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GREEN PAPER ON THE LIBERALISATION OF TELECOMMUNICATIONS INFRASTRUCTURE AND CABLE TELEVISION NETWORKS

PART II

A COMMON APPROACH TO THE PROVISION OF INFRASTRUCTURE FOR TELECOMMUNICATIONS IN THE EUROPEAN UNION

(presented by the Commission)

PREFACE

On 25 October 1994 the European Commission adopted Part I of a Green Paper on the liberalisation of telecommunications infrastructure and cable television networks. In that document the Commission set out the general principles and timetable for action which form the basis for the consultation on the development of a common approach to infrastructure in the European Union.

Part I, together with Part II of the Green Paper, launch the process of formulating Union policy on infrastructure, which was called for in Council Resolution 93/C213/01 of 22 July 1993 on the 1992 Telecommunications Review. This was seen by Council as a prerequisite to extending the process of liberalisation beyond voice telephony to the whole of the telecommunications sector.

The Commission's White Paper on Growth, Competitiveness and Employment (COM(93) 700 final) and the Report on *Europe and the global Information Society* by the group of leading industrialists under the Chairmanship of Commissioner Bangemann, emphasise the need within Europe for an efficient and effective communications infrastructure, capable of supporting the emerging Information Society.

This priority was reflected in the Bangemann Group Report whose first recommendation is a request to Member States to *"accelerate the on-going process of liberalisation of the telecommunications sector by opening up to competition infrastructures and services still in the monopoly area"*.

The Commission's Action Plan on the Information Society (COM(94) 347 final, 17.7.94) subsequently gave highest priority to the early formulation of a policy on infrastructure, both in relation to alternative telecommunications networks and cable networks and in relation to establishing a general regulatory framework for infrastructure liberalisation for the delivery of voice telephony services to the general public after 1 January 1998.

Finally, the Council of Telecommunications and Industry Ministers, meeting together on 28 September 1994 stressed *"...the importance and urgency with respect to rapidly evolving market conditions of setting a clear and stable regulatory and legal framework allowing market operators to engage in business activities, to invest and to take initiatives to bring about the Information Society¹"*.

It is against this political background that Part I of this Green Paper proposed, in order to provide a coherent approach to infrastructure competition, a clear principle; namely, *"that provided the necessary safeguards are in place, the providers of telecommunications services which are open to competition should have a free choice of underlying infrastructure for the delivery of such services"*.

In response the Council of Telecommunications Ministers meeting on 17 November adopted a resolution confirming the principle of general liberalisation of

¹ Conclusions of the 1787th session of Council 9561/94 (Press 197 - G), 28.9.94

infrastructure by 1 January 1998 for the full liberalisation of infrastructure², including additional transitional periods for certain Member States in line with Council Resolution 93/C213/02³, and asked the Commission to develop the necessary regulatory framework.

Part II of the Green Paper now launches a broad discussion with all interested parties of the major issues involved in the future regulation of network infrastructure. This will allow the development of a common approach to infrastructure provision in the European Union. This approach must be fully integrated with the range of Union policies designed to support the Information Society.

² A number of Member States have urged the Commission in an associated statement to come forward as quickly as possible with proposals to provide for the use of alternative infrastructure for telecommunications services which have already been liberalised.

³ Council Resolution of 22 July 1993, OJ C213/02, 6.8.93

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SUMMARY

Europe is shifting towards an information-based economy, where networks and network infrastructure play as significant a role as did the rail networks in transforming the European economies in the last century.

For Europe to meet the challenges presented by this Information Society, it is vital to ensure that business, industry and Europe's citizens can access modern, affordable and efficient communications infrastructures over which a rich and diverse range of traditional and new multi-media services will be offered.

This revolution has been recognised at the highest political level. In their conclusions on the Bangemann Group Report, the Heads of State and Government meeting in Corfu considered *"that the current unprecedented technological revolution in the area of the Information Society opens up vast possibilities for economic progress, employment and the quality of life"*. These changes are being driven by technology and by market forces. New global and regional partnerships are being formed to enable business and ordinary citizens to benefit from the opportunities offered by the convergence of broadcasting, telecommunications and information technologies.

Given the political consensus on the liberalisation of telecommunications infrastructure, it is now vital for Europe to put in place a clear and predictable regulatory environment. Such a framework will ensure:

- the completion of the internal market for telecommunications, stimulating the development of both basic and advanced infrastructures in the Union;
- providing Europe with efficient and cost effective telecommunications services, benefiting both business and consumers ;
- stimulating public and private sector investment, growth and innovation, thereby contributing to employment and cohesion;

This Green Paper now launches a broad consultation on the issues surrounding such a future telecommunications environment. The key questions are :

- How can universal service be developed? How much does it cost and who should pay for it?
- What should be the future framework for interconnection and inter-operability?
- How will telecoms networks be licensed? What restrictions can legitimately be placed on licence numbers and what conditions can be attached to licences?
- How can a fair competitive environment be ensured?
- How can infrastructure competition contribute to the challenge of employment? How should Europe address the shift in employment in telecommunications?
- How can Europe ensure comparable and effective access to global markets?
- What are the broader societal effects of the Information Society and how can the regulatory framework address these ?

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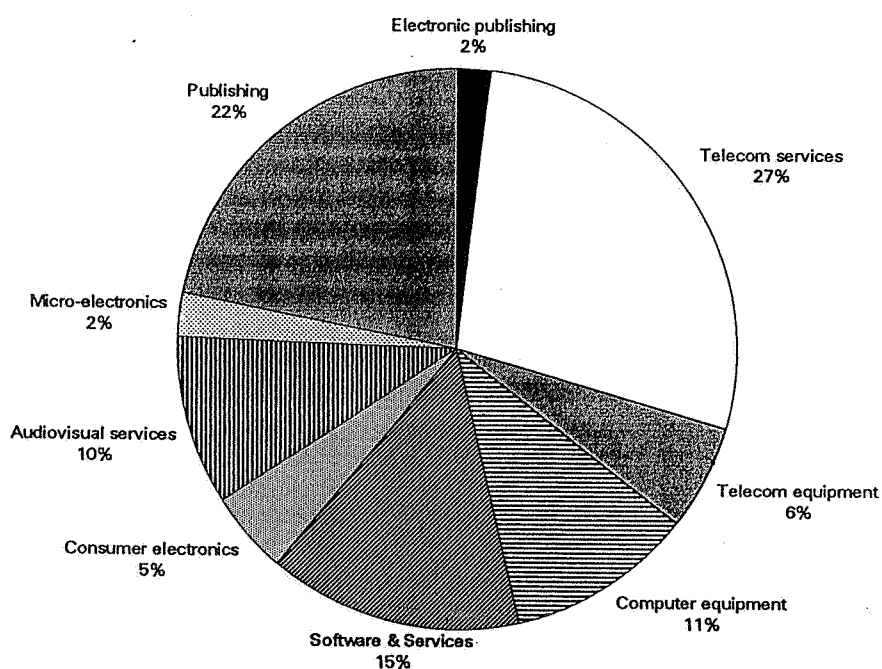
Major market and technological developments

Despite the turndown in economic activity in much of the OECD area, the telecommunications sector continues to grow substantially in both volume and value terms. Total turnover for telecommunications services in the European Union in 1993 was about 120 billion ecu or nearly 3 per cent of overall GDP, despite falling price levels in the sector. The nominal growth rate over the last 5 years has averaged about 7 per cent annually.

As an indicator of telecommunications usage and growth, international public telephone traffic in the Union rose by just over 10 per cent in 1993 compared to volume increases of about 11 per cent in 1991 and 1992.

It is the new service market areas that are producing the largest growth rates, particularly where competitive service provision has occurred. In particular, mobile communications has displaced data communications and value-added services as the most dynamic part of the service market. In the Union, mobile services account for about 5 per cent of subscriber lines and nearly 10 per cent of service revenues. In the rest of the European Economic Area the figure is significantly higher. By the beginning of 1998, the date already agreed for the full liberalisation of telecommunications services, there is the real prospect of well over 10 per cent of telephone subscribers in the enlarged Union being served by competing wireless operators.

Table III.2 - Turnover of EU information sector in 1993.⁴



Total Market : 414 billion ECU

⁴ Source : IDATE

In contrast, despite the development of integrated or multimedia services (combinations of voice, data and images), and considerable speculation about the emergence of multimedia networks, turnover for these new markets in Europe is as yet limited. The first applications are occurring in specific business markets such as intra-company advanced communications, video-conferencing, electronic data interchange, broadcasting and news services for the financial sector, certain ISDN applications, the emergence of some tele-working and the exploitation of some CD ROM products.

However, there is no significant turnover yet from the provision of multimedia services to the residential sector. Moreover, telecommunications and television or broadcasting services are in the main currently supplied by quite separate networks. This is the case even in the UK where in some areas telephone and cable TV services are being marketed jointly by companies with local cable TV and telecommunications franchises.

Total subscribers to cable television in the Union at the end of 1993 were 26 million, half of which were in Germany. This total corresponds to approximately 15 per cent of telephone lines.

The total turnover of broadcasters in the Union at the end of 1993, which includes both content and transport or transmission revenues, was about 27 billion ecu. Turnover for the provision of cable television was approximately 3 billion ecu. These totals are equivalent to about 22 per cent and about 2.5 per cent respectively of telecommunications services revenues.

The rapidity of technological and commercial developments combined with evolution in the regulatory environment in many parts of the world is already leading to a substantial degree of services and network competition and is making infrastructure competition inevitable.

Moreover, because of the risks and uncertainties associated with some applications and technologies, market forces are required to unlock the significant potential for innovation and investment for the development of telecommunications and the Information Society. Many of the fastest growing parts of the telecommunications sector are in niche markets, subject to competition from new players.

At the same time, attention must be paid to the social challenges and consequences of harnessing these market, technological and regulatory trends.

The Major issues raised

Universal service

The Commission reaffirms the fundamental importance of maintaining and developing universal service in the European Union, on the basis of a common minimum set of services and infrastructure. This political priority was recognised in Council Resolution 93/C213/01 on the review of the situation of the telecommunications sector and the need for further development in that market, which established as a major goal for Community telecommunications policy the liberalisation of all public voice telephony services, whilst maintaining universal service.

This Resolution recognised the importance, for the individual consumer and for the competitiveness of industry and commercial users, of a Union-wide telecommunications system offering to all users, including specific social groups, reasonable and affordable charges for access and use, high quality of service and technological innovation. The importance of universal service was equally emphasised in the Resolution of the European Parliament of the 20th April 1993 whilst supporting the liberalisation timetable and recognising the need to take full advantage of the potential for exploiting alternative infrastructures in Europe to supply and develop telecommunications services.

