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Information and
communication technology
in international policy
debates

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Preface

This report has been written for *Norges Forskningsråd*, which has financed the project via its ongoing SKIKT programme (*samfunnsmessige og kulturelle forutsetninger for informasjons- og kommunikasjonsteknologi*; contract number 126241/510). We thank the institution and the programme secretary Halvdan Buflod for the interest and the commitment shown by financing this research.

The report represents the work of the STEP group, and deals with the international information and communication technology policy debate. A companion report has been written by Trond Buland at IFIM, Trondheim, which deals with the policy debate in Norway.

Eric J. Iversen has written about general tendencies in the debate (chapter 2), about the EU policy discussion specifically (chapter 3), about the OECD (chapter 5), and he has compiled the appendix. Finn Ørstavik has written about the US discussion (chapter 4), the abstract, and has compiled the pieces into a report format. Keith Smith has written the introduction (chapter 1).

Abstract

The objective of this report is to describe and analyse policy debates on information and communication technology (ICT) in Norwegian and international policy milieus. While there are many directions from which such debates could be analysed, we approach the issue in terms of basic policy concepts, by considering

- how policymakers see the economic and social significance of information- and communication technology, and
- how they see their own role in relation to information- and communication technology.

In doing this, we try to go beyond superficial observations and the generally speculative ideas which are often presented as a rationale for ICT policy. We seek to come to grips with underlying issues, by focussing on

- the ways in which information- and communication technology is conceptualised, and
- the background assumptions which policymakers are adopting at the present time when discussing this technology.

Against this background, we seek to evaluate the quality of the documentation, information and analysis which is available for and used by policy makers in international institutions, such as the EU and the OECD, and in policy milieus in the USA.

In terms of theoretical perspectives, there are two particular themes that we will be interested in the course of the subsequent analysis. They are (i) *technological determinism* and (ii) *innovation systems*.

(i) A longstanding feature of ICT policy debates has been to place the effects and impact of new technology in the foreground, while the mechanisms that generate new technology, and the selection processes which decide between technological alternatives and development directions, have been more or less ignored. In much discussion of ICT, technical change itself has been taken for granted, as if changes are presented to society, rather than being a product of social actions among members of society. An important emerging development in the ICT debate is that

there is now some awareness that technology development in itself is a social product and an expression of social factors and policy strategies.

(ii) The second theme we deal with is closely related to the previous one. It concerns the fact that innovation happens in a social context, and that innovation presupposes that many agents take part in an interactive process, where something new is created. Policy rhetoric in the post-war period has to a large degree been built around 'linear' concepts of innovation. Arguments seem to presuppose that pure scientific research is the ultimate engine of change, and that innovation in the market is mere exploitation of ready-made novelties presented to the economic agents by scientists. Recent analyses of innovation, however, tell us that innovation is primarily an interactive process, both inside firms, and between firms and other organisations and institutions. Research is not necessarily the driving force of innovation – it is rather that science and technological development are part of a problem-solving process in which many actors are involved. There are important complementarities and reciprocities between activities in science, applied technology and in commercial business. In the following report we explore some of the implications of this for R&D policy.

Keywords: Information- and communication technology; ICT; policy debate; innovation system; determinism.

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Information and communication technology in international policy discussions

Chapter 1. The ICT revolution: the conceptual framework

1.1. IT policy and innovation theory

Much of contemporary IT policy rests on the argument that we are moving towards, or are actually in, a new type of society: an ‘information society’, or a ‘knowledge society’, resting on information as an economic resource. However the term ‘information society’ is rarely defined or conceptualised in any serious way, and it is often unclear what its real content is. In this introduction we discuss critically some of the ideas which underlie the notion that we are moving towards an information society. This can be approached from various angles; we do so from the point of view of innovation theory, and of some influential ideas within it.

In a famous passage, Keynes argued that economic policy-makers are often influenced by theoretical ideas, although they may be unaware of where those ideas have been developed, and what their strengths and limitations actually are. This point applies to innovation policy as well as to economic policy - there are often implicit ideas about the nature of innovation underlying different types of policy approach. In this introduction we want to explore the impact and validity of one particular set of ideas, to do with the impact and nature of large-scale technological change. Within this approach, ICT is seen as the most important technology in a new wave of economic growth; it is part of what Freeman and Perez call a ‘techno-economic paradigm shift’ which is reshaping the economic environment and which is creating an information society, in which ICT is the central driving force.

This approach derives essentially from Schumpeter’s most influential but probably least-read book, *Business Cycles*. Schumpeter in fact took his argument from the Soviet economist Nikolai Kondratiev, who argued that in the long-term growth is both technology driven and cyclical. It is technology driven because processes of invention and knowledge creation lead to radical innovations which restructure the production

system, creating major investment opportunities. The emergence of new major technologies are seen by Schumpeterians as initiating and sustaining ‘cycles’ of growth. Growth is cyclical because such innovations only occur very occasionally.

How valid are these approaches, and to what extent should they influence IT policy at the present time? In the following section we outline the theory in more detail, and then discuss its impacts and validity. We have two basic criticisms of this approach: the first is that it is technologically determinist – it gives no convincing account of why and how such technologies develop. Secondly, it misunderstands the problems of diffusion of the technology, in particular because of a neglect of social factors. These issues are closely relevant for understanding the evolution of ICT policy, and for ICT policy debates at the present time.

1.2. ‘Schumpeterian growth’

Large-scale technological change is an obvious feature of the advanced market economies. Schumpeter’s argument was that from time to time this takes the form of radical upheavals in the knowledge base which underlies production, and hence large scale changes in industrial techniques and organisation. Such changes can be identified far back in human history: the development of agriculture in pre-history, the transition to water-powered mills in the eleventh century, and so on. Most people have some historical familiarity with the big shifts of the modern era, in which the pace of change has quickened. From the late eighteenth century we have had, for example:¹

- ◆ the development of the steam engine, which had major implications for the design of machinery, factory sizes and structures, and transport systems;
- ◆ the development of electrical power systems and decentralised dynamo technologies, once again with major implications for the optimal size of production units and the application of power to production; but also with profound implications for the use of electricity in the home.
- ◆ the development of telecommunications in the first half of the 20th century;

¹ For an example, see C. Freeman and C. Perez in G. Dosi et al (eds) 1988, pp.38-67.

- ◆ the emergence of the modern chemicals technology
- ◆ the internal combustion engine, with its complex related technologies in oil production, transport and refining, and the development of the automobile.

These ideas are often systematised into eras or time periods associated with different types of technology and different types of economic organization. An example is given below:

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Table 1.1: Clusters of pervasive technologies: systems and organization

	Period: "	"	"	"	"
	1750-1820	1800-1870	1850-1940	1920-2000	1980 -
Dominant technology system	Water power, sail shipping, turnpikes, " textiles	Coal, sail shipping, " canals, iron, " steam power, " mechanical equipment	Railways, steam ships, heavy industry, steel, chemicals, telegraph	Electric power, oil, nuclear, cars, radio and TV, consumer durables, petrochemicals	Gas, aircraft, space-based telecommunications, information, optoelectronics
Emerging system	Mechanical techniques, coal, stationary steam, canals	Steel, distributed energy supply, telegraph, railways	Electricity, cars, trucks, radio, telephone, roads, chemicals	Nuclear, computers and IT systems, telecommunications, air transport	Biotechnology, AI, IT-telecom integration,
Dominant methods and/or organization	Manufacture, localised enterprise	Centrally managed enterprises, joint stock companies	Standardised parts, M-form corporation	Fordism/ Taylorism, mass production, TNCs.	Quality control, globalised enterprises, de-centralised management

Source: Adapted from M. Nakicenovic, "Diffusion of pervasive systems: a case of transport infrastructures", in Nkicenovic and Grubler (eds) **Diffusion of Technologies and Social Behaviour**.

These large-scale technological revolutions have a number of features in common. They have complex relationships with scientific change (not, it should be emphasised, taking the form of a one-way causal relationship between science and technological change). They usually involve inter-related technological advance in a range of areas. They usually involve change in the organisation of firms. They have wide cross-industry implications and effects. They always involve some dimension of social change, and they often have a direct impact on everyday life (through, for example, the development of consumer electrical products for the home). The ICT revolution is quite clearly a radical innovation of this type. But what are the real effects and policy implications of such change? Is this really a productive way to think about the growth process?

One basic problem in this theory is that that what really matters is not the innovation of technologies but their diffusion: the problem is to actually apply them, to put them to work. The point here is that the technological revolutions referred to above are often very slow to diffuse.² The Watt steam engine, for example, was patented in 1775, yet it was not in widespread use, even in England, until over a century later. It had no significant economic impact until at least fifty years after it became available.³ In communications technology, the telegraph was invented in the 1830s, but took decades to have a significant effects.⁴ The "dynamo revolution" in the late 19th century, through which the small-scale electrical motor spread into the factory system, also took decades: it took around forty years for even fifty percent of American factories to use the new technology.⁵ Similar delays occurred in the domestic use of electricity. Such points might be extended to modern IT developments: Even where the hardware has spread, very few of the capabilities of IT are actually in use. These points mean that for ICT and also for the previous

² The term "slow" here is obviously relative and imprecise; whether diffusion is slow or fast depends on our expectations and time-scale. The point here is that diffusion of a technically superior product or process is never instantaneous, and often takes decades.

³ See N. Von Tunzelmann 1978 for a detailed quantitative analysis of the diffusion of the Watt engine.

⁴ See P. Hall and P. Preston 1988, Ch. 4.

⁵ P.A. David in E. Deiano and G. Vickery (eds) (1991).

'revolutionary' technologies, the productivity and growth impacts of the technologies are likely to be slow to emerge, and difficult to identify.⁶

What underlies the slow diffusion patterns? While there are very many factors involved, there are two important points for our discussion here.

Firstly, no item of technical hardware ever stands alone: it is almost always part of a complex technical and production system which integrates many technical functions and activities. Getting a technology such as the automobile into large-scale production involved solving an enormous number of related technical problems in chemical engineering (especially related to refining of petroleum), in electrical technology, in metallurgy, and so on. These problems had to be solved in the context of building a integrated production system which could actually be managed; this in turn required the solution of problems in factory architecture, materials handling, labour recruitment and management, and so on. (In the context of this kind of complex integration it should be noted that information and communications systems are a core element of the technical system⁷

A second problem concerns the relationship between technology and society. The Schumpeterian approach sees technology as an autonomous driving force, with society 'lagging' behind. The problem is for society to adapt to the new technology. However this approach has some serious weaknesses. Technology does not exist autonomously, or independent of society. However technologies always exist within an economic and social system. Technologies are put to work within particular organisational structures of particular firms, and within a general social context which defines the financial environment, the legal context, technical standards, the supply of scientific and technological skills, social and cultural norms concerning work, and so on. Very often the use of a technology involves changes and adaptation in this system. For example, the early factory system was slow to develop in part because there was little or no social acceptance of the idea of a regular working day.

⁶ This is a well known problem for ICT: the growth and productivity impacts are very difficult to measure empirically. See Daniel Sichel 1997.

⁷ Professor Thomas Hughes has emphasized the systemic elements of innovation in the electrical power system; he suggests that successful innovators are usually system managers, and therefore that technologies are always "systems, presided over by system builders". T.P. Hughes 1983.

The emergence of electrical power technology in the US involved new forms of business enterprise (the holding company), legal changes allowing monopoly supply of electricity, the emergence of electrical engineering as a profession with its own training methods, plus a wide range of standards for electricity supply and the operation of electrical products: all of these were based on social changes or decisions. Automobiles involved new forms of work organisation, new forms of legal regulation and above all the creation of a vast public infrastructure of roads and bridges, and an industrial energy infrastructure. Again, these involved either a direct social change or some form of social decision. The complexity and difficulty of such large-scale organisational change in the social and infrastructural system is obviously a vital element determining the speed of diffusion of a new technology.

Innovating a particular piece of hardware is therefore a much simpler matter than changing the social and technological system in which it is embedded. But technical change and changes in production systems and the social system go together, and are time-consuming. With a generic technology such as ICT, the problem is not to develop the technology but to apply it across industries or across various branches of public administration or the education system; but each industry, each department, each school area or each hospital has its own specific systems which must change. The complexity of this pattern of systemic change, then, is one of the main reasons underlying the slow diffusion of radical new generic technologies. It is also one of the reasons why major "clusters" of innovation - such as those we are now experiencing - do not necessarily lead to immediate or rapid increases in productivity.

The important question is, to what extent do these arguments apply to recent developments in Information Technology? We turn now to a discussion of change in this area and its socio-economic significance.

1.3. The IT Revolution and its policy significance

This section considers three issues, namely the role of information in society, recent technological change in IT, and the types of policy responses which governments have made.

1.3.1. The Economic and Social Significance of Information

Information and communication are increasingly central to the operation of any economy and society for two principal reasons. First there are informational needs due to increasing specialisation, especially problems in enterprise organisation and production control which follow from complex production technologies. Secondly, there is the increasing knowledge-intensity – in terms of codified scientific or quasi-scientific knowledges - of industrial production itself. We briefly discuss these factors in turn.

A clear trend in economic organisation is towards an increasing social and technical division of labour: that is, towards specialisation in terms of economic activities and functional tasks. Since the time of Adam Smith this division of labour has been recognised by economists and others as a primary element in the growth of productivity, and therefore in the long-run economic growth of the West. Increasing specialisation does not however mean that activities become isolated from one another: on the contrary, the need to integrate activities becomes acute, and this gives rise to significant problems of coordination wherever there is a social and technical division of labour. Such coordination rests primarily on the production, accessibility and use of information. These problems of coordination and control in advanced economies are broadly speaking solved in two ways: on the one hand through arms length market transactions, and on the other through administrative systems inside organisations, either vertically integrated enterprises of one kind or another, or linked groups of companies. Either way, there are significant problems of information collection, processing and assessment involved.⁸

A central element in the changing industrial structure and division of labour is of course the advance of technology itself. The major technological revolutions described in the previous section all generated increasing problems of production management and enterprise control which required improved information processing. In an influential work, Professor James Beniger firmly linked these technological shifts to the IT revolution:

⁸ J.S. Metcalfe, "Information and some economics of the information revolution", in M. Ferguson 1986, pp 37-51.

... national economies constitute open processing systems engaged in the continuous extraction, reorganisation and distribution of environmental inputs to final consumption. Until the last century these functions, even in the largest and most developed national economies, still were carried on at a human pace ... so long as the energy used to process and move material throughputs did not much exceed that of human labour, individual workers in the system could provide the information processing required for its control.

Once energy consumption, processing and transportation speeds, and the information requirements for control are seen to be inter-related, the Industrial Revolution takes on new meaning. By far its greatest impact from this perspective was to speed up society's entire material processing system, thereby precipitating a crisis of control, a period in which innovations in information processing and communications technologies lagged behind those of energy and its application to manufacturing and transportation.⁹

Beniger's argument is that this "control crisis", which followed from the fact that information processing capabilities lagged far behind other technological advances, is the main reason why so much attention and effort has been given to the development of new information technologies in our time. It is not simply a matter of technological opportunity springing from the semiconductor revolution; it is driven by long-standing economic and organisational needs. It should be noted that innovation in ICT has increasingly been needed not just to solve problems in the control of production and large organisations, but in the control of information processing itself.

The informational requirements of advanced production are not limited to industry itself. Our type of economic system is associated with social complexity and differentiation, and hence with a need for complex public administration systems, which also require coordination and which pose major informational problems. It is these factors which underlie one of the key trends in modern economic development, which is for the number of persons employed in such tasks to rise. It is this increase which usually underlies the idea of information as an economic resource and the concept of the "information economy".

Linked with these issues is the increasing knowledge-intensity and information-intensity of advanced industrial production. Industrial competition is primarily technological in the sense that competition is less about price than about the technical

⁹ J. Beniger 1986, p.427.

characteristics and performance attributes of products. Moreover the appropriate combination of attributes can change quickly: product cycles seem to be getting shorter, and producers must try to anticipate such change and to respond quickly and flexibly. These factors significantly increase the importance of design processes, production engineering, and quality control in production; at the same time the use of R&D as a monitoring and information-providing system has increased. All of these functions involve, in different ways, the production, collection, and modification of information, and all are strongly affected by changes in IT. Expenditure on these informational aspects of innovation exceeds spending on investment in fixed capital in many firms, industries and even whole economies.¹⁰

What are the quantitative dimensions of these information functions in our society? More concretely, what proportion of national economic activity consists of information activity? How many people are directly affected by the IT revolution? Given the nature of our economic statistics, it is difficult to know what proportion of the workforce in a modern economy is employed in the "information sector" and what proportion of output consists of information. There is no category of "information equipment" in the production statistics, and information activities cannot be identified with particular industrial and employment classifications. However investigations into the relevant dimensions of information as an industry have been made, mostly in the US. The first significant attempt to overcome the statistical problems was the work of the economist Fritz Machlup.¹¹ Machlup reorganised the industrial classification of the US into five major groups of information activities: education, research, communications, information equipment and information services. Studying output and employment trends in these activity groups, he showed through an analysis of the US national accounts that such activities accounted for 29% of US BNP and 31% of employment in 1958. Moreover during the previous ten years the information sector had been growing at twice the

¹⁰ for example, L. Scholz and others estimate the direct and indirect expenditure on innovation in the Federal Republic of Germany (of which R&D, design, and market preparation are the most important elements) at 13,9% of GDP, which is higher than the rate of investment in fixed capital; L. Scholz et al, "Innovation, growth and employment. Innovative activity at plant, sectoral and intersectoral level and its effects on the West German economy in the 1980s", in R. Schettkat and M. Wagner (eds) 1990, pp.135-169

¹¹ F. Machlup 1962 and 1980.

rate of the economy as a whole, indicating a substantial structural shift in the US economy. Machlup's work was significantly extended in the mid-1970s in a very detailed nine-volume study for the US Department of Commerce by Marc Uri Porat.¹² Dr Porat distinguished between a "primary information sector" consisting of firms which supplied information goods and services of all kinds, and a "secondary information sector" consisting of "all the information services produced for internal consumption by government and noninformation firms." He showed that the two sectors taken together accounted for 46% of US BNP, 40% of the workforce, and 53% of labour income. More recent estimates for the mid-1980s suggest that over 50% of the American workforce is now in the information sector, and that nearly 70% of labour costs and 70% of working hours relate to information (since information workers receive higher wages and work longer hours).¹³ These information industries have much higher investment rates than other sectors of the economy: in the 1980s the capital stock of US "information producing" industries grew at 5% p.a., while the manufacturing capital stock grew at less than 2% p.a. It should be noted in this context that IT investment is concentrated such service industries, which now own 84% of the US stock of IT equipment. These trends in the US economy are probably consistent with trends in other advanced economies.

It should be noted that this type of calculation, which has been repeated in many other societies including Norway, does not necessarily imply that we are involved in an 'information society'; if we used exactly the same methodology to calculate the workforce engaged in the production, processing, distribution and sale of food, we might well end up with considerably larger numbers. The point here is to emphasize the integration of activities, and the pervasiveness of information processing across industries.

¹² The main body of Dr. Porat's research is reported in **The Information Economy: Definition and Measurement**, 256pp, and **The Information Economy: Sources and Methods for Measuring the Primary Information Sector**, 188pp., US Dept of Commerce Office of Telecommunications, (OT Spec.Pub 77-12-1), 1977.

