Digital Economy: Policies Exchange and Development for SMEs
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Broadband:
status - policies – issues in the EU

Part 1: National Action Plans for the development of broadband infrastructures.

Since 1999 inside many countries and inside important international organizations emerged a debate on the role of broadband infrastructures for the economic an social development. Several countries approved governmental actions plans directed to the development of broadband infrastructures. Also the European Union included broadband as a priority in its two action plans *e*-Europe. This document contains a selection – certainly not complete - of part of national and international action planes on the development of information society and broadband.

Ireland, Government – January 1999.

Implementing The Information Society in Ireland: An Action Plan is probably the first national plan dealing with the problem of the necessity of creating a modern telecommunication infrastructure. In particular the Government wanted to ensure:

a) international connectivity (guaranteeing submarine cable licencing);

b) competition in the infrastructure market;

c) the development of nation-wide broadband network (using EU Structural Funds).

In fact the Action Plans followed the publications, in January 1998 of *Broadband Telecommunications Report* published by Forfàs (The National Policy and Advisory Board for Enterprise, Trade, Science, Technology & Innovation) which clearly stated

that securing infrastructure investment for broadband telecoms is essential if the benefits of broadband services are to be available to Irish business. The most effective way to stimulate investment in broadband infrastructure in Ireland – according to the Report – was therefore to ensure that infrastructure competition is not delayed or hindered in any way by any of the potential pitfalls mentioned in this report.

Korea – Government - March 1999.

Establishing Korean Information Infrastructure (KII) is the initiative by the South Korean Government as outlined in *Cyber Korea 21*, the programme created in March 1999 for the development of the Information Society included in the *Informatisation Promotion Action Plan (1996-2000)*. Financed by the Ministry of Information and Communication (MIC) with 10.4 thousand billion, the aim was to create an environment in which users can access various multimedia services any time and anywhere by 2002.

The document stated: "By the same data, fibre optic cables will connect 144 call-areas across the whole country providing all citizens with a connection of 1.5/2Mbps at a reasonable price. High-speed communication services will be available to anyone, anywhere, at anytime. A high-speed optical fiber backbone will connect every part of the nation to speed up and improve the national information network. By 2002, 144 call zones in Korea will be interconnected by fiber-optic cables. The installation of ATM switches will start from major cities, expanding to the entire country. The digitization of local exchange networks will be completed by 2002. The combined use of fiber-optic cables, ISDN, cable modem, xDSL, wireless local loop and satellite communication will contribute to upgrading local loops. In densely populated residential areas and large buildings, local loops will be enhanced by fiber-optic cables. In rural and remote areas satellites will provide high-speed Internet connections. As a result, Koreans will enjoy telecommunication services as fast as 1.5 ~ 2 Mbps at a reasonable rate by 2002.

Sweden – Government – November 2000**.**

On November 1999 was published *A future-proof IT infrastructure for Sweden, Report by the Swedish Government's IT Commission.*

The ICT Commission's hearing led to the following conclusions.

1. Sweden should build a completely new IT infrastructure, designed for digital communication. A fine-meshed fibre optic network needs to be constructed throughout the country, so that all households, enterprises and authorities can obtain a direct network connection at low cost within five years. The fibre optic network shall be accessible to everyone within one hundred metres of all buildings.

2. Universal access to broadband will provide room for growth. As a result of everyone throughout the country having practical access to high-capacity data communication, new opportunities for employment, education, caring services, enterprise and culture will emerge on a wide front. As a result of Sweden being quick to invest in a new, advanced IT infrastructure, Swedish industry can grow and get a world leading position within this expansive area.

3. A fine-meshed fibre network throughout Sweden will be able to cope with entirely new tasks. Sweden needs a radically new, open IT infrastructure which will give everyone access to high, actual communication capacity. This can be achieved by the State, the regions and the municipalities together assuming responsibility for building a fibre optic IT infrastructure which, all in all, will form a fine-meshed network over Sweden, available at low cost to everyone, regardless of location. Using this basic infrastructure, a host of operators can act on a fully competitive basis to provide services.

4. Sweden is experiencing a "digital elevation" through the emergence of several high-speed urban networks, municipal networks and local area networks 3 emerging. These "broadband islands", however, need to be joined together in a structured, inexpensive and viable manner. This in turn calls for the systematic development of a nation-wide fibre optic structure.

- The State is assuming a leading role for vigorous implementation. The cornerstones of implementing a new IT infrastructure are:

- the State and the regions planning and co-ordinating the development of a nation-wide fibre network,

- the State providing credits to municipalities and regions on good, favourable terms.

The report defined broadband as infrastructure with bandwidth of 5 Mbit/s and upwards,

On November 2000 the Government adopted the document *An Information Society for All. A publication about the Swedish IT Policy.*

The document remembered that on March 2000 an IT Bill that was submitted to the Swedish Parliament. In this way a new foundation was laid for IT policy.

After the IT Bill in the spring of 2000, the Swedish Parliament decided to set up the objective for Sweden to become the first country to create an information society for all. It has therefore become necessary to make a precise definition of the concept of the information society. In the work of the implementation of the IT Bill, the different proposals have been organised with three future information societies as a starting point. These follow on from each other during a time period that stretches from now to approximately ten years in the future.

The three visions are rough sketches that are based on the views of specialists and analysts. Based on knowledge available today, they attempt to describe at what speed and to what degree the future IT will develop and affect us.

The following is a short summary of the three visions.

The Internet Society. The first society can be called the Internet society. It exists today and has come quite a long way as it is based on the ordinary telephone network. In the Internet society, central government and the EU need to not only ensure that the old infrastructure can be used more efficiently, but also that its quality is improved. They also need to ensure that the services used in the infrastructure are developed and are of good quality. In the latest IT Bill, the Internet Society is affected by the proposals and measures that deal with electronic commerce, security issues, transfer of public information, education and training, encouragement to use computers, and connections to the Inter-net, as well as large parts of the eEurope project.

The Broadband Society. This society is called the Multimedia and Broadband Society. The regulations for electronic communication are now being produced on an European level. The new regulations are to be adapted to the new society, where the boundaries between telecommunication, computer communication and media become less clearly defined, the so called convergence. The new regulations should also apply to the current expansion of the IT infrastructure with high transfer capacity. Progress towards the Broadband Society has started, but it will be about another five years before it becomes reality.

The Accessibility Society. There are also longer-term visions. One has been formulated by the Technology Prediction Project (Teknisk Framsynsprojektet). It is possible to call it as the accessibility society. This society will come into existence in 5–10 years. By then, our working lives and our private lives will have been thoroughly changed by IT.

The report identified seven key areas that are thought to have great significance for the long-term development in an accessibility society. Teknisk Framsyn predicts that we will live in a society in which we have the opportunity to be continually connected. People communicate electronically with each other, regardless of time and space, their homes and workplaces, or with different services on the Internet. The technical and biological worlds meet. This makes it possible to use biological material in technology, but also to meet purely human needs. Products such as hearing implants and silicon-based interfaces already exist today! This society makes great demands on software, broadband, security, improvedsystems of payment, and new laws and regulations.

Germany – Government – November 1999.

On November 1999 the German Government published the Action Programme *Aktionsprogramm der Bundesregierung Innovation und Arbeitsplätze in der*

Informationsgesellschaft des 21 Jahrhunderts ("Innovation and Jobs in the Information Society of the 21st Century"). The Goverrnment believed that "the information society needs a new infrastructure – above all, it needs efficient information networks… Technological conditions have to be created for new network generations… Broadband mobile communications networks are needed which give access to multi-media services at any time and any place, so providing a cable-free internet service.

Spain – Government – January 2000.

INFO XXI, La Sociedad de la Inform@ción para todos. Iniciativa del gobierno para el desarrollo del la sociedad de la información (Initiative by the Spanish Government for the Development of the Information Society) was published on January 2000.

The document stated that the development of broadband infrastructure is a priority for the government. In particular "Las infraestructuras de comunicación constituyen un factor clave para sustentar los servicios de la Sociedad de la Información y su continua actualización, en línea con la evolución de las tecnologías, es un requisito indispensable para éxito de la Iniciativa….

Por tanto, el Gobierno se propone, en el marco de la Iniciativa:

Procurar el despliegue en el territorio español de unas infraestructuras de comunicaciones que posibiliten el desarrollo de la Sociedad de la Información.

Para el logro de estos objetivos, el Gobierno pondrá en marcha otras medidas de tipo regulatorio o incentivador de iniciativas diseñadas sobre bases tecnológicas apropiadas.

Estas dos actuaciones dan lugar a los siguientes programas de infraestructuras y redes:

Son objetivos del Gobierno en este ámbito:

Adoptar las iniciativas precisas para promover la rápida extensión de las redes de telecomunicación de alta capacidad, de forma que se asegure la posibilidad de acceso de las empresas y de los ciudadanos a los servicios relacionados con la Sociedad de la Información.

Los instrumentos para esta actuación serán la implantación de centrales digitales, mejora de las redes troncales, modernización de las redes locales, extensión de la RDSI, mejora de servicios de red inteligente, mejora de redes de datos y acceso a Internet, mejora para usuarios con limitaciones de acceso (Telefonía Rural de Acceso Celular).

Igualmente se procurará la rápida extensión de las redes de acceso de banda ancha, preferentemente en poblaciones con menos de 50.000 habitantes. Para ello se contemplan todas las tecnologías disponibles, tanto el acceso a través de redes de

cable, adelantando los plazos previstos en los correspondientes pliegos de los concursos, como de sistemas de acceso radio y ADSL.

Favorecer en esta estrategia el uso racional de las infraestructuras existentes, así como su uso compartido, al objeto de minimizar el impacto ambiental y maximizar la productividad de los recursos.

Adoptar iniciativas para permitir un rápido desarrollo de la tecnología ADSL, acelerando los plazos previstos reglamentariamente en los que estará accesible para todos los usuarios, de forma que dispongan de la posibilidad de acceder a Internet a través de la modalidad denominada de tarifa plana, en unas condiciones de calidad y velocidad de acceso muy superiores a las actuales.

Adoptar iniciativas para alcanzar en el menor plazo posible la cobertura integral del territorio por parte de las redes de telefonía móvil digital.

Realizar un seguimiento estadístico periódico sobre el desarrollo de las infraestructuras, la evolución de la implantación y uso de los servicios y los costes, así como el control de la calidad, con un seguimiento especial de la evolución de Internet.

Las actuaciones en este campo se coordinarán con otras de ámbito regulatorio y de seguridad en la red.

Denmark - Task Force – February 2000.

The document *Digital Denmark - Conversion to the Network Society*, published on February 2000 stated that Denmark had "a well-developed telecommunications infrastructure and use of the Internet and mobile phones is widespread, but the use of broadband communications is only slowly gaining ground.

The recommendation included the necessity of Increased Demand for Broadband Connections: In order to promote the range of Internet services and broadband connections, the market should be helped on its way by means of increased public demand.