The Green Paper launches discussion on three key issues which must be addressed at a Union level with respect to universal service in the telecommunications sector. The first concerns the elements that comprise universal service, the second the methods for costing universal service and the third, the means of financing uneconomic aspects of universal service provision in a competitive telecommunications environment.

While recognising the political consensus that the core of universal service currently consists of voice telephony service, the Green Paper reinforces the view that the concept of Universal Service must evolve over time as technology and user needs develop.

With regard to the cost of universal service, the Green Paper reinforces the view that a common and progressive approach is required at a European level, even though the costs involved will be different in different Member States. In particular, the approach must be based on a calculation of the net cost to the operator of serving customers in terms of : (i) the revenue generated by a customer (including rental and call charges paid by the customer, and the revenue generated by in-coming calls to that customer), and (ii) the actual cost of providing service to that customer. The calculation of universal service costs must also recognise the fact that even low-profit customers have a marketing 'value' to a commercial organisation.

With regard to financing, the Green Paper recognises that all market players should in principle contribute to the provision and/or financing of universal service. The financing mechanisms would be put in place at a national level, but within a framework set at a Union level.

The Green Paper considers two financing methods in detail, either (i) the use of access charges or (ii) the use of independently administered universal service funds. The initial preference expressed is for Universal service funds.

Interconnection and interoperability

Interconnection of competing telecommunications infrastructures and services will be the central commercial issue in a competitive environment. Interconnection will be primarily a matter for national regulatory authorities, but within an overall European framework. All interconnection agreements can be subject to the competition rules, but additionally, in the case of interconnection with public telecommunications infrastructure, it is important that there is a common regulatory approach at a European level.

The Green Paper outlines the scope of an Interconnection Directive - already foreseen in the Commission's Action Plan on the Information Society. The

Directive would provide a framework for negotiating interconnection terms, including interconnection charges, and provide dispute resolution mechanisms at a national and European level. It would also provide the legal mechanism for implementing schemes for sharing the cost of universal service among the market players.

Licensing procedures and conditions for infrastructure for the provision of telecommunications services

The Green Paper addresses many of the licensing issues which would have been raised in the context of services liberalisation, even without the agreement on infrastructure liberalisation. These are :

- Who will licence ?
- How will licences be granted and what are the grounds for limiting numbers ?
- What conditions can be put into licences ?

Part II indicates that licensing of telecommunications infrastructure, networks and services will remain a matter for national regulators, but again within a framework provided at a European level. In terms of licensing procedures and conditions, the framework builds on the approach already followed in the telecommunications sector since 1990, based on the two categories of legitimate restrictions which define the scope of licensing procedures and conditions. These are (i) the essential requirements as defined in Community law, (such as rights of way or availability of frequency), which would be expanded to include environmental protection and (ii) public service specifications in the form of trade regulations (which are rules relating to the quality, availability and permanence of telecommunications services provided over the licensed infrastructure.

The Green Paper proposes that the number of licences for *public telecoms infrastructure* can only be restricted on the basis of these two categories; and in the case of *private infrastructure*, only on the basis of essential requirements.

The Green Paper also makes proposal concerning the procedures and criteria for awarding licenses and comments are invited on the degree to which these should be harmonised at a European level. It also considers the range of conditions which may be attached to licences, which again is delimited by the essential requirements and public service requirements in the form of trade regulations, depending on whether the infrastructure concerned is public or private.

Finally, any approach must be proportional to size and market position of the licensed operator, and take account of whether the operator enjoys rights of way or not.

The conditions for fair competition

The Green Paper recognises the need for fair and effective competition in the new environment through the enforcement of the Treaty competition rules. This will be significant not only in encouraging market entry, but also in addressing the new

players and the new co-operative ventures, straddling a number of industries which are going to shape the emerging telecommunications markets.

In this context it is important that companies can plan and invest within a predictable environment; the competition rules will have a role to play in providing such predictability.

The Green Paper at the same time recognises that those rules complement the application of other provisions in the Treaty in relation for example to the free movement of services or the right of establishment.

Employment and the Information Society

The issue of employment constitutes an essential part of the consultation on this Green Paper. The current employment situation in the telecommunications sector, as identified in Part II, can be summarised thus:

- employment levels of the main traditional source of telecommunications employment, the dominant TOs, has been declining for several years. This is a feature of competitive and monopoly markets alike and results from the adjustment by TOs to technological and commercial changes;
- New employment opportunities for the sector result from new entrants and new service areas, for example, in the area of mobile communications.
- The best means of reversing the overall trend is through the increased investment and market expansion which would flow from liberalisation, strengthening growth and employment in every sector of the European economy.

However, quantitative employment effects within the telecommunications sector alone should not be the principal consideration in the liberalisation debate. The central and overriding argument for telecommunications liberalisation must be that it will lead to greater efficiency in the information sector generally, and to productivity and competitiveness gains for the wider European economy taken as a whole. As such, it will be an important step in the fight against unemployment in all sectors of European industry.

In all of these areas, the liberalisation of infrastructure will be a facilitator of the improved services and choice which the Information Society may bring about. At the same time, full account must be taken in the consultation of the risks which future social changes present. In particular, consideration must be given to the potential impact of new patterns of work on individuals, for example, in respect of home working and/or tele-working.

The social challenges

As recognised in the Bangemann Group Report on *Europe and the Global Information Society*, information and communication technologies now pervade our lives, affecting the way we work, the way we learn, the way we spend our

leisure time and the way we interact with each other. The Information Society is rapidly developing; new investment opportunities are being created everywhere and the application of information and communication technologies are affecting all industries and services in our society. The Green Paper considers these developments.

The major investments in communications infrastructures and networks are being undertaken to widen and develop the provision of telecommunications services to industry, commerce and individual customers. Communications technologies are already being exploited in many industrial and service sectors. There is the prospect of further widespread expansion of IT into banking and insurance, publishing and the media, marketing and household applications.

The Structural Funds have been contributing substantial amounts to the modernisation of telecommunications infrastructures in Member States, particularly in less developed ones, and important telecommunications programmes have been agreed in the context of the 1994-1999 Structural Fund programmes. The Commission has been careful to choose the appropriate intervention rates to ensure that the benefit of Community financial assistance goes to the consumer and that this assistance is intended to materialise investments which would not have otherwise taken place. This is particularly true for investment programmes in telecommunications with revenue bearing potential and also in cases where the investor, from the Member State point of view, is not a public body but private capital has also been mobilised. The Commission will ensure that these principles, which of course are applied after careful examination of the economic and other aspects of the investments concerned, will continue to apply in a liberalised environment in the telecommunications sector.

The potential fields of application are many and include major areas of public expenditure, such as education, healthcare and transportation.

In pursuing general societal goals, such as ensuring equal opportunities for every citizen, and extending the benefits of the Information Society to households, industry, government and public services, Member States are likely to be faced with situations which will require regulatory intervention in order to guarantee the provision of infrastructure.

An example addressed in the Green Paper is the need to avoid the emergence of a dual society based on information "haves" and "have nots". This could result where parts of the population were either unable to access new services or were not comfortable in using such services. In such a situation the 'social case' for regulatory intervention might, for example, lead to action to facilitate access for schools or educational centres to the Information Society.

The international dimension

Full account must be taken in the consultation of the broader international agenda and, in particular, the current WTO/GATS negotiations on basic telecommunications services (which include infrastructure). The political agreement on 17 November has given a clear signal to our negotiating partners on the direction which the Union is taking. The Green Paper, by providing the detail behind the principle of liberalisation, can only help the negotiations.

At the same time, the Green Paper takes account of the Community's existing commitments within that negotiating framework, whilst clearly indicating our objective of ensuring comparable and effective access to global markets.

Towards the Information Society

The Green Paper also views the common approach to infrastructure more broadly in the context of the overall approach to the Information Society. A clear framework for infrastructure liberalisation is complementary to the evolution of Union policy in other neighbouring fields, such as intellectual property rights, audio-visual policy and media concentration - all areas which are central to the emerging Information Society. The Green Paper draws on these various initiatives and builds on the substantial work and consultation already carried out in these areas.

The Green Paper does not aim to extend telecommunications regulation to other sectors of the economy. Rather it recognises that there are very different policy objectives which underlie the regulatory approach in these different sectors and that these different objectives will remain, even when technology and markets converge. Nevertheless, the consultation provides all those interested in the telecommunications sector an opportunity to address these issues, and to look ahead to the need for a coherent approach to regulation between the different sectors which the Information Society will demand.

In placing infrastructure liberalisation within the more general context of the Information Society, the Green Paper recognises that immediate problems of terminology arise in distinguishing between infrastructure and services, or in delineating different types of service involving telecommunications, broadcasting and/or multimedia components. This Green Paper often refers generically to "services" (- the offerings delivered over or via infrastructure) to encompass traditional telecommunications services (voice telephony, data transmission, valued-added services (such as voice mail or video conferencing) as well as network management services) and new information, multimedia and other services.

At the same time, where appropriate for regulatory purposes, reference is also made more narrowly to "telecommunications services" in order to indicate that the proposed regulatory regime distinguishes between telecommunications activities and radio and television broadcasting to the public. It must nevertheless be recognised that distinctions should be drawn in a flexible manner.

Infrastructure as the delivery mechanism for the new interactive information flows is an essential raw material for the Information Society. The future regulatory environment for infrastructure is therefore central to achieving the full potential which that Society can offer.

- Firstly, by removing restrictions on the combination of different wired and wireless network infrastructures and technologies, this common approach will bring about a fully integrated personal communications environment. This will offer every business and every citizen full mobility and Europe-wide access to all the range of new services which the Information Society will offer.
- Secondly, the establishment of a predictable regulatory environment will stimulate innovation in the delivery of, and affordable access to, broadband capacity. This will be the backbone for innovative multi-media products, offering the user exciting new services fully integrating voice, data and images, from distance learning and video-conferencing in the office environment to telebanking and video on demand in the home.

- Finally, the combination of these first two elements - full mobility and broadband capacity - will be the driver of major changes in society and will stimulate new approaches to communications, information services and to content. These changes, which lie outside the scope of this Green Paper, will have a major impact on the way we live and the way we work, as our lives become increasingly "interactive" and "on-line".

The major changes and positions

On the basis of the priorities established by Union policy in the field of telecommunications, the need for a coherent regulatory framework regarding the establishment and provision of telecommunications infrastructure, the analysis of market and technological developments and taking into account the applicable Treaty rules, the Commission invites comments on the proposals and on the application of the measures set out in the Table below.