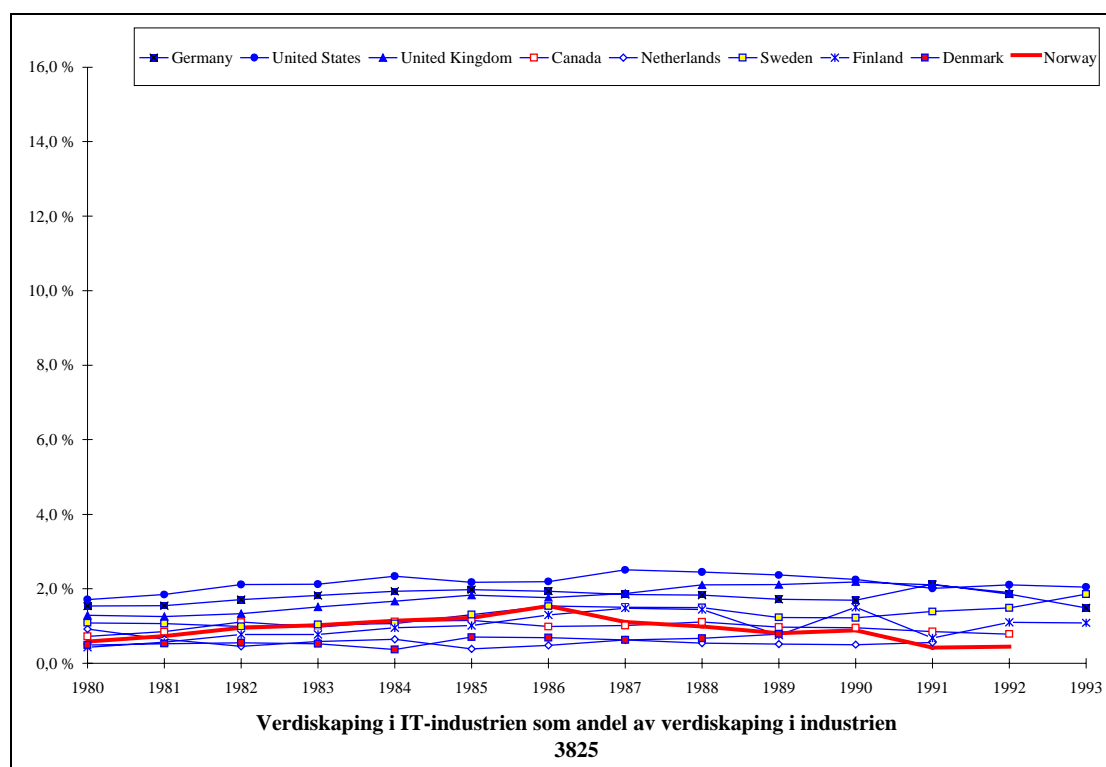
¹³ E.M. Rogers 1986, pp.10-13.

1.3.2. The Scale of the IT sector

Against this background, it is important to bear in mind that the ICT sector – meaning the complex of industries which produce ICT equipment – is relatively small.

If we simply take the basic IT industry, ‘Office equipment and computers’ (ISIC 3825) we can see that there is no OECD economy in which this sector makes up more than about 2% of manufacturing output (and manufacturing output as a whole rarely makes up more than 25% of GDP; in Norway manufacturing makes up 17% of GDP).

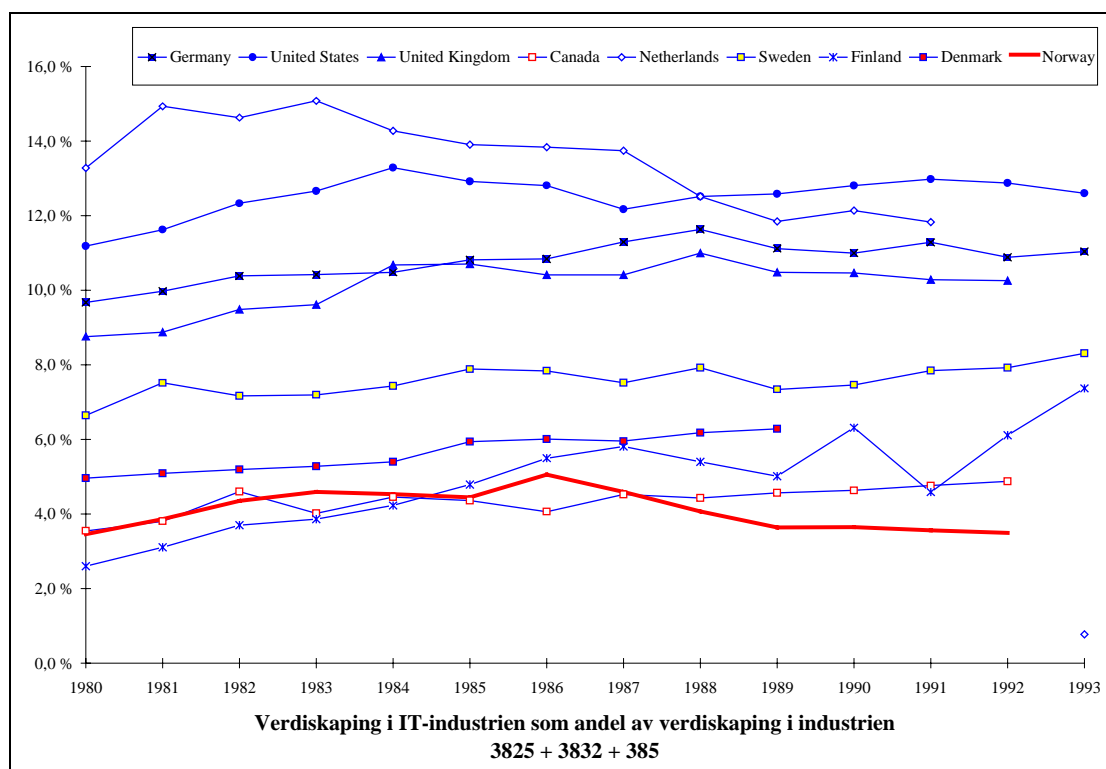
Figure 1: Value added in the production of computers 1980-1993.



Source: OECD, STAN database.

If we extend this by adding in telecommunications equipment, and also scientific and technical instruments production, then we raise the ICT figure, but it nevertheless remains a relatively small part of overall manufacturing output, as Figure 2 shows. Even rapid growth in such a small sector cannot have a major effect on growth rates of industry; the effects of ICT must therefore be sought in its use in other sectors.

Figure 2: Value added in IT equipment, telecommunications equipment and scientific and technical instruments 1980-1993.



Source: OECD, STAN database.

Given that the size of the sector, however we measure it, is small, it is difficult to see that the IT industry can make a large direct contribution to economic growth. These leaves its indirect effects: the idea that it has productivity-enhancing effects across many industries. The evidence for this is also rather limited, but it nevertheless forms the basis for many policy ideas. It is to these we now turn.

Chapter 2: General tendencies in the international ICT-discussion

The purpose of this section is to provide a first impression of the recent tendency of the ICT-discussion as it is currently taking form around the world. The intention is to flag some of the main trends we will meet in the current international discussion. Here, we characterise some general dimensions of the international discussion before going on to sketch common currents in, (i.) how information technology is conceived; (ii.) how governments argue for IT policies; and (iii.) how governments envision their roles in the recent international IT-policy discussion.

2.1. How Information Technology is conceived

In our analysis of key IT-documents the focus on what the concept “information technology” includes differs significantly. Some documents we have surveyed focus on individual technologies (semiconductors, consumer electronics etc), and emphasise the need for industrial support in the development and/or diffusion of these technologies. Others focus more broadly on ‘information infrastructure’, entailing the development and use of broadband communication technologies to connect consumer-premise equipment (CPE) into different types of networks. Of these infrastructure-oriented documents, some focus on developing national infrastructure (NII, etc) while a growing set focuses on integrating the national into ‘global’ networks. Not surprisingly, transnational groupings (G7 and OECD) emphasise this latter set of issues.

A third set of documents moves the discussion away from the technologies themselves and their expected economic benefits, and focuses increasingly on more societal aspects. A subset of these emphasises geographical effects of the technology, including tele-commuting or distributed health services. This is the continuing regionalisation of the IT-discussion, which especially in Nordic countries is used to argue for potential benefits of IT infrastructures for rural areas.

The most interesting set of documents, however, are those that discuss the relationship between society and information technology and endeavour to understand its changing nature, and with it, the changing challenges to policies. These documents question the assumptions behind such concepts as ‘convergence’,

'learning in the information age' and the 'information society', attempt to put them into perspective and suggest policy-implications.¹⁴

2.2. How governments argue for IT-policies.

The rationale used by governments for IT-policies of course depends on the type of policy measure and the particular context. However, several types of argumentation can be indicated. In surveying information infrastructure policies (construed broadly) the OECD identifies several main rationales for IT-policy initiatives. The main rationale for IT-policies falls under the heading of "Economic growth and productivity". The types of initiatives that 'macro' policies (meaning largely government/private cooperative investment in broadband-communication networks or 'information infrastructure'), meso-policies (schemes to support/develop national IT-industries) and micro-level policies (germinating new content industries or firms and adapting old ones to 'new challenges').

Table 2.1: OECD's characterisation of what governments hope to achieve in their Information-infrastructure policies

I. Economic growth and productivity
1.1. Job-creation
1.2. Building on national strength and international competition
II. The Geographic impact: regional issues
III. Social and cultural objectives

Source: OECD Information Infrastructure Policies in OECD Countries. OECD /GD (96) 174.

The OECD gives special mention to government ambitions directed at "job-creation" and at "building on national strength and international competition", although these should be subsumed under the economic growth and productivity heading. The policy discussion directed at job-creation is generally oriented towards the meso- and micro-levels. The sector-based focus is generally used to frame expectations of employment growth effects coming out of the IT-sector. These expectations range from the general to the specific and among others involve the multimedia sector

¹⁴ See respectively, Information Society Forum, June 1996; and Building the European Information Society **The Green Paper on Convergence... and the Implications for Regulation**. EU Commission Com(97) 623; **Networks for People and their Communities:**

(where in Japan, for example, it is expected that related jobs will surpass the auto industry by 2010); the Personal Communications Services Industry (e.g. the USA; where 300,000 jobs are expected in the course of 10-15 years); or information services generally (as in France, where jobs connected to the information-services sector are expected to double to 600,000 by 2005). Meanwhile job destruction connected to IT is less emphasised, though some (e.g. Denmark) consider the effects on traditional industry.

Arguments involving 'building on national strengths/international competition' are generally employed in favour of macro- and meso-level initiatives. In assessing these arguments however it should be noted that ambitions to be internationally competitive are not always in line with established 'national strengths'. Indeed much of the EU argumentation stresses the 'threat of international competition' not out of position of strength but out of one of weakness. Thus it is argued in Europe and other places that the local IT sector should be built up in order to fend off domination by leading (US) competitors. This sort of technology-push policy argument, which once defined IT-policy, is much less apparent in the current policy analysis, though it still dominates some parts of the discussion.

Arguments involving the geographic impact of IT are used to make the point that IT infrastructure can create opportunities for rural communities. The emphasis is on regional policies, generally via rhetoric that emphasises a rejection of urbanisation. This set of arguments is closely related to the "social and cultural objectives" that the OECD mentions, especially those concerning distance-learning, IT-commuting and Tele-medicine. In addition to these, a relatively new area that is being emphasised is the set of information-based services the government itself is already responsible for. One such 'service' involves education and vocational or professional training, where the buzzword 'lifelong learning' serves to place the need for updating skills and knowledge on the agenda. Under the heading of cultural objectives one finds very little in terms of policy initiatives beyond a general outcry against the linguistic (English) and cultural (US) hegemony perceived on the Web.

In short, despite a certain change of orientation, economic rationales dominate the way the international community discusses IT-policy. But as the OECD remarks,

“For governments to support the transformation toward the information society, it is essential to have a clear insight in the social and societal as well as economic impacts of information infrastructures. Existing statistics, data and methodology, however, are often inadequate to measure the effects. National reports do not in analyse this.”¹⁵

Thus, it is an irony that the area that receives the greatest attention in the Information Technology policy-discussion lacks necessary sources of *information* both in terms of making diagnoses and in measuring effects of policies.

2.3. How governments envision their role

Whereas there is much variation in the way the policy discussion conceives of IT but somewhat less diversity in the way IT policies are argued for, there seems to be a remarkable standardisation in the way the different governments envision their role. One characteristic of this streak in the recent policy discussion is the pains that are taken to place the responsibility for the realisation of the information society with the private sector. The OECD characterises the changing relationship between governments and industry in the following way:

“The broadening of IT policies is accompanied by a trend in government to forge cooperative relationships with industry, whereby governments, rather than trying to direct the course of the IT industry, play a moderating role, working with industry and important users to set standards, engage in R&D and undertake diffusion exercises.”¹⁶

Thus there is the repeated eagerness in the policy discussion to limit government activity and emphasise the role of the private sector, although the sincerity of this eagerness seems to vary (contrast the US Global Infrastructure Initiatives in the US, where captains of industry are prominent, to the reluctance in Japan to liberalize its Tele-market). Notwithstanding, a consensus does prevail. One such expression for such an international consensus mentioned already can be seen in the G-7 ‘core principles’. Such principles are reinforced by other treaties, such as those within the

¹⁵ **Information Infrastructure Policies in OECD Countries.** OECD/GD (96) 174. P 10.

¹⁶ **Information Technology Outlook 1997.** OECD, p. 104.

purview of the WTO including the Singapore Agreement¹⁷ (WTO, 1996) for the elimination of duties on IT products. These principles are as follows:

Table 2.2: The G-7 Ministerial Conference on the Information Society: Core-principles¹⁸

1. Promoting dynamic competition
2. Encouraging private investment
3. Defining an adaptable regulatory framework
4. Providing open access to networks
5. Ensuring universal provision of and access to services
6. Promoting equality of opportunity to the citizen
7. Promoting diversity of content (e.g. Cultural and linguistic diversity)
8. Recognising the necessity of world-wide cooperation, with particular attention to less-developed countries.

On its side, the OECD has more recently characterised the role of the government as ideally being that of a “catalyst¹⁹”. OECD sees the role of government in the ‘global information society’ as acting catalytically where regards the development of and demand for information technology. A second role is more active. Here the OECD envisions governments becoming much more active taking into use IT-based services to improve governmental services internally, in administrative tasks, and externally, in interfacing with the public. This role is increasingly important, not only per se but also as a demonstration to the general public of the usefulness of such technologies.

There are two aspects of the Government’s role that are becoming increasingly important. The first involves the question of role of education in the information society. This is a vexed question which is well analysed in the EU discussion (see *Building the European Information Society for us all*, 1997). The second role that has not been emphasised until lately is the government’s active role as a user as well as developer of electronic information services (EIS). The focus of integrating electronic information and the government range from making governments more transparent and open (‘reinventing government’ in the US, or ‘open government’ in the UK) to diffusing government benefits. Government activity in this field stands

¹⁷ See <http://www.wto96.org/media/13ipirita.html> for the agreement.

¹⁸ Referred to in **Information Infrastructure Policies in OECD Countries**. OECD/GD (96) 174

¹⁹ OECD/ICCP: **Global Information Infrastructure - Global Information. Society** P 17.

not only to make government administration more effectively, but it can also serve an important 'demonstration' role in drawing citizens into the widely heralded 'Information Age'.

Chapter 3: The IT policy discussion in Europe

In this section, we analyse the recent IT policy discussion in Europe, specifically focusing on the role of European institutions and then particularly on the European Commission. The European policy-discussion is the most comprehensive and arguably the most relevant for Norway. One of the defining aspects of this discussion is that it continues to expand (in terms of number of documents) and spread (in terms of its locus in the political fora). This expansion is concurrent with important changes in the recent discussion that involve shifts in perspective and orientation. In the following critical survey, we will be primarily concerned with two such shifts. The first involves an increasing tendency to emphasise the global-dimension of IT. The second is more fundamental, involving a change over time from a predominately technology-push orientation, to one that stresses a demand-side component, towards a perspective that seeks to integrate the development of IT with the development of society.

3.1 Defining the limits of the discussion: our sample

The European IT discussion is indeed expansive. A collection of IT-policy documentation collated by the *Information Society Project Office* (ISPO)²⁰ indicates that there are currently over 8600 such documents. These documents represent varying levels of generality, varying levels of quality and varying levels of the political process. Further, some are duplicate versions of the same documents while others are specific technical projects or projects from individual Member States.²¹ Nonetheless, the amount of written material that reflects the IT-discussion could fit into a moderate size library.

We will concentrate on a small sample of this huge total. We have narrowed our focus to generalist policy-measures in the pan-European policy arena, particularly those that have followed the EU Commission Communication entitled *Europe's way to the Information Society: an Action plan*. (Com (94) 347 final). This

²⁰ The ISPO is a combined effort of DGIII and DGXIII.

²¹ For an interesting database covering national IT-discussions in Europe, consult the European Survey of the Information Society at <http://www.ispo.cec.be/esis>.

Communication can be said to have initiated the recent policy discussion as it has attempted to collect items in the European discussion from various sources and structure these past and current policy-documents according to four so-called priority areas. These are:

1. Improving the Business Environment
2. Investing in the Future
3. People at the Centre
4. Meeting the Global Challenge

An overview of the documents that ISPO has categorised according to these priority areas is reproduced in Annex 1 This system of categorisation of course does not provide a perfect fit for the increasing number of documents: many overlap the boundaries while many stretch the meaning of the headings. In preparation for the analysis below we have recognised a set of EU-related documents which we see as defining the general IT-discussion currently taking place in Europe. These are compiled in the box below.

Box: A Set of Important Documents in the EU IT-Policy Discussion

I. White-Papers

1. Com (93) 700 final: Growth, Competitiveness and Employment.

II. Green Papers

1. Com (96) 389 final: Green Paper Living and working in the Information Society: People First. DG V/B/5 Employment, Industrial Relations and Social Affairs. 1996
 2. Com (97) 623: Green Paper on Convergence... and the implications for regulation. Towards an information society approach: DG XIII + DG X.C. 1997.

III. Communications

1. Com (94) 347 final: Europe's way to the information society: An Action Plan. 1994
2. COM(97) 390 Communication on the social and labour market dimension of the information society - The next steps: July, 1997.
3. Com (95) 224: Towards the Information Society: Communication on a Methodology for the implementation of information society applications. June 1995.
4. Com (96) 471 final. 'Learning in the information society: Action plan for a education initiative (1996-98) 1996.
5. Com (96) 395 final: The information society: from Corfu to Dublin. July, 1995.
6. Com (96) 592 final: Europe at the forefront of the Global Information Society: Rolling action plan.
7. Com (97) 397: The social and labour market dimension of the information society: People first-the next steps. 1997
- 8 Com (97) ICTCM19. The competitiveness of the European Information and Communication Technologies (ICT) Industries. - 14/04/97.
9. Com (98) 50: The need for strengthened International Coordination. 1998

IV. European Ministers

1. Ministerial Declaration: Global Information Networks Conference (1997)

V. Policy-reports

1. Europe and the global information society: recommendations to the European Council. By a High Level group of (industrialist) experts: "Bangemann Report".(25. May 1994).

2. Making the most of the Information Society in the European Union. Information Society Forum: June 1996 (including Working Group Reports)
 3. Building the European Information society for us all. Final policy report of the high level expert group. April 1997. For DG V.

VI. Theme Papers

1. Global Information Networks: Realising the Potential: Theme Paper: Bangemann & Rexrodt. July 1997.

Of these, four documents have been selected for closer analysis. These represent different formal levels of the discussion and identifiably different perspectives. They do not however necessarily represent the four priority-areas of the ISPO. Instead, we have identified three major currents that we find form the recent discussion. With their respected documents, these are:

1. The Technological Deterministic Perspective: An IT-sector policy approach: **The competitiveness of the European Information and Communication Technologies (ICT) Industries.** Com (97)ICTCM19:DG
2. The Social Intergrationalist Perspective: An endogenous approach: **Building the European Information Society for us all** (final report from the High Level Expert Group) April 1997
3. The Global Challenge Perspective: A signal approach: **Bonn-Ministerial Declaration (July, 1997). Global Information Networks Conference.**
4. **Global Information Networks: Realising the Potential:** Theme-report from Bangemann & Rexrodt.

3.2. The Competition Communication

The first document we investigate is the 1997 *Competitiveness of the ICT Industries Communication* (hereafter, the Competition Communication). It represents in many ways the classical vein of IT-policy debate within the EU. This is to say that it is essentially a sector-specific industrial policy framed in the urgent tone of technology-determinism. Before looking at the specifics of the arguments of this particular item, let us briefly survey its immediate history.

3.2.1. The Policy Context

The Competition Communication is the recent product of the Directorate General responsible for industry (DG III). However, the heritage of this document reaches into the heart of the European IT discussion. One link in its immediate parentage can be traced back to the famous *Bangemann-report*,²² (1994), in which a "high level expert group" presented a set of 'concrete recommendations' to help define Europe's way into the Information Society. This high-level group, which was appointed by the Commission via the impetus of the Council, consisted mainly of industrialists in the

²² Europe and the global information society: recommendations to the European Council (25. May 1994) CD-84-94-290-C. M. Bangemann is a Commission for Industrial affairs and Information and telecommunications technologies.