If citizens and enterprises are to exploit the potential and products and services offered by the network society, they must have access to broadband connections. A rapid spread of broadband connections is necessary to ensure the competitiveness of enterprises and the ability of the citizens to use the many new services and technologies. In line with the increase in use of the Internet, and as telephony, multimedia products and other services which require the transmission of large quantities of data are offered via the Internet, the demand for bandwidth will increase.

Denmark lacks a competition-driven market for broadband connections from individual households or enterprises to the Internet. However, it may be difficult to create market-related, financial incentives to invest in what will eventually be the ideal solution, namely the laying of fibre-optic cables to individual households or

enterprises. This will probably only occur if there is a massive increase in user demand for bandwidth.

In order to increase demand for Internet services and the installation of broadband connections, the market should, therefore, be helped on its way by increased public demand. This is the object of, among other things, the recommendations on broadband for primary and lower secondary schools and out-of-school educational establishments and on public e-commerce. In connection with decisions on public infrastructure, for example in the area of radio and TV, the focus should also be placed on stimulating demand for and the spread of technologies and network types which can be used for radio and TV, new multimedia services and other services and functions which have high bandwidth requirements. At the same time, it is necessary to focus on how competition can be stimulated and how the market for the supply of access paths to the Internet can be expected to develop in the coming years, compared with the products and services offered and the prices in other countries, and the factors which affect the development of this market.

In November 2001 the Government published *From Hardware to Content - Strategy for Fast, Cheap and Secure Internet to all of Denmark*. The strategy was directed to the continued penetration of fast, cheap and secure internet. The strategy rested on a market-based infrastructure and the Fast internet and broadband should be a natural part of the increasingly more technological and knowledge-based society. But widespread use was not a political goal in itself. It will only be so by virtue of the opportunities likely to be offered with widespread internet access.

The Government's goal was: Denmark should have fast, cheap and secure internet for support and further development of the Danish welfare society.

In early 2001, the Government therefore took the initiative for a Danish strategy on broadband and fast internet connections. The aim was to present the Government's goal and strategy for spreading and ensuring the use of fast, cheap and secure internet services in Denmark.

Finally, on June 2002 the government published *IT for All - Denmark's Future IT and Telecommunications Policy Statement and Action Plan 2002*". The IT policy objectives were:

- A significant increase in high-speed and broadband connections.
- Overall fall in prices of telecommunications services.
- Reduction in legislation specific to the telecommunications sector.

USA – FCC - August 2000.

The FCC Report *Deployment of Advanced Telecommunications Capability: Second Report* analysed the diffusion and availability of advanced telecommunications services and highlights the lack of infrastructure for residents in rural zones or outside

of the US, and for those who are in minorities or who have a low income. The commission has proposed various actions to promote investment in infrastructures and facilitate access to services. Other areas for the Commission's attention include ensuring that regulation provides access for various competitors to remote terminals, streamlining procedures for the approval of wireless equipment with advanced transmission capacities, continuing the commitment to the e-Rate programme for rural areas with further initiatives to foster high-speed connection for schools, libraries and rural communities etc, consider extending the available base for broadband communications both with and without licences, examining the possibility of implementing a national policy to promote the use of cable platforms by Internet service providers.

On February 07, 2002 FCC released the third Report on the availability of high speed and advanced telecommunications capability. This was the FCC's third inquiry, as required by Congress, into whether "advanced telecommunications capability" is being deployed to all Americans in a reasonable and timely fashion. Advanced telecommunications capability is the availability of high-speed, switched, broadband telecommunications that enables users to originate and receive high-quality voice, data, graphics, and video using any technology platform.

The report concluded that advanced telecommunications capability is being deployed in a reasonable and timely manner. The report, showed that the advanced telecommunications services market continued to grow, and that the availability of and subscribership to high-speed services increased significantly. Additionally, the report noted that although investment trends in general have slowed recently, investment in infrastructure for advanced telecommunications remains strong.

The data in the report is gathered largely from standardized information from providers of advanced telecommunications capability including wireline telephone companies, cable providers, wireless providers, satellite providers, and any other facilities-based providers of 250 or more high-speed service lines (or wireless channels) in a given state.

Commission action to promote broadband deployment. The Commission has undertaken several proceedings to promote the availability of advanced telecommunications capability with the goal of removing barriers to deployment, encouraging competition and promoting infrastructure investment. Below are listed just a few of these proceedings:

- The *Cable Modem Notice* that considers the definitional question of the regulatory classification of cable modem service.

- The *Incumbent LEC Broadband Telecommunications Services Notice* to examine the appropriate regulatory requirements for the incumbent LECs' provision of domestic broadband telecommunications services.

- The *Triennial Review Notice* to address incumbent LECs' wholesale obligations under section 251 to make their facilities available as unbundled network elements to competitive LECs for the provision of broadband services.

Additionally, the Commission plans to initiate an inquiry, the *Broadband Notice*, relating to the statutory classification of wireline broadband Internet access services. The Commission will explore what regulations, if any, are appropriate if wireline broadband Internet access services are found to be information services or other services subject to Title I of the Act. Specifically, we plan to examine implications for universal service, access and interconnection, and other core communications policy objectives.

On February 14, 2002 the FCC launched a proceeding to promote widespread deployment of high speed broadband Internet access services. In particular the Federal Communications Commission (FCC) adopted a major rulemaking to promote greater deployment of broadband services. The *Notice of Proposed Rulemaking (Notice)* is poised to resolve outstanding issues regarding the classification of telephone-based broadband Internet access services and the regulatory implications of that classification. The additional clarity brought by the resolution of these issues will promote greater investment in the nation's broadband infrastructure.

The FCC tentatively concluded the wireline broadband Internet access services - whether provided over a third party's facilities or self-provisioned facilities - are information services, with a telecommunications component, rather than telecommunications services. Information services include such services as voice mail and e-mail, which ride over telecommunications facilities.

In addressing these issues raised in this *Notice*, the Commission is guided by the following principles and policy goals:

1. Encourage the ubiquitous availability of broadband access to the Internet to all Americans.

2. Promote competition across different platforms for broadband services.

3. Ensure that broadband services exist in a minimal regulatory environment that promotes investment and innovation.

4. Develop an analytical framework that is consistent, to the extent possible, across multiple platforms.

In addition to the threshold classification issues, the Commission is searching how to strike an appropriate balance of responsibilities between the Commission and the states with respect to broadband Internet access services.

Additionally, the FCC is working on whether facilities-based broadband Internet access providers should be required to contribute to support universal service.

France - Task Force – September 2000.

In January 1998 the government approved the document *Préparer l'entrée de la France dans la société de l'inform@tion. Programme d'action gouvernemental* (Preparing France's entry into the inform@tion society. Government action programme). For the Government, the development of infrastructures supporting the Internet, as well as actively participating in its technical regulation, form a key part of France's effort to make up for lost ground in this domain.

The two lines of development of the Internet infrastructure in France were firstly the increase in the transmission speeds of each component of the network (backbone and local access) and secondly the improvement of the overall connectivity of the network, that means increasing the number of interconnection points between network elements to ensure optimum traffic management.

Full deregulation of the telecommunications sector will lead to a significant increase in the supply of means of access to the Internet; It is necessary to develop trials of alternative infrastructures

In addition the government claimed the need to develop trials on new infrastructures for local accesses (such as cordless access to the local network), as well as new uses of existing infrastructures, such as the ADSL (Asynchronous Digital Subscriber Line) which enables high speed digital signals to be transmitted over the conventional telephone network.

On September 2000 was published the report *Réseaux à hauts débits: nouveaux contenus, nouveaux usages, nouveaux services (Boudier report)*.

The conclusions included:

L'arrivée désormais inéluctable des hauts débits va impliquer dans nos sociétés des bouleversements structurels ; cette perspective doit se traduire maintenant en termes d'orientations, de décisions et d'actions.

Bien que fortement engagée dans la voie des nouvelles technologies, la France n'a pas fait le choix des mêmes options que la Suède, la Finlande ou le Canada qui ont pris une orientation radicale : des investissements massifs pour assurer des très hauts débits pour tous, dans les plus brefs délais. Cette stratégie, qui implique des investissements publics massifs, trouve son fondement dans le fait que ces dépenses publiques soutiennent la croissance de la nouvelle économie, et donc sont des moteurs importants pour la croissance et l'emploi de demain.

Pourtant force est de constater que très rares, quels que soient les pays considérés, sont les services et les véritables utilisations des réseaux à hauts débits disponibles aujourd'hui. Notre conviction est que seule une approche pilotée par la demande est susceptible de conduire à une croissance saine et durable des hauts débits, et notre enquête nous a conduit à la conclusion que le besoin de réseaux et de services à hauts débits est avéré.

Encore faut-il s'entendre sur les services considérés : les hauts débits sont inducteurs de technologies dont les champs d'application ne se limitent pas à l'informatique et aux télécommunications. Dès lors qu'on cherche à évaluer la demande pour des

services aujourd'hui nouveaux, c'est l'ensemble des secteurs de l'audiovisuel, des médias, des services en ligne, aussi bien que des producteurs d'information comme les banques ou la distribution qu'il nous a fallu considérer, dans la perspective qui était nôtre, et du point de vue du parti qu'ils pourraient tirer des hauts débits. Le champ est certes large, et le présent rapport ne prétend pas l'avoir couvert de façon exhaustive, mais une telle approche était nécessaire à une bonne compréhension des enjeux. Une telle approche est celle qui se fait jour dans les pays les plus avancés du point de vue des réseaux comme les États-Unis ou le Japon. Adopter une perspective plus étroite eut conduit à l'échec d'une étude qui ne peut se placer que dans un cadre résolument international, plus encore qu'européen. L'interdépendance des économies mondiales est en effet inévitable surtout dans un domaine où l'interconnexion des réseaux ne saurait être limitée au strict territoire national. Ce qui n'empêche pas, au contraire comme on l'a vu, le besoin actuel ou futur des utilisateurs, de s'exprimer au plan local, quand bien même sa satisfaction ferait appel à des ressources au plan international.
Ce besoin est effectivement tiré par des usages que l'on voit clairement apparaître :

- pour les entreprises, l'utilisation des services à hauts débits génère des gains de productivité qui assurent l'avenir économique des réseaux concernés. La vidéoconférence, l'irruption du traitement de l'image, l'apparition d'une demande pour des services d'applications à la demande, les échanges d'informations multimédia sont autant d'outils de productivité auxquels les entreprises auront inéluctablement recours. Si révolution des hauts débits il y a, elle a commencé mais cela sera une révolution silencieuse car très diffuse. C'est elle, notamment, qui va supporter le coût de constitution de coeurs de réseaux à très hauts débits de type Internet 2 et que l'État, dans les réseaux qui dépendent de son initiative, comme RÉNATER 3, a décidé de mettre en place (réseaux à plusieurs GigaBits par seconde) ;

- pour les particuliers, le divertissement sera le principal moteur de l'utilisation, à venir, de services et de réseaux à hauts débits. D'autres usages auront leur rôle à jouer comme la formation et le télé-renseignement. L'incertitude actuelle sur les modèles économiques n'est probablement que temporaire et l'industrie du divertissement numérique (cinéma hollywoodien, jeux numériques, consultation de sites d'information, de culture ou de distraction) est désormais suffisamment forte pour lancer l'ascension vers les utilisations de réseaux à hauts débits. En offrant de l'interactivité, elle dispose d'un avantage décisif.