1 Removal of special and exclusive rights over the use of infrastructure for the provision of telecommunications services

Part I of the Green Paper has proposed the basic principle that where services are open to competition there should be a free choice of the underlying infrastructure for their delivery.

From this basic principle two positions followed :

- The removal of restrictions on the use of own or third party infrastructure authorised in Member States for services already liberalised in the following areas:
 - for the delivery of satellite communications services.
 - for the provision of all terrestrial telecommunications services already liberalised (including the use of cable television infrastructures for this purpose).
 - to provide links, (including microwave links) within mobile networks for the provision of mobile communications services.
- The lifting of exclusive and special rights over the use of own or third party infrastructure for the delivery of voice telephony services to the general public, once those services are liberalised from 1st January 1998, and the replacement by licensing and authorisation schemes setting out the necessary safeguards within the framework of the overall review of Directive 90/388/EEC (the Services Directive) and of the ONP-framework to be tabled by 1 January 1996 in the context of the preparation for the full liberalisation of voice telephony services foreseen by Council Resolution 93/C213/02.

The Telecoms Council on the 17th November 1994 in considering Part 1 of the Green Paper, recognised the general principle according to which the provision of telecommunications infrastructure should be liberalised by 1st January 1998⁵, including the additional transition periods for certain Member States in line with Council Resolution 93/C213/02.

⁵ A number of Member States have urged the Commission in an associated statement to come forward as quickly as possible with proposals which provide for the use of alternative network infrastructure for the services already liberalised. The Commission in turn preserved its right to take action in this area within its competence and according to its obligations. On 21 December 1994 the Commission adopted in draft a Directive amending Commission Directive 90/388/EEC regarding the abolition of the restrictions on the use of cable television networks for the provision of telecommunications services.

- The principle of mutual recognition of licences or authorisations is not normally applicable to infrastructure licences. This is the case, for example, with national licences for the provision of fixed networks encompassing rights of way. Mutual recognition should, however, apply to certain elements used in licensing procedures, such as evidence relating, for example, to the technical competence or financial standing of the applicant.

Conditions attached to communications infrastructure licences

Building on the framework provided by Community law, future licenses for infrastructure should respect the following principles :

- Licensing conditions for infrastructure must be based on objective grounds, be transparent, be non discriminatory and respect the principle of proportionality. Any fees for licences should respect the same criteria.
- Licences must not contain conditions other than those justified on the grounds of essential requirements and, in the case of public telecommunications infrastructure, public service requirements set out in the pre-announced criteria.
- Infrastructure not intended for the use of services for the general public (such as infrastructure for corporate networks or closed user groups), should only be subject to conditions based on the essential requirements.
- With regard to ownership restrictions, licences may not contain conditions which restrict ownership by nationals of Member States or of the European Economic Area or undertakings controlled by such nationals.

Any other restrictions on ownership or control must be compatible with Community law and with the European Community's commitments taken on a multi-lateral basis.

- Licensing conditions must ensure a high standard of consumer protection and respect competition rules.

Provision of Telecommunications Services

- Service provision (as opposed to network establishment and operation) should not be subject to individual licensing in the Member States. It may be subject to class licences, general authorisations or to a requirement for declaration by Service Providers of their activities to the National Regulatory Authority(ies) of the Member State(s) where they choose to operate.
- Nevertheless, in the case of independent service providers offering voice telephony services to the general public on a resale basis, consideration may need to be given as to how and when such resellers should be obliged to make a contribution, appropriate to their market position, to the provision of or financing of universal service. (via access charges or a universal service fund, as set out in the following point 3).

Access for Service Providers to any infrastructure should be based on commercial agreements, subject to the competition rules, and where appropriate, the framework of Open Network Provision rules set out below.

- The Commission will regularly review if additional safeguards for consumers are considered necessary. If so, they should be fully consistent with the Treaty provisions and respect the principle of proportionality. Preference should be given to rules agreed by sector participants (such as a code of conduct) over binding regulatory measures, and to general or class regimes over specific individual licenses or authorisations. However, where this Code of Conduct does not adequately protect consumer interests, binding regulatory measures should be introduced.

5. Ensuring fair competition

In a market which will, for many years, be characterised by the presence of dominant operators controlling bottleneck facilities, the full implementation of the competition rules will be indispensable to allow for the emergence of a competitive environment. This will imply, where required, the establishment of the appropriate procedures and safeguards. These will concern, in particular:

- screening interconnection agreements,
- reviewing the conditions for access granted to infrastructure providers and to service providers,
- monitoring joint ventures.
- assessing any scheme established for financing universal service;
- ensuring open and non-discriminatory access to rights of way.
- reviewing the effects of cross-ownership of different networks and of joint provision of network and services;

The latter requires transparent accounting structures and practices to be established by providers of communications infrastructures, including the separation of accounts for telecommunications and non-telecommunications activities, as well as the implementation of transparent cost accounting systems for infrastructure providers who also provide telecommunications services.

6. Access to rights of way, frequencies and numbering

In order to guarantee the successful development of a competitive market for infrastructure, access to certain basic resources must be guaranteed. This concerns rights of way, frequency for wireless network components, numbering and directory services.

Rights of Way

- Member states should grant rights of way to communications network operators according to open and transparent procedures.
- Where environment requirements (such as avoiding road congestion), or other essential requirements, prevent the granting of rights of way to all potential applicants, the Member States should introduce schemes for the sharing of ducts on a voluntary basis and consider, where it is deemed necessary to avoid bottleneck situations, the introduction of mandatory duct-sharing.
- To introduce competition in the market for infrastructure provision, Member States will need to ensure that the incumbent telecommunications organisations are subject to the same regulatory conditions as their competitors regarding rights of way, and provide for mandatory sharing of facilities where necessary to bring down barriers to entry.

Frequencies

Access to frequency spectrum will be increasingly important in ensuring the optimum combination of fixed and wireless technologies in future networks. In order to support this development a number of measures should be taken, in particular:

- CEPT/ERC should initiate a comprehensive review of the balance of frequency usage between broadcasters, fixed network operators and mobile and personal communications operators. This will also need to address the balance between these uses and the use of spectrum for defence and security purposes.
- Pan-European network operation requires greater co-ordination of frequency allocation across Member States.

Numbering

In order to facilitate network investments, an appropriate framework ensuring access to numbers must be put in place. In particular, this requires:

- Creation of a European numbering space for special services (e.g. freephone, premium rate, shared cost services) must be a priority for the EU.
- A "best practice" guidance for NRAs on the administration and control of the national numbering schemes is under development in the ETO,
- The reform package for submission to the Council before 1 January 1996 will address *inter alia* the subject of numbering reform in Europe.

Directories

Access to subscriber data for network operators and service providers and access for subscribers to a comprehensive directory service will be important elements. Such access should proceed, inter alia, on the following basis:

- Access to subscriber databases and to raw subscriber data must be ensured on the basis of objective, transparent and non-discriminatory criteria, and in conformity with Community legislation, in particular the competition rules of the Treaty, the principles of open network provision (ONP) and the provisions on the protection of personal data and privacy, as well as, where applicable, IPR legislation.
- Maintaining a complete universal telephone directory and at least one enquiry service which contains the details of all subscribers of fixed and mobile telephony services and is available for all users.

7. Action in Neighbouring Fields (Data Protection, Audio-visual, Media and IPRs)

Common rules concerning data protection and privacy are fundamental for the development of the information society and for removing other constraints on effectively exploiting the competitive provision of communications infrastructures.

In this context rapid progress should now be made on the proposed General Data Protection Directive and the proposed specific Directive on the protection of privacy in the digital network environment.

The Commission has already identified in its Action Plan on Europe's Way to the Information Society that work will continue in the area of Information Security, and, in particular, that it will :

- publish a Communication on security issues and the role of Member States
- make proposals with regard to the harmonisation of national rules on unauthorised access, and
- prepare a Green Paper on the legal protection of encrypted broadcasts.

Action in all of these areas can substantially contribute to the creation of an appropriate environment for infrastructure competition.

The Commission has also identified in its Action Plan on Europe's Way to the Information Society, initiatives in a range of areas which will help to shape the new regulatory environment both for infrastructure and for services. These policies will substantially influence the extent to which investment can be mobilised to finance competing networks.

These actions include :

In the field of media ownership, the recently adopted Communication on the follow up to the Green Paper on media pluralism and subsequent public consultation;

In the field of audio-visual policy, the possible revision of Directive 89/552/EEC (the "television without frontiers" directive) and following up the Audio-visual Green Paper with regard to the issue of content.

In the field of intellectual property, the adoption as a matter of priority of the pending proposal on the legal protection of data bases; the preparation of a Green Paper on intellectual property in the Information Society and the preparation of a directive on private copying.

Additionally, the Commission has already proposed a Directive aimed at the harmonisation of the laws, regulations and administrative provisions on contracts negotiated at a distance between suppliers and consumers.

The Commission will undertake work during 1995 on the regulatory approach to be applied to ensure the free circulation of new services, which will help ensure that the Commission's actions in the relation to infrastructure and the services to be provided over them remains consistent

8. The Societal and Social Impact

The services carried over infrastructure in Europe will have a major effect on the quality and way of life for Europe's citizens. Priority attention will also be given to studying and monitoring the societal and social impact of the diffusion of new technologies and of a competitive environment for communications infrastructure (in particular, in relation to the areas of employment and cultural policy, as well as the need to avoid the development of a society of information "haves" and "have nots").

In this regard the Commission's Action plan announced a number of reports and Communications in this area, including a report by the High Level Group of Experts.

Consideration in this context must also be given to the need for retraining and re deployment of employees as the traditional telecommunications sector adapts to a competitive environment.

The Commission also proposes setting in motion a comprehensive action programme to investigate potential health hazards associated with the proliferation of fixed and wireless infrastructures and to accelerate the preparation of necessary safety standards, as well as providing general guidance.

9. A global approach to infrastructure and ensuring fair access to third country markets

The Union must actively contribute to on-going discussions at a global level concerning the Information Society, and, in particular, the evolution of common global approaches to issues promoting the development of infrastructures, capable of meeting the needs for global communications. The meeting of the G7 in February to be hosted by the Commission will substantially assist this aim.