IT-sector, and it took its signals mainly from the *Commission White Paper on Growth, Competition and Employment*. As the purpose of this important White Book was explicitly "jobs, jobs, jobs", the Bangemann-report focused essentially on stimulating competitive-potential of Europe's IT-sector. These recommendations were then incorporated to a greater or lesser degree into the Action-Plan, which again we use to define (somewhat arbitrarily) the start of the 'recent IT debate' in Europe.

What is characteristic for the Competition Communication and what binds it to the central current of traditional EU IT policy is the following:

- The concern that the European IT-producing sector is essential to securing European jobs, European productivity growth and ultimately European social development in the foreseeable future;
- the assumptions that the tempo of development effecting this sector is great;
- the worry that this sector is losing ground, particularly to US competitors; and
- the view that certain costs must be accepted to transform the European IT-sector in such a way as to stave off foreign competition and remain at "the forefront of the information-revolution".

The alternative to improving the performance of this industry or set of industries in a European context is presented as a situation of following others' leads (in the form of conforming to standards set elsewhere: a variety of the "price-takers" situation) at the price of European jobs. A definite sense of inevitability is involved, as is in equal measure, the message that quick action is imperative.

A final point worth mentioning about the IT-sector-policy legacy embodied in this recent document is that this clearly technological-deterministic vein in the European policy discussion is a feature that is grounded in the Treaty of Rome itself. Title VI, article 130f of the Treaty defines the aim of the Commission in matters of Research and Technological Development to, "strengthen the scientific and technological basis of European industry and to encourage it to become competitive at the international level." The importance of this inclusion should not be underestimated given the difficulty the EU has had in defining its industrial role.²³ The point is that this treaty article has asserted a strong influence when the EU has set about "deploying"²⁴ the

²³ Which incidentally was integrated in 1987, principally in the face of the European IT-sectors disappointing performance compared with the US. (See Andersen 1992)

²⁴ One of bits of military jargon that emerges. (See Com (96) 607)

Information Society, though as we will remark in our analysis, this influence has gone from being a purely "technology push" perspective, which would be closest to the text of this particular article, to embracing the "market-pull" orientation which we see in the more recent documents.

3.2.2. Technological-Determinism in the Competition Communication

Basically then, we are asserting that the mainstream of the European IT-discussion has been shaped by the combined position that aiding the IT-sector at the European level is imperative and that it is important in order to compete amidst increasing international competition.²⁵ Not surprisingly, this applies particularly to that part of the European discussion that has been conducted in the industrially-oriented parts of the Commission (DG III, DG XII, D XIII, more lately DG X). The Competition Communication falls within this category, as it issues from the directorate responsible for Industry (DG III)

Let us look next at the assumptions the Competition Communication makes about information technology. Note first that it incorporates communication technologies into the IT heading, yet excludes broadcasting and other content industries despite laying emphasis on the tendency towards convergence.²⁶ At the same time, it includes all 'consumer electronics' broadly defined. The diagnosis is that EU production industry needs active assistance lest European industry should miss this window of opportunity and be forced to continue in a position of dependence amidst uncontrollable unemployment. Note the advertisement style of the Communication's following appeal:

"Europe cannot afford to miss the boat. There are worrying signs of

- slow market growth
- declining relative shares for European producers
- uneven response to market and technological evolution" (Competition Communication, p 2)

²⁵ We are drawing here inter alia on the observations of Andersen as well as the High Level Expert Group on societal aspects of the information society. (See below)

²⁶ Part of the reason for this exclusion seems to be that responsibility for, for ex. multimedia lies elsewhere in the Commission (DG X)

The Communication presents some statistics whose intent is to support this diagnosis. However, these numbers do not support the prospects as robustly as advertised. This is particularly the case for “slow market growth”. In Europe, market growth for all the aggregated lot of ICT is placed at 7% p.a., which the Communication concedes is “an impressive figure”. The claim of ‘slow market growth’ therefore seems disingenuous. The point to make is rather that the performance of Europeans in certain ICT-markets is considerably lower than that of Americans (especially packaged-software) while those of other areas (telecommunications) is superior. Though the ingredients of a somewhat more nuanced picture of the market situation can be found spread out in the Communication, this does not serve to sustain the desired climate of urgency within the report.

A sense of imperative urgency does however pervade the Communication, especially when it appeals to what can happen in the future. What will become of the EU in the future if we fail to catch the ICT boat? What of European jobs? In addition to the image of a single boat leaving with fortunate passengers on board, the Communication includes other images that communicate a sense of irretrievability. For example the image of “the future as the Information Society in all its forms takes hold”. Repeatedly the imagery is that of something that happens to Society, brought about by a higher power which is part technology and part global competition. Given the situation the EU finds itself subject to, its only choice is to act through the prescriptions supplied by the Communication.

3.2.3. Regulatory role

We note as we turn to the role that is envisioned by the Communication that the question of *why* Europe must be a leading world producer of ICTs is not discussed. Are not the real benefits of the “information society” to be found on the users’ end? Should one not focus on becoming leading users of these technologies whose profit margins are always falling? Is it not here that the real benefits accrue? Some of these questions will be raised in the next section. Here we must quickly characterise the role it prescribes to meet the diagnosis.

The first thing to remark about how regulatory roles are envisioned in the European discussion is that the EU adds an extra-layer to the typical delegation of roles

between industry and national governments. Unlike Japan and unlike the US, the EU consists of nations which continue (contrary to the fears of some and the hopes of others) to be different than the states of the USA. This has a tendency to add a signal-value to some of the documentation coming out of the Commission, especially in the form of Communications.

In this Communication, the signal is sounded as follows:

“Urgent action is required by all actors (Industry, Member States, Commission) to force the pace and ensure that European ICT industries are at the forefront of market and technological evolution.”

The challenges include:

1. Improve market take-up
2. Transform industrial structures
3. Develop fast-growing companies
4. Enable European excellence in software
5. Optimise technology development and diffusion
6. Exploit the potential for employment growth

Certainly this is a tall order. Characteristically, however, this Communication does not detail steps to take but instead refers to other documents or programs that are assumed to do so. In this laundry-list style document we recognise general supply-side ambitions, for example to “develop fast-growing companies”. In addition, there are general demand-side ambitions, designed to encourage a ‘market-pull’ effect to supplement the ‘technology-push’ motor which remains the real focus. Improving ‘market take-up’ is seen not in terms of benefiting the user, but in terms of bettering the market prospects of (European) industry.

In addition, the Communication indicates other “New areas requiring attention”, including ambitions to “Improve global competition; Accelerate ICT take-up and promote awareness and; Create new markets by timely standards”.(Competition Communication, p 10) As is suggested by the titles, most lie very close to the ‘challenges’ surveyed above, such that the question of their ‘novelty’ seem to be, in addition to their generality, spurious. Nonetheless, the Communication chooses to conclude dramatically:

“A number of key areas for action have been identified in this Communication. The longer their effective implementation is delayed, the more difficult it will be to hold a leading position for the European ICT industry.”(Competition Communication, p 11)

3.2.4. Concluding comments

It should be noted that we do not evaluate the individual merit of the key areas of action that the Communication has chosen. No doubt there are problems that this Communication is helpful in bringing to attention (such as the question of technical standardization). Our critique has involved more the way this installment of the IT-policy discussion has portrayed Information Technology and how it sees the regulatory role.

We noted that this Communication represents the main tradition of the European debate, a tradition rooted in the Treaty of Rome. Characteristic of this tradition is, “the notion that technological development is autonomous of society”²⁷ and that society has only to submit and adapt to technology in order to ‘catch the boat’ into a future when ‘the information society takes hold’. Here the overriding sense of urgency is combined with rather weak statistical evidence. In other words, this is essentially a technologically deterministic tradition, of which this Communication is a surprisingly crude expression.

In this recent Communication a technology-push strategy is prominent, as it had been during the 80s. Overfocusing on such an approach had been criticised, especially in the early 1990s when recognition mounted that there was

“a need for a shift in European technology policy towards *demand* and the overall conditions within which technological capabilities can be further enhanced and developed through their increased use and the various learning feedback.”²⁸

This Communication shows little concession to the spirit of this criticism, though a ‘market-pull’ argument is incorporated. In the next section we will see an emerging tradition which very much distances itself from the technological determinism tradition exemplified here.

²⁷ Mackay, H. 1995.

²⁸ Freeman, Christopher & Luc Soete. *Macroeconomic and Sectoral Analysis of Future Employment and Training Perspectives in the New Information Technology: Executive Summary: Synthesis Report: Policy Conclusions and Recommendations* 1991. P 4.

3.3. The Social Integrationalist Perspective: Building the European Information Society for Us All. Final report, April 1997

3.3.1. Policy Context

This policy report, like the Bangemann-report referred to above, is the product of a High-level Expert Group (HLEG), charged in 1995 by the Commission (DG V) to explore the social implications of the “Information Society”. Where the Bangemann expert-group prominently included industrialists from around Europe, this HLEG includes a range of experts, from industry to media, from organisations representing labour and to those representing employers. The main contingent of these experts however was from various academic posts, including two prominent long-standing figures in innovation studies on issues related to IT: Chris Freeman and the chairman Luc Soete.²⁹

In this section we will present this expert group’s argument for changing the IT policy agenda. We argue here that they are advocating a fundamental shift in perspective and focus for the IT policy debate, in the words of this expert group, away “from technological determinism to social embeddedness.” To achieve such a shift the expert group collects support from central EU and OECD documents that stress “the social dimension” of information technology. For example the group pays homage to *the White-book on Growth, Competition, Employment*, just as the Bangemann report had, except that here it stresses this social dimension. As it does so it formulates a thorough critique of other aspects of the European policy debate. Particularly, it criticises the argumentation of the technological deterministic vein that we saw running through the Competition Communication and other EU documents.

3.3.2. Critique

Because this policy-report advocates a change in the agenda, let us focus first on this critique. It should however be pointed out that this critique is only incidental to the argument of the expert-group, although the central themes of their “social intergrationalist ” perspective are effectively placed into relief beside this criticism. At the same time, this critique is important in a larger sense. It will be noted that

²⁹ Note these professors are the same individuals that argued for a ‘need for a shift’ in European technology policy. Our presentation in this section is aided by a lecture given by L. Soete on the topic in Maastricht, April, 1997.

technological-determinism has long been a easy target for criticism in academic circles. Policy-discussions as they take place in governmental settings have however been relatively resistant to taking this comprehensive criticism into account let alone adjusting policy measures accordingly. It is therefore important that the expert-group has in this case introduced the criticism directly into the mainstream of the European policy debate, illustrating how such a perspective has not only proved ineffective in terms of expressed policy goals but, indeed counterproductive.

The high level group's critique is framed first and foremost in practical terms. It first indicates that the policy of IT-industry support which has been in place since the 80s has been a failure in its own terms:

“Despite a succession of long-term research support policies during the 1980's, European competitiveness in these ICT related areas deteriorated often in those areas most strongly supported by European research and development policies.” (Information Society Report, p 13)

Second, the expert-group argues that the predominance that technological determinism enjoys in much of the policy debate in Europe has served to isolate this debate and limit the scope for policy action. Indeed, it identifies the policy language connected to this limiting perspective as in part responsible for “lack of public support for the information society.” We remember from the Competition Communication (under “take-up”) that exactly this type of support was noted as a policy objective. The expert group therefore points out that not only does such a perspective not achieve what it sets out to do, it counteracts its own expressed objectives. It is interesting to note that this expert-group sees its revelation of this central paradox in the IT-debate as its “main contribution”. (Information Society Report, p 18)

3.3.3. Constructive vision

The expert-group's contribution is however by no means limited to a critique of the existing debate. It defines its own goals in the following way:

“Our group must illustrate that there are numerous social policy challenges associated with a future European information society, stress that these transcend the simplistic notions of rapid adjustment to a future determined by the ‘external’ force of technological change in which people have no influence and no chance to participate, and highlight the countless opportunities for engineering a European information society for us all.” (Information Society Report, 19)

Let us start our survey of the high level group's "social integrationalist vision" and the challenges it identifies by indicating what its alternative to the technological deterministic perspective is. The 'vision' insists on understanding technology as being socially-embedded. This perspective is here illustrated with reference to OECD Sundqvist report in the following way:

"It puts the emphasis on technology as a social process which, 'by meeting real or imagined needs changes those needs just as it is changed by them. Society, in this view, is shaped by technical change, and technical change is shaped by society.'"
(Information Society Report, p17)

The focus of this endogenous view of technology indeed seems to lie in the very idea of the "information society", yet it tends to be sequestered away in theoretical reports and overlooked by the general discussion. One of the merits of this report is that it provocatively spells out certain implications of this view for information technologies. One of this expert-group's points of departure is the commonly used simile, which in the Communication on "Europe's way to the Information Society: An action plan" is framed in this way:

"A 'digital revolution' is triggering structural changes comparable to last century's industrial revolution with the corresponding high economic stakes. The process cannot be stopped and will lead eventually to a knowledge-based economy."
(Information Society Report, p 1)

The expert group indicates that in fact there are fundamental differences between the growth associated with other highly visible technology clusters such as the railway and the car, and the present 'evolution'. The key point involves what "complementary asset" the technology-set needs to develop. In the case of the railway, knock-on investments to intermediate goods (for ex. steel and machinery) in turn prompted an upsurge in demand for these physical goods, which contributed to overall growth in the economy. In contrast, there is very little knock-on benefit in terms of increased intermediate demand for "physical, material goods and capital equipment" for information technologies. The key complementary asset simply does not reside in intermediate goods (e.g. plastics for building computers, iron oxide for semiconductors). As the expert-group observes,

"despite the major capital investment required for some of these products (e.g. semiconductors) material, physical capital accumulation is no longer the essential

‘complementary asset’ of these sets of new technologies. Rather since the knowledge on how to use information typically depends on individual skills and ... ‘tacit’ knowledge, the new complementary asset to the growth and use of new ICTs is investment in intangible, human capital.” (Information Society Report, p 17)

It is therefore not only important that Europeans are not alienated by the idea of an information society, it is essential that they are integrated into it and develop the skills to interact within it. Their role is much larger than that of a one-time consumer.

Another point that gets lost amidst the rhetoric of an information society or even a ‘knowledge based economy’ is that there are huge differences between data and information, information and knowledge, knowledge and wisdom. The point about the economic behaviour of information which is fundamentally different to that of capital goods, is that whereas the economics of the latter is concerned with solving problems of scarcity, the economics of the latter introduces problems of overabundance (i.e. of information). Managing this overabundance requires knowledge, which again places a premium on the complementary asset inherent in the skills of users. The expert-group pulls the jargon surrounding the information society into focus by observing that the ultimate goal should not be an information society, nor yet a knowledge-based society but alas a ‘*wise society*’. The point is that one has the opportunity to choose the type of society one wants from a multitude of ‘information societies’; it is not a one-off question of catching the boat like a refugee.

3.3.4. Policy challenges

The expert group argues that the question of the information society is at base a question of a ‘learning society’. Given that the complementary asset for ICT is not physical goods, and that value creation in ICT involves the development of human capital on the demand side, the group focuses on investing in this capital. Here it identifies a major problem and perhaps the greatest challenge facing policy-makers. The problem is that the incentive to invest in learning in order to create this capital is negative. Three reasons for this are mentioned.

- ◆ The first is demographic. Comparing the rate of knowledge turnover in the ICT field and that of employment turnover in Europe, one finds that there is a great discrepancy. The workforce in Europe is old, employment turnover is about 2%, which means that relying on next generations to keep up with the new knowledge will take time.

- ◆ The second involves the dynamics of today's labor-markets. The fact that employees remain in the same job for shorter periods of time means that there is little incentive for firms to invest in human-capital in the present generation of the workforce.
- ◆ Upgrading skills is then left up to the public educational system. There are barriers to investment in education because of budgetary-constraints (especially EMU criteria) that effectively disallow increased investment into education.

A key implication is the need to consider how to stimulate knowledge creation and the acquisition of skills. Here there is a role for policy makers. But what are the choices? The expert-group makes several suggestions. Three central policy proposals were proposed to the Commission:

The first is to use public service as an engine for growth. The idea is that the public sector should not, as it has in the past, try to push Europe into the Information Age. The expert-group makes clear that Europe has not been able to capitalise on elasticities generated by ICT by promoting production of ICT equipment. They suggest another approach. The group recommends that governments should try to influence the demand of ICT services by actively promoting an array of public services at all levels on the net: these include information services, tax information/services, census, car-registration etc.³⁰ These public services would become the 'killer applications' that would both create demand (plus generate spin-offs) and get people actively interested in ICT. It would also generate knowledge production.

A second recommendation introduces the idea of University/College Degree with a maintenance contract. The suggestion involves follow-up courses by which one's degree would be updated say every three years. Universities would be made responsible not only for the granting of a degree. After three years the graduate would return for a course to update one's theoretical knowledge and/or skills.

A third recommendation which has since been blacklisted is the 'Bit-tax' idea. The bit tax is intended to address the problem of budgetary constraints. The premise is that the tax-base is shifting, and that production/ distribution/ consumption are becoming increasing indivisible and untaxable as a function of the Information

³⁰ It is interesting that on his recent visit to Sweden, Bill Gates wondered why Scandinavian governments were not better at promoting exactly this sort of service.

Economy. A 'bit tax' would be levied on the transmission of information by volume and this revenue would be plowed into the educational system. This particular policy-recommendation however was dropped from the agenda of the final report amidst tremendous popular and political pressure. The Commission is careful to note that the idea of taxing the net is not on its agenda.

3.3.5. Concluding comments

Again, without taking a position on the individual recommendations, we look at the way this document analyses technology and promotes the role of the regulatory agency. We have reviewed these issues fairly closely above. We observed first that this policy report is unique within the European IT-discussion; it explicitly criticizes the current of technology determinism flowing through it and identifies that the dominant deterministic perspective as a major problem. Further, we observed how this document takes seriously the relationship between society and technology, how it analyses the economic and social dimensions at stake and how it identifies policy challenges that have thus far been downplayed or overlooked by the current discussion. Finally, we surveyed several of this document's policy recommendations. On this basis we reach the conclusion that this is the most interesting and forward-looking of the documents we have surveyed.

3.4. Globalisation: Global Information Networks

3.4.1. The Policy Context

In this last section on the EU, we survey a third perspective which is characteristic of the recent IT-discussion in Europe. This perspective attempts to take the focus which Bangemann et al. directed at the European-dimension (Europe's Way into the Information Society) and raise it onto a 'global' plane. We examine two related documents in this globalization context.

- Global Information Networks - Realising the potential. Theme-paper. The Bonn-Conference, July 1997. Bangemann & Rexrodt;
- Ministerial Declaration: Global Information Networks. July, 1997

The first is a policy-report which is unlike the ones we have thus far seen in that it was not formally instigated, neither by the Commission nor a member state government. Instead it is a position paper forwarded and signed by two individuals,

M. Bangemann (Commission) and G. Rexrodt (Federal Minister of Economics, Germany), after having received comments from participant countries in advance of the conference. This document formed the centrepiece of the conference of the same name that took place in 1997. This document apparently set the agenda for the conference and exerted a strong influence over its conclusions. The second document is a formal document that represents the common-declaration of European ministers on the subject of Global Information Networks. In addition to this Bonn-Conference, other documents indicating a certain shift in this direction include the G-7 Core Principles paper and Com (98) 50 DG XIII: *The need for Strengthened International Coordination*.³¹

The Bangemann/Rexrodt theme paper continues in the spirit of the Bangemann-report from 1994 in that it is mostly concerned with setting a common regulatory framework in order to promote the development of markets for IT-based services. The introduction emphasises especially multimedia in terms of creating new employment and electronic commerce, and because “it will also have a considerable impact on Europe’s competitiveness on world markets.” (Theme Paper, p. 1) In certain passages it is as if the promise of the Information Society has already been delivered:

“The rapid and coherent development of the Information Society *has become* essential to nations’ competitiveness, employment and living standards. (Yet) Europe must realise the full potential” (Theme Paper, p 1. Emphasis added)

However, the focus of this Bangemann-report is to seize new opportunities. Where the Bangemann report from 1994 argued for Tele-liberalisation, he and Rexrodt argue that we are now in a post liberalised market, characterised by a shift “from infrastructure to the creation and transmission of content as well as to the development of value-added services.” (Theme Paper, p 3) On one level, it should be noted, they are still arguing for infrastructure, if the regulatory frameworks connected to Intellectual Property Rights and other standards and norms for domain names (DNS) or operation connected to e-commerce can be called infrastructure. Be that as it may, the argument is, as in 1994, about “enabling the market” especially by

³¹ Note associated governments of Europe, as well as countries of central and eastern Europe are also represented.

ensuring that the technical interconnection of networks are not derailed by the unwillingness to find common rules of the road, now at the global level. Objectives here involve "Creating a favourable environment for electronic commerce", or "Making the most of content-resources".

Although much of the discussion is still about enabling cross-border flows of data, a certain degree of the Social-Intergrationalist vision is incorporated into this document. The Bangemann/Rexrodt paper highlights "building confidence" among society in a tone that is much user-friendlier than the Competition Communication we looked at above. The view of the societal side of technology remains however essentially pragmatic and involves making society feel less threatened by questions of data-theft, security or confidentiality. Further, a section is dedicated to "empowering the user" in which issues connected to education and equality are raised. In a section entitled "enabling participation by all", there is clear reference to the expert-group behind the Information Society Report reviewed above, though the issues of user-friendliness and improved education (here called 'digital literacy') are not seen as fundamental questions but something to be fixed by certain adjustments. No new role for the regulatory is foreseen on this front. On the question of the regulatory role, this document, "aims to concentrate attention on those areas where the development of the Global Information Networks might benefit from constructive and *enlightened* use of the powers of government. It aims to give *due weight* to the *legitimate interests* of industry and of users" (emphasis added).

The Ministerial Declaration, a highly political document, gives prominence to the idea of "An Opportunity for All". Like the Bangemann-Rexrodt report, it endorses the idea of "empowering the user" and seeks to "stimulate developments in the educational system and in professional training systems so that information... is exploited as part of the learning process at all levels, from primary to post-graduate, as well as for lifelong learning." (p. 7) This might raise hopes that the regulatory level had started to adopt a more 'social-Intergrationalist' perspective. However, there is more ample support to the contrary: namely that the Council of Ministers continues to cling to the technological deterministic position. Indeed, the question of education is not among the roles these representatives of government see for

government. The role they define for themselves in this document involves a traditional mix of 'providing the framework' and 'stimulating new services'.

In their view of technology, the language is likewise reminiscent of the 'catching the boat' urgency we met above. Indicative of this current is the statement that the Ministers, "consider that opportunities offered by Global Information Networks must be seized most energetically and speedily in order to reap the benefits in terms of competitiveness, growth and employment." (p. 1) We note the resemblance of the title of the White Paper from 1993 on Growth, Competitiveness and Employment, and remark that the only visible change seems to be the promotion of the position of "competitiveness".

3.5. Characteristics of the EU-discussion

We have surveyed the recent IT-discussion of information technology in Europe through a number of key documents associated with the EU. In the section above, we examined 4 key documents that serve to illustrate three major perspectives dominating this discussion. These were the "Technological Determinism" position, the "Social Intergrationalist" position and the "Globalising-Networks" position. In our work it became clear that the first position represents the original position of the Commission on matters concerning information technology. We have tried to emphasise how this position has expressed itself in mainly demand-side industrial-policy measures, which until recently have been deaf to supply-side measures. The way technology is perceived is important in that it influences the way markets are conceived and thus how recommendations are framed. This position underplays the role of society in the information society it itself advocates, limits its own role and arguably overlooks the key challenges.

Though it has been thoroughly criticised in the theoretical literature, the position we have seen allied to technology-push sector policies seems to perpetuate itself. The spirit remains very much alive in the Globalising-Networks position. However, in focusing on perpetuating information and communication technologies into the rest of the world, the perspective moves towards promoting conditions that will stimulate use of services. Particularly, the policy discussion promotes electronic commerce and the vaguely defined area of multimedia, in the latter case particularly linking

increased access and use to increased European employment. In this sense, there is a move towards a more supply-side orientation. In this sense, the policy discussion seems to have paid heed to the criticism noted above that there was a need to shift, “towards demand and the overall conditions within which technological capabilities can be further enhanced.” (Freeman & Soete. 1991: cited above) Despite the drift in this direction, however, the focus here seems to be more on creating external markets for European products and less on creating an dynamic interaction in Europe through which technological capabilities might develop according to learning feedbacks.

Such concerns are addressed in the last position we considered, that advocating a Social Intergrationalist perspective. The Building the European Information Society for us all report which puts forward this position is far and away the most interesting document in the European and arguably the IT-discussion at large. This perspective goes explores the worn idea of the Information Society in order to spell out what a serious treatment of the relationship between technology and society might entail. Further, it takes the IT-discussion beyond widespread metaphors of IT as the ‘Third Industrial Revolution’ in its analysis characteristics of IT and their implications on policy.

Chapter 4: The US information and communication technology policy debate

We're headed into the "digital age" of high-speed networks and information on demand. Multimedia, microchips, and megabits will change how we live, learn, work, and play. But despite all the press coverage, the public debate has yet to offer the context or perspective we need to understand what's at stake and how we can build these new tools in the public interest. The networks of the digital age will take their shape from the institutions that build them. But they will also be defined by the users who make demands on them. By the policymakers that set the rules for them. And by the citizens who see what's at stake -- and act on it.³²

4.1. Introduction

In this chapter we deal with the US debate on information- and communication technology. As in the analysis of Norwegian and the European policy debate, we will try to answer two main questions: We first ask: Is the policy debate marked by a concern with perceived and projected *consequences*, but with a lack of interest in, or willingness to discuss more fundamental questions concerning the mechanisms that generate new technology and the selection processes which decide between technological alternatives and development directions? Is *progress* taken for granted, and changes implicitly (or explicitly) assumed to be necessary and/or predetermined, and to be something else than a product of social actions among members of society; a result of impersonal powers such as market forces, or as a result of a development logic built into science itself? To what extent do arguments reflect an understanding of the fact that technology development is a human and social product and an expression of political will and strategies? Secondly, we ask to what extent the debate reflects that policy makers (and others having a voice in the US information- and communication technology policy debate) rely on the so-called *linear model* in their thinking about science, technology and society. Post-World War II policy rhetoric has tended to assume and imply a one-way sequential development path from basic scientific research to commercial applications of technology. In contrast to this image, modern studies of science, technology and society show that innovation happens in a social context: Innovation presupposes that agents take part in an interactive process. Although there are significant functional distinctions to be made between scientists and employees in commercial firms, there are important complementarities and reciprocities which are crucial for the success of the activities

both in science, applied technology and in commercial business. To what extent does the US policy discussion incorporate an adequate understanding of such issues?

Developing the argument, we have been fortunate to be able to draw on earlier analytical work.³³ However, we have first and foremost based our analysis on primary sources, of which a considerable amount is available on the Internet.

4.2. Overview

There is a striking paradox in the post war attitude to science, technology and commercial activities in the US. One the one hand, liberal economic ideas have had great influence, and the legitimacy of state involvement in the economy has been very limited. There has been room for a *science policy*, but very little room for a *technology policy*: The ruling ideology being that science is (or should be) a pure, spiritual activity, kept securely apart from business and the impure realm of *mammon* (with *technology* being the bridge between them), the legitimate role of Government had to be to support basic science in all its forms, but not to interfere with commercial exploitation of the scientific end-products. On the other hand, there is absolutely no doubt that the US leadership in information- and communication technology has been created in an interplay between private and public institutions. To a large extent, key developments were pushed ahead in a collaborative effort under the umbrella of the *Cold War*, legitimised by national security needs. Thus, there *has* been an effective technology policy – but carried out mainly in a military and security policy context.³⁴

After some scattered technology policy initiatives during the 1980s, there appears to have occurred a significant shift in policy making as the Cold War petered out. In 1990 president Bush presented the first draft of an overall US Technology Policy. The Congress passed the High Performance Computing Act, which launched the High Performance Computing and Communications Initiative (HPCCII). And as Clinton entered the White House in January 1993, an already active technology

³² *What's at stake?* The Benton Foundation 1996. (<http://www.benton.org/library/stake/brief.html>)

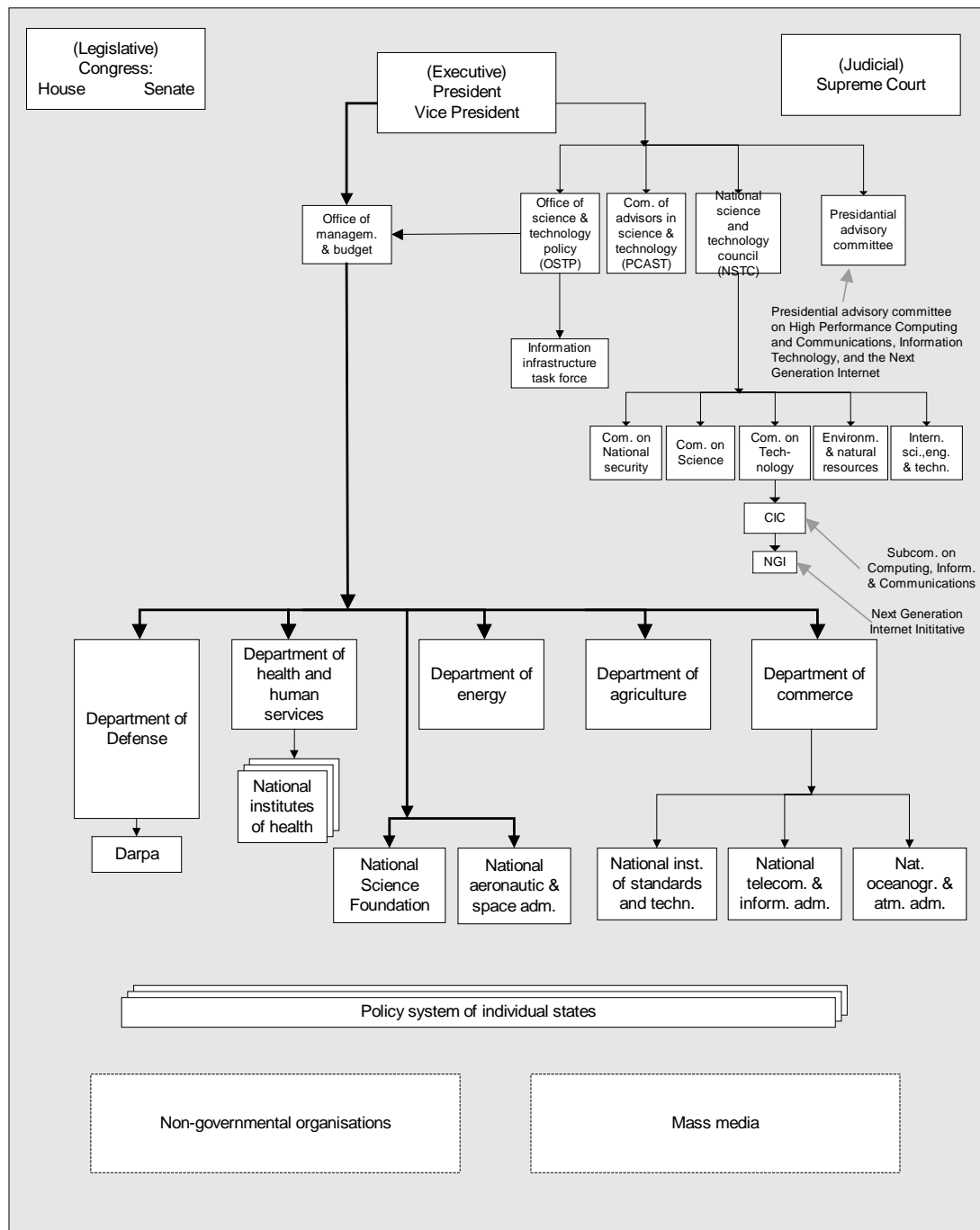
³³ For example Anders Hellebust: *Utvikling av informasjonssamfunn: visjoner, politikk og reell utvikling i USA, Japan og EU. Rapport 34/97.* Oslo: Telenor FoU.

³⁴ Among the first to point out this Janus face in US post-war economic history was Merrit Roe Smith – see Roe Smith (ed.) 1985.

policy debate was institutionalised on the highest level of the executive branch of US government, and focus was turned even more decisively towards information- and communication technology issues.

To be ease orientation in the debate during the following years, we have drawn up a sketch of the American policy system in figure 4.1.

Figure 4.1: Key institutions in the US information- and communication technology policy system



The American policy system is large and complex, and the IT policy discussion has been similarly extensive and multifaceted. Box 4.1 lists a number of the central written contributions to the debate, some of the legislation initiatives, and some of the new institutions that have been created. In the ensuing text we present some of the stakeholders in the debate, and we make an effort synthesise main lines of argument presented in certain of the most interesting documents.

Box 4.1: Some reference points in the US information- and communication technology policy landscape

POLICY DOCUMENTS

- Technology: The engine of economic growth. A National Technology Policy for America. Clinton/Gore Campaign Document (1992).
- Technology for America's economic growth. A new direction to build economic strength. White House Press Release (1993). (<http://library.white-house.gov>)
- The National Information Infrastructure: Agenda for action. (1993)
- Realising the Information Future. The internet and beyond. Computer Science and Telecommunications Board, National Research Council (1994).
- The national information infrastructure: A revolution for the millennium. Dr. A. Prabhakar, director of the National Institute of Standards and Technology: Remarks (1995). <http://www.nist.gov/speeches/oct95/mayo.htm>
- The NII – An Administrative Perspective. Michael Nelson, White House Office of Science and Technology Policy. Speech at the Workshop on Advanced Digital Video in the National Information Infrastructure. (<http://www.eeel.nist.gov/advnii/nelson.htm>)
- A framework for global electronic commerce. William Clinton & Albert Gore Jr. (1997) (<http://www.iitf.nist.gov/elecomm/ecom.htm>)
- "Opportunities for optimism." Larry Irving³⁵. Remarks at the 15th Annual FCBA/PLI36 conference on telecommunications policy and regulations (1997). <http://www.ntia.doc.gov/ntiahome/speeches/121297pli.htm>
- The emerging digital economy. Lynn Margherio et. al. U.S. Department of Commerce, Secretariat on Electronic Commerce (1998) (<http://www.ecommerce.gov>)
- Next Generation Internet. Implementation plan. National Coordination Office for Computing, Information and Communications (1998) (<http://www.ccic.gov>)
- *Past and prologue: Why I am optimistic about the future.* Remarks by congressman George E. Brown, Jr. at the American Association for the Advancement of Science's Colloquium on Science and Technology Policy, Washington DC (1998).

INITIATIVES, TASK FORCES AND PROGRAMMES

- High Performance Computing and Communications Initiative (1990)
- National Information Infrastructure (1993)
- The Information Infrastructure Taskforce (1993-1996)
- Global Information Infrastructure
- Next Generation Internet Initiative (1996)

LEGISLATION

- The Telecommunications Act (1996)
- The High Performance Computing Act (1991)
- The Internet Tax Freedom Act
- The Electronic Commerce Enhancement Act
- The Digital Signature and Electronic Authentication Law
- The Electronic Financial Services Efficiency Act
- The Next Generation Internet Act
- Communications Privacy and Consumer Empowerment Act

MONOGRAPHS

- Bill Gates: The road ahead (1995)

³⁵ Larry Irving is Assistant Secretary for Communications and Information of the Department of Commerce. He also chairs the committee on Telecommunications Policy under the Information Infrastructure Task Force. (Data from July 1996.) Confer: <http://www.iitf.nist.gov/committee.html>

³⁶ Federal Communications Bar Association and the Practising Law Institute.

4.3. The information- and communication technology industry

In spite of the active US Government approach during the 1990s, there is no doubt that the main driving force in the development towards *information society* (or the *digital economy* – or whatever other term is used to depict a society in which digital electronics technologies have been widely diffused) is the information- and communication technology industry itself. This is an important industry in the US:

- ◆ It generated 6,2 percent of the US gross national product in 1996, growing from 5,4 percent in 1990, and was the biggest US industry measured in revenues as well as in number of employees.
- ◆ Turnover grew almost 60 percent between 1990 and 1996. Within software and some other segments the growth rates were approximately the double of this. Revenues in the communications services grew 43 percent, from 187 billion dollars to 267 billion between 1990 and 1996.
- ◆ Communications services industry employment has grown steadily since 1993 and reached 1.1 million in 1996. The software and computer-related services industry created more than 450.000 new jobs between 1990 and 1996, a 58 percent jump from 780.000 to 1.2 million.
- ◆ The information- and communication technology industry was also leading as investors in R&D, and it was the leading export industry, selling for about 150 billion US dollars abroad in 1996. American information- and communication technology industry was also leading in terms of investments abroad.³⁷

The industry has many leaders and advocates which are highly visible and respected citizens. It is clearly not surprising that these people are the most technology optimistic among the knowledgeable people having a voice in the information and communication technology policy debate. Considering their active role in creating and promoting new technology, it might be a bit more surprising that the industry leaders also appear to be the only participants in the debate that voice arguments that it would appear reasonable to label as *technology deterministic*. In Microsoft boss Bill Gates' book *The road ahead* from 1995³⁸ we can read that:

One thing is clear: We don't have the option of turning away from the future. No one gets to vote on whether technology is going to change our lives. No one can stop productive change in the long run because the marketplace inexorably embraces it.

³⁷ The numbers are from "Opportunities for optimism." Remarks by Larry Irving to the 15th Annual FCBA/PLI conference on telecommunications policy and regulations (<http://www.ntia.doc.gov/ntiahome/speeches/121297pli.htm>) and from Newsletter 14/98 from Tore Li, Science Counsel at the Norwegian Embassy in Washington.

³⁸ The original edition of this book held the top position on the New York Times Best-seller List for seven weeks in 1995 and was published in more than twenty languages. The book was widely reviewed, in newspapers, as well as in the large number of specialised information- and communication technology publications.

... I believe that because progress will come no matter what, we need to make the best of it – not to try to forestall it.³⁹

What does this type of *determinism* consist in? Crudely speaking, mainly in two things, we believe:

First, that Gates knows from the inside the strong momentum that there is in the information and communication technology business itself, and that he is a true believer in the efficacy and efficiency of the products that his firm – and the industry in general – is creating. In effect, he is convinced that all rational individuals and firms will want to use the new information and communication technology tools that are becoming available, and thus, it is unimaginable that any conservative force can be strong enough stop the development towards a *digital economy* and *information society*.

Second, Gates obviously is aware of the fact that it is in his and his company's interest that everyone believes in the "inexorability" of the diffusion of digital technologies. His description is as much a *prescription* as it is a prognosis. The kind of determinism we find in his argumentation may very well be a clever marketing effort – an attempt to make what Merton called the *self-fulfilling prophecy*.

The fundamental premise in Gates' book is that the marriage of computing and telecommunications, of computers and the Internet, will revolutionise social life and transform modern economies. And they will do so, he claims, because they are superior tools – superior in terms of *effectiveness and efficiency*. However, there is a telling truism underlying the reasoning: "Superior technologies win in the marketplace, and they way to know they are superior is to see that they win in the marketplace."

In reality, very few knowledgeable people today believe that it is possible to find *objective technical measures* to rate *qualitatively different* technologies as superior or inferior. And even if such measures in some cases can be agreed upon, there is certainly no guarantee that technical superiority would make a technology win in the marketplace. Hence, although the US debate seems to convey a consensus that the

³⁹ Gates 1996; page 11.

development towards information technology has a fundamental and sound techno-economic rationale, it is quite possible that many tacitly share the understanding that this is a justification, and not the reason for the development. *Although* there might be a valid techno-economic rationale for the development of *information society*, the eventual success of this development will be the result of conscientious efforts and intense struggles, and it is far from the result of simple human rationality and a built-in logic of history. As Gates himself displays an acute awareness of, this success would rely not least on the ability to influence people's minds about what is happening and what should be happening.

In reality, the information and communication technology industry is both following popular sentiment (to the extent that consumers and businesses chooses whether to buy a product or not), and at the same time leading the way, working hard to shape ideas and habits in the daily life of people. (Gates' book is an expression of exactly this type of effort.) That microelectronics is a generic technology which can be put to beneficial use in business and in most people's daily life is no longer a vision only in the minds of engineers. We are all confronted with the potential of microelectronics and information- and communication technologies. We have adopted cellular phones, computers are diffusing into homes and schools, and software games are crowding out television (and more) from our everyday lives. We can actually see from one product generation to the next how the size of electronic devices is shrinking, and how their capabilities are becoming ever stronger. Thus, even if it might well be that information- and communication technology as such is *hyped* – that it is less important in economic terms and less revolutionary in social and cultural terms than industry pundits claim, there can be little doubt that *popular opinion* has accepted the notion of a digital revolution, and the notion that modern societies are transforming into *information societies* or *post-industrial societies*. In other words: The cost-saving effects of the new technology might be unclear, and the cultural benefit in moving into digital media might be doubtful, but popular opinion has endorsed the concept of a revolution. And here the so-called Thomas Theorem applies to the full: *If a social phenomenon is accepted as real – then it is real in its consequences.*

4.4. The US congress⁴⁰

The most significant change in information and communication technology legislation during the 1990s is no doubt the radical changes in the rules and regulations for telecommunications. The Telecommunications Act of 1996 law was designed to provide for a pro-competitive, de-regulatory national policy framework. While earlier regulation accepted local telecommunications monopolies, but reduced the power of network operators to make monopoly profits, the new legislation aimed at opening up the whole telecommunication market for competition. In order to accelerate private sector deployment of advanced telecommunications and information technologies telecommunications markets were opened to competition. The idea was that with the new information and communication technologies taking shape, private interests would find it appealing to make huge investments in developing large scale, high capacity networks.

There appears to be a very broad consensus that new technologies are making deregulation unavoidable. Existing telecommunication regulations were developed basically for standard telephone equipment. New digital technologies changes completely the subject matter of the legislation. Existing telecommunication monopolies tended to limit innovation by (1) imposing high prices on leased lines and on local exchange services used by online service providers, by (2) obstructing interconnection between networks, blaming “incompatibilities” or “absence of need for other provider”, by (3) limiting users possibility to attach devices to networks, and finally by (4) claiming that internet traffic is comparable to broadcasting, and should be subjected to the same type of legislation and regulation as is broadcasting.

In the framework of the World Trade Organisation, an agreement was concluded that will (1) promote privatisation of government controlled telecommunication companies, (2) promote and preserve competition in telecommunications markets, ensuring interconnection at fair prices, opening markets to foreign investment, and enforcing anti-trust safeguards, (3) guaranteeing open access to networks on a non-discriminatory basis, and (4) implementing, by an independent regulator, pro-competitive and flexible regulation that keeps pace with technological development.

⁴⁰ The US congress has built out advanced open information systems in the form of web-sites on the Internet. However, it is difficult to get a satisfactory overview, and to distinguish between rhetoric and

In line with this, the Telecommunications Act, as well as additional bills, resolutions and comments from the 104th and 105th congresses (1996-1998) that we have screened, seem to indicate that the politicians in the congress substantially aim at facilitating the efforts of private business enterprises to develop the “emerging digital economy”. Judging from the political rhetoric the key issues as perceived by the politicians appear to be:

- Threats to privacy
- Security issues
- Harmful or inappropriate content
- Uneven access to information – increased social differences between the haves and the have-nots
- Intellectual property rights
- Human resources – lack of competent people in the growing industry, and in addition far-reaching de-skilling and possible unemployment in other industries (not least due to an expected strong growth in electronic commerce)
- A long range of technical issues related to the effective functioning of the national (and increasingly global) information infrastructure

There is currently a significant effort being done to build a regulatory framework promoting the unfettered growth of *electronic commerce*. Among acts and bills currently in the legislative process are the *Internet Tax Freedom Act*, the *Electronic Commerce Enhancement Act*, the *Digital Signature and Electronic Authentication Law*, the *Electronic Financial Services Efficiency Act* and the *Next Generation Internet Act*.⁴¹

The legislative efforts reflect that politicians on Capitol Hill share the conviction of the information and communication technology industry leaders that there is a very strong rationale for the development of the digital economy, and that it is an important responsibility for legislators to make sure the efforts of businesses are not done in vain. Judging from testimonies and from text in bills, declarations and laws, this has very little if anything to do with “technological determinism”. The legislators seem to be well aware that new electronics technologies are being actively developed in a constellation of organisations from business, government and academia that shared a strong interest in the success of these technologies. Furthermore, legislators are *technology optimists*, at least in the limited sense that they think it is important

the real content of policies. This should be kept in mind when reading the present paragraph.

⁴¹ See <http://thomas.loc.gov/> for information on legislation and the legislative process in the U.S.

that the information- and communication technology industry continues to grow, to create new jobs and to secure continued US technological leadership. Although it is hard to judge what is real convictions behind the declarations of the public statements, it also appears that many Congressmen are *technology optimists* in a deeper sense. Many appear to believe in the positive potential of *information society* – in what it can bring of individual empowerment and enrichment of culture and social life.

4.5. The White House and the Clinton Administration

Under Clinton, the whole administration, and in particular the office of the Vice President, has paid a lot of attention to the significance of information and communication technologies and related public policies. Clinton from the outset of his campaign argued that Government has a specifically significant role to play, since the development of information- and communication technology is a systems building effort, where the development of infrastructure, standards etc. is crucial. After entering office, Clinton actively has used the *Office of Science and Technology Policy* (OTP) to formulate policies which promote and modulate the development of information and communication technologies. OTP's explicit mission is to work with the private sector to develop and advocate national policies that maximise technology's contribution to US economic growth, the creation of high-wage jobs, and improvements in the quality of life.

This reflects one of the central policy concerns of the Clinton administration, namely the potentially negative effects of the end of the *Cold War* on the dynamism and the coherence of the US innovation system. A key document where this concern is voiced is the White House Press Release *Technology for America's economic growth* from 1993.⁴² In this document President Clinton and Vice President Gore argued that closer interaction ought to be established between federal and state institutions and business firms, in order to foster the development new products, compatible with the social and economic needs that were emerging after the dawn of the cold war. They use an explicit systems-rationale in order to argue the need for public policy engagement in the process that one believes and wishes will take place: From the 19th

⁴² <http://library.whitehouse.gov/>

century Government had to invest in and regulate railroad infrastructure development. Invest, because of the enormous costs and because of the long-term perspective for gaining profit from such investments. Regulate, because private initiative led to a plethora of systems characteristics which made systems incompatibilities the rule and not the exception. Today, Government is needed to help building the information infrastructure for the new era. *Especially in the open and competitive framework of the new telecommunications legislation, Government and private business have to work together in an interactive process in order to realise the promises of the emerging information society, and in order for the industry and the infrastructure not to become fragmented into a host of incompatible products, technologies and networks.* Government has a dual obligation:

- First, to strive to develop regulations and standards compatible with the rapid expansion of the new technology.
- Second, to *join forces with private industry* to add momentum and influence the direction of the developments already under way.

During the Cold War a significant part of the crucial interaction (between industrial interests, scientific research and government institutions) took place within a military-industrial set-up where the Pentagon and military interests ruled and the general fundament for legitimacy was national security needs.⁴³ Clinton and Gore argued the need to extend this kind of cooperation, and to bring it out of the military sphere and into the core of the civilian economy and to the heart of policy making aiming at satisfying the needs of the American people.

Drawing up this kind of perspective, Clinton and Gore found that information- and communication technology takes on an added significance. This is the crucial *enabling technology* which facilitates in a new and radical way systems building on the innovation process level. *Modern information- and communication technology binds actors together across institutional and geographical boundaries.* Thus, information and communication technology can come to make up for the loss of the institutional integration that had been such a pregnant side effect of the Cold War effort.

⁴³ Roe Smith, *op.cit.*

Assistant Secretary Larry Irving of the National Telecommunications and Information Administration of the US Department of Commerce touched upon this effect of information and communication technology in a speech held December 12, 1997:

“... [The new] advanced technologies ... are about people – how to harness ... technologies and use them to communicate better with family, colleagues, and business partners; to revitalise our communities; to improve our children’s education; and to enhance the way we receive medical services. These technologies are powerful and empowering. ... It all comes down to this: connecting communities, uniting people.”⁴⁴

Clearly, the Clinton administration has not sidestepped the opportunity to make grand claims about the social and economic significance of information- and communication technology. Mr. Arati Prabhakar, president of the National Institute of Standards and Technology, in a speech he held October 4, 1995 argued that the proposed *National Information Infrastructure* would be “the Revolution of the Millennium”.⁴⁵ Also, in the document *A framework for global electronic commerce* Clinton and Gore stated that

“We are on the verge of a revolution that is just as profound as the change in the economy that came with the industrial revolution. Soon electronic networks will allow people to transcend the barriers of time and distance and take advantage of global markets and business opportunities not even imaginable today, opening up a new world of economic possibility and progress.

....

Internet has emerged as an appliance of every day life, accessible from almost every point on the planet. Students across the world are discovering vast treasure troves of data via the World Wide Web. Doctors are utilising telemedicine to administer off-site diagnoses to patients in need. Citizens of many nations are finding additional outlets for personal and political expression. The Internet is being used to reinvent government and reshape our lives and our communities in the process.”⁴⁶

These quotes echo in a remarkable way the enthusiastic claims made by Microsoft’s Bill Gates two years earlier (in his 1995 book).

⁴⁴ 15th Annual FCBA/PLI conference on telecommunications policy and regulations. “Opportunities for optimism.” Remarks by Larry Irving. <http://www.ntia.doc.gov/ntiahome/speeches/121297pli.htm>.

⁴⁵ Dr. Arati Prabhakar: Remarks. The national information infrastructure: A revolution for the millennium. <http://www.nist.gov/speeches/oct95/mayo.htm>

⁴⁶ William Clinton and Albert Gore Jr.: *A framework for global electronic commerce*; <http://www.iitf.nist.gov/electcomm/ecom.htm>

4.6. IT policy debate on the level of individual states

One of the key issues the Clinton administration has had to face is extensive criticism of government inefficiencies and opposition to reintroducing the state bureaucracy as an active partner in business operations. Clinton has had to emphasise that Government is supposed first and foremost to function as a catalyst, and not as a stakeholder in business as such. Clinton has been tactically smart, however, in coupling up his wish for active government in the development of information and communication technology, with initiatives to develop *revolutionary applications* aiming exactly at improving the everyday running of government affairs. Clinton has argued that information and communication technology is pertinent in order to succeed in his widely publicised effort to Reinvent Government.

According to a recent OECD study,⁴⁷ the IT policy debate at the state level in the US has reflected this approach to policy on the federal level. It has to a large extent been focusing on internal aspects of the state government. There have been growing demands for improved organisational performance, higher levels of accountability, and for local government to take advantage of the changes happening in information management and communication technology to create more effective management of information resources and through this to create improved state welfare.

Among key issues that have been debated are the following:

- ◆ Co-ordination of information resources management among and between agencies, planning and budgeting relationships and inter-system communication, in order to increase the efficiency and effectiveness of local government.
- ◆ Strengthening the role of state governments as policymakers for science- and technology in general.
- ◆ State governments acting as change agents; encouraging innovation and building public/private co-operative partnerships in science, education and industry, in order – for example – to promote development of advanced manufacturing technologies, geographic information systems etc.
- ◆ Development of state level legislation for information access as well as concomitant legislation concerning privacy, data security and computer crime.

As the federal government has used deregulation as a means to reduce bureaucratic inefficiencies and to increase market competition, also state level involvement in regulatory reform has increased and local governments have taken a more proactive

⁴⁷ *Information technology policies: Organisational structure in member countries*. Paris: OECD 1995.

role with respect to strategic, state-wide planning. State level public policies for information- and communication technology is a sign of a general realignment of government's roles and responsibilities which has happened over the last years, and which has given government a bigger say in service delivery, regulation enforcement and policy formulation.⁴⁸

4.7. Conclusion

As we have seen, people from the Clinton administration has been as up-beat about the impact of information technology on the economy, on government and on social life in general as has the representatives of the industry themselves. Some work has been done on documenting the rapid growth of the information and communication technology industry. But, in spite of many attempts, it has not been possible to prove with statistics that information and communication technology actually is bringing productivity gains to business.⁴⁹ Furthermore, we have not found any real analysis substantiating the many grand claims about the wonders of a future information society. The ideological claims about the empowering and democracy enhancing effects of the diffusion of information- and communication technology appears to be no more than hopeful expectations. Many important questions remain unanswered:

- ◆ Will a development towards electronic communication and electronic trade create more workplaces that it will eradicate?
- ◆ Will the use of electronic communication tools really pull people closer together? To use Durkheimian concepts, will such technologies increase integration and decrease anomie, or is it the other way around?
- ◆ Will information- and communication technology increase the freedom of individuals, or will it in reality increase the possibility to *control* individual behaviour?
- ◆ Will the extensive and intensive use of information- and communication technology increase the risk of catastrophic incidents, and make societies more vulnerable faced with war or organised sabotage?
- ◆ Will a commercialised Internet really give the universal access to information that many today believe will come?

While the answer to these questions remain to be found, the leading voices in the policy system, and apparently most other people, are clearly optimistic about the

⁴⁸ *Ibid.*

impact of information- and communication technology on the future society. The suspicion does remain, however, that the most fundamental motivations for promoting the information and communication technology “revolution” is related to the simple and obvious: The spread and use of networked computers and information systems is crucial for the future of American information and communication technology industry itself. This is considered important for two reasons: Information- and communication technology industry itself is among the strongest growing American industries (in terms of revenues, profits as well as employment growth), and is expected to continue to grow for years to come. Information and communication technology is one of the technology areas where the US maintains world leadership, and most Americans are eager to see this lead maintained.

A recent analysis of the importance of technical standards express the logic of the final point succinctly:

“Standards make good sense for industry and consumers. The participants developing a standard have business advantage over outsiders. Standards development, maintenance, and administration have complex and soon-to-be-obsolete business model: Income is mainly from sales of documents, which are about to be spread for free on the internet. ... The Department of Commerce would be a good funding source because the world would adapt US national standards as international standards. US companies and industries would have a business advantage over other international competitors in an international economy because the US was the developer of the standards. In other words ... the US would be able to flood the market in many areas (not just the internet) which would have a huge competitive advantage for US industries. The cost of temporary funding would easily be overshadowed by the increase in US business activity in the world market.”⁵⁰

Reflecting on our initial problem formulation, the four main conclusions of this chapter are the following:

There may well be an element of determinism in the perception of lay people when observing the development of microelectronics technology. The so-called *Moore's Law* – which crudely speaking states that the power of microelectronics components doubles every 18 months – is an example of a regularity that in some people's mind appears as a quasi-natural law. Apart from this, there is little or no determinism in the

⁴⁹ See for example: The emerging digital economy. Lynn Margherio et. al. U.S. Department of Commerce, Secretariat on Electronic Commerce (1998) (<http://www.ecommerce.gov>)

⁵⁰ Frank Farance: *Standards*. White paper available at <http://nii.nist.gov/cat/tp/tpff.html>.

US debate on information and communication technology. Knowledgeable people are well aware that the development in microelectronics is pushed ahead by conscientious commercial efforts and R&D efforts. Thanks to such efforts, a techno-economic potential is presently being realised and the economic benefits harvested. The expected impact on culture and society are perceived as so significant that many talk about this period as a revolutionary period. However, in most cases, the real economic and social impact remains uncertain.

1. The lack of determinism is reflected in the other main feature of the ICT debate in the US: While the linear thinking about science, technology and business has played an important ideological role during the Cold War period, the situation is now that many policy makers (and others) are acutely aware that the development of ICT and the diffusion of new technology is a systemic effort on a societal level. The efforts to develop a national, indeed a global information infrastructure is construed as an interactive collaborative effort where all the main institutions – Business, Government and Academia – have to play important roles.
2. The real lacuna in the US policy debate is in the critical evaluation of what “information society” really will bring. Attention is being paid to negative consequences of the new socio-technical system that is emerging, in that issues such as privacy and protection of children are being discussed. However, with respect to fundamental questions concerning the net effect of information and communication technology on employment, on personal freedom, and on quality of life in general, concern appears to be an exclusive interest of peripheral interest groups. The central policy makers are marked by strong technology optimism. It is not certain whether this is rooted in a perception of an almost *universal consensus* that information society should be happening – so that opposing it is politically impossible and in any case futile –, or if they seriously believe the ICT revolution to be a new industrial revolution, as important as the previous industrial revolution, so that opposing is wrong and as narrow-minded as the efforts of the ludites of 19th century Britain.

The US has been the leading developer of information and communication technology during the whole post World War II period. In many areas, the country continues to be leading the way in science and technology, both in the industrial and in the academic sectors. There is a strong will among Americans to keep this advantage and use the control that it gives over technology to promote American interests and to secure the welfare of Americans.

Chapter 5: The International IT-policy Discussion: OECD

In our last section we focus on a forum for the international discussion that combines various currents in the IT policy discussion in the US, EU and other member states. Further, it combines (or attempts to combine) the political with theoretical discussions. In this respect, the discussion at this international Organization for Economic Coordination and Development can be seen as a hybrid of the international policy discussion and is a good place to conclude our critical survey. We will find that the OECD documents are especially instructive in exploring the role of the government.

5.1. The OECD and the international IT-discussion

The OECD is an international forum in which member governments, including the US and the EU, are integrated into a kind of dialogue for common policy discussions. The expressed purpose of the OECD is to promote policies whose objectives include the achievement of ‘sustainable economic growth, employment and rising standard of living’. Since the Organisation’s inception in 1960, IT-policies have enjoyed a fairly central position in these discussions. In particular the Organization has long addressed the ongoing need for more reliable and comparable cross-country data about Information Technology and the similarly unrelenting need to provide dependable analyses concerning the development of the IT field. This type of information, for which the OECD’s Committee for Information, Computer and Communications Policy (ICCP) has been responsible, is essential to a genuine policy-discussion at the international level.

In this section we focus on two recent ICCP documents on a subject we already have met both in the US and the European discussions: the theme concerns the ‘global information society’. Together these documents attempt to identify common policy challenges and potential solutions - often fairly specific - “that fully exploit the contributions of advances in technology” in a global context. The documents are:

- OECD/ICCP: Global information infrastructure—Global Information Society (GII-GIS): Policy Requirements. (79pp)

- OECD/ICCP: Global information infrastructure—Global Information Society (GII-GIS): Policy Recommendations for Action (19pp)

As their names indicate, these two documents are related. The longer document concerning ‘policy requirements’ is in fact a background document for the considerably more succinct ‘policy recommendations’ document.⁵¹ Together the globalisation documents represent one of a growing list of voices in the international IT discussion that are concerned with integrating national and regional policies at the ‘global level’. We noted above the G-7’s “shared vision of human enrichment” efforts (1995), we noted the EU’s Ministerial Declaration on the Global Information Networks (1997), and we noted the policy discussion in the US concerning the ‘Global Information Infrastructure’. In their input to this discussion the OECD is attempting to use its position as a multinational policy forum to help define common ground, to spell out general and specific challenges and to make policy recommendations.

These documents will be treated together in this section in order to study how information technology is perceived, how general IT-policies are argued for and how the governmental role is conceived. These issues will be treated with reference to other OECD documents, especially the recent Information Technology Outlook 1997 report, which includes a policy survey of Member States (Norway included). Another important document is the OECD’s “Technology, Productivity and Job Creation” report which argues that the OECD economies are undergoing a fundamental change in how they grow.

5.2. Information technology and how the OECD argue for IT-policies

Behind the GII_GIS title lies an ambitious attempt to integrate the principally techno-economic concerns of the infrastructure-policy discussion together with the “societal goals and ambitions” associated with the information society perspective. On the one hand there is the focus on network access, network provision and the propagation of ‘core sets of services’, namely e-commerce and multimedia. The familiar emphasis here is on the stimulation of economic growth and productivity,

⁵¹ These reports were drafted by Dmitri Ypsilanti of the Directorate of Science, Technology and Industry (OECD) and Louisa Gosling (European University Institute, Florence, Italy)

the creation of new economic activities and work. Thus the first part of the title stresses, “the importance in developing global information infrastructures in terms of creating economic activity and jobs”. However, ‘a number of social benefits’ are also attached to information and communication technologies broadly defined. Under the Global Information Society part of the title, the OECD argues IT policies argue for IT policies as a means to realise broader goals. The OECD thus recognises, “the necessity to use these developments to improve societal goals and aspirations.” (Policy Requirements, p. 8) Here the focus is on ‘improved education opportunities, improved health care delivery etc’ and other services that tomorrow’s ‘seamless’ networks can accommodate. In addition there is brief mention supporting ‘cultural and linguistic diversity’.

Unfortunately, the techno-economic and the societal perspectives do not sit comfortably together in the documents, but instead remain separate as the ungainly GII–GIS title indicates. Apparently the schism between the infrastructure perspective and the information society perspective reflects a rift between the differing concerns of the ministers representing the different member states. Whatever the case—and despite the OECD’s insurance that the two perspectives receive equal emphasis—it is clear that the relationship between the techno-economic and the societal concerns is not as ‘seamless’ as the global information networks it prioritises. The main focus is, from its policy implications, clearly on the first.

Let us look more closely at the argument of these documents. In doing so we will find that the ‘social benefits’ are largely integrated in with the economic goals, not to say made synonymous with them. The documents address a, ‘need to review existing policy frameworks to facilitate the transition to an information society.’ (p. 14) The argument behind such a necessity is familiar from the IT-discussion from the late 80s and early 90s. It runs basically as follows: the convergence of previously separate technologies and industries (telematics, computers, broadcasting and other ‘content’ industries is precipitating the need to reappraise older policies. In addition, the increasing tendency of satellite and other technologies to ignore national frontiers not only contributes to the need for ‘reregulation’ but argues that it should occur not at the national but at the international level. In an era in which most if not all of its member states are in the process of liberalising their telecommunications markets,

the OECD is arguing that the current reregulation process should not be nationally but internationally oriented. The premise for this complaint is that, “present communication market structures and policy frameworks in many OECD countries are not yet conducive to support the rapid and efficient development of information infrastructures and multimedia applications or the development of electronic commerce.” (Recommendations, p.19)

Based on this diagnosis, the policy recommendations are concerned with a laundry list of measures to ensure the, “development and integration of high speed communication networks, and a set of core services and applications in digital format, into global integrated networks capable of seamless delivery.”(Recommendations, p. 7) This list includes:

- The availability and diffusion of high-speed interactive infrastructures
- Fair access to and use of infrastructures for both customers and service providers
- The interconnection and interoperability of infrastructures and services;
- Growth and development of multimedia services
- Transaction and information safeguards which ensure privacy, confidentiality of information and security of payments, and protection of intellectual property.

This list is concerned with technological development although the recommendations are not of the technology-push cast. There is however a ‘technology-nudge’ policy here, in the sense that the constant upgrade of technical infrastructure is advocated. Infrastructure in a broader sense is also the objective when the Recommendations argue for international convergence of policy around standard ‘principles’; compatible legal and regulatory platforms for questions concerning privacy, intellectual property, etc are as essential to ‘information superhighways’ as compatible technical platforms. The most remarkable element of this general, mixed list are its relatively specific demand-side objectives directed at encouraging the development of “multimedia services” (which are elsewhere linked directly with OECD jobs).

In this way the OECD recommendations are very much in line with the related US GII document, the EU Ministerial Declaration and the G-7 ‘core principles’. In addition, the OECD recommends that its member economies should help developing economies ‘leap-frog their present status’ by ‘providing them with experiences and

lessons on regulatory structures and requirements.’ (Requirements, p 10) The objective is for a functionally global set of standards for infrastructure and for principles.

In short, the framework of these documents –like those from other fora –are concerned with influencing, “ the shape of the Information Economy of the 21st century and the Information Society which accompanies it.” (Recommendations, p 5) In that order of priority: the techno- economic forces first, after which society is apparently expected to follow. One is however left in considerable doubt about the consistency of this relationship, which at places is proclaimed in such non-sequiturs as, “Electronic commerce represents the core element in realising these economic and *social* potentialities.” (Requirements, p. 8. emphasis added) One is left asking, what these potentialities might be and how electronic commerce or ‘seamless global networks’ can directly address relevant social concerns.

The documents do not help us with such questions. This is apparently because the real vision of this relationship is located elsewhere, in the *Technology, Productivity and Job Creation* document that the GII-GIS argument repeatedly refers to. In this central OECD document, one associates long-term productivity growth and employment with the advent of new technologies, in a new kind of growth. This economic growth is expected to bring about social improvements. The documents before us allude to this argument in what it confusingly calls a ‘new growth model’ in order to conclude that, “it is this vision which can become reality by taking concrete and rapid changes to make appropriate reforms of implementing global information infrastructures and global information society.” (Recommendations, p. 19) It does not seem that the ‘vision’ is clearly enough stated to warrant ‘taking concrete changes’(sic) however rapidly. The discrepancy between ‘vision’ and reality is decidedly greatest when one starts talking of ‘implementing global information society’. Such bids at political sound-bites only highlight a glaring lack of reflection on what an ‘information society’ might entail, not to mention a ‘global’ one. And as to how one expects to ‘implement’ a ‘society’, remains extremely unclear semantically but also in terms of the role of governments.

5.3. How the governments' role is envisioned

In the last section we survey what role is envisioned for the government in “taking concrete and rapid changes.” It is arguably here that these OECD documents are most interesting, as they draw on the experiences of the member states.

In the globalisation documents, the OECD is concerned with drawing fairly clear lines of responsibility between the roles of the government (individually and collectively) and the roles of the private sector. As elsewhere in the international IT-discussion, great pains are taken to emphasise the primary importance of the private role, apparently to differentiate today's situation as clearly as possible from the intense regulatory climate of the 'pre-convergence' era. It is against this background that opportunities are emerging for governments to 'contribute to further enhancement of public goals.' (Recommendations, p. 3)

Because these are transnational policy papers, they are of course most concerned with suggesting guidelines for this sort of 'enhancement'. However, there is some confusion at just how active and just how passive governments should be. Governments are delegated an ill-defined role in taking a “pro-active response to GII-GIS developments and applications”. The role of government is seen as stimulating development, opening market possibilities, removing barriers to competition and 'growth', and stimulating demand for new services. In doing so, governments are warned not to be over-active in their role. The caveat that, “it is important to understand that the dynamics of change are largely technology and private-sector driven” (Recommendations, p. 5) is reminiscent of the techno-determinism arguments, in which society and governments are ascribed passive roles. Yet this is not necessarily the advised reading in the OECD documents. The OECD is, in other passages in these documents and more centrally in the Information Technology Outlook 1997 report concerned in defining a “catalytic role” to the public sector. A survey of what this role entails is compiled from the 'policy requirements' document. It involves an arms-distance set of functions as well as a hands-on set. The functions prescribed are as follows:

Governments should play a 'catalytic role' to:

- *Promote and encourage investment by the private sector*
- *Stimulate new demand.*

- *Stimulate public demand for on-line services*
- *Promote strategic research and development programs,*
- *Launch user-oriented pilot projects and promotional activities,*
- *Provide test-beds for experimentation and promote international co-operation in these areas.*

Governments should also integrate these technologies in their own daily activities, both internally and vis-à-vis their public

- *use new electronic delivery systems and software to provide the means to significantly enhance the internal efficiency and productivity of public administrations.*
- *use new electronic media to the greatest possible extent for the delivery of their core public services. (public information and cultural resources, databases for health services, web sites at local, regional and national levels and public libraries and databases)*
- *encourage social adaptation to the new electronic environment via public information and training programs on the increasing range of services and public access points available.*

The arms-distance functions (the first set) are fairly standard and familiar from elsewhere in the international discussion and do not necessitate further comment.

The second set of hands-on functions is the newer and more interesting set of initiatives, which we have seen first and foremost in the EU document *Building the European Information Society for us all*. The role of the public sector in promoting Electronic Information Services by effectively and organically integrating information technology into governmental administration and into the government-citizen interface can be an effective way to encourage the development and diffusion of information technology with promise. Training and education are likewise seen as important areas for governments to act to bring the economic objectives in line with the social realities of our 'information society'.

5.4. Conclusion

We have seen that, true to its name, the Organisation for Economic Cooperation and Development is most concerned with the cooperation of member states in adapting their policy frameworks and focusing on the economic development that the maturing technologies – principally of multimedia and electronic commerce – are expected to carry with them. The documents reviewed here seem to reflect the

political difficulties of moving towards a 'global information society', in which some governments prefer to pursue one set of policies while others prefer other approaches. Information technology is in these documents seen as somehow larger than 'infrastructure' but smaller than an 'information society'.

What is perhaps most instructive about these documents and their reflection on the wider international discussion around IT-policies involves the role envisioned for the government. The catalytic role advocated here – with extensive reference to the policies of member countries—is indicative of a concern to promote the role for the private sector. This is a hallmark of the current international IT-discussion that should be contrasted to the comprehensive role the regulatory has enjoyed in telecommunication policies. Also indicative of the current discussion is the increasing focus on education and training as an important part of the so-called information society, as well as the active integration of information technology into governments themselves.

6. Conclusions

The recent international policy discussion can be characterized by three broad and related tendencies: first, the body of recent policy initiatives is growing rapidly; second, it is becoming more and more explicitly global in its focus; and, third and most importantly, its policy-orientation is changing direction and becoming broader.

Indeed, the IT-policy discussion during the 90s involves an increasing number and increasing diversity of policy initiatives. The sheer number of IT-related documents in the EU, for example, could fill a moderate-sized library. At the same time, however, there is a contradictory tendency that seems to run across (developed) countries. As the details of the individual ICT-discussions multiply and collectively broaden, the international ICT-discussion in fact seems to tend towards an increasing degree of policy consensus. Where the early and mid-90s saw a great deal of policy-headlines of the sort 'EU's way into the Information Society', the recent discussion is studded by slogans about 'global cooperation'. There is some degree of agreement (but also some conflicts) on the collective international norms and standards that are to underlie a 'global information society'. This "Globalising" perspective is underlined by certain highly visible evidence of trans-national consensus, such as the G7 set of 'eight core principles' for the Information Society. (cf. box 2.1)

In our critical surveys of the EU, the US and the hybrid OECD IT-policy discussion, the most important tendency we find is a gradual but fundamental re-orientation of the basic policy perspective. The IT policy discussions that extended into the 80s concentrated principally on trying to build up the competitive strength of the domestic IT sector⁵². This phase was characterised by a strong current of 'technology push' type policies in which different sectors of the IT-sector were emphasised (e.g. semi-conductors). In this phase, IT policy was firmly planted in industrial policy where the technology push focus was often combined with an 'infant industry' rationale. More recently, greater emphasis has been placed on stimulating the diffusion of new technologies, for example by stimulating demand through 'market pull' policies. Because the IT industry has been its own greatest customer, this type of demand-side or 'market pull' policy remained in a many case the territory of

industrial policy. What we see in parts of our analysis is an attempt to transcend the duality of a 'technology push, market pull' policy discussion. The tendency is towards an 'integrationalist' innovation-system oriented perspective', which escapes the confines of technological deterministic industrial policy, and views technology in terms of its inter-relationship with society. The most interesting aspect of this gradual reorientation is that the IT-discussion is finally investigating the *–society* side of the 'information-society' term in a serious manner.

⁵² One classic example from Norway was the STRAP-IT programme from 1985.

Appendix 1: The Information Society Policy Office's (ISPO) survey of past, current and future EU IT-Policy Actions

The following information is taken from ISPO's "Rolling Action Plan Web page", found at <http://www.ispo.cec.be/infosoc/legreg/rap2.doc>. The ISPO web-page is directly related to The European Commission's ROLLING ACTION PLAN FOR THE INFORMATION SOCIETY: COM(96) 607 and covers EU legal and regulatory actions related to the Information Society. The types of EU items that are included are:

1. Communications,
2. Decisions,
3. Directives,
4. Recommendations,
5. Green Papers
6. Other (e.g. Conferences)

ISPO has here classified these items according to the four themes set out in the document entitled *Europe's way to the Information Society: an Action Plan* (Com (94) 347 final). ISPO is a combined effort between Directorate General III and Directorate General XIII.

A. FORTHCOMING ACTIONS

A.1. IMPROVING THE BUSINESS ENVIRONMENT

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
100	Communication on a guide to the regulatory framework of the information society (1998 packet)	4Q-97	After final adoption of the 1998 package of measures, this Communication will be published as a guide to illustrate for users the impact of the 1998 package and to show the inter-relationship in a non-technical way between different measures regarding the information society.
104 <u>UPDATE</u>	Communication on an internal market framework for commercial communications based on home country control and mutual recognition	4Q-97	This Communication will be a follow-up to the consultations held in the framework of the Green Paper on commercial communications [COM(96) 192] which was adopted on 8-5-96. It still accounts for the views of the EP in its report adopted on 15.7.97.
108	Communication on the evaluation of the TEDIS programme. Assessment and future steps	97	The Communication will provide an evaluation of the TEDIS programme which deals with the promotion of the use of EDI in the private sector and focuses on SMEs. Further consideration will in particular be given to promoting the communication links between the private and the public sectors and on focusing on SME needs.
136 <u>NEW</u>	Communication on interconnection pricing and accounting separation in a liberalised telecommunications environment	3Q-97 4Q-97	
138 <u>NEW</u>	Communication on an Action Plan for the competitiveness of the European information and communication technologies industries	2Q-98	The Action Plan will describe a set of specific actions aimed at improving the competitiveness of the European ICT industries in areas such as: trade policy; standardisation; international co-operation; promotion of SMEs; education and training; and benchmarking. It comes as a follow-up to the Communication on the competitiveness of the European ICT industries (see 3105 in C.1.)
139	Communication on electronic fee collection	4Q-97	The Communication will be a follow-up to the Council directive 93/89/EEC of the 25.10.93 relating to tolls and charges of certain infrastructures and will present the state of the art of electronic fee collection.
140	Communication on harmonisation measures for road transport telematics	4Q-97	The Communication will be a follow-up to the Council resolution 95/C/264/01 relating to road transport Telematics deployment and will aim at securing harmonised transport Telematics services on the trans-European road network.
145 <u>NEW</u>	Communication on the future of the European content industry	2Q-98	The communication will analyse the EU information content industry and the challenges it faces in a global competitive market, particularly with regard to the fast shifting focus from infrastructure to content for the information society; it will propose actions aimed at strengthening the competitiveness of the EU content industry in building on Europe's vast content resources, its cultural richness and language diversity, thus complementing related RTD initiatives under the 5 th Framework Programme.
110 <u>UPDATE</u>	Decision on an action plan for the deployment of GNSS (Global navigation satellite systems in Europe) and bilateral agreements with certain third countries	3Q-97 97	The GNSS rolling action plan provides a framework for the deployment of GNSS in Europe. It will present the remaining technical and institutional activities to be carried out to implement the European contribution to the global system. The Commission will also propose to begin formal negotiations with the other major players, in particular the USA, Russia and Japan. This communication follows a Communication on the same subject [COM(94)248] and a resolution of the EP in May 94 on space transport policy.
111	Directive on the access to media ownership	4Q-97 98	Divergent rules on media ownership may cause obstacles to the free flow of media services and to the freedom of establishment of media companies within the Community.
112 <u>UPDATE</u>	Directives on the harmonisation of certain aspects of copyrights and related rights in the information society	4Q-97 98	As announced in the Commission's Communication on the matter, this instrument proposes to further harmonise certain copyright and related right aspects, where necessary for the proper functioning of the internal market in the information society and the needs to bring about a favourable environment which protects and stimulates creativity and innovation across Member States.
141 <u>NEW</u>	Decision on the TEN-Telecom work programme	4Q-97 and 1Q-98	The TEN-Telecom work programme promotes the implementation of trans-European services and applications of the information society based on the use of telecommunications infrastructures. The work programme specifies the projects of common interest identified in the Council and EP Decision (see 3200 in C.1.) and prepares the definition of the content of the Calls inviting interested parties to submit specific proposals and funding requests.
114 <u>UPDATE</u>	Green Paper on the regulatory implications of the convergence of the telecommunications, audiovisual	97	This Green Paper will examine the regulatory implications of the increasing convergence of the telecommunications, audiovisual and publishing industries and will make appropriate proposals.

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	and the information society technology sectors		
137 <u>NEW</u>	Green Paper on a new audiovisual and information services: a cultural perspective	2Q-98	This Green Paper will analyse the impact of new audiovisual services on European cultures and cultural industries, with specific regard to financing, production and distribution of European content in digital and multimedia services. It will examine the options with a view to ensuring the maximum positive impact of EU programmes and legislation.

A.2. INVESTING IN THE FUTURE

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
115 <u>UPDATE</u>	Communication on the development of the use of multimedia as pedagogical means in the Community	4Q-97	This Communication follows the Council Resolution relating to educational multimedia software in the fields of education and training of the 6-5-96 (OJ: C195 of 6-7-96).
116	Communication on vocational training in the information society	3Q-97	This Communication will constitute the complement to the Communication on "Learning in the Information society" (COM (96) 471).
117	Communication on GI2000: Towards a European Policy Framework for Geographic Information (GI).	97	The objective of the communication is to raise awareness and start a discussion at the political level to be followed by the development of an action plan. GI is important because of its value for planning, land management, marketing studies, environment, renewable energy resources, emergency services, health care, political analysis etc.
140 <u>NEW</u>	Directive on harmonisation measures for VTMS (Vessel traffic management and information services)	4Q-98	The Directive will present a set of measures directed at the harmonisation of VTS procedures, the level of qualification of operators, the level of services, the interoperability and interconnection of VTMS.
141 <u>NEW</u>	Decision on a new specific programme "Creating a user-friendly information society"	9-97 3Q/4Q-98	The Decision would set up the second thematic programme of the 5th Framework Programme. It would include four key actions: systems and services for the citizen; new working methods and electronic commerce; multimedia content and tools; essential technologies and infrastructures. These key actions would be complemented by actions supporting visionary research, generic technologies and research networks.

A.3. PEOPLE AT THE CENTRE

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
123	Communication on the consumer dimension of the information society	97	The Communication will examine the respective benefits and problems facing consumers as a result of information society developments and will identify areas of action both at a political level and in practical terms (such as the use of new communications technologies for consumer information and education).
124 <u>UPDAT</u>	Communication on an action plan on the Internet and similar networks	4Q-97	The Communication on illegal and harmful content, that was adopted by the Commission on the 16-10-96, indicates a number of policy options to combat this type of content on the Internet. The action plan will, after discussion of these options with the Council and EP, indicate the range of measures necessary to implement these policy options, the means to do this and the actors responsible. It will elaborate the measures necessary to ensure a coherent set of actions at the EU level and the launching of these actions into the global context and will especially address the question of liability for access and service providers.
142 <u>NEW</u>	Communication on the scope, level, quality and affordability of universal service for telecommunications (the "Monitoring Report")	4Q-97	This monitoring report was announced in the Commission Communication of March 1996 (see point 303).
125	Decision on the development of Guidelines for Trans-European data communication networks (TENS) for administrations and identification of projects of common interest for IDA	97	This follows Council decision 95/468/EC of the 6-11-95 adopting the IDA programme, which invites the Commission to present the Council and the EP new proposals following the mid-term programme evaluation. This proposal concerns the development of guidelines for TENS for administrations and the identification of projects of common interest for IDA in Europe.
126 <u>UPDAT</u>	Follow up to the Green Paper on the protection of minors and of human dignity and new audiovisual and information	4Q-97	The development of new audiovisual and information services will require new types of programme content as well as new ways of producing and financing it. It will also offer new opportunities in terms of cultural and linguistic diversity. The analysis of these issues with a view to identifying ways of encouraging

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<u>E</u>	services		the development of new services will complement other initiatives related to the protection of the public interest in audio-visual and information services. On the 30.06.97, the Council displayed a broad measure of agreement with the Commission's approach in terms of better co-ordination of national responses and closer co-operation and is awaiting the Commission's communication and a proposal for a recommendation.
127	Green Paper on access to public sector information	1Q-97	The Green Paper is published in the context of the INFO 2000 programme. It will invite a public debate on two main issues: citizens access to public information and exploitation of public sector information by private information content providers in developing value added services.
129	Green Paper on public procurement "Pistes de réflexion pour l'avenir"	97	The Green Paper is intended to provide a framework for a wide-ranging debate on a number of issues central to the Community's present and future public procurement policy. One of the issues addressed is electronic procurement and the key role of electronic tendering in further enhancing transparency and access to public procurement.
143 NEW	Green Paper on access to libraries	4Q-97	The Green Paper will examine the role and functioning of libraries and the new cultural and societal challenges that must be confronted in order to provide their contribution to bridging the gap between knowledge and new technologies. It should initiate a debate on a broad range of issues including, inter alia, public access to electronic information and works as well as correlated copyright and other access rights aspects, long-term availability of such information, etc.

A.4. MEETING THE GLOBAL CHALLENGE

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
132	International Conference at G7 level on standardisation aspects of information society	9-97	The Conference is market focused and aims to facilitate the timely and coherent development of the Global Information Society (GIS) by identifying and promoting the resolution of outstanding standardisation issues.
133	International Conference on the 3rd annual information society Forum with CEECs	10-97	
134	International Conference with Latin American countries on IS	4Q-97	
135	Round Table on information society with Russia	97	Support will be given to the organisation of a Round Table with Russia on information society. The round table should target government representatives, associations, industry and research bodies.
144 NEW	Negotiations on Information Technology Agreements (ITA): Recommendations on duty reductions for information technology products - New Round of negotiations	10-97	Following the approval on of the Singapore Declaration on 13-12-96 which was approved by a critical mass of countries accounting for 90% of the world's IT market and which foresees the elimination of tariffs for 90% of the world's IT market in four steps by the year 2000, a new round of negotiations is scheduled to start in October 1997 with a view to review and/or expand the scope of the existing agreement.

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B. PENDING AND ON-GOING ACTIONS

B.1. IMPROVING THE BUSINESS ENVIRONMENT

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
201 <u>UPDATE</u>	Decision on the allocation of wide-screen broadcast funding for the introduction of advance TV services in Europe	26-7-96 4Q-97 4Q-98	The legal basis for this action plan expired on 30 th of June 1997, in line with the Council decision (22-7-93 93/424/EEC); so no further calls for proposal will be launched and no more funding will be allocated. Now that wide screen services are available in all Member States, together with wide screen TV sets, the market failure which blocked commercialisation of the new screen format has been overcome. In the light of this successful outcome, the Commission will not propose a follow-up to this action plan. Market implementation of the action plan will continue until the end 1998, following the announcement of the results of Call 97/1 for broadcasting and programme production in July.
204 <u>UPDATE</u>	Directive on the application of open network provision (ONP) to voice telephony and on universal service for telecommunications in a competitive environment.	11-9-96 9-6-97 4Q-97	The Directive revises and replaces the existing Directive 95/62/EC on the application of (ONP) to voice telephony. It describes the scope of the universal service for telecommunications which must be available to all users in the EU and requires Member States to ensure that this service is affordable, taking into account national situations. The Directive also sets out harmonised conditions for the provision of fixed public telephone networks and publicly available telephone services in the EU.
207	Directive on a regulatory transparency mechanism (including in annex the Commission Communication)	24-7-96 97	The document proposes an internal market mechanism which would ensure that any new national proposals for regulation of new services would be transparent and coherent with existing internal market principles.
2113 <u>MOVED FROM A.1. (ex-113)</u>	Directive on the legal protection of conditional access services	9-07-97 97	The Directive was adopted by the Commission as a follow up to the Green Paper on the legal protection of encrypted services adopted on 6-3-96 and the EP Resolution of 13-05-97. It addresses the legal protection of TV and radio broadcasting and information society services offered to the public at a distance where access is subject to payment. Such services include pay-TV, video-on-demand, music-on-demand, electronic publishing, etc.
229 <u>NEW</u>	Recommendation on improving and simplifying the business environment for business start-ups	22-04-97 97	

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B.2. INVESTING IN THE FUTURE

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
208	Decision on a specific RTD programme in Information Technologies (ESPRIT)	11-94 96-98	Focused calls for proposals were held on 15-Dec-94, 15-Mar, 15-Jun, 15-Sept and 15-Dec-95. At least two calls in 1996. The programme contributes to providing technologies, standards and best practices for information society. A special initiative to promote electronic commerce has been launched.
<u>209</u> <u>UPDATE</u>	Decision on a specific RTD programme on Advanced Communications, Technologies and Services (ACTS)	27-7-94 96-98	The ACTS programme has been implemented through two major calls for proposals in September 1994 and September 1995. It now involves about 1000 organisations in 158 co-operative technology development projects and over 300 trials on National Host infrastructures. All major European industrial interests are involved, and organisations from over 38 different countries participate. A third Call was opened on 17 June 1997 (O.J. C 183) with a closing date of 26 September 1997.
<u>210</u> <u>UPDATE</u>	Decision on a specific RTD programme on Telematics Applications	11-94 96-98	The first call for proposals closed on 15-3-95 and a second call on 15-6-95 and a third call closed on 15-1-96. A further call is to be launched on 15-12-96 and closed on 14-4-97 (main call) and 2-6-97 (Integrated Applications for Digital Sites). The 5th Call (Research Networking) will be launched on 15-3-97. The implications for the deployment of services and possible actions are being assessed in areas such as healthcare, public administrations, education and training, libraries and related areas, transport, urban and rural development, research networks, disabled and elderly people.
211	Decision on a specific RTD programme in the field of transport	15-12-94 31-12-94 96-97	The first call for proposals closed on 15-3-95 and a second call on 15-3-96. A third call will be launched on 17-12-96 with a closing date of the 17-5-97. The programme contributes to integrating into the transport system a number of technologies linked to the information society notably Telematics tools. The programme will also assess the potential policy impact of the use of such technologies.
212	Decision on a specific RTD programme on targeted socio-economic research (TSER)	12-94 96-97	Research into the socio-economic aspects of the information society are a major theme of the programme. The first call took place in 1995 and the second in 10-96. Current projects include socio-economic analyses of user-producer interaction, application in the services sector, and learning applications. The second call includes pathways to a European I.S.; quality of working, domestic, social and political life; and effective introduction of ICT into education and training.
2118	Decision on the 5th Framework Programme (It will be followed by proposals for the specific programmes)	9-4-97 98	The draft 5th FP (1998-2002) concentrates on a limited number of topics and creates strong links between research and the needs of citizens and industry. It also calls for greater coordination both within the programme and with Member State research as well as greater managerial flexibility. The proposal identifies three thematic (the living world and the ecosystem; a user-friendly information society; competitive and sustainable growth) and three horizontal programmes (the international dimension; research, innovation and SMEs; the human potential).
<u>230</u> <u>NEW</u>	Leonardo da Vinci Programme	17-12-97	A call for proposals was issued with a deadline 1st of April 1997. Proposals include promoting access to skills and promoting the development of vocational skills through the information society in the context of lifelong learning. Some 215 proposals were received dealing with both training in ICT-related skills and for changing skill requirements in relation to new ICT applications. Selected projects will start by the end of 1997.
<u>231</u> <u>NEW</u>	Task Force educational multimedia	17-12-96 4Q-97 1Q-98	A joint call for proposals worth 30 MECU was issued in 17-12-1996 by the Task Force. Participating programmes include Esprit, Telematics Applications, Targeted socio-economic research, TEN-Telecom, Socrates and Leonardo da Vinci. The Commission's decision on the selected proposals is expected by mid-September.

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B.3. PEOPLE AT THE CENTRE

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
213	Decision on the ADAPT-BIS Community Initiative under the Structural Funds	96 97-99	The ADAPT-BIS (building information society) Community Initiative will reinforce the support currently given to facilitating the adaptation of workers to the information society and the creation of new jobs, in particular SMEs, and to evaluating and promoting innovations in work organisation.
214	Decision on the SIMAP (Système d'Information pour les Marchés Publics)	3-6-95 95	The first SIMAP projects were launched in July 1994 and entered their pilot phase in November 1995, with the participation of all Member States as well as Norway, Switzerland and Iceland. SIMAP aims to prepare the way for the introduction of electronic tendering procedures for public procurement. Electronic tendering, will be further addressed in the forthcoming Green Paper on Public Procurement.
215	Decision on IDA Programme: Telematic interchange of data between administrations	20-1-95 6-11-95 96-97	Over 25 trans-European Telematics projects are being implemented. IDA users (EC and agencies, other European institutions, Member States administrations) will gradually migrate to the use of common Telematics services which will be provided through TESTA (Trans-European Services for Telematics between Administrations), which is expected to be in operation towards the end of 1997.
216 <u>UPDATE</u>	Directive concerning the processing of personal data and the protection of privacy in the telecommunications sector, in particular in the Integrated Services Digital Networks (ISDN) and in the public digital mobile networks	9-96 9-97	Following the adoption of the general directive (see 1.3) progress is being made on this measure, which provides a specific set of safeguards, based on the general directive, but adapted to the telecommunications sector. It is central to maintaining public confidence in the emergence of, in particular, personal communications in the information society.
218 <u>UPDATE</u>	High Level Expert Group on the Social and Societal Aspects of the information society	21-2-95 1-96 1-Q-97	The Group published its First Reflections report "Building the European information society for us all", in January 1996. This report focuses on the following themes: employment, work organisation, the future of work, labour markets, social cohesion, regional cohesion, education and training, health, culture, media and democracy.
219	Information Society Forum	21-2-95 26-6-96 97	The Forum is composed of around 130 members from six main fields: users of new technologies, social groups, content and services providers, network operators, equipment manufactures and institutions. The Forum adopted its First Annual Report to the European Commission, entitled: "Network for People and their Communities: Making the Most of the Information Society in the European Union". As a result of the extended dialogue amongst its members, the Report provides a valuable contribution in terms of ideas and recommendations covering social, cultural, political and economic aspects of the Information For its second year of activity (1996-97), six working groups have been set up on the following issues: Employment and Job Creation; Social and Democratic Values; Culture and the Future of New Services and the Media; Universal Access and Consumer Protection and Support; Sustainability in an Information Society; Public Services: Bringing Administration Closer to Citizens; Lifelong Learning.
220 <u>UPDATE</u>	Inter-Regional Information Society Initiative (IRISI) a) initial 6 regions b) further regional strategies c) inter-regional projects Regional information society initiative (RISI) • RISI 1 - strategy building (23 regions) • RISI 2 - pilot applications	11-94 94 -> 3-97 4-97 (ESF) 11-96 (RISI 1 - ERDF) 1-97 (RISI 2 - ERDF)	IRISI attempted to demonstrate a methodology based on subsidiarity and a bottom-up approach for creating awareness among the general public and decision makers. The six participating [North West of England(UK), Nord Pas-de-Calais(F), Valencia(E), Central Macedonia (GR) and Piemonte(I)] had to outline a strategy on the information society by analysing the base-line situation and assessing the opportunities for building the information society, through a concerted effort bringing together all the relevant regional actors. The innovative nature of the IRISI approach rests on the institutional mechanism by which strategy has been developed, i.e. a partnership between all key players in a region. The success of the IRISI initiatives has convinced the Commission to continue in that direction with a new generation of innovative actions under Art.10 of the ERDF and Art.6 of the ESF. The general approach aims at enabling and facilitating learning processes within a given region and between regions. The initiative has meant that nearly 25% of all eligible regions under the structural funds are currently engaged in this process of strategy building and of its translation into an action plan.
232 <u>NEW</u>	Council Decision for a multi-annual programme for the Information Society	12-12-96 1-12-97	The programme will run from 1998-2002 with a budget of 25 MECU. It identifies three lines of action : increasing public awareness, supporting the establishment of the information society based on the identification of user needs and a permanent inventory of European policies and programmes; measures to take into consideration and make use of the global dimension of the information society.

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B.4. MEETING THE GLOBAL CHALLENGE

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
<u>224</u> <u>UPDATE</u>	Decision on a specific programme on international RTD cooperation (INCO) of the 4th Framework Programme for RTD	13-11-94 20-6-96	R&D projects have already been launched with third countries the process of execution in the field of communication technologies and Telematics applications. Further calls will address information networks for SMEs and research centres, teleworking, Telematics applications for health and education, language engineering and the creation of a network of Innovation Relay Centres.
225	G7- Pilot Projects	2-95	As a result of the G7 conference in Brussels in Feb-95, 11 projects have been launched: Global Inventory Project, Global Interoperability of Broadband Networks, Cross-cultural education and training, Bibliotheca Universalis, Multimedia access to world cultural heritage, Environment and natural resources management, Global emergency management information network initiative, Global healthcare applications, Government On-line, Global marketplace for SMEs, Maritime information Systems.
226	Information society Forum with Central and Eastern Europe (Prague) Follow up actions on information society in the CEECs	12/13-9-96 97	In June 1995, the first Forum on the Information Society was held with the countries of Central and Eastern Europe. A follow-up meeting of the Forum took place in September 1996 in order to develop a workplan. Four thematic panels were set up in order to prepare the next meeting of the Forum: strategy and policy for I.S., implementation of the Action Plan, education and training, application of information- and communication technology in public administrations. An Action Plan has been drawn up outlining a number of future actions.
227	International Conference on "the creation of the Euro-Mediterranean information society" (Rome) Follow up of Euro-Mediterranean Conference	30/31- 5-96 97	The conference focused on the cognitive dimension of the IS and the regulatory basis for its development. Workshops were held on: research networks, telecommunications regulatory aspects and for educational dimension. These actions were launched as a follow-up of the Ministerial Euro-Med- Conference in Barcelona. Following the conference, a follow-up Action Plan is being prepared which will incorporate three types of measures: dialogue measures (workshops), training programmes and regional pilot and R&D projects.
228	Implementation of Directive (91/263/EEC, April 1991) on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity Mutual Recognition Agreements (MRAs)	95-now	Art. 10.5 of this Directive states that European regulatory bodies shall recognise documentation issued by third country relevant bodies, when agreements between the Community and the third country concerned have been concluded. A mandate has been given by the Council to the Commission to negotiate MRAs for the regulated areas, by which public authorities will recognise the validity of certificates issued in the territory of the other country. Negotiations are currently taking place between the EU and USA, Canada, New Zealand, Australia, Switzerland and Japan. Preliminary meetings have taken place with Korea, Singapore and Israel in 1995.
<u>233</u> <u>NEW</u>	Decision concerning the WIPO Copyrights Treaty and the WIPO Performances and Phonogrammes Treaty	4Q-97 4Q-98	The Community having already signed these two treaties, it is necessary to proceed with their ratification for matters falling under Community competence (see 3222 in C.4.).
<u>234</u> <u>NEW</u>	WIPO Negotiations on audiovisual performances and on <i>sui-generis</i> protection of databases.	On-going activity	Following the adoption of the WIPO Copyrights Treaty and the WIPO Performances and Phonogrammes, WIPO is currently discussing the extension of protection of performers to audiovisual performances as well as a Treaty on the protection of databases requiring substantial investment. These represent major issues for the Community and the Commission considers important to reach a positive result in the near future.

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C. ACCOMPLISHED ACTIONS
C.1. Improving the business environment

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
300	Communication on consultation on Infrastructure Green Papers	3-5-95	Report on the results of the public consultation on the Commission's proposal for action
301	Communication on the present status and future approach for open access to telecommunications networks and services (Open Network Provision - ONP)	11-94	The Communication confirmed the importance of the ONP principles of open and efficient access in the liberalised Telecom environment from 1998. It considered the scope of application of ONP and launched the debate prior to the submission of legislation at the end of 1995.
302 <u>UPDATE</u>	Communication on the follow-up to the Green Paper on copyright and related rights in the information society	20.11-96	The Communication sets out the results of the consultation exercise and announces the Commission's internal market policy in the area of copyrights and related rights in the information society.
303	Communication on Universal Service in telecommunications	18-3-96	Building on the consensus established around the infrastructure Green Paper, the Commission presented a survey of the level and availability of universal service within the EU. It also drew together the elements of the 1998 package relating to universal service to propose a strengthening of the concept of voice telephony services, in particular with regard to affordability and quality of service. It also examined the impact of universal service on regional and social cohesion, criteria for its evolution over time and the relationship between universal service and the information society.
304	Communication on follow-up to Green Paper on mobile & personal communications	23-11-94 13-6-95	The Communication reported on the views expressed in the Consultation on the Mobile G.P. and proposed concrete measures and a timetable to act on the consensus which emerged. On the basis of this, political support was sought from the Member States.
305	Communication on the future development of the market in directories and other telecom information services in a competitive environment	10-10-95	The communication highlighted the importance of directory services in the general context of the information society and described the guidelines and principles which have been set out for directory services in various directives and other Community acts. Both the EP and the Council reacted positively to the communication (Presidency conclusions of 21st March 1996 Telecom Council and EP resolution of 22nd May 1996).
306	Communication on wider use of standardisation to support EU policy	30-10-95	
307	Communication on "Standardisation and the global information society: The European approach"	24-7-96	The aim of this Communication is to examine how, in the light of the characteristics of the ICT market and the ICT standards process, the best possible conditions can be created for the drawing up of standards needed for the implementation of the Information Society, and to indicate by what means the Community intends to promote those aspects for which it has particular responsibility.
308	Communication on the directive on mutual recognition of type approval for terminals	9-96	The report was published on the 27th of March 1996.
309	Communication for the introduction of advanced television services in Europe	7-96	Financial support mechanism to assist broadcasters and programme producers with extra costs of introducing wide-screen 16.9 format. The 16.9 screen format is the only globally agreed parameter for the future of TV, including HDTV. It embodies cinema/TV convergence. Publication of a call 96/2 for broadcasting and programme production proposals in Oct 96.
3101	Communication on the EU and space: fostering applications, markets and industrial competitiveness	4-12-96	It aims to explain to Council and EP how the Commission sees the role of the EU in space taking into account the recent evolution of the sector, to seek agreement on this approach and to outline the main priorities for future action. These priorities will lead subsequently to specific proposals to be submitted to the relevant bodies concerning space telecommunications, space navigation and earth observation.

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3105	Communication on the competitiveness of the European information and communication industries	16-4-97	The Communication analyses the European ICT industry and the challenges it faces, and proposes actions aimed at improving the competitiveness of the ICT industries and the business environment in which they operate. It complements existing policy initiatives with actions in several areas, including: completion of the abolition of trade tariffs on IT products; improving the standardisation process; exploiting the potential of EU enlargement; accelerating take-up; facilitating the emergence of SMEs; etc.
3106	Draft Communication on the application of the competition rules to access agreements in the telecommunications sector.	10-12-96	It aims to clarify the competition rules will play in resolving access agreements in the Telecom sector. It does not establish new principles of competition law, but demonstrates how the principles existing in current case law of the Commission and of the Court of Justice will be applied to a new type of problem occurring in the context of the liberalisation of the Telecom sector. It sets out access principles stemming from EU competition law, defines and clarifies the relationship between competition law and sector specific legislation and explains how competition rules will be applied in a consistent way across the converging sectors involved in the provision of new multimedia services especially to access issues and gateways. Public consultations end on 12-5-97.
3107	Communication on the assessment criteria for national schemes for the costing and financing of universal service and guidelines for the Member States on the operation of such schemes.	27-11-96	In order to assist Member States in preparing national reforms in advance of full liberalisation of Telecom in 1998, this Communication identifies the principal elements that the Commission will assess in looking at national universal service schemes which must be notified to the Commission by the end of 1996. It also provides detailed guidelines, building on the existing principles within Community law, which are designed to develop best practice in national approaches to the costing and financing of universal service.
3119	Communication on a Community strategy and framework for the deployment of road transport telematics in Europe and proposals for initial actions	20-5-97	The Communication is based on the Council Resolution of 28-9-95 on the deployment of road transport Telematics. It was elaborated with the help of the High Level Group on road transport Telematics created in December 1995. It proposes an overall European strategy and framework to carry out this deployment, with legislation, technical harmonisation and co-ordination of implementation and financing of RTD projects (notably through the TEN-Telecom budget). It also proposes initial actions in some priority domains.
339 NEW	Communication on EU Action Plan on Satellite Communications in the Information Society	5-3-97	Based on a close coordination with the European sector's actors, it aims to focus the European industrial potential on the new generation of global satellite systems, advanced services and innovative applications which meet key user requirements in the global information society namely personal mobility, fast response times, global connectivity and access to the broadband evolution of the Internet.
340 NEW	Communication on a European Initiative on Electronic Commerce	16-4-97	It identifies four key areas where action must be taken and implemented by the year 2000 if Europe is to benefit from the opportunities of Electronic Commerce: affordable access to infrastructure, products and services; a coherent regulatory structure at EU level; a favourable business environment; a compatible and coherent regulatory framework at global level.
342 NEW	Communication on : the prospects and possible obstacles to the progress of European capital markets for SMEs	5-5-97	It aims to: explore the potential barriers to the listing of SMEs on capital markets; to start a European-wide debate on the appropriate conditions for access to equity finance; to describe and draw attention to the progress made by various initiatives in the EU such as EASDAQ and Euro-NM; to outline the actions the Commission is currently taking and intends to take in the future to overcome the barriers to the development of SME-oriented capital markets and ensure their smooth operations.
343 NEW	Communication on the implementation of the telecommunications regulatory package	29-5-97	The communication assesses the steps taken by Member States to implement the provisions of the 1998 telecommunications liberalisation package, including measures already adopted and those still pending at the time the report was finalised
344 NEW	Communication regarding the consultation on the Green Paper on numbering (see point 318)	21-5-97	Following the public consultation on numbering, the Commission has drawn certain policy conclusions, in particular regarding the introduction of carrier pre-selection, the accelerated introduction of number portability and the establishment of an ETNS based on code '388'. Proposals for concrete legal measures will be submitted during the third quarter of 1997.
345 NEW	Communication on the further development of mobile and wireless communications	29-5-97	The communication presents an overview of the developments in the mobile and wireless markets within the EU and seeks to contribute to the debate on the future evolution of mobile communications towards a Universal Mobile Telecommunications System (UMTS) as a key component of the "wireless information society". It raises key questions which must find an answer to clarify which regulatory or supporting measures are needed. It calls for comments to be submitted by 15 July 1997.
346 NEW	Communication on the World Radiocommunications Conference 1997 (WRC-97)	18-6-97	In view of the WRC-97 (November 1997) and considering the importance of radio-frequencies for further development of the EU radio communications sector, it informs the Council and the EP about the issues at stake in WRD, identifies how and where WRC decisions relate to Community policy and proposes necessary improvements on the approach to defend Community interests in the context of WRC.
310	Decision on guidelines for TEN-ISDN	9-11-95	The objective is the development of a range of services and applications based on EURO-ISDN. A number of projects have been launched in 1995 and the 1996 call was issued on 13 April with a closing date of 24th June.

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3200	Decision for guidelines covering trans-European Telecom Networks (TEN-Telecom)	12.6.97 11.07.97	These guidelines cover the objectives, priorities and broad lines of measures envisaged for the development of trans-European telecommunications networks, with special focus on generic services and applications. Priorities will be on projects of societal interest which have reached a high degree of maturity and are economically viable.
3202	Decision on a co-ordinated authorisation approach in the field of satellite personal communication services in the Community	24-3-97	It aims to facilitate the rapid introduction of S-PCS services in the EU on the basis of the principles governing the internal market, in accordance with a similar timetable across Member States and through a co-ordinated approach of the national Telecom regulatory authorities. It gives an important role to the European Conference of Postal and Telecommunications Administrations (CEPT) and contains a brief for the CEPT to harmonise by Sept.97 the frequencies and authorisation conditions related to S-PCS. However, the text allows for decision at EU level should the CEPT not make satisfactory progress.
347 NEW	Commission Decisions concerning the additional implementation periods for Directives 90/338/EEC and 96/2/EC on full competition in the telecommunications market requested by: IRELAND, PORTUGAL, LUXEMBOURG, SPAIN, GREECE	27-11-97 4-6-97 11-6-97 18-6-97	This series of decisions sets the additional transitional periods for the introduction of competition in alternative infrastructure and public voice telephony competition (both networks and services) under the "Full Competition Directive" (see point 311) and for the direct interconnection of mobile networks with other networks or with PSTN in other Member States under the Mobile Directive voice telephony: 1.1.2000, alternative infrastructure: 1.7.1997, voice telephony: 1.1.2000, alternative infrastructure: 1.7.1997, direct interconnection: 1.1.1999, voice telephony: 1.7.1998, alternative infrastructure: 1.1.1997, voice telephony: 1.12.1998, voice telephony: 31.12.2000, alternative infrastructure: 1.10.1997
311	Directive amending Commission Directive 90/388/EEC of 23 July 1990 regarding the implementation of full competition in telecommunication markets	13-3-96 22-3-96	Following political agreement on the full liberalisation of voice telephony services and infrastructure, this measure gives legal form to the date of the 1st of January 1996 and provides for possible transitional periods for Greece, Ireland, Portugal, Spain and Luxembourg subject to Commission approval. The measure also provides for early liberalisation from 1996 of alternative infrastructures for liberalised Telecom services and sets out principles under the competition rules for licensing, interconnection, universal service, numbering and directory services.
312	Directive amending Commission Directive 90/388/EEC of 23-July-1990 regarding the abolition of the restrictions on the use of cable TV networks for the provision of Telecom services	18-10-95 26-10-96	Following political agreement on the early liberalisation of alternative infrastructure for services which are already open to competition, this measure provides for the use of cable television networks to deliver such services from 1996. It also provides for possible transitional periods for Greece, Ireland, Portugal, Spain and Luxembourg subject to Commission approval.
313	Directive amending Commission Directive 90/388/EEC of 23-July-1990 regarding mobile and personal communications	16-1-96 26-01-96	The measure fully opens the market for mobile communications to competition as foreseen in the 1994 Mobile Green Paper. It provides for self-provision of infrastructure or use of third party infrastructure and allows from 1998 direct interconnection between mobile networks. It requires Member States to consider requests for licences for DECT systems from 1996 and for DCS 1800 digital mobile networks from 1998.
314	Directive on the application of ONP (Open Network Provision) to voice telephony	13-12-95	This directive has been re-submitted at the urging of EP, following its rejection of the Council Common Position in July 1994, the conciliation procedure having failed over the issue of commitment. The proposal builds on the agreements reached between the Council and the EP during the conciliation procedure. The Directive's three fundamental objectives are: - determining the rights of the users of voice telephony services in their relations with telecommunications bodies - improving access for all users, including the providers of services, to the fixed infrastructure of public telephone networks (the Directive does not apply to mobile telephones) - encouraging the provision of voice telephony services at Community level.
315	Directive on satellite-communications: liberalisation of satellite services and terminals	13-10-94 19-10-94	Following Council Resolution 92/C8/01 the Directive extends the scope of Directives 88/301/EEC and 90/388/EEC to remove monopolies over satellite equipment and services
316	Directive on the use of TV-standards	24-10-95	The Directive provides a regulatory framework for advanced TV (16:9, digital, HDTV) including standards; and deals with the issue of conditional access to digital pay television, following the outcome of an industry-wide consultation on this topic.

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317	Directive on legal protection of databases	11-3-96 27-03-96	The Directive provides for the harmonisation of the author's right relating to the structure of databases and for the creation of a new right protecting substantial investments made by makers of databases.
3203	Directive on interconnection in the context of ONP and universal service	11-6-97	This measure provides a common framework for interconnection between the organisations operating public telecommunications networks in order to ensure "any to any" services throughout the Community. It also sets principles for the costing and financing of universal service.
3205	Directive updating the open network provision (ONP) and leased lines directives	11-6-97	As required by Council Resolution 93/C213/01 the Commission tabled measures by 1 Jan. 1996 to implement the regulatory framework for a competitive environment in 1998. The adaptation of ONP to this new environment is a central element.
3206	Directive on a common framework for general authorisations and individual licenses in the field of telecommunication services	10-4-97	The directive lays down common rules to be applied by Member States as regards to the procedures and conditions for providing Telecom services. This is an essential feature of the regulatory framework to be introduced at EU level with a view to a fully liberalised sector from 1998. It will considerably facilitate freedom to provide Telecom services in the EU and the entry of new operators into the market. It must be transposed by Member States by 1 January 1998.
318	Green Paper on numbering	20-11-96	The rapid development of the Telecom market means that reform of the numbering environment will be inevitable. This reform will need to be based on an agreement on the political priorities, stemming both from the liberalisation trend and from changing technological trends. The technical work will follow on from this. The Green Paper is intended to initiate a broad consultation with sector players on these matters.
319	Green Paper on the legal protection of encrypted services	6-3-96	The Green Paper aims to identify, in the light of the Internal Market principles, the measures needed to safeguard the legal protection of encrypted services at an equal level throughout the Community. It is closely related to IPR protection, to media policy and to the Directive on satellite and cable broadcasting of 1993.
320	Green Paper on the liberalisation of telecom infrastructure and cable TV networks: principles & timetable (Part I)	17-11-94 4-95	The Green Paper establishes the general principle of the free choice of infrastructure to deliver services already open to competition. It proposes immediate limited action and links full competition to the 1998 date for services liberalisation.
321	Green Paper on the liberalisation of telecom infrastructure and cable TV networks: implementation measures (Part II)	13-6-95 5-95	The Green Paper has launched a consultation on the issues raised by allowing competition in infrastructure for the basic telephone service and the relevant safeguards. It sets out future policy on infrastructure liberalisation and initiates public debate on the issues.
322	Green Paper on copyright and related rights in the information society	Jul-95	The Green Paper identifies in detail those issues in the field of copyright where initiatives may be needed with respect to the IPRs exploited for the new electronic services. It is based on the conclusions of a hearing with interested circles in July 1994. The deadline for written submissions was end October 1995. A hearing on certain specific questions in relation to technical systems of identification and protection and on certain aspects related to the acquisition and administration of rights took place in January 1996. The consultation process was closed in the context of a Conference on the matter held in Florence in June 1996.
323	Recommendations relating to the legal aspects of electronic data interchange (EDI)	19-10-94	EDI users are recommended to use a European model EDI Agreement and Member States are recommended to facilitate the use of this model agreement, which legal provisions aim at providing a contractual approach to the legal issues related to the use of EDI.

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C.2. INVESTING IN THE FUTURE

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
324	Communication on a methodology for the implementation of information society applications	13-6-95	This communications proposes a methodological approach of a general nature for the implementation of all types of applications which represent the driving force of the information society.
325	Communication on Information Society: From Corfu to Dublin, The new emerging priorities	24-7-96	The objective of this communication is to indicate the impact of the information society on European Union policies, thereby highlighting future priorities: improving of the business environment; investing in the future; putting people at the centre; meeting the global challenge. The information society Council of the 8-10-96 welcomed the intention of the Commission to present a revised action plan to the Dublin Summit.

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C.3. PEOPLE AT THE CENTRE

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
3217	Directive Television without frontiers	30-6-97	Regulatory framework for trans-national movement of television broadcasting services.
326 <u>UPDATE</u> <u>E</u>	Communication on Telematics applications for transport in Europe	4-11-94 6-95 24-10-94 28-9-95 11-3-97	The communication provides the basis for an action plan for the implementation of Transport Telematics in Europe. Financial engineering of public-private partnerships needs closer attention. The Council Resolution of 24-10-94 stresses the need to introduce compatible Telematics systems in the transport sector. The Council Resolution of Sept-95 concentrates on Telematics Applications in Road Transport, identifies priorities for short term actions and recommends the setting up of a High Level group to assist the Commission with the strategy for deployment. The Council resolution of the 11-3-97 emphasises the need to achieve interoperability in the development and implementation of electronic fee collection systems.
327 <u>UPDATE</u>	Communication on learning in the information society - Action Plan for a European education initiative (1996-98)	2-10-96	Requested by the European Council at Florence (June 1996), the proposed action plan is aiming at increasing the synergies among national initiatives to promote the use of new technologies in education. The objectives are to speed up the diffusion of common multimedia platforms for learning, the development of quality educational content, the training of teachers and the exchange of experiences through setting up a European school network based on the interconnection of existing school networks. This electronic network is planned for launch before the end of 1997. A private foundation for educational multimedia will be set up in the autumn of 1997 to promote public-private partnerships.
328	Communication on harmful and illegal content on Internet	16-10-96	The Communication refers to the legal and regulatory challenges posed by content circulating on the Internet, giving particular emphasis on the issue of harmful and illegal content. It proposes options for short term action to combat or control such content (self-regulation, technical protection means, improved international co-operation, education and awareness).
3122	Communication on Cohesion and the information society	22-1-97	It aims to outline the way forward in the areas of regulatory, investment and demand policies to ensure that all European regions, citizens and firms are equally well equipped to benefit from the opportunities offered by the information. It also aims to ensure that public authorities make the information society a priority in their policy agenda and investment decisions and invites Member States to move away from mere pilot actions and increasingly integrate them into the broad scope of their structural funds programmes.
3121	Communication on the social and labour market dimension of the information society - The next steps	23-7-97	The document assesses progress achieved towards integrating the social dimension into the I.S. related policies and presents the challenges that have to be met to the reconcile social, economic and technological objectives. It has three major objectives: raise awareness of the social implications of the I.S.; integrate the I.S. dimension in social policies and actions were required; and identify specific actions aimed at maximising the contribution of the I.S. to the promotion and social integration.
329	Decision on the Media II Programme	22-6-95 22-12-95 10-7-95	Financial support mechanisms for key sectors of the programmes industry. The Commission's proposal has two parts: MEDIA II - training (1996 - 2000). A programme for the training of professionals of the European audiovisual programme industry MEDIA II - development and distribution (1996 - 2000). This programme aims to promote the development and the distribution of audiovisual works.
330	Decision on guidelines for the trans-European transport network	9-9-96	Intelligent transport systems (ITS) for traffic management, positioning and navigation is an integral part of the Trans European Networks-Transport guidelines. They include the necessary technical installations and information and telecommunications systems to ensure harmonious and efficient traffic management. All the priorities of the guidelines such as connections, key links, interconnections, interoperability, provisions relating to the environment, the optimisation of capacity and efficiency, safety apply to ITS and require the use of ITS for their achievement.
331	Decision on INFO 2000 Programme	30-6-95 20-5-96	A multi-annual programme to stimulate the development of a European multimedia content industry and to encourage the use of multimedia content in the emerging information society.
332	Decision on a Multi-annual programme on Multi-lingualism in the Information Society Programme (MLIS)	21-11-96 28-11-96	The multi-annual programme promotes multi-lingualism in the information society and has been allocated a budget of 15MECU. It includes the following action lines: a. Support for the creation of a framework of services for European Languages; b. Encouraging the use of modern language technologies, resources and standards; c. Promoting the use of advanced language tools in the European public sector; d. Accompanying measures.

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333	Directive on the protection of individuals with regard to the processing of personal data and on the free movement of such data	24-10-95 23-11-95	The general directive provides for a number of rights for the data subject and of obligations on the controller of data processing (fair processing, quality of data, lawfulness of processing, notification of certain processing). The directive is designed to ensure a high level of protection for individuals and creates a level playing field for the free circulation of personal data in the Community. The principles of the Directive apply to all areas of the Information Society and will constitute the basis for specific rules in the telecommunications field
334	Green Paper: Living and working in the Information Society: People first	24.7.96	The Green Paper forms the basis for a wide discussion on social, economic and technological challenges in the context of employment and economic structure, future of work, labour market and learning and living in the Information Society. A consultative process was officially launched in a Colloquium held in Dublin and organised together with the Irish Presidency. Contributions and reactions to the Green Paper will be invited from the widest possible audience until the end of 1996.
335	Green Paper on the protection of Minors and Human Dignity in Audiovisual and Information Services	16-10-96	
3128	Green Paper on a partnership for a new organisation of work	16-4-97	The Green Paper aims at launching a Europe-wide debate amongst all the main actors, in particular social partners and public authorities, and to invite them to develop a framework which would encourage EU companies to improve the flexibility of their work organisation while providing increased security for workers. The aim is to improve business competitiveness by developing new forms of work organisation based on high skills, high trust and high quality. The Green Paper should be seen in the context of the integrated employment strategy proposed by President Santer in the Confidence Pact.
336	White Paper on "Teaching and learning - Towards the learning society"	29-11-95	This White Paper is part of a process designed simultaneously to provide an analysis and to put forward guidelines for action in the fields of education and training. After describing what is at stake and analysing the changes which need to be considered, while respecting the principle of subsidiarity, the White Paper suggests five general objectives for action setting out for each of them one or more support projects at Community level.

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C.4. MEETING THE GLOBAL CHALLENGE

ISPO #	ACTION TITLE AND TYPE	DATE	DESCRIPTION
3130	Communication on the information society and development: the role of the European Union	15.07.97	The Communication is a follow-up to the ISAD Conference. It focuses on the redefinition and the re-orientation of previous policies to give a higher priority in development policies to telecommunications infrastructures and applications
337	International Conference at G7 ministerial level on information society (Brussels)	2-95	A meeting of relevant G7 ministers took place in Brussels on Feb 25-26 1995. The meeting emphasised the necessity to encourage the development of a world-wide information society. Eleven pilot projects were identified for international co-operation. The implementation of the G7 conclusions across the different EC policies related to Information Society is under way. A progress report on the pilot project was presented at the Halifax G7 meeting in June
338	International Conference on information society and development (ISAD) in South Africa	13/15-5-96	South African Vice President Mbeki, proposed at the occasion of the G7 Conference in Brussels an Information Society Conference with the developing countries hosted by South Africa. The conference took place in May with the participation of many developing countries. Contacts have been established with the Egyptian government for the preparation of a follow-up meeting.
3221	Council decision on the Multilateral Negotiations on basic telecommunications services in the context of the World Trade Organisation (WTO)	15-07-97	The agreement, to enter force on 1 January 1998, was signed by 69 countries on 15.2.97. It commits all signatories to important measures, in particular the most-favoured nation (MFN) treatment which bans discriminatory measures on a bilateral basis, as well as legally binding commitments regarding market access and national treatment. In addition, 54 countries agreed on a common set of regulatory principles aimed at securing more effective access and national treatment, in particular transparency, fairness and non-discrimination in key areas such as interconnection, licensing, tariffs, universal service provisions, technical standards and frequencies. This also includes a ban on anti-competitive practices such as cross-subsidising and disguised barriers to market access. The Commission negotiated on behalf of the Community and its Member States.
3222	Council Decision on the WIPO Copyrights Treaty and the WIPO Performances and Phonogrammes Treaty	6-05-96 7.07.97	On 20-12-96 the WIPO Diplomatic Conference in Geneva adopted two new treaties respectively on the protection of literary and artistic works, and on the protection of the rights of performers and producers of phonograms. The two treaties provide for appropriate international response to the challenges facing intellectual property protection in the digital age. The Commission negotiated on behalf of the Community and its Member States. The Council adopted the Commission proposal regarding the signature of the two treaties on behalf of the Community.
3223	Council Decision on the Information Technology Agreement (ITA) on the abolition of trade duties for information technology products	24-03-97 12-06-97 14-06-97 26-06-97	The Singapore Declaration was approved on 13-12-96 by a critical mass of countries accounting for 90% of the world's IT market. The cornerstone of the ITA is the elimination of tariffs for information technology products in four steps by the year 2000. The Commission negotiated on behalf of the Community and its Member States. Regular reviews are foreseen in order to extend product coverage (removing some remaining exceptions), enlarge country coverage and accelerate implementation.
3131	International Conference at ministerial level on "Global information networks" (Bonn Conference)	6/8-7-97	At this International Ministerial Conference, ministers from 29 European countries agreed on a number of key principles that will pave the way for a rapid growth in Europe of the use of Global information networks. Representatives of leading European businesses and of European user groups attending the Conference supported in separate statements this drive to stimulate the use of the information networks in Europe and beyond. The ministers undertook to further develop their national strategies and action plans and to strengthen their co-operation at the European and international level. (information on the Bonn Conference is available on http://www2.echo.lu/bonn/).

Source: The Information Society Policy Office: <http://www.ispo.cec.be/infosoc/legreg/rap2.doc>.

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STEP-gruppen ble etablert i 1991 for å forsyne beslutningstakere med forskning knyttet til alle sider ved innovasjon og teknologisk endring, med særlig vekt på forholdet mellom innovasjon, økonomisk vekst og de samfunnsmessige omgivelser. Basis for gruppens arbeid er erkjennelsen av at utviklingen innen vitenskap og teknologi er fundamental for økonomisk vekst. Det gjenstår likevel mange uløste problemer omkring hvordan prosessen med vitenskapelig og teknologisk endring forløper, og hvordan denne prosessen får samfunnsmessige og økonomiske konsekvenser. Forståelse av denne prosessen er av stor betydning for utformingen og iverksettelsen av forsknings-, teknologi- og innovasjonspolitikken. Forskningen i STEP-gruppen er derfor sentrert omkring historiske, økonomiske, sosiologiske og organisatoriske spørsmål som er relevante for de brede feltene innovasjonspolitik og økonomisk vekst.

The STEP-group was established in 1991 to support policy-makers with research on all aspects of innovation and technological change, with particular emphasis on the relationships between innovation, economic growth and the social context. The basis of the group's work is the recognition that science, technology and innovation are fundamental to economic growth; yet there remain many unresolved problems about how the processes of scientific and technological change actually occur, and about how they have social and economic impacts. Resolving such problems is central to the formation and implementation of science, technology and innovation policy. The research of the STEP group centres on historical, economic, social and organisational issues relevant for broad fields of innovation policy and economic growth.