowledge-based society and economy has recently been given added impetus by the emergence of broadband technologies. There are strong indications that i2010 has been successful in reducing the infrastructure gap between rural or otherwise disadvantaged regions on the one hand and strong, central regions on the other hand. With regard to broadband availability, in particular, previously under-served areas of Europe have made a lot of progress in recent years.

The next step should now be to develop the capabilities of these regions to make best use of broadband; this implies the need to foster their absorptive capacity and the effectiveness of their regional innovation culture.

Thus, in line with TRANSFORM's emphasis on the uses which are made of ICT (rather than ICT uptake as such) we recommend that the successor of the i2010 strategic initiative places greater stress on transformative uses of ICT and on nurturing the social and cultural environment in which transformative effective uses of ICT can flourish. Because of the diversity of regional contexts and agendas in Europe, this will require an explicit role for regions – so as to make a more effective contribution to the European information society and knowledge-based society.

The earmarking of Structural Funds for the Lisbon Goals is welcome but there needs to be more emphasis on investing (time and money) in the soft factors.



In the absence of an appropriate specific funding instrument (since Innovative Actions has now been abandoned, on the grounds that experimentation is now mainstreamed), we suggest that the EC could invite ("Convergence" and "Regional Competitiveness & Employment") regions to use their Regional Operational Programme funds to finance a joint inter-regional learning platform and programme (i.e. mainly at their own expense). The EC's contribution could, in this case, be limited to providing (and funding) the coordination mechanisms as well as technical and domain-specific expertise.

Recent political and economic upheavals in many of the New Member States and regions have resulted in low levels of social infrastructure. In

particular, regional government and governance in many New Member State regions is new-born and as yet quite immature. The European Commission needs to recognise that much more effort, money (and time) will need to be channelled into New Member States and their regions to bridge the digital gap and promote the knowledge economy there. We argue that the majority of New Member State regions suffer from a low capacity not to install the required ICT infrastructure, but to make transformative use of ICT in order to achieve progress towards their most pressing goals – including a successful integration in the global economy, lower unemployment, and stronger social cohesion.

TRANSFORM argues that transformation (through ICT adoption) is a collective action problem in that it implies co-ordinating (enrolling, mobilising) a large number of diverse actors – to generate new ideas and to implement them through coordinated, but not centrally directed, action. Without doubt, the EC has significant experience of providing support systems for relevant aspects of regional development derived from the earlier **Innovative Actions programmes** (e.g. RIS, RITTS and RISI³), experience has been gathered how to address collective action problems using a multi-level, multi-agency, multi-domain approach. We recommend that the European Commission initiates in-depth research into the experience of these initiatives, as well as comparable schemes in other parts of the world, against the background of today's regional development imperatives. This would help identify good practice in using EU financial aid for the support of network creation for fostering transformational use of ICT.

The accumulated (and sometimes codified) experience and expertise of the RIS, RITTS and RISI initiatives – but especially the underlying processes – could be put to good use in encouraging and supporting regions to plan and to implement transformational uses of ICT. Of course, there are differences but any such new initiative would (should) not be starting from scratch.

It is important that EU institutions continue to emphasise the importance of organisational change, skills development, experimentation, innovation and effective (change) management in the development of the information society and the knowledge-based society. In this context, we believe that rhetoric matters and it matters most when the messages are clear and succinct. The Commission should not underestimate the

³ *The 2000-06 Innovative Actions programme is subject still to evaluation but the Regional Innovative Actions Programmes (RIAPs) appear to have been much less successful than the earlier IRISI and RISI programmes. They were project based with fewer opportunities for strategic intervention or for capacity building.*

influence that key EU publications can have on those responsible for regional development.

The European Commission should provide a clear message to regions and their administrations about the importance of transformational uses of ICT, the soft factors necessary for such development, and how this fits with development of the knowledge-based society and achieving the Lisbon goals. This could be achieved in a variety of ways but one possibility is to stage a high profile event such as a major conference (perhaps in 2009 – The EU Year of Creativity & Innovation) on the theme of Regional Transformative Uses of ICT.

We recommend that the Commission should consider how it might support the development of schemes and mechanisms for helping to promote/build social capital around transformative uses of ICT including, inter alia, eLearning (ICT-mediated) training courses, 'Summer Schools', Guides to Good Practice, staging a high profile Good Practice Conference with an Exhibition and Awards with a follow-up Best Practice Web Portal (to build a Virtual Community of practitioners). This could include the idea of exchanges of personnel or secondments between the Commission, member states and regions, particularly involving those from the New Member States. We stress again the importance we attach to multi-scalar inter-institutional working and that such an exchange scheme or secondments could help in building a more effective way of working.