The main principles with regard to worldwide developments are :

- Common Community positions are required in international fora to assist in developing a global approach to standards, frequency and numbering. (This concerns, in particular, positions within the International Telecommunications Union and the World Radio Conferences.
- Emphasis on the on-going multi-lateral talks on basic telecommunications as the key to opening up access to third country markets. The overall aim must be to ensure comparable and effective market access, and, in particular, the lifting of ownership restrictions, for EU network operators and service providers.
- Until the results of the GATT/WTO negotiations are clear, it is important that the Union reserves its right to maintain equivalent conditions to those currently prevailing in third country markets with regard to market entry or the licensing of non-EU or EEA nationals or companies controlled by such nationals. the objective of imposing such conditions would be to promote open markets in third countries for European network operators and service providers through negotiations.
- Common Community positions on issues having a direct impact on the operation and interconnection of networks, such as restrictions on encryption, rules on intellectual property and data protection and privacy.

10. Future Evolution of the Regulatory Environment - Towards the Information Society

The Commission is looking beyond the immediate steps needed to liberalise telecommunications infrastructure by 1 January 1998 and to put in place the accompanying regulatory framework.

This Green Paper is intended to initiate the debate, in parallel with that launched by action in other neighbouring fields, on the future evolution of the regulatory environment beyond 1998 to meet the challenges of technological and market convergence.

In addressing these issues, certain basic principles derived from the experience in the telecommunications will assist the debate:

- Liberalisation of telecommunications infrastructure and services must go hand in hand with the implementation of a clear regulatory framework, which can help to mimic competition (through principles of non-discrimination, transparency, etc.) pending the emergence of genuinely competitive markets.
- Effective and independent regulation at the appropriate level will be essential.
- The regulatory framework should lay down basic principles at a European level on the basis of the rules in the Treaty, as well as clear criteria for their application in a predictable manner at a national level. Increasing reliance on competition rules is to be expected.

- Effective competition in the markets for telecommunications equipment and services should evolve without rigid structural safeguards, such as those developed in the mid-eighties in North American markets.

Where safeguards have been considered necessary proportional solutions have been chosen, such as transparent cost-accounting and separate accounting for different parts of a business.

These principles must be applied to the challenges of multi-media and the Information Society, taking full account of the regulatory patterns established in the converging sectors.

Timetable for action

Council Resolution 93/C 213 of 22 July 1993 called for the Commission to prepare, before 1st January 1996, the necessary amendments to the Community regulatory framework, in order to achieve liberalisation of all public voice telephony services by 1 January 1998. Linking the liberalisation of infrastructure to liberalisation of voice telephony means that the same time scale must be observed for the regulatory measures identified in this Green Paper.

The specific measures in the 'reform package' are expected to include measures to be adopted by the Commission and measures to be adopted by the European Parliament and the Council.

The proposed timetable is as follows:

By 15 March 1995	Submission of public comments on the Green Paper
May 1995	Commission Communication to the European Parliament and the Council on the public consultation on the infrastructure Green Paper
June 1995	Council Resolution on Infrastructure .
Before 1 January 1996	Publication by the Commission of proposals for specific measures to extend the existing EC regulatory framework
	Commission Communication to the European Parliament and the Council on the principles and financing of Universal service

Public consultation

The Commission invites comments on all the issues raised by this Green Paper, including, in particular, on the major changes required and on the evolution of the regulatory framework to meet the challenges of convergence.

The Commission intends to organise a series of hearings in Brussels with interested parties early in 1995, allowing an opportunity for discussion of the issues raised in both parts of the Paper.

In order to respond urgently to the evolving Information Society, the Commission would ask that written comments on both Parts I and II to be forwarded to the Commission by no later than 15th March 1995.

The Commission will subsequently report to the European Parliament and Council on the results of the consultation process.

I. INTRODUCTION

Europe is shifting towards an information-based economy, where networks and network infrastructure play as significant a role as did the rail networks in transforming the European economies in the last century.

For Europe to meet the challenges presented by this Information Society, it is vital to ensure that business, industry and Europe's citizen's can access modern, affordable and efficient communications infrastructures over which a rich and diverse range of traditional and new multi-media services will be offered.

This revolution has been recognised at the highest political level. In their conclusions on the Bangemann Group Report, the Heads of State and Government meeting in Corfu considered *"that the current unprecedented technological revolution in the area of the Information Society opens up vast possibilities for economic progress, employment and the quality of life"*⁶. These changes are being driven by technology and by market forces. New global and regional partnerships are being formed to enable business and ordinary citizens to benefit from the opportunities offered by the convergence of broadcasting, telecommunications and information technologies.

In fostering this evolution it is now vital for Europe to put in place a clear and predictable regulatory environment which will promote a maximum of choice and facilitate the emergence of new services and new means of providing services. Given the political consensus on the liberalisation of telecommunications infrastructure, it is now vital for Europe to put in place a clear and predictable regulatory environment. Such a framework will ensure:

- the completion of the internal market for telecommunications, stimulating the development of both basic and advanced infrastructures in the Union;
- providing Europe with efficient and cost effective telecommunications services, benefiting both business and consumers ;
- stimulating public and private sector investment, growth and innovation, thereby contributing to employment and cohesion;

This Green Paper now launches a broad consultation on the issues surrounding such the future telecommunications environment. The key questions are :

- How can universal service be developed? How much does it cost and who should pay for it?
- What should be the future framework for interconnection and inter-operability?
- How will telecoms networks be licensed? What restrictions can legitimately be placed on numbers and what conditions can be attached to licences?
- How can a fair competitive environment be ensured?

⁶ Conclusions of the European Council, Corfu, 24-25 June 1994

- How can infrastructure competition contribute to the challenge of employment? How should Europe address the shift in employment in telecommunications ?
- How can Europe ensure an comparable and effective access to global markets?
- What are the broader societal effects of the Information Society and how can the regulatory framework address these ?

The common approach to infrastructure must also be viewed more broadly in the context of the overall approach to the Information Society. A clear framework for infrastructure liberalisation is complementary to the evolution of Union policy in other neighbouring fields, such as intellectual property rights, audio-visual policy and media concentration - all areas which are central to emerging Information Society.

In placing infrastructure liberalisation within the more general context of the Information Society, immediate problems of terminology arise in distinguishing between infrastructure and services, or in delineating different types of service involving telecommunications, broadcasting and/or multimedia components. This Green Paper will often refer generically to "services" (- the offerings delivered over or via infrastructure) to encompass traditional telecommunications services (voice telephony, data transmission, valued-added services (such as voice mail or video conferencing) and network management services), as well as new information, multimedia and other services.

At the same time, where appropriate for regulatory purposes, reference is also made more narrowly to "telecommunications services" in order to indicate that the proposed regulatory regime distinguishes between telecommunications activities and radio and television broadcasting to the public. It must nevertheless be recognised that distinctions should be drawn in a flexible manner and one which promotes rather than holds back the transition to the Information Society.

Infrastructure as the delivery mechanism for the new interactive information flows is an essential raw material for the Information Society. The future regulatory environment for infrastructure is therefore central to achieving the full potential which that Society can offer.

- Firstly, by removing restrictions on the combination of different wired and wireless network infrastructures and technologies, this common approach will bring about a fully integrated personal communications environment. This will offer every business and every citizen full mobility and Europe-wide access to all the range of new services which the Information Society will offer.
- Secondly, the establishment of a predictable regulatory environment will stimulate innovation in the delivery of, and affordable access to, broadband capacity. This will be the backbone for innovative multi-media products, offering the user exciting new services fully integrating voice, data and images, from distance learning and video-conferencing in the office to telebanking and video on demand in the home.

- Finally, the combination of these first two elements - full mobility and broadband capacity - will be the driver of major changes in society and will stimulate new approaches to communications, information services and to content. These changes, which lie outside the scope of this Green Paper, will have a major impact on the way we live and the way we work, as our lives become increasingly "interactive" and "on-line".

The positions set out in this Paper are consistent with the general approach followed by the Union in the area of telecommunications since the 1987 Green Paper on the development of a common market for telecommunications services and equipment⁷. This means that the positions are based on an evolving balance between liberalisation, the creation of a common regulatory framework and the application of rules ensuring fair competition in Information Society.

The global aims and positions of the Green Paper are summarised below

⁷ COM(87) 290, 30.6.87

SUMMARY OF THE GLOBAL AIMS AND POSITIONS OF THE GREEN PAPER

The global aims and positions of this Green Paper, in implementing the general principle of liberalisation of infrastructure within the timetable envisaged in Part I of the Paper, can be summarised as follows:

1. *LIBERALISATION OF COMMUNICATIONS INFRASTRUCTURE IS THE SINGLE MOST IMPORTANT STEP TO BE TAKEN IN THE CONTEXT OF EUROPEAN TELECOMMUNICATIONS POLICY.*

Liberalisation will mobilise private capital, stimulate the emergence of new multi-media markets and applications, and lead to users having more choice of services and better value for money. Liberalisation of infrastructures will maximise the benefits of the planned liberalisation of telecommunications services in Europe in 1998.

2. *UNIVERSAL SERVICE REMAINS A MAJOR POLICY REQUIREMENT WITHIN THE EUROPEAN UNION.*

- Universal service remains a major policy requirement within the European Union. Universal telephone service at an affordable price should continue to be guaranteed to all European users in the future competitive environment.

The dual aim should be to provide consumers and business with a diverse offering and choice of telecommunications services at competitive prices, whilst guaranteeing universal access to basic telecommunications services for all citizens.

- In the context of the liberalisation of telecommunications services and the pricing and structural adjustment that is required, infrastructure liberalisation will not undermine the provision of universal service. Indeed, as long as the universal service burden is shared appropriately between competitors, infrastructure liberalisation is more likely to lead to positive benefits for the sector by encouraging innovation, the exploitation of new technologies and increased choice of services.

- Three key issues must be addressed at a Union level. The first concerns the identification of the elements that comprise universal service, the second the costing of universal service and the third the means of financing uneconomic aspects of universal service provision in a competitive environment.

A secure mechanism for dealing with the burden of uneconomic universal service obligations is crucial. The goal of providing affordable access to basic telecommunications services for all citizens is not an argument in favour of maintaining inefficient across-the-board subsidies for access, but rather it is a reason for developing targeted schemes for needy citizens and uneconomic customers. The particular needs of peripheral regions with less developed networks should also be taken into account.

Given the rate of technological progress and its effect on costs and availability of increasingly sophisticated services, together with the need to ensure that the benefits of the Information Society extend to all citizens, the definition of universal service must be dynamic.