Pour que ces besoins atteignent la maturité, une industrie du contenu forte doit compléter l'offre technologique des fournisseurs de services et des opérateurs de réseaux : il est rassurant à cet égard de constater que, avec prudence, parfois avec inquiétude, la France semble aujourd'hui sortir d'un débat technologique pour affronter les véritables enjeux posés par l'arrivée des hauts débits.
Ces enjeux touchent à l'organisation même de notre pays, et de ce fait conduisent à s'interroger sur la nature de son fonctionnement, de son administration, du rôle des acteurs privés et publics, et pour finir, de sa cohésion.

C'est dire que le rôle de l'État doit être surtout celui d'un accompagnateur du mouvement de généralisation des hauts débits par la re-réglementation (ce qui couvre à la fois la déréglementation des normes devenues obsolètes ou contre-productives et la régulation des nouvelles activités visant de grands objectifs tels que la protection du consommateur, de la vie privée du citoyen, des bonnes moeurs, de la loyauté de la concurrence, etc) et non pas celui d'un intervenant actif à l'aide des ressources collectives, étant entendu que l'État est par son utilisation des hauts débits l'un des acteurs importants et un inducteur de leur utilisation par l'ensemble du corps social. Notre méthode a donc été de dégager les lignes d'action d'un État moderne, présentée dans le cadre du chapitre 7 du présent rapport sous quatre rubriques :

- L'État acteur et entrepreneur ;
- Assurer la cohésion sociale en amenant les hauts débits dans les collectivités locales ;
- Établir les règles d'une saine concurrence ;
- Favoriser le développement des contenus et des services. 3
- Favoriser l'accès des PME et TPE aux hauts débits et mettre en place un réseau de plates-formes d'expérimentation et d'incubation des nouveaux services ; En permettant aux PME innovantes et aux TPE de proposer leurs activités de la manière la plus attrayante et la plus économique aux consommateurs, les plates-formes d'incubation tendent à corriger les inégalités qui favorisent les grandes entreprises et donneraient une chance aux secteurs les plus innovants de notre économie de tirer pleinement parti de leur avance technologique. En utilisant ces plates-formes pour fournir des services plus interactifs à l'administré, voire tirant parti des possibilités d'assistance en temps réel d'un conseiller en ligne, l'État rétablirait l'égalité entre ceux qui ont acquis la maîtrise des procédures administratives parfois complexes de notre pays et ceux qui se sentent démunis, voire découragés par le labyrinthe des formulaires et des déclarations multiples auprès des autorités ;
- Renforcer les pouvoirs des collectivités locales ;
- Accompagner et favoriser la création de contenus tirant parti des hauts débits.

A l'heure où le risque d'apparition d'un fossé numérique mobilise les énergies de tous ceux qui se préoccupent de l'avenir de notre pays et du maintien de sa cohésion sociale, les hauts débits représentent à la fois un risque majeur et une chance inestimable. Le risque est de voir s'aggraver la sélection par la richesse, les réseaux à hauts débits étant d'un coût non négligeable pour le consommateur. La chance est d'offrir à ce consommateur des contenus multimédia plus aptes, par leur convivialité supérieure à celle des données informatiques, à le faire entrer de plain-pied dans la société de l'information.

Norway – Government – October 2000**.**

eNorway. Action Plan was approved on June 2000. According to the document the players in the market are responsible for investing in digitalisation and broadband facilities. However, the authorities would like to make conditions suitable so that we can achieve a nationwide system of broadband communication. This is why the competition in the market must be strengthened and public demand stimulated. Special government measures must be considered to ensure access in areas where the market players cannot establish a system at acceptable cost for the desired deadline.

The Government's goal was that all primary and secondary schools, libraries, hospitals and municipal authorities will be offered broadband connections by the end of 2002.

Technological developments, increased competition and the convergence of the telecommunications, media and IT sectors make a constant review of the regulations necessary in order to adapt them. It is important for Norway to have a world class telecommunications infrastructure, which can form a basis for the profitable running of businesses and the development of new products and services. It is important for the communications networks to be secure and for people to have confidence in them.

On October 2000 was approved *Regjeringens handlingsplan for bredbåndskommunikasjon,* the government's plan of action for broadband communications. The government wanted to see a rapid and wide extension of the broadband network by the players in the market. According to the plan the whole country will be covered. Competition in the market must therefore be strengthened. In addition, public sector demand will be stimulated so that it can contribute to new investment by the market players. This will also help to renew the public sector. Special government actions must be considered to ensure access in areas where the market cannot establish a system at acceptable prices within the desired deadline.

Finland – Government - November 2000.

On November 2000 the government published *Broadband to everybody? Technical and financial viability in Finland.*

At that time fibre optic cable covered 95 per cent of Finnish municipalities and 99 per cent of the population living in these municipalities. Altogether 95 per cent of Finns lived within a few kilometres from high-speed fibre optic cable networks.

According to the document, in connecting households to the fibre optic cable network, it is rational to flexibly use both cable and radio technology.

The problem was to extend the broadband network to the most remote municipalities and to provide everyone with an access regardless of the place of residence. However, it is easier to provide information society services than many conventional areas of service to archipelago and rural areas.

According to the government it was a challenge to reach a hundred per cent coverage in high-speed access. However, even greater challenge for an equal information society was to increase people's readiness and ability to use and benefit from information networks.

According to the study, it is usually not the best choice to connect the subscriber to the regional network with fibre optic cable. A better alternative is to decide case by case whether to use copper cable or radio technology. However, in new residential areas, it is wise to extend the fibre optic cable to house MDFs. In the future, digital television and electronic networks will also be channels for data transfer.

The quality of available services and the possibilities to obtain a customer terminal influence the decision of whether or not to acquire access to information networks. Some people are satisfied with an access at the working place. Mobile telephone technology is also replacing the need for fixed access. However, fixed copper cable connections do exist and they will probably be used more in the future.

The Finnish Parliament had to discuss a legislative proposal that would make it possible to lease the high band of the subscriber line. This is believed to reduce the prices of leasing and customer services. The high band connection of a telephone cable (xDSL) is fast enough to transmit such value services as email and continuous Internet access.

UK – Government – February 2001.

On February 2001 the government adopted the document *UK online: the broadband future. An action plan to facilitate roll-out higher bandwidth and broadband services*.

The Report recommended a programme of action by Government and industry covering the following four areas.

1. Providing leadership. The Government should:

- set a goal for the UK: to have the most extensive and competitive broadband market in the G7 by 2005, with significantly increased broadband connections to schools, libraries, further education colleges and universities*;* and

- develop and implement a strategy for meeting these goals in close consultation with key players in the private and public sectors, in particular by:

- establishing a UK online Broadband Stakeholder Group, to be chaired by the e-Minister;

- developing, through the devolved administrations and Regional Development Agencies, complementary strategies at local/regional level; and

- assisting the devolved administrations and Regional Development Agencies in this by establishing a fund of £30 million over the next three years to support them in taking forward innovative schemes to meet local requirements.

2. Driving forward competition in the supply of broadband infrastructure and services. The Government should continue to drive forward its pro-competitive approach to broadband, through regulatory pressure on BT's wholesale supply of ADSL, local loop unbundling, the roll-out of broadband wireless services and the innovative use of satellite facilities.

3. Tackling barriers to growth of broadband market. The report identified four areas where action is required to tackle barriers to growth which may be holding back market development:

- Stimulating demand for broadband services: the key was to engage interest in Internet use of any sort – the vast majority of broadband users come to see the benefits of it only after having first used narrowband services. The UK online initiatives to drive forward universal access to the Internet weree therefore vital.

The report proposed that at least 3,800 of the publicly-funded UK online Centres and all UK online for business centres should be equipped with 2 Mbits/s connections or higher in order to demonstrate the benefits of broadband.

Tackling fragmentation of demand: the report recommended a range of actions aimed at:

– auditing potential demand for bandwidth by the public and private sectors in 100 market towns with a view to encouraging private sector investment in broadband infrastructure;

– aggregating demand for bandwidth by the public sector in ways most likely to encourage broadband infrastructure investment by the private sector, particularly in rural areas;

– encouraging private sector demand for broadband services in rural and low income areas to cluster into economically viable groups, and using the regional planning process to facilitate broadband links to those clusters;

– encouraging all publicly funded workspaces to offer broadband connectivity of at least 2 Mbit/s; and – establishing a network of business incubators connected at 10 Mbit/s or above, to act as seedbeds for start-ups requiring next generation broadband services.

- Stimulating the production of broadband content: by working with industry, through the Digital Content Forum, to tackle barriers to growth of the broadband content sector, and by driving forward use of broadband content to enhance public services.

- Tackling the skills needs of broadband: by working with industry to address skills gaps in both the engineering skills needed for broadband roll-out and the mix of technical and creative skills needed for creation of broadband content.

Action should have included the creation of up to 20 new technology institutes to provide advanced learning in ICT, with at least two centres in each region.

4. Undertaking urgent research on the costs and benefits of pump-priming the market to extend services to rural areas and lower income groups. Tackling the barriers identified above should help the market for broadband services develop as efficiently as possible. Further measures necessary could be necessary to pump-prime the market – for example through tax incentives of public private partnerships – to help take broadband into areas of the country or sectors of the economy which the market may not supply on commercial grounds. Considerable work is therefore needed to ensure that the Government has accurate and up-to-date information on the broadband market as it develops in the UK and internationally, so it can judge on an ongoing basis whether pump-priming may be necessary, and whether the benefits of any such intervention would outweigh the costs.

The report therefore recommended a major programme of research on the broadband market, to inform future strategy development.

Canada – Task Force – June 2001

The *Report by the "National Broadband Task Force",* a structure created by the Canadian Minister for Industry, was published on June 2001. The task force's prime mandate was to shape a strategy in order to ensure that Canadian firms and citizens have broadband connection by 2004.

The Report made clear the objective of developing strategies to make broadband service available to geographical communities that are unlikely to be served by market forces alone by 2004. This challenge could be win only by combining the efforts of all stakeholders – governments, the private sector and the communities themselves.