How providers of statistics, including the European Statistical System, can contribute

We strongly endorse the Commission's recognition of the need to improve the capacity of regions to reinforce a **regional benchmarking culture**⁴. It is also to be welcomed that from 2008 onwards, all of the EU's national statistical institutes are obliged to produce regional breakdowns of basic indicators about ICT take-up at NUTS1 level.

In general, though, indicator availability at the regional level is still poor. There is a clear need to enhance the existing EU benchmarking process and the i2010 indicator set so as to meet the specific needs of regional policy making.

Given the central importance which benchmarking has within the Lisbon process, and the amount of funds which the EU spends on ICT-related investments at regional level, it appears obvious that benchmarking as a tool for policy-making

⁴ *Commission of the European Communities (CEC)(2007) 'Growing Regions, Growing Europe. Fourth Report on Economic and Social Cohesion', Luxembourg: Office for Official Publications of the European Communities - emphasis added.*

should be available for regional policy-makers as well as those at EU and Member State levels – and it is very unfortunate that this is not the case. Thus, any policy which attempts to foster transformative use of ICTs is currently penalised by the lack of an appropriate statistical base. This absence should be rectified as soon as possible.

In addition to the need for availability of basic ICT indicators at NUTS2 level, more advanced statistical measures should also be provided. As has been argued above, specific attention needs to be given to the role of 'soft factors'. We recommend that, as the successor of the i2010 initiative is being developed, the current set of ICT related indicators should be supplemented in order to better reflect the impact dimension of ICT use (including the nature, purpose and meaning of use) – rather than simply availability, access and extent of use.

An important way through which a benchmarking system provides value is by offering time-series data, especially if these are available across regions to allow comparisons. This means that the investment in a benchmarking system bears its biggest fruits in the medium term rather than the short term. To avoid this leading to under-investment in indicator collection, we recommend the Commission to seek ways to fund regions' investments in this area.

A limited number of key indicators of transformative use of ICT should be agreed upon, and then operationalised. In particular, policy makers need 'leading indicators' that underlie the notion of a regional innovation culture and the capacity for ICT-enabled, transformative change – such as network creation, continuous learning and innovation, and participation and empowerment.

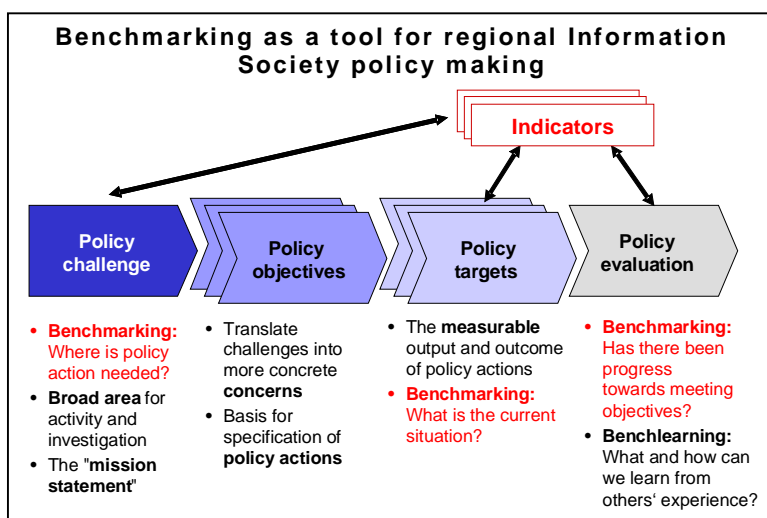
Such indicators would allow regions to measure progress over time and to compare themselves against other regions, thereby identifying their main strengths and weaknesses.

But even a 'perfect' benchmarking system, if it existed, should not be understood as an end in itself. From the viewpoint of policy-makers, statistical data derived from benchmarking exercises only have a value within a system of tools for supporting policy formulation. Not only does the analysis of quantitative data need to be supplemented by qualitative analysis. Benchmarking should also be embedded in a more holistic process of **benchlearning**, which is the translation of the findings of comparative analysis into insight which takes full account of the specific situation in the regions being compared.

This is a point that emerged strongly at the eris@2008 conference.

Not every policy action which qualifies as "best practice" can be emulated by any region – in fact, this appears to be the exception rather than the rule. But identifying good practice, understanding how it was achieved, and drawing conclusions as to which lessons can be drawn given the specific situation of one's own region, is always possible. Benchlearning implies a highly collaborative process of data interpretation and discussion about what the data mean.

Future research and implementation projects should therefore have a strong focus on benchlearning rather than on data generation for indicator building or classical benchmarking. We recommend initiating a follow-up project to UNDERSTAND⁵ which could demonstrate how the data collected via harmonised regional observatories can be utilised for the purposes of benchlearning. It would need to suggest a benchlearning methodology, which could then be



agreed upon by Member States and adopted on a wider scale.

For the purpose of collecting data at the regional level, a question of vital importance concerns the regional breakdown being used. Eurostat, DG Regio and other Commission bodies mainly use the Nomenclature of Territorial Units for Statistics (NUTS), especially for the framing of Community regional policies. Comparability problems result from the fact that NUTS is mainly built on existing administrative units in the Member States, as opposed to a functional regional classification which would more adequately reflect the internal structure of the territory, as well as size and population of a region⁶. This is unfortunate for scientific regional analysis in general.

⁵ See <http://www.understand-eu.net>

⁶ See OECD (2002) "Redefining Territories - the Functional Regions", Paris: OECD.

Many researchers have pointed out that the use of diverging concepts (e.g. of unemployment) for national comparisons is problematic. This is usually acknowledged and treated as a problem by policy-makers. However, the use of different territorial units is usually not identified as a challenge in this respect (see e.g. the Cohesion Reports published by the European Commission). However, as can easily be shown, aggregation of data into territorial units can considerably distort findings.

We are aware, however, that a switch to functional regions as the basis for EU regional policy will not be feasible in the short- or medium term, but this does not mean that improvements should not be sought over the longer term.

We conclude by stating that benchmarking as a tool for policy-making, and benchlearning as a process for building social capital and developing a strategic approach, should be available to regional policy-makers as well as to those at EU and Member State levels, and that indicators used for benchmarking should take better account of the uses being made of ICT, with a particular emphasis on transformative use. Further efforts will be required to advance towards these goals.

Annex: Research Methodology

Empirical research in TRANSFORM consisted of 12 case studies in selected EU regions, plus a regional Internet user survey conducted in the same regions.

Readers should note that since empirical research in the project was limited to a small number of EU regions, TRANSFORM's findings are neither considered to be comprehensive in their scope, nor are they meant to be representative for the entirety of EU regions.

Case study research

In selecting the case study regions, a broad geographical coverage of the European space was sought, including old Member States, both north and south, and New Member States. As much as possible, a degree of diversity of regional types across Europe as well as variation within individual countries was sought as well. Selection criteria included general indicators of social and economic development as well as the relative status with regard to uptake and use of ICT.

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

- Schleswig-Holstein and Thüringen (Germany),
- Emilia Romagna (Italy),
- Pomorze and Malopolska (Poland),
- Bratislava and Vychodne Slovensko (Slovakia),
- Extremadura and Navarra (Spain),
- Mellersta Norrland, (Sweden),
- South Yorkshire and East Anglia (UK).

The selection 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 or, alternatively, as exemplars of good practice. Finally, unlike similar studies, 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 culture to those that have a weaker identity and more ambiguous boundaries.

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 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. Individual case study documents were prepared but have been retained within the consortium to protect the confidentiality of individual informants.

The case study analysis was based on an iterative and comparative design which worked through the development and "testing" of theoretical statements against the data gathered in the 12 regional case studies.

More information on the findings from the regional Internet user survey can be found in the document "TRANSFORM WP1 Synthesis Report", which is available for download at the TRANSFORM website, see www.transform-eu.org/publications/publications.html.

Survey research

The TRANSFORM regional Internet user survey was conducted in late 2007/early 2008. A probability sample was drawn with the universe set as the total online population aged 18-64 in the twelve EU NUTS 2 regions also covered by the case study research (see above).

Topics of the interviews included advanced, transformative uses of the Internet and mobile applications, social networks and the role of ICTs for participation in them, the perceived effect of Internet use on living conditions in the region, and ways for obtaining ICT skills.

The sample size was at least 300 successful interviews per region, with the exception of Slovakia where, because of the small size of the country, only 200 interviews could be carried out in the selected NUTS2 regions. The total sample size was 3,588.

The online interviews took 15-20 minutes on average. Field duration was 5.5 weeks.

More information on the findings from the regional Internet user survey can be found in the document "TRANSFORM Indicator Piloting Data Report", which is available for download at the TRANSFORM website, see www.transform-eu.org/publications/publications.html.

Authors: Gareth HUGHES and Karsten GAREIS with Jorge Assis, James Cornford, Randal Richardson and Martin Sokol.

For more information on TRANSFORM, please contact: Karsten.Gareis@empirica.com.
empirica Gesellschaft für Kommunikations- und Technologieforschung mbH, Bonn, Germany.

The project consortium gratefully acknowledges funding by the European Commission, DG Information Society & Media. All views expressed in this document, however, are those of the author and do not necessarily reflect the views of the European Commission.