3. *NETWORK INTERCONNECTION MUST BE GUARANTEED AT A EUROPEAN LEVEL IN ORDER TO ENSURE INTER-OPERABILITY OF TELECOMMUNICATIONS SERVICES.*

A new regulatory framework for interconnection will be developed, drawing upon the principles of open network provision and the application of Treaty competition rules. The framework will provide a predictable regulatory environment, which will:

- remove current restrictions on interconnection; give priority to the commercial negotiation; set out the rights and obligations on infrastructure providers; promote fair competition; and identify suitable technical standards.
- establish dispute resolution mechanisms, alongside existing means of recourse, at a national and European level.
- lay down common and efficient charging principles for interconnection, taking account of universal service obligations.

THERE MUST BE OPEN ACCESS TO INFRASTRUCTURE FOR NETWORK OPERATORS AND SERVICE PROVIDERS. ADEQUATE PROVISION OF TELECOMMUNICATIONS TRANSMISSION INFRASTRUCTURE SHOULD BE GUARANTEED THROUGHOUT ALL MEMBER STATES.

Telecommunications infrastructure makes use of a national resource, and those who have rights to provide public infrastructure, (particularly where rights are linked to rights of way), carry particular responsibilities to make their facilities available to other market players.

Principles for open access and use are laid down in the specific European Union framework of open network provision, as well as through the general application of the competition rules. These principles should be applied in a proportional and non-discriminatory manner to telecommunications infrastructure. Specifically, transmission capacity in the form of a guaranteed set of market offerings should be available throughout the European Union.

4. *COMMON PRINCIPLES FOR THE LICENSING / AUTHORISATION BY MEMBER STATES SHOULD BE IMPLEMENTED.*

The priorities with respect to licensing the establishment and operation of infrastructure are:

- a common approach to licensing at a European level, in order to minimise barriers to market entry.

New market entrants need a clear and predictable regulatory environment with minimum variation between Member States. Common licensing principles - covering both the criteria for awarding licences (and for limiting their number where such limitation is justified), and the conditions within them - must be agreed at a European level.

- co-ordinated licensing between Member States for trans-European infrastructure projects

Europe has an urgent need for long distance, high quality, high capacity, low cost telecommunications circuits. New responsive procedures must be set in place so that organisations wishing to install long distance telecommunications circuits crossing several Member States can receive the necessary authorisations quickly and in a co-ordinated manner.

5. *FAIR COMPETITION SHOULD BE PROMOTED THROUGH THE FULL APPLICATION OF THE TREATY COMPETITION RULES*

In order to provide a fair competitive environment, the application of competition rules will become increasingly important alongside the common regulatory framework put in place at a European level. The competition rules will have a particular role in helping to define future market structures and in setting the conditions under which networks and services can rapidly develop.

To provide greater coherence in market developments, particularly in relation to the provision of cross-border networks and services, new procedures may be required to allow the assessment of the terms for interconnection and access (including mechanisms for financing universal service) to networks and to rights of way.

6. *TRANSPARENT AND RESPONSIVE MECHANISMS MUST BE ESTABLISHED TO ENSURE FAIR ACCESS TO COMMON RESOURCES, IN PARTICULAR, RIGHTS OF WAY, NUMBERS AND FREQUENCIES*

Rights of way are essential for the establishment of any fixed communications infrastructure, whilst numbering is an indispensable resource for the operation of and access to both networks and services. Additionally, access to frequencies is essential for all mobile and some fixed telecommunications services.

7. *ACTION IS NEEDED IN NEIGHBOURING FIELDS IN ORDER TO EXPLOIT THE BENEFITS OF LIBERALISATION OF TELECOMMUNICATIONS INFRASTRUCTURE.*

This includes action to strengthen data protection and privacy for the individual; to ensure security of information; to clarify and develop the situation with regard to intellectual property rights; and action in the audio-visual field.

Adoption of current Commission proposals on data protection and privacy is becoming urgent, in order to give the public reassurance about their rights to privacy in the Information Society. Commission initiatives in the areas mentioned have been announced in the Commission's Action Plan to the Information Society (COM(94) 347).

A COHERENT FRAMEWORK FOR CONTENT REGULATION SHOULD BE DEVELOPED

These future frameworks, building on current Union policy, must take into account the fact that in the future the same material may be transmitted over a variety of different delivery systems, including broadcast systems and telecommunications systems.

8. *THE SOCIETAL AND SOCIAL IMPACT MUST BE EXAMINED*

PUBLIC HEALTH AND SAFETY, AND ENVIRONMENTAL NEEDS MUST BE SAFEGUARDED

Environmental requirements will increase pressure for the sharing of facilities and/or rights of way by infrastructure providers. This should be allowed and encouraged by Member States, and in exceptional cases, it may be necessary to impose sharing arrangements.

Increasing use of radio-based links raise potential hazards with regard to health and electromagnetic interference. Accelerated research into these areas and the development and implementation of the necessary standards is a priority.

THE FULL IMPACT OF THE INFORMATION SOCIETY MUST BE EXAMINED.

The potential of the Information Society for the lives of every European citizen calls for an approach which is open, transparent and consultative, involving all sectors of society. Issues related to consumer protection, social cohesion and cultural diversity, employment and patterns of work, must be subject to wide public debate in the course of implementing the measures outlined above.

9. *UNION POLICY MUST ACTIVELY PURSUE THE ON-GOING MULTI-LATERAL NEGOTIATIONS ON BASIC TELECOMMUNICATIONS WITHIN THE GATS IN ORDER TO OPEN UP FOREIGN MARKET ACCESS.*

As long as comparable and effective market access to third countries has not been achieved, the ability to take measures with regard to third countries should not be restricted, subject to Community commitments on a multi-lateral or bilateral basis.

10. *THE FUTURE EVOLUTION OF THE REGULATORY ENVIRONMENT TO MEET THE NEEDS OF THE INFORMATION SOCIETY MUST BE ADDRESSED*

A coherent regulatory framework for the licensing of infrastructure which avoids the current distinctions based upon the services provided must be developed.

Future infrastructure will be able to carry all forms of information and communications services (TV and radio programmes, simple and advanced telecommunications services, multi-media applications).

In the medium term (beyond 1998), new regulatory frameworks are needed which address the issue of convergence of telecommunications and broadcasting. Current differences *between* the Member States in their regulatory regimes for cable TV and broadcasting, and differences *within* Member States between the treatment of broadcasting and telecommunications, threaten to impede the development and distribution of advanced information/communications services. In relation to the new services to be provided in the Information Society the Commission will be undertaking work during the course of 1995 to put in place an appropriate regulatory framework.

II THE APPROACH CHOSEN AND THE SCOPE OF THIS GREEN PAPER

The establishment of a consistent approach for the Union towards the development of telecommunications infrastructure must be seen against the overall objectives of the Union's policy. The approach chosen focuses on those issues which have a clear European dimension and for which solutions are essential in order to assist the development of the Information Society in Europe. Such an approach is mandated by the principle of subsidiarity. Agreement on these issues will stimulate the further development of both advanced and basic communications networks and services at a European as well as a national level. The approach is summarised below.

The approach builds on the market and technological developments in Member States, as well as the political initiatives in certain countries seeking to introduce greater network competition. (These trends are analysed in Sections III and IV). It examines in Sections V and VI the social challenges and, in particular, the opportunities for new employment which a competitive infrastructure environment may offer and the adaptation of that environment to the priority of universal service.

The approach proposed is consistent with main lines of Union policy in telecommunications to date (which are set out in detail in Section VII and VIII). It must also be viewed in the context of the new political priorities flowing from the Treaty of European Union, in particular, the importance attached in Title XII of the Treaty to the establishment of Trans European Networks⁸.

The European Union is actively pursuing the development of trans-European telecommunications networks in the context of a number of proposals in the fields, such as the Integrated Services Digital Network (ISDN) and Integrated Broadband Communications (TEN-IBC)⁹. The Commission has indicated that it will propose overall Guidelines on Trans-European Networks in telecommunications. Beyond these initiatives the European Union is actively engaged in promoting advanced communications networks and services through its research programmes¹⁰.

Finally, the common approach must also look beyond the Union to take full account of developments throughout Europe and in the markets of our major trading partners. The Union is actively pursuing the multi-lateral negotiations on Basic Telecommunications Services in order to open up the global trading environment for networks and services within the context of the GATS.

⁸ Article 129b of the EC Treaty indicates that *"within a framework of a system of open and competitive markets, action by the Community shall aim at promoting interconnection and interoperability of national networks as well as access to such networks"*.

⁹ Communication from the Commission to the Council and the European Parliament on preparatory actions in the field of Trans-European Networks: Integrated Broadband Communications (TEN-IBC) COM(93) 372 final, 22.7.93 and Communication from the Commission related to the development of the Integrated Services Digital Network (ISDN as a trans-European Network and the related proposals for a guidelines for the development of ISDN as a trans-European network and for a multi-annual Community action, COM(93) 347 final, 1.9.93

¹⁰ See, in particular, Council Decision of 7th June 1991 adopting a specific research and technological development programme in the field of communications technologies (1990 to 1994)(91/352/EEC; OJ L192/8, 16.7.91 - the RACE programme.

THE APPROACH CHOSEN :

1. Builds on the existing principles of the Union's telecommunications policy and in neighbouring fields and, in particular, the future vision of telecommunications as most recently set out in the Commission's Green Paper on Mobile and Personal Communications¹¹ ;
2. Promotes the emergence of a fair competitive environment in the Information Society both within the European Union and in third country markets, in particular, with regard to access to such markets ;
3. Draws on developments in current national environments, and, in particular, the moves undertaken in a number of Member States to develop infrastructure competition¹², as well as taking into account technological and market developments both within the European Union and world-wide.

The studies carried out for the Commission in preparation for this Report form an integral part of the consultation process and will be made available on request (Details are set out in Annex 2);

4. Develops pan-European and global approaches to the future regulatory framework for telecommunications;
5. Points towards a coherent regulatory framework which strengthens existing Union policies in neighbouring areas, such as in the fields of broadcasting, culture and intellectual property rights, needed to bring about the Information Society and in particular, to spread the benefits of stronger growth, competitiveness and employment throughout the Union to each of Europe's citizens.

The debate on infrastructure is also high on the global political agenda, with important initiatives being undertaken in all regions of the World. For that reason it is especially appropriate that early in 1995 the Commission is hosting a meeting of Ministers from the Group 7 countries on issues associated with the Information Society.