In light of the magnitude and complexity of the broadband challenge, the Task Force thought it was important to develop a set of principles which would not only guide its work, but also serve as a point of reference for governments and other stakeholders as they seek ways and means to extend broadband service to all Canadian communities. After considerable discussion and debate, we agreed that:

• all Canadians should have access to broadband network services so that they can take advantage of broadband opportunities wherever they live;

• the definition of broadband and related concepts should be dynamic and reflect changes in technology, applications and Canadians' requirements;

• all Canadians should have access to the social, cultural and economic benefits delivered through broadband applications;

• in addition to broadband infrastructure, access involves the parallel development of content, services, and individual and community capacity;

• all communities, institutions, businesses and individuals in Canada should have equitable and affordable access to broadband services, and to the widest possible range of content and service providers;

• communities should be engaged in planning broadband networks in light of local needs, and in building local capacity to use broadband services and content;

• the private sector should play a leadership role in the development and operation of broadband networks and services;

• governments should facilitate the deployment of broadband networks, services and content through policies and regulations that favour private sector investment, competition and innovation, as well as by supporting communities, the creation of Canadian content and the use of broadband to deliver public services;

• publicly assisted programs to deploy broadband infrastructure to communities unlikely to be served by market forces alone should be guided by such considerations as sustainability, technological neutrality, timeliness, affordability and the value of open, competitive markets; and

• publicly assisted programs should achieve sustainable broadband access to every public learning institution, public library, health care centre and other designated public access point in the country.

In developing an action plan for ensuring that broadband services will be available to Canadian communities that are unlikely to be served by market forces alone by 2004, the Task Force drew great benefit from the counsel of a number of provinces, territories, municipalities and other communities that have already launched similar initiatives within their jurisdictions, or are in the process of doing so.

The experience of Canada's broadband pioneers provided an essential reality check for the Task Force. It helped immeasurably to point us in the right direction, as we sought to develop priorities and models for broadband deployment.

In light of this experience and on the basis of our analysis of the broadband requirements of Canadian communities, the Task Force recommended that by 2004, broadband facilities and services should be deployed to and within all Canadian communities, according to the following priorities.

• All Canadian communities should be linked to national broadband networks via high-capacity, scalable transport links capable of supporting an aggregate of 1.5 Mbps symmetrical service to each end user, as well as higher bandwidths to institutions.

• Access to broadband in First Nation, Inuit, rural and remote communities (including Métis communities) should be available at a reasonably comparable price to that charged in more densely populated areas.

• The local broadband access infrastructure should be extended to the community's public facilities, including every public learning institution, public health care facility, public library and other designated public access point.

• The local broadband access infrastructure should also be extended to local business and residential users, for example, by leveraging broadband infra-structure serving public facilities.

Given the great diversity of the needs and capabilities of Canada's rural, remote, northern, First Nation and Inuit communities, the Task Force quickly concluded that it would be pointless to try to design a "one size fits all" approach to implementing these priorities.

However, we strongly believe that one of our key roles is to help governments and other stakeholders get on with the job of extending broadband access, by:

• identifying the core objectives that should guide publicly funded broadband deployment initiatives; and

• developing clear and practical models for partnership and co-operative action.

After examining a large number of alternative approaches, we came to the conclusion that government- funded broadband deployment models should achieve the following objectives:

• ensure third-party open access;

• ensure competitive and technological neutrality;

• ensure sustainability and scalability;

• ensure transparency in all aspects of government funding programs;

• maximize the role and risk taking of the private sector;

• leverage the financial capability of the private sector;

• minimize deployment costs;

• encourage public and private sector partnerships;

• respond to community needs; and

• build community capacity.

With these objectives in mind, the Task Force concluded that there are two main ways in which the broadband priorities can be implemented by 2004:

• through an *infrastructure support model*, focused on incentives to stimulate the supply of broadband infrastructure and services, similar to the approach that has already been adopted by some provinces and territories; and

• through a bottom-up *community aggregator model*, focused on the stimulation of demand for broadband capabilities, similar to the approach that has already been adopted in some communities and municipalities.

Japan - Government – October 2001

On October 2001 the Government published the White Paper *Information and Communications in Japan - The Accelerating IT Revolution: A Broadband-driven IT Renaissance*.

The document starts expressing the belief that the Broadband Era is characterized by a qualitative change in Internet usage, allowing for (1) sending and receiving of any form of information quickly; (2) constant connection; and (3) connection via means other than PCs, such as cell phones and networkable home appliances. It is a time when all people in all situations will be able to use information.

The White Paper Mapped Out the National IT Strategy:

1. Building a strategic system that will usher in an IT society;

2. Basic policies for promoting the IT society;

Policies for Creating an Environment That Will Bring About the IT:

- Formation of the world's most advanced information and communications network;
- Promoting education and nurturing human resources;
- Promoting e-commerce
- Promoting information intensification in the national government and local governments
- Ensuring the safety and reliability of advanced networks;

Finally it was pointed out that existed problems common to all five categories noted above that will require focused efforts to ensure the realization of an advanced information and communications network society. The e-Japan Priority Policy Program classified these into four categories: promotion of R&D; closing the digital divide; handling new problems that will arise from changes in social and economic structures; and promotion of international coordination and contributions to international efforts.

Italy – Task Force – November 2001

On October 2000 the Information Society Forum – created inside the Prime Minister's Office – published the book *e-Italia. Un progetto per l'Italia e l'Europa, un contributo per la comunità internazionale. Rapporto del Forum per la Società dell'Informazione* (*e*-Italy. A project for Italy and Europe, a contribution to the international community. The information Society Forum Report).

The Report noted that the liberalisation launched by the European Union failed to resolve the question of how to introduce broadband networks homogeneously over the "last mile" (the local loop), especially in the disadvantage areas. The Italian Government has intervened on several occasions at the European Union level to argue for the adoption of an infrastructure policy allowing Member States to use structural funds to help finance investment in networks. The e*Europe 2002* document provides the first response to these proposals for disadvantaged areas.

The development of broadband infrastructure - essential for the proper delivery of interactive multimedia services - will have a major impact on the country. This has become all the more urgent in the light of the rapid growth of mobile communications. Mobile telephone use in Italy has already overtaken fixed-line telephony and is now a powerful driving force behind the development of the Internet. As mobile computing, mobile banking and mobile commerce become more popular, the focus has shifted to the ubiquitous delivery of customised Internet services for users.

The report set four fundamental goals.

A. Accelerate the integration of voice, data and images and, more generally, champion any type of technological convergence that facilitates the development of on-line interactive multimedia services

B. Create, in the medium to long-term, low-cost broadband telecommunications infrastructure suitable for the new class of services.

Several factors could impede the uptake of new telecommunications services, but the two most liable to cause problems are the absence of suitable infrastructure and a forbidding cost structure. Moreover, experts believe that mobile networks are not capable of replacing high-speed fixed-line infrastructure.

- There was the need to ensure that network infrastructure is regularly upgraded to keep it up to date. Similarly, legislation regulating access, interconnection and pricing policies must be constantly reviewed and updated.
- Each regional government should undertake to monitor its existing infrastructure and identify priority areas of action (for example, needs reported by industrial districts, businesses, universities, hospitals and schools).
- Central government and, in particular, the Ministry of Communications, must promote policies to subsidise investment that can no longer be postponed if the country is to avoid falling behind in development or prevent migration away from areas that are not properly served.
- Local authorities must create conditions more conducive to private cable companies interested in hooking up residential users. In those areas where private investment is scarce or at any rate insufficient for the successful achievement of development goals, consideration should be given to setting up companies with mixed or public-sector capital.
- All municipal authorities should, as soon as possible, approve the regulation provided for by Law 249/1997 that would enable the cabling of towns by firms which have submitted applications to use public land. In this way, municipal authorities can contribute to creating an environment where advanced, competitive and widely-available services can flourish.

- The infrastructure by which residential users gain access to the network must be progressively upgraded to give users the bandwidth they need to enjoy the interactive multimedia services of the future.

A nationwide high-performance backbone is an absolute prerequisite for adequate service quality. Not only must the backbone be able to deliver high-quality service now, but must also be capable of handling the traffic volumes of the future, which will vastly larger than present flows. The new architecture must therefore permit the more efficient use of available network resources. Those that are available today often cannot handle new multimedia applications, which is hardly surprising given that the routing of connections by means of circuit switching was invented with voice telephony in mind.

Large-scale investment is needed in Italian networks, especially in disadvantaged areas. This is a matter of absolute priority which demands a clear-sighted approach, especially given the presence of a large number of operators in an increasingly competitive environment.

According to the report was necessary to encourage the maximum use of existing local networks and their interconnection at the national level. The paradigm is the Internet, whose massive success has largely been due to the lack of red tape and the streamlined approach to the creation of what is essentially a confederation of autonomous bodies that share the same technical standards and are pursuing the same goal of interoperability.

C. Optimise existing infrastructure by eliminating bottlenecks and avoid waiting for the completion of broadband networks.

D. Bring regulations and pricing policies into line with the new ICT scenario.

On September 2001 the Ministry of Communications and the Minister for Innovation and Technologies created a Task Force on Broadband Communications. The Task Force published its *Rapporto sulla banda larga* (Report on Broadband) on February 2002.

It was the Task Force's opinion that take-up of broadband is a priority objective for Italy, and that the Government should draw up industrial policy guidelines for the development of infrastructure and services.

Take-up of broadband in the country was considered an inescapable necessity owing to its knock-on effects on economic, technological and cultural growth.

Implementing the responses to address this need is proving difficult in Italy, as indeed it is internationally, owing to growing conviction that it is not possible to extend broadband to all areas under the same conditions.

Studies and early practical experiments have underscored the need to differentiate between the technologies adopted depending on the specific demographic and geographic characteristics of different areas. A further issue to tackle regards recent deregulation and the opening up of markets to competition and privatisation. Though

these processes have been hampered by significant difficulties and have yet to achieve a stable equilibrium, no serious reasons have emerged to suggest that current trends should be reversed.

However important and effective a driving force it may be, competition alone cannot guarantee achievement of an objective as ambitious as the diffusion of broadband, a process influenced by a large number of variables.

This leads the Task Force to the initial recommendation concerning the role the Government might play in extending the reach of broadband.

Rather than promoting supply alone, it was considered necessary to take steps to encourage the balanced development of supply and demand. It is a matter of putting in place a framework of elements conducive to such development, including rules governing operations, safeguards and, where necessary, support in fostering competition.

Accordingly, it was the Task Force view that take-up of broadband in Italy should be undertaken on the basis of a “selective" model rather than through a "universal service" approach.

This assertion should not be interpreted as acknowledging any limitation on the eventual spread of broadband. The goal was to adopt a model that the Government is able to implement with a high probability of success.

In any case, the Government’s scope for exerting a positive impact on the process of broadband development in Italy lies primarily with the implementation of indirect initiatives.

These actions should be the outcome of specific policies for the industry, which should be developed within the framework of initiatives embracing various government bodies, with the Ministerial Committee for the Information Society being the natural point of reference for such activity.

According to the report it was necessary to establish priorities, approaches and timetables for these interventions.

The lines of action were: development of infrastructure and technologies; support of broadband supply and demand; regulation of the connectivity market; regulatory measures; development of monitoring tools.

European Union

On August 2001 BDRC Ltd published the Report *The Development of Broadband Access Platforms in Europe: Technologies, Services, Markets*, commissioned by European Commission, DG Information Society.

The study described the development of broadband access platforms across the European Union. The conclusions were:

Considering the technical potential of each access platform, it is apparent that there is a clear winner in terms of speed, reliability and future potential. Of all currently available technologies, fibre optic is the most suited to digital data transmission.

According to the report, despite its proven benefits, fibre optic is not being widely considered as an access platform for the home/SME because of the considerable investment required. The principle barrier is financial, not technical. The problem is that the business model for fibre to the home is hard to justify. To ensure that the best technical solution gets to market, it is necessary to take a long-term perspective. However, like building a 'railroad' through the desert of the 'wild west', such an investment requires almost blind faith in the future of the digital age. But it is precisely this type of belief (albeit in the Internet specifically) that lead to the unprecedented interest in 3G licences and the rapid global growth in value of tech stocks and Internet related businesses at the beginning of 2000. However, when this 'bubble burst', so did the immediate chances of rapid and extensive deployment of broadband access platforms.

Continuing the logic that fibre optic technology is the best solution for data transmission, it becomes apparent that the recent enthusiasm for high-speed mobile transmission (3G) may prove to have been misplaced. To compromise on speed in order to receive and transmit data at any location and at any time, may not be the best fit between human behaviour and the available technology. Perhaps a better solution may prove to be geographically fixed 'hot-spots' (wired or wireless), which allow very large amounts of data to be stored in the memory of a mobile terminal (PDA, laptop, etc.), and then accessed while on the move. This could then be combined with comparatively low-speed mobile access. Furthermore, innovations such as Wireless Optical Access and Fixed Wireless Access have the potential to provide seamless connections which overcome the need to lay fibre, but are as fast as fibre over distances of 1-2km.

In the current market climate, with the threat of further economic slow-down and large debts among many incumbent telecommunications operators, businesses are likely to prefer to maximise short-term returns rather than invest in the future. The likelihood is that interim technical solutions (e.g. ADSL and 3G) may prevail for many years and hold back the potential of ultra high-speed access to the home (e.g. fibre optic). However, it is in this climate that a decisive and forward thinking action by a competitor could stimulate the market.

The answer to developing the market for broadband access is to market content and not access. The content that is currently most popular is TV (plus films, games, radio, music and the web) and as digital convergence progresses, and new interactive media emerge, the market will become increasingly willing to pay for new forms of content (perhaps without even considering how it arrives). Only when this occurs will broadband stimulate use, which in turn will stimulate demand.

Across the EU, the principle characteristic of the broadband market is diversity. This represents both a danger and a potential strength. In terms of the roll out of physical

infrastructure, such diversity could lead to a highly fragmented market in which different regions have different alternatives. This would be very bad for the future of broadband as investment in digital transmission systems works best where there is technical harmonisation and a common vision of the future. However, diversity of technical solutions could become a great strength if it leads to a wider choice of access platforms to the home/SME. For example, ADSL, cable and FWA (plus other platforms), all available in the same market to the same customers.

Given the importance of content, the diversity of cultural contexts in the EU also represents a danger and a potential strength. For example, the anglophone nature of the Internet was initially a strength assisting its rapid growth, but now non-English speaking cultures are beginning to develop their own Internet content. Such cultural diversity increases the depth and richness of the content available, and encourages more people to benefit from the potential of the digital era. The EU is very well placed to benefit from such rich and varied content.

Finally the reports indicated the recommendations**.**

Given the current market climate, which may not be conducive to rapid broadband deployment, government may play an important role to encourage a faster development of broadband platforms in Europe. Below are measures that could be implemented in Europe – some at EU, others at national level - to accelerate broadband take-up. These measures also cover important issues such as ensuring access to broadband platforms in all regions and cities in Europe.

For the short to medium term, stimulate demand for broadband by encouraging the widest possible roll out of all platforms and the possibility of low cost access: maintain pressure on incumbents to unbundle local loops fully; ensure that cable operators do not gain exclusive access to customers; encourage competition between platforms (e.g. ADSL, cable & FWA); ensure a strong legal position with regard to anti-competitive situations; encourage Member States to learn from the experiences of others; provide tax incentives/subsidies for investment in less profitable regions; promote standardisation of components and protocols; Encourage European wide business strategies by harmonising the regulatory environment across the EU, with regard to broadband deployment. In particular, to encourage a common situation regarding the deployment of physical infrastructure such as hanging cables through the streets, digging and occupying ducts, and the installation of wireless co-location sites; stimulate demand for digital broadcasting (which will encourage the wider population to access digital content); provide tax incentives/subsidies for analogue TV converters.

For the long term, provide a clear vision toward universal fibre optic transmission: provide tax incentives/subsidies for fibre optic development; develop pan-European policy on physical infrastructure for fibre optic; encourage industry to share ideas and agree common standards. Further investigate the possibilities of Fixed Wireless Access and Optical Wireless Access as viable alternatives to laying new physical infrastructure to every home/SME.

e-Europe. The European Council held in Lisbon on 23/24 March 2000 set the ambitious objective for Europe to become the most competitive and dynamic economy in the world. It recognised an urgent need for Europe to quickly exploit the opportunities of the new economy and in particular the Internet.

To achieve this, the Heads of State and Government invited the Council and the Commission to draw up ″...a comprehensive eEurope Action Plan …. using an open method of co-ordination based on the benchmarking of national initiatives, combined with the Commission's recent eEurope initiative as well as its Communication 'Strategies for jobs in the Information Society'. "

The *e-Europe 2002. An Information Society For All. Action Plan prepared by the Council and the European Commission for the Feira European Council, 19-20 June 2000* in reality was launched by the European Commission in December 1999 with the objective to bring Europe on-line. Complementary to *e*Europe, the Commission also presented a Communication on "Job Strategies in the Information Society" in January 2000. The actions were clustered around three main objectives:

1. A cheaper, faster, secure Internet: a) Cheaper and faster Internet access; b) Faster Internet for researchers and students; c) Secure networks and smart cards.

2. Investing in people and skills: a) European youth into the digital age; b) Working in the knowledge-based economy; c) Participation for all in the knowledge-based economy.

3. Stimulate the use of the Internet: a) Accelerating e-commerce; b) Government online: electronic access to public services; c) Health online; d) European digital content for global networks; e) Intelligent transport systems

According to the Action Plan developments depended mainly on private sector funding. Such activity may be supported with European funding, but much depends on action by Member States. This action should, of course, not compromise budgetary discipline.

As a response to convergence and to the changing market and technological conditions, a new pro-competitive regulatory framework, which reinforces competition and takes account of the increasing speed of developments in this sector, is being put forward by the Commission. All possible efforts should be made to ensure that it is adopted as soon as possible in 2001. Meanwhile competition in the local loop must be developed as a matter of priority. The Commission has therefore recommended the unbundling of the local loop by the end of 2000. In addition, the necessary frequencies for multimedia wireless systems should be made available. The Commission will draw appropriate conclusions from the sector enquiry on excessive pricing of leased lines conducted under EC Competition Law.

Ensuring that less-favoured regions can fully participate in the information society it was considered a priority for the Union. Projects encouraging up-take of new technologies must therefore become a key element in regional development agendas. Public investment in information society infrastructure in less favoured regions may

be justified in cases of market failures, where private investment alone cannot be profitable. These investments must be made in a way that does not distort competition and is technologically neutral. Investments must be determined by each region and on the basis of their particular economic and social structure. The Commission has undertaken to increase priority of information society related projects within the structural funds. A similar revision of priorities has been announced by the European Investment Bank (EIB).

On June 2002, during the Sevilla European Council, the European Commission presented *eEurope 2005: An information society for all.*

The objective of the Action Plan was to provide a favourable environment for private investment and for the creation of new jobs, to boost productivity, to modernise public services, and to give everyone the opportunity to participate in the global information society.

eEurope 2005 therefore aims to stimulate secure services, applications and content based on a widely available broadband infrastructure.

The Barcelona European Council called on the Commission to draw up an eEurope action plan focussing on "the widespread availability and use of broadband networks throughout the Union by 2005 and the development of Internet protocol IPv6 …. and the security of networks and information, eGovernment, eLearning, eHealth and eBusiness".

Most services are provided by the market. Developing new services needs significant investment, most of it from the private sector. But there is a problem: funding more advanced multimedia services depends on the availability of broadband for these service to run on, while funding broadband infrastructure depends on the availability of new services to use it.

Action is needed to stimulate services and infrastructure to create the dynamic where one side develops from the growth of the other. Both developing services and building infrastructures are mainly tasks for the private sector and eEurope will create a favourable environment for private investment. This means not only developing an investment friendly legal framework but also taking action that stimulates demand and so reduces uncertainty to private investors.

eEurope 2005 applies a number of measures to address both sides of the equation simultaneously. On the demand side, actions on e-government, e-health, e-learning and e-business are designed to foster the development of new services. In addition to providing both better and cheaper services to citizens, public authorities can use their purchasing power to aggregate demand and provide a crucial pull for new networks. On the supply side, actions on broadband and security should advance the roll-out of infrastructure.

The Lisbon strategy is not just about productivity and growth but also about employment and social cohesion. eEurope 2005 puts users at the centre. It will improve participation, open up opportunities for everyone and enhance skills.

eEurope contains measures regarding e-inclusion in all action lines. One important tool to achieve this is to ensure multi-platform provision of services. It is generally accepted that not everyone will want to have a PC.

Making sure that services, especially online public services, are available over different terminals such as TV sets or mobile phones is crucial to ensuring the inclusion of all citizens.

The eEurope action plan is based on two groups of actions which reinforce each other. On the one hand, it aims to stimulate services, applications and content, covering both online public services and e-business; on the other hand it addresses the underlying broadband infrastructure and security matters.

The action plan comprises four separate but interlinked tools Firstly, policy measures to review and adapt legislation at national and European level; to ensure legislation does not unnecessarily hamper new services; to strengthen competition and interoperability; to improve access to a variety of networks; and, to demonstrate political

By 2005, Europe should have: modern online public services; e-government; e-learning services; e-health services; a dynamic e-business environment; and, as an enabler for these widespread availability of broadband access at competitive prices; a secure information infrastructure.

Europe 2005 identifies those areas where public policy can provide an added value and therefore focuses on a limited set of actions in priority areas. Some key targets are: Connecting public administrations, schools, health care to broadband; Interactive public services, accessible for all, and offered on multiple platforms; Provide online health services; Removal of obstacles to the deployment of broadband networks; Review of legislation affecting e-business; Creation of a Cyber Security Task Force.

Secondly, eEurope will facilitate the exchange of experience, of good practices and demonstration projects, but also of sharing the lessons from failures. Projects will be launched to accelerate the roll-out of leading edge applications and infrastructure.

Thirdly, policy measures will be monitored and better focussed by benchmarking of the progress made in achieving the objectives and of the policies in support of the objectives.

Fourthly, an overall co-ordination of existing policies will bring out synergies between proposed action**s.** A steering group will provide a better overview of policy developments and ensure a good information exchange between national and European policy makers and the private sector. This steering group would also make an early participation of candidate countries possible.

The action plan is a proposal to Member States to take some far-reaching commitments. It is an invitation to the private sector to work with the Commission and Member States to realize the eEurope objectives. It sets out the initiatives the Commission will or is willing to take.

Overall the action plan sets the scene for a co-ordinated European policy approach on information society issues. The eEurope action plan should be confirmed as a key element in the Lisbon strategy. If successful, this plan will have a significant impact on growth and productivity, employment and social cohesion in Europe.

Oecd

The OECD (Working Party on Telecommunication and Information Services Policies) has published its first document, *The Development of Broadband Access in OECD Countries*, on June 2001.

Main points of the document were:

- The development of broadband access to the Internet is gaining increasing prominence. This is occurring in fields that go well beyond communications policy. One reason for this is the role advanced communication capabilities may have played in generating higher growth in productivity rates, as well as new network-based economic activities, in some countries over recent years. If, as many believe, new communication tools such as the Internet and wireless networks boosted growth in the latter half of the 1990s, and softened the current cyclical downturn, then the next steps toward broadband access are of critical importance that go beyond the communications sector.

- The current bottleneck to growth in the communications sector, and beyond for areas such as electronic commerce, is the limitations of local access networks. These limitations are not just technological. The inheritance of many decades of monopoly provision of access networks is that there is usually only one, or at best two, networks passing most homes and businesses in OECD countries. In some cases the same company still owns both these networks.

- In liberalising their telecommunication markets OECD countries have taken a very necessary step in providing the competitive forces that will build choice for users. They have also unleashed a torrent of innovation in the communication industry that is, at last, beginning to rival that of information technology.

New access technologies are being developed, existing networks being upgraded and new networks being built. The pace of development, however, is extremely uneven across the OECD area. Much can be done, in many countries, to increase the pace at which broadband access becomes available, the quality of service this involves (not all broadband is equally broad), and to reduce prices.

The aim of the report is to update developments in terms of the roll out of broadband access in OECD countries. It does not aim to provide a definitive description of the technological alternatives or the applications for which it is being used but rather to highlight developments in relation to the leading platforms.

The analysis of the report leads to the following policy conclusions:

- The most fundamental policy available to OECD governments to boost broadband access is infrastructure competition.

- A second necessary step is to open up the network elements, of players in dominant positions, to competitive forces. Policies such as unbundling local loops and line sharing are key regulatory tools available to create the right incentives for new investment in broadband access. The evidence indicates that opening access networks, and network elements, to competitive forces increases investment and the pace of development. Nearly all OECD governments have already introduced such policies, or taken decisions to introduce such policies, in respect to telecommunication networks.

- Open access to cable networks, where it is warranted by market conditions.

- Arguably cable operators are in a less dominant position than incumbent telecommunication carriers. A case can be made for not subjecting new cable infrastructure to open access policies particularly where new entrants have little market power. The initial experience is that open access, for all mature platforms, increases the incentives for new entrants. On the other hand experience also indicates that the likely winners are those companies that own, manage and are responsible for their own infrastructures.

Clearly, infrastructure competition is the best policy tool available but, the reality is that, it takes time to rollout competitive platforms. By not making those network elements that take the longest time to build, available to new entrants, some countries risk missing the immediate additional competition this can bring to a market.

- At the beginning of 2001 just one person per 100 inhabitants, on average in OECD countries, was a subscriber to high speed Internet access. By way of contrast the leading country surpassed 10 subscribers per 100 in early 2001. The challenge for all other countries is to emulate and exceed that target as quickly as possible to breakthrough the current access bottlenecks. This will not only stimulate growth in the entire communications sector but also drive growth in areas such as electronic commerce and contribute to overall growth in OECD economies.

Part II: Conclusions

Broadband benefits.

Al the National Action Plans agreed on the fact that broadband infrastructure bring enormous advantage for the development of society.

Ireland: Securing infrastructure investment for broadband telecoms is essential if the benefits of broadband services are to be available to Irish business.

Spain: Las infraestructuras de comunicación constituyen un factor clave para sustentar los servicios de la Sociedad de la Información y su continua actualización,

en línea con la evolución de las tecnologías, es un requisito indispensable para éxito de la Iniciativa.

United Kingdom: Broadband services, offering higher connectivity and entirely new sorts of value added services, will be a significant factor in determining national competitiveness over the coming years.

France: L'arrivée désormais inéluctable des hauts débits va impliquer dans nos sociétés des bouleversements structurels; cette perspective doit se traduire maintenant en termes d'orientations, de décisions et d'actions… Pour les entreprises, l'utilisation des services à hauts débits génère des gains de productivité qui assurent l'avenir économique des réseaux concernés. La vidéoconférence, l'irruption du traitement de l'image, l'apparition d'une demande pour des services d'applications à la demande, les échanges d'informations multimédia sont autant d'outils de productivité auxquels les entreprises auront inéluctablement recours.

e-Europe 2005: Most services are provided by the market. Developing new services needs significant investment, most of it from the private sector. But there is a problem: funding more advanced multimedia services depends on the availability of broadband for these service to run on, while funding broadband infrastructure depends on the availability of new services to use it.

Action is needed to stimulate services and infrastructure to create the dynamic where one side develops from the growth of the other. Both developing services and building infrastructures are mainly tasks for the private sector and eEurope will create a favourable environment for private investment. This means not only developing an investment friendly legal framework but also taking action that stimulates demand and so reduces uncertainty to private investors.

Oecd: Broadband has the capacity to create an environment where everyone, irrespective of their geographic location, can have the same opportunities in commerce, education, health care, entertainment and government services.

Definition of Broadband.

The definition of broadband it is really difficult. A solution was proposed by the Oecd document, which contains the following definition:

Broadband refers to the amount of capacity (or speed of data transfer) provided on a telecommunications network. Internet connections over a telephone line usually use a modem with a speed of 33.6 or 56 Kbps (kilobits per second). On the other hand, the broadband transmission rate is faster than 2 Mbps (megabits per second), according to ITU-T Recommendation I.113 (ITU, 1997). Previous OECD work defined broadband as providing downstream access of 256 Kbps (and upstream access of 128 Kbps) (OECD, 2001*a*) in that these are at present the most common speeds offered by DSL in OECD countries.

The Fcc's Report of August 2000 utilized the following definitions:

advanced telecommunications capability, infrastructure capable of delivering a speed in excess of 200 kbps in each direction; *high speed* those services capable of delivering transmission speeds in excess of 200 kbps in at least one direction.

The Report by the Canadian "*National Broadband Task Force"* defined broadband as high capacity, two-way link between an end user and access network suppliers capable of supporting full-motion, interactive video applications.

Finally the document issued by the Italian *Task Force on Broadband Communications,* wrote that Broadband communications refers to the technological environment that permits the use of digital technologies at maximum levels of interactivity. The technological environment consists of applications, content, services and infrastructure… At the moment, bandwidth on the order of hundreds of kbit/s for private use is sufficient, but in the short-to-medium term bandwidth of at least several Mbit/s will be necessary even for private users. Business and government already require several Mbit/s and higher orders of bandwidth will be necessary in the future.

The Canadian definition appears the most modern and the one capable of including the new services – expecially video – available on the market. This means the necessity of including inside broadband a minimun capacity of 2 M/bits. Appears therefore non acceptable the following statement contained in the Oecd document: Moreover, different technologies will allow users to choose between broadband options according to their needs. As broadband technologies are still only nascent, it is difficult to focus on a specific technology in examining infrastructure deployment issues. At present, it is hard to predict the broadband market trend because it is consumers who decide the technologies to be adopted. In other words, no one currently knows which technology will best provide broadband.

In reality a full capacity of M/bits can be guaranteed to all the users of each community only by the fiber optics. In this directions is the statement of the Italian Task Force: Even though developing xDSL technologies is the best way of introducing broadband quickly, it makes strategic sense for Italy to start investing now in the transition from copper to fibre technology. Delays in doing so will be hard to remedy with medium-term solutions.

Finally can be helpful to remember that the national broadband infrastructures can be divided in:

- National backbone networks, the backbone connecting the main area of each country.
- Community networks, the networks deployed inside each area.
- Access network ("Last mile"), the infrastructure connecting the telephone company facilities to each household.

Since the cost of providing fibre optics broadband to everybody it is too high, some countries accepted the idea that some part of the territory will be served by Adsl (Asynchronous Digital Subscriber Line) technologies or by wireless access:

Spain: Igualmente se procurará la rápida extensión de las redes de acceso de banda ancha, preferentemente en poblaciones con menos de 50.000 habitantes. Para ello se contemplan todas las tecnologías disponibles, tanto el acceso a través de redes de cable, adelantando los plazos previstos en los correspondientes pliegos de los concursos, como de sistemas de acceso radio y ADSL.

France: The government claimed the need to develop trials on new infrastructures for local accesses (such as cordless access to the local network), as well as new uses of existing infrastructures, such as the ADSL which enables high speed digital signals to be transmitted over the conventional telephone network.

Finland: It is usually not the best choice to connect the subscriber to the regional network with fibre optic cable. A better alternative is to decide case by case whether to use copper cable or radio technology. However, in new residential areas, it is wise to extend the fibre optic cable to house MDFs. In the future, digital television and electronic networks will also be channels for data transfer. According to the report the high band connection of a telephone cable (xDSL) is fast enough to transmit such value services as email and continuous Internet access.

United Kingdom: The Government should continue to drive forward its pro-competitive approach to broadband, through regulatory pressure on BT's wholesale supply of ADSL, local loop unbundling, the roll-out of broadband wireless services and the innovative use of satellite facilities.

Universal service approach or selective model?

In the last years emerged a debate on the possibility of considering the availability of broadband infrastructure as a universal service. European Union decided that there are not yet the condition to guarantee to everybody this right. In reality only few countries expressed the goal of serving 100% of population within few years.

Sweden: Universal access to broadband will provide room for growth. As a result of everyone throughout the country having practical access to high-capacity data communication, new opportunities for employment, education, caring services, enterprise and culture will emerge on a wide front. As a result of Sweden being quick to invest in a new, advanced IT infrastructure, Swedish industry can grow and get a world leading position within this expansive area.

United Kingdom: The UK online initiatives to drive forward universal access to the Internet are therefore vital.

Canada: All Canadians should have access to broadband network services so that they can take advantage of broadband opportunities wherever they live;

Problems in building new infrastructures.

In considering the problem of competition between infrastructure we have to consider the fact that building new infrastructures is extremely expensive. In addition new infrastructures creates environmental problems, citizen inconveniences, administrative problems and technical difficulties in duplicating the so-called "last mile".

Sweden: The problems related to the creation of new infrastructures are the main reason that leaded the Swedish government to create infrastructures owned by public institutions (*commodity network*), and opened to competition on the services (this model has been adopted, for instance, by the municipality of Stockholm).

Spain: Favorecer en esta estrategia el uso racional de las infraestructuras existentes, así como su uso compartido, al objeto de minimizar el impacto ambiental y maximizar la productividad de los recursos.

Eu Bdrc: Encourage European wide business strategies by harmonising the regulatory environment across the EU, with regard to broadband deployment. In particular, to encourage a common situation regarding the deployment of physical infrastructure such as hanging cables through the streets, digging and occupying ducts, and the installation of wireless co-location sites.

e-Europe 2005: Reduce barriers to broadband deployment. Member States should ease access to rights-of-way, poles and conduits to facilitate investment, for instance through the removal of legislative barriers. The Commission will support this by encouraging and organising exchange of local and regional experience and private/public partnerships.

Market failure in providing infrastructures in disadvantage areas.

There is a generally consensus on the fact that telecom operators are not interested in investing for the development of broadband infrastructures in disadvantage areas. This is the reason why most of the countries approved plans for the development of there areas.

Usa: We reach the troubling conclusion that, in all likelihood, market forces alone will not guarantee that many rural Americans will have access to advanced services.

Italy: A systemic approach such as the introduction of broadband communications must necessary be addressed within a clear industrial policy framework. In the absence of guidance, coordination and stimulation of investment and demand, attempts to leave the development of communications systems completely to market forces have not produced satisfactory results.

The intervention of the Government could prevent the formation of a technological and economic gap … and the consequent loss of competitiveness of the entire economy.

Oecd: At the same time, it should be noted that countries that attach importance to market competition also feel some necessity for government involvement to stimulate private investment in broadband networks. For instance, the UK government perceives that market action alone may not deliver optimal results, especially in rural areas. The US has expressed concern that the market might not work at the same pace in all areas, particularly in rural and certain urban areas.

The argument often put forward is that there could be 'market failure' so that total reliance cannot be placed on the market mechanism. If this is correct, then the danger would be that broadband networks might remain unavailable in some areas for many years without government proactive involvement.

A number of OECD countries appear to believe that some policy initiatives, especially financial incentives, are imperative in order to narrow the geographical "digital divide" and deploy broadband services to rural communities. For example, the Italian government "now envisages the possibility of public intervention to create broadband infrastructure in rural areas and recognises the need for specific action in disadvantaged areas". The Japanese government suggested in its study group report that the deployment of fibre optic networks by public investment would be desirable for the unpopulated areas where private investment would not occur. The Swedish government also claims that sparsely populated areas "are the main parts of Sweden where the market will not be able to fund the expansion without assistance". (Oecd)

Government's leadership in promoting awareness about broadband role and in defining public policies.

According to all the action planes Government has the duty to promote general awareness about broadband benefits; systemic approach to economic and social development.

Sweden thought that the infrastructure should be built primarily by public institutions, leaving competition in the services: the State, the regions and the municipalities together assuming responsibility for building a fibre optic IT infrastructure which, all in all, will form a fine-meshed network over Sweden, available at low cost to everyone, regardless of location. Using this basic infrastructure, a host of operators can act on a fully competitive basis to provide services.

The State is assuming a leading role for vigorous implementation. The cornerstones of implementing a new IT infrastructure are: the State and the regions planning and co-ordinating the development of a nation-wide fibre network; the State providing credits to municipalities and regions on good, favourable terms.

France: C'est dire que le rôle de l'État doit être surtout celui d'un accompagnateur du mouvement de généralisation des hauts débits par la re-réglementation (ce qui couvre à la fois la déréglementation des normes devenues obsolètes ou contre-productives et la régulation des nouvelles activités visant de grands objectifs tels que la protection du consommateur, de la vie privée du citoyen, des bonnes moeurs, de la loyauté de la

concurrence, etc) et non pas celui d'un intervenant actif à l'aide des ressources collectives, étant entendu que l'État est par son utilisation des hauts débits l'un des acteurs importants et un inducteur de leur utilisation par l'ensemble du corps social. Notre méthode a donc été de dégager les lignes d'action d'un État moderne, présentée dans le cadre du chapitre 7 du présent rapport sous quatre rubriques: L'État acteur et entrepreneur; Assurer la cohésion sociale en amenant les hauts débits dans les collectivités locales; Établir les règles d'une saine concurrence; Favoriser le développement des contenus et des services ; Favoriser l'accès des PME et TPE aux hauts débits et mettre en place un réseau de plates-formes d'expérimentation et d'incubation des nouveaux services; Renforcer les pouvoirs des collectivités locales; Accompagner et favoriser la création de contenus tirant parti des hauts débits.

A l'heure où le risque d'apparition d'un fossé numérique mobilise les énergies de tous ceux qui se préoccupent de l'avenir de notre pays et du maintien de sa cohésion sociale, les hauts débits représentent à la fois un risque majeur et une chance inestimable. Le risque est de voir s'aggraver la sélection par la richesse, les réseaux à hauts débits étant d'un coût non négligeable pour le consommateur. La chance est d'offrir à ce consommateur des contenus multimédia plus aptes, par leur convivialité supérieure à celle des données informatiques, à le faire entrer de plain-pied dans la société de l'information.

Norway : The players in the market are responsible for investing in digitalisation and broadband facilities. However, the authorities would like to make conditions suitable so that we can achieve a nationwide system of broadband communication. This is why the competition in the market must be strengthened and public demand stimulated. Special government measures must be considered to ensure access in areas where the market players cannot establish a system at acceptable cost for the desired deadline.

Primary and secondary schools, libraries, hospitals and municipal authorities should be offered broadband connections by the end of 2002.

Special government actions must be considered to ensure access in areas where the market cannot establish a system at acceptable prices within the desired deadline.

Finland: It is a challenge to reach a hundred per cent coverage in high-speed access. However, even greater challenge for an equal information society is to increase people’s readiness and ability to use and benefit from information networks.

United Kingdom: Providing leadership. The Government should:

- set a goal for the UK: to have the most extensive and competitive broadband market in the G7 by 2005, with significantly increased broadband connections to schools, libraries, further education colleges and universities*;* and

- develop and implement a strategy for meeting these goals in close consultation with key players in the private and public sectors.

Canada: Governments should facilitate the deployment of broadband networks, services and content through policies and regulations that favour private sector

investment, competition and innovation, as well as by supporting communities, the creation of Canadian content and the use of broadband to deliver public services;

There are two main ways in which the broadband priorities can be implemented: a) through an *infrastructure support model*, focused on incentives to stimulate the supply of broadband infrastructure and services, similar to the approach that has already been adopted by some provinces and territories; and b) through a bottom-up *community aggregator model*, focused on the stimulation of demand for broadband capabilities, similar to the approach that has already been adopted in some communities and municipalities.

Italy: Need to ensure that network infrastructure is regularly upgraded to keep it up to date. Similarly, legislation regulating access, interconnection and pricing policies must be constantly reviewed and updated.

Central government and, in particular, the Ministry of Communications, must promote policies to subsidise investment that can no longer be postponed if the country is to avoid falling behind in development or prevent migration away from areas that are not properly served. Broadband is a priority objective for Italy, and that the Government should draw up industrial policy guidelines for the development of infrastructure and services.

e-Europe 2002: The European Council held in Lisbon on 23/24 March 2000 set the ambitious objective for Europe to become the most competitive and dynamic economy in the world. It recognised an urgent need for Europe to quickly exploit the opportunities of the new economy and in particular the Internet.

eEurope 2005: The objective of the Action Plan was to provide a favourable environment for private investment and for the creation of new jobs, to boost productivity, to modernise public services, and to give everyone the opportunity to participate in the global information society. eEurope 2005 therefore aims to stimulate secure services, applications and content based on a widely available broadband infrastructure.

The government should monitor the broadband market:

United Kingdom: Considerable work is therefore needed to ensure that the Government has accurate and up-to-date information on the broadband market as it develops in the UK and internationally, so it can judge on an ongoing basis whether pump-priming may be necessary, and whether the benefits of any such intervention would outweigh the costs.

Finally the problem of optimising existing infrastructure:

Italy: Optimise existing infrastructure by eliminating bottlenecks and avoid waiting for the completion of broadband networks. It is necessary to encourage the maximum use of existing local networks and their interconnection at the national level. The paradigm is the Internet, whose massive success has largely been due to the lack of red tape and the streamlined approach to the creation of what is essentially a

confederation of autonomous bodies that share the same technical standards and are pursuing the same goal of interoperability.

Finally the European commission has proposed the institution of a A co-ordination mechanism for e-policies:

e-Europe 2005: Over the recent years many policy initiatives have been launched either as a direct response to the e-economy or to build in an e-dimension into existing policies. Examples at European level are policies such as regional (e.g. support for eEurope in structural funds), development (e.g. dotforce - the G8 initiative), education (e.g. e-learning), employment and inclusion (e.g. employment guidelines), trade (e.g. e-commerce in WTO) and the eEurope action plan. At national level equally, many policy initiatives related to the e-economy have been taken. It is not always guaranteed that the various national measures are well communicated at European level. A better overview and an exchange of information between the various actors would enhance the efficiency of e-policies.

For this reason, an eEurope steering group, chaired by the Commission (composed of

Member States and candidate countries representatives, the European Parliament, and, where necessary, representatives of the private sector and of consumer groups, and funded by the follow-up to the PROMISE programme), should be established. This steering group would monitor progress of the eEurope action plan with the aim of improving the implementation of eEurope 2005. It would also provide a forum to exchange experiences. It would allow to bring in the private sector and make an early participation of candidate countries possible. The group would in general meet twice a year and with executive level participants to allow a strategic discussion.

Primary role played by territorial institutions

In several countries a fundamental role is played by some territorial institutions, which approved plans to allocate resources for the development of broadband infrastructures. In particular the intervention of regional and local institutions of Sweden, Usa, Canada, United Kingdom, Italy, France included: broadband development as a part of strategic territorial planes; direct financing of broadband infrastructures; Public demand for services; Coordination of local infrastructures and resources

United Kingdom: Developing, through the devolved administrations and Regional Development Agencies, complementary strategies at local/regional level;… encouraging private sector demand for broadband services in rural and low income areas to cluster into economically viable groups, and using the regional planning process to facilitate broadband links to those clusters.

Canada: Communities should be engaged in planning broadband networks in light of local needs, and in building local capacity to use broadband services and content; …publicly assisted programs to deploy broadband infrastructure to communities

unlikely to be served by market forces alone should be guided by such considerations as sustainability, technological neutrality, timeliness, affordability and the value of open, competitive markets

Italy: Local authorities must create conditions more conducive to private cable companies interested in hooking up residential users. In those areas where private investment is scarce or at any rate insufficient for the successful achievement of development goals, consideration should be given to setting up companies with mixed or public-sector capital. … All municipal authorities should, as soon as possible, approve the regulation provided for by Law 249/1997 that would enable the cabling of towns by firms which have submitted applications to use public land. In this way, municipal authorities can contribute to creating an environment where advance.

Private sector role

All the countries agreed on considering that private sector plays a leading role in the development of broadband infrastructures.

Norway: According to the document the players in the market are responsible for investing in digitalisation and broadband facilities.

Japan: The private sector is to play the leading role in the area of IT.

Canada: The private sector should play a leadership role in the development and operation of broadband networks and services" (Canada)

e-Europe 2005: Both developing services and building infrastructures are mainly tasks for the private sector and eEurope will create a favourable environment for private investment. This means not only developing an investment friendly legal framework but also taking action that stimulates demand and so reduces uncertainty to private investors.

Promotion of competition.

There is a general consensus on the fact that competitions represents a fundamental choice. In reality competition on the broadband market is really difficult, because of the prominent role played by incumbent. On the other ways incumbent are not interested in investing on new infrastructure if they are oblige by the law to lease them to new comers at fixed tariffs.

Ireland: The most effective way to stimulate investment in broadband infrastructure in Ireland is therefore to ensure that infrastructure competition is not delayed"

Canada: Governments should facilitate the deployment of broadband networks, services and content through policies and regulations that favour private sector investment, competition and innovation.

Denmark: Reduction in legislation specific to the telecommunications sector.

United Kingdom: Policies to enhance competition, open telecommunication markets and promote access to infrastructures (unbundling, line sharing, interconnection).

USA: Promote competition across different platforms for broadband services; Ensure that broadband services exist in a minimal regulatory environment that promotes investment and innovation

France: Full deregulation of the telecommunications sector will lead to a significant increase in the supply of means of access to the Internet; It is necessary to develop trials of alternative infrastructures.

Norway: Technological developments, increased competition and the convergence of the telecommunications, media and IT sectors make a constant review of the regulations necessary in order to adapt them

Ue – Bdrc: maintain pressure on incumbents to unbundle local loops fully;

Ue – e_ Europe 2002: As a response to convergence and to the changing market and technological conditions, a new pro-competitive regulatory framework, which reinforces competition and takes account of the increasing speed of developments in this sector, is being put forward by the Commission. Meanwhile competition in the local loop must be developed as a matter of priority. The Commission has therefore recommended the unbundling of the local loop by the end of 2000. In addition, the necessary frequencies for multimedia wireless systems should be made available. The Commission will draw appropriate conclusions from the sector enquiry on excessive pricing of leased lines conducted under EC Competition Law.

Oecd: The most fundamental policy available to OECD governments to boost broadband access is infrastructure competition.

Public- private partnership

Canada proposed a model that we can call public - private partnership: government-funded broadband deployment models should achieve the following objectives: ensure third-party open access; ensure competitive and technological neutrality; ensure sustainability and scalability; ensure transparency in all aspects of government funding programs; maximize the role and risk taking of the private sector; leverage the financial capability of the private sector; minimize deployment costs; encourage public and private sector partnerships; respond to community needs; and build community capacity.

Italy: In those areas where private investment is scarce or at any rate insufficient for the successful achievement of development goals, consideration should be given to setting up companies with mixed or public-sector capital.

EU structural funds

In the past Ireland and Spain used European structural funds for the development of new infrastructures. *e*-Europe provided the possibility of using structural funds for disadvantaged areas. Italy has decided to use structural funds to ensure development of broadband in the South of the country.

e-Europe 2002: Ensuring that less-favoured regions can fully participate in the information society is a priority for the Union. Projects encouraging up-take of new technologies must therefore become a key element in regional development agendas. Public investment in information society infrastructure in less favoured regions may be justified in cases of market failures, where private investment alone cannot be profitable. These investments must be made in a way that does not distort competition and is technologically neutral. Investments must be determined by each region and on the basis of their particular economic and social structure. The Commission has undertaken to increase priority of information society related projects within the structural funds. A similar revision of priorities has been announced by the European Investment Bank (EIB).

e-Europe 2005: Broadband access in less favoured regions. Member States, in co-operation with the Commission should support, where necessary, deployment in less favoured areas, and where possible may use structural funds and/or financial incentives (without prejudice to competition rules). Particular attention should be paid to outermost regions.

Tax incentives.

Some countries are considering the possibility of tax incentives for the deployment of new infrastructures.

United Kingdom: Further measures necessary could be necessary to pump-prime the market – for example through tax incentives of public private partnerships – to help take broadband into areas of the country or sectors of the economy which the market may not supply on commercial grounds

Ue – Bdrc: provide tax incentives/subsidies for investment in less profitable regions; provide tax incentives/subsidies for fibre optic development.

Stimulating broadband demand and supply.

There is a general consensus on the fact that the State should create the conditions in order to promote demand of services, especially by public institutions.

*Denmark***:** In order to promote the range of Internet services and broadband connections, the market should be helped on its way by means of increased public demand… This is the object of, among other things, the recommendations on broadband for primary and lower secondary schools and out-of-school educational establishments and on public e-commerce. In connection with decisions on public

infrastructure, for example in the area of radio and TV, the focus should also be placed on stimulating demand for and the spread of technologies and network types which can be used for radio and TV, new multimedia services and other services and functions which have high bandwidth requirements. Denmark lacks a competition-driven market for broadband connections from individual households or enterprises to the Internet. However, it may be difficult to create market-related, financial incentives to invest in what will eventually be the ideal solution, namely the laying of fibre-optic cables to individual households or enterprises. This will probably only occur if there is a massive increase in user demand for bandwidth.

Norway: Primary and secondary schools, libraries, hospitals and municipal authorities should be offered broadband connections by the end of 2002… Public sector demand will be stimulated so that it can contribute to new investment by the market players.

United Kingdom: Stimulating demand for broadband services: the key is to engage interest in Internet use of any sort – the vast majority of broadband users come to see the benefits of it only after having first used narrowband services… Stimulating demand for broadband services: the key is to engage interest in Internet use of any sort – the vast majority of broadband users come to see the benefits of it only after having first used narrowband services.

Governments should facilitate the deployment of broadband networks, services and content through policies and regulations that favour … the use of broadband to deliver public services;

Italy: Rather than promoting supply alone, it is necessary to take steps to encourage the balanced development of supply and demand. It is a matter of putting in place a framework of elements conducive to such development, including rules governing operations, safeguards and, where necessary, support in fostering competition.

e-Europe: The eEurope action plan is based on two groups of actions which reinforce each other. On the first hand, it aims to stimulate services, applications and content, covering both online public services and e-business (the second hand regards broadband infrastructure and security matters).

e-Europe 2005: Member States should aim to have broadband connections for all public administrations, learning institutions and health centres by 2005. Since broadband services can be offered on different technological platforms, national and regional authorities should not discriminate between technologies when purchasing connections (using open bidding procedures, for example).

The Commission, in co-operation with Member States, the private sector and regional authorities, will define e-services to promote Europe and to offer user-friendly public information. These e-services should be deployed by 2005 and build on interoperable interfaces, use broadband communication, and be accessible from all types of digital terminals.

Broadband and universities.

All the countries are ensuring broadband connections to university. Particularly interesting is the plane adopted by European Union:

e-Europe 2005: In the wider context of the European Research Area project, the Commission is supporting the full exploitation of broadband networks by the research community. This will continue under the Sixth Framework Program using the new priority instruments of Networks of Excellence and Integrated Projects. In specific terms, it will support the upgrade and efficiency of technology for optical fibre access networks, mobile broadband wireless services (beyond 3G), broadband access satellite systems (also taking into account the needs of the Galileo system), convergence of fixed and mobile networks, including the transition to the next generation Internet Protocol (IPv6) and take account of security and privacy issues (wireless, always-on) etc. The Commission has already set out the steps needed to support the next generation Internet in its IPv6 Communication 34 , "Next Generation Internet - priorities for action in migrating to the new Internet protocol IPv6" and those recommendations should be followed up.

Training.

Training is considered one of the first government's duty in the knowledge society.

United Kingdom: Tackling the skills needs of broadband: by working with industry to address skills gaps in both the engineering skills needed for broadband roll-out and the mix of technical and creative skills needed for creation of broadband content Action should have included the creation of up to 20 new technology institutes to provide advanced learning in ICT, with at least two centres in each region.

e-Europe 2005: The Lisbon strategy is not just about productivity and growth but also about employment and social cohesion. eEurope 2005 puts users at the centre. It will improve participation, open up opportunities for everyone and enhance skills.

Stimulating the production of broadband content.

Also the development of sophisticated services is considered as important factor for the development of broadband infrastructures.

United Kingdom: By working with industry, through the Digital Content Forum, to tackle barriers to growth of the broadband content sector, and by driving forward use of broadband content to enhance public services.

Tackling the skills needs of broadband: by working with industry to address skills gaps in both the engineering skills needed for broadband roll-out and the mix of technical and creative skills needed for creation of broadband content.

Canada: Governments should facilitate the deployment of broadband networks, services and content through policies and regulations that favour the creation of Canadian content.

Public access points.

One of the role of the state should be to provide broadband access available to public institutions.

United Kingdom: The report proposed that at least 3,800 of the publicly-funded UK online Centres and all UK online for business centres should be equipped with 2 Mbits/s connections or higher in order to demonstrate the benefits of broadband.

Canada: Publicly assisted programs should achieve sustainable broadband access to every public learning institution, public library, health care centre and other designated public access point in the country.

e-Europe 2005: All citizens should have easy access to PIAPs, preferably with broadband connections, in their communes/municipalities. In establishing PIAPs, Member States should use structural funds and work in collaboration with the private and/or voluntary sector, where necessary. The Commission intends to continue to support technology development in the research programme and good practice showcases to the extent possible through the follow-up programme to the PROMISE programme.

New technologies and SMEs.

One of the problem for European economy is to guarantee the usage of new technologies to SMEs.

France: En permettant aux PME innovantes et aux TPE de proposer leurs activités de la manière la plus attrayante et la plus économique aux consommateurs, les plates-formes d'incubation tendent à corriger les inégalités qui favorisent les grandes entreprises et donneraient une chance aux secteurs les plus innovants de notre économie de tirer pleinement parti de leur avance technologique. En utilisant ces plates-formes pour fournir des services plus interactifs à l'administré, voire tirant parti des possibilités d'assistance en temps réel d'un conseiller en ligne, l'État rétablirait l'égalité entre ceux qui ont acquis la maîtrise des procédures administratives parfois complexes de notre pays et ceux qui se sentent démunis, voire découragés par le labyrinthe des formulaires et des déclarations multiples auprès des autorités ;

Eu – Bdrc: Despite its proven benefits, fibre optic is not being widely considered as an access platform for the home/SME because of the considerable investment required. The principle barrier is financial, not technical. The problem is that the business model for fibre to the home is hard to justify. To ensure that the best technical solution gets to market, it is necessary to take a long-term perspective.

However, like building a 'railroad' through the desert of the 'wild west', such an investment requires almost blind faith in the future of the digital age.

e-Europe 2005: By end 2003, the Commission intends to establish an European e-business support network, federating existing European, national and regional players in this field with a view to strengthening and co-ordinating actions in support of SMEs in the field of e-business. The Commission will foster geographical and sectoral clusters of SMEs working online to encourage innovation in e-business, sharing of good practice and promotion of guidelines and standards.