

# **Building the European Information Society for Us All**

First Reflections  
of the High Level Group of Experts

Interim Report  
January, 1996

**This is the first interim report of the High Level Expert Group on the Social and Societal Aspects of the Information Society. It contains a set of first reflections which form the basis for discussions with the Commission, members of the European Parliament and other European committees, and outside experts, in view of the preparation of a final policy report to be presented in May 1996. The expert group consisted of: Hans Blankert, Gerhard**

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# Letter of submission by Professor Luc Soete, Chairman of the Group

Maastricht, January 24th, 1996

Dear Commissioner Flynn,

On behalf of my colleagues in the High Level Expert Group, it is my pleasure to submit to you this report of "First Reflections". We felt it was essential to produce such a report of first thoughts and reflections at this relatively early stage of our debates because we wanted to have a "focusing device" for our forthcoming debates and discussions with the Commission, the European Parliament, the various relevant committees as well as the social partners, the academic community and the newly established Information Society Forum.

We do so, as reflected in the title of our report "Building the European Information Society for Us All", by putting forward our own vision of a future Information Society, in which societal "embeddedness" plays a central role. Without any doubt, the Information Society provides plenty of new opportunities for growth and employment creation; for more efficient use of inputs, contributing to a potentially more sustainable development path; for higher income and more broadly higher welfare; for more decentralised organisational forms, whether on the shop floor or in terms of work sharing; for individual enrichment and social integration; for more consistent regional and urban development patterns; for cultural enrichment as well as more democratic decision making. All these opportunities for renewed growth, higher welfare and quality of life depend crucially on what we would call the congruence between the technological, economic and social dimensions of the Information Society. No outcome is predetermined. Thus, just as in the case of industrial and commercial enterprises where the adoption of new technologies will be the subject of cautious analysis and rarely be based on speed only, so too should the societal adoption of new technologies be based on policy debate and on the search for measures necessary to achieve an economically and socially integrated Information Society.

That our report raises controversial questions and issues, debate, disagreements at this early stage of "reflections" is likely. That it raises the level and content of the debate on these broader social aspects of the emerging Information Society (IS), we hope.

Let me, on behalf of my colleagues, thank you for the confidence you have put in us, the independence you have been a personal guarantee to, and the unfailing support we received from your services, in particular DGV-B. You told us you had great expectations from our activities, I hope on behalf of all other experts that with this first report we have lived up to those expectations.

Professor Dr. Luc L.G. Soete  
Chairman of the High Level Group of Experts

## Foreword by Padraig Flynn, Commissioner for Employment and Social Affairs, European Commission

The High Level Expert Group was established in May 1995 to look into the social and societal aspects of the Information Society. The Group is regarded as an integral part of the European Commission's Action Plan on the Information Society. Our aim in establishing this Group was clear - we wanted more insight into how the ubiquitous new information and communication technologies were going to affect the life chances and lifestyles of Europeans. We also wanted independent advice on these trends and changes; fresh eyes for new challenges.

It gave me great pleasure, last year, to set in motion the work of the Group, which has now reached a mid-way stage with the publication of this First Reflections Report. The experts have worked hard to produce this thought-provoking and wide ranging document. Being a totally independent group, they chose to introduce some new areas of work, such as quality of life, democracy and the media, beyond the Commission's original brief for them. Throughout this document, however, you will find that they have stuck to the central point of the exercise, which is to reflect deeply, but concretely, on the social and societal issues of the Information Society.

The experts draw attention to the need for an integrated social vision of the Information Society. These powerful technologies surround us, in all aspects of daily lives, affecting the way we live, the quality of human contact, the vitality of our communities.

In the Report, the experts lay out some key dimensions of a 'European Model' of the Information Society. They point out the need to create a Learning Society, not just an Information Society. This is an important issue in developing a stronger social dimension to the Information Society: the Information Society will be a Knowledge Society, based on the know how and wisdom of people, not the information in machines.

The Information Society should be about people. We must put people in charge of the information, not let it be used to control them. The Information Society must be used to unlock the power of information, not to create new inequalities between the information rich and information poor. To create a cohesive Information Society, we will need to anticipate better the adaptation problems faced by groups and individuals in Society.

We must also safeguard direct human contact. Quality of life ultimately depends on relations between people, families and communities, not the efficiency with which we use machines or material wealth. The Information Society should enrich life, not erode its essential humanity.

The experts draw our attention to the fact that information and communication technologies (ICTs) have both positive and negative characteristics. On the one hand, they can make production and services cheaper, faster, and better. On the other hand, ICTs are associated with an increasing pace of work and daily life, and the automation of large parts of our social activities: at work, at the shops, at the bank, in government and even in the home.

Clearly, the challenge for all of us is to place an emphasis on developing the positive aspects of the Information Society. In this regard, I would like to draw attention to a few of the key opportunities which they emphasise in the document, and which are close to my concerns as Commissioner for Employment, Social Affairs and Industrial Relations.

- first, a mixed picture confronts us when we examine the employment implications of the Information Society. There are certainly major new opportunities for growth of totally new forms of employment in the Information Society. There are potentially large numbers of new jobs associated with the growth of information services, for example in the multi-media industry. The challenge is to identify how to make these new sectors grow rapidly in order to create the jobs of the future.

- second, new forms of work organisation are emerging, associated with the new ICTs. The clearest example is teleworking, but there are many indirect influences on the way we work and the organisational forms of the future. The need for workers to be in the same place at the same time as each other is reduced by these new technologies. They shrink distance and allow firms to offer services cheaply and effectively at all hours of day and night. These are potentially great advantages, although we have also to exercise caution, and to find ways to ensure that workers are still adequately protected.

- third, social cohesion issues are very much to the fore in this First Reflections Report. We need to look carefully at how the Information Society will affect women, the long term unemployed, and disabled and disadvantaged groups. We must identify ways to avoid the creation of new groups of excluded people in the drive towards the Information Society; such as people with traditional skills and those of us who did not grow up with the ICTs. In particular, we must make sure not only that people and communities are given support in adapting to the Information Society, but that the way these technologies are applied is adapted to the needs of ordinary people. The European Information Society must be an open society for all, not just a playground for Internet surfers and cyber enthusiasts.

- fourth, the new ICTs promise great hopes for health services which are both more cost effective and of a higher quality. More information on health should allow improvements in the speed and effectiveness of diagnosis, treatment and follow-up, whilst the development of medical telematics should improve the accessibility of expertise. For instance, the Commission is involved in bringing medical support to less accessible places, such as on-board ships. The new information systems allow the sharing of information, between administrations, which will be important for the control of public health risks, mapping of epidemics and so on. To achieve such transfers of information, even within health administrations, requires much cooperation on identifying standards, a process to which the Commission is highly committed. We also have to guarantee the confidentiality of patient information and to make sure that new codes of practice on the introduction and use of the new ICTs are developed which are flexible, but robust. We cannot let our enthusiasm for the potential of the technology allow us to lose sight of the fundamentally social relationship between carers and patients.

In this short foreword, I have had the space to sketch out only some of the key challenges which the experts have identified. Of course, this First Reflections report raises many other important questions. At this stage in their work, the Experts aim only to stimulate debate on the issues which they have identified. They hope to get responses from a wide range of interested groups, in terms of concrete ideas, lessons, and proposals about what can and should be done. The Commission is helping them in assembling and analysing these responses and will facilitate the debate in all ways possible.

These are times of great change in the structure of working and private lives. The Information Society is undoubtedly, a major aspect of these changes. We have to get on with the task of defining and bringing to fruition a new vision of European Society, one which matches up to the challenges of our day. Now is the time to make sure that we do the ground work to bring everyone on board to make this a common project for Europe's future. The First Reflection Report provides us with a good start, from which to launch this great project of building a European Information Society. I therefore, welcome the Group's First Reflection Report and look forward to the discussion and debate which it provokes.

Padraig Flynn  
Brussels  
January, 1996



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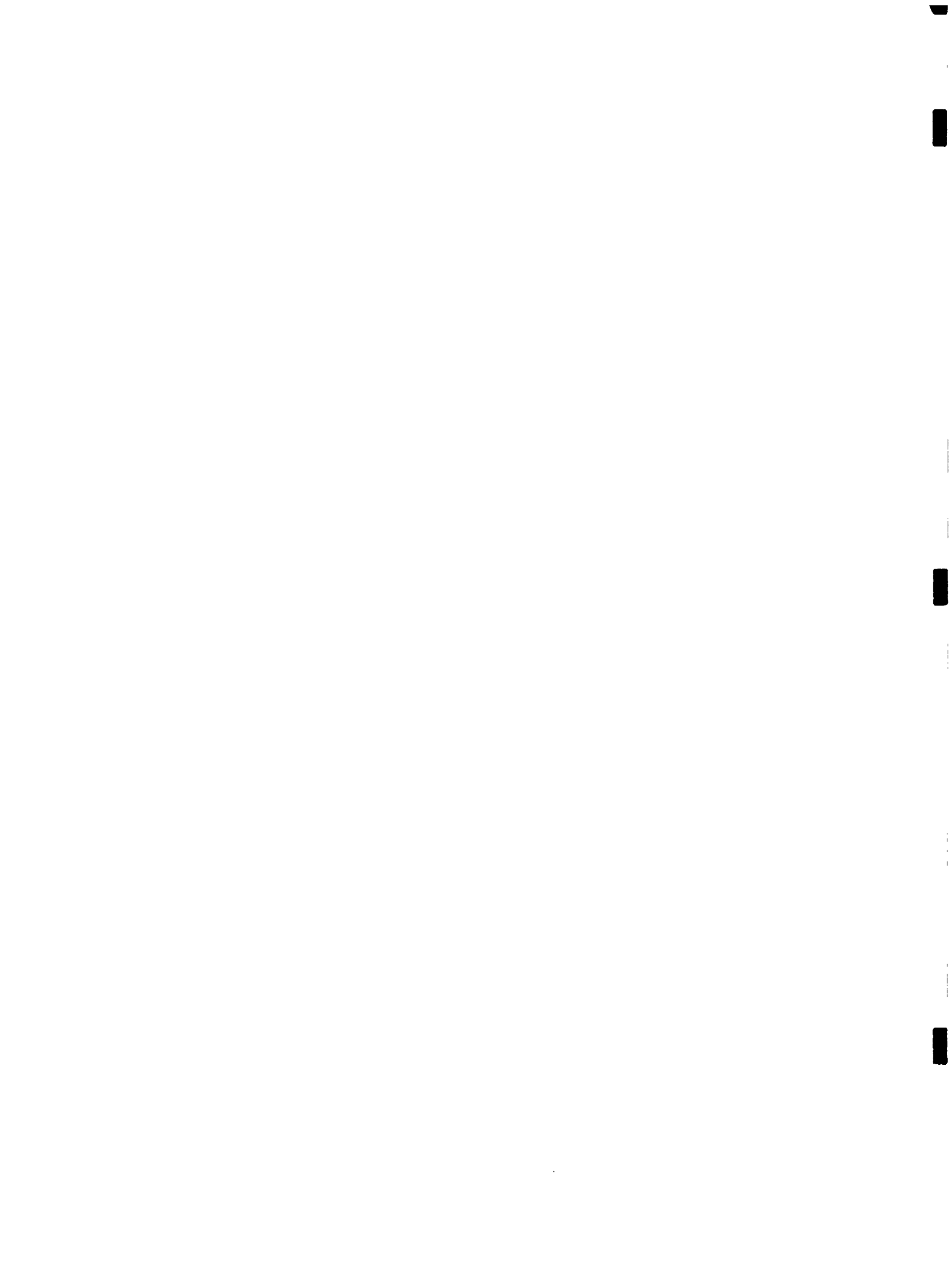
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# EXECUTIVE SUMMARY

## **The vision**

The 1990s have witnessed a great proliferation of reports and papers on Information and Communication Technologies (ICTs) and on what is now described as the 'Information Society' (IS). This burgeoning literature is mainly concerned with the advent of the 'Information Highways' and the ways in which even greater amounts of information may be distributed ever more quickly, efficiently and cheaply to more and more households and businesses throughout the world.

The objective of this report is not to add one more document to this already over-subscribed field. Rather, it is to transcend this discussion from the outset, by making a separation between data and information, and by distinguishing between the notion of information and the need for knowledge. It is necessary to separate out the transmission of data from communication between people, and the acquisition of knowledge. Most present-day telecommunication systems are still systems of transmission of data. In this report, we focus our attention on ways in which information can be converted into useful knowledge, so that the 'information economy' may become a 'knowledge-based economy' and the technology be put at the disposal of all. The underlying ICTs provide the potential for great increases in productivity and many new and improved products and services. However, history shows that the ability to convert this potential into actual gains in productivity and improvements in living standards and quality of life depends on a prolonged process of learning and institutional change.

The technology in itself is neither good nor bad. It is the use which human beings make of any technology which determines both the nature and extent of the benefits. Moreover, these do not accrue automatically to everyone in society. For most innovations, both benefits and costs are unevenly distributed. While some individuals and groups may benefit greatly, others may be seriously disadvantaged, through for example, loss of employment or erosion of skills.

We welcome the opportunity to present this interim report based on the group's first reflections, hoping that it might provoke discussion and help us in formulating our final policy report. It gives us the chance to identify a number of key themes which we believe should be moved to the centre stage of the discussion of the IS, realising that it is neither possible nor desirable to separate the social and societal aspects from the technical, industrial and economic ones.

In the future there could be different models of Information Societies, just as today we have different models of industrialised societies. They differ in the degree in which they avoid social exclusion and create new opportunities for the disadvantaged. In the White Paper on Growth, Competitiveness and Employment, the Commission underlined the importance of the social dimension which characterizes the European Model. A strong ethos of solidarity should also characterize the European Model of the Information Society. This is not an easy goal to achieve since the traditional structures of the welfare state will have to undergo substantial changes. To adapt to these changes, an active rather than passive concept of solidarity is needed. We would like to emphasise four features of such an active solidarity.

First and foremost, it is essential to view the IS as a “learning society”. The issues of education and training were given to us to consider as a theme of our work. We agree that education and training is an important sector, but the sectoral boundaries cut across the formal provision of education and training services. For us, learning and the development of knowledge should be a lifelong process which takes place at work and in the home, as well as through education and training. Furthermore, putting the central emphasis on the learning society, rather than the IS per se, provides a potentially much more positive route forward for the IS debate. In particular, the more appropriate emphasis on learning illustrates that, although access to the information super-highway is and will continue to be important, it is insufficient to ensure the rapid development of a knowledge-based economy. As we noted above, it is the ability to use information and to transform it into knowledge that is important. This is why we argue below in favour of an approach to access to information which goes beyond conventional ideas about universal service provision (USP).

Second, as information is assuming a much more important position in our lives, a crucial additional characteristic of a human IS is undoubtedly that people should be in control of the information, rather than it being used to control them. In practice, with the proliferation of detailed information recording our movements, purchases and personal profiles, there is a risk that an intrusive IS will develop. We would like to see this risk reduced. Nevertheless, we would still like to draw attention to the trend towards individualisation, which underlies these powerful new technologies for mapping and monitoring activities. The collection of this wide array of information concerning the activities of individuals allows

the customisation of all sorts of areas of everyday life, down to the individual level. There are observable trends towards the individualisation of various aspects of life: individual contracts of employment, targeted benefits, consumer profiling, personalised health care, individualised insurance planning and so on. There are obvious advantages in terms of effectiveness of such systems in that, for example, it will be possible to make services really responsive to individual needs — but there are also major risks in terms of the invasiveness of such systems and the likely reductions in social solidarity.

Third, human activities (work, leisure, contacts with administrations, banks, etc.) will occur more and more through the intermediary of telecommunication networks. These activities will be increasingly based on representations of reality (that is, abstract and virtual images of reality), rather than reality itself. There are significant advantages to this evolution such as, for example, (faster delivery of products and services, fewer accidents and, perhaps, lower physical stress), but there are also risks. Virtual life is not real life and the representation of reality is not reality. Some of us will not be able to endure living permanently in a representation of reality.

Fourth, in any period of major social, economic and technological change, the balance of social costs and advantages shifts. The Information Society is no exception. Changes in the industrial structure are leading to job destruction, as well as new job creation. There are great challenges in terms of adjusting to the IS at the sectoral level, at the firm level, at the level of individual skills and occupations, and within both public and private service provision. Furthermore, there are similarly dramatic changes in the organisation and quality of work. Organisations have to be flexible to perform in the new paradigm of competition of quality, customisation and rapid innovation. Workers are increasingly required to be flexible in terms of the skills they have, the tasks they perform, and the new forms and structures of employment. New relationships between paid employment, work and activity are emerging. These raise questions about the place of work in people's lives, particularly for the large numbers of people faced with unemployment, under-employment, or unstable employment patterns.

The IS is emerging at a time of great change. Without any doubt, new ICTs provide tremendous opportunities for new growth and employment creation; for a more efficient use of inputs, not just of labour, but also of energy, materials and capital, contributing to a potentially more sustainable development path; for higher income and welfare; for more decentralised organisation forms, whether on the shop floor or in terms of work-sharing; for more consistent regional and urban development patterns; for individual enrichment as well as a more democratic and decentralised society. Importantly, the opportunities for higher economic and productivity growth crucially depend on congruence between the technological, economic and social dimensions. No outcome is predetermined. Thus, just as in the

case of industrial and commercial enterprises, where the adoption of new technologies will be the subject of cautious analysis and will rarely be based on technical efficiency alone, so too should the societal adoption of new technologies be based on policy debate and on the search for measures necessary to achieve an economically and socially integrated IS.

The Information Society is a society in formation. The decisions we make now, and the opportunities we take now, to construct a strong social dimension for the future of Europe may well be with us for a long time. We can not afford to miss out in the global stakes nor can we afford to weaken the solidarity of Europeans in a rush for a rapid move into the IS for some, but not for all.

Social policy therefore merits equal if not more weight than economic policy in formulating our approach to the IS. We believe that the Commission has paid insufficient attention to these issues so far, and in the following sections we elaborate these arguments in more detail.

## **Employment**

There is a large potential for the growth of completely new forms of employment in the IS. New core ICT intensive sectors are forming the basis of new industries and multi-media based industries in particular are likely to be high value, high skill sectors with considerable labour intensity. On a positive note, therefore, we see a potential for new knowledge-rich forms of employment emerging, which could create highly satisfying employment for many Europeans. The prospect of new occupations based upon information services which reinforce creative, collaborative, communal and caring aspects of work are strong and should be an area which policies seek to build up, not only because jobs with these attributes are socially desirable, but also because in many cases these innovative services will form the basis of the emerging information economy in Europe, and thus also a major component of its competitive advantage.

However, we also feel bound to raise the question to what extent new technologies represent a threat to employment, a subject which has been at the centre of polemical debates between economists and sociologists for the last two hundred years. While we do not subscribe either from an economic or historical point of view to such alarmist views as “The End of Work”, there are, nevertheless, some new features of the emerging IS which have in our view been insufficiently taken into account in the current employment debate.

- New ICTs seem to have a powerful potential to affect service employment, which has been a traditional employment “reservoir” in most industrialised countries and today represents over two thirds of total employment in the EU. Many of these service jobs both



in the private and public sector hitherto largely have been “protected” from “labour-saving technical change”. To assess the impact of the use of new ICTs on such service employment, we need to know much more about the relationship between innovation, and the creation and destruction of jobs in such sectors.

- The deregulation and privatisation of telecommunication operators, and the increased possibilities for the delocalisation of particular activities, are likely to have major structural impacts on existing manufacturing and services employment. At least in the short run, there is concern that this impact might involve substantial employment displacement.

- Employment statistics are still heavily biased towards manufacturing and material goods, as are our statistical methods for estimating inflation. With the growing proportion of consumption being devoted to “information-intensive” goods and new information services, one may wonder whether current inflation estimates correctly measure overall consumer price trends in the emerging IS. There is at least a suspicion that the substantial price declines linked to new information goods and services are at present not sufficiently being captured in official inflation estimates. Again, little is known about the size of this issue and even less about its macro-economic policy implications.

- Like many others in this field, we are of course concerned about the fact that the benefits and costs of the use of new ICTs might become more and more unevenly distributed, with some groups being seriously disadvantaged by loss of employment and erosion of skill. How to respond to this “distributional” challenge is to some extent the central issue of our report. However, this debate should not be limited to the traditional set of “social policy” proposals. It should also address the erosion by the emerging IS of the underlying financial base of existing “distributional” policies (such as many of the current European social security systems) together with potential and more specifically IS-related “distributional” policies.

- Finally, we share the growing concern that the combined effect of such distributional impacts, and the growing international transparency of markets, will put the burden of adjustment even more on the unskilled labour and low wage parts of the labour force. The emerging IS is a global one. The challenge it is likely to put to all our institutions is a formidable one.

## **Work organisation**

The relationship between work organisation and the IS is complex. Whilst new network technologies are major factors allowing for organisational innovation, there are many other drivers of change, such as increased demands for quality, global competition, and market volatility. ICTs can be seen as a means of achieving the productivity and performance improvements necessary to control costs and retain competitiveness.

- The emergence of new forms of organisation which increasingly use networking structures to increase flexibility, seems to be a widespread feature of these trends. There is, however, a considerable amount of latitude in the way in which the new technologies are introduced. Not all ways of implementing ICTs are equally effective. There is much evidence to suggest that those approaches to innovation which build upon the social relations which are inherent in the design and implementation of new technologies, are likely to result in higher performance workplaces by comparison to approaches seeking only to achieve performance in terms of the technical or economic efficiencies.
- A key feature of recent changes in organisational structures is the emergence of greater decentralisation as evidenced, for instance, in the clear shift towards outsourcing and externalisation, and downsizing and devolved hierarchies. Such changes provide important challenges to our existing systems in terms both of ensuring high standards in employment, and providing the appropriate incentives for investment in training, especially with regard to people who work in small firms, in services, and in the self-employed and freelance sectors.
- Teleworking (whether it be home-based or in teleworking centres, full-time or part-time) is more than “work at a distance”. It is significant not only because it is directly associated with ICTs, but also because it involves new flexible patterns of management and work organisation. We are concerned that teleworking should develop in ways which emphasise the positive aspects of the new flexibilities (like wider access to jobs, more flexible timing of work), and which reduce the risks of shifting away from conventional workplaces such as isolation of workers, lower social protection and inadequate working conditions.

## **The future of work and social relations**

The nature of work and its role in our lives seems to be undergoing major changes. Although the nature and extent of these changes varies markedly from place to place, the general dimensions in a few key areas of change are an increase in part-time work and self-employment; an increase in the unpredictability of working hours; an increase in casualised forms of work (temporary or fixed term contracts, etc.); the increasing participation of women in work; the trend towards earlier retirement and the decline in the expectation of a career for life.

On some levels, the increased use of ICTs both increases the salience of these trends and, in some areas, also provides scope for new policies to improve the integration of working life into the rest of our lives. For instance, the much more rapid rate of obsolescence of existing skills is undoubtedly leading to increasing involuntary early retirement. Similarly, the rhythm of work in the IS will be far less predictable, as people will be expected to work over a more extended working week.

- The reconciliation of work and home life will be a major issue in the social cohesion of the IS. It is necessary that the complex relationships in this area be better understood in order to inform policy making.
- Traditional social relations rest on a clear distinction between place and time at work and place and time off work. The IS tends to destructure these accepted conventions of place and time such as family space and time; work space and time; leisure space and time; training; and consumption. The boundaries between these activities, in particular between work and non-work, are blurring. That is why new social relations need urgently to be considered; one must foresee and negotiate the right to go off-line and to be free from the constant call of the electronic network at anytime and in any place.
- Similarly, new remuneration systems will have to be negotiated. With the shift towards more flexible working hours, and indeed more flexible work arrangements more generally, new arrangements to make flexible work more attractive to workers might be found, such as annualized working time contracts, and the use of time off in compensation for unsocial working hours.
- The possibility of home-based teleworking also raises a whole new set of problems concerning the reconciliation of work and home life. The problems of reintegrating work into the home, even on a part-time basis, have significant economic, social and psychological implications.
- Not only will social relations be modified by the questioning of traditional work/non-work frontiers but sectoral frontiers will also be questioned. The new flexible work organisation patterns, internationalisation, and shifts in the sectoral structure of the economy, all create pressures to adapt the machinery of representation and negotiation between the social partners. Thus, we believe that innovation in procedures of social dialogue and collective agreements will be needed in order to maintain the salience of these channels in the new flexible regimes of the IS.

## **Labour markets**

The IS is emerging at a time when the traditional expectations of work and career are facing a radical challenge. As work becomes more subject to change in terms of its content (through continual innovation) and in terms of its security of tenure, labour market policies must become more responsive and proactive. There has been a rising interest in active labour market policies across most of Europe in recent years. It would seem that in the IS, such proactivity is likely to become more important, and the possibility of finding new ways to improve the performance of the labour market is enhanced.

- The effectiveness and relevance of external labour market measures will require careful reassessment in the context of the IS, given the changing organisational, occupational and skill profiles of work. Of particular importance are training into work schemes aimed at

people with relatively low qualification levels, the long-term unemployed, and other target groups which are more at risk of exclusion in the IS.

- Internal labour markets are likely to be under pressure to become more adaptable, so that organisations are able to meet the challenges of ongoing innovation which will be associated with the IS.
- Increases in the efficiency of the labour market, and especially the link between the internal and external labour market, will be required in order to deal with the increasing flexibility of work. ICTs provide at least a partial solution to these problems by increasing the transparency of the labour market, reducing the costs of providing information sources in a wide variety of places and allowing easier access to information on employment demand and supply. However, for such systems to be effective, some new approaches within the labour market institutions will be necessary, if only to safeguard equality of access, security and reliability.

### **Social cohesion and the quality of life**

Work and employment are by no means the most important dimensions of a broader social vision of the IS. Any such vision has to take account of the major possibilities for improving the quality of life and social cohesion through creative approaches to ICTs. However, equally there are concerns that the IS could lose its sociability. The culture of screen and chair could lead towards isolation, with people increasingly interacting through the digital media and withdrawing from the social realm.

- A wide diversity of different ways of interacting is desirable so that people have a real choice between interacting on-line and interacting with humans. The IS offers new opportunities for social integration, through building up communities at a local level. The introduction of ICTs will permit more people to work from, or near, home for at least some of the time, meaning that more localities might come alive during the working day. With ICTs, more services, especially education and community services, can be delivered into communities at a local level. Such changes could help to reinvigorate whole communities and lead to stronger social networks and a sense of place.
- ICTs could help to overcome some of the disadvantages associated with mobility problems or a lack of access. Indeed the opportunities associated with the IS to increase the quality of life of disadvantaged groups are already provoking great excitement and attention. Steps should now be taken to shift from speculation to concrete action.
- The introduction of ICTs could introduce new risks of social exclusion for some groups and exacerbate the risks faced by other groups who are already disadvantaged. People who are not in the workforce or education are less likely to encounter these new technologies, and so may be left behind as the new technologies become more widespread. The people at risk of being left out, because they are not in work include those who have retired early,

those taking career breaks to raise children and unemployed people. People with low incomes, including many elderly people, single parents and, again, the unemployed, face particular dangers that they will lack access to the IS, because the household budget will probably not be adequate. The nature of exclusion in the IS needs close scrutiny so that policies can be constructed to avoid the development of a two-tier IS.

- In policy terms, it is important to recognize the need to adapt the IS to the needs of people, and not just to expect people to adapt to the IS. Although there are clear barriers of technical literacy facing most people, it seems pertinent to ask whether the current user-friendly technologies cannot be made a lot more friendly to use through more ergonomic hardware and software.

- There is a fear that the IS could be an isolated society, with human contact increasingly replaced by telepresence and electronic communication. However, the reality seems to be more complex. Leading examples where the automation of services has taken place, such as in retail banking, seem to result in a reduction of routine human transactions but an increase in more complex interactions, such as giving advice, consultation and negotiation. These changes are not yet well understood, nor do we know what can be done to make the new systems of social interaction more convivial.

- The family has an important role as a place where people will be socialised into the IS and as a learning environment. Ways in which families can fulfil these roles more effectively are needed, such as closer integration between learning at home and learning at school and support for parents in understanding the new ICTs, allowing them to learn along with their children.

- The social consequences of the rapid introduction of new ICTs are not well understood. Although the more dramatic scenarios of fragmentation and isolation associated with a cyber-society seem simplistic and overstated, there are concerns that the abstract nature of interacting through screens could lead to an abstraction of reality. A particular issue is the stress associated with information and perceptual overload. The sheer volume and immediacy of information raises fears that people are no longer in control and need new techniques and strategies to help them cope. In addition, these technologies extend people's availability, so that they are on-line and on-call wherever they are and at all times. Such accessibility could easily become invasive, and its effects on social life need to be better understood.

- New forms of marketing, retailing and consumption are emerging along with the IS. In the past, most retail services were local and available for a few hours of the day. In recent years a widening of the availability of these services has occurred in most places. With ICTs, it is possible to buy goods and do business, on-line, at any time and in any place. These changes will affect the way we consume, our understanding of the process of consumption, the relationships between buyer and seller and the place of shopping in our culture. They need to be tracked to enhance the ability of consumers to use the new technologies and services to their own advantage.

## **Regional cohesion**

ICTs have a much remarked-upon and potentially powerful ability to 'shrink distance'. In essence, new industrial and social geographies could emerge, particularly with regard to services which can be delivered over the wire. In principle, therefore, there are new policy challenges concerning the relative economic advantage of non-core regions, especially the less favoured regions (LFRs) in Europe. In the first place, the fact that the telecommunications infrastructures are relatively less well-developed in (some of) these regions could lead to them losing out on the potential economic competitiveness of being able to provide and access services on-line. This could reinforce existing disadvantages of peripherality, especially in lagging regions, or could simply annihilate the potential advantages of some LFRs in terms of lower labour costs. On the other hand, the potential for catching-up, or even regional 'leapfrogging', could be high in distant regions leading to new commercial activities and the emergence of service providers. The impact of deregulation and liberalisation is likely to make such new opportunities much more transparent.

In essence, therefore, the development of an integrated approach to the IS in order to increase regional cohesion is necessary. This implies a number of interrelated steps.

- There is a need to develop much more focused and targeted approaches to infrastructural support. Following this perspective, Community Structural Funds could be directed in ways which are much more sensitive to emerging demand, and thus more effective and efficient.
- Any reformulation of USP has to take into account new technological possibilities and be accepted by all countries in the European Union. The problem is how to define a level of access which is adequate (especially given the proliferation of media), which will have some long-term validity, and which is operational at a reasonable cost. There is unlikely to be a blanket approach which will be good for all regions, and so any programmes and policies adopted should be attuned to the variations which exist.
- Broader measures are needed, however, which can ensure that different social groups (e.g. residential, schools, hospitals, small enterprises, public services) gain access to a reasonable service level at a reasonable price.
- Satisfying demand for telecommunications services is as important as investment in the infrastructure and services. Critically important is the modernisation of enterprises and the public sector, and the development of human resources to increase the development impact of ICTs.
- Regional institutions, such as chambers of commerce, regional innovation centres, collaboration between regional government, and training institutes and enterprises, are important to the innovativeness of the region and its capacity to respond to the challenges of the IS. In LFRs, they are often thinly developed, rigid and not up-to-date, or not well-integrated.

## **Education and training**

We have stressed from the start that the IS should be viewed as a learning society. Education and training is a horizontal issue cutting through most aspects of this report, as well as an area of specific concern to the educational and vocational training sector. The centrality we allocate to learning, of course, means that we immediately emphasise the need to look beyond training in ICT skills. In addition, whilst we would underline the importance of ICTs as new tools, techniques and media for delivering education, we argue against a narrow focus on new learning technologies and systems.

Instead, new and changing skill demands and new possibilities for learning methods should be seen as components of an integrated approach to lifelong learning in the IS. The aim should be to meet social and economic criteria of openness, accessibility, affordability, and, as far as possible, learning should be challenging and fun. Most of all we want to underline the importance of the social nature of the learning environment, whether at school, college, the workplace, or in the home. Much of the value of education resides in learning collectively. Education is valuable, therefore, not just for its instrumental role in developing skills, but also for its role in the development of social cohesion and culture.

- New multi-media software for education and training is a fundamental requirement for the IS. Present software programmes are often not very satisfactory, which partly explains their low levels of adoption. The quality of such software needs to be of the highest standard and has to be customised to the different needs in different training environments around Europe. Thus, a strong European industry producing these systems is necessary to make sure that supply of the training and education is relevant to European needs, and the involvement of trainers in the design of these systems is needed to make sure it really is useful in the training or educational environment.
- Because education and training is mostly a collective experience, a central focus of new learning approaches will be on developing a new role for the teacher as a guide through the information maze and as a coach, rather than a lecturer. New learning approaches will also be needed to promote the lifelong learning of trainers.
- Equality of access to education and training is, again, an area of challenge, and one in which the IS can make a contribution. All communities and social groups will need access to the infrastructure of the IS and the means to make use of the services which are becoming available. On the other hand, ICTs can reach out to people who cannot currently easily obtain access to classrooms to learn, particularly those who live in remote areas or who are disabled and/or housebound.
- ICTs also provide new ways of making education and training available to people for whom attending regular classes is difficult - especially those in employment or with family commitments. Thus, whilst we place great emphasis on the conviviality of the learning

environment, ICTs can undoubtedly increase one's chances for gaining access to learning opportunities, through enhanced open and distance learning.

## **Health**

As with education and training, there is great scope for innovation in health service provision in the IS. ICTs can directly contribute to improved diagnostic capability and health care and a more cost effective delivery of services. Clearly, in any such innovations, patient safety and the acceptability of these systems to both patients and medical staff are fundamental.

- Given the vast potential benefits of health telematics, we are primarily concerned that these technologies should diffuse rapidly, through the development of the technological systems themselves and by increasing their accessibility to hospitals, doctors and patients (and making sure that there is equality of access); promoting standards for sharing medical information and identifying and removing barriers to their adoption.
- The new technologies will, inevitably, change the jobs and skills required of health service staff. The participation of health care professionals in the design and implementation of these systems will lead to a more rapid and effective adoption of these technologies. In addition, however, there are major training and retraining requirements which should be addressed in parallel to increase the acceptability, performance and cost effectiveness of the new technologies.
- New safeguards will be needed so that both professionals and patients will have confidence in the new systems. The collection and transfer of medical records will occur to a far greater extent than in the past. The confidentiality of health data, therefore, is a major priority. In addition, the detailed recording of information on treatments means that clear guidelines will be needed on the rights of access to this information, and on issues of liability which might arise where there are breakdowns in the systems or disputes over the outcomes of treatment. In some cases, ethical standards in the health sector may need re-examination.
- As with the role of the teacher in education, the physician-patient relationship is the pivotal link in the delivery of health care. Approaches to health care in the IS should enhance the quality of this link by providing more support in terms of diagnostic power and information to the physician. Health care in the IS should, in general, aim for improvements in health, as well as for improvements in the quality of care itself.



## **Culture and media**

Cultural change assumes extraordinary importance in the IS, if only because of the centrality of communication and knowledge in culture. Language, for instance, is one of humanity's greatest cultural technologies. ICTs are not just a new wave of contemporary machines and industrial processes, but are systems for recording and communicating information. Thus, the cultural effects of the widespread diffusion of this technology are likely to be especially profound in comparison with earlier waves of technical change and thus figure prominently in our report.

Technology does affect culture and the economy, but there is no question of a uni-directional linear model. Each interacts with the other and so there is the possibility to shape technologies in support of cultural and political objectives in a number of areas.

- The IS can be used to support cultural diversity, in particular the multilingual nature of European society, by making language-learning easier and more accessible reducing the cost of translation and creating storehouses of cultural and linguistic materials, and so on. In particular, the accessibility of such materials and opportunities should be increased. However, in the short term, the English language is becoming more and more important in the international exchanges of the IS and tends even to become the dominant language used in some fields. A good example here is the Internet.
- ICT-based services can help to protect and reinvigorate local communities by reducing the cost and improving the quality of services which can be delivered in and by the community. In essence, distance can be shrunk so that people can live globally in their own communities.
- There is a proliferation of information transactions taking place because of the falling costs of production and, with the Internet, rapid and easy distribution of information. At the same time, there is concentration of ownership and resources taking place in the media. Clearly, therefore, there are major challenges in this area, given its importance as an economic sector in its own right, its centrality in cultural and political life, the problems of control over quality and reliability of information, and the need to protect the producers of information.

## **Democracy**

There are great opportunities for an enrichment of democracy in the IS, through the development of horizontal exchanges of views and information between citizens, through greater information access, through more open and accessible government. However, the information explosion currently taking place, in terms not just of its quantity, but also in the variety of sources, formats, complexity and rapidity, could overwhelm people leading

to an ephemeral and information overloaded political system. We, therefore, regard a coherent discussion of the challenges of the IS to democracy as an essential component of the debate in this area and provide some starting points for this debate below.

- There are great new opportunities for public expression and experimentation in the IS, especially in areas which are low cost and accessible to grassroots groups. More democratic and accessible government in particular is a major opportunity presented by these new developments.
- The vitality of political debate could, likewise, be reinvigorated through more use of direct democracy. To the extent that these systems can encourage horizontal communications and participation they should be encouraged, but the dangers of an ephemeral political culture, fuelled by the urgent immediacy of media, must be guarded against. There must also be space for sober reflection and careful decision making.
- The introduction of new modes of public opinion collection and information dispersal, perhaps through on-line systems, could disadvantage some groups in society. So, careful monitoring of all innovations in the democratic machinery is necessary in order to protect the democratic basis of society.
- Structural changes to the world economy, the breakdown of traditional class structures and the growing internationalisation of society and the economy, are fuelling changes in the traditional political landscape. ICTs reinforce this change, especially through the promotion of industrial and social changes, and through the growing importance and immediacy of the international arena of politics.
- Protection of the democratic principle also comes from having a more articulate and educated population. Young people in particular need to be educated so as to be able to differentiate important messages from the noise, the real from the false, and the long-term from the ephemeral.
- Protection against the invasive potential of the new ICTs is also important both through direct legislative action and by building up, particularly, the international component of data protection legislation.

# INTRODUCTION

The present High Level Expert Group (HLEG) has been convened by the Commission to identify and interpret the many opportunities and new risks of the Information Society (IS). In the mandate given to the Group, the HLEG was asked to focus particularly on issues of practical policy relevance to the European Commission, as well as to identify areas in which the Commission should launch debate and stimulate policy research. The present Interim Report presents the Group's "first reflections". It is being accompanied by more substantial analytical background papers covering the different themes considered below.

The Group welcomes the Commission's initiative to provide a major impulse into the broader policy debate surrounding the emerging IS, by setting up the HLEG. So far, the IS policy debate has been dominated by technological issues<sup>1</sup> and more recently the appropriate regulatory economic environment,<sup>2</sup> neglecting by and large, some of the broader issues implicit in the "society" notion.

The belated recognition of this neglect undoubtedly reflects the growing consensus amongst policy makers that the benefits of the IS will depend crucially on the way information and communication technologies (ICTs) will be integrated in society at large. Consequently, it is not surprising that similar groups have been established in other countries such as the US, Canada, Sweden or Denmark or that international organisations, such as the

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<sup>1</sup> Such as the new technological opportunities offered by the convergence of computer and telecommunications technologies, the need particularly in Europe for new, inter-operability technical standards, appropriate R&D and information infrastructure support policies, etc. While we subscribe to the importance of these issues, we will not address these issues here.

<sup>2</sup> As summarized in the Bangemann Action Plan: the central role of the private sector in the development of the IS; the rapid liberalisation of the telecommunications infrastructure and services; and the limited role of the public sector in stimulating the development of applications and the creation of a stable and transparent competitive regulatory framework. Issues such as intellectual property protection, privacy, security and broadcasting are gradually weaved into the regulatory framework. Again we will only address these issues here in so far as they can be related directly to the broader social and societal context.

OECD, have been asked to address these issues.<sup>3</sup> At the moment though the Commission has been the most explicit in its search for a broader policy debate on the IS.

In the HLEG's view this is not surprising. A large proportion of public opinion in Europe appears sceptical about the new opportunities offered by the IS and even fearful about the job losses, employment displacement and work insecurity associated with a future IS. In the HLEG's view, the impression at least of a lack of public support for the IS is also a reflection of the "technology dominated" nature of the European IS policy debate. The latter offers little freedom of manoeuvre for policy action. Such an "international competitiveness/technological determinism" argument runs as follows. We are forced through international competition to adopt new information technologies as rapidly as possible. It is an illusion to think we would be able to govern the speed of such change. Consequently, the only relevant policy issue is one of liberalising and deregulating. Any delay would be extremely costly. At the social level, while there could be "local" employment destruction, the cost of such destruction is minimal when compared to the aggregate employment "price" rigid societies might have to pay in terms of loss of competitiveness when failing to adopt the new ICTs quickly enough. In other words, these employment losses have to be accepted as a minimal cost, outweighed by the positive global welfare impact of the IS and the employment growth in new areas.

The HLEG is attempting to put forward a more balanced approach to a future IS vision, in which societal "embeddedness" plays a central role. Such interdependence with the social and societal dimension is in the first instance based on economic arguments. Without any doubt, new ICTs provide tremendous opportunities for new growth and employment creation; for a more efficient use of inputs, not just of labour but also of energy, materials and capital, contributing to a potentially more sustainable development path; for higher income and more broadly higher welfare; for more decentralised organisation forms, whether on the shop floor or in terms of work sharing; for more consistent regional and urban development patterns; for individual enrichment as well as more democratic decision making. All of these opportunities for higher economic and productivity growth crucially depend on congruence between the technological, economic and social dimensions. None is predetermined. Thus, just as in the case of industrial and commercial enterprises where the adoption of new technologies will be the subject of cautious analysis and rarely be

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<sup>3</sup> See amongst others: W. J. Clinton and A. Gore, "Technology for America's Economic Growth: A New Direction to Build Economic Strength," Washington, Office of the President of the United States; "The Challenge of the Information Highway", Final Report of the Information Highway Advisory Council, Industry Canada, September 1995; The Swedish IT Commission, "The IT-Commission's Work Programme" (SOU, 1995: 68), June 1995; Ministry of Research, "Info-Society 2000", Copenhagen, Denmark, November, 1994; and OECD, Global Information Infrastructure — Global Information Society, DSTI/ICCP(95)27, Paris, mimeo.

based on speed only, so too should the societal adoption of new technologies be based on policy debate and on the search for measures necessary to achieve an economically and socially integrated IS.

For us the distinctions between 'data', 'information' and 'knowledge' and between 'codified' and 'tacit' knowledge are of considerable importance. From our standpoint, the generation of unstructured data does not automatically lead to the creation of information, nor can all information be equated with knowledge. All information can be classified, analyzed and reflected upon and otherwise processed to generate knowledge. Information, in our sense, is comparable to the raw materials processed by industry to make useful products. One of the main effects of the new ICTs has been a billion-fold reduction in the cost and speed of storing and transmitting information. However, such ICTs had no such effect on knowledge, still less on wisdom.<sup>4</sup> One of the main problems for the IS, therefore, is to develop the skills and tacit knowledge to make effective use of this vast resource. Without such tacit knowledge, to navigate the rough sea of on-line information, with its misinformation, poor quality information, unreliable information and advertising hype, could induce nausea .

In contributing to this debate, the Group thus felt that it was essential to broaden further the possible relevant issues. From the six topics suggested originally by the Commission (employment, organisational change, regional development, education, health, and labour markets)<sup>5</sup>, four areas considered of crucial importance have been added, namely “social cohesion”, “culture”, “media” and “democracy”. The organisational change chapter has been subdivided to include both internal and external reorganisation within the firm, and direct work (re-)organisation issues.

In other words, the HLEG has examined the social aspects of the IS on a comprehensive and global basis — a citizen's view —, not cutting our reasoning within the limits of our mandate. Thus some of the observations by the Group may be more relevant to the national, regional or operational level than directly to the Commission. However, there are many other issues which we believe are also central to the emerging IS which have not been addressed here. Urban and city development has not been touched upon in the present Interim Report; the implications of the IS for our legal systems, for transport, sustainable development as well as the more general philosophical debate about the role of information in society have not been addressed here. Given our limited time, we felt that our expertise

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<sup>4</sup> Which we would identify as “distilled” knowledge derived from experience of life, as well as from the natural and social sciences, from ethics and philosophy.

<sup>5</sup> The six themes were outlined in CEC, 'Background Working Document Established for the High Level Expert Group on the Social and Societal Aspects of the Information Society', Brussels, 2 May, 1995, DGV.B.5, Adaptation to Industrial Change (mimeo).

would be most clearly appreciated with respect to the broad *social* dimension of the emerging IS.

A final word on our approach and the level of analysis presented in this preliminary, Interim Report. As mentioned earlier, these first broad reflections are being accompanied by longer and more detailed analytical supporting reports. While the latter provide much of the supporting arguments for some of the first conclusions drawn here, we would like to stress from the outset that when considering a complex set of issues dealing with future impacts and interactions between an emerging cluster of radical new technologies such as ICTs and society, purely evidence-based arguments are not only difficult to find and substantiate, they might also be highly misleading. In this area, the past can rarely provide clear, reliable insights into the future. The Group has therefore adopted a predictive and proactive approach in presenting this set of first reflections by recognizing both on the basis of available research and data and indirect and more circumstantial evidence, foreseeable strengths and opportunities as well as weaknesses, threats and obstacles which we are likely to face and which in the end should be managed by appropriate policy action.

That our report raises controversial questions and issues, debate, disagreements even possible rejections is likely. We hope that it raises the level and content of the intellectual debate on these broader social aspects of the emerging IS. We thus offer the following set of arguments and thoughts as first reflections upon which this group of experts achieved consensus as issues for debate, reflection and discussion with the Commission, the European Parliament, the various relevant committees as well as the social partners, the academic community and the newly established IS Forum.

The disciplines of both economics and sociology in their research on diffusion have increasingly recognised that technologies are continuously shaped and transformed by the interaction of technology and society. The notion of an unchanging product or process diffusing through a clearly defined population of potential adopters has been displaced by models which recognise a strong interaction between users and producers of new artifacts and also take into account wider processes of political and social change and regulatory regimes. Thus diffusion is itself an evolutionary process in which many actors contribute to the “solution environment” which shapes the development of any new technology. We hope that our report will make a modest contribution to the debate which necessarily accompanies the diffusion of information technology. Hopefully it will facilitate the adaptation of ICTs so that they are more socially acceptable and hence also more profitable and more useful to human beings.

## **THEME I:**

### **The IS and Employment**

The concerns about the employment and distributional implications of the emerging IS are, as has been emphasized in many reports, not based on any historical precedents. There is a large potential for the growth of completely new forms of employment in the IS. New core ICT intensive sectors are forming the basis of new industries, notably the multimedia-based industry, which is likely to be a high value, high skill sector with considerable labour intensity. On a positive note, therefore, we see a potential for new knowledge-rich forms of employment emerging, which could create highly satisfying employment for many Europeans. The prospect of new occupations, based upon information services which reinforce creative, collaborative, communal and caring aspects of work, is strong and should be an area which policies seek to build up, not only because jobs with these attributes are socially desirable, but also because in many cases these innovative services will form the basis of the emerging information economy in Europe, and thus also a major component of its competitive advantage.

However, we also feel bound to raise the question to what extent new technologies represent a threat to employment, a subject which has been at the centre of polemic debates among economists and sociologists for the last two hundred years. What brings these concerns about the IS back to the forefront, despite the reassuring historical analogies and macro-economic compensation arguments, are the particular features and characteristics of the new ICTs underlying the IS. We emphasize five. Each of them has been insufficiently addressed in the present policy debate and warrants more research.

#### **1. The IS and the jobs of the future**

The use of new ICTs are likely to lead to major changes in employment in Europe, especially in the service sectors and particularly in those sectors and occupations hitherto largely “protected” from automation or “informatisation”. These service sectors, which today account for more than 60% of total employment in the EU, have traditionally been “sheltered” from international competition and have acted as the main absorber of employment displacement in manufacturing and agriculture. Furthermore, it was the public service

sector which had been the almost exclusive creator of new employment opportunities in the EU employment boom over the second half of the 1980s.

At least in the short term, the concern about the “creative destruction” impact of ICTs on such service employment seems justified. It does not necessarily question the feasibility of the White Paper’s proposals to increase the employment intensity of growth in the EU (with the aim of reducing unemployment by half before the end of this decade), but it certainly calls for more urgent policy action to render such a policy aim more realistic.

*Consequently, there is, in the view of the HLEG, at the moment an urgent need: first, to fulfil the recommendations from the Delors White Paper aimed at reaping the benefits from new ICTs (promotion of infrastructure investments in communication systems across borders and education and training); and second, to reprioritise within the context of the emerging IS, policies aimed at “full” employment.*

Many of the new employment opportunities created in the IS are likely to be in the private service sector, with the continuing growth of ICT-based services and information-intensive services such as multimedia software and systems development, professionalised consulting services and so on. It is the likely impact on public service sector employment which raises the biggest issues of concern. Some traditional public services, such as public administration, are by nature informationally intensive. In addition, some public services are most subject to deregulation and liberalisation. There are thus likely to be substantial transitional and adjustment problems with many jobs facing the threat of rationalisation.

These problems will be complex and hard to tackle from a policy perspective, not least because of the striking disparity between the amount and quality of statistical information and economic analysis on productivity growth and employment trends in manufacturing as compared to the lack of analysis of trends in service employment, their link to productivity growth, and impact on overall competitiveness.

*There is an urgent need for a major policy effort in the statistical, economic and technological analysis of services, including: their classification and structure, their private or public function; their “communication” versus “personal contact” dependency; their output measurement; their degree of openness; and their nature and structure of employment, as well as occupational and skill qualifications. Only on the basis of such informed “information” can appropriate policies be developed for the promotion of employment-intensive service growth.*



## 2. New “regulation” for new employment and growth

Both the overall macro-economic climate and regulatory institutional environment are of the utmost importance in creating the appropriate conditions for a rapid diffusion and use of new information products and services and as a consequence new employment creation. The HLEG is concerned that on both accounts these conditions are not at present being fulfilled in the EU and that the European ICT industry, both manufacturing and services, is at a major disadvantage in developing new demand opportunities for information products and services.

First, insofar as the dramatic decrease in the cost for obtaining data and information with new ICTs can be compared with a macro-economic disinflationary effect — an “oil-shock in reverse”<sup>6</sup> — , the question can be raised whether our present statistical methods for assessing “inflation” are still appropriate. There is at least a suspicion that, with the growing proportion of consumption being devoted to “information-intensive” goods and services with rising quality characteristics, current inflation estimates overestimate “money illusion” and are unlikely to pick up real aggregate price trends of the emerging IS. Little is known about the size of this issue, even less about its macro-economic consequences.

*There is a need for a broadening of the IS policy debate to include macro-economic policy issues, including a more correct measurement of “real” inflation, taking more fully into account the rapidly growing number of information products and services. Even macro-economic policy makers need to become convinced about the importance of the IS, and its implication for traditional concepts and policies.*

Second, the proposed changes in the appropriate regulatory framework as presented in the present move towards liberalisation of the national European telecom operators markets do not sufficiently, in the view of the HLEG, take into account both the speed and scope of the required regulatory reform. The emergence of new markets for information services requires not just a more competitive framework, deregulation and open access, but also the development of new institutions setting out the rules of such new markets, including those governing property rights, security, privacy, etc. At the same time, and as the case of Internet illustrates, the speed of change goes well beyond the “controlled” liberalisation process pursued at the moment in Europe, and involves a much more dramatic “creative destruction” process, with a completely new communication pricing structure.

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<sup>6</sup> The word 'shock' is probably not fully appropriate, as the changes to which we refer are neither sudden nor short-lived. They involve long term and permanent decreases in prices for continuously improving ICT-related products and services.

*We propose the setting up of a European think-tank on regulatory policy in the broad ICT area. We suggest such a think-tank to develop close international cooperation with national and international (such as the US FCC) regulators in the ICT field so as to exchange information and develop more rapidly best practice policy. We believe that inappropriate arguments about subsidiarity have sometimes unnecessarily reinforced the power of national regulators in the ICT area. In the short term, European telecommunications regulation will continue to reflect the diverse national-level situations. But, in the longer-term, regulation policy must fully reflect the new international agenda formed by the emerging global information infrastructure.*

Furthermore and as we discuss in more detail under Theme X below, the IS will internationalise the communications media industries, the production of media content, editorial matter and the cultural industries in general. Traditionally, these industries operate and are largely controlled at the national level because of long standing concerns about the effect of communications industries on national sovereignty and security, democracy and censorship. In the IS the communications sector is becoming more “commodified”, with information being packaged and distributed internationally. In order to reinforce the growth and profitability of this sector, it is necessary that anti-trust laws which regulate the sector at the national level should not be in contradiction in different countries.

*While the Commission has taken steps to re-regulate the telecom sector in 1998, it should urgently include the other communications sectors in this process. A concrete policy goal should be the creation of a 'level playing field' across the EU covering all communication industries.*

### **3. Deregulation and existing jobs**

Regarding the rationalisation effects which follow the introduction of ICTs, there are two main areas of concern to which we wish to draw attention in this phase of our work. First, a major cost of the programme of telecommunications liberalisation, which is currently under way, will be the loss of jobs in some parts of the monopoly service providers and the potential erosion of the social protection of workers in these industries. Second, in the public sector, especially in public administration, the ICTs provide an opportunity to offer direct services to citizens in the form of on-line services. This could lead to a rapid rationalisation of the front offices of the government with an ensuing loss of jobs.

Established telecommunication service providers are often hindered in their attempts to compete with the new private firms on two main grounds. New entrants can try to 'cherry pick'<sup>7</sup> the high value added areas of the telecommunications market whilst the established

provider must continue to guarantee USP. The new entrants can also take advantage of their fresh start through operating very flexible industrial relations regimes, with perhaps lower levels of worker protection and working conditions than have been established over the years in the public sector telecommunication providers. The pressure will therefore be on the established providers to raise competitiveness challenges through a radical restructuring of the workforce to lower wage costs and raise productivity. This process while inevitable should be made as smooth as possible through engaging the support and cooperation of workers.

*There is a need for support<sup>8</sup> of programmes of worker involvement in the process of change and adaptation caused by the transition to the new liberalised communications environment. Such programmes should seek to ensure that the new working conditions are the best compromise between achieving rapid change, reinforcing high standards of working conditions and industrial relations and continuing to meet the social obligations of the telecommunication providers.*

Public administration has traditionally been an employment rich sector, aiming to serve citizens directly in their towns and villages. This led to the proliferation of administrative offices offering different levels of service in different places. ICTs allow direct on-line access to many such services from the home. This could lead to a gradual rationalisation of such offices, dealing with a large number of routine or paper form filling tasks. In the IS many offices could close leading not only to the loss of many front-office jobs but to government becoming more remote and impersonal.

*Productivity gains made from rationalisation and decentralisation of public services should ideally be reinvested into the development and upgrading of local services, especially in the school, health, environmental and cultural sectors. Many of these public services are extremely labour intensive and would fit well the search for an increased employment intensity of growth. By strengthening these, the rationalisation due to ICTs would allow for the expansion of these services, despite budget constraints. In particular, an improvement in the scope and quality of public sector information services to communities and citizens could be considered.*

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<sup>7</sup> We say “try” to cherry pick, because there are already some 10 directives attempting to smooth this process.

<sup>8</sup> We do not necessarily imply by this financial public support. Many telecommunications companies have already set up such programmes.

#### **4. The social distribution of jobs in the IS**

ICTs are informational technologies. As they develop they lead to increased memorisation, speed, manipulation and interpretation of data and information. Their development will increasingly make possible the “codification” of large parts of the skills required of people in the workplace. At the same time new forms of “tacit” knowledge and skills become ever more important. An increasing number of routine skills have already become totally codifiable. As large parts of present day employment involves such routine tasks, there is increasing concern about the distributional employment impact of the IS. Furthermore, confronted with the accompanying widespread use of various forms of information and computer technologies, “skill mismatches” are likely to be of a much more pervasive and general nature, raising questions about the inherent “skill bias” of new ICTs. These distributional concerns justify the particular importance paid to the labour market functioning in the IS dealt with under Theme IV, social cohesion under Theme V and education and training dealt with under Theme VII. More specific reflections are made under those headings. Here we raise the broader macro-economic issue about whether and how to develop appropriate “redistribution” policies.

Such policies address more generally the question of how governments will be able to continue to raise funds in an increasingly information-based world in which value is generated through systems and global networks, rather than through clearly identifiable material production and exchange. There is a need to refocus the many debates and discussions on work and income within the context of the emerging IS and to consider how governments can marshal the funds to pursue such “redistribution” policies. The HLEG shares the view of some experts in the field that there might be a need for a new tax base, more closely associated with information exchange, as e.g. in the case of a “bit tax”.<sup>9</sup> Such a tax, preferably introduced on a world-wide basis so as to avoid distortions, could possibly be used to alleviate some of the distributional issues raised above.

*Research should be carried out on appropriate ways in which the benefits of the IS can be more equally distributed between those who benefit and those who lose. Such research should focus on practical implementable policies at the European level, which do not jeopardise the emergence of the IS. More specifi-*

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<sup>9</sup> Cordell developed the proposal for a “bit tax” which could be applied to all interactive digital services (Cordell and Ide, 1994). It is based on a simple count of bits flowing over telecommunications lines. The argument in favour of such a new tax is based on the way globalisation has undermined traditional national tax bases. At the same time, the disincentive to the diffusion and use of new information and communication services can be assumed to be marginal, because these new services offer, generally speaking, a new bundle of product or service characteristics. The concept of a “bit tax” corresponds closely to the need for a new tax base linked to the emerging information society and global network economy.

*cally, the HLEG would like the Commission to undertake research to find out whether a “bit tax” might be a feasible tool in achieving such redistribution aims.*

## **5. Jobs and globalisation**

The possibility of ICTs to codify information and knowledge over both distance and time, not only brings about more global access, it also enables firms/organisations to relocate the sort of routine activities which can be codified and thus also internationally traded. ICTs contribute in other words to economic transparency and, in so far as they bring to the forefront the cost advantages of alternative locations, to international capital mobility and international “outsourcing” of particular activities. While the benefits to the world as a whole of such a more transparent, borderless world are undisputed, there is concern about the world-wide distribution of those benefits.

For the poorest, most peripheral countries/regions there is concern that they may become excluded. For the richer, technologically leading countries/regions, there is concern about the increasing erosion of the monopoly rents associated with innovation, and their implications for employment and wages. Given the importance of these world-wide impacts, we address under the next Theme II: IS and Organisational Change in more detail some of the implications of such new patterns of “outsourcing” and “delocalisation”, whereas we look at some of the regional implications of the IS in Theme VI. Here we raise some of the broader macro-economic implications, of the shift towards a borderless capital mobile world.

National welfare systems, which already face considerable pressures of increased demand in a time of budgetary constraint, are further challenged both by the global dimensions of the IS and its association with new, more flexible forms of work organisation. First, in most EU countries, the financing of the national social security system and, more generally, the welfare state has been closely linked to employment, through the contributions of employers and employees. This close national-level relationship is becoming increasingly hard to sustain, given the heightened international mobility of capital and investment in the globalised and economically transparent IS. National administrations face choices between international competitiveness and/or the long-term sustainability of the national welfare system. Second, there are trends towards new forms of work organisation in the IS such as part-time or fixed-term contract work (discussed below in Theme III). Such changes challenge the edifice of traditional welfare systems which, typically, were constructed in periods of much lower unemployment, younger demographic profiles and much more stability in employment patterns. Both from the point of view of financing the welfare

system and encouraging more flexible working patterns, reforms to the present social security systems are urgently needed.

*With the emerging IS, there is a concern that the creation of employment could be discouraged, because of the close linkage between employment and financing of welfare systems in some European countries. Any reforms should bear in mind that welfare services remain essential, possibly even more essential, to ensure social cohesion in the more decentralised and differentiated economic and social environment of the IS. The emphasis of any reforms should, therefore, be to encourage employment creation, not the diminution or dismemberment of welfare services and provision within the EU.*

However, the international growth and employment implications of the emerging IS do not stop at the borders of the European Union. The notion of the emergence of a “global” IS, in a world in which approximately half the population has no access to public telephony, is somewhat of a misnomer. The huge present day concentration of access to global information infrastructure and use of ICT equipment in the industrialised world, also illustrates, however, the huge potential for catching-up for the “other” countries. Whilst the HLEG welcomes the broadening of the IS debate to the developing world with the planned G-7 meeting in South Africa, there is also a need for a more local “Continental European/Mediterranean” assessment of the emerging IS, in view of both the future enlargement of the EU and close geographical proximity.

*We propose that the EU takes, in collaboration with the ILO, the initiative for a major “world” study on the employment implications of the trade, investment and relocalisation implications of the emerging IS, covering all regions in the world, including developing countries, manufacturing as well as services, and the nature of employment displaced and created. While such an exercise would be “world” focused, the EU could focus, apart from trends in the EU, on the surrounding regions, in particular the Central and East European and Mediterranean countries. Such an exercise would, as a minimum, provide more factual evidence on the world-wide distribution of the gains from the IS.*

## **THEME II:**

### **Organisational Change and the IS**

The rapid rate of globalisation of production and competition, partly brought about by new ICTs, has put new demands on firms and organisations. Such increased pressure for change has often been identified with a demand for an increase in flexibility. It is this feature, it is often said, which leads to a down-sizing of large firms and the growth of many different forms of networking with small firms. These organisational and managerial changes are likely to have major consequences for the world market, although, as noted above, the assessment of the scale and impact of the new flows of investment and trade associated with the ICT-based production and services is far from adequate. The IS is likely to have major impacts on intra-firm relationships through the intensified competition and the need for accelerating innovation and rapid adjustment to new market trends. As a result there will be a further search for organisational structures and methods which are more flexible and innovative - “lean” production, outsourcing, industrial networks - whereby big highly integrated organisations tend to be divided into more independent units.

Three issues can be raised: first, internal restructuring issues within firm and other organisations; second, external restructuring issues and in particular various new forms of networking; and third the specific issue of organising work at a distance — or so-called “teleworking”.

#### **1. IS and internal restructuring: towards the “flexible” firm**

##### *a) The need for organisational change*

Innovations in ICTs continue to occur with a remarkable rapidity and frequency. Also, they are unprecedentedly flexible technologies, with the same technical system being used to create a wide range of continually upgraded and highly differentiated products. It is for these reasons that the most constant feature of production in the IS is likely to be “change”. Such unending change allows for the possibility to put in place new work practices and structures of organisation. Many existing organisations reflect the more stable operating conditions of the recent past. Functional boundaries between the departments in

organisations have often been created which can be barriers to rapid and flexible innovation and change. In particular, hierarchical bureaucracies were established to enable consistent decision making and control. With the shift towards the existence of immediate electronic information flows, many people are now questioning the need for hierarchical organisations in which middle management is mainly dealing with routinised filtering of information and highly codified decision making. Many such routine activities can be devolved to workers with access to decision support systems and access to on-line information. ICTs can be used within traditional structures or lead to new patterns of work and management. ICTs do not, however, determine the future. It is their use that allows for new patterns of work and management.

In other words, new ICTs will allow enterprises to introduce more flexible systems of coordination and management: the so-called flexible “firm”,<sup>10</sup> both in the private and public sector.<sup>11</sup> However, such changes require major changes in practice and culture amongst both workers and management. Any technical or organisational innovation which substantially alters the way people work will be risky for enterprises. A clear cost advantage cannot always be identified, especially in the short term, and there is likely to be resistance from workers and managers alike, who are accustomed to existing work practices. In such cases, some may be deterred from taking the risk of innovating, preferring instead to learn from the (sometimes costly) mistakes of others.

Managers may also be rightly cautious about innovations which alter systems and procedures which currently deliver an acceptable level of performance, compared to entering an unknown realm in which there is great uncertainty about how to successfully complete the process of change, how long it will take and so on. Increasingly, also, it is seen that with ICTs there are no 'turnkey' solutions. The very flexibility of the technologies means that they must be embedded in the social organisation of the workplace in order to achieve a competitive combination of productivity, performance and quality.

Public authorities can play a role in the fast changing environment which will characterize the IS by supporting experimental projects, evaluating and documenting best practice, and organising advice and counselling to small and medium-sized enterprises (SMEs) on organisational as well as technological change.

*The EU should collect evidence on successful case and pilot studies of organisational innovation. Such case studies showing the impact of ICTs on the*

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<sup>10</sup> Organisation would probably be a more appropriate word.

<sup>11</sup> We believe that this will actually be the case more in the public than in the private sector, because the former has been less active in adopting new ICTs so far.



*change of the structure of firms should cover a wide range of industrial sectors, including some of the new cross-sectoral activity areas.*

Organisational advice on the continuous adaptation to the possibilities of ICTs is hard to get. The purpose of the proposed inventory exercise is therefore also to raise awareness of the issue, transfer and diffuse knowledge and experience, promote cooperation between national activities and strengthen European organisational research and development.

The existing networks of public and private agencies, which might be used to deliver such advice and counselling, will only be effective and influential if the agencies involved are seen to provide practical, well targeted and up-to-date advice. The policy implications of such plans will be different in different places. In some areas there is a situation of almost over-supply, where such services have proliferated in recent years to an extent where it is hard for potential users to identify the best agency to support their needs. In other areas the innovation infrastructure is very thinly developed, and, perhaps, many specialised needs cannot be addressed. We thus stress the need for better insight into innovation and reorganisation issues which are appropriate to existing needs and levels of development. A system of process re-engineering and quality control might be envisaged. Such services should also be dynamic, reflecting both the developing needs of users and the changing opportunities as new ICT applications emerge. Furthermore, special attention should be given to customising and adapting technologies to the needs of SMEs, possibly through schemes such as outreach services, employment placement activities and consultancy provision.

The new ICTs are an important factor in the restructuring of hierarchical layers; they are also a restructuring factor of certain distribution channels. For instance, through the possibility of guaranteeing direct contact between the enterprise and the client (telemarketing and teleshopping) and between the public administration and the user (administration at a distance), new ICTs might also bring about the reorganisation of certain traditional activities (shops and counters).

*b) New IS challenges to the firm: security, privacy and encryption*

Discussing the issue of security, privacy and encryption could take place under practically any of the 'themes' considered in our report. We bring it up under this heading because it is probably the area which so far has received little attention, yet has probably the most immediate impact on the effective and efficient use of new ICTs.

There are many new challenges to businesses in operationalising the benefits and meeting the challenges of new ICTs. In practice, the level of robustness of ICT-systems, especially

networks, often leaves much to be desired. Systems can be unreliable because of technical failures, environmental hazards and invasion by determined crackers and hackers. One cannot yet fully assess the economic and social risks associated with such threats. In addition, the IS is based upon electronically integrating the databases of different organisations. The effect of coupling together such information systems could give a powerful boost to managerial efficiency, especially where firms have to coordinate activities. A good practical example would be in logistical management. For instance, competitiveness can be significantly enhanced by reducing lag times and increasing predictability of deliveries, through the electronic integration of suppliers, producers and even end users, through tracking and tracing technologies and digital mobile technologies. Such front to back integration can shift the focus of management away from supply push to demand pull and in so doing reinforce the need for competitiveness to be founded on high-quality, high reliability but flexible organisations.

The critical difficulties in achieving such gains are not necessarily technical. There remain significant difficulties in integrating different technical standards, but the main problems centre around the absence of well established protocols which will allow organisations to share information freely one to another. There are understandable fears of abuses of such flows, a resistance to give away what may be commercially valuable information, especially to competitors, and so forth. There are also many fears of domination and coercion of smaller players by larger ones. The development of electronic data interchange provides an example of cases where larger organisations have used their market power to require SMEs to adopt certain technical approaches in order to retain a contract. In some cases, such problems have been overcome through the establishment of an 'honest broker' such as a professional body or a regulated bourse at the centre of a web of electronic information flows.

The concept of privacy also should be extended to companies. For instance, firms may be reluctant to sign up for the IS if it is clear that all their operations will be laid bare not just to industrial partners, but to competitors, to the state and, potentially, to fraudsters. The limits and implications of such surveillance should be better understood, so that firms can take reasonable steps to create a private sphere within which they plan and strategically manage their activities. It is for this reason that the legitimate boundaries of the use of encryption devices should be identified. It would be a shame if, for instance, firms were to decide that they could not use telematic systems to send commercially sensitive information because of the lack of adequate encryption systems.

How to create a flexible but well safeguarded economy of information sharing and transactions is not well understood for all sectors. Whilst some sectors, particularly the financial services, are a long way down this road, the full economic benefits of the IS will

not occur until all branches of industry can be electronically linked up. This requires a practical understanding of how the new flows of information should be regulated and by whom in order to promote maximum confidence in the new world of the on-line organisation.

*A working group should be set up to examine how best to establish protocols, procedures, codes and standards for linking up the information flows in different sectors and between organisations. This group should not mainly consider technical standardisation, but concern itself with the steps that are necessary in order to create a flexible and dynamic system of standards, regulation and self-regulation. The aim should be to increase confidence in the IS by reducing and codifying the risks of sharing information between organisations and ensuring a fair trade in markets for information.*

### *c) Access of workers' representation to internal ICT-networks*

More and more firms are introducing private local and wide area networks to replace traditional internal mail systems and to create cooperative and shared work environments. They are used for sending memos, information briefings, health and safety information, and also to form shared task spaces even when the workers are not located together. Investigations have shown, however, that these new networks often have a significance way beyond their instrumental roles as conduits of official information. Analysis of e-mail shows that a new culture of communication which cuts through formal lines of communication are developing in many cases. Given that these networks are helping to change the collective organisation of work, workers' representative organisations will have to find new ways to create solidarity between workers. These problems are particularly challenging where there is a spatially and temporally dispersed workforce, information concerning rights and representation.

*Investigations should be conducted on access to firm networks by labour organisations and worker representatives. The legitimacy of this type of use of ICT networks should be established as part of the new industrial relations culture of the IS.*

## **2. The IS and “external” restructuring: the growth of networking**

There is a well documented trend towards greater externalisation of services and production. As far as services are concerned, there is little doubt that the increasing “outsourcing” of service activities has been a major factor behind the growth of the service sector. On the one hand, there has been a growth of highly specialised professional

services, such as advertising, informatics support and management consultancy. On the other hand, many externalised services are in relatively routine and lower skilled areas such as catering, cleaning and security.

As far as production is concerned, many large organisations have undertaken major programmes of rationalisation and downsizing. Much attention has been upon re-establishing a focus on the core business. Non-core activities have often been hived off. In addition, many larger firms now use sub-contracting chains of producers of goods and services to provide a more flexible ensemble of suppliers to meet their need to respond rapidly to changes in level and type of demand.

ICTs are one of the major factors behind this “external” flexibility. ICTs contribute to a greater rate of change and uncertainty in the business operating environment, thus making the use of a more flexible configuration of production resources more attractive. ICTs may also contribute to the development of outsourcing through electronic integration of inter-firm links. In essence the transaction costs of finding appropriate suppliers in the market place are reduced through such inter-firm networks. Automated billing settlement systems can directly lead to lower cost and more efficient trading. But also, the integration of information systems between firms blurs the boundaries which divide them, leading to more of a partnership relationship than an arms length trading relationship.

ICTs certainly make networking and outsourcing more likely and attractive for firms. There are also good economic reasons why firms will increasingly seek to outsource production. While, such outsourcing might imply higher quality and the use of highly skilled specialised workers, we have some concern that one of the reasons for the growth of outsourcing is the lower wage rates and working conditions in the sub-contractor organisations. There is undoubtedly a potential that major firms, particularly multinationals, may be attracted by the idea of using sub-contracting to avoid what they consider to be high levels of social costs in the core businesses in their home regions.

In addition, we are concerned that the rapid growth of single person and micro-businesses may imply a form of self-employment in which employees are given a stark choice between redundancy and selling their labour back into the firm on a freelanced, piecework or other casualised basis. As we note below, there have been fears that some forms of home-based telework might fall into this pattern, where workers are denied the protection of the status of employee but are in effect on contract to only one client.

ICTs are only one factor behind the drive towards “outsourcing”. By permitting easier management of the international and inter-organisational coordination of flows of goods and services, however, they make it much more feasible. The extent to which ICTs really

reinforce such effects is not established. To our knowledge no definitive studies have been carried out. Rather, it seems that, as with so many features of the emerging IS, there are choices about how ICTs are used, for better or worse. Thus, we are concerned that the promotion of the benign aspects of the IS should be promoted over approaches which are not favourable to the pay, security and conditions of workers.

*In summary, there is a need to examine in more detail the relationship between outsourcing and ICTs so as to:*

- *promote a higher level of awareness and debate over the challenges and opportunities of tele-mediated outsourcing;*
- *support with documentation experiences in industries which have pioneered ICT-based outsourcing, such as the automotive sector;*
- *develop best practice models of the design and implementation of material flow systems into sub-contractors which are both highly productive and are accompanied by acceptable working conditions in supplier firms;*
- *create good conditions of work and pay in SMEs by supporting projects which enhance their independence and profitability through the establishment of tele-mediated partnerships and non-hierarchical electronic data interchange systems;*
- *discover ways to increase the quality of working lives of the new breed of externalised self-employed, through an expansion of the scope of labour and social legislation.*

### **3. The IS and different forms of “teleworking”**

The European Commission has in recent years undertaken a range of activities in the sphere of telework. There are now reports available that offer a more sophisticated assessment of the various forms of telework. We are aware that the European Commission is deepening its analysis in this area, through pilot schemes and the preparation of a communication on labour legislation, social security and health safety issues regarding telework, which is planned for 1996. However, we still feel that as this is one of the major forms of new modes of work which will be established in the IS, concerted action needs to be taken to make sure that these new forms of work are encouraged within a framework which reduces the negative aspects of telework as much as possible.

*In broad terms, therefore we support the on-going re-evaluation of regulatory systems to see if they can be updated to both encourage different forms of teleworking as an innovation and to extend to teleworkers the protection provided to workers in traditional workplaces. In other words, legislation should make it possible to consider various forms of teleworking - both at the company*

*and employee level - on a neutral basis. In particular, collective agreements should be extended to telework. We are concerned that the solidarity of teleworkers, particularly home-based teleworkers, be reinforced, through innovative forms of collective organisation. The convention and recommendation on the protection of homeworkers by the International Labour Conference 1995 should be considered. This should be examined as a potential model for European guidelines. We thus recommend that the EU document best practice of collective bargaining and of practical experiences. This material should be presented to the Social Partners in the Social Dialogue.*

In general, we would also like to see a much higher quality of debate on teleworking. The process of re-examining the legal and social protection basis of teleworking should be conducted in such a way as to raise the general awareness of teleworking. This awareness raising should have the aim of making sure that potential teleworkers and managers know better the pros and cons of the different forms of teleworking.

*We would like to see a detailed assessment of the numbers of men and women currently involved in telework, the activities they are engaged in, the skills required and the social consequences. Such assessment should lead to concrete proposals for preventing particular groups (e.g. women) from being concentrated in low-skill activities and to more consideration as to how training requirements are met, particularly in the context of lifelong learning.*

Although various forms of teleworking are already developing without any special promotion, environmental considerations as well as the need for coordination of a wide variety of local, urban, regional and national initiatives, are likely in the future to require more systematic policies for the growth and promotion of telework within the EU. General government policy “push” strategies or the setting of quantitative objectives, such as the Bangemann Report’s goal of stimulating the creation of 10 million teleworking positions by 2000, are unlikely to be helpful. In the end, the development of teleworking will depend on the initiative of enterprises and individuals. The Commission can help best with experiments illustrating the particular modalities, and in particular pointing to the importance of (re)creating local social human networks,<sup>12</sup> involving the social partners

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<sup>12</sup> As in the case of the Eurovillage project in Länna, Sweden. A Eurovillage is defined as an intelligent village that establishes a platform for continuous learning and development of multi-media communication and cooperation in a local and European context. The network is established to constitute a virtual meeting and market place for local multi-media culture, multilingual communication, education and electronic commerce. The purpose of the project is to evaluate the potential of local and transeuropean team learning, multilingual knowledge transfer and multi-media communication based on ICTs.

**concerned.**

## **THEME III:**

### **The IS and the Future of Work**

The IS is emerging at a time when fundamental changes seem to be taking place in the structure of work and its relationship with the rest of our lives in the family, the community and the wider society. The changing age and sex structure of the labour force and the general flexibilisation of work in the IS are profoundly affecting family life cycles. As more young people take advantage of post-school education and training opportunities, their families usually have to support them longer term at the start of their careers. A different, but similarly increasing, group of young people are finding it hard to establish a stable pattern of employment. They also tend to stay longer within the family household.

At the other end of the age range, the 'greying' of Europe's population is producing a complex picture of contradictory effects. Whilst some people are retiring younger (perhaps because their traditional skills are no longer in demand in the IS), the retirement age is also going up in some countries because schemes for early retirement are running out. With rising life expectancy and standards of health, these older workers are often vigorous and still able to contribute substantially to society. There is a risk, however, that their ability to contribute actively to society will not be realised. This would be both wasteful in their own lives and for Europe as a whole.

In the middle of the age range more women are participating in the workforce. A large number of the jobs taken by women have been part-time, which along with other forms of more flexible work arrangements, has been increasing.

All these changes affect the relationship between work and family life. Overall, many workers, are experiencing less security of tenure and less predictability in their hours of work. The traditional routines of the family have to accommodate these pressures.

While the IS cannot be said to be causing all these changes, it is clearly one of the factors behind the new structures of working lives which are emerging. In addition, the IS provides new possibilities for increasing access to work and for developing, if appropriately implemented, a better fit between employment and the rest of life. We consider three issues in this report: first, the need to find a new, "geographical" balance between work (both paid



employment and other activities) at the traditional work place and at home; second, the need to find a new “time balance” between work and social life; and third the need to find a new “mental” balance with respect to new IS-related health and safety issues both in the traditional work place and in the home. These challenges are not solely addressed to policy makers, for much of the initiative lies with the individuals and enterprises. Nevertheless, some policy changes and leadership is necessary to construct a new vision of Europeans at work and leisure.

## **1. The IS and the changing notion of work**

In its most extreme vision, the increasing use of ICTs makes it possible to bring work back to the home. It is as if work can now be returned to the local community or even be placed back into the home environment, as it was in the days before the industrial revolution. These changes could be significant, if they ever become widespread, as urbanisation has totally changed the concept of home and village, from its origins when most people lived in agricultural communities to the model of house and neighbourhood as a small domestic maintenance unit. The changes in social relationships associated with a shift of the work place back to the home could be substantial. Such changes have clearly both positive and negative dimensions. On the one hand, there is a possibility that more people can integrate their private and work lives more satisfactorily. On the other hand, there is a greater chance that work duties will interrupt the flow of family activities by impinging on the space, time and attention spans of the household. Also, such changes have many social and economic consequences. With home-based teleworking, for instance, the employee is expected to invest in his workspace, but as a return avoids the costs associated with commuting. With teleworking, traditional remuneration methods based on time at work will need to be adjusted. It is essential for the social partners to negotiate new systems of remuneration which can avoid a return to some of the injustices associated with “piecemeal” wages. However, whatever the remuneration system, teleworking will require from the worker a certain self-discipline in the capacity to distinguish professional from family activities.

The ways in which these changes will impact upon the cohesiveness of the family unit are not clearly understood, nor are the psychological pressures. For instance, could the impact on the family be an increase in quarrelling and divorces? And how will it be possible for information workers to concentrate in the midst of family life?

These examples of home teleworking are just the extreme examples of the types of issues that could become apparent if workplaces are less often seen as outside the home and neighbourhood. With the 'go anywhere' technologies of the IS, many traditional boundaries of space and time are blurred.

*More knowledge is needed on the implications of the role of the family in the IS with particular regard to the pressures of new patterns of work; the effect of changing consumption patterns; the effects of less security and predictability of working lives, and the development of workable policies to support the cohesion of the family unit in the IS.*

## **2. The IS and working time**

The notion of working time will also change as ICTs pervade all workplaces. Relatively few workers will be ICT-technicians. A larger number of workers will be expected to operate or work with these technologies, whilst almost all workers will experience changes in the pace and rhythm of work as a result of the influence of new ICTs on organisations.

As a result of the IS we expect two key types of change. First, many workers will be expected to work over a more extended working week. This is not to say that they will work longer hours, but rather that the old regular shift patterns or the reliable “9 to 5” work pattern is less and less likely to be the norm in the future. Second, work will become more abstract in nature. Information work is brain work requiring conceptual and analytical skills rather than being based on intuitive skills or physical actions. (We discuss these issues in more detail below under section 4).

*However, it does seem clear that a new set of social conventions governing work will be necessary as the boundaries between work and non-work become more blurred. In particular, we need to understand in detail areas in which these problems are likely to affect people’s lives, such as:*

- *The implications of being constantly on call, the potential need to go off line at times and the right to restrict access at some times;*
- *The limitation and negotiation of intrusions;*
- *The design and negotiation of remuneration systems.*

At the same time, the high rate of innovation in the IS will undoubtedly lead to a high rate of obsolescence of ICT-systems. This drives managers to seek a highly intensive utilisation of their capital stock, in order to reinforce competitiveness. In essence, this leads to extended operating hours of plant, especially in the manufacturing industries, but also increasingly in the technologically intensive service sector. Extended operating hours for capital inevitably means more extensive working times for workers. In other words, there is more and more evening, night and weekend work - with the attendant adverse health risks associated with shift work patterns for workers, especially older ones.

By the same token, as we noted above, there is a trend in the IS towards more volatility of demand associated with the increased rate of technological change and a much tighter integration of demand and supply. In zero inventory systems there is not much opportunity for matching work flows to the needs of workers. Rather, they must be there when the demand exists and not otherwise. Firms are increasingly using variable working hours to deal with such fluctuations.

Traditionally fluctuations are dealt with through overtime payments. In the current period of high unemployment, it might be more appropriate to encourage the widening of the labour force instead so that more people are able to become economically active. Measures to limit overtime bans, for instance, are not the only way to achieve these changes, systems of “time off in lieu” can also be used as a flexible means to spread the opportunities for employment. On the other hand, we would not welcome an excessive use of hiring and firing as we shift through economic cycles and demand fluctuations. Such approaches, in our view, are destabilising to the local labour market. They ultimately reduce the performance of firms and are detrimental to the lives of workers and their families.

*We would like to see the encouragement of more proactive approaches to variations in labour demand whether they result from day to day variations in operating conditions, market volatility or seasonal or business cycles. We believe a set of measures could be found which would make flexible work more acceptable to workers and which could simultaneously widen access to employment opportunities. Such measures might include: annualized working time contracts; a widespread use of time off in lieu, for overtime and night and weekend shift supplements, to make new shift patterns attractive; and financial incentives for company agreements on working-time reductions to prevent redundancies in a downturn.*

### **3. The IS and new health and safety issues: from physical to mental stress**

In addition to the changes in how work is organized, conducted and practised, ICTs will have a profound impact on occupational health and safety. Both positive and adverse effects are foreseen on the basis of available research data. Overall, the consequences of ICTs on occupational health and safety seem to lead to a trade-off between physical workloads and hazards, and psychological stress and information overload.

By expanding possibilities for further mechanization and automation of work, the general impact of ICTs will be positive by lightening physically heavy work, eliminating some of the unergonomic conditions and isolating workers from hazardous processes and exposures

with the help of remote controls. Such arrangements will promise reduced exposure to noise, other physical factors, dusts, chemicals, and biological factors.

On the other hand, ICTs increasingly require a coordinated use of the sensory system (especially vision), fine psycho-motoric functions of hand-arm systems, and most of all the human brain. The available studies speak of numerous and continuing problems in designing human-technology interfaces in order to make work with ICTs less taxing. Empirical studies also show increased psychological workload due to the pressure to perform tasks fast and at a high-quality using very information-rich environments. There are cases where inadequate work organisation, together with inadequate skills or training, have provoked unreasonable psychological stress. Similar stress problems are related to technology failures, monotony in the control room and difficulty caused by problems in combining abstract (virtual) events in the computer system with real events and processes. A major characteristic of the IS, which could be called the “screen and chair society”, is the permanent utilisation of the cathodic video screen: at work, for leisure, in front of the television, for culture, banking, etc. For many, being seated on a chair in front of a screen to look at a virtual representation has become a quasi-permanent position, which, for some, creates concomitant physical problems such as backache.

The problems associated with such changes can be solved at least in part by using the results of research on human physiology and psychology and thus strengthening efforts to develop anthropocentric technology and work organisation. This requires more consideration of the user needs and user opinions than has been the case so far. It is important to note that this is not only an issue of health and safety. It is also linked to the acceptability of new ICTs and the productivity of investments in ICTs. Similarly, it requires further development and encouragement of self-steering, interaction and participation in the implementation phase.

*Health and safety aspects need to become fully integrated into the design and implementation of ICTs in any workplace, including the home, in order to facilitate the smooth adaptation to the change in work which is associated with such implementation. In implementing ICT-intensive work patterns, ways should be found to fully use the current research knowledge on occupational health and safety, particularly including the data on work organisation, ergonomics and psychology of work. Furthermore, the principle of participation should be duly considered to facilitate implementation of ICTs. The earliest possible involvement of users (and in some cases, clients) has been shown to substantially improve the acceptability and productivity of the use of ICTs. Finally, it is necessary to investigate both the physical effects on health of the “screen and chair” IS (stress, backache, migraines, eyes) and the possible*

*gradual diminution of certain senses (touching, smell) linked to the intensive use of virtual images.*

## **THEME IV:**

### **The IS and Labour Markets**

New flexible work patterns are emerging alongside the flexible firm in the IS. Flexible work includes: part-time work; working at or from home; the shift from employment to self-employment; increased use of fixed-term contracts; temporary and casualised work; outsourcing; the internationalisation of labour markets, often stimulated by the search for lower labour costs; and so on. The effects of many of the new forms of flexible jobs can be negative: less pay, longer working hours, more shift and night work as well as work on weekends including Sundays and holidays, lower social security coverage and so on.

In essence, the IS is emerging at a time when the traditional expectations of work and career are facing a radical challenge. It is necessary to consider in more detail changes in the relationships between the IS and the future of working lives of Europeans in relation to the labour market and its institutions. If work is less stable and more short term, then labour market policies must become more responsive and proactive in order to allow people to get back into work. In particular, we are concerned that policies be found which increase the accessibility of employment opportunities (especially through retraining and reskilling) and which raise the employability of workers, so that volatility of market demands does not directly result in a constant shift between labour shortages and over supply.

#### **1. Recruitment and retraining systems**

The combination of new flexible forms of work in the IS, which seem to affect all occupational groups albeit in different ways, and the growing rate of obsolescence of skills mean that labour market services will be called upon more frequently and to a much greater extent than in the past. In essence, therefore, labour market services and policies will have to match the underlying trend in the IS towards immediacy, responsiveness and customisation of services and inter-organisational integration across the public-private divide. Again ICTs will both be driving these changes and providing the tools for achieving the new service levels.

At the same time these new flexible forms of work raise some of the most fundamental challenges to firms' traditional incentives to invest in training and human resources more generally. At a time when investments in such (re-)training becomes an essential feature of the emerging IS, which we like to characterize as a “learning” society, the new flexible forms of work do not provide firms with sufficient incentives to undertake such investments. On the contrary, the increased “external” labour market flexibility is likely to reduce the rate of return to firms of such investments, with the most highly skilled becoming highly mobile.

*There is a clear and obvious need to develop and integrate further electronic networks in labour market agencies, especially public employment services with systems used by employers and education and training services. At the same time though, the development of stronger incentive systems (tax credits, training subsidies,<sup>13</sup> etc.) for human resources investment within firms is urgently needed.*

## **2. Enhancing employability**

Overall, there has been a decreasing demand for people with lower levels of skills. This is likely to be strengthened as ICTs become more widely diffused. We have already expressed our concern about the distributional impact of the emerging IS under Theme I: the IS and employment. Clearly, action is needed not only to reduce the impact of existing forms of exclusion, but to create real pathways to integration for people who are major potential losers. Existing European funds, such as the European Social Fund (ESF) could be redirected to address these “new” emerging issues.

*There is a need for a re-examination and evaluation of the guidelines of the ESF with the aim to reorientate its activities more directly towards the adaptation of the work environment and the workers within the new operating conditions of the IS.*

More specifically, the question can be raised whether pathways to integrate less well qualified people can be found through a combination of training policies and active labour market policies, at Member State level and through EU programmes such as PETRA. In many cases, training courses and even work experience placements are insufficient for people to break through into long-term employability.

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<sup>13</sup> A good example is the recently introduced Dutch WBSO scheme providing indirect employment subsidy to R&D personnel.

*There is a need for evaluations of existing 'training into work' projects which focus on the development of the new competencies associated with the ICT-based workplace. Best practice examples of such projects should be used to form the foundations of a system of customised pathways into work for less well qualified workers, together with subsidies for employers who are willing to participate in such programmes.*

Helping people into work is only one side of the equation, as far as labour market policy for the IS is concerned. Many people will need help to maintain their employability in the face of rapid technological change, the decline of many traditional sectors and occupations and the emergence of new cultures of work based upon self-reliance, team work, communication skills, achieving high levels of customer satisfaction, etc. Firms might have difficulties in upgrading workers' skills in time to remain competitive, and in many cases people might need help to make the transition from old to new practices and from old to new technologies. The issue here is not simply the need for continuing workplace based training, but for a better integration of the internal and external labour market to improve the position of people in the labour market. European schemes, such as COMETT and FORCE have recognised the need for such integration, and current schemes such as ADAPT and LEONARDO provide mechanisms by which such approaches could be further developed with direct reference to the IS.

*We believe that pilot projects increasing the adaptation of the work environment and the workers to the new operating conditions of the IS might be useful in this context. Such projects should seek to increase the coherence between the external labour market policies and firm level labour market developments. They could take the form of partnerships between training agencies and firms, ICT-based delivery of information on skill trends and training opportunities; self-assessment systems; and so on. In particular, we would like to see an emphasis on such measures which seek to include older workers into the IS, given the growing problem of involuntary retirement and the general issues of operating an economy based upon an ageing workforce.*

As with the introduction of all new technologies there are gains and losses and winners and losers. One of the great appeals of the IS is that it has the potential to increase the accessibility of employment to sections of the community that are disadvantaged in terms of traditional workplaces and work systems. In particular, with the trend within many countries towards higher rates of economic activity by women, there are chances to rethink the way that jobs are offered to improve the opportunities for women to gain equal access to higher status employment.



*Special policy action should be considered to improve the access of women to the high status jobs emerging in the IS. This may require special labour market measures to 'mainstream' the work that women do and to increase their access to the better jobs in the IS.*

Opportunities for improving the labour market position of disabled and disadvantaged people can also be imagined through, for example, special developments and adaptations of technologies so to make them more useable, the development of vision systems, the delivery of services and access to jobs on-line and so forth. There has been much discussion about teleworking for people with mobility problems. The implementation of ICTs can undoubtedly lead to an increase in the economic and social participation of disabled people by increasing the accessibility of work opportunities.

### **3. The transition to work from college**

The transition to work is increasingly a difficult time for both potential employees and employers. The new ICTs require new competencies and approaches to working which are not necessarily fully developed at school or college. Work, therefore, can come as quite a culture shock just as employers find it hard to integrate new entrants into the workforce. In recent years there have been moves to increase the links between the secondary and tertiary education sectors to industry so that these two worlds do not collide at the time of entering employment. However, we feel that more could be done to smooth this difficult transitional process.

*Again we believe that a limited set of pilot schemes developing exchanges of information and experience between firms and workers and young people in education could be useful in this context. Physical visits and short orientation placements remain essential, but could be supported through appropriate developments of multimedia systems.*

### **4. Negotiated change - social dialogue in the IS**

Social dialogue in the IS is important in achieving a fair and sustainable balance between the interests of workers and the interests of management. The main areas in which such balances have to be found concern: the changing work roles and skills required of employees in the IS; the introduction of more flexible employment patterns; and participation in the implementation of ICTs. Effective social dialogue is essential if such changes are to take place smoothly and with mutual satisfaction. Effective social dialogue can help to resolve even very difficult issues. For instance, German trade unions have

increasingly been prepared to accept a reduction in weekly working hours with more flexibility and adjustment of pay if jobs can be made more secure or where new jobs can be created.

Thus, the HLEG supports the development of social dialogue as a positive contribution to adapting work and work organisation to the IS. Indeed, we feel that the employment challenges of the IS can only be effectively tackled through concerted agreement and action between all the key stakeholders.

*Existing procedures for consultation between the employers and the trade unions or worker representatives supported by the state should be further developed. In order to stimulate the highest level of debate, such consultative procedures should be able to draw upon a strong and up-to-date analysis of the real issues of concern in employment and industrial development in the IS and of the evaluation of policy measures to meet these.*

A ready model for such consultative action, at the national level, is the German “Council for Technology”, which encompasses the top representatives of employers and trade unions, the federal ministers for economics, and education, science, research and technology, a state minister for education, and representatives from universities and research institutes. Clear candidates for such a development are the telecommunication and media industries, in which European level social dialogue is weakly developed because they are currently either organised on a local or national level (as national monopolies) or they are part of multinationals.

*As the IS develops it is important that the Commission stimulates and supports community-wide social dialogue so that joint efforts can be made to overcome the negative effects of the changes in the structure of employment and labour markets.*

It would be desirable to see further extension of information, counselling and consultation beyond the European Union and to smaller firms with respect to the consequences for employment of ICTs. It must be stressed that social dialogue should not be seen as a cost which firms have to bear. Rather, it should be considered as part of the process of working out approaches to technical and organisational change which seek to enhance both working lives and firm performance at the same time.

We feel that it is important to reassert the continuing relevance of collective agreements in the IS. Such agreements are a necessary counterweight to the increasing individualisation of contracts. Individual contracts may be more in line with the new flexible work patterns

of the IS. There are examples where work patterns have been negotiated at an individual level to meet both the needs of worker as well as those of the enterprise. However, individualised agreements reduce solidarity amongst workers and make it hard to establish a clear idea of what constitutes best practice. Collective agreements, therefore, provide a valuable framework within which individual arrangements can be viewed, although their role will shift as new forms of work and working practices become more widespread.

*An examination of the shifting role of collective agreements is clearly needed, so that more appropriate patterns to meet the challenges of the IS can be identified. There are major challenges here, especially as regards flexible work patterns which are steadily increasing in prominence in the IS such as access to paid leave, properly trained representation, etc. Better ways of extending social security coverage to the increasing numbers of workers in such new flexible work roles should be sought.*

The best basis for such negotiations is in our view a different set of relationships between workers and managers than those which traditionally hold sway. The need for such changes are widely recognised and are typified by discussion of new roles for management in terms of new network organisational structures, the changing roles of managers towards coaching, leadership and the increased discretion and responsibility devolved down to workers. At the same time, it is likely that the traditional area of collective agreements: the sector or professional branch, will increasingly be put into question by the global information industry. The frontiers between the electronic, electrical, information sectors and the multi-media and many other services will be blurred by both economic and technological evolutions.

## **THEME V:**

### **The IS, Social Cohesion and the Quality of Life**

The issues of social cohesion and quality of life are central to the emerging IS. We define social cohesion as one's ability to participate in society. In the IS individuals should be able to take full part in the social life of the community - the IS should, where possible, be used to reduce exclusion not to increase it. The term 'quality of life', in itself difficult to define, is dependent on an individual's wants and needs. The IS needs to be implemented in such a way that individuals can tailor their way of living to fulfil their wants and needs and maintain control over their lives. These two concepts, though separate, are related.

Exclusion can have serious impacts on an individual's quality of life. Some feel excluded by ICTs because they do not understand how to use them and they feel that they are unable to keep up with the pace of technology. Such individuals have negative feelings toward ICTs. They associate them with decreased job opportunities, a sense of isolation and health problems. Since ICTs are pervasive in society, and their use will continue to increase, it is important that people learn how to use these technologies.

Therefore, it is essential in our view that people, or groups of excluded people should not just be forced to adjust to the new technologies. Rather, the technologies must become more adjusted to human needs. The IS should not create new categories of excluded. It should be used to improve social integration and the quality of life.

The issues concerning social cohesion and the quality of life in the IS are broad and complex. In this chapter we address some, but by no means all, of these issues.<sup>14</sup> ICTs have an important potential to support more cohesive and integrated communities and, especially, opportunities to reduce the exclusion facing disadvantaged groups. However, many ICTs are still rather hard to use; social acceptance can only be enhanced through greater efforts to involve users in the design and implementation of these technologies. The danger that the IS might increase isolation must be taken seriously, even though other evidence would point to new forms of conviviality and human interaction centred around

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<sup>14</sup> Thus we do not discuss here the financial implications of these issues; we refer to the discussion of social distribution of jobs in Theme I, section 4.

these new technologies. The way that the virtual domain created with these new technologies alters our perception of concrete reality is, likewise, important. In both these cases, more knowledge about the real effects is needed, rather than more speculation. The new forms of on-line marketing, retailing and consumption are also likely to shift social values and the quality of life and needs deep consideration, both from the point of view of new systems of consumer protection as well as in terms of consumption as a constituent of social life. Finally, the family's role in terms of learning about the emerging IS is also of importance.

### **1. The potential for increased social integration within the community**

As discussed at greater length above under Themes II and III, the IS provides the tools to increase distance working. Such an increase could have a profound impact on social integration. At present, some individuals resist tele-working because they are afraid that they will be socially isolated due to reduced contact with colleagues. However, more employees working from home could result in increased social contacts within the neighbourhood and family thus creating 'social networks' within communities. We believe that this could positively affect the community as a whole and specific groups such as children, the elderly, the handicapped and the unemployed.

*The positive potential for teleworking on community life and for specific groups such as children, the elderly, the handicapped and the unemployed should be a priority area for investigation and social development.*

### **2. ICTs as tools for improving life quality and social integration of disadvantaged groups**

It is common, when a major set of new technologies is launched, to hope that it will also solve many social problems: the problems of the poor; the ill; the handicapped; the excluded; the marginalised; even the developing countries. This rule is also true for the new ICTs. Everyone hopes that they will contribute to social cohesion and they might do so if they are introduced in an optimal way.

ICTs can indeed substantially contribute to the quality of life and autonomy of many people who have had problems gaining access to services or caring for themselves using traditional methods or who have been disadvantaged as a result of social or cultural factors. This would be particularly valuable for people with disabilities or chronic health problems and the elderly. Systems which allow the remote monitoring of health conditions, alarm systems, home automation systems, remote access to information and transactional services (televoting and teleordering) are obvious examples.

*The various possibilities for increasing the rate of development and adoption of applications of ICTs to increase social participation and to improve the quality of life should be examined in much more detail. In particular, attention should focus on provision or adaptation in areas where the market is unlikely to meet needs. The participation of the target groups in the design, development and implementation of technologies is critical, as is the participation by voluntary bodies and NGOs representing such groups.*

### **3. The IS and exclusion**

It is essential that everyone should be included in the IS. Certain groups are already excluded, such as those with reduced mobility or impaired physical ability to communicate. Others face greater risks of exclusion in the future - for example the elderly, early and “active” retired persons, low income families, the unemployed and women. Certain people, either in their work or home life, find it difficult to use systems linked to new ICTs. This could be particularly difficult for the large number of illiterate people in Europe; for immigrants who have not fully mastered the language of the country of adoption; and, more generally, for persons with learning disabilities. New ICTs often require a long learning time which is not acceptable to everyone; in particular, to older people and those that are not attracted to some of the characteristics of the new ICTs, such as abstraction, interactivity or the necessity of quick response. Among them one finds children who do not like to play electronic games; or individuals that are not attracted to the ICTs’ “virtual” communication possibilities but earn their living through direct personal or physical contact, including some shopkeepers, artists and high level policy makers.

We believe it to be essential that the new and heightened risks which these groups face are fully researched and analyzed. In addition, it is important to discover what variables will determine ICT uptake by a given social group as this will provide insight into the groups which are likely and unlikely to adopt ICTs.

More people are retiring from full-time employment younger and people are living in full health longer. The result is a growing group of economically inactive but vigorous older people. Presently, half of the male labour force leaves the labour market at 55, and increasingly they will live longer, on average to the age of 80. Since the people who have retired early or who are still very active are no longer at work, they have fewer opportunities to come into contact with ICTs. The integration of older people into the IS, should be given greater consideration. At the moment, however, few existing services in the public sector or private sector acknowledge their existence, despite their often significant resources of time and economic power. Above all, such people must not be pushed towards the margins of the IS.

Unemployed people usually do not have access to ICTs and often cannot afford the technologies. The result is a group of people who are not only excluded from the work environment but are also socially excluded as they do not have access to or an understanding of ICT-based innovations. The full integration of women into the IS may also require specific policy action, given the predominantly male orientation of the ICT industry and products.

*Groups facing a high risk of exclusion must be incorporated into the IS including the elderly, early and “active” retired people, the unemployed and women. Their particular needs should be analyzed and better understood before major policy actions are launched. In particular, adaptations to the educational systems are required which address their non-vocational interests and needs in adapting to the IS. In addition, it might be appropriate to promote social cohesion by finding ways in which they (particularly the early and “active” retired and unemployed) can fill the human gaps in the provision of support for less adaptable older people and in the early learning of young people.*

#### **4. Making the IS easy for all: barriers to use**

Building up the IS infrastructure and reducing the economic barriers to the IS are essential steps. However, ICTs can still be a force for exclusion because many of the tools and services offered are not adapted to people's needs and certain groups generally lack an understanding of the benefits of ICTs. The majority of people still face barriers of technical literacy in accessing the IS. ICTs may be easier to use today than they were in the past, but to apply the term 'user-friendly' is still an overstatement. Finally, these new tools are often imposed upon people, with little user-involvement and control over the way that interfaces are designed. We believe these issues to be central to the acceptance of ICTs into daily life.

*In-depth investigations should be carried out into the difficulties faced by different sectors of the population in using ICT tools and ICT-based services and how to make the tools and services more user-friendly. In particular, such studies should examine: variations according to age, gender, social grouping; and the possibilities of overcoming access problems through training. The European Commission could consider promoting the development of user-friendly information technology by establishing an annual award, each year targeted to a specific domain of everyday life. The European Foundation for the Improvement of Living and Working Conditions might consider providing a list of priorities for making ICTs more human.*

## **5. A threat to social cohesion and quality of life: reduced human contact**

The social organisation of the IS — that is, the way it influences individuals in their interaction with other people, with the wider social environment, and tasks and activities undertaken on a day to day basis — is an important aspect of the IS debate. We believe that special attention should be paid to the effect of new ICTs and services on social contacts and quality of daily life. For example, the use of ICTs to purchase goods and perform transactions could affect social interaction. At present, when we shop or go to the library, we interact with other people. Although this interaction is often casual, it does fulfil a part of an individual's need for social contact. This type of human interaction does not occur when we purchase something via the Internet. We are concerned with how this reduced human contact will affect the individual in the IS.

Along similar lines, potential end users may be concerned that the introduction of new technologies might eliminate human contact and therefore certain services could become available only via ICTs. Banking, for example, already has some of these features with the growing use of automated telling machines and telephone banking. However, the banking industry has at the same time increased its opening hours and, in some areas, enhanced interpersonal contact. We believe that it is important to consider implementing services which are available via ICTs using a “grace period” where human contact is provided to give people the opportunity to gain acceptance to unfamiliar technologies and services. Otherwise, individuals who are unable to utilise the technologies will be excluded from using certain services - in effect reducing the quality of their lives.

*Further research efforts are needed to gain a better understanding of the personal consequences of ICTs, not only in terms of their design but also in the ways in which they are used. The aim should be to identify guidelines for the design and implementation of anthropocentric ICT systems and to raise the general awareness of the need to consider the social context of ICT use at work, in the community and in the home. Another aim should be to identify how ICTs can reinforce conviviality and avoid isolation.*

## **6. The IS as a threat to quality of life: “virtual” reality, abstraction and information stress**

The speed with which new ICTs are being introduced into people's lives, whether at the workplace or the home, raises questions about the match between people's social, behavioral and psychological needs and the systems with which they are confronted. There is a danger that some individuals will lose their sense of concrete reality through the further incursion of 'virtuality' into their lives. Screens, be they hooked up to a PC or a TV, have



become a central focus for people, often for hours at a time. It is hard to imagine that such close and intensive interactions with such visual communications technologies over extended periods do not alter ways of thinking and understanding the real world around us. There is concern that the abstract nature of much ICT use leads to a similar abstraction of reality. These technologies seem sometimes to reach right inside the brain in ways which physical technologies do not — this could be the reason why such technologies are becoming increasingly associated with psychological stress.

Psychological stresses associated with information technologies include information anxiety and information stress. In the case of information anxiety, individuals are overloaded with information and therefore cannot understand most of it. Similarly, information stress is also caused by an overload of information. In this case however, individuals feel inadequate because they are unable to process all the information to which they are exposed.

Although both these conditions have always existed, the IS exacerbates them by increasing the amount of information we are exposed to. In addition, ICTs also contribute to stress as they have changed expectations of how quickly tasks can be completed. Computer systems can give answers to questions and carry out instructions in a matter of seconds. Such instantaneous responses have raised expectations and decreased the tolerance of any form of delay. A crucial step is to learn how to evaluate different information and information sources and how to prioritise information.

*Further research efforts are needed to better understand the effect of “virtuality” in our lives. Existing research and literature on the problems of information stress and anxiety should be examined and carried further. Such an examination should lead to the development of objectives and ultimately programmes on how best to understand and approach these areas.*

Finally, the IS has imposed new pressures on individuals in terms of accessibility. Mobile phones, computer networks, and fax machines allow people, including employers, to constantly remain in contact with each other. ICTs increase contemporary challenges to the 9 to 5 working day, as many employers and employees have the tools to work anywhere at anytime. This in turn raises a number of questions. How to distinguish between free time and work time? How to protect ourselves from the increased demands of work? How can corporate cultures and policies develop that accept and respect the individual? What is the effect of continual accessibility?

*Pressures associated with continual accessibility and new work demands associated with ICTs require further research.*

## **7 . The IS and consumer behaviour**

Part of quality of life is acquiring the goods and services that individuals want and need. Consumer behaviour is increasingly affected by ICTs. More and more, consumers are able to order goods and perform other transactions (such as settling our accounts) via information networks. Information networks are available 24 hours a day. Provided that they have access to the networks, consumers can choose when goods will be purchased and when other transactions will be performed. The effect of ICTs on the consumer should be better understood. When and where will shopping take place? How will the quality of goods be judged? Will showrooms be necessary and when will they be open? How will goods be returned or guaranteed?

Additionally, ICTs allow consumers to interact with, and provide feedback to, their suppliers. A consumer is also able to provide information, such as their opinion of a product, to many fellow consumers using information networks. This could significantly influence the approval (or disapproval) of a product or service. Such interactions could influence how organisations meet customer needs.

*We believe that the effect of ICTs on consumer behaviour should be tracked to enable recommendations to be made on how consumers (and suppliers) can best use the information networks to their advantage.*

## **8. THE IS, THE FAMILY AND THE USE OF ICTS**

THE FAMILY PLAYS AN ACKNOWLEDGED ROLE IN THE EARLY LEARNING OF CHILDREN AND IN SUPPORTING GENERAL LEVELS OF EDUCATION THROUGHOUT THE DEVELOPMENT OF YOUNG PEOPLE. WITH THE RAPID SHIFT TOWARDS THE IS, THERE IS A SERIOUS RISK THAT FAMILIES WILL BE UNABLE TO SUPPORT THEIR YOUNGER MEMBERS IN THIS WAY. ALTHOUGH WE DO MAINTAIN THAT INFORMATION TECHNOLOGIES SHOULD BE AVAILABLE AND TAUGHT WITHIN THE PUBLIC SCHOOL SYSTEM, WE DO ACKNOWLEDGE THAT ACCESS TO ICTS IN THE HOME IS AN IMPORTANT ROUTE TO THE EMERGING IS. HOWEVER, THERE ARE STARK VARIATIONS IN ACCESS TO ICTS BETWEEN HOUSEHOLDS AND ALSO IN THE WAY IN WHICH SUCH TECHNOLOGIES ARE VIEWED AND USED. BELOW WE NOTE THAT ACCESS TO ICTS IN SCHOOLS STILL REQUIRES CONSIDERABLE DEVELOPMENT AND THERE ARE MAJOR PROBLEMS OF UP-DATING THE STOCK OF EQUIPMENT AND SOFTWARE. THE RESULT IS THAT HOME ACCESS TO THE IS WILL REMAIN A SIGNIFICANT CONTRIBUTOR TO THE LIFE CHANCES OF CHILDREN IN THE IS. FINALLY, THE ATTITUDE TOWARDS TECHNICAL LITERACY IN THE HOME IS ALSO LIKELY TO HAVE A MAJOR IMPACT ON THE ABILITY OF CHILDREN TO TAKE ADVANTAGE OF THE IS. FOR EXAMPLE, IN SOME SCHOOLS "COMPUTER CLUBS" HAVE BEEN DEVELOPED

WHERE PARENTS AND CHILDREN, TOGETHER, LEARN COMPUTER SKILLS USING THE SCHOOL'S ICT EQUIPMENT. WE FEEL THAT SUCH INITIATIVES COULD EASILY BE DUPLICATED THROUGHOUT EUROPE. ON THE OTHER HAND, IN MANY HOMES THE MOTHER STILL TAKES THE MAIN PART OF THE RESPONSIBILITY FOR PRE-SCHOOL LEARNING - YET ICTS ARE STILL PRIMARILY SOLD AND PRESENTED IN A MALE ORIENTATED MANNER IN TERMS OF TECHNICAL SPECIFICATIONS AND PERFORMANCE CHARACTERISTICS RATHER THAN IN TERMS OF WHAT THEY ACTUALLY DO.

*AWARENESS PROGRAMMES SHOULD BE DEVELOPED IN CONJUNCTION WITH EDUCATIONALISTS AND ICT-FIRMS WHICH ENCOURAGE BROADER USE OF THE TECHNOLOGIES. EMPHASIS SHOULD BE ON REINFORCING THE EDUCATIONAL AND DEVELOPMENTAL USE OF ICTS AND UPON THE REAL VALUE OF COMPUTERS RATHER THAN THEIR TECHNICAL SPECIFICATIONS. CONSIDERATION IS NEEDED AS TO HOW TO WIDEN ACCESS TO THESE TECHNOLOGIES TO ALL MEMBERS OF THE FAMILY, PERHAPS THROUGH FURTHER DEVELOPMENTS OF COMMUNITY CENTRE BASED ACCESS AND THROUGH THEIR INTEGRATION INTO ACTIVITIES WHICH INVOLVE ALL MEMBERS OF THE HOUSEHOLD, SUCH AS WITHIN SPORTS AND LEISURE FACILITIES.*

## **THEME VI:**

### **THE IS AND REGIONAL COHESION**

THE POTENTIAL OF ICTs TO BRIDGE GEOGRAPHICAL DISTANCE HAS LED QUITE NATURALLY TO A FOCUS ON THE POTENTIAL OF THE IS TO CONTRIBUTE TO THE DEVELOPMENT AND GREATER INTEGRATION OF PERIPHERAL AND LESS-FAVOURLED REGIONS (LFRs). A NUMBER OF PARTICULAR FEATURES OF THE IS HAVE BEEN HIGHLIGHTED. FIRST OF ALL, THERE ARE PARTICULAR ACTIVITIES, HIGH IN INFORMATION CONTENT, BUT PART OF EXISTING MANUFACTURING OR SERVICE PRODUCTION PRESENTLY LOCATED IN CORE REGIONS WHICH MIGHT, THANKS TO THE POSSIBILITIES OFFERED BY NEW ICTs, BECOME LOCATIONALLY "FOOTLOOSE". SECOND THERE ARE NEW LOCATIONALLY MOBILE ACTIVITIES, SUCH AS TELESERVICES, FOR WHICH LOW COST, LESS PHYSICALLY CONGESTED, PERIPHERAL OR LESS-FAVOURLED REGIONS MIGHT BECOME ATTRACTIVE LOCATIONS. THIRD, THERE ARE THE POSSIBILITIES FOR WORKING AT A DISTANCE OFFERED BY ICTs (SEE OUR PREVIOUS DISCUSSION ON TELEWORKING UNDER THEME II.3) WHICH COULD COUNTERACT POSSIBLE AGGLOMERATION AND URBANISATION PRESSURES.

ALL THESE FEATURES DEPEND CRUCIALLY ON ACCESS AND AFFORDABILITY TO ADVANCED INFORMATION INFRASTRUCTURES. NOT SURPRISINGLY THEREFORE THE REGIONAL COHESION DIMENSION OF THE IS HAS GENERALLY BEEN DISCUSSED WITHIN THE FRAMEWORK OF UPDATING THE PRESENT UNIVERSAL SERVICE OBLIGATION APPLICABLE TO BASIC TELEPHONY SERVICES TO "INFORMATION" SERVICES. HOWEVER, THERE IS MORE TO REGIONAL COHESION THAN THE BROADENING OF UNIVERSAL SERVICE OBLIGATION. ALONGSIDE THE LATTER WE CONSIDER THREE OTHER ISSUES: THE OPPORTUNITIES LINKED TO THE DEREGULATION AND LIBERALISATION OF TELECOM OPERATORS AND SERVICES FOR REGIONAL "CATCHING-UP" AND EVEN "LEAPFROGGING"; THE ADAPTATION AND DEVELOPMENT OF REGIONAL POLICIES; AND THE PARTICULAR CASE OF WHAT WE HAVE CALLED "TELE-COOPERATION", THAT IS, THE POSSIBILITY AFFORDED BY TELEWORKING, WHICH WE HAVE IDENTIFIED ABOVE PRIMARILY AS INDIVIDUAL TELEWORK AT HOME, FOR COMPANIES TO RELOCATE IN PERIPHERAL OR REMOTE AREAS.

#### **1. THE IS, "UNIVERSAL SERVICE" AND INFORMATION INFRASTRUCTURE DEVELOPMENT**

THE SUPPORT FOR INFORMATION INFRASTRUCTURE IN PERIPHERAL AND LFRs HAS TRADITIONALLY BEEN A CENTRAL FEATURE IN EUROPEAN COHESION POLICIES (STAR, TELEMATIQUE). SUCH POLICIES HAVE AIMED AT GUARANTEEING ACCESS AND IMPROVING AFFORDABILITY TO ADVANCED INFORMATION INFRASTRUCTURES IN TERMS OF THE SO-CALLED "UNIVERSAL SERVICE PROVISION" (USP) SET OUT IN THE EUROPEAN COUNCIL RESOLUTION (22 JULY 1993). USP GUARANTEES ACCESS TO A MINIMUM LEVEL PROVISION OF POST AND TELEPHONY TO EVERYONE IN ALL MEMBER STATES. THE IS COVERS A MUCH WIDER RANGE OF SERVICES THAN POSTAL AND TELEPHONE SERVICES. THE QUESTION CAN THEREFORE BE RAISED AS TO HOW THE DEFINITION OF USP MUST BE BROADENED TO TAKE INTO ACCOUNT THE FACT THAT IN THE NEWLY EMERGING IS THE OLD BASIC PROVISIONS MIGHT NO LONGER FULFIL BASIC COMMUNICATION NEEDS.<sup>15</sup>

THIS QUESTION APPEARS ALL THE MORE ESSENTIAL AS, GIVEN THE DEREGULATION AND PRIVATISATION OF TELECOMMUNICATIONS, ICT-SERVICES WILL BE PROVIDED ON A COMMERCIAL BASIS THUS RAISING ON THE ONE HAND THE QUESTION ABOUT THE COMMERCIAL VIABILITY OF "PRIVATISED" TELECOM SERVICES IN LFRs AND ON THE OTHER HAND THE RISK THAT ONLY THE MORE AFFLUENT AND/OR CORE REGIONS WILL BENEFIT FROM THE MORE COMPETITIVE PRICING AND NEW SERVICES FOLLOWING LIBERALISATION. NEVERTHELESS, THE SIMPLE EXTENSION OF THE USP TO THE NEW IS REQUIREMENTS, AS IN, FOR INSTANCE, BROADBAND TO ALL PREMISES, NOT ONLY WOULD BE EXTREMELY COSTLY BUT WOULD ALSO BE QUICKLY OUTDATED (E.G. THE CURRENT SHIFT FROM CABLE TO CELLULAR AND THE EXPECTED SHIFT FROM CELLULAR TO PERSONAL COMMUNICATIONS SERVICES).

OBVIOUSLY, IN AN INCREASINGLY INFORMATION DEPENDENT SOCIETY, A NOTION OF UNIVERSAL SERVICE GUARANTEEING SOME LEVEL OF EQUAL ACCESS; NEUTRALITY WITH RESPECT TO USERS; CONTINUITY; AVAILABILITY; AND ADAPTABILITY TO NEEDS WILL REMAIN ESSENTIAL. COMMUNICATION WILL MORE THAN EVER BE OF "GENERAL INTEREST".<sup>16</sup> THE CURRENT NOTION OF UNIVERSAL SERVICE HAS BEEN DEFINED AS THE "BASIC SERVICE OFFERED TO ALL IN THE UNION AT AFFORDABLE TARIFF CONDITIONS AND AT A STANDARD QUALITY LEVEL". SUCH A SERVICE IS OF COURSE MUCH MORE DIFFICULT TO IDENTIFY WHEN CONFRONTED WITH THE WIDE AND INCREASING ARRAY OF COMPLEX AND COMPETING ICTs ASSOCIATED WITH THE IS.

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<sup>15</sup> Thus the present proposed Open Network Provision (ONP) directive (COM(94) 689final, 1/02/1995) proposes an extremely low minimum transmission rate (specified to 2.4 kbits per second in the Commission Communication on the Consultation on the Green Paper, May 1995), only adequate for voice transmission, but not for fax, on-line access or data transfer where the current minimal norm for modem speed is 14.4 kbits.

<sup>16</sup> "d'intérêt general" as one says in French.

*RATHER THAN GETTING LOST IN MINIMAL TECHNICAL STANDARDS, WE WOULD ARGUE THAT THE DISCUSSION HAS TO GET BACK TO THE "FUNCTIONALITY" OF THE SERVICES AND ALTERNATIVE TECHNOLOGIES. AS IN OTHER AREAS, WE FAVOUR HERE TOO A MUCH MORE SOCIAL AND SOCIETAL DOMINATED DEBATE THAN THE CURRENT TECHNOLOGICAL ONE. FROM THIS PERSPECTIVE THERE IS A NEED TO INVESTIGATE IN MUCH GREATER DETAIL WHETHER IN ORDER TO AVOID EXCLUSION AND PRESERVE REGIONAL COHESION, THE CURRENT NOTION OF "UNIVERSAL SERVICE" SHOULD NOT BE SHIFTED IN THE DIRECTION OF A NOTION OF "UNIVERSAL COMMUNITY SERVICE", EXTENDING UNIVERSAL SERVICE PROVISION TO INCORPORATE A BASIC LEVEL OF ACCESS TO NEW INFORMATION SERVICES,<sup>17</sup> BUT LIMITED IN ITS UNIVERSALITY OBLIGATION TO EDUCATIONAL, CULTURAL, MEDICAL, SOCIAL OR ECONOMIC INSTITUTIONS OF LOCAL COMMUNITIES. SUCH A "COMMUNITY" USP CONCEPT WOULD IN EFFECT MEAN A RETURN TO THE HISTORICAL NOTION OF "UNIVERSALITY" AS INTRODUCED LAST CENTURY IN THE US WITH THE ADVENT OF THE TELEGRAPH. IT WOULD GUARANTEE OPEN ACCESS TO THE NETWORK AND THE CARRIER SERVICES AND INVOLVE, WHERE NECESSARY, PUBLIC FUNDING FOR TECHNICAL AND FINANCIAL ASSISTANCE.*

THIS PROPOSED LIMITATION OF USP DOES NOT IMPLY THAT WE CONSIDER THE AVAILABILITY OF MODERN INFORMATION INFRASTRUCTURE TO BE OF LESS IMPORTANCE FOR REGIONAL DEVELOPMENT. ON THE CONTRARY, CONNECTIVITY HAS BECOME A PRECONDITION FOR ANY REGIONAL DEVELOPMENT TODAY. BUT AS ARGUED BELOW, SUCH PROGRAMMES OF MODERNISATION AND EXTENSION OF TELECOMMUNICATIONS INFRASTRUCTURE NEED TO BE CARRIED OUT IN HARMONY WITH THE PROCESS OF DEREGULATION AND LIBERALISATION OF TELECOM OPERATORS AND SERVICES. OTHERWISE THE EXPECTED "ADDITIONALITY" OF PUBLICLY FUNDED SUPPORT PROGRAMMES (SUCH AS STAR, WHICH RECEIVED SUPPORT FROM THE COMMUNITY STRUCTURAL FUNDS) WITH PRIVATE INVESTMENT INITIATIVES, IS MORE OFTEN THAN NOT GOING TO RESULT DE FACTO IN PURE SUBSTITUTION, AND ULTIMATELY A QUICKLY OUTDATED TELECOMMUNICATION INFRASTRUCTURE.

THE NEW CELLULAR POSSIBILITIES REDEFINE TO SOME EXTENT THE OLD NOTION OF REGIONAL INFRASTRUCTURE. THE ISSUE NOW IS THAT EVERY REGION NEEDS TO BE ABLE TO HAVE ACCESS, THAT IS, TO BE COVERED THROUGH SATELLITE COMMUNICATION, TO CELLULAR TELEPHONY AND DATA TRANSMISSION. IT IS, AS WE MENTIONED, ABOVE THE FUNCTIONALITY WHICH IS THE ESSENCE, RATHER THAN THE "BITS" OR THE TECHNICAL WAY IN WHICH THE SERVICE IS BEING PROVIDED.

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<sup>17</sup> This could be specified in functional rather than technical terms such as possibilities for electronic networking, data and mail interchange, access to new business and information services available world wide and in core regions. etc.

## **2. THE IS, LIBERALISATION AND COHESION**

**IF THE ICTS UNDERLYING THE EMERGING IS ARE LIKELY TO HAVE THE POTENTIAL GROWTH AND INTEGRATING IMPACT FOR GEOGRAPHICALLY PERIPHERAL AND/OR LFRs, THE PACE OF LIBERALISATION OF THE TELECOMMUNICATION MARKET IN THOSE REGIONS NEEDS TO BE AT LEAST AS RAPID AS IN THE CORE REGIONS. AT THE MOMENT THE OPPOSITE SEEMS TO BE THE CASE.**

**THE EVIDENCE COLLECTED SO FAR FOR PERIPHERAL COUNTRIES, SUCH AS FINLAND, SWEDEN OR IRELAND, WHICH HAVE RAPIDLY LIBERALISED THEIR TELECOMMUNICATIONS SECTOR SUGGESTS THAT LIBERALISATION IS LIKELY TO BENEFIT GEOGRAPHICALLY PERIPHERAL COUNTRIES TO A SIGNIFICANT EXTENT. LIBERALISATION HAS ENHANCED PRIVATE INVESTMENT IN TELECOMMUNICATION MARKETS, LED TO A MORE RAPID DIFFUSION AND USE OF NEW ICT EQUIPMENT, AND CREATED SUBSTANTIAL EMPLOYMENT IN VARIOUS NEW TELESERVICE ACTIVITIES.**

**WHILE THE ISSUE OF GEOGRAPHICAL DISTANCE TYPICAL OF “PERIPHERAL” COUNTRIES OR REGIONS SHOULD NOT BE CONFUSED WITH THE PROBLEM OF POVERTY AND LOW LEVELS OF DEVELOPMENT TYPICAL OF LFRs, THERE ARE NEVERTHELESS SIMILAR PROBLEMS WITH RESPECT TO ACCESS AND AFFORDABILITY IN THE USE OF ICTs. THE PROBLEMS IN LFRs ARE OBVIOUSLY MUCH BROADER AND ARE INTRINSICALLY RELATED TO PAST PATTERNS OF SPECIALISATION AND THE UNEVEN REGIONAL DEVELOPMENT ACCOMPANYING ECONOMIC INTEGRATION AND DEVELOPMENT. THIS IS NOT ONLY BECAUSE OF THE WEIGHT OF HISTORY BUT ALSO BECAUSE FIRMS, INSTITUTIONS AND REGIONS DEVELOP AT AN UNEVEN PACE AND WITH VARIABLE LEVELS OF SUCCESS. THE REAL POLICY ISSUE IN THIS AREA APPEARS TO BE HOW TO AVOID THE FORMATION OF REGIONAL “BLACK HOLES”, RESULTING FROM THE CUMULATIVE IMPACT OF UNDERDEVELOPMENT.**

**THE DEREGULATION AND LIBERALISATION PROCESS ALLOWS FOR MORE SPECIFIC POLICY ACTIONS. THUS EVEN WITHIN LFRs, INVESTMENT IN TELECOMMUNICATION INFRASTRUCTURE MIGHT BE POTENTIALLY PROFITABLE IN MANY SUB-REGIONS. THE DIGITALIZATION OF TRUNK LINES AND LOCAL EXCHANGES, THE ENDOWMENT WITH INTELLIGENT NETWORK FEATURES, AND THE EXTENSION OF GSM, TO TAKE A FEW EXAMPLES, ARE LIKELY IN URBANISED SUB-REGIONS TO BE PROFITABLE FROM THE VERY OUTSET. FOR THIS REASON, MUCH OF THE UPGRADING AND EXTENSION WOULD BE TAKING PLACE ANYWAY IN THE RUN UP TO LIBERALISATION AND IN ANTICIPATION OF COMPETITION. THE EVALUATION OF THE STAR PROGRAMME ILLUSTRATED HOW DIFFICULT IT IS TO ENSURE TRUE ADDITIONALITY IN NETWORK INVESTMENT.**

***THERE IS THUS A NEED FOR A FUNDAMENTAL RETHINKING OF “REGIONAL COHESION” POLICIES WITHIN THE FRAMEWORK OF THE EMERGING IS, FROM POLICIES WITH***

*RESPECT TO TELECOM LIBERALISATION IN GEOGRAPHICALLY PERIPHERAL COUNTRIES AND REGIONS TO THE DEVELOPMENT OF PROGRAMMES TAILORED TO THE SPECIFIC NEEDS OF LAGGING REGIONS. COMMUNITY STRUCTURAL FUNDS SHOULD BECOME MUCH MORE FOCUSED, TARGETED TO THOSE AREAS/REGIONS WHERE THE BENEFITS OF LIBERALISATION ARE UNLIKELY TO FILTER THROUGH. SUCH FUNDS SHOULD BE USED IN OTHER WORDS MORE AS SUPPORTING DEMAND-LED REGIONAL POLICIES FILLING IN REGIONAL "BLACK HOLES". IN DOING SO THE REGIONAL POLICY WOULD BRING MORE CLEARLY TO THE FOREFRONT THE BENEFITS OF THE INCREASED TRANSPARENCY OF COSTS IN LFRS AND BECOME A MORE EFFECTIVE REGIONAL COHESION POLICY INSTRUMENT, FOCUSING ITS SUPPORT ON RELATIVELY NARROW TARGETS<sup>18</sup> FOR SPECIFIC GROUPS IN RURAL OR REMOTE AREAS.*

### **3. THE IS AND REGIONAL COHESION - BEYOND UNIVERSAL SERVICE**

ALTHOUGH CONNECTIVITY IS BECOMING A PRECONDITION FOR ECONOMIC GROWTH IN ALL REGIONS, THE SHEER EXISTENCE OF THE INFORMATION SUPER-HIGHWAY DOES NOT GUARANTEE DEVELOPMENT. TO FULLY EXPLOIT THE TECHNOLOGICAL CAPACITY OF THE NEW ICTS REQUIRES THE ADAPTATION AND DEVELOPMENT OF REGIONAL HUMAN RESOURCES AND OF THE INSTITUTIONAL STRUCTURES WHICH SUPPORT REGIONAL INNOVATION AND ORGANISED LEARNING.

#### *A. DIFFUSING THE LEARNING ORGANISATION*

CLEARLY, A MAJOR CHALLENGE IN DEVELOPING THE IS IN LFRS, RURAL AREAS AND DISTANT AREAS IS TO STIMULATE DEMAND FOR THE NEW ICT INFRASTRUCTURES. DESPITE QUITE A LOT OF SUPPORT FOR INNOVATION AND INVESTMENTS, THE LEVEL OF TAKE UP OF ICT-BASED SERVICES HAS GENERALLY BEEN DISAPPOINTING. THE PROSPECTS FOR SUCCESS APPEAR TO BE STRONGEST WHERE THE INNOVATIONS INVOLVE SOME SIGNIFICANT CHANGE IN ORGANISATIONAL BEHAVIOUR, PARTICULARLY IF IT LEADS TO A BOOST TO COMPETITIVENESS OR THE VALUE ADDED FOR THE FIRM CONCERNED. THUS EDI-BASED INTEGRATION OF SUB-CONTRACTORS INTO THE OPERATIONS OF A LARGER FIRM IS FAR MORE LIKELY TO LEAD TO SUSTAINED USE OF ICTs, BECAUSE IT INVOLVES BOTH A NEW WAY OF OPERATING AND HAS A STRONG ECONOMIC RATIONALE.

*ONE MAIN FOCUS OF REGIONAL COHESION PROJECTS IN LFRS, RURAL AREAS AND DISTANT AREAS SHOULD BE ON SUPPORTING ORGANISATIONAL LEARNING THROUGH INNOVATIONS WITH ICTs. THESE PROJECTS SHOULD HAVE A DEMONSTRABLE IMPACT*

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<sup>18</sup> As an example one might think of access to ISDN services in rural areas.



*ON THE WAY THE ORGANISATIONS INVOLVED OPERATE ON A DAY TO DAY BASIS. ADVICE AND CONSULTANCY SHOULD BE AVAILABLE AT ALL STAGES OF THE PROCESS, FROM INITIAL PROJECT PROPOSAL TO FINAL EVALUATION. SMES, IN PARTICULAR, SHOULD BE TARGETED FOR THIS ACTION.*

#### ***B. HUMAN RESOURCES IN QUANTITY AND QUALITY***

WHILE INFORMATION WORKERS HAVE BEEN GROWING STEADILY AS A PROPORTION OF THE WORKFORCE FOR THE LAST 50 YEARS, THE SHIFT TODAY IS INCREASINGLY TOWARDS KNOWLEDGE WORK. IN SUCH WORK THE AVAILABILITY OF HIGH-QUALITY FLEXIBLE PEOPLE IS BECOMING A FUNDAMENTAL REQUIREMENT AT ALL LEVELS AND IN ALL ORGANISATIONS. TO MAKE THE MOST OF THE CAPACITY OF NEW ICTs, THERE IS A NEED TO REINFORCE THE NEED FOR HIGH LEVELS OF EDUCATIONAL STANDARDS. SOME LINES OF ACTION SEEM TO BE ESSENTIAL IN THIS DIRECTION:

- AN EVALUATION OF HUMAN RESOURCE NEEDS IN REGIONAL ECONOMIES AND THE ADAPTATION OF THE HIGHER EDUCATION SYSTEM TOWARD THESE NEEDS.

IN MANY LFRs, HIGHER EDUCATION CONCENTRATES UPON GENERAL EDUCATION RATHER THAN ON PROVIDING HIGH LEVEL VOCATIONALLY ORIENTATED TRAINING. WHILST GENERAL EDUCATION IS ESSENTIAL, SUCCESSFUL ECONOMIES USUALLY HAVE HIGHLY DEVELOPED VOCATIONAL EDUCATION PROVISION. IN MANY CASES THERE IS STILL A NEED FOR THE DEVELOPMENT OF SUCH VOCATIONAL EDUCATION PROVISION IN CLOSE INTERACTION WITH THE ACTUAL NEEDS OF LOCAL ENTERPRISES. HOWEVER, THE DESIRE TO FOCUS ON SUCH IMMEDIATE NEEDS SHOULD NOT LEAD ONE TO IGNORE THE NEED TO DEVELOP VOCATIONAL EDUCATION IN A MORE PROACTIVE FASHION, GOING BEYOND THE REGION'S IMMEDIATE NEEDS. WHILE CURRENT NEEDS OF LOCAL ENTERPRISES ARE NOT ALWAYS CLEAR, THE ASSESSMENT OF FUTURE NEEDS IS OFTEN INADEQUATE. TO MEET FUTURE NEEDS IS LIKELY TO REQUIRE GREATER COOPERATION BETWEEN THE VARIOUS GROUPS INVOLVED, NAMELY THE MANAGERS, TRAINERS, LABOUR MARKET AGENCIES AND SO FORTH. IN SOME CASES, NEW ENTERPRISES CAN BE CREATED THROUGH TRAINING.

*DEMANDS FOR IS RELEVANT EDUCATION AND TRAINING SHOULD IN OTHER WORDS BE CAREFULLY ASSESSED AND MONITORED IN THE LFRs. WHILE TRAINING SHOULD BE ATTUNED TO THE NEEDS AND LEVELS OF DEMAND IN LOCAL INDUSTRY, IT SHOULD ALSO CONTAIN A PROACTIVE ELEMENT GOING BEYOND CURRENT LOCAL OPERATING NEEDS. IF POSSIBLE, COLLABORATIVE DEVELOPMENTS OF TRAINING SHOULD TAKE PLACE TO CREATE A TRAJECTORY OF DEVELOPMENT FOR THE FIRM, THE TRAINEE AND THE EDUCATIONAL INSTITUTE.*

- DEVELOPMENT OF APPLIED RESEARCH INSTITUTES AND TECHNOLOGY TRANSFER CENTRES TO GENERATE AN INDIGENOUS TECHNOLOGY BASE UPON WHICH REGIONAL FIRMS CAN CALL.

THE Pervasiveness of ICTs means that applications can be found for them in just about all firms and in all sectors. However, at the same time, getting the best out of the technologies usually requires much greater customisation of the systems to users' needs. In addition, implementation of ICTs usually means changing current procedures and working practices. In some cases, quite basic research may be needed in order to facilitate the application of new ICTs to production processes, especially in the long established industries often found in LFRs, such as, for instance, viticulture or the garment industry. Local industries, therefore, need to be able to call upon readily available expertise in order to innovate successfully. While such expertise will rarely be of local origin, easy access will imply some geographical proximity of technological training, assessment, and information facilities.

*THE ADAPTIVENESS OF THE REGIONAL INNOVATION SYSTEM TO THE NEEDS OF INDUSTRIES IN LFRs SHOULD BE RE-EXAMINED IN THE CONTEXT OF THE IS. IN PARTICULAR, ONE SHOULD LOOK AT HOW TO UPDATE EXISTING PROGRAMMES AND POLICIES, AND HOW STAFF CAN HELP FIRMS TO TAKE BETTER ADVANTAGE OF THE OPPORTUNITIES OF ICTs. THERE ARE, HOWEVER, NO UNIVERSAL SOLUTIONS. IN SOME LFRs THERE IS STILL THE "REACTIVE" NEED FOR THE ESTABLISHMENT OF REGIONAL TECHNOLOGY TRANSFER CENTRES, LINKING UP RESEARCH INSTITUTES, EDUCATIONAL INSTITUTIONS AND FIRMS. IN OTHER REGIONS, THERE IS A NEED FOR MORE "PROACTIVE" APPROACHES AND FOR EXISTING REGIONAL TECHNOLOGY TRANSFER CENTRES TO INTEGRATE TRAINING MORE EFFECTIVELY, THE TRANSFER OF TECHNOLOGY, ON-LINE MARKET INFORMATION AND OTHER CONSULTATION AND ADVICE ON THE SPECIFIC NEEDS OF MODERNISATION AND RESTRUCTURING OF LOCAL FIRMS. GIVEN THE GROWING COMPLEXITY OF TECHNOLOGY, REGIONAL TECHNOLOGY TRANSFER CENTRES WILL NEVER BE ABLE TO PROVIDE ALL THE REQUESTED TECHNOLOGICAL AND MARKET INFORMATION. HOWEVER, THEY COULD BECOME CRUCIAL INFORMATION AND KNOWLEDGE BROKERS, BRINGING FIRMS IN CONTACT WITH OTHER TECHNOLOGY INSTITUTES AND CENTRES OUTSIDE THE REGION. THIS WILL REQUIRE A GREATER FOCUS ON THE COORDINATION OF ACTIVITIES, RATHER THAN ON THE CREATION OF NEW, REGIONAL INNOVATION INSTITUTIONS.*

### **C. ADAPTING REGIONAL INSTITUTIONS TO THE IS**

THE STRUCTURE OF REGIONAL INSTITUTIONS IS A MAJOR FACTOR IN DETERMINING HOW RECEPTIVE A REGION IS TO THE IS. THE RELATIONSHIPS BETWEEN REGIONAL GOVERNMENT

AND INDUSTRY AND OTHER MAJOR ACTORS SUCH AS THE UNIVERSITIES AND THE ECONOMIC DEVELOPMENT AUTHORITIES ALL SIGNIFICANTLY SHAPE REGIONAL INNOVATION. IN GENERAL, DIVERSE BUT WELL INTEGRATED AND ADAPTABLE INSTITUTIONS TEND TO LEAD TO GREATER INNOVATION. RIGID STRUCTURES BASED UPON OLD OR DECLINING INDUSTRIES, OR AREAS IN WHICH THERE HAS BEEN LITTLE DIVERSITY OF INDUSTRIAL CULTURE TEND TO BE LESS INNOVATIVE, PARTICULARLY IF THEY ARE IN PERIPHERAL AREAS. NEVERTHELESS, IT SHOULD NOT BE FORGOTTEN THAT MANY "OLD" AND "TRADITIONAL" INDUSTRIES ARE BEING TRANSFORMED AND RENEWED WITH THE HELP OF ICTs.

WITH THE IS COMES A NEW AREA OF ACTIVITY FOR MANY REGIONS AS TELECOMMUNICATION POLICY IS NOT NORMALLY REGARDED AS A REGIONAL POLICY ISSUE. MORE AND MORE REGIONS ARE BECOMING AWARE OF THE NEED TO ELABORATE STRATEGIES FOR ADAPTING THE REGIONAL ECONOMIC BASE TO THE CHALLENGES OF THE IS. THE RECOGNITION OF THE NEED TO FORMULATE STRATEGY IN THIS REGARD IS REFLECTED IN THE RECENT PILOT ACTION OF THE EU IN THE AREA OF SHAPING THE REGIONAL IS AT THE REGIONAL LEVEL.

*THE PILOT ACTION OF THE COMMISSION SUPPORTING THE DEVELOPMENT OF REGIONAL IS STRATEGIES SHOULD, IN OUR VIEW, LEAD TO PRACTICAL IMPLEMENTATIONS OF THE REGIONAL IS IN TERMS OF ACTUALLY CREATING THE IS AND NOT JUST PLANNING FOR IT. IN PARTICULAR, WE WOULD LIKE TO SEE ICTs USED TO STRENGTHEN REGIONAL INSTITUTIONAL STRUCTURES THROUGH: ICT-BASED LOCAL PUBLIC SERVICES TO FIRMS, COMMUNITIES AND HOUSEHOLDS; THE DEVELOPMENT OF ON-LINE LINKS BETWEEN FIRMS AND EDUCATIONAL AND LABOUR MARKET INSTITUTIONS; ON-LINE SERVICES DIRECTED TOWARDS THE REAL NEEDS OF SMES (BACKED BY DIRECT HUMAN CONTACT); AND SUPPORT FOR USER-NEEDS BASED TELESERVICE CENTRES, ESPECIALLY IN COMMUNITIES WHICH ARE AT A DISADVANTAGE THROUGH BEING REMOTE AND LESS AFFLUENT.*

SEVERAL INTER-REGIONAL NETWORKS WHICH ALLOW FOR THE SHARING OF KNOW-HOW ABOUT THE IS ARE ALREADY IN PLACE. HOWEVER, WE ARE CONCERNED THAT INTER-REGIONAL GROUPINGS SUCH AS THE FOUR MOTORS (BADEN-WURTTENBURG, CATALONIA, LOMBARDY, RHÔNE-ALPES), TELECITIES GROUP AND THE IRIS-I GROUP WILL EFFECTIVELY CREATE A SUPER LEAGUE OF REGIONS, WHICH COULD CREATE A NEW GEOGRAPHY OF UNEVEN DEVELOPMENT IN THE IS. IT IS OF COURSE BETTER TO ENCOURAGE MORE INTER-REGIONAL COOPERATION RATHER THAN HOLDING BACK THE LEAD REGIONS.

*IT SHOULD BE A CENTRAL POLICY AIM TO ENCOURAGE THE COOPERATION OF REGIONS AROUND EUROPE SO THAT COOPERATIVE LEARNING BETWEEN CITIES AND REGIONS ABOUT THE IS CAN TAKE PLACE. THESE NETWORKS SHOULD HAVE SOME JUSTIFIABLE POTENTIAL FOR SYNERGIES BETWEEN THEM FOR INSTANCE BY VIRTUE, FOR EXAMPLE,*

*OF SIMILAR INDUSTRIAL HISTORIES. ICT NETWORKS SHOULD BE DEVELOPED TO ENCOURAGE THE INTERCHANGE AND BUILDING-UP OF EXPERIENCE. THEREFORE, A MAJOR FUNCTION OF THESE NETWORKS SHOULD BE TO HELP THE TRANSFER OF EXPERIENCES TO OTHER REGIONS.*

#### **4. TELECOOPERATION AND REGIONAL COHESION**

THERE ARE MANY EXAMPLES NOW OF FIRMS IN REMOTE REGIONS AND CITIES USING ICTs TO ACCESS WORK IN REMOTE AREAS. IN EFFECT, THE LOWER OVERHEADS OF A NON-METROPOLITAN LOCATION CAN BE USED AS A COMPETITIVE ADVANTAGE BECAUSE FIRMS CAN USE THE ICTs TO 'BORROW SIZE' BY GETTING ACCESS TO MOST OF THE SERVICES, INFORMATION AND COMPUTER POWER AVAILABLE TO FIRMS IN BIG CITIES. AT THE SAME TIME, NEW ENTERPRISES MIGHT BE CREATED TO RESPOND TO THESE NEW GROWTH AND MARKET POSSIBILITIES. THE NEW ECONOMIC GEOGRAPHY OF THE IS, THEREFORE, RAISES MANY OPPORTUNITIES FOR NON-CORE REGIONS TO COMPETE FOR JOBS AND INVESTMENT.

HOWEVER, THESE NEW OPPORTUNITIES NEED TO BE PLACED WITHIN A BALANCED ECONOMIC DEVELOPMENT STRATEGY. IF NOT, THE INWARD INVESTMENT OF FIRMS INTO NON-CORE REGIONS IN THE FORM OF CALL-CENTRES, DATA ENTRY CENTRES AND SO ON COULD CREATE A NEW WAVE OF ELECTRONIC BACK OFFICES. SUCH WORK HAS OFTEN BEEN RELATIVELY LOW-SKILLED AND LOW PAID, AND IN SOME COUNTRIES<sup>19</sup> PRIMARILY TARGETED AT FEMALE SECOND INCOME EARNERS WHO WORK PART-TIME AND WITH FEW MULTIPLIERS INTO THE LOCAL ECONOMY. IN ADDITION, BACK-OFFICES HAVE THE REPUTATION OF BEING FOOTLOOSE. THE GENERAL EFFECT MIGHT BE ONLY A TEMPORARY AND ATTENUATED BOOST TO REGIONAL DEVELOPMENT. SUCH FORMS OF WORK ARE ALSO TO BE FOUND WITH SOME FORMS OF INDIVIDUAL TELEWORK, WHERE JOBS ARE LOW STATUS AND UNSTABLE. INDEED ONE OF THE POTENTIAL ADVANTAGES FOR EMPLOYERS OF TELEWORKERS IS THE EVEN GREATER TRANSFERABILITY OF WORK FROM PLACE TO PLACE AND PERSON TO PERSON.

THERE SHOULD, IN OTHER WORDS, BE A SEARCH FOR A BROADER, MORE BALANCED APPROACH TO DEVELOPING THE ON-LINE ECONOMY WITH STRONG POSITIVE EFFECTS ON THE REGIONAL DEVELOPMENT. EVIDENCE, FROM IRELAND IN PARTICULAR, INDICATES THAT A WELL EDUCATED AND ADAPTABLE WORKFORCE CAN ATTRACT HIGHLY PROFESSIONALISED TYPES OF INWARD INVESTMENT AND THAT IT IS POSSIBLE TO BEGIN TO CONSTRUCT A SELF-SUSTAINING HOME GROWN TELESERVICE SECTOR.

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<sup>19</sup> Not, for example, in the case of the Nordic countries.

*THERE IS A NEED FOR MORE DETAILED INVESTIGATIONS OF THE POSSIBILITIES FOR THE REGIONAL DISPERSION OF TELESERVICES AND TELEWORKING, SO THAT APPROPRIATE REGIONAL POLICIES TO DEVELOP THESE SECTORS, BOTH THROUGH INWARD INVESTMENT AND THROUGH FOSTERING HOME GROWN ENTREPRENEURS, CAN BE DEVELOPED. THE ECONOMICS OF SUCH RELOCALISATION SHOULD BE BETTER UNDERSTOOD IN TERMS OF THE PRE-CONDITIONS SUCH AS FISCAL INCENTIVES, MINIMUM INFRASTRUCTURAL PROVISION, COST BALANCES, LINGUISTIC REQUIREMENTS AND HUMAN RESOURCE AVAILABILITY. STRATEGIES WHICH WILL LEAD TO HIGHLY SUSTAINABLE JOBS, PARTICULARLY SKILLED ONES, IN SUCH REGIONS SHOULD BE EXAMINED AND BETTER UNDERSTOOD IN TERMS OF CREATING NEW POSSIBILITIES FOR PROSPERITY IN SUCH REGIONS.*

## **THEME VII:**

### **EDUCATION AND TRAINING IN THE IS**

**EDUCATION AND TRAINING (E&T) THROUGHOUT LIFE WILL BE A FUNDAMENTAL NEED IN THE IS. WE THEREFORE PLACE PARTICULAR EMPHASIS ON RESHAPING EDUCATION AND TRAINING SYSTEMS SO THAT THEY CAN MEET THE DEMANDS OF LIFELONG LEARNING IN THE IS.**

**IN THIS SECTION, WE RAISE A NUMBER OF KEY THEMES WHICH ARE IMPORTANT IN PROVIDING AN IMPETUS TO THE MODERNISATION OF THE EDUCATION AND TRAINING SYSTEMS IN RESPONSE TO THIS NEED FOR LIFELONG LEARNING IN THE IS. FIRST, NEW COURSES, CURRICULA, INFRASTRUCTURES AND OTHER RESOURCES ARE NEEDED WHICH RECOGNISE THE SIGNIFICANCE OF ICTs AS BOTH AN OBJECT OF AND TOOL FOR LEARNING. SECOND, WE FEEL IT IS NECESSARY TO UNDERLINE THE CONTINUING SALIENCE OF THE SOCIAL ROLE OF LEARNING, BOTH AS A COLLECTIVE EXPERIENCE AND WHICH TAKES PLACE VIA DIRECT HUMAN CONTACT WITH TEACHERS. IN OUR VIEW, THE ROLE OF THE TEACHER WILL BE ENHANCED IN THE IS, AS TEACHING SHIFTS AWAY FROM THE TEACHING OF ESTABLISHED TEXTS AND ROUTINE DRILLS TOWARDS HELPING PEOPLE TO DEVELOP THE ABILITY TO LEARN AND TO NAVIGATE THE NEW SEAS OF INFORMATION, SUCH AS THOSE BEING CREATED ON THE INTERNET.**

**OUR THIRD PROPOSAL IS THE FORMATION OF A EUROPEAN LEARNING AGENCY AND NETWORK (ELAN). THE ELAN WILL NOT SEEK TO SUPPLANT EXISTING EFFORTS TO PROMOTE THE TOOLS AND TECHNIQUES OF OPEN AND DISTANCE LEARNING. RATHER, THE AIM WOULD BE TO PROVIDE A CENTRAL FORUM IN WHICH APPROACHES AND EXPERIENCES CAN BE SHARED, ESPECIALLY IN AREAS SUCH AS QUALITY ASSURANCE, TRAINING, AND RESEARCH AND DEVELOPMENT.**

**FINALLY, AS WE NOTE ABOVE, 'LIFE-LONG LEARNING' IS A CENTRAL PILLAR OF THE IS, YET FEW SEEM TO KNOW HOW TO MAKE IT REALLY HAPPEN. TO PROVIDE A SYSTEM OF EDUCATION AND LEARNING, WHICH LASTS FROM THE CRADLE TO GRAVE AND WHICH IS AVAILABLE TO ALL, IS ESPECIALLY DIFFICULT IN THESE TIMES OF PUBLIC SPENDING RESTRAINTS. YET THIS CONUNDRUM MUST BE RESOLVED IF THE IS REALLY IS TO BE A LEARNING SOCIETY.**

## **1. A BROAD EDUCATIONAL AGENDA FOR THE IS**

### ***A. ICT-TRAINING: A KEY PRIORITY***

ALMOST ALL NEW ENTRANTS INTO THE LABOUR MARKET IN THE 21ST CENTURY IN THE EU WILL REQUIRE ICT SKILLS. THE MAJORITY OF THE EXISTING WORK FORCE WILL ALSO REQUIRE SOME RE-TRAINING. THIS PRESENTS ON THE ONE HAND, AN ENORMOUSLY EXPANDED DEMAND FOR ICT SKILLS AND, ON THE OTHER HAND, ENORMOUS OPPORTUNITIES FOR THE DESIGN AND SUPPLY OF ICT PRODUCTS AND SERVICES FOR USE IN EDUCATION AND TRAINING (E&T).

*FURTHER EXPANSIONS OF EFFORTS TO IMPROVE AND MATCH BOTH DEMAND AND SUPPLY IN ICT TRAINING ARE NEEDED, AT BOTH MEMBER STATE AND THE EU LEVELS, THROUGH A COMBINATION OF E&T POLICIES WITH SOCIAL, INDUSTRIAL AND CULTURAL POLICIES. AT THE EU LEVEL A VAST IMPROVEMENT IN BOTH QUALITY AND QUANTITY OF ICT-BASED E&T WILL BE NEEDED OVER THE NEXT DECADE OR TWO IF THE UNION IS TO IMPROVE ITS ECONOMIC COMPETITIVENESS AND AT THE SAME TIME TO ATTAIN ITS OTHER OBJECTIVES OF SOCIAL COHESION, REGIONAL COHESION AND PROMOTION OF EUROPEAN CULTURE.*

### ***B. CULTURE, EDUCATION AND THE IS***

EDUCATION AND TRAINING POLICIES ARE DEEPLY AFFECTED BY MANY NEW DEVELOPMENTS IN ICTs. ALL MEMBER COUNTRIES HAVE ADOPTED POLICIES WHICH RECOGNISE THE IMMENSE CONTRIBUTION WHICH ICTs CAN MAKE TO EDUCATION AND TRAINING AND ALSO THE IMPORTANCE OF ICT SKILLS FOR THE FUTURE WORKFORCE OF THE EU. THE SOCIAL AND CULTURAL DIMENSIONS OF ICTs HAVE, HOWEVER, RECEIVED TOO LITTLE CONSIDERATION. THE DEVELOPMENT OF AN "IS" IS IN SOME RESPECTS A MISNOMER. THE PROBLEM IS NOT JUST TO INCREASE THE QUANTITY OF INFORMATION AND THE SPEED OF ITS TRANSMISSION. INDEED THERE IS ALREADY A HUGE PROBLEM OF INFORMATION OVERLOAD. THE PROBLEM IS RATHER THE QUALITY OF INFORMATION AND ITS CONVERSION INTO USEFUL KNOWLEDGE. THE EDUCATION AND TRAINING SYSTEM PLAYS A KEY ROLE IN THIS CONVERSION PROCESS AND IN UPGRADING QUALITY.

*A RE-EXAMINATION OF E&T POLICIES REGARDING ICTs IS NEEDED, TAKING FULLY INTO ACCOUNT THE SOCIAL AND CULTURAL ASPECTS OF ICTs.*

SOME VERY STRONG AMERICAN AND JAPANESE FIRMS ARE ALREADY EMERGING AS SUPPLIERS OF MULTIMEDIA EDUCATIONAL AND TRAINING SOFTWARE AS WELL AS PROVIDERS OF TELECOMMUNICATION NETWORKS AND OF ENTERTAINMENT PRODUCTS. THERE IS SOME DANGER THAT THESE FIRMS COULD DOMINATE THE WORLD MARKET, INCLUDING THE

EUROPEAN MARKET. THIS IS A “DANGER” NOT SO MUCH IN RELATION TO THE OWNERSHIP OF THESE FIRMS BUT BECAUSE OF THE SOCIAL AND CULTURAL IMPLICATIONS. DESIGN AND DEVELOPMENT OF MULTIMEDIA EDUCATIONAL AND TRAINING SOFTWARE REQUIRES DEEP AND CONTINUOUS INTERACTION WITH THE USERS OF THESE PRODUCTS, THAT IS THE TEACHING PROFESSION, THE EDUCATIONAL INSTITUTIONS, THE CHILDREN AND THE STUDENTS OF THE RELEVANT COUNTRIES. SUCH INTERACTION REQUIRES CULTURAL PROXIMITY ALTHOUGH NOT ALWAYS NECESSARILY GEOGRAPHICAL CLOSENESS. AS IS REFLECTED IN THE EUROPEAN COMMISSION’S TASK FORCE ON EDUCATIONAL MULTI-MEDIA SOFTWARE, THE DEVELOPMENT OF A STRONG EUROPEAN-BASED MULTI-MEDIA EDUCATIONAL AND TRAINING SOFTWARE INDUSTRY IS HIGHLY DESIRABLE ALSO FOR ECONOMIC REASONS (WHOSE REPORT WE AWAIT WITH INTEREST). THIS WILL BECOME ONE OF, OR INDEED, THE MOST IMPORTANT SERVICE INDUSTRIES OF THE 21ST CENTURY.

*AN URGENT REVIEW IS NEEDED OF WAYS TO PROMOTE ON AN AMBITIOUS SCALE EUROPEAN MULTIMEDIA EDUCATIONAL AND TRAINING SOFTWARE DEVELOPMENT AND PRODUCTION COMBINING PUBLIC AND PRIVATE RESOURCES AND INITIATIVES.*

#### *C. MAKING THE CONNECTION*

IN ORDER TO ACHIEVE ITS SOCIAL, CULTURAL AND ECONOMIC OBJECTIVES, IT IS ESSENTIAL THAT EUROPEAN EDUCATION AND TRAINING INSTITUTIONS, ESPECIALLY SCHOOLS, ARE CONNECTED BY APPROPRIATE RAMPS AND BYWAYS TO THE FUTURE INFORMATION “SUPER-HIGHWAYS” IN EUROPE.

*CONSIDERATION SHOULD BE GIVEN TO SCHEMES OF FREE CONNECTION, PREFERENTIAL ACCESS AND REDUCED TARIFFS (OR FREE ACCESS) FOR EDUCATIONAL ESTABLISHMENTS TO THE EUROPEAN INFORMATION SUPERHIGHWAYS. EUROPEAN TELECOMMUNICATION SERVICE PROVIDERS, WHETHER OF WIRED OR WIRELESS (CELLULAR) NETWORKS, SHOULD PLAY A ROLE IN PROVIDING SPECIAL TARIFF CONDITIONS AS WELL AS FREE CONNECTION TO ALL EDUCATIONAL AND TRAINING ORGANISATIONS.*

#### *D. MATERIALS FOR LEARNING*

MOST SCHOOLS IN THE EU NOW POSSESS COMPUTERS, BUT NOT ALL POSSESS SUFFICIENT EQUIPMENT. IT IS THE CAPACITY OF IT TO ENABLE CHILDREN AND STUDENTS TO DEVELOP AUTONOMOUS LEARNING IN ANY SUBJECT AT A PACE VARYING WITH INDIVIDUAL ABILITY AND NEEDS THAT REPRESENTS THE MAIN ADVANTAGE OF THIS TECHNOLOGY IN ALMOST ALL DISCIPLINES. THE POSITION VARIES BETWEEN MEMBER COUNTRIES BUT OFTEN COMPUTERS ARE USED MAINLY TO TEACH JUST MATHEMATICS AND COMPUTING ITSELF. A HUGE EFFORT



WILL BE NEEDED TO PRODUCE A VERY WIDE RANGE OF MULTI-MEDIA EDUCATIONAL SOFTWARE IN EVERY DISCIPLINE, IN EVERY EUROPEAN LANGUAGE, FOR EVERY AGE GROUP AND TO MAKE THESE PRODUCTS AVAILABLE TO ALL EDUCATIONAL INSTITUTIONS AS WELL AS TO HOME USERS. AN EVEN GREATER EFFORT WILL BE NEEDED TO UPDATE THESE PRODUCTS CONTINUOUSLY AS THE FRONTIERS OF KNOWLEDGE ADVANCE IN EVERY SUBJECT AND AS THE QUALITY OF ICTS IMPROVES.

*A MAJOR EFFORT IS NEEDED TO INCREASE THE AVAILABILITY OF A WIDE VARIETY OF ICT PRODUCTS AND SERVICES TO EUROPEAN SCHOOLS. AS INDICATED ABOVE IN SECTION 2(B) THIS DEMANDS A CONCERTED EFFORT TO STRENGTHEN THE EUROPEAN E&T MULTI-MEDIA SOFTWARE INDUSTRIES, AS WELL AS OTHER CULTURAL AND ENTERTAINMENT INDUSTRIES, SUCH AS FILM AND TELEVISION, SO THAT THEY CAN COMPETE WITH THE MEGA-OPERATORS ELSEWHERE.*

NO LESS IMPORTANT IS THE DEVELOPMENT OF A WIDE RANGE OF PRODUCTS AND SERVICES FOR TRAINING ORGANISATIONS OF ALL KINDS. THEIR NEEDS ARE OFTEN FOR VERY SPECIFIC CUSTOMISED PRODUCTS AND USER-PRODUCER COOPERATION IS VITAL HERE TOO. THERE IS A MORE GENERAL NEED FOR PRODUCTS WHICH ASSIST STUDENTS TO ACCLIMATISE THEMSELVES TO THE NEW WORK OF INTERACTIVITY, VIRTUAL IMAGES AND ABSTRACTION.

#### *E. RESEARCH ABOUT LEARNING*

EUROPEAN UNIVERSITIES HAVE CONSIDERABLE ACHIEVEMENTS BY WORLD STANDARDS AND HAVE A VITAL ROLE IN THE FURTHER DEVELOPMENT OF EUROPEAN CULTURE, SCIENCE AND TECHNOLOGY BUT THE ADVENT OF MASS HIGHER EDUCATION MEANS THAT THERE WILL BE INCREASING VARIETY IN THIS SECTOR AND NOT ALL INSTITUTIONS CAN PERFORM ALL FUNCTIONS. THERE IS A DANGER THAT FUNDAMENTAL RESEARCH MIGHT BE SACRIFICED TO MORE PRESSING OBJECTIVES.

IN PARTICULAR, WE KNOW FAR TOO LITTLE ABOUT HOW PEOPLE LEARN AND ABOUT THE DIFFERENCES BY AGE GROUP, GENDER AND OTHER VARIABLES. WE NEED TO KNOW MORE ABOUT HOW OLDER PEOPLE LEARN AND HOW YOUNG PEOPLE LEARN. AN EVEN MORE FUNDAMENTAL QUESTION IS HOW PEOPLE ACQUIRE A SENSE OF IDENTITY AND HOW A SENSE OF HUMAN IDENTITY MIGHT DEVELOP, WHICH TRANSCENDS MORE NATIONALISTIC ATTITUDES.

*FUNDAMENTAL RESEARCH ON LEARNING ITSELF IS A HIGH PRIORITY, INCLUDING THE WAYS IN WHICH ICTS AFFECT LEARNING. THIS INCLUDES SUCH QUESTIONS AS: HOW DO PEOPLE "LEARN HOW TO LEARN" INSTEAD OF JUST REMEMBERING FACTS? HOW TO TEACH AND DEVELOP THE MASTERING OF "CATHODIC" ABSTRACTION, VIRTUAL IMAGES, INTERACTIVITY AND FRAGILITY TO ALL, INCLUDING THOSE WHO FEAR AND*

*WHO CANNOT EASILY ADJUST TO THE NEW TECHNOLOGIES? HOW TO DEVELOP TRAINING METHODS WHICH WOULD ALLOW THE REMAINING MILLIONS OF ILLITERATES IN THE EUROPEAN UNION TO HAVE ACCESS TO THE WRITTEN SERVICES OF THE IS?*

## **2. THE LEARNING SOCIETY**

### *A. REAFFIRMING THE ROLE OF THE TEACHER AND OF THE COLLECTIVE EXPERIENCE OF LEARNING*

IN DEVELOPING E&T POLICIES FOR THE FUTURE USE OF ICTs, A CLEAR DISTINCTION SHOULD BE MADE BETWEEN (A) PRIMARY AND SECONDARY SCHOOLS, (B) TERTIARY EDUCATION AND TRAINING, (C) POST-EXPERIENCE EDUCATION AND TRAINING. THE ROLE OF DISTANCE AND HOME LEARNING BECOMES PROGRESSIVELY MORE IMPORTANT MOVING FROM (A) TO (C). THE ROLE OF PRIVATE SECTOR FINANCE AND PRIVATE DEMAND ALSO BECOMES MORE IMPORTANT IN MOVING FROM (A) TO (C). PUBLIC SECTOR PROVISION AND FINANCE CONTINUES TO PREDOMINATE BUT IN (C) MUCH TRAINING AND RETRAINING IS PROVIDED BY COMPANIES AND MUCH HOME LEARNING IS PAID FOR BY INDIVIDUALS.

*WE DRAW ATTENTION TO THE IMPORTANT DISTINCTION BETWEEN THESE LEVELS OF EDUCATION BECAUSE WE WISH TO EMPHASISE THAT DISTANCE LEARNING SHOULD NOT BE SUBSTITUTED FOR SCHOOL EDUCATION AT THE PRIMARY AND SECONDARY LEVEL. SCHOOLS SERVE FUNCTIONS OF SOCIAL AND CULTURAL DEVELOPMENT WHICH CANNOT BE ATTAINED BY DISTANCE LEARNING. GENERAL SKILLS OF COMMUNICATION, SOCIAL INTEGRATION AND LEARNING TO USE ICTs ITSELF REQUIRE THE PHYSICAL PRESENCE OF MOST PUPILS AND DIRECT CONTACTS WITH TEACHERS AND WITH EACH OTHER. COLLECTIVE LEARNING AND TEAMWORK ARE OFTEN AS ADVANTAGEOUS AS INDIVIDUALISED LEARNING. MOREOVER, GOOD SCALE ECONOMIES CAN BE ACHIEVED WITH A VARIETY OF BOTH ON-LINE AND OFF-LINE ICT PRODUCTS AND SERVICES, TEACHING FAIRLY STANDARD CURRICULA TO A MINIMUM LEVEL.*

### *B. INVOLVING THE USERS*

FOR ALL TYPES OF INNOVATION THE PARTICIPATION OF USERS HAS BEEN SHOWN TO BE ESSENTIAL. WE WISH TO UNDERLINE MOST EMPHATICALLY THE NEED FOR SUCH INVOLVEMENT IN THE ICT DEVELOPMENTS FOR E&T. DESIGN AND DEVELOPMENT CONTRACTS SHOULD INCLUDE PROVISION FOR TESTING WITH CHILDREN, STUDENTS AND TEACHERS FOR QUALITY AND PERFORMANCE.

*IN ORDER TO ACHIEVE THE ESSENTIAL HIGH-QUALITY STANDARDS FOR SUCH PRODUCTS, EDUCATION POLICIES SHOULD BE DESIGNED SO AS TO ALLOW TEACHERS TO JOIN MIXED DESIGN AND DEVELOPMENT TEAMS AS A REGULAR PART OF THEIR*

*IN-SERVICE TRAINING. SUCH TEAMS SHOULD BE FORMED BY AGREEMENT WITH THE PUBLISHING INDUSTRIES AND THE MEDIA, AND SHOULD INCLUDE THE NECESSARY SOFTWARE AND ANIMATION EXPERTS. THE EU SHOULD ITSELF INITIATE SOME SCHOLARSHIPS ON A EUROPEAN BASIS FOR THIS PURPOSE AND ENCOURAGE MEMBER GOVERNMENTS TO EMBARK ON SIMILAR PROGRAMMES.*

### *C. TEACHERS AS GUIDES AND COACHES*

THE ROLE OF THE TEACHER AND TRAINER IS CHANGING AND WILL CHANGE EVEN MORE AS THE SUPPLY OF ICT PRODUCTS AND SERVICES IMPROVES. TEACHERS SHOULD HAVE MORE RATHER THAN LESS TIME TO ADVISE THEIR PUPILS, AS AUTONOMOUS LEARNING WITH ICT PRODUCTS BECOMES MORE WIDESPREAD. THIS CERTAINLY DOES NOT MEAN HOWEVER THAT TEACHERS ARE NO LONGER NEEDED, ONLY THAT THEIR ROLE WILL CHANGE. THE HIGH PROFESSIONAL COMPETENCE OF TEACHERS BECOMES MORE IMPORTANT THAN EVER. THE TEACHER WILL INCREASINGLY BECOME AN ADVISOR AND COUNSELLOR WHO WILL HELP CHILDREN/PUPILS/STUDENTS/TRAINEES TO ACCESS AND USE A VARIETY OF ICT PRODUCTS AND SERVICES. THE “GUIDE AT THE SIDE” OF LEARNERS WILL TEND TO REPLACE THE “SAGE ON THE STAGE” OF OLDER EDUCATIONAL SYSTEMS. THE LEARNERS NEED HELP TO CONVERT INFORMATION INTO KNOWLEDGE, TO AVOID INFORMATION OVERLOAD AND TO IDENTIFY THE BEST SOURCES FOR THE SPECIFIC NEEDS AND ABILITIES OF EACH LEARNER.

*IN-SERVICE TRAINING SHOULD INCLUDE RE-TRAINING OF TEACHERS TO UNDERSTAND THEIR CHANGING ROLE WHICH REQUIRES DIFFERENT SKILLS TO THOSE OF THEIR TRADITIONAL ROLE. RE-TRAINING OF ALL TEACHERS SHOULD INCLUDE NOT ONLY PARTICIPATION IN DESIGN AND DEVELOPMENT OF ICT PRODUCTS, BUT ALSO SHORT COURSES ON THE RAPIDLY CHANGING SCOPE OF THE CURRENTLY AVAILABLE MATERIALS AND DATA BANKS AND MODES OF ACCESS TO THEM.*

### *D. DISTANCE EDUCATION AND THE RURAL COMMUNITY*

THERE IS OFTEN PRESSURE TO CLOSE SMALL LOCAL VILLAGE SCHOOLS FOR ECONOMIC AND EDUCATIONAL REASONS. HOWEVER, IT MAY OFTEN BE DESIRABLE TO KEEP THESE SMALL SCHOOLS OPEN FOR A COMBINATION OF SOCIAL AND CULTURAL REASONS. A JUDICIOUS USE OF DISTANCE LEARNING MAY OFTEN BE ABLE TO COMPENSATE IN SOME SUBJECTS FOR THE INEVITABLY SMALLER RANGE OF SPECIALIST SKILLS WITH A SMALL TEACHING STAFF.

*SCHOOL CLOSURE PROGRAMMES AFFECTING SMALL COMMUNITIES SHOULD BE REVIEWED IN LIGHT OF THE FUTURE POTENTIAL OF ICTS TO ALTER THE ECONOMIES OF SCALE IN PROVISION OF PUBLIC SERVICES, AND THE NEED TO MAKE FIRM COMMITMENTS TO THE LONGER TERM VIABILITY OF SMALL AND REMOTE COMMUNITIES (SEE*

*ALSO THEME IX).*

### **3. A EUROPEAN LEARNING AGENCY AND NETWORK (ELAN)**

THE WIDE DIFFUSION OF OPEN AND DISTANCE LEARNING THROUGHOUT THE EU FOR POST-EXPERIENCE EDUCATION, TRAINING AND RE-TRAINING WILL BE AN IMPORTANT ASPECT OF THE IS. SUCCESSFUL EXPERIENCE IN A NUMBER OF MEMBER COUNTRIES (BRITAIN, GERMANY, SPAIN, PORTUGAL ETC.) HAS ALREADY DEMONSTRATED THE ADVANTAGES OF THIS APPROACH AND THE GREAT SCOPE FOR ENCOURAGING THE PRODUCTION AND USE OF NEW ICT PACKAGES IN SPECIALISED AND RAPIDLY CHANGING MARKETS. IN SOME OF THESE AREAS THERE ARE VERY FEW EXPERTS AND IT IS IMPOSSIBLE FOR THEM TO BE PHYSICALLY IN LOCATIONS ALL OVER EUROPE. OPEN AND DISTANCE LEARNING CAN BE ESPECIALLY VALUABLE IN SUCH CASES.

*WHILST NATIONAL POLICIES WILL, AND SHOULD CONTINUE TO, VARY AND MUCH CAN BE GAINED FROM CULTURAL DIVERSITY WE NEVERTHELESS BELIEVE A WORKING GROUP SHOULD URGENTLY LOOK INTO THE POSSIBILITIES FOR A ELAN TO PROMOTE LEADING EDGE APPLICATIONS OF ICTS IN AREAS OF SPECIAL INTEREST FOR ALL-EUROPEAN EDUCATION AND TRAINING. SUCH A EUROPEAN AGENCY AND NETWORK SHOULD BE A CENTRAL FORUM FOR THE EFFORTS OF THE EU TO FOSTER R&D IN THE FIELD OF NEW ICT APPLICATIONS BY BRINGING TOGETHER TRAINERS AND TEACHERS FROM INDUSTRY AS WELL AS FROM THE EDUCATION SECTOR AND FROM THE NEW MEDIA AND CULTURAL INDUSTRIES.*

SUCH A EUROPEAN LEARNING AGENCY AND NETWORK COULD BE A CENTRE FOR QUALITY ASSURANCE, AS WELL AS FOR TRAINING, RE-TRAINING, RESEARCH, DESIGN AND DEVELOPMENT. IT COULD HELP GREATLY TO STRUCTURE THE MARKET FOR EUROPEAN DESIGNED ICT PRODUCTS AND SERVICES. SPECIAL ARRANGEMENTS FOR ACCESS AND COOPERATION WITH SMES WOULD BE ESSENTIAL. SUCH ARRANGEMENTS SHOULD COVER BOTH THE PARTICIPATION OF SMES IN DESIGN AND DEVELOPMENT WORK AND ADVISORY SERVICES ON ACCESS OF SMES TO NEW TRAINING AND MULTI-MEDIA SOFTWARE PRODUCTS AND SERVICES.

*APPROPRIATE COORDINATION WITH THE LEONARDO AND SOCRATES PROGRAMMES AS WELL AS MEDIA 1 AND INFO 2000 WOULD BE NEEDED IN THE DESIGN OF ANY FUTURE ELAN. WHILST MANY OF ITS ACTIVITIES WOULD INVOLVE COORDINATION OF EXISTING NETWORKS AND COOPERATION WITH THEM, THE PROPOSED ELAN SHOULD ACT AS A STRONG FOCUS FOR FAR MORE AMBITIOUS EFFORTS FOR THE EU IN ALL THESE AREAS.*

#### **4. THE IS WILL BE A LIFE-LEARNING SOCIETY**

##### ***A. LIFELONG LEARNING STARTS YOUNG***

WE BELIEVE IT IS IMPORTANT TO PROMOTE THE USE OF ICTS IN PRE-SCHOOL EDUCATION. THE ACQUISITION OF LANGUAGE AND COMMUNICATION SKILLS IS VITAL AT THIS EARLY AGE BUT YOUNG CHILDREN SHOULD ALSO HAVE OPPORTUNITIES TO ACQUAINT THEMSELVES WITH ICTS ALREADY IN THE PRE-SCHOOL AGES FOR THE FOLLOWING REASONS: FIRST, IN THE EXPERIMENTS THAT HAVE ALREADY BEEN MADE WHEN COMPUTERS HAVE BEEN AVAILABLE TO CHILDREN OF PRE-SCHOOL AGE, IT HAS BEEN SHOWN THAT YOUNG CHILDREN TAKE ON THE USE OF THE TECHNOLOGY BOTH RAPIDLY AND EASILY. THE APPLICATIONS THAT THESE CHILDREN HAVE BEEN USING ARE MAINLY IN THE AREA OF MULTI-MEDIA EDUCATIONAL GAMES LIKE LEARNING COLOURS, SIMPLE MATHEMATICS, THE PARTS OF THE BODY, AND SO ON. A SECOND, IMPORTANT ISSUE IS THAT, CONTRARY TO THE NORM FOR CHILDREN AGED 10 AND UPWARDS, WHERE BOYS USUALLY TAKE THE LEAD AND ARE DOMINANT WHEN USING ICTS IN THE SCHOOLS, GIRLS OF PRE-SCHOOL AGE TAKE THE INITIATIVES AND OCCUPY THE COMPUTERS. THIS CAN POSSIBLY BE EXPLAINED BY GIRLS MATURING EARLIER WITH REGARD TO AN ABILITY TO CONCENTRATE AND FOCUS ON A SPECIFIC TASK. GIRLS ALSO DEVELOP THE SKILLS OF CONTROLLING PRECISION MOVEMENTS (FOR INSTANCE, CONTROLLING THE MOVEMENTS OF THEIR HANDS) EARLIER THAN BOYS. THUS, BY INTRODUCING ICTS AT THE PRE-SCHOOL AGE, WE CAN ENCOURAGE MORE GIRLS TO BE AS ACTIVE AND INTERESTED IN ICTS AS BOYS AND PERHAPS TO TAKE MORE OF A LEAD IN THE USE OF TECHNOLOGY.

*THE INTRODUCTION OF ICTS IN PRE-SCHOOL EDUCATION SHOULD BE PROMOTED AND THE EU SHOULD PROMOTE INTERCHANGE OF EXPERIENCE AND RESEARCH RESULTS, ESPECIALLY WITH RESPECT TO ANY GENDER DIFFERENCES AT EARLY AGES AND THEIR LONGER-TERM CONSEQUENCES. THIS WOULD REQUIRE LONGITUDINAL STUDIES OF VARIOUS AGE COHORTS.*

##### ***B. .... AND CONTINUES THROUGHOUT LIFE .....***

THE TERTIARY SECTOR IS INTERMEDIATE BETWEEN SCHOOLS AND THE NEWLY EXPANDING INSTITUTIONS OF DISTANCE AND HOME LEARNING. WE ANTICIPATE AND WELCOME A GREAT VARIETY OF DEVELOPMENT IN THE TERTIARY SECTOR, VARYING BY COUNTRY, DISCIPLINE, AGE GROUP AND OTHER FACTORS. THERE IS ALSO SCOPE FOR JOINT LEARNING OF PARENTS AND CHILDREN ON SOME COURSES USING SCHOOL AND TERTIARY FACILITIES.

*ENCOURAGEMENT IS NEEDED FOR THE TERTIARY SECTOR TO GIVE PRIORITY TO THE EXPANSION OF OPPORTUNITIES FOR CONTINUING ADVANCED LIFE-TIME LEARNING BY INCREASING THE RANGE OF PART-TIME AND ADULT COURSES OF VARIOUS LENGTHS.*

MOREOVER, THE BORDERLINE BETWEEN EDUCATION ON THE ONE HAND AND TRAINING ON THE OTHER IS BECOMING INCREASINGLY BLURRED.

*THUS, GOVERNMENT DEPARTMENTS AND AGENCIES WITH RESPONSIBILITIES FOR EITHER ACTIVITY SHOULD PROMOTE INCREASINGLY CLOSE LIAISON AND COOPERATION.*

*C. ....AND SHOULD BE AVAILABLE TO ALL ESPECIALLY THE UNEMPLOYED*

EDUCATION AND TRAINING, ALTHOUGH THEY ARE INCREASINGLY IMPORTANT FOR ECONOMIC AS WELL AS FOR CULTURAL AND OTHER OBJECTIVES OF EUROPEAN COUNTRIES, CANNOT SOLVE THE EMPLOYMENT PROBLEMS ALONE. ICTS CAN HELP TO IMPROVE MANY EDUCATIONAL AND TRAINING ACTIVITIES AND FOR MOST JOBS SOME COMPETENCE IN ICTS WILL BE IMPORTANT IN THE FUTURE BUT NOT EVERYONE WILL BE AT EASE WITH ICTS AND COMPETENCE WILL VARY. THERE IS THEREFORE NO SUBSTITUTE FOR EMPLOYMENT POLICIES WHICH ARE DESIGNED TO COPE WITH ALL ASPECTS OF UNEMPLOYMENT BUT ESPECIALLY YOUTH EMPLOYMENT.

*THERE IS A VITAL NEED FOR ACTIVE POLICIES OF JOB CREATION WHICH MAKE FULL USE OF EXPANDED EDUCATION, TRAINING AND RE-TRAINING IN ICTS BUT ALSO ACCEPT THE NEED TO CREATE NEW JOBS FOR THOSE WHO, FOR A VARIETY OF REASONS, DO NOT POSSESS AND ARE UNLIKELY SOON TO POSSESS SKILLS IN ICTS ABOVE A VERY ELEMENTARY LEVEL, OR INDEED AT ALL.*

*ALSO, INTENSE EFFORTS ARE NEEDED, PERHAPS WITH THE HELP OF THE ELAN OR OTHER INSTITUTIONS, TO DEVELOP NEW MULTI-MEDIA E&T SOFTWARE SPECIFICALLY FOR THE NEEDS OF THE LESS SKILLED UNEMPLOYED WHO HAVE SPECIAL DIFFICULTIES IN ACQUIRING COMPUTER LITERACY AND FOR ALL THOSE GROUPS WHO NEED TO ACQUIRE ELEMENTARY ICT SKILLS (E.G. MINITEL, ETC.) IN THE HOME OR WORK ENVIRONMENT OR IN PUBLIC PLACES.*

## **THEME VIII:**

### **THE IS AND HEALTH**

ALTHOUGH NUMEROUS LOCAL APPLICATIONS HAVE BEEN MADE IN DIFFERENT PARTS OF THE WORLD, THE HEALTH SECTOR IS ENTERING INTO THE IS A FEW STEPS BEHIND THE INDUSTRIAL SECTOR. WHILST WIDE-SCALE IMPLEMENTATION OF ICTS IN THE HEALTH SECTOR WILL BE BENEFICIAL, SOME OBSTACLES ARE TO BE EXPECTED. BELOW WE DISCUSS SOME OF THESE OPPORTUNITIES AND RISKS. MUCH OF WHAT IS DISCUSSED BELOW ON THE HEALTH SECTOR IS, TO A GREAT EXTENT, APPLICABLE TO SOCIAL SERVICES AS WELL.

NUMEROUS ACTIVITIES ARE ONGOING WITHIN THE FOURTH FRAMEWORK PROGRAMME OF THE EC "TELEMATICS FOR HEALTH CARE PROGRAMME" OF DG XIII AND IN SEVERAL OTHER DEVELOPMENT PROGRAMMES LAUNCHED BY A NUMBER OF OTHER DIRECTORATES OF THE EC, INCLUDING DG V AND ITS PROGRAMME ON TELEWORK. SOME SPECIAL PROGRAMMES FOR SELECTED TARGET GROUPS HAVE ALSO BEEN IMPLEMENTED SUCH AS COST 219 FOR THE DISABLED, HELIOS 2 FOR HANDICAPPED PEOPLE, AND TIDE FOR DISABLED AND ELDERLY PEOPLE, TO NAME A FEW. INTENSIVE PROGRAMMES HAVE ALSO BEEN INITIATED FOR THE DEVELOPMENT OF MULTI-MEDIA FOR HEALTH CARE PURPOSES. SEVERAL STANDARDISATION PROGRAMMES ARE UNDER WAY TO HARMONISE TECHNICAL STANDARDS WITHIN THE HEALTH CARE SECTOR.

THE INTRODUCTION OF ICTS IN THE HEALTH SECTOR WILL FACILITATE BETTER COVERAGE OF HEALTH SERVICES, IMPROVE THE QUALITY OF DIAGNOSTICS AND HEALTH CARE AND ENSURE THE MORE COST-EFFECTIVE DELIVERY OF SERVICES INCLUDING THE DELIVERY OF HEALTH SERVICES TO AREAS WHICH ARE SPARSELY POPULATED AND REMOTE INCLUDING SHIPS, OFF-SHORE PLATFORMS, ETC. IN ALL SUCH DEVELOPMENTS DUE CONSIDERATION SHOULD BE GIVEN TO THE QUALITY OF SERVICES, WORKING CONDITIONS OF HEALTH CARE PERSONNEL, THE NEED TO REORGANISE THE SERVICE INFRASTRUCTURES, OCCUPATIONAL HEALTH AND SAFETY OF HEALTH WORK (PARTICULARLY ERGONOMICS AND PSYCHOLOGICAL WORK LOAD) AND PATIENT SAFETY, USABILITY DESIGN AND ACCEPTABILITY OF NEW WORKING AND SERVICE DELIVERY METHODS. FINALLY, THE PARTICIPATION OF BOTH HEALTH CARE WORKERS AND PATIENTS IN THE IMPLEMENTATION OF ICTS AND IN THE DEVELOPMENT OF NEW SERVICE STRUCTURES SHOULD ALSO BE EMPHASISED.

## **1. NEW POSSIBILITIES FOR THE DEVELOPMENT OF HEALTH SERVICES**

**AS STATED IN THE EC PROGRAMME DOCUMENT ON HEALTH APPLICATIONS OF THE IS, ICTS ARE EXPECTED TO POSITIVELY IMPACT THE HEALTH SECTOR:**

**”THE IS IS RADICALLY ALTERING THE HEALTH SECTOR, BRINGING CHANGES IN THE ADMINISTRATION OF HEALTH CARE SYSTEMS, THANKS TO THE COMPUTERISATION OF MULTI-MEDIA PATIENT INFORMATION COMBINED WITH ADVANCES IN MEDICAL IMAGING. THE DEVELOPMENT OF TELEMATICS APPLICATIONS PLACES AN UNPRECEDENTED VOLUME OF MEDICAL INFORMATION AT THE DISPOSAL OF ALL THOSE INVOLVED IN HEALTH CARE.”**

**ICTs, PARTICULARLY THOSE USING ISDN AND BROADBAND ATM NETWORKS, PROVIDE NEW POSSIBILITIES FOR THE DEVELOPMENT OF SEVERAL ASPECTS OF HEALTH CARE SERVICES INCLUDING (I) COMMUNICATION OF INFORMATION WITHIN DIFFERENT HEALTH SYSTEMS, (II) TRANSFER OF DIAGNOSTIC INFORMATION IN DIGITAL FORM OBTAINED FROM RADIOLOGICAL, ELECTROPHYSIOLOGICAL, CLINICAL BIOCHEMISTRY AND OTHER DIAGNOSTIC METHODS (III) TWO-DIRECTIONAL AND INTERACTIVE COMMUNICATION OF INFORMATION NEEDED IN THERAPEUTIC SERVICES, INCLUDING CONSULTATIONS AND ADVISED SURGICAL AND OTHER OPERATIONS, (IV) TELEMATIC INFORMATION AND TRAINING OF HEALTH PERSONNEL, STUDENTS OF HEALTH PROFESSIONS AND PATIENTS IN GROUPS OR INDIVIDUALLY, (V) COMPILATION, STORAGE, PROCESSING AND TRANSFER OF ADMINISTRATIVE AND FUNCTIONAL INFORMATION ON ACTIVITIES OF HEALTH SYSTEMS, (VI) COLLECTION AND COMMUNICATION OF INFORMATION IN HEALTH PROMOTION AND REHABILITATION, AND APPROPRIATE TRAINING WHERE NEEDED, (VII) COMPILATION, PROCESSING AND STORAGE OF INFORMATION NEEDED IN HEALTH RESEARCH, INCLUDING EVALUATION OF HEALTH SYSTEMS, (VIII) COLLECTION AND COMMUNICATION OF INFORMATION NEEDED IN PREVENTATIVE HEALTH SERVICES.**

**SUCH NEW OPPORTUNITIES ARE EXPECTED TO HELP EXPAND COVERAGE OF SERVICES AND FACILITATE ACCESS TO HIGH-QUALITY DIAGNOSTIC AND CONSULTATIVE SERVICES FOR HEALTH CARE PROFESSIONALS. IN ADDITION, HEALTH SERVICES WILL BECOME MORE COST-EFFECTIVE THROUGH STRUCTURAL AND FUNCTIONAL RATIONALIZATION OF HEALTH SERVICE DELIVERY SYSTEMS RESULTING IN A REDUCED NEED TO MOVE PATIENTS AND DECREASING THE NEED FOR SPECIALISTS TO TRAVEL.**

***WIDE-SCALE IMPLEMENTATION OF ICTS IN THE HEALTH SECTOR IS EXPECTED IN ALL MEMBER STATES. THIS WILL RESULT IN IMPROVED AVAILABILITY AND QUALITY OF HEALTH SERVICES AND WILL PROVIDE SUPPORT FOR RATIONALISATION AND IMPROVEMENT OF COST-EFFECTIVENESS OF HEALTH SERVICE SYSTEMS. A GREAT POTENTIAL FOR APPLICATION IS FORESEEN IN ALL PARTS OF THE HEALTH SECTOR, NAMELY PREVENTION, PROMOTION, CURATIVE SERVICES AND REHABILITATION, AS WELL AS IN SOCIAL SERVICES.***



THE SYSTEM-WIDE BENEFITS FROM TELEMATIC HEALTH SERVICES ARE NOT POSSIBLE TO ACHIEVE WITHOUT APPROPRIATE STANDARDISATION OF TELEMATIC SYSTEMS AND ASSOCIATED SYSTEMS SUCH AS NEW IMAGING SYSTEMS, VIDEO, AUDIO AND MULTI-MEDIA, ETC. SUCH STANDARDISATION IS REQUIRED AT THE COMMUNITY, NATIONAL AND EUROPEAN LEVELS. THE COMPATIBILITY OF ICT SYSTEMS AT ALL LEVELS SHOULD BE ENSURED UNDER THE LEADERSHIP OF THE EC AND IN COLLABORATION WITH EUROPEAN AND INTERNATIONAL TECHNICAL STANDARDISATION BODIES. IF FRAGMENTED INTO TOO SMALL ISOLATED OR INCOMPATIBLE SYSTEMS OR INCOMPATIBLE COMPETING NETWORKS, THEN THE COST-EFFECTIVENESS OF ICT INVESTMENTS AND THEIR FUNCTIONAL EFFICIENCY IS SIGNIFICANTLY LOWERED. NUMEROUS ACTIVITIES FOR SUCH STANDARDISATION ARE ONGOING - HOWEVER, THE NEED TO EXPAND USES OF ICT SYSTEMS IS URGENT AND GROWING STEADILY. BESIDES THE STANDARDISATION OF TECHNICAL ASPECTS, THERE IS ALSO A NEED TO STANDARDISE SOFTWARE.

*THE RELEVANT EUROPEAN AND INTERNATIONAL STANDARDISATION BODIES IN COLLABORATION WITH THE EUROPEAN COMMISSION, AND OTHER INTERNATIONAL ORGANIZATIONS SHOULD ACCELERATE THE GENERATION OF APPROPRIATE UNIVERSAL STANDARDS FOR ALL RELEVANT PARTS OF TELEMATIC HEALTH SYSTEMS, COVERING NOT ONLY THE TECHNICAL STANDARDS BUT ALSO THE APPROPRIATE STANDARDS FOR ORGANISATIONAL AND FUNCTIONAL ASPECTS OF TELEMATIC HEALTH SYSTEMS, INCLUDING SOFTWARE. SUCH STANDARDISATION IS URGENTLY NEEDED IN ORDER TO AVOID THE DEVELOPMENT OF INCOMPATIBLE AND FRAGMENTED STRUCTURES WHICH ARE LIKELY TO REDUCE THE BENEFITS OF ICT-BASED SYSTEMS. THE MEMBER STATES SHOULD PARTICIPATE IN THE PREPARATION OF SUCH STANDARDS IN ORDER TO ENSURE THEIR ACCEPTABILITY, FEASIBILITY, USABILITY AND ALSO TO GUARANTEE PATIENT SAFETY.*

THE WIDE-SCALE IMPLEMENTATION OF ICTS WITHIN THE HEALTH SECTOR ALLOWS FOR AND CREATES A NEED TO REORGANISE WORK IN HEALTH SERVICES AT ALL LEVELS - THE OPERATIONAL LEVEL, THE ADMINISTRATIVE LEVEL, THE TEAM LEVEL, AND THE INDIVIDUAL AND HEALTH WORKER LEVEL. IN FACT, THE ENTIRE HEALTH CARE SYSTEM WILL BE AFFECTED AS WILL HEALTH SERVICE PROVISION PROCESSES. SUCH REORGANIZATION IS NEEDED TO ADAPT THE SERVICE SYSTEMS TO PROCESS AND USE SUBSTANTIALLY MORE INFORMATION, TO TRANSFER INFORMATION EFFICIENTLY WITHOUT GEOGRAPHICAL LIMITS AND TO MAKE EFFECTIVE USE OF COMPETENCIES IN ANY PART OF THE HEALTH SERVICE NETWORK. EXPERIENCES GAINED IN THE IMPLEMENTATION OF ICTS IN INDUSTRIAL AND OTHER SECTORS HAVE SHOWN THAT THE REORGANISATION OF PRODUCTION PROCESSES IS REQUIRED TO ENSURE THAT SYSTEMS WORK EFFECTIVELY AND TO GAIN THE FULL BENEFITS OF ICTS. NUMEROUS RESEARCH DATA AND PRACTICAL EXPERIENCE SPEAK TO THE IMPORTANCE OF

PARTICIPATION OF PERSONNEL AND USERS IN THE PREPARATION OF SUCH ORGANISATIONAL CHANGES. THE OPINIONS OF CLIENTS SHOULD ALSO BE CONSIDERED.

STUDYING THE POSITIVE AND POSSIBLE ADVERSE IMPACTS OF ICTs AT VARIOUS LEVELS OF HEALTH SYSTEMS IS NECESSARY. NUMEROUS PILOT PROJECTS HAVE BEEN INITIATED IN EUROPE SPONTANEOUSLY OR AS A PART OF THE EC HEALTH TELEMATICS PROGRAMME. EXPERIMENTS, INTERVENTIONS AND FOLLOW-UP STUDIES ON DIFFERENT ALTERNATIVES AND IMPACTS OF NEW ORGANIZATIONS SHOULD BE ENCOURAGED AND THE INFORMATION AND EXPERIENCE GAINED SHOULD BE SYSTEMATICALLY COLLECTED, ANALYZED, AND DISTRIBUTED. CLEARING-HOUSE ACTIVITIES FOR ANALYSIS AND EXCHANGE OF SUCH INFORMATION SHOULD BE ESTABLISHED WITHIN THE EC FRAMEWORK.

*TO ENSURE THE SMOOTH AND EFFECTIVE IMPLEMENTATION OF ICTs WITHIN THE HEALTH SECTOR, THE REORGANISATION OF THE HEALTH SYSTEM AS A WHOLE AND THE REORGANISATION OF PRACTICAL WORK IN HEALTH SERVICES IS LIKELY TO BE NEEDED. THESE REQUIREMENTS SHOULD BE CONSIDERED WHEN PLANNING THE IMPLEMENTATION OF ICTs. THE PLANNING AND IMPLEMENTATION OF SUCH ORGANISATIONAL CHANGES SHOULD INVOLVE THE PARTICIPATION OF HEALTH SECTOR PERSONNEL AND TAKE ACCOUNT OF THE VIEWS OF CLIENTS. COMPILATION, ANALYSIS, AND EVALUATION OF EXPERIMENTS AND DISTRIBUTION OF INFORMATION AND EXPERIENCE ON PILOT INTERVENTIONS OF SUCH IMPLEMENTATION SHOULD BE ORGANISED BY THE EC.*

## **2. NEW NEEDS AND POSSIBILITIES FOR LEARNING AND COMPETENCE BUILDING**

AS IN ALL OTHER SECTORS, THE IMPLEMENTATION OF ICTs IN THE HEALTH SECTOR CREATES A NEED FOR NEW COMPETENCIES AND SKILLS AMONG PERSONNEL. THIS IS NOT ONLY TRUE FOR HEALTH PERSONNEL BUT ALSO FOR THE PLANNERS AND DESIGNERS OF NEW TECHNOLOGIES, THOSE RESPONSIBLE FOR THE DEVELOPMENT OF WORK ORGANIZATION, ADMINISTRATORS, AS WELL AS TRAINERS AND EDUCATORS OF HEALTH PERSONNEL. SOME OCCUPATIONAL GROUPS MAY DISAPPEAR WHILE OTHERS, SUCH AS NEW HEALTH SECTOR ICT EXPERTS, WILL EMERGE. NEW COMPETENCE DEVELOPMENT IS NEEDED FOR ALL PERSONNEL INCLUDING THE SPECIAL COMPETENCY AREAS REQUIRED IN CERTAIN PROFESSIONS (E.G. SURGICAL NURSING OR WORK IN MODERN INTENSIVE CARE); COMPUTER SKILLS AND SKILLS RELATED TO THE USE OF INFORMATION TECHNOLOGY (INCLUDING MULTI-MEDIA) AND MODERN MEDICAL TECHNOLOGY AS WELL AS SKILLS TO DEAL WITH PATIENTS IN THE NEW HIGH-TECH TELEMATIC ENVIRONMENTS. SUCH COMPETENCE BUILDING IS, AND WILL CONTINUE TO BE, OF CRITICAL IMPORTANCE TO THE ICT INTENSIVE HEALTH SECTOR. THERE WILL BE NO STEADY-STATE SITUATIONS - INSTEAD CONTINUOUS LEARNING AND DEVELOPMENT OF HEALTH PERSONNEL IS ANTICIPATED. FOR THESE REASONS, THE OPPORTUNITIES,

SYSTEMS AND MOTIVATION FOR CONTINUOUS LEARNING ARE NEEDED AND SHOULD BE FURTHER DEVELOPED. THERE IS ALSO A NEED TO TRAIN AND INSTRUCT PATIENTS AND CLIENTS ON THE USE OF ICT-BASED HEALTH SERVICES AND, PARTICULARLY, TO CONSIDER USER NEEDS IN SELF-CARE SERVICES.

*EFFECTIVE, COMPREHENSIVE AND CONTINUOUS THEORETICAL AND PRACTICAL TRAINING PROGRAMMES FOR PERSONNEL IN ALL LEVELS OF THE HEALTH CARE SYSTEM AND FOR ALL SENIORITY LEVELS SHOULD BE ORGANISED. PROVISION OF SUCH TRAINING SHOULD BE SCHEDULED IN CONJUNCTION WITH THE IMPLEMENTATION OF NEW TECHNOLOGIES. THE NEED FOR NEW PROFESSIONAL GROUPS SUCH AS ICT EXPERTS SHOULD BE CONSIDERED WHEN DESIGNING THE TRAINING CURRICULA. EFFECTIVE USE OF MULTI-MEDIA IN SUCH TRAINING IS ENCOURAGED. ALSO THE MANAGERS, ADMINISTRATORS AND PLANNERS OF HEALTH SYSTEMS REQUIRE ICT TRAINING.*

EXTENSIVE PROGRAMMES FOR THE DEVELOPMENT OF MULTI-MEDIA SYSTEMS FOR MEDICAL EDUCATION AND TELEMEDICINE HAVE BEEN INITIATED BY THE EC. THESE PROGRAMMES PROVIDE EXCELLENT PROSPECTS FOR THE IMPROVEMENT OF TRAINING, ESPECIALLY IN TERMS OF VISUALIZATION AND DEMONSTRATIONS. BOTH ON-SITE TRAINING AND DISTANT LEARNING WILL BE EFFECTIVELY SUPPORTED BY TELEMATICS AND MULTI-MEDIA. THE CRITICAL FACTOR WILL NOT BE THE TECHNOLOGY BUT THE PRODUCTION OF HIGH-QUALITY SUBSTANTIVE CONTENT FOR TRAINING PACKAGES AND MATERIALS.

*COLLABORATION WITHIN THE SPECIAL EUROPEAN TELEMEDICINE PROGRAMMES FOR PRODUCTION OF HIGH-QUALITY TRAINING MATERIALS (MULTI-MEDIA AND HYPER-MEDIA) HAS BEEN INITIATED BY EC. THE DIRECTORY OF EXISTING TRAINING MATERIALS SHOULD BE MADE AVAILABLE FOR TRAINING CENTRES AND OTHER TRAINERS, AND ACTIONS SHOULD BE TAKEN FOR TRANSLATING MATERIALS INTO NATIONAL LANGUAGES. GUIDELINES AND QUALITY MANUALS FOR THE PRODUCTION OF STANDARD TRAINING PACKAGES SHOULD ALSO BE PREPARED AND DISTRIBUTED.*

AT PRESENT, ONLY A FRACTION OF THE TOTAL CAPACITY OF ICTs IS EXPLOITED. THIS IS PRIMARILY THE RESULT OF A LACK OF COMPETENCE OR LOW USAGE RATES OF THE TECHNOLOGY AND SOFTWARE BY USERS. SUCH PROBLEMS OF USABILITY ARE LIKELY AMONG ALL SECTORS; HOWEVER THERE ARE SEVERAL SPECIAL PROBLEMS IN THE USABILITY OF ICTs IN THE HEALTH SECTOR. FOR INSTANCE, IN THE HEALTH SECTOR IT IS NECESSARY THAT DATA IS WIDELY DISTRIBUTED WHILE AT THE SAME TIME, CONFIDENTIALITY IS MAINTAINED. ANOTHER EXAMPLE IS THE ABSOLUTE REQUIREMENT OF ASEPTIC CONDITIONS IN SOME HEALTH CARE ACTIVITIES, IN WHICH ICTs ARE ALSO USED. TO ESTIMATE PROBLEMS OF USABILITY OF NEW TECHNOLOGY, FEEDBACK ON USER EXPERIENCES SHOULD BE

TRANSMITTED TO DESIGNERS AND PLANNERS. MORE EXTENSIVE PILOT USABILITY EXPERIMENTS SHOULD BE IMPLEMENTED BEFORE TECHNICAL SOLUTIONS ARE DISTRIBUTED TO THE MARKET. SUCH STUDIES SHOULD ALSO COMPRISE THE EXPERIENCES OF PATIENTS AND OTHER CLIENTS OF SERVICES.

A PART OF ICT-BASED HEALTH SERVICES, FOR EXAMPLE SELF-CARE INSTRUMENTS AND PACKAGES, WILL BE INDEPENDENTLY USED BY PATIENTS WITHOUT THE INVOLVEMENT OF HEALTH CARE PERSONNEL. CONSIDERATION SHOULD BE GIVEN TO SUCH INDEPENDENT USE PARTICULARLY IN VIEW OF PATIENT SAFETY ISSUES.

*MORE EMPHASIS ON THE PROBLEMS RELATED TO HUMAN-TECHNOLOGY INTERFACE IN THE IMPLEMENTATION OF ICTS AND USABILITY OF ICTS IN THE HEALTH SECTOR SHOULD BE GIVEN BY THE PLANNERS AND DESIGNERS OF TECHNOLOGIES AND HEALTH ORGANISATIONS THEMSELVES. MORE EXTENSIVE PILOT STUDIES ON USABILITY SHOULD BE ORGANISED. THE USER FEEDBACK OF BOTH HEALTH PROFESSIONALS AND PATIENTS AND OTHERS INVOLVED SHOULD BE EFFECTIVELY COLLECTED AND TRANSMITTED TO THE PLANNERS, DESIGNERS AND IMPLEMENTORS OF ICTS IN THE HEALTH SECTOR.*

THE NEW WAYS TO ORGANISE HEALTH WORK IN THE ICT ENVIRONMENTS REQUIRE NEW TRAINING AND MANAGERIAL ACTIONS TO ENSURE QUALITY OF SERVICES AND PATIENT SAFETY. THE TOTAL QUALITY MANAGEMENT (TQM) SYSTEMS ARE PARTICULARLY FEASIBLE IN THE ICT-INTENSIVE HEALTH SECTOR AND APPROPRIATE QUALITY MANAGEMENT GUIDELINES SHOULD BE PRODUCED. PARTICULAR ATTENTION SHOULD BE GIVEN TO ENSURE PATIENT SAFETY IN THE HIGH-TECH HEALTH SYSTEMS. APPROPRIATE MEASURES FOR PREPAREDNESS ARE NECESSARY FOR EMERGENCIES, FOR POSSIBLE SYSTEM-WIDE COLLAPSE OF NETWORKS, FOR ELIMINATION OF THE EFFECTS OF HUMAN ERRORS AND FOR THE POSSIBLE MISUSE OF ICTS IN THE HEALTH SECTOR. THERE ARE NUMEROUS POTENTIAL PROBLEMS RELATED TO THE QUALITY AND SAFETY OF TELEMATICALLY CONDUCTED, DIRECTED OR GUIDED SELF-CARE WHICH SHOULD ALSO BE ADDRESSED.

*APPROPRIATE QUALITY MANAGEMENT AND CONTINUOUS QUALITY IMPROVEMENT SYSTEMS WITH APPROPRIATE GUIDELINES SHOULD BE SPECIFICALLY PREPARED FOR ICT-BASED HEALTH SYSTEMS. IN THE DEVELOPMENT OF SUCH GUIDELINES, CONSIDERATION SHOULD BE GIVEN TO THE SCIENTIFIC AND TECHNICAL QUALITY OF SERVICES AND METHODS USED, INTRODUCTION OF BEST PRACTICES, AS WELL AS PREPAREDNESS FOR TECHNICAL OR OPERATIONAL FAILURE AND FOR EMERGENCIES. APPROPRIATE QUALITY MANAGEMENT SHOULD ALSO BE ORGANISED FOR THE PRODUCTION OF TELEMATIC SERVICES FOR SELF-CARE.*

### **3. THE NEED FOR NEW REGULATION**

LIABILITY ISSUES CONNECTED TO THE USE OF ICTS IN THE HEALTH SECTOR ARE COMPLEX, COMPREHENSIVE, AND SOMETIMES DIFFICULT TO RESOLVE DUE TO THE LACK OF APPROPRIATE REGULATIONS SPECIFICALLY RELEVANT FOR ICTS. THERE ARE BUILT-IN LIABILITIES CONCERNING PRODUCERS OF TECHNOLOGIES, HEALTH SECTOR PERSONNEL, AND CLIENTS OF TELEMATIC HEALTH SERVICES. THE PROBLEMS OF LIABILITY MAY, HOWEVER, ARISE, FOR EXAMPLE IN THE CASE OF TELEMATIC VIDEO CONSULTATIONS OR TELEMATICALLY GUIDED OR CONDUCTED OPERATIONS OR THROUGH TELEMATIC CONTROL OF TECHNICAL OPERATORS (E.G. DISTANT CONTROL OF CARDIAC PACEMAKER, DRUG ADMINISTRATION, ETC.). THE DEFINITION OF PATIENTS' RIGHTS, AND THE RIGHTS AND RESPONSIBILITIES OF THE HEALTH PERSONNEL IN THE NEW ICT-INTENSIVE HEALTH SECTOR ARE EXPLICITLY NEEDED.

*REVIEW OF LEGISLATION SHOULD BE MADE TO ASCERTAIN ITS APPROPRIATENESS AND TO MAKE THE NECESSARY PROVISIONS ON THE RIGHTS, RESPONSIBILITIES AND LIABILITY OF DIFFERENT ACTORS AND PARTNERS IN THE ICT-INTENSIVE HEALTH SECTOR INCLUDING PRODUCERS OF TECHNOLOGY, HEALTH PROFESSIONALS AND PATIENTS.*

CONFIDENTIAL HEALTH INFORMATION IS EFFECTIVELY PROTECTED THROUGH EU DIRECTIVES AND OTHER LEGAL PROVISIONS IN EU MEMBER STATES. THOUGH NOT NECESSARILY WORSE THAN IN THE "PRE-ICT" SOCIETY, THE PROTECTION OF CONFIDENTIALITY IN ICT SYSTEMS DEMANDS SPECIAL ATTENTION. IN PARTICULAR, THE SANCTIONS IN CASES OF SEVERE VIOLATIONS SHOULD BE MAINTAINED AND POSSIBLY MADE MORE RIGID FOR EXTREME CASES. EFFECTIVE TRAINING OF ALL INVOLVED IN THE GENERAL DATA PROTECTION REGULATIONS AND IN THE PRINCIPLES OF THEIR PRACTICAL IMPLEMENTATION IS ALSO CRITICAL. SUCH REGULATIONS SHOULD NOT, HOWEVER, RESTRICT THE USE OF HEALTH INFORMATION ON ACTIVITIES FOR THE PURPOSE OF HEALTH PROTECTION AND HEALTH RESEARCH.

*ALL NECESSARY LEGAL, PRACTICAL OR TECHNOLOGY ACTIONS SHOULD BE TAKEN TO PROTECT CONFIDENTIALITY OF HEALTH DATA IN THE ICT-INTENSIVE HEALTH SECTOR. THE DATA PROTECTION SYSTEMS SHOULD BE CONSTRUCTED IN A WAY THAT PROTECTS PERSONAL HEALTH DATA WHILE MAKING THE DATA NEEDED FOR THE PROTECTION OF POPULATION'S COLLECTIVE HEALTH INTERESTS AND HEALTH RESEARCH (E.G. IN THE CASE OF EMERGING EPIDEMICS) AVAILABLE FOR HEALTH AUTHORITIES AND SCIENTISTS.*

#### **4. NEW NEEDS FOR RESEARCH AND COLLABORATION**

IN SPITE OF THE SPECIAL PRIORITY AREA IN THE BIOMED 2 PROGRAMME, LITTLE RESEARCH HAS BEEN DONE ON THE EFFECT OF ICTS ON THE HEALTH CARE SECTOR. MORE PREDICTIVE AND FUTURE-ORIENTED RESEARCH IS NEEDED TO IDENTIFY THE NEED FOR AND POTENTIAL OF THE NEW TECHNOLOGIES IN THE HEALTH SECTOR. SYSTEM-WIDE ASSESSMENT OF ICT IMPLEMENTATION WILL BE OBTAINED ONLY WITH THE HELP OF HEALTH SYSTEMS RESEARCH ON THE IMPACT OF ICT-BASED METHODS OF HEALTH CARE. SUCH RESEARCH HAS BEEN, TO DATE, LESS DEVELOPED IN EUROPE. THIS SHOULD BE STRENGTHENED AND PARTICULARLY SHOULD EMPHASISE THE EFFECTS AND DEVELOPMENT POTENTIALS OF ICTS IN HEALTH SERVICES. RESEARCH IS ALSO NEEDED TO PROVIDE A SCIENTIFIC BASIS AND EVALUATIONS OF ORGANIZATIONAL CHANGES IN THE HEALTH SYSTEMS.

*HEALTH SERVICES RESEARCH, BIOMEDICAL RESEARCH AND APPROPRIATE SOCIAL RESEARCH SHOULD BE DIRECTED TO PROBLEMS OF USABILITY, FEASIBILITY, DEVELOPMENT POTENTIAL AND THE IMPACTS OF ICTS ON THE HEALTH SECTOR. APPROPRIATE STUDIES ON THE IMPACT OF ICTS ON OCCUPATIONAL HEALTH AND SAFETY OF HEALTH PERSONNEL, ON PATIENT SAFETY, AND ON THE IMPACT OF ICTS ON METHODOLOGY, AVAILABILITY AND QUALITY OF HEALTH SERVICES SHOULD BE ENCOURAGED. SUCH RESEARCH SHOULD BE EFFECTIVELY SUPPORTED BY THE EC.*

THE EXPECTED POSITIVE IMPACT OF ICTS ON THE HEALTH SECTOR IS OBTAINED ONLY IF SUFFICIENTLY LARGE AREAS AND IF SEVERAL LEVELS OF HEALTH SYSTEMS ARE INVOLVED AND NETWORKED. BOTH NATIONAL AND INTERNATIONAL CONTACTS ARE VITAL FOR THE EXCHANGE OF INFORMATION AND FOR COLLABORATION IN THIS FIELD. A NUMBER OF SPECIAL NETWORKS HAVE BEEN ORGANISED TO FACILITATE INDIVIDUAL PROJECTS AND PROGRAMMES. SUCH COLLABORATION SHOULD BE FURTHER ENCOURAGED AND SUPPORTED AT BOTH THE NATIONAL AND EUROPEAN LEVELS. TO FACILITATE SUCH COLLABORATION, ORGANIZATION OF NATIONAL AND EUROPEAN NETWORKS ON DEVELOPMENT AND IMPLEMENTATION OF ICTS IN THE HEALTH SECTOR SHOULD BE STRENGTHENED.

*A FORMAL MULTI-SECTORAL COLLABORATION WITH APPROPRIATE NATIONAL AND EUROPEAN NETWORKING IS RECOMMENDED FOR FURTHER DEVELOPMENT OF THE USE OF ICTS IN THE HEALTH SECTOR. SUCH NETWORKS SHOULD MEET REGULARLY TO EVALUATE PROGRESS IN THE FIELD, TO IDENTIFY POTENTIAL PROBLEMS AND ADVANCES, AND TO FORMULATE PLANS FOR FURTHER COLLABORATION. THE EUROPEAN COLLABORATIVE NETWORK SHOULD REPORT REGULARLY TO THE APPROPRIATE EC AUTHORITIES.*

#### **5. HEALTH SERVICES FOR ALL**

AS PROPOSED BY THE WORLD HEALTH ORGANIZATION 'HEALTH FOR ALL BY THE YEAR 2000' STRATEGY, EQUITY IN HEALTH IS A WIDELY ACCEPTED CONCEPT IN ALL MEMBER COUNTRIES. ICTS OFFER GREAT POTENTIAL TO IMPROVE EQUITY WITHIN THE HEALTH SECTOR THROUGH EXPANDING COVERAGE AND THROUGH IMPROVING THE AVAILABILITY AND QUALITY OF SERVICES. THE IMPLEMENTATION OF ICTS MAY, HOWEVER, ALSO EXCLUDE SOME POTENTIAL USERS BY SETTING CERTAIN MINIMUM CRITERIA FOR COMPUTER LITERACY OR BY BEING LESS AVAILABLE OR ACCEPTABLE THAN TRADITIONAL HEALTH SERVICES. FOR MOST USERS SUCH OBSTACLES CAN BE OVERCOME WITH THE HELP OF TRAINING, INSTRUCTIONS AND ADVICE. HOWEVER, A FRACTION OF THE POPULATION MAY ALWAYS REMAIN NON-USERS (E.G. THE SERIOUSLY DISABLED, ELDERLY PEOPLE AND CERTAIN PATIENT GROUPS WITH MENTAL HEALTH PROBLEMS). ORGANIZING SPECIAL ADVISORY SUPPORT TO HELP THE USERS OR BY PROVIDING CONVENTIONAL SERVICES AS ALTERNATIVES MAY BE NEEDED TO PREVENT SUCH EXCLUSIONS. A NUMBER OF PEOPLE COULD BECOME USERS OF NEW SERVICES PROVIDED THEIR SPECIAL NEEDS ARE CONSIDERED. IN THIS RESPECT, PARTICULAR ATTENTION SHOULD BE GIVEN TO THE NEEDS AND AVAILABILITY OF SERVICES TO DISABLED AND HANDICAPPED PEOPLE, THE ELDERLY, CHRONICALLY ILL AND OTHER UNDER-SERVED GROUPS.

*EQUITY IN HEALTH SHOULD BE ENSURED FOR ALL GROUPS EITHER BY SUPPORTING THE USE OF ICTS IN HEALTH CARE, OR, IF NECESSARY, BY PROVIDING CONVENTIONAL HEALTH SERVICES. SPECIAL ATTENTION SHOULD BE GIVEN TO THE NEEDS OF HANDICAPPED AND OTHER UNDER-SERVED USER GROUPS OF ICTS IN THE HEALTH SECTOR. IN PLANNING SOLUTIONS FOR THEIR NEEDS THE PRINCIPLE OF FULL PARTICIPATION OF THE TARGET GROUPS SHOULD BE ENSURED.*

## **6. REVIEW OF ETHICAL CODES**

HEALTH CARE IS CRITICALLY DEPENDENT ON HIGH ETHICAL PRINCIPLES BY THE INDIVIDUALS WHICH PROVIDE HEALTH CARE SERVICES. NUMEROUS ETHICAL CODES HAVE BEEN PUBLISHED BY INTERNATIONAL ORGANIZATIONS AND INTERNATIONAL ASSOCIATIONS OF HEALTH PROFESSIONALS, THE MOST PROMINENT ONES BEING THE WORLD MEDICAL ASSOCIATION'S (WMA), 'INTERNATIONAL CODE OF MEDICAL ETHICS, WMA STATEMENT ON THE USE OF COMPUTERS IN MEDICINE', AND THE 1982 COUNCIL FOR INTERNATIONAL ORGANIZATIONS OF MEDICAL SCIENCE (CIOMS) INTERNATIONAL GUIDELINES FOR BIOMEDICAL RESEARCH INVOLVING HUMAN SUBJECTS. THESE AND OTHER CODES WERE PREPARED IN TIMES WHEN ICTS WERE NOT YET EXTENSIVELY APPLIED TO THE HEALTH CARE SECTOR. SPECIAL EXAMINATION OF ETHICAL ISSUES ASSOCIATED WITH THE USE OF ICTS AND, FOR EXAMPLE, IN THE USE OF TELEMEDICINE HAVE NOT OCCURRED. THE ETHICAL ISSUES CONCERNED CAN BE GROUPED INTO FOUR MAIN CATEGORIES WHICH SHOULD BE SPECIALLY CONSIDERED IN SUCH EXAMINATIONS:

- A. ETHICAL PRINCIPLES IN THE PROTECTION OF CONFIDENTIALITY OF PERSONAL HEALTH DATA;
- B. ETHICS IN THE NEW TELEMATICALLY CONDUCTED PATIENT-PHYSICIAN RELATIONSHIP;
- C. ETHICAL ASPECTS OF RESEARCH AND DEVELOPMENT EXPERIMENTS IN HEALTH CARE USING ICTs;
- D. ETHICAL ISSUES IN ICT-ASSISTED SELF-CARE.

*THE EC SHOULD, TOGETHER WITH RELEVANT INTERNATIONAL AND PROFESSIONAL BODIES, INITIATE THE EXAMINATION AND ANALYSIS OF ETHICAL ASPECTS OF THE NEW ICT-INTENSIVE HEALTH SECTOR IN VIEW OF POSSIBLE NEEDS TO AMEND OR COMPLETE THE EXISTING CODES OF ETHICS.*



## **THEME IX:**

### **THE IS AND CULTURE**

THE COMPLEX ROLE OF COMMUNICATION TECHNOLOGIES IN CULTURE HAS BEEN A LONG STANDING AREA OF DEBATE. FOR EXAMPLE, THE PROCESSES BY WHICH CULTURAL VALUES HAVE BEEN REDEFINED BY THE GROWTH OF THE 'CULTURAL INDUSTRIES' OF FILM, RADIO, TELEVISION HAVE BEEN DISCUSSED AT LENGTH, AND CONTINUES TO BE AN ISSUE OF INTEREST TO POLICY MAKERS, PUNDITS AND THE PUBLIC. THE IS WILL UNDOUBTEDLY LEAD TO A RENEWAL OF THESE DEBATES, BECAUSE:

- THE NEW ICTS ARE INHERENTLY COMMUNICATION TECHNOLOGIES, SO THEY CHANGE THE WAY THAT PEOPLE INTERACT;
- NEW CULTURAL INDUSTRIES WILL EMERGE TO EXPLOIT THE ICTS, THUS CHANGING THE WAY THAT WE UNDERSTAND AND 'CONSUME' CULTURE.

AN IMPORTANT WAY IN WHICH ICTS DIFFER FROM PREVIOUS WAVES OF ELECTRONIC CULTURAL TECHNOLOGIES IS THAT THEY ARE INTERACTIVE, RATHER THAN ONE WAY OR BROADCAST. BECAUSE END USERS CAN ACCESS, BROWSE AND SELECT INFORMATION MOUNTED ON A SERVER, IT IS POSSIBLE FOR USERS TO HAVE, THE IMPRESSION AT LEAST, THAT THEY HAVE FREE CHOICE. OF COURSE, THE ABILITY TO EXERCISE SUCH CHOICE IS CONSTRAINED BY THEIR ABILITY: TO PAY FOR ACCESS TO THE INFORMATION; TO IDENTIFY THE INFORMATION THAT THEY DESIRE; AND, INDEED, TO DEFINE THEIR OWN INFORMATIONAL NEEDS. THE RANGE OF CHOICES AND THE WAY IT IS PRESENTED IS, OF COURSE, CONSTRAINED BY THE ECONOMICS OF PROVIDING SUCH SERVICES. WHILST SUCH ON-LINE CULTURAL COMMODITIES MAY NOT BE AS STANDARDISED AS BEFORE, THEY ARE NOT COSTLESS TO PRODUCE OR DELIVER. THUS, THE CONTENT OF THE COMMODITY AND THE MANNER IN WHICH IT IS PRESENTED WILL BE STRUCTURED BY THE LEVEL AND TYPE OF MARKET DEMAND, ITS MANNER OF DELIVERY AND THE PURPOSE FOR WHICH THE INFORMATION WAS OFFERED.

ALSO, THE NEW ICTS REPRESENT BOTH NEW TECHNOLOGIES AND TECHNIQUES OF PRODUCTION, DISTRIBUTION AND CONSUMPTION OF CULTURAL GOODS. THE NEW TECHNOLOGIES CHANGE THE MODES AND RANGES OF EXPRESSION WHICH ARE AVAILABLE TO PEOPLE USING THESE SYSTEMS. THIS IS CLEARLY SHOWN BY THE EMERGENCE OF DISTINCT RULES OF ETIQUETTE IN THE TEXT ONLY WORLD OF THE INTERNET, WHERE WRITING

SOMETHING IN CAPITALS IS THE SAME AS SHOUTING. AS THEY BECOME MORE PERVERSIVE, THEREFORE, WE CAN EXPECT THAT ICTS WILL PROMOTE CHANGES IN THE GRAMMARS OF EXPRESSION AND THE NATURE AND UNDERSTANDING OF CULTURAL PRODUCTION, NOT JUST ON-LINE BUT IN THE WIDER SOCIETY. THIS HAS HAPPENED BEFORE WITH NEW COMMUNICATIONS TECHNOLOGIES SUCH AS READING AND WRITING, THE TELEPHONE AND TELEVISION. WE MIGHT EXPECT IT TO HAPPEN AGAIN.

THE RELATIONSHIPS BETWEEN CULTURE AND TECHNOLOGY ARE, HOWEVER, COMPLEX. TO EXPECT CHANGES IS REALISTIC, TO DETERMINE THEIR PACE AND DIRECTION IS MORE DIFFICULT. TO SOME EXTENT CULTURAL TECHNOLOGIES ARE MALLEABLE TO THE CHOICES SOCIETY MAKES ABOUT THE DIRECTIONS OF DEVELOPMENT. THUS, WE STRESS ONCE AGAIN THE NEED FOR A VISION OF HOW CULTURE CAN DEVELOP IN AN IS. IN THE REST OF THIS CHAPTER, WE SUGGEST TWO EXAMPLE AREAS IN WHICH WE SEE THE POSSIBILITY FOR THE APPLICATION OF ICTS IN SUPPORT OF CULTURAL DEVELOPMENT. THESE ARE: THE PROMOTION OF CULTURAL DIVERSITY IN THE IS; AND THE DEVELOPMENT OF LOCAL COMMUNITIES AND COMMUNITIES OF CULTURE. FINALLY, WE RAISE THE DANGER OF THE FRAGMENTATION IN THE IS - BECAUSE OF THE WAY THAT ICTS REDUCE ALL COMMUNICATION AND CULTURAL ARTIFACTS TO THE SIZE OF BITS AND BYTES. THE REVERSE SIDE OF SELECTION AND CHOICE IS THE RUPTURE BETWEEN THE CONTENT AND ITS CONTEXT AND ENVIRONMENT. A 'CULTURE OF POSTMODERNITY' IN THE IS WHICH SAMPLES LIBERALLY FROM THE WIDE RANGE OF CULTURAL OFFERINGS PRESENTS US WITH THE RISK OF BEING AS SHALLOW AS IT IS WIDE.

## **1. THE IS AND EUROPE'S CULTURAL DIVERSITY**

EUROPE'S DIVERSE CULTURAL AND LINGUISTIC HERITAGE IS BOTH A STRENGTH AND WEAKNESS. IT PROVIDES EUROPEANS WITH A WEALTH OF EXPERIENCE AND KNOWLEDGE ABOUT DIFFERENT WAYS OF LIVING, VALUE SYSTEMS AND APPROACHES TO ISSUES. BUT IT ALSO CREATES COMMUNICATION DIFFICULTIES, NOT JUST BECAUSE OF LINGUISTIC BARRIERS, BUT ALSO BECAUSE OF DIFFERENCES IN SETTING PRIORITIES, METHODS OF RESOLVING CONFLICTS AND SO ON. IN OUR VIEW, THE IS SHOULD BE SEEN AS AN OPPORTUNITY TO REDUCE SOME OF THE COSTS OF PRESERVING THIS DIVERSITY.

AS ICTS BEGIN TO CHANGE THE ECONOMICS OF PRODUCING AND DELIVERING CULTURAL SERVICES, THERE ARE CHANCES TO REDUCE THE PUSH TOWARDS CULTURAL STANDARDISATION AND TO DEVELOP NEW PROGRAMMES OF CULTURAL DEVELOPMENT. HOWEVER, WHILE ICTS ARE AN IMPORTANT CATALYST FOR SUCH PROGRAMMES, THE DEVELOPMENT OF APPLICATIONS AND SYSTEMS SHOULD NOT BE ALLOWED TO REPLACE SOCIAL INTERACTIONS. CULTURE IS BY DEFINITION SOMETHING WHICH IS SHARED BETWEEN PEOPLE AND SO TAKES PLACE IN THE PUBLIC DOMAIN, NOT ONLY IN PRIVATE AND ON SCREEN. ALSO, THE FULL RANGE OF CUES AND INTERACTIONS BETWEEN HUMANS ARE NOT AVAILABLE ON-LINE. THUS,

A BETTER UNDERSTANDING OF THE BALANCE BETWEEN DIRECT HUMAN CONTACT AND TELE-MEDIATED CONTACT SHOULD BE SOUGHT.

THE IS CAN ALSO BE USED TO SUPPORT THE MULTILINGUAL NATURE OF EUROPEAN SOCIETY BY MAKING LANGUAGE-LEARNING EASIER AND MORE ACCESSIBLE, BY REDUCING THE COST OF TRANSLATION, BY CREATING STOREHOUSES OF CULTURAL AND LINGUISTIC MATERIALS, AND SO ON. IN PARTICULAR, THE ACCESSIBILITY OF SUCH MATERIALS AND OPPORTUNITIES SHOULD BE INCREASED. HOWEVER, IN THE SHORT TERM, THE ENGLISH LANGUAGE IS BECOMING MORE AND MORE IMPORTANT IN THE INTERNATIONAL EXCHANGES OF THE IS AND TENDS EVEN TO BECOME THE DOMINANT LANGUAGE USED IN SOME FIELDS (A GOOD EXAMPLE IS THE INTERNET).

MORE GENERALLY, PROGRAMMES FOR DEVELOPMENT OF CULTURE APPLICATIONS OF ICTS COULD REINFORCE LOCAL CULTURES AND BUILD BRIDGES TO OTHER CULTURES, IN A COMPLEMENTARY MANNER. SUCH PROGRAMMES COULD TARGET CERTAIN NON-MAINSTREAM AREAS, INTERESTS OR GROUPS. FOR INSTANCE, THERE MIGHT BE SPECIAL SUPPORT FOR MINORITY LINGUISTIC GROUPS, INCLUDING NON-EUROPEAN CULTURES WHICH HAVE BECOME ESTABLISHED IN EUROPE, IN ORDER TO FURTHER INTER-ETHNIC UNDERSTANDING. PERSON TO PERSON EXCHANGE OF CULTURAL VIEWS COULD ALSO BE ENCOURAGED, PERHAPS THROUGH SPECIAL COMPUTER CONFERENCES ON ISSUES SUCH AS CROSS-CULTURAL UNDERSTANDING, THE EMERGING EUROPEAN CONSCIOUSNESS AND SO ON.

PROGRAMMES TO CREATE MULTIMEDIA ART GALLERIES, EXHIBITION SPACES, MUSEUMS AND LEARNING SPACES FOR DIFFERENT GROUPS, REGIONS AND TRADITIONS COULD ALSO BE ESTABLISHED. SUCH DEVELOPMENTS COULD ALLOW THE INTRODUCTION OF VIRTUAL TOURISM, WHICH COULD BE USED TO REDUCE PRESSURES ON SOME OF THE MOST VALUABLE AND POPULAR EUROPEAN CULTURAL TREASURES AND NATURAL HABITATS.

ALSO, AS ATTITUDES AND VALUES ARE MAINLY FORMED WHEN YOUNG, THE ESTABLISHMENT OF NETWORKS BETWEEN SCHOOLS TO STUDY AND COMPARE DIFFERENT CULTURES AND WAYS OF LIVING AND TO EVALUATE THE RESULTS WOULD SEEM WORTHWHILE. AN INTEREST IN AND UNDERSTANDING OF CULTURE IS NOT ONLY OF USE IN DEVELOPING A SENSE OF IDENTITY, EUROPEAN CITIZENSHIP AND UNDERSTANDING OF OTHERS, BUT A VALUABLE RESOURCE ON AN INDIVIDUAL LEVEL AS IT CAN PROMOTE THE INQUIRING ATTITUDE NEEDED TO SUPPORT THE SHIFT TOWARDS LIFE-LONG LEARNING WHICH WE HAVE ARGUED FOR ELSEWHERE IN THIS REPORT.

*A MULTICULTURAL VISION OF EUROPE COULD BE SUPPORTED WITHIN THE IS, THROUGH THE USE OF ICTS: AS A FOCUS FOR THE CULTURAL DEVELOPMENT; FOR THE TRANSMISSION OF CULTURAL IDEAS AND ARTIFACTS; FOR FOSTERING DIRECT*

*CONTACT BETWEEN DIVERSE (AND OFTEN WIDELY DISPERSED) GROUPS; FOR SUPPORTING THE MULTILINGUAL NATURE OF EUROPEAN SOCIETY. COOPERATION WITH SIMILAR PROGRAMMES OUTSIDE OF EUROPE MIGHT BE PURSUED ALONG WITH THE OBVIOUS NEED TO COORDINATE POLICIES WITH INTERNATIONAL BODIES ACTIVE IN THIS AREA, SUCH AS UNESCO.*

## **2. CULTURE AND COMMUNITY**

CULTURE IS NORMALLY ASSOCIATED WITH LOCALITIES, COMMUNITIES AND NEIGHBOURHOODS - THE PEOPLE WITH WHOM WE ASSOCIATE DAY BY DAY. THESE SPATIAL COMMUNITIES ARE STILL THE GLUE WHICH ALLOWS EUROPEAN CULTURE TO COHERE AND RENEW ITSELF. ICTS WILL UNDOUBTEDLY ALTER THE CULTURAL COHESION OF SUCH SPATIAL COMMUNITIES. ON THE ONE HAND, THE SPACE ANNIHILATING NATURE OF ICTS COULD REDUCE A LOCAL SENSE OF PLACE, AS PEOPLE BECOME MORE INTERESTED BY A GLOBAL WINDOW ON THE WORLD WHICH IS OPENED UP BY THE NEW TECHNOLOGIES. ON THE OTHER HAND, WITH APPROPRIATE POLICIES THESE NEW TECHNOLOGIES COULD LEAD TO A RELOCALISATION OF CULTURAL RESOURCES BACK INTO THE COMMUNITY. POLICY MAKERS COULD LEAD THIS PROCESS BY PROVIDING SERVICES AT A LEVEL WHICH MATCHES THE SCALE OF DIRECT HUMAN INTERACTIONS AND BY ENCOURAGING THE DEVELOPMENT OF PRIVATE SECTOR ACTIVITIES WHICH AID THE REBUILDING OF LOCALITIES AND NEIGHBOURHOODS.

*A VITAL STEP IN THE REINVIGORATION OF THE SPATIAL COMMUNITY WOULD BE TO PROMOTE CULTURAL PRODUCTION AND CONSUMPTION AT THE LOCAL LEVEL. THIS IS IMPORTANT AS PART OF HELPING TO REASSERT A SENSE OF PLACE AND PRIDE, TO DEVELOP PEOPLE'S NATURAL CREATIVITY (ESPECIALLY IN REMOTE OR PERIPHERAL AREAS) AND AS AN EDUCATIVE PROCESS. IT IS IMPORTANT, THEREFORE, THAT WHEN CULTURAL SERVICES ARE DEvised THAT THEY COUNTER, RATHER THAN REINFORCE, CENTRALISING EFFECTS. ONCE AGAIN, THE NATURAL PLACE FOR CULTURAL EXPRESSION IS IN THE PUBLIC SPHERE, AND POLICIES FOR THE IS SHOULD BE AVOWEDLY COMMITTED TO DEVELOPING THE PUBLIC SPACES AND SHARED CELEBRATION OF CULTURE.*

NEW NON-SPATIAL 'COMMUNITIES OF INTEREST' (COIs) ARE ALSO FOSTERED BY ICTs. COIs ARE SELF-SELECTING GROUPS WITH SHARED INTERESTS, VALUES AND KNOWLEDGE. COMPUTER CONFERENCES AND BULLETIN BOARDS CREATE FORA IN WHICH INDIVIDUALS FROM DIFFERENT COUNTRIES AND CULTURES INTERACT. THESE COIs CLEARLY HAVE DIFFERENT MODES AND FORMS OF EXPRESSION THAN TRADITIONAL FACE TO FACE COMMUNITIES. NEVERTHELESS, THEY DO SEEM TO BE EVOLVING THEIR OWN STRONG SOCIAL NORMS AND WAYS TO TRANSFER TACIT INFORMATION. THERE ARE NUMEROUS ANECDOTAL

EXAMPLES OF PERSONAL RELATIONSHIPS BEING DEVELOPED ON-LINE EVEN LEADING TO REAL (AND VIRTUAL) MARRIAGES.

*DESPITE THE POPULAR INTEREST IN THESE VIRTUAL COMMUNITIES OVER THE PAST FEW YEARS, THERE IS RELATIVELY LITTLE SERIOUS ANALYSIS OF THE IMPLICATIONS OF SUCH DEVELOPMENTS, SUCH AS: THE REAL SCALE OF THESE EFFECTS; THE CONSEQUENCES FOR THE REAL SOCIAL ABILITIES OF THE AFICIONADOS ON-LINE NETWORKING; THE RELATIONSHIP BETWEEN STRONG SPATIAL AND VIRTUAL COMMUNITIES.*

### **3. CULTURE AND DIGITISED MEDIA**

AN INTERESTING QUESTION REGARDING THE NEW VIRTUAL COMMUNITIES OF INTEREST IS WHETHER, AS SOME HAVE ARGUED, A SIGNIFICANT NEW WAVE OF CULTURAL PRODUCTION IS EMERGING FROM THE 'TRENCHES OF HYPERSPACE'.<sup>20</sup> THE DIGITISATION OF INFORMATION, IMAGES, TEXT, MOVEMENTS AND SO ON ALLOWS CULTURAL COMMODITIES TO BE SAMPLED, CUT AND PASTED AND REMIXED, OFTEN WITH SCANT REFERENCE TO ITS ORIGINAL CONTEXT. OF COURSE, THIS IS NOTHING NEW. CREATORS OF INFORMATION, ART AND IDEAS HAVE ALWAYS PLUNDERED THE PAST TO MAKE THE PRESENT. BUT THERE IS AN ARGUMENT THAT A DEGREE OF RESPECT FOR THE INTEGRITY OF CULTURAL PRODUCTS IS NECESSARY FOR A PROPER TRANSMISSION OF TRADITIONS AND WAYS OF LIFE. MOREOVER, THE NEW TOOLS OF CULTURAL REPRODUCTION (THE ICTs) PUT A LAYER OF TECHNOLOGY BETWEEN THE ARTIST AND THE ARTEFACT. THE NEW TECHNOLOGY INVOKES NEW TECHNIQUES, WHICH RESULTS IN DIFFERENT OUTCOMES AND UNDERSTANDINGS. FOR INSTANCE, THE SHEER EASE OF MANIPULATING INFORMATION, OF REORDERING TEXTS OR CHANGING COLOURS AND SO ON MUST SURELY CHANGE THE WAY THAT WORKS OF ART ARE PRODUCED AND DISTRIBUTED. IN ADDITION, MULTIMEDIA ART WILL REQUIRE THE MASTERY OF MULTIPLE DISCIPLINES OF TEXT, SOUND, IMAGE, DESIGN AND MOVEMENT (WITHIN THE CONSTRAINT OF A TWO-DIMENSIONAL CATHODE TUBE). SUCH CHANGES WILL ALTER OUR PERCEPTIONS THROUGH THE REPRESENTATION OF EXISTING CULTURE, THE WAY THAT NEW CULTURAL GOODS ARE PRODUCED, AND THUS, OUR ABILITY TO UNDERSTAND THE TRADITIONS AND CULTURES OF THE PAST.

*THESE COMPLEX INTERACTIONS BETWEEN CULTURE AND TECHNOLOGY ARE, FOR US, BOTH A MAJOR AREA OF CONCERN AND AN OPPORTUNITY FOR A WIDER, MORE DEMOCRATISED APPROACH TO CULTURAL PRODUCTION. MORE SERIOUS INVESTIGATION IN THIS AREA IS CLEARLY NEEDED. HOWEVER, AS ELSEWHERE IN THE*

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<sup>20</sup> cf. Douglas Rushkoff (1994) "Cyberia: Life in the Trenches of Hyperspace", Minerva.

*REPORT, WE SUGGEST THAT EDUCATION WILL PLAY A MAJOR ROLE IN DETERMINING THE FUTURE CULTURAL RICHNESS OF EUROPE.*

## **THEME X:**

### **THE IS AND THE MEDIA**

THE MEDIA INDUSTRIES IN EUROPE ARE UNDERGOING RADICAL TRANSFORMATION AND GROWTH ASSOCIATED WITH THE IS. NEW JOBS AND NEW WORK ROLES ARE BEING CREATED IN THIS PROCESS, NOT ONLY IN MEDIA-PRODUCTION AND EDITING BUT ALSO IN THE NEWLY EMERGING MEDIA, AND IN DISTRIBUTION, SELLING AND ADVERTISING. THE KEY TRENDS ARE: THE INTERNATIONALISATION AND CONCENTRATION OF OWNERSHIP AND OPERATIONS; MULTIPLE TECHNOLOGICAL CONVERGENCES, SUCH AS BETWEEN TELEVISION AND COMPUTERS, ELECTRONIC NEWSPAPERS AND ELECTRONIC NEWS-SERVICES, TEXT-TV AND INTERACTIVE VIDEO, CD-PLAYERS AND PCs; THE PROLIFERATION OF COMPLETELY NEW ELECTRONIC MEDIA WHICH HAVE QUITE DIFFERENT CHARACTERISTICS FROM THE OLD SYSTEMS; THE MERGER OF INFORMATION, ENTERTAINMENT AND EDUCATION SECTORS AND PRODUCTS WITHIN THE MEDIA INDUSTRY; AND THE DEVELOPMENT OF NEW SYSTEMS OF CREATING AND EDITING MATERIAL.

THESE KEY TRENDS RAISE SERIOUS CHALLENGES SUCH AS:

- A POTENTIAL CONCENTRATION OF PRODUCTION AND DISTRIBUTION ACTIVITIES IN THE MEDIA;
- THE POTENTIAL LOSS OF DIVERSITY OF OPINION AND PLURALISM THROUGH MEDIA CONCENTRATION;
- A LACK OF TRANSPARENCY CONCERNING THE INTERESTS AND GROUP BEHIND MEDIA PRODUCTS, PARTICULARLY IN THE NEW ELECTRONIC MEDIA;
- THE EASE OF COPYING LEADING TO A SERIOUS EROSION OF COPYRIGHT PROTECTION.

#### **1. THE IS AND THE ECONOMIC CHALLENGES TO THE MEDIA INDUSTRY**

THE MEDIA ARE ALREADY CORE INDUSTRIES OF THE IS. THEY HAVE A SIGNIFICANT POTENTIAL FOR GROWTH IN TERMS OF VALUE CREATED, NUMBERS OF ENTERPRISES AND NEW JOBS. BUT, WITH THE IS THERE ARE NEW ECONOMIC EQUATIONS TO BE WORKED OUT CONCERNING THE BALANCE BETWEEN ECONOMIES OF SCALE OF PRODUCTION AND DISTRIBUTION IN THE INDUSTRY. ON THE ONE HAND, WITH RELATIVELY EASY AND LOW COST

ACCESS TO THE INTERNET, ANYONE CAN BE AN INTERNATIONAL PUBLISHER. THUS, TRADITIONAL BARRIERS TO ENTRY ARE REDUCED. ON THE OTHER HAND, THE ECONOMIC REALITY IS THAT, THERE IS SUBSTANTIAL CONCENTRATION OF OWNERSHIP IN THE MEDIA. THE COSTS OF QUALITY CONTENT PRODUCTION REMAIN HIGH AND SAVINGS CAN BE MADE BY SPREADING THESE COSTS ACROSS AS MANY DISTRIBUTIONAL CHANNELS AS POSSIBLE. ALSO, A MONOPOLY OVER THE RIGHTS TO TELEVISE CERTAIN EVENTS, SHOWS AND SO ON CAN RESULT IN VERY HIGH PRICES BEING PAID AND CHARGED FOR MEDIA ACCESS AND VIEWING. IN PARTICULAR, WE ARE SEEING VERTICAL INTEGRATION OF PRODUCTION AND DISTRIBUTION; HORIZONTAL INTEGRATION ACROSS THE DIFFERENT MEDIA; AND GEOGRAPHICAL MERGERS. THESE TAKEOVERS, MERGERS AND STRATEGIC ALLIANCES ARE RESULTING IN THE EMERGENCE OF A FEW, LARGE AND VERY POWERFUL MEDIA EMPIRES.

THE PICTURE CONCERNING THE MEDIA, THEREFORE, IS CONTRADICTORY AND COULD BECOME DICHOTOMISED BETWEEN THE CONCENTRATED INTERNATIONAL CENTRE AND LOW COST PRODUCERS. AS THE INDUSTRY HAS A MAJOR PART TO PLAY IN DEVELOPING WEALTH AND JOBS IN THE IS, WAYS TO AVOID OVER CENTRALISATION MIGHT BE SOUGHT, ESPECIALLY IF CONTROL OVER THE MAJOR DISTRIBUTION CHANNELS ARE USED TO EXCLUDE ALTERNATIVE VOICES AND VIEWPOINTS (SEE BELOW). THE MARKETS FOR MEDIA PRODUCTS, ESPECIALLY NEW ONES, CAN BE QUITE FRAGILE.

*INDUSTRIAL POLICY IN THIS AREA THEREFORE IS NECESSARY FOR THE DEVELOPMENT OF A THRIVING EUROPEAN INDUSTRY. SUCH POLICIES SHOULD PROVIDE AN INTEGRATED APPROACH WHICH RECOGNISES THE NEED FOR A DIVERSE AND STRONG EUROPEAN PRODUCTION SECTOR FEEDING INTO A DISTRIBUTION SECTOR. THE DISTRIBUTION CHANNELS MIGHT ALSO NEED REGULATION AT A SUB-EUROPEAN LEVEL, TO MAKE SURE THAT ACCESS TO HIGH-QUALITY MEDIA IS AVAILABLE ACROSS THE WHOLE UNION.*

## **2. CONCENTRATION AND A MONOPOLY OF INFORMATION**

PUBLIC ACCESS TO HIGH-QUALITY AND NEUTRAL INFORMATION IS NECESSARY TO THE PROPER FUNCTIONING OF DEMOCRACY. WITHOUT UNBIASED NEWS CONCERNING AFFAIRS IN THE COMMUNITY, THE COUNTRY OR THE WIDER WORLD, CITIZENS CANNOT PLAY AN ACTIVE PART IN THE GOVERNANCE OF SOCIETY OR MAKE INFORMED CHOICES IN ELECTIONS. THE INFORMATION WE RECEIVE, HOWEVER, IS NOT DECIDED IN A TOTALLY NEUTRAL AND TRANSPARENT MANNER. THE OWNERSHIP OF THE MEDIA IS BECOMING MORE CONCENTRATED: ONE MEDIA CONGLOMERATE MAY CONTROL A VARIETY OF NEWSPAPERS, TELEVISION STATIONS, NEWS PROGRAMMES, ETC. WITH, ONLY A FEW ORGANISATIONS DECIDING WHAT INFORMATION VIEWERS ARE EXPOSED TO AND THE LACK OF TRANSPARENCY ABOUT WHO



OWNS WHAT IN THE MEDIA, WE ARE CONCERNED THAT MEDIA CONCENTRATION COULD BE DETRIMENTAL TO CULTURAL AND POLITICAL PLURALISM IN EUROPE.

THE TENDENCY TOWARDS CONCENTRATION IN THE MEDIA THEREFORE IS A LEGITIMATE AREA IN WHICH POLICY ACTION IS NEEDED TO ENSURE:<sup>21</sup>

- THE HARMONISATION OF NATIONAL RESTRICTIONS ON MEDIA CONCENTRATION IN THE ENTIRE MEDIA SECTOR;
- THE ESTABLISHMENT OF ABSOLUTE TRANSPARENCY OF OWNERSHIP IN THE MEDIA INDUSTRY;
- THE SETTING UP OF RULES FOR NATIONAL PUBLIC SERVICE MEDIA-INSTITUTIONS, PROGRAMMING RULES AND POSITIVE MEASURES INCLUDING PROMOTING NON-COMMERCIAL RADIO- AND TELEVISION STATIONS OR INDEPENDENT NEWSPAPERS, ALL INITIATIVES WHICH MIGHT BE SEEN AS IMPORTANT TO SECURE AND SUPPORT PLURALISTIC OVERALL MEDIA SUPPLY ON A NATIONAL BASIS.

*THE RAPID DEVELOPMENT OF THE MEDIA INDUSTRY NOW CALLS FOR A RAPID ACTION PLAN IN THIS AREA WHICH SHOULD STRENGTHEN THE COMPETITIVENESS OF EUROPEAN QUALITY MEDIA PRODUCTS AND, AT THE SAME TIME, STRENGTHEN THE ECONOMIC AND CULTURAL PLURALISM IN THE SECTOR.*

THE RATE OF TECHNOLOGICAL DEVELOPMENT IN THE YEARS TO COME WILL RAISE, MONTH BY MONTH, NEW QUESTIONS AND NEW PROBLEMS.

*THUS WE SUGGEST THAT A FLEXIBLE AND DYNAMIC APPROACH TO MONITORING AND DEVELOPING POLICY BE ADOPTED. ONE SUGGESTION, MADE BY EUROPEAN PARLIAMENT, WHICH SHOULD BE EXAMINED IN DETAIL, IS TO FORM AN INDEPENDENT EUROPEAN MEDIA COUNCIL. THIS BODY WOULD OBSERVE DEVELOPMENTS IN THE MEDIA, ENSURE COMPLETE TRANSPARENCY WITH REGARD TO CROSS-OWNERSHIP, AND PUBLISH ITS FINDINGS AND RECOMMENDATIONS IN AN ANNUAL REPORT. THIS INDEPENDENT GROUP SHOULD ALSO CONSIDER ISSUES SUCH AS MEDIA ETHICS AND COPYRIGHTS.*

PART OF THE POLICY PACKAGE DEVELOPED SHOULD BE A GUARANTEE OF ACCESS TO HIGH-QUALITY INFORMATION TO ALL. ICTS WILL CERTAINLY RESULT IN THE AVAILABILITY OF HIGH QUALITY MEDIA FOR THOSE WHO CAN AFFORD IT. BUT, IN THE MASS MARKET, ECONOMIES OF SCALE IN THE PRODUCTION AND DISTRIBUTION MAY LEAD TO LOWER QUALITY, BUT

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<sup>21</sup> These points are based upon a resolution of the European Parliament (A3-043/93), which in turn was a response to the 1992 European Commission Green Paper on Pluralism and Media Concentration. In October 1994 the Commission made a follow-up paper on the Green Paper after a round of consultations.

GLOBALLY AVAILABLE MEDIA PROGRAMMING. THE SOCIAL VALUE OF ACCESS TO HIGH QUALITY PROGRAMMING AND INFORMATION AT A LOW COST, IN THE PUBLIC SERVICE TRADITION, SHOULD NOT BE UNDERESTIMATED. A SPLIT BETWEEN INFORMATION RICH AND INFORMATION POOR, COULD UNDERMINE THE COHESION AND DEMOCRATIC BASE OF THE IS.

*THE PUBLIC SECTOR MUST CONTINUE TO ACT AS A SUPPORTER OF COMPREHENSIVE AND RELIABLE INFORMATION WHICH HAS A HIGH LEVEL OF ACCESSIBILITY TO ALL PEOPLE. THIS MEANS NOT JUST MAKING INFORMATION AFFORDABLE, BUT ALSO MAKING SURE THAT INFORMATION IS UNDERSTANDABLE AND AVAILABLE VIA A WIDE VARIETY OF MEDIA, SO THAT PEOPLE WHO ARE NOT PLUGGED INTO ICTS CAN ALSO TAKE PART IN THE IS. HERE AGAIN WE DRAW ATTENTION TO THE NEED FOR A CONCEPT OF USP REGARDING THE INFORMATION SERVICES CONTENT AND QUALITY. IN THE IS THE OLD GUARANTEES OF STANDARDS WILL NO LONGER BE ADEQUATE.*

FINALLY, IT IS WORTH EXAMINING THE CONSEQUENCES OF THE NEW ECONOMICS OF MEDIA PRODUCTION AND DISTRIBUTION ON THE QUALITY AND INDIVIDUALISATION OF INFORMATION AVAILABLE TO CONSUMERS. AS THE AMOUNT OF LEISURE TIME INCREASES, OUR ABILITY TO CONSUME MORE ICT-BASED SERVICES WILL ALSO RISE, WHICH WILL UNDOUBTEDLY LEAD TO A GROWTH OF MEDIA OFFERINGS CUSTOMISED TO CERTAIN CONSUMER SEGMENTS AND TASTES.

AT THE MOMENT, TWO DISTINCT TYPES OF MEDIA NETS ARE EMERGING, THE INTERNET, WHICH IS USED FOR ALL KINDS OF COMMUNICATION AND MEDIA PRODUCTS AND THE 'SOFA NET' USING THE REMOTE CONTROL. THE LATTER FORM OF INFORMATION CONSUMPTION IS BASED ON ENTERTAINMENT AND "INFOTAINMENT", WITH VIDEO ON DEMAND SERVICES, HOME BANKING, HOME SHOPPING, ETC. AS THE USE OF SMART NETWORKS BECOMES MORE DEVELOPED, THE POSSIBILITY WILL GROW FOR INDIVIDUALISED INFORMATION SERVICES. THE ELECTRONIC NEWSPAPER COULD BECOME A 'DAILY ME' WHERE THE READER, THROUGH INTELLIGENT AGENTS SCOURING THE NEW SERVICES, CAN BE PROVIDED WITH AN EXTREMELY REFINED AND INDIVIDUALISED DIET OF ENTERTAINMENT, INFORMATION AND NEWS. THE RESULT OF THESE TRENDS COULD BE AN EVEN MORE DIFFERENTIATED AND SUBCULTURAL SOCIETY THAN TODAY, IN WHICH PEOPLE NO LONGER SHARE THE SAME KNOWLEDGE AND EXPERIENCES.

*THE SOCIAL AND SOCIETAL IMPLICATIONS OF THE PATTERNS OF CONSUMPTION OF THE NEW MEDIA SHOULD BE EXAMINED. IN PARTICULAR, THE EXAMINATION SHOULD TAKE INTO ACCOUNT POLITICAL AND HUMAN CONSEQUENCES OF THE IMPULSE IT GIVES TOWARDS SOCIAL FRAGMENTATION AND INDIVIDUAL INTEREST GROUPS, RATHER THAN SUPPORTING THE INTEREST OF WIDER SOCIETY.*

### 3. THE IS, INTELLECTUAL PROPERTY RIGHTS AND INFORMATION QUALITY

AS DISCUSSED IN THE PREVIOUS CHAPTER, THE DIGITISED MEDIA ALLOW INFORMATION TO BE MANIPULATED FLEXIBLY, RAPIDLY AND AT LOW COST. WITH THE NEW MEDIA, THE ECONOMICS OF PUBLISHING AND MEDIA PRODUCTION ARE NOW CHANGING IN WAYS WHICH FUNDAMENTALLY AFFECT THE APPROPRIABILITY OF CREATIVE WORK, WITH WIDELY RECOGNISED CONSEQUENCES FOR EXISTING NOTIONS AND PRACTICES OF COPYRIGHT, AUTHORSHIP AND INTELLECTUAL PROPERTY RIGHTS. FIRST, IT HAS BECOME EASY TO CREATE A 'NEW' PIECE OF WORK BY PIECING TOGETHER THE WORK OF MANY OTHER PEOPLE. THUS, EXERTING OWNERSHIP AND GETTING PAID FOR CREATIVE WORK DONE IS MORE DIFFICULT. SECOND, THE CONCEPT OF A 'COMPLETE WORK' FOR WHICH AN AUTHOR RECEIVES INDIVIDUAL CREDIT, AND PAYMENT, IS THREATENED AS PRODUCTION BECOMES LESS BASED UPON INDIVIDUAL CREATIVE INPUTS AND MORE UPON PICKING AND MIXING FROM THE EXISTING STOCK OF KNOWLEDGE TO CREATE NEW WORK AND TO UPDATE EXISTING PRODUCTS. THE TRADITIONAL NOTIONS OF BOTH ECONOMIC OWNERSHIP AND INTELLECTUAL AUTHORSHIP ARE THUS ERODED.

IF THE EUROPEAN MEDIA INDUSTRY IS TO DEVELOP SUCCESSFULLY, IT IS OF GREAT IMPORTANCE TO HAVE THE NECESSARY REGULATORY FRAMEWORK TO PROTECT CREATIVE WORK AND INTELLECTUAL PROPERTY FROM BEING COPIED, TRANSFORMED OR EXPLOITED AGAINST THE WISHES OF THOSE WHO HOLD THE RIGHTS TO THE WORK. LEGAL INITIATIVES MUST BE TAKEN ON A NATIONAL AS WELL AS COMMUNITY AND INTERNATIONAL LEVELS. IT SEEMS TO BE AN OBVIOUS AREA FOR A FAR REACHING HARMONISATION OF LEGISLATION BECAUSE ICTS KNOW NO BORDERS.<sup>22</sup>

*ROBUST AND WORKABLE APPROACHES TO DEALING WITH INTELLECTUAL PROPERTY RIGHT PROTECTION, COPYRIGHT, SECURITY OF INFORMATION, CHARGING FOR DATA AND PRIVACY OF INFORMATION ARE CLEARLY ALL AREAS WHICH RAISE MAJOR AND SPECIFIC CHALLENGES TO THE ESTABLISHMENT OF THE IS, TO THE FUTURE OF WEALTH CREATION IN THE EU, AND FOR THE PROTECTION OF SOCIAL LIFE IN THE FUTURE.*

AT THE SAME TIME, THE PROLIFERATION OF NEW SOURCES OF INFORMATION ON SATELLITE, ON CABLE AND ON THE INTERNET MEANS THAT PEOPLE ARE BEING BOMBARDED BY MORE AND MORE INFORMATION. IN THE MIDST OF THIS BARRAGE OF INFORMATION IT IS VERY DIFFICULT TO EVALUATE THE RELIABILITY AND QUALITY OF INFORMATION. MUCH INFORMATION IS EPHEMERAL AND OF UNKNOWN PROVENANCE AND, PERHAPS, CANNOT BE

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<sup>22</sup> We are aware of the July 1995, Commission Green Paper on 'Copyrights in and Related Rights in the Information Society', which will be examined in more detail in the further work of the Group.

TRUSTED. A MAJOR PROBLEM ARISES WHERE CHARGES ARE BEING LEVIED FOR INFORMATION. IN THE IS, INFORMATION WILL INCREASINGLY BE BOUGHT AND SOLD AS A COMMODITY. INDEED, THIS WILL BE ONE OF THE MAJOR AREAS OF GROWTH OF ECONOMIC ACTIVITY. THUS, MARKET NORMS WHICH GIVE PEOPLE THE CONFIDENCE TO ENTER THE NEW MARKETS FOR INFORMATION AS BUYERS OR SELLERS ARE IMPORTANT, AND NOT YET FULLY DEVELOPED.

THUS, WE CAN SEE THAT THERE IS A POTENTIAL PROBLEM IN THE DEVELOPMENT OF MARKETS FOR NEW MEDIA AND INFORMATION. ON THE ONE HAND, WITHOUT THE GUARANTEE THAT PEOPLE WILL BE PAID TO PRODUCE INFORMATION, THERE COULD BE A LOWER THAN OPTIMAL LEVEL OF NEW MEDIA PRODUCTION, OR ELSE, AS IS PERHAPS EVIDENCED BY MEDIA CONCENTRATION, THERE WILL BE ATTEMPTS TO MONOPOLISE OR EXTRACT VERY HIGH RENTS FROM PRODUCTION AND DISTRIBUTION. ON THE OTHER HAND, BUYERS MAY UNDERVALUE INFORMATION OFFERED ON-LINE BECAUSE THEY CANNOT ASSESS ITS TRUE WORTH AND SO DEMAND WILL BE UNDER DEVELOPED.

*WE SUGGEST THAT THESE PROBLEMS MIGHT BE SOLVED BY CHARGING STANDARDISED FEES FOR ACCESS TO INFORMATION. EVERY TIME A USER DOWNLOADS INFORMATION, BE IT AN ARTICLE (OR PART OF AN ARTICLE), A VISUAL IMAGE OR A MUSICAL SCORE, THEY WOULD BE REQUIRED TO PAY A FEE, WHICH COULD BE FED BACK TO THE PRODUCER/CREATOR AS A ROYALTY, IF THE AUTHOR SO WISHES. BY THE SAME TOKEN, THE USERS OF SUCH SYSTEMS WOULD BE GUARANTEED PROTECTION AGAINST INFORMATION WHICH IS NOT MERCHANTABLE THROUGH AN EXTENSION OF EXISTING CONSUMER PROTECTION LEGISLATION TO INFORMATION PAID FOR IN THIS MANNER.*

## **THEME XI:**

### **THE IS AND DEMOCRACY**

ICTS CREATE NEW OPPORTUNITIES FOR GREATER PUBLIC PARTICIPATION IN AND AWARENESS OF THE POLITICAL PROCESS. THERE ARE ALREADY EXAMPLES OF ON-LINE GOVERNMENT IN WHICH THE TRANSPARENCY OF GOVERNMENT PROCEDURES AND ACCESSIBILITY OF GOVERNMENT OFFICIALS ARE INCREASED. THE NEW COMMUNICATION TECHNOLOGIES CAN MAKE THE POLLING OF PUBLIC OPINION EASIER AND, WITH CARE, MORE COMPREHENSIVE. HOWEVER, THE BEST WAYS TO IMPLEMENT SUCH SYSTEMS HAVE YET TO BE IDENTIFIED, AND WILL PROBABLY VARY FROM PLACE TO PLACE GIVEN THE DIFFERENT DEMOCRATIC TRADITIONS WITHIN EUROPE. THERE IS EVEN A DANGER THAT TOO MUCH INFORMATION AND DEBATE, ESPECIALLY IF IT IS PRESENTED MORE AS MEDIA SPECULATION, COULD DETRACT FROM THE SERIOUS BUSINESS GOVERNMENT TO CREATE A 'CONFETTI DEMOCRACY'. AS WE HAVE SAID BEFORE WITH RESPECT TO THE CONFUSION BETWEEN DATA TRANSMISSION, INTERPERSONAL COMMUNICATION AND THE ACQUISITION OF KNOWLEDGE, THERE IS A DANGER OF CONFUSING "DATA TRANSMISSION" AND "PUBLIC DEBATE".

AS WE DISCUSSED ABOVE, THE MEDIA HAVE ALWAYS HAD AN IMPORTANT ROLE TO PLAY IN SUPPORTING PLURALISM AND OPENNESS OF GOVERNMENT. WE ARE CONCERNED, HOWEVER, THAT THE INTERNATIONALISATION AND SIMULTANEOUS CONCENTRATION OF THE MEDIA COULD LEAD TO A DEMOCRATIC DEFICIT. THE INTERNATIONALISATION OF THE OPERATIONS OF THE MEDIA INCREASINGLY TRANSCEND THE REGULATORY CAPACITIES OF NATIONAL ADMINISTRATIONS AND THE CONCENTRATION OF THE MEDIA COULD LEAD TO A PRIVILEGED GROUP OF EFFECTIVE LOBBYISTS AND POLITICAL ACTORS BEING ABLE TO CANALISE THE MEDIA AND THROUGH THAT PUBLIC ATTENTION.

WE ARGUE, IN THIS CHAPTER, THAT AN ESSENTIAL TASK IN THE IS IS TO USE ICTS TO BRING THE GOVERNMENT CLOSER TO THE PEOPLE AND ESPECIALLY YOUNG PEOPLE. THE ART OF POLITICS IS OFTEN SEEN AS REMOTE, OPAQUE AND BORING TO YOUNG PEOPLE. YET, DECISIONS THAT AFFECT ALL OUR LIVES ARE MADE IN THESE CIRCLES. WAYS TO MAKE THE DEMOCRATIC PROCESS MORE TRANSPARENT AND VITAL IN THE EYES AND HEARTS OF THE YOUNG ARE BOTH DESIRABLE AND NECESSARY. HOWEVER, WE WOULD CAUTION AGAINST THE IS BEING ALLOWED TO BECOME SO TRANSPARENT THAT IT INVADES PEOPLE'S PRIVACY.

SUCH CONCERNS SHOULD NOT DETER US FROM LAUNCHING THE IS, BUT REQUIRE ADEQUATE CHECKS TO PRESERVE THE PRIVATE LIVES OF INDIVIDUALS.

## **1. EXPRESSION AND DEBATE IN DEMOCRATIC SOCIETIES**

ICTs AUGMENT THE POSSIBILITIES FOR INDIVIDUAL EXPRESSION. FIRST, THE NOVELTY OF THE MEANS BRINGS ABOUT A PHASE OF CURIOSITY AND INFATUATION. SECOND, BECAUSE THEY OFFER A SPACE STILL LITTLE STRUCTURED BY CODES AND REGULATIONS, OR BY SYSTEMS OF CONTROL.

ADDED TO THE NEW POSSIBILITIES THAT ICTs OFFER, GROUPS, ASSOCIATIONS AND POLITICAL ORGANISATIONS ALSO TRANSFER ONTO THE NEW SYSTEMS, INFORMATION AND MESSAGES AVAILABLE FROM PAPER OR TRADITIONAL AUDIOVISUAL AIDS. THE DEVELOPMENT OF ICTs THUS LEADS VARIOUS SOCIAL GROUPS TO UTILISE THIS NEW MEDIUM TO PRESENT THEIR OBJECTIVES, TO HIGHLIGHT THEIR ACCOMPLISHMENTS OR TO PROMOTE THE DIFFUSION OF THEIR IDEAS. AT THE SAME TIME, ICTs CAN PUT ADMINISTRATIVE OR ECONOMIC INFORMATION AT THE DISPOSITION OF GROUPS AND INDIVIDUALS. THEY COULD IN THIS WAY CONTRIBUTE TO THE DEVELOPMENT OF KNOWLEDGE ABOUT ISSUES OF PUBLIC CONCERN, PARTICULARLY AT THE COMMUNITY LEVEL.

ICTs, FOR ALL THESE REASONS (PERIOD OF ENGAGEMENT AND CURIOSITY, ABSENCE OF REGULATION AND CENSORSHIP, DEVELOPMENT OF POLITICS OF COMMUNICATION OF ORGANISATIONS) BRING ABOUT AN INFORMATION EXPLOSION. THUS THERE IS, AT LEAST FOR THE MOMENT, AN INCREASE IN EXPRESSION ON THIS PUBLIC STAGE OFFERED BY THE MEDIA AND ICTs.

SUCH AN INFORMATION EXPLOSION WHICH MIGHT AT FIRST SIGHT APPEAR TO INCREASE OPINION FORMATION AND TRANSPARENCY DOES NOT *NECESSARILY* IMPROVE DEMOCRACY. FIRST, ALL SOCIAL GROUPS AND INDIVIDUALS DO NOT HAVE ACCESS TO ICTs. SECOND, MOST OF THE TIME, THE INCREASED UTILISATION OF ICTs INVOLVES NEITHER DEBATE NOR CONFRONTATION OF OPINION, BUT RATHER AN EXPRESSION OF ANY GIVEN VIEWPOINT BUT NO CONTRADICTORY ARGUMENTATION. FINALLY, THERE IS THE RISK OF AN INFORMATION OVERLOAD, WHICH WEARS DOWN THE IMPORTANCE OF ANY GIVEN QUESTION IN THE DEMOCRATIC DEBATE AND WHICH FAVOURS UNDIFFERENTIATED INFORMATION.

IN OTHER WORDS, THE INCREASE IN THE FLOW OF INFORMATION DOES NOT NECESSARILY ENGENDER AN AMELIORATION OF THE DEMOCRATIC SYSTEM. IT COULD JUST AS EASILY LEAD TO A DISTANCING OF CITIZENS WITH REGARD TO REAL DEMOCRATIC STAKES.

## **2. AVOIDING TECHNOLOGICAL DISENFRANCHISEMENT**

IN ADDITION TO THE PROBLEMS ASSOCIATED WITH THE INFORMATION EXPLOSION, THERE ARE SOCIAL DANGERS IN THE DEVELOPMENT OF DIRECT ELECTRONIC DEMOCRACIES. UNLIKE THE PUBLIC SPACE OF AN AGORA, THE 'ELECTRONIC AGORA' COULD REINFORCE INEQUALITY BECAUSE OF THE DIFFERENT LEVELS OF ACCESS THAT PEOPLE HAVE TO ICTs. MANY SOCIAL GROUPS WILL BE DETERRED FROM TAKING PART IN ON-LINE REFERENDA BECAUSE THEY DO NOT HAVE THE REQUIRED TECHNICAL EQUIPMENT OR SKILLS. THIS LACK OF TECHNICAL ACCESS IS LIKELY TO BE CONCENTRATED AMONGST PEOPLE WHO ARE POORER, LESS EDUCATED OR OLDER. THE DANGER COMES NOT JUST FROM THE LOSS OF A VOTE, BUT ALSO A REDUCTION IN THEIR SOCIAL WELFARE, AS THEIR VIEWPOINTS ARE DECREASINGLY TAKEN INTO ACCOUNT, LEADING IN THE LONGER TERM TO TECHNOLOGICAL DISENFRANCHISEMENT.

*THE IMPLICATIONS OF CHANGES IN THE DEMOCRATIC DECISION MACHINERY, ASSOCIATED WITH THE INTRODUCTION OF ICTs, SHOULD BE RESEARCHED. THE BENEFITS AND RISKS OF USING THE NEW TECHNOLOGIES IN ONLINE GOVERNMENT, FILING OF FORMS (E.G. TAX RETURNS) AND SO ON SHOULD BE CATALOGUED AND USED AS THE BASIS FOR A DEBATE ON THE ISSUE. THESE EFFECTS SHOULD BE INVESTIGATED MOST THOROUGHLY WHERE ANY CHANGES IN THE ADMINISTRATION OF POLLS IS CONTEMPLATED. SUCH INVESTIGATION SHOULD TAKE ACCOUNT OF ANY SOCIAL AND POLITICAL BIASES INTRODUCED INTO POLITICS THROUGH THESE NEW TECHNIQUES.*

## **3. THE FORMING OF OPINION**

SUCCESSIVE WAVES OF MEDIA HAVE SHORTENED THE TIME PERIOD BETWEEN THE DIFFUSION OF INFORMATION AND THE ANALYSIS IT REQUIRES FOR UNDERSTANDING. ICTs ACCELERATE THIS PHENOMENON AND DIMINISH EVEN MORE THE DELAY BETWEEN AN EVENT AND THE JUDGEMENT THAT INDIVIDUALS ATTACH TO THAT EVENT. "DIRECT DEMOCRACY" RUNS COUNTER TO THE TIME IT TAKES TO FORM A JUDGEMENT, WHICH IS SLOWER THAN THE TIME IT TAKES TO DIFFUSE INFORMATION. OPINION EVOLVES PROGRESSIVELY THROUGH KNOWLEDGE AND DEBATE. DEMOCRACY IS, IN OTHER WORDS, A DYNAMIC PROCESS THAT CANNOT ALWAYS BE ACCOMPLISHED DIRECTLY.

THE TECHNICAL MECHANISM OF ICTs OFTEN PROVIDES INDIVIDUALS WITH THE POSSIBILITY TO INTERVENE DIRECTLY AND IMMEDIATELY IN ORDER TO OFFER AN OPINION OR EVEN TO VOTE. DIRECT DEMOCRACY IS ONE FORM OF DEMOCRATIC EXERCISE. IT SHOULD NOT BE SUBSTITUTED FOR OTHER, MORE TRADITIONAL FORMS OF REPRESENTATIVE DEMOCRACY WHICH ALSO DEMAND THAT PLURALISM OF IDEAS BE RESPECTED.

BUT, SIMILAR TO REPRESENTATIVE DEMOCRACY, DIRECT DEMOCRACY CAN RENEW DEMOCRATIC LIFE. THE FACT THAT POLITICAL AUTHORITY BOTHERS TO SOLICIT THEIR OPINIONS CAN REINFORCE INTEREST IN POLITICAL LIFE. ALONG WITH DEMOCRACY OF DELEGATION, ICTS COULD CREATE A DEMOCRACY OF PARTICIPATION THAT CAN STRENGTHEN CITIZENSHIP. BESIDES, INFORMING CITIZENS AND ENGAGING THE PARTICIPATION OF CITIZENS IN GOVERNMENTAL DECISIONS, CAN ASSIST THE LAUNCH OF POLITICAL DEBATES THROUGH HORIZONTAL EXCHANGES BETWEEN CITIZENS AND INTEREST GROUPS. THE VITALITY OF POLITICAL DEBATE AND IDEOLOGY TO BE FOUND IN THE INTERNET IS A SOURCE OF DEMOCRATIC ENRICHMENT, EVEN IF IT IS NECESSARY TO CORRECT ABUSES AND TO LIMIT, AS MUCH AS POSSIBLE, THE UTILISATION OF THE ELECTRONIC MEDIA FOR THE DIFFUSION OF SEXIST AND RACIST MESSAGES. IT IS NECESSARY, NEVERTHELESS, TO ACCEPT THE GOLDEN RULE OF DEMOCRACY, TODAY EXPRESSED IN ELECTRONIC FORM, ACCORDING TO WHICH FREEDOM OF EXPRESSION HAS NO OTHER LIMITS THAN THOSE PROVIDED FOR BY THE LAW. IN SUM, THE ELECTRONIC MEANS OF INTERACTIVE COMMUNICATION BETWEEN CITIZENS OFFERS POSSIBILITIES FOR DEMOCRATIC RENEWAL THAT MUST BE ENCOURAGED AND SPREAD BY THE INSTITUTIONS OF SOCIETY.

OVERALL, THEN, THE CAPACITY THAT ICTS OFFER TO PUT INDIVIDUALS AND GROUPS IN CONTACT WITH ONE ANOTHER TO REQUEST A SERVICE, TO EXCHANGE KNOWLEDGE, TO TRANSMIT INFORMATION AND SO ON, PROMOTES PARTICIPATION IN COMMUNITY LIFE AND A RENEWAL OF SOCIABILITY, WHICH ARE NECESSARY TO EFFECTIVE DEMOCRACY. IT WOULD BE FITTING TO URGE POLITICAL POWERS AND ADMINISTRATIVE SERVICES TO USE ICTS TO IMPROVE FURTHER CITIZENS' INFORMATION, IN PARTICULAR INFORMATION ON THE LOCALITY.

#### **4. IS AND THE MAINTENANCE OF PLURALISM**

BY VIRTUE OF THEIR CONTROL OVER THE CONTENT AND DISTRIBUTION OF INFORMATION, THE OPERATORS OF ICT SERVICES AND MEDIA WILL PLAY A CENTRAL SOCIAL AND POLITICAL ROLE IN THE IS AS POLITICAL ACTORS IN THEIR OWN RIGHT. THE DIALOGUE BETWEEN POPULATION AND POLITICAL ESTABLISHMENT IS, OUTSIDE OF ELECTION TIME, LARGELY ENTRUSTED TO THE MEDIA. EVEN IN THE HEAT OF AN ELECTION, ACCESS AND CLEVER USE OF THE MEDIA CAN MAKE OR BREAK POLITIC FORTUNES. IN BOTH HIGHQUALITY AND POPULAR MEDIA THE EDITORIAL DECISIONS AND INFORMATION FLOWS OF THE MEDIA CONTRIBUTE TO THE DEMOCRATIC REALITY INCREASINGLY BECOMING A STAGED DEMOCRACY.

WITH THE DEREGULATION AND INTERNATIONALISATION OF THESE INDUSTRIES, THE ABILITY OF INDIVIDUAL GOVERNMENTS TO IMPOSE STANDARDS OF PRACTICE ON COMMUNICATIONS PROVIDERS IN THE IS IS SIGNIFICANTLY WEAKER, WHILST THE RISK OF "INFORMATION TERRORISM" AND POLITICAL MANIPULATION PAID FOR BY INFLUENTIAL GROUPS OR COMPANIES GROWS. LOWER GOVERNMENT CONTROL HAS ITS POSITIVE SIDE IN THAT IT WILL,



IN THE FUTURE, BE HARDER FOR OPPRESSIVE REGIMES TO CONTROL SOCIETY THROUGH PROPAGANDA AND MISINFORMATION. HOWEVER, AT THE SAME TIME, IT IS NECESSARY TO ESTABLISH SOME GENERAL PRINCIPALS OF DEMOCRATIC LIFE IN THE IS, AND OF SOCIAL RESPONSIBILITY GOVERNING THE PROVIDERS OF MEDIA CONTENT. IN PARTICULAR, A BALANCE IN ACCESS TO THE MEDIA BY DIFFERENT POLITICAL AND SOCIAL GROUPS SHOULD BE ESTABLISHED. TIME TO REFLECT ON THE IMPLICATIONS OF ISSUES SHOULD BE BUILT INTO DEBATES AND DECISIONS ON POLICY. A PARTICULAR WORRY IS THAT THE PROLIFERATION OF FRAGMENTED AND EPHEMERAL INFORMATION COULD DESTABILISE AND OVER SIMPLIFY POLITICAL DEBATE.

*THE SOCIAL CHALLENGES OF THE LOWER LEVELS OF CONTROL OVER CONTENT AND STANDARDS IN THE MEDIA AND ITS EFFECT ON THE POLITICAL PROCESS ARE IMPORTANT. IN PARTICULAR, WAYS TO ESTABLISH A BALANCE IN THE ACCESS TO THE MEDIA BY DIFFERENT GROUPS ARE NEEDED, ESPECIALLY IN THE CONTEXT OF THE DIFFICULTY OF REGULATING THE NEW INTERNATIONAL MEDIA AND THE RISK OF "INFORMATION TERRORISM". SPECIFIC POLICY PROPOSALS ON THESE ISSUES SHOULD BE EFFECTIVE AT THE EUROPEAN LEVEL AND MAKE THE BASIS FOR INTERNATIONAL AGREEMENTS.*

## **5. A YOUNG CITIZENS PROGRAMME**

THERE IS A FEAR THAT YOUNGER PEOPLE ARE BECOMING INCREASINGLY ALIENATED FROM THE POLITICAL PROCESS. AT THE SAME TIME THEY ARE SO SATURATED WITH FRAGMENTED AND EPHEMERAL INFORMATION THAT THEY WILL FIND IT HARD TO BE REFLECTIVE ENOUGH TO FULFIL THEIR ROLE AS CITIZENS IN A DEMOCRATIC IS. WE ARE CONCERNED THAT THE PRESSURES AND COMPLEXITIES OF MODERN LIFE MEAN THAT PEOPLE ARE LESS AND LESS ABLE TO COMPREHEND ISSUES OF GREAT POLITICAL IMPORTANCE.

*CHILDREN AND YOUNG PEOPLE SHOULD BE INTRODUCED AT SCHOOL TO BOTH THE WORLD OF POLITICS AND THE ROLE OF THE MEDIA IN OPINION FORMATION. IN PARTICULAR, WE WOULD SUGGEST EDUCATION ABOUT AND WITH MEDIA AT ALL LEVELS IN THE EDUCATION SYSTEMS. IF PROPERLY INTRODUCED TO THE WORKING PROCESS IN THE MEDIASECTOR, THE SPECIAL KIND OF "EDITED REALITY" WHICH ALL MEDIA PRESENTS, PICTUREMANIPULATION, ELECTRONIC MANIPULATION OF TEXTS, PICTURE AND IMAGE, THE DIFFERENCE BETWEEN RELIABLE AND UNRELIABLE SOURCES, THE YOUNG STUDENTS WILL BE ABLE TO USE ALL KINDS OF MEDIA WITH A MORE DEVELOPED SENSE OF CRITICISM. THIS COULD TAKE PLACE THROUGH EDUCATIONAL PROGRAMMES, SOME OF WHICH MIGHT BE DEVELOPED IN CONJUNCTION WITH THE MEDIA THEMSELVES. POLITICIANS AND GOVERNMENT*

*ADMINISTRATIONS THEMSELVES SHOULD PLAY A ROLE IN THIS PROCESS BY MAKING THEIR OPERATIONS MORE TRANSPARENT TO THE VOTERS OF TOMORROW.*

## **6. THE DANGER OF THE IS AS A 'TRANSPARENT SOCIETY'**

THE GENERALISED USE OF ICTS MAY LEAD TO THE MAPPING AND MONITORING OF BEHAVIOUR, THROUGH THE ROUTINE RECORDING OF EVERY TRANSACTION WHICH PEOPLE MAKE. MANY EXAMPLES OF THIS CONTINUAL SURVEILLANCE OF OUR LIVES ALREADY EXIST, FROM LEGITIMATE GOVERNMENT RECORDS, THE CONTINUAL CAPTURE OF DATA ON PURCHASES, TO VIDEO SURVEILLANCE IN PUBLIC AND PRIVATE SPACES. THIS MIGHT CREATE THE IMPRESSION OF A "TRANSPARENT" SOCIETY, WHERE EVERY INDIVIDUAL BEHAVIOUR OR CONSUMPTION PROFILE IS RECORDED. PRIVACY AND DATA PROTECTION IS, OF COURSE, A COMPLEX AREA, AND WE ARE AWARE THAT MUCH EFFORT IS ALREADY GOING INTO FORMULATING APPROPRIATE PROTECTION MECHANISMS THROUGH MONITORING MACHINERY AND NEW LEGAL INITIATIVES. IN PARTICULAR WE REFER TO THE WORKING PARTY OF NATIONAL REPRESENTATIVES FORMED TO AID THE COMMISSION ON MEASURES TO SAFEGUARD INDIVIDUAL RIGHTS AS TO THE USE OF PERSONAL DATA.

*THE ONGOING WORK OF NATIONAL AND INTERNATIONAL DATA PROTECTION SHOULD PROCEED AS A HIGH PRIORITY. THESE EFFORTS SHOULD SUPPORTED BY A FIRM COMMITMENT TO RAISING AWARENESS OF THE ISSUES, NOT IN ORDER TO SCARE PEOPLE, BUT SO THAT THEY CAN EXERT CONTROL OVER THEIR RIGHTS OF PRIVACY, ACCESS TO SERVICES AND IN ORDER TO AVOID ABUSES OF THE POWER OF INTEGRATED INFORMATION SYSTEMS.*



# CONCLUSIONS

## TOWARDS THE INFORMATION SOCIETY: THE GROUP'S VISION

THE IS SIGNALS MORE THAN A MAJOR CHANGE IN THE TECHNOLOGICAL PARADIGM UNDERLYING THE ECONOMY. ICTS WILL AFFECT, AND IN MANY CASES ALREADY AFFECT, EVERY ASPECT OF THE ECONOMY AND LARGE PARTS OF SOCIAL, CULTURAL AND POLITICAL LIFE. THE PERVASIVENESS OF ICTS MEANS THAT WE SHOULD TAKE SERIOUSLY THE CHANGES WHICH WILL UNDOUBTEDLY ACCOMPANY THESE NEW TECHNOLOGIES.

IN THE INTRODUCTORY PHASE OF ANY MAJOR NEW TECHNOLOGICAL SYSTEM A PROCESS OF CREATIVE DESTRUCTION TAKES PLACE. THE DESTRUCTIVE COMPONENT OF THE CHANGES LEADS TO THE SWEEPING AWAY OF MANY ESTABLISHED PATTERNS AND PRACTICES. THE CREATIVE COMPONENT LEADS TO MANY NEW OPPORTUNITIES FOR DOING NEW THINGS FOR CONSTRUCTING ALTERNATIVE FUTURES. A BALANCE HAS TO BE STRUCK BETWEEN CONTROLLING AND GUIDING THE DESTRUCTIVE CHANGES WHILE ALLOWING THE FULL FLOWERING OF THE OPPORTUNITIES.

IN THE MAIN BODY OF THIS REPORT WE HAVE CONCENTRATED LARGELY ON THE SPECIFIC CHALLENGES ASSOCIATED WITH THIS PARADIGM SHIFT. PERHAPS THIS IS INEVITABLE. IT IS EASIER TO IDENTIFY THE POINTS OF TENSION WHICH THREATEN CUSTOM AND PRACTICE. IT WOULD BE UNFORTUNATE, HOWEVER, IF WE WERE TO GIVE THE IMPRESSION OF A PESSIMISTIC VIEWPOINT ON THE IS. AS WE STATE ELSEWHERE IN THIS REPORT, TECHNOLOGIES ARE NEITHER INHERENTLY GOOD NOR BAD. IT IS UP TO US TO SHAPE IT INTO THE FORMS WHICH WE DESIRE. THERE IS NO CARTE BLANCHE THOUGH. THE PRESSURES OF COMPETITION IN A GLOBAL MARKETPLACE, FOR INSTANCE, MEAN THAT THERE IS BY NO MEANS AN OPEN CHOICE OF ALTERNATIVE WAYS TO MOVE FORWARD TOWARDS THE IS. ON THE OTHER HAND, WE BELIEVE THAT APPROPRIATE STRATEGIES DEVELOPED EARLY ENOUGH CAN PROVIDE A GREAT DEAL OF LATITUDE OVER THE FORM WHICH THE EUROPEAN IS WILL TAKE.

IN ESSENCE, THEREFORE, WE NEED A VISION TO CARRY US FORWARD INTO THE IS. CONCLUDING THIS SET OF FIRST REFLECTIONS WE BEGIN TO SKETCH OUT THE MAIN LINES OF SUCH A VISION BY RETURNING TO SOME OF THE KEY PRECEDING THEMES AND SUGGESTING SOME AREAS WHERE THE IS PROVIDES US WITH GROUNDS FOR OPTIMISM. HERE WE DO NOT

AIM AT BALANCE, OR EVEN TO BE CAUTIOUSLY REALISTIC. RATHER, WE ARE DESCRIBING SOME OF THE ELEMENTS OF A SOCIAL SCENARIO, AS IDEAS AND AMBITIONS FOR THE EUROPEAN IS. FOR WE NEED AIMS IF WE ARE TO KNOW WHERE WE ARE GOING.

## **1. POSSIBILITIES FOR NEW JOBS AND NEW TYPES OF WORK**

MANY OF THE NEW JOBS IN THE IS WILL MOVE BEYOND EXISTING INFORMATION WORK AND THERE WILL BE A SHIFT TOWARDS KNOWLEDGE WORK FOR A LARGE NUMBER OF WORKERS. THERE IS A *SIGNIFICANT POTENTIAL* FOR NEW PATTERNS OF AUTONOMOUS WORK TO EMERGE BASED UPON THE ONLINE ECONOMY IN WHICH VERY SMALL FIRMS (EVEN SELFEMPLOYED PEOPLE) CAN USE THE POSITIVE EXTERNALITIES OF THE NETWORK TO COMPETE WITH FIRMS THAT HAVE THE ADVANTAGES OF SIZE (AND THEREFORE ECONOMIES OF SCALE). WE DO NOT YET KNOW HOW MANY OF THESE NEW ONLINE JOBS WILL BE CREATED. BUT NEW ICT-BASED SERVICES ARE EMERGING AND MANY EXISTING FIRMS ARE INNOVATING IN THE USE OF ICTS TO PROVIDE NEW MEANS OF ENHANCING PRODUCTS AND SERVICES.

EXAMPLES OF NEW JOBS INCLUDE NEW INFORMATION MANAGERS (USING EXPERTISE ABOUT THE CONTENTS OF CYBERSPACE TO PROVIDE KNOWLEDGE RATHER THAN INFORMATION); MULTIMEDIA MANAGERS (PEOPLE SKILLED IN PUTTING TOGETHER INFORMATION FROM DIFFERENT SOURCES AND FROM DIFFERENT MEDIA SO THAT MESSAGES CAN BE PUT ACROSS); INTERNET PLUMBERS (PEOPLE WHO PROVIDE TROUBLESHOOTING SERVICES TO FIRMS AND INDIVIDUALS IN SETTING UP, USING AND ADAPTING ONLINE SERVICES); NEW EDUCATIONALISTS (PEOPLE WHO CAN ACT AS GUIDES AND COACHES TO THE ARRAY OF INFORMATION AND LEARNING MATERIAL ONLINE)...AND SO ON. EVEN IF THERE ARE VERY FEW PEOPLE IN THESE ROLES AS YET, THESE JOBS ARE IMPORTANT BECAUSE THEY REPRESENT THE NEW WAVE OF EMPLOYMENT AND INDUSTRIAL DEVELOPMENT.

THE DYNAMICS OF JOB GROWTH IN THE EMERGING SECTORS ARE ALSO IMPORTANT. WHAT ARE THE ISSUES RELATING TO THE ENCOURAGEMENT OF ENTREPRENEURIAL ACTION, THE REDUCTION OF BARRIERS TO INNOVATION AND SUCCESS, ENSURING THAT THE INSTITUTIONAL STRUCTURES PROACTIVELY SUPPORT THESE NEW TYPES OF JOB AND FORMS OF WORK?

IN MANY CASES THE NEW JOBS WILL NOT CONFORM TO TRADITIONAL STEREOTYPES OF EMPLOYMENT PATTERNS. PEOPLE TALK ABOUT PORTFOLIO EMPLOYMENT. MORE IMPORTANT PROBABLY ARE MICROBUSINESSES, WHICH PROVIDE AT LEAST FULLEMPLOYMENT. BUT THESE NEW TYPES OF JOBS ARE LIKELY TO BE FLEXIBLE JOBS IN THE SENSE THAT THEY REQUIRE THE STATE AND EMPLOYERS AS WELL AS EMPLOYEES TO ACCEPT CHANGES IN THE NATURE AND EXPECTATIONS OF WORK. THIS IS AN ATTITUDE CHANGE AND POSSIBLY REQUIRES CHANGES IN SOCIAL AND LEGAL SYSTEMS, INSURANCE, LOAN STRUCTURES AND SO ON. THE INSTITUTIONAL STRUCTURES PROVIDE THE BASIC ARCHITECTURES WITHIN WHICH PEOPLE

CONSTRUCT THEIR LIVES. IN SOME RESPECTS MAJOR CHANGES IN THESE ASPECTS OF LIFE WILL NEED REARRANGEMENT TO PERMIT INNOVATION AND CHANGE TO HAPPEN. THERE MAY BE, MOREOVER, DIFFERENT NEEDS IN DIFFERENT PLACES. BUT, IF PEOPLE ARE TO BE EXPECTED TO INNOVATE AND IN SOME CASES BECOME MORE SELF-RELIANT THE INFRASTRUCTURES OF LIVING MUST SUPPORT THEM AND MAKE SUCH CHANGES POSSIBLE OR EVEN WELCOME.

## **2. A POSSIBLE NEW CONCEPT OF COMMUNITY**

IN THIS REPORT WE HAVE RAISED THE ISSUES OF THE CHANGING NATURE OF SOCIAL LIFE WHICH MAY RESULT FROM THE IS. ON THE ONE HAND THERE IS THE NEW CULTURE OF 'SCREEN AND CHAIR'. AN INCREASINGLY SEDENTARY LIFE MAY RESULT IN WHICH MOST OF THE STIMULATION COMES FROM MACHINES AND ABSTRACT IMAGES AND SOUNDS: A REPLACEMENT OF THE REAL WORLD FOR VIRTUALITY. ON THE OTHER HAND, WE COULD CHOOSE TO USE THE IS TO CREATE A NEW IMAGE OF SOCIETY IN WHICH PEOPLE BECOME MORE ACTIVE IN THE LOCALITY.

A NEW SET OF SPACE AND TIME RELATIONSHIPS ARE POSSIBLE IN THE IS. WE CAN COMMUNICATE AND INTERACT WITH PEOPLE WHO ARE VERY DISTANT FROM US. AT THE SAME TIME THE SPACE CHANGING NATURE OF THE TECHNOLOGIES CAN BE USED TO LOWER THE TYRANNY OF SPACE WHERE WE HAVE TO GET IN THE CAR TO GO TO WORK, TO SCHOOL, TO COLLEGE, TO THE SHOPS, TO THE LIBRARY. MANY OF THESE SERVICES CAN BE DELIVERED DIRECTLY INTO THE HOME. HOWEVER, MANY OF THEM COULD ALSO BE DELIVERED AT THE COMMUNITY LEVEL.

THE IS COMMUNITY COULD BE ONE WHICH SUPPLANTS THE AUTOMOBILE SCALE COMMUNITIES OF TODAY, NOT WITH THE ISOLATED AND INWARD LOOKING COMMUNITIES OF YESTERDAY, BUT WITH THE 'GLOCAL' (GLOBALLOCAL) COMMUNITIES OF TOMORROW. THIS IS, WE STRESS, ONLY A POSSIBILITY WHICH IS WORTH CONSIDERING. THERE WOULD BE MANY WHO WOULD WANT TO OPT OUT OF SUCH SOCIABLE STRUCTURES. THE MEANS OF CHANGING THE CONTINUAL ROLL OUT OF (SUB)URBAN SPRAWL IS NOT CLEAR. BUT ON THE OTHER HAND SUCH VISIONS PROVIDE A GLIMPSE INTO AN ALTERNATIVE FUTURE TO CURRENT PROBLEMS AND URBAN DECAY AND SOCIAL FRAGMENTATION. THE NEW SERVICES OF THE IS COULD BE PACKAGED AND PROCESSED OR THEY COULD BE CUSTOMISED AND CREATIVE. THERE IS A CHOICE, SO THAT THE WAY WE APPROACH THE ADOPTION OF THESE NEW TECHNOLOGIES IS IMPORTANT.

## **3. A POSSIBLE NEW CULTURE OF LITERACY AND UNDERSTANDING**

AN EARLY POINT OF AGREEMENT AMONGST ALL THE EXPERTS WAS ON THE CENTRALITY OF LIFELONG LEARNING AS A KEY THEME WHICH WEAVES ITS WAY RIGHT THROUGH OUR THINKING ON THE IS. SOMEHOW, WAYS AND MEANS MUST BE FOUND SO THAT PEOPLE HAVE THE OPPORTUNITY AND ARE STIMULATED TO REGARD LEARNING AS PART OF LIVING, NOT AS A MEANS TO AN END WHICH THEY HOPE WILL SOON END. THIS NEW ATTITUDE TOWARDS LEARNING IS CRUCIAL, NOT JUST IN THE LONGER TERM, BUT IN THE CURRENT TRANSITIONAL PHASE BECAUSE NOT ONLY IS THERE MORE INFORMATION, AND MORE EPHEMERALITY OF INFORMATION, BUT THE INFORMATION IS COMING IN MANY DIFFERENT FORMS SIMULTANEOUSLY ON MULTIPLE MEDIA.

MULTIMEDIA IS PART OF A TREND TOWARDS A NEW CONCEPT OF LITERACY IN WHICH VISUAL AND AURAL FORMS OF COMMUNICATION ARE BECOMING MORE EQUALLY WEIGHTED WITH PRINT MEDIA, AND IN WHICH DYNAMIC INFORMATION IS BEING USED MORE AND MORE. INFORMATION STORED IN ELECTRONIC FORMS IS LESS STATIC AND DOES NOT HAVE TO BE AS COMPLETE. WE CAN ALREADY SEE THE EMERGENCE OF A CULTURE IN WHICH THERE IS MUCH LESS REVERENCE FOR STATIC STATEMENTS OF LEARNING OR CREATIVITY. INFORMATION IS STORED IN METAFILES, CUT AND PASTED INTO DOCUMENTS, AND SAMPLED FOR REUSE AND RECYCLING. ARGUABLY A NEW DIGITAL LITERACY IS EMERGING WHICH IS BASED ON MULTIMEDIA AND, THEREFORE, HAS DIFFERENT BOUNDARIES (BETWEEN ART, MUSIC AND LITERATURE).

THESE NEW GROUND RULES WILL REQUIRE NEW FORMS OF LITERACY NOT JUST READING AND WRITING SKILLS OR EVEN 'COMPUTER LITERACY', BUT THE ABILITY TO UNDERSTAND AND TO MANIPULATE IMAGES, SOUNDS AND WORDS ALL TOGETHER. UNDOUBTEDLY, THIS WILL CHANGE THE WAY WE PERCEIVE THINGS, AND TO SOME EXTENT THE VALUES WE HAVE.

AT THE SAME TIME, IMPLICIT IN THESE NEW FORMS OF LITERACY IS A GREAT CHALLENGE FOR THE EDUCATIONAL SYSTEM NOT JUST TO INTEGRATE THESE NEW TOOLS INTO EDUCATION, BUT TO MAKE SURE THAT ALL AGE GROUPS CAN GET ACCESS TO THESE NEW TECHNIQUES, AND SOON. THIS REQUIRES US TO THINK SERIOUSLY ABOUT THE WAY WE PERCEIVE EDUCATION AS A SET OF PRACTICES WHICH TAKE PLACE IN SCHOOLS AND COLLEGES AND WHICH HAVE QUALIFICATIONS AT THEIR HEART. NEW MOTIVATIONS FOR LEARNING, NEW MEANS TO PAY FOR LEARNING EXPERIENCES AND NEW MODES OF DELIVERING LEARNING ARE NEEDED. COMMUNICATION AND LEARNING ARE NATURAL HUMAN ACTIVITIES AND SHOULD BE FUN. HOW CAN WE MAKE THEM OBVIOUSLY SO?

#### **4. POSSIBLE NEW POLITICS AND CULTURE FOR THE IS**

SCIENCE, TECHNOLOGY, THE ECONOMY, POLITICS AND CULTURE AND THEIR INTERACTIONS ARE ALL DETERMINANTS OF THE NATURE AND RATE AT WHICH NEW TECHNOLOGIES BECOME

WIDELY DIFFUSED. TECHNOLOGY EXISTS TO SERVE HUMAN SOCIETY, NOT THE OTHER WAY AROUND. THE INSTITUTIONS OF POLITICS AND OUR SOCIAL INSTITUTIONS OF GOVERNMENT AND THE PUBLIC SPHERE ARE ALSO MEANT TO SERVE SOCIETY. IN ORDER FOR ANY MAJOR TECHNOLOGICAL SYSTEM TO BECOME ESTABLISHED, CHANGES IN THE SOCIAL AND POLITICAL INSTITUTIONS HAVE TO TAKE PLACE. WE WILL HAVE TO MOVE FORWARD WITH INSTITUTIONAL CHANGES TO ACHIEVE THE FULL POTENTIAL ADVANTAGES OF THE IS.

WE CAN ALREADY SEE MANY OF THESE CHANGES IN THE NEW MARKET RELATIONS ASSOCIATED WITH THE IS. AS INFORMATION BECOMES COMMODIFIED, ACTIVITIES WHICH IN THE PAST COULD ONLY BE PROVIDED AS PUBLIC GOODS CAN INCREASINGLY BE TRADED - WE CAN SEE THIS HAPPENING IN MANY AREAS OF THE PUBLIC SERVICES, NOTABLY EDUCATION AND HEALTH. MAJOR CHANGES OF THE SYSTEMS OF PUBLIC PROVISION AND GOVERNANCE, HOWEVER, HAVE UNCERTAIN CONSEQUENCES LOOK FOR INSTANCE AT THE MIXED BLESSING OF MOTORWAY CONSTRUCTION.

NEW STRUCTURES ARE NEVERTHELESS NEEDED WHICH REFLECT THE NEW POSSIBILITIES OF THE IS AND WHICH PERMIT THE DEVELOPMENT OF DEMAND FOR NEW ICTBASED SERVICES. ORGANISATIONS AND STRUCTURES OF THE PAST ARE NOT NECESSARILY GOING TO MEET THIS DEMAND. WE COULD BE DEFENSIVE ABOUT THIS AND TRY TO HANG ONTO THE TREASURED ASPECTS OF THE OLD SYSTEMS, OR WE COULD TRY TO DEFINE A BETTER MORE OPEN PATH, WHICH OVERCOMES SOME OF THE CENTRALISATION AND AUTHORITARIAN ASPECTS OF THE TRADITIONAL BUREAUCRACIES AND GOVERNANCE STRUCTURES TO BE FOUND IN EUROPE.

WE RAISE THIS ISSUE OF THE POSSIBILITY, OR EVEN NECESSITY, OF CHANGE IN THE STRUCTURE OF PUBLIC SERVICES AND EVEN THE BODY POLITIC AS AN IMPORTANT AREA FOR EXPLICIT DEBATE. THERE ARE POSSIBILITIES AND OPPORTUNITIES FOR A MORE OPEN SOCIETY RATHER THAN A MORE TRANSPARENT SOCIETY! THIS MORE DETAILED AND OPEN DEBATE SHOULD COVER THE RIGHTS AND RESPONSIBILITIES OF INDIVIDUALS, FAMILIES AND COMMUNITIES IN DEFINING THE POLITICAL, CULTURAL AND SOCIAL DIMENSIONS OF A EUROPE IN WHICH THE IS IS A MAJOR PART.