¹¹ Green Paper on a common approach in the field of mobile and personal communications in the European Union, COM(94) 145 final, 27.4.94

¹² See in particular :

- Consultation Publique organisée par Bruno Lasserre à la demande de Gérard Longuet : *Quelle réglementation pour les télécommunications françaises?*, Direction Générale Postes et Télécommunications, April 1994, and *Les autoroutes de l'information*, Rapport au Premier ministre par Gérard Théry, September 1994

- *Study of the International Competitiveness of the UK Telecommunications Infrastructure*, DTI, February 1994, and

- Report by McKinsey for the Ministerie van Verkeer en Waterstaat, *Telecommunicatie in Nederland : op weg naar wereldklasse*, June 1993

The scope of infrastructure covered by the Green Paper

Part II of the Green Paper covers issues of telecommunications infrastructure as a whole, drawing on the policies already set out in relation to the specific sectors of satellite communications and mobile and personal communications¹³. It does not therefore specifically address those sectors, though they are part of the overall vision of the rapid evolution towards a completely new telecommunications environment based on the full integration of fixed, mobile and satellite technologies.

The focus of this Green Paper is nevertheless terrestrial transmission infrastructure for telecommunications. 'Terrestrial transmission infrastructure for telecommunications means the basic transmission capacity which is the raw material from which telecommunications networks and services are built (see figure II-1).

The ensemble of telecommunications services available in a country or region may also be referred to as its "telecommunications infrastructure". The Council has recognised that the provision of adequate "telecommunications infrastructure" in this sense is best achieved in a competitive market environment. The liberalisation of telecommunications transmission infrastructure as discussed in this Green Paper is a key step in stimulating the establishment of such a market for telecommunications services.

The scope of issues affecting infrastructure covered by the Green Paper

Council resolution 93/C213 of 22 July 1993¹⁴ places this Green Paper in the context of the on-going liberalisation of the telecommunications sector. For that reason and in order to ensure a coherent and comprehensive approach the Paper must also address issues related to service provision, (such as the framework for interconnection and the licensing of telecommunications services) and access to common resources, (such as frequency or numbers), which might be considered to be more strictly an issue of service competition. Nevertheless such issues are so closely bound to the establishment and operation of infrastructure that issues associated with these areas must at least be raised.

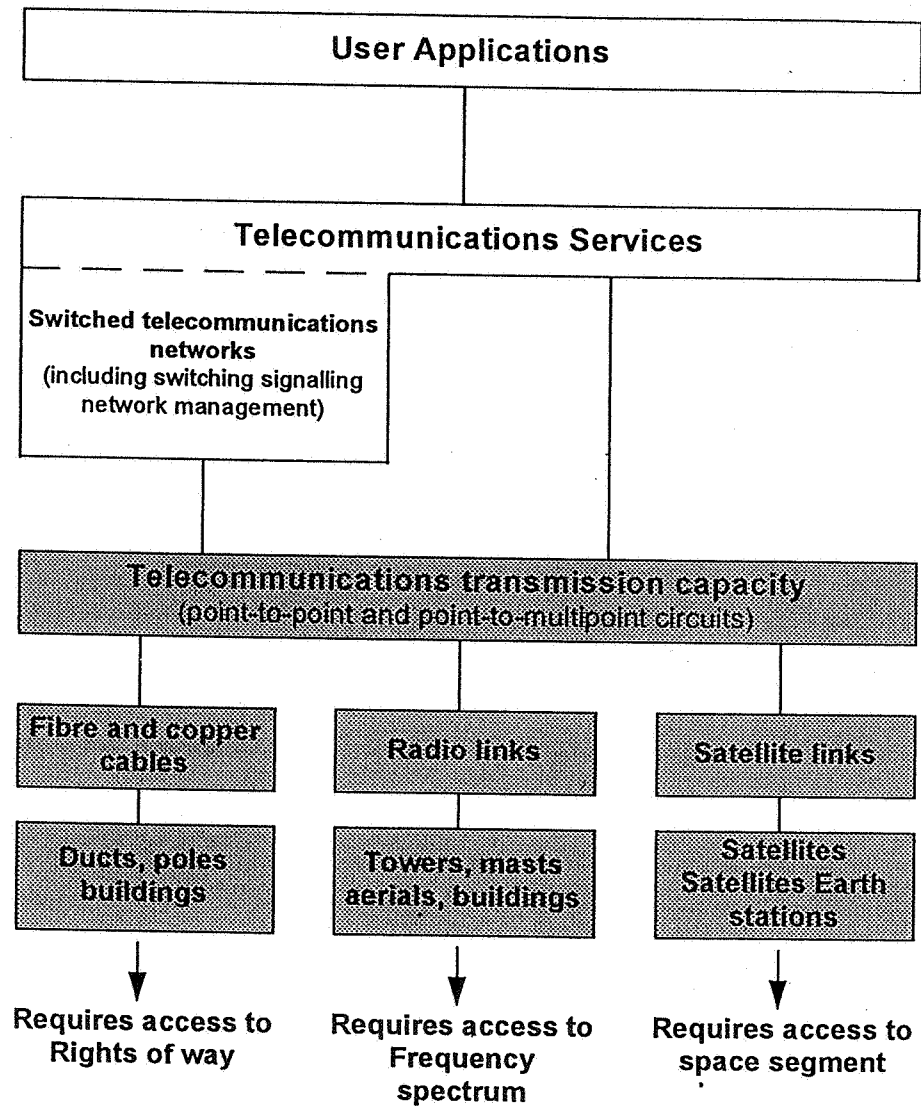
Beyond the regulatory agenda immediately connected with infrastructure competition, the Information Society raises fundamental challenges brought about by

¹³ Green Paper on a common approach in the field of mobile and personal communications in the European Union, COM(94) 145 final, 27.4.94 and Green Paper on a common approach in the field of satellite communications in the European Community, COM(90), 20.11.90 and Commission Communication on Satellite communications : the provision of and the access to - space segment capacity, COM(94) 210 final, 10.6.94

¹⁴ OJ C213, 6.8.94

Figure II.1. Telecommunications Infrastructure in the context of telecommunications networks and services

The shaded boxes in the diagram below represent telecommunications infrastructure



the convergence of telecommunications, information technology and broadcasting. This Green Paper contributes to the debate on these issues in examining the question of how the future regulatory environment should evolve to meet the challenges of convergence. Consideration of those developments is not however a precondition for either discussion of the principle of infrastructure liberalisation set out in Part I or steps to apply and extend existing principles of telecommunications policy to infrastructure.

Many of the issues raised in looking beyond infrastructure competition are not only relevant to telecommunications, but are central to the overall process of developing a framework for the Information Society. The Commission is actively developing policies in many of these neighbouring areas, such as in relation to intellectual property rights, the regulation of broadcasting and rules promoting plurality in the media. These initiatives in neighbouring fields are highlighted in the Green Paper.

This Green Paper does not claim to find solutions to these issues which are at the heart of longer term and broader regulatory evolution within the Union. It nevertheless is vital to launch a debate now on many of these issues, in order to view them in a European, rather than purely national context.

III THE CURRENT SITUATION

III.1 Communications Infrastructures

As pointed out in the first part of the Green Paper, a number of infrastructures capable of carrying telecommunications services exist in Member States. However, the major part of public telecommunications services are provided by the national networks operated by the Telecommunications Organisations (TOs).

III.1.1 Public telecommunications networks

Table III.1.1 provides a list of the entities currently licensed to provide fixed telecommunications networks in Member States and the three accession countries and the corresponding numbers of main telephone lines.

Infrastructure competition for public telecommunications networks exists in Finland, Sweden and the UK. In Denmark and Italy, regional operators or operators with responsibility for different service areas have recently been consolidated and this process is also in progress in Portugal.

Table III.1.1 - Operators licensed to provide infrastructure for public telecommunications services.

Operator(s)		Infrastructure regulation	Thousands of mainlines (end 1993) ¹⁵
Belgium	Belgacom	Monopoly	4396
Denmark	Tele Danmark Telecom Danmark Four regional operating companies	Monopoly	3030
Germany	DBP Telekom	Monopoly	37000
Greece	OTE	Monopoly	4744
Spain	Telefónica	Monopoly	14254
France	France Telecom	Monopoly	31000
Ireland	Telecom Eireann	Monopoly	1150
Italy	Telecom Italia	Monopoly	24167
Luxembourg	P & T Administration	Monopoly	221
Netherlands	PTT Telecom	Monopoly	7630
Portugal	Portugal Telecom CPRM	Monopoly	3300
UK	BT	Competition	26500
	Mercury		200
	Kingston Telecom		200
	CATV operators		300
	Other licensed operators		Negligible at this time
Austria	PTV Radio Austria	Monopoly	3579
Finland	Telecom Finland	Competition	747
	48 Local telephone companies		2014
Sweden	Telia	Competition	5972
	Tele 2		0.8

¹⁵ Source : IDATE, 1994, except for UK (Office of Telecommunications), Finland (Ministry of Communications Finland) and Sweden (National Regulatory Authority for Sweden)

III.1.2 Alternative infrastructure

In addition to the licensed operators listed in Table III.1.1, two other types of network currently exist which have the potential to carry public telecommunications services: own-use infrastructure operated by public utilities and cable television (CATV) networks.

The extent to which these alternatives to the public network are used varies between Member States, and is largely dependent on the regulatory framework in each Member State.

Utility networks

In all European countries there are utilities which already have telecommunications networks or which have access to rights of way which are a pre-requisite for such networks. However, their potential for immediate deployment for commercial purposes if regulation allowed this is limited.

On the basis of studies carried out for the Commission on alternative infrastructures, Part I of the Green Paper concluded that further investment in additional facilities by the utilities would be required. In particular, the study found that the benefits for utilities were more likely to be lie in the construction of long distance rather than local infrastructure. Exploitation of long distance infrastructure would require either construction of local access or use of existing TO connections.

CATV

Cable television networks, by contrast, already consist of local as well as long distance infrastructure. However, the level of development of these networks varies considerably across Europe.

In two Member States, Greece and Italy, CATV does not exist and development of cable is still very limited in Spain and Portugal. In the remaining Member States, penetration rates for cable vary considerably from more than 90% in Belgium, Holland and Luxembourg to around 5% in France and the United Kingdom. In terms of subscribers Germany represents the biggest national market with nearly 15 million subscribers and a penetration rate of around 45%.¹⁶

¹⁶ For further details, see IDATE, 1994.

Table III.1.2 - Cable TV Networks in the European Union¹⁷

	Number of Operators	Households passed ¹⁸	Subscribers ¹⁹
Belgium	38	97.4 %	95.5 %
Denmark	6500 ²⁰	73.6 %	57.3 %
Germany	1	64.6 %	40.5 %
Greece
Spain	30	8.1 %	1.1 %
France	16	25.8 %	6 %
Ireland	13	>50 %	40 %
Italy
Luxembourg	120	99.5 %	81.4 %
Netherlands	358	90.3 %	86.4 %
Portugal	1	1.6 %	0.3 %
UK	23	12.6 %	2.8 %

III.2 The Market Situation

Despite the turndown in economic activity in much of the OECD area, the telecommunications sector continues to grow substantially in both volume and value terms. Total turnover for telecommunications services in the European Union in 1993 was about 120 billion ecu or nearly 3 per cent of overall GDP, despite falling price levels in the sector. The nominal growth rate over the last 5 years has averaged about 7 per cent annually.

¹⁷ Source : IDATE, 1994

¹⁸ Percentage of television-owning households passed by the cable TV networks

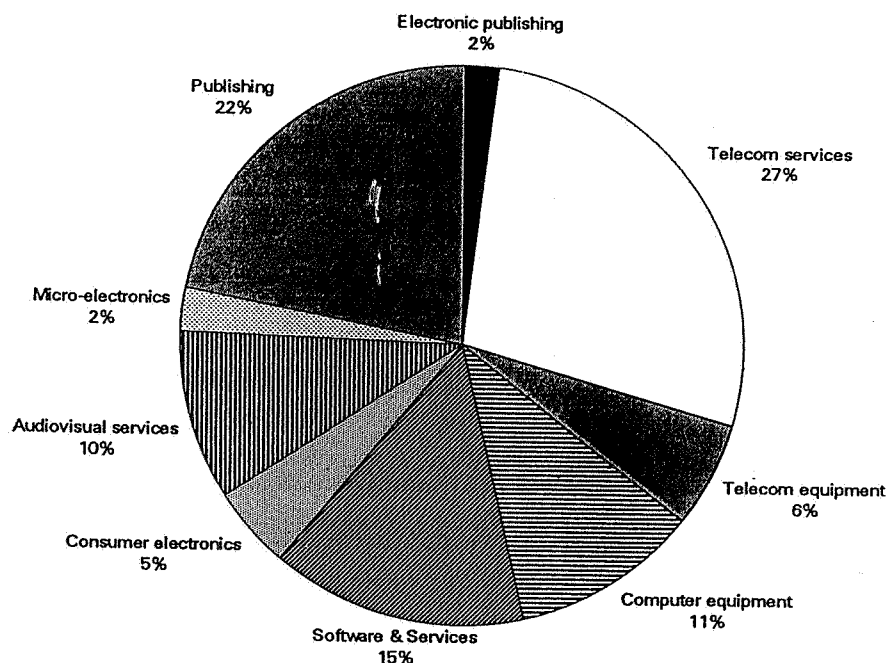
¹⁹ Percentage of television owning households actually subscribing to a cable TV network.

²⁰ These are networks serving more than 25 subscribers. There are around 4,800 additional networks with less than 25 subscribers.

As an indicator of telecommunications usage and growth, international public telephone traffic in the Union rose by just over 10 per cent in 1993 compared to volume increases of about 11 per cent in 1991 and 1992.

It is the new service market areas that are producing the largest growth rates, particularly where competitive service provision has occurred. In particular, mobile communications has displaced data communications and value-added services as the most dynamic part of the service market. In the Union, mobile services account for about 5 per cent of subscriber lines and nearly 10 per cent of service revenues. In the rest of the European Economic Area the figure is significantly higher. By the beginning of 1998, the date already agreed for the full liberalisation of telecommunications services, there is the real prospect of well over 10 per cent of telephone subscribers in the enlarged Union being served by competing wireless operators.

Table III.2 - Turnover of EU information sector in 1993.²¹



Total Market : 414 billion ECU

²¹ Source : IDATE

In contrast, despite the development of integrated or multimedia services (combinations of voice, data and images), and considerable speculation about the emergence of multimedia networks, turnover for these new markets in Europe is as yet limited. The first applications are occurring in specific business markets such as intra-company advanced communications, video-conferencing, electronic data interchange, broadcasting and news services for the financial sector, certain ISDN applications, the emergence of some tele-working and the exploitation of some CD ROM products.

However, there is no significant turnover yet from the provision of multimedia services to the residential sector. Moreover, telecommunications and television or broadcasting services are in the main currently supplied by quite separate networks. This is the case even in the UK where in some areas telephone and cable TV services are being marketed jointly by companies with local cable TV and telecommunications franchises.

Total subscribers to cable television in the Union at the end of 1993 were 26 million, half of which were in Germany. This total corresponds to approximately 15 per cent of telephone lines.

The total turnover of broadcasters in the Union at the end of 1993, which includes both content and transport or transmission revenues, was about 27 billion ecu. Turnover for the provision of cable television was approximately 3 billion ecu. These totals are equivalent to about 22 per cent and about 2,5 per cent respectively of telecommunications services revenues.

III.3 The Regulation of Infrastructure in Member States

III.3.1 Public telecommunications infrastructures

Among the Member States and accession countries, only Finland, Sweden and the UK currently permit competition in the provision of public telecommunications infrastructure.

The extent to which public telecommunications operators are permitted to provide broadcasting or multimedia services is unclear, although in the UK, BT is expressly prohibited from supplying broadcasting services on its telecommunications network.

Table III.3.1 - Current restrictions on the activities of Telecommunication Operators in the EU²²

	Production and Transmission of "Broadcast and Multimedia Services"
BELGIUM	Uncertain area of the law due to the division of competence within the federal structure. The combination of the various applicable legal provisions at Federal and Flemish and French Community levels suggest that there is currently a prohibition on TOs producing content or transmitting "broadcast" services. There exists the possibility that services in response to individual requests may be provided.
DENMARK	No explicit barriers to transmission of multimedia services (TeleDenmark being the main provider of infrastructure for the transmission of broadcast services). However, explicit restrictions preventing national TOs from producing such services
GERMANY	There are no explicit barriers to the transmission of multimedia services by TOs. DBP Telekom is scheduled to be able to produce such services in 1995 after privatisation.
GREECE	The combination of the various applicable legal provisions (including telecommunications licensing requirements) indicates in practice that TOs may neither be involved in the production of content nor transmit "broadcast" services; these restrictions may extend to services in response to individual request.
FRANCE	No explicit barriers
SPAIN	Implicit barrier against the production and transmission "broadcast" services (subject to possible future change in government policy). It is arguable that a TO can transmit services in response to individual requests.
IRELAND	No explicit barriers. The Constitution of Ireland explicitly protects freedom of expression, subject to rules on obscenity and public policy
ITALY	No explicit barriers. However, the right to freedom of speech protected by the Constitution is subject to the following : 1. broadcasting services expressly excluded from telecoms licence; 2. broadcasting licences not granted to operators not engaged in the "entertainment market" pursuant to their charter; and 3. private broadcasting licence cannot be granted to State-owned companies.
LUXEMBOURG	There are no explicit barriers preventing TOs from producing content for multimedia services, nor from transmitting such content over the TO's infrastructure.
The NETHERLANDS	There are no explicit barriers to the production of content by TOs, but there is a restriction on the transmission of such content over their own infrastructure, although transmission may occur via CATV networks; transmission might also be possible over CATV networks owned by the TO, subject to it obtaining a broadcasting licence.
PORTUGAL	No explicit barriers
UK	All national TOs may <u>not</u> use national licences for the provision of content (to be reviewed in 2001), but can do so at a regional level in specified circumstances. National TOs <u>cannot</u> convey "broadcast services" but may convey services in response to individual requests (to be reviewed in 1998).
AUSTRIA	There are no explicit barriers to the production of broadcast services, however, their transmission is subject to the de facto monopoly of the public broadcasting entity, it may be possible to provide services in response to individual requests.
FINLAND	No explicit barriers
SWEDEN	There are no explicit barriers preventing TOs from engaging in either the production or transmission of television and radio programmes over their networks.

Content refers to information, other than voice telephony, data communications or value added services, of an audio, visual or audio-visual character, for its commercial transmission over infrastructure.

Production of Content refers to the right to produce or compile *content* (as defined).

²² Source : Coudert, 1994

III.3.2 *Alternative network infrastructures*

An overview with regard to current alternative network infrastructure licensed in the Member States for defined telecommunications purposes is given in Table III.3.2.

In six Member States (Belgium, Germany, Greece, Spain, Italy and Portugal) the possibility exists for the self-provision of infrastructure by utilities for their own internal communication needs, such as the railways, motorways, energy and water companies.

In four Member States (Belgium, Spain, Ireland and the Netherlands) wider rights exist for licensing, on a discretionary basis, the self-provision of infrastructure by non-utility corporate or closed user groups. However, the use of that infrastructure is limited to the internal communications needs of the organisations concerned.

In two Member States (Germany and France) in addition to the discretionary licensing of corporate/closed user group networks for internal communications²³, such alternative infrastructure can be used by third parties, subject to specified conditions²⁴.

In Denmark there is a general possibility to self-provide infrastructure. In the United Kingdom, full infrastructure competition is permitted, either on the basis of specific individual licences, or through the grant of class licences for certain types of infrastructure provision.

Among the accession countries, Austria permits the self-provision of infrastructure by utilities for internal communications purposes, but otherwise reserves infrastructure provision to PTV. Sweden and Finland both allow full infrastructure competition.

²³ This includes those networks belonging to the utilities in the case of France. France has established a system for authorising independent networks ("réseaux indépendants") for such purposes.

²⁴ For example, in *Germany*, certain entities, (primarily public utilities) can set up their own infrastructure for internal communications, whilst private networks can be set up only within a 25 km area, or beyond that only if conforming with certain technical configurations. For further detail see Coopers & Lybrand, 1994.

Table III.3.2 - Current regulation of alternative telecommunications transmission infrastructure

	General Alternative Provision	Class ²⁵ Exemption For Utilities	Discretionary Licensing for Self-Provision	Discretionary Licensing for CUGs ²⁶	Commercial Third Party Provision
Belgium	No	Yes	No ²⁷	No	No
Denmark	No	Yes	Yes	Yes	No ²⁸
Germany	No	Yes	Yes	Yes	Yes ²⁹
Greece	No	Yes	No	No	No
Spain	No	Yes	No	No	No
France	No	No ³⁰	Yes	Yes	Yes
Ireland	No	No	Yes	No	No
Italy	No	Yes	No ³¹	No	No
Luxembourg	No	No	Yes	No	No
Netherlands	No	No	Yes	No	No ³²
Portugal	No	Yes	No	No	No
UK	Yes	No	Yes	Yes	Yes
Austria	No	Yes	No ³³	No	No
Finland	Yes	No	Yes	Yes	Yes
Sweden ³⁴	Yes	No	No	No	Yes

Source : "The impact of liberalisation of alternative Terrestrial Infrastructure for non-reserved services", Coopers & Lybrand, 1994, and additional analysis.

- ²⁵ The exact categories of exempt organisations and nature of exemptions from the general obligation to use TO infrastructure vary according to the Member State concerned.
- ²⁶ Corporate networks / Closed User Groups
- ²⁷ Belgian regulation provides in principle for licensing of private transmission links, but only where Belgacom is not prepared to provide a technically equivalent link at a normal tariff and within a reasonable period.
- ²⁸ Shared use of internal networks is possible under certain circumstances.
- ²⁹ However limited to particular configurations and maximum distances.
- ³⁰ No specific exemption for utility companies - application must be made by them for an authorisation to operate an independent network ("réseau indépendant")
- ³¹ The Italian Postal Code provides for the possible discretionary licensing of private telecommunications systems, but only if there is no or an inadequate public service between the points to be linked.
- ³² Proposals are currently before the Dutch Parliament to introduce competitive infrastructure provision by the creation of a second national infrastructure provider.
- ³³ Austrian regulation provides in principle for licensing of private transmission links, but only where PTV is not prepared to provide a technically equivalent link at a normal tariff and within a reasonable period.
- ³⁴ There are no restrictions on the building or use of infrastructure for the provision of telecommunications services in Sweden, so there is no need for discretionary licensing for self-provision or class exemption for utilities.

III.3.3 Cable TV infrastructures

Current provisions concerning use of cable TV networks for the provision of telecommunications services are summarised in Table III.3.3. In most cases, CATV networks are either barred from carrying telecommunications services, (both public voice telephony and liberalised services) or do not because the current legal situation is unclear, (due to absence of express provisions in the national regulatory framework)

Table III.3.3 - Use of CATV networks for the delivery of telecommunications services

Use of cable TV networks for telecoms services	
Belgium	No
Denmark	No
France	Non-voice services only
Germany	No
Greece	----- ³⁵
Ireland	No legal provision
Italy	----- ³⁶
Luxembourg	no legal provision
Netherlands	limited use
Portugal	No
Spain	No
UK	Yes
Austria	No
Finland	Yes
Sweden	Yes

Source: "L'impact de l'autorisation de la fourniture de services de télécommunications libéralisés par les câblo-opérateurs", IDATE, 1994, ECCA and additional analysis

In France, the regulatory framework has since 1990 permitted CATV networks to apply for licences to offer telecommunications services other than voice telephony, but take-up has been limited because of limited geographic coverage and the exclusion of telephone service.

³⁵ No cable TV networks available

³⁶ No cable TV networks available

In Holland, CATV operators constituting about 55 per cent of the Dutch market are participating with the railway company and other utilities in a consortium which will form the basis of a second national telecommunications operator.

Following the duopoly review in the UK, CATV companies have been permitted to provide a full range of telecommunications services.

III.4 Conclusions

Currently, telecommunications services are provided for the most part over the infrastructures of the public telecommunications network operators. In the Union and accession countries, only Finland, Sweden and the UK permit competition in public telecommunications infrastructure provision.

In general, the exploitation of alternative infrastructures such as utility networks or cable TV networks to provide telecommunications services in the Union is extremely limited due to the restricted regulatory situation.

In addition, the current legal situation for the use of cable TV networks in providing telecommunications services is unclear.

The current restrictive regulatory situation on infrastructure is not only holding back the cost effective development of pan-European networks and services in Europe but also threatens to impede the development and distribution of multimedia products and services.

IV THE MAJOR DRIVERS FOR CHANGE

IV.1 Market and Commercial Developments

The telecommunications industry is in a period of transition. The two major features of technological change - fragmentation and convergence - are shaping the commercial environment; fragmentation because new services and new operators are emerging, and convergence because the traditional divisions between the transmission media for communications are blurring. The telephone is moving from the wires in favour of the air and television is moving from the air to utilise wires. Moreover, companies from historically quite distinct sectors, telecommunications, computing and software, publishing, and broadcasting and entertainment are beginning to explore avenues of mutual interest.

At the heart of the major commercial changes underway in the telecommunications sector is the move to digitisation and the tremendous growth in electronic processing power both within networks and by terminal equipment. But in addition, the advances in transmission (both wire and radio-based) and switching technologies are now being actively exploited commercially.

IV.1.1 Changing Market Structures

Although significant competition in fixed infrastructure has only been introduced in a small number of European countries, (the UK, Sweden and Finland), traditional market structures in the telecommunications sector are changing everywhere as a result of competition in some service areas, the development of new services and infrastructure competition in other countries outside Europe.

Firstly, the rapid development of mobile or wireless networks has led to the entry of new companies to the telecommunications sector, (for example from the banking, utilities and construction sectors) who are participating in some of the consortia involved in mobile network investments.

Secondly, increasing competition in telecommunications services is leading to a proliferation of new companies in the sector (both equipment and service providers) and a greater involvement of established companies providing various kinds of communications services to business, e.g., Reuters, Visa, IBM, Sita, EDS, Swift etc.

Thirdly, increasing competition and market opening in the international business telecommunications sector has meant that traditional telecommunications operators are now moving outside their traditional geographic boundaries, following their larger customers and also forming joint ventures. In many cases the traditional operators are also following individual customers abroad by means of card-based service, where telecommunications services can be used on the move and billed domestically or to a credit card account.

In addition, corporatisation and privatisation of many established publicly owned TOs, is reinforcing these trends through new entities entering the sector and alliances

involving strategic partnerships from both inside and outside Member States. Within the European Union, most Member States have established an arms length relationship with their operator through the implementation of a formal contractual relationship, whilst private share holdings in the established TOs exist in the UK, Holland, Denmark, Spain, Italy and Portugal and plans are underway to increase the level of private investment in the latter two countries. Privatisation is also actively being considered in most of the other Member States and throughout central and Eastern Europe. The shift away from traditional public sector management of the telecommunications sector, combined with the development of new service markets is leading to an increasingly complex picture of alliances, groupings and partnerships.

Rapid technological and commercial developments and the prospect of the take-off of multimedia services in the context of the further growth of the information economy are also leading to significant alliances and agreements in anticipation of market opportunities. This is most noticeable in the US where companies are also attempting to overcome the established lines of business restrictions imposed between local and long distance and between fixed and wireless operations. However, the changing market structures also encompasses forward integration into new service areas, though securing access to content (films, TV programming, published media) and link-ups between telecommunications and cable operators, service providers and software companies.

Finally, the development of telecommunications services competition and the growth in mobile and wireless operators has led to the emergence of a new breed of service provider which packages and prices services to the final customer. In some instances, particularly for larger business clients, this intermediary between the infrastructure or network operator and the customer may add significant value by integrating a number of communications systems. In other cases, particularly for international services, suppliers resell services at prices below normal tariffed levels. The increasing commercial importance of the systems integrator or service provider is aided by digitisation and the adding of intelligent features to both the network and to terminal equipment, making it easier to tailor services to customers and bill them accordingly.

Table IV.1.1 - Recent alliances/acquisitions³⁷

Successful bids

Date	Purchaser	Purchaser turnover \$bn	Target/Partner	Activity of target	Value of deal \$bn	Share of target %
Aug-94	LDDS	1	WilTel	Inter-exchange	2.5	100
Jul-94	US West	11	Wometco/Georgia Cable	CATV	1.2	100
Jul-94	Bell Atlantic Cellular	n/a	Nynex Cellular	Mobile	13.0	100
Jul-94	AirTouch	1	US West Cellular	Mobile	18.0	100
Jul-94	Nextel	0.1	One Comm	Mobile	0.7	100
Jun-94	AT&T	67	Unisource	Global outsourcing	n/a	n/a
Jun-94	Eunetcom	n/a	Sprint Corporation	Inter-exchange	4.2	20
Dec-93	US West	11	Time Warner	Media/CATV	2.5	23
Nov-93	Nextel	0.1	Motorola mobile licences	Mobile licences	1.8	100
Oct-93	Bell Atlantic	13	Iusacell	Mobile	1.0	42
Aug-93	AT&T	67	McCaw Cellular	Mobile	12.3	100
Jun-93	BT	20	MCI	Inter-exchange	5.3	20
Jun-92	US Sprint	10	Centel	LEC	2.9	100
Oct-91	Bell Atlantic	13	Metro Mobile CTS	Mobile	2.5	100
Sep-91	AT&T	58	NCR	IT manufacture	7.4	100
Sep-90	Bell Atlantic & Ameritech	25	Telecom New Zealand	PTO	2.5	68
Aug-90	GTE	20	Contel	LEC	6.3	100
Apr-90	MCI	12	Telecom USA	Inter-exchange	1.3	100

Unsuccessful bids

Date	Purchaser	Purchaser turnover \$bn	Target/Partner	Activity of target	Value of deal \$bn	Share of target %
Aug-94	MCI	12	Nextel	Mobile	1.3	17
Jun-94	EDS	10	Sprint	Inter-exchange	20.0	100
Apr-94	SW Bell	11	Cox Enterprises	CATV	5.0	100
Mar-94	AT&T	67	Energis	Transporter	0.3	33
Feb-94	Bell Atlantic	13	Tele Communications	CATV	22.0	100

IV.1.2 Blurring of the traditional boundaries

Until quite recently, telecommunications and broadcasting networks could be distinguished very clearly from one another and from other communications means, not only by the networks themselves but by the services provided on them. Commercial developments are already blurring these distinctions.

³⁷ Source: Mercer, 1994

Telecommunications networks have traditionally provided two-way private voice communications between parties whilst broadcast networks have supplied simultaneous open communications, (sound only or sound and image), from one to many points.

However, an increasing proportion of telecommunications traffic consists of one way communications or of non-voice communication. Adding a personal computer or other terminal to the end of a telecommunications line instead of a telephone multiplies the possibilities. Accessing information services, databases or premium services by telephone or PC is already common. Use of fax machines is also now widespread. Although video-conferencing and more particularly video-telephony have yet to take-off, Reuters is already providing specialised television services in addition to its traditional telecommunications market information services to the financial sector or anyone who wishes to subscribe. Security services such as the surveillance of premises are also being marketed by telecommunications operators. In addition, the popularity of Internet and other interconnected networks has now spurred the development of electronic mail, beyond the confines of private local or intra-company networks. Some telecommunications operators are also experimenting with video on demand or related services, mostly in response to competition or the prospect of competition in telephone services.

On the broadcasting side, more specialised and targeted services are also appearing even if these are currently more developed in North America than in Europe. The limited capability of the return path in many of these cable TV networks, means, however, that services are limited to pay TV packages or home shopping, the latter used in conjunction with the telephone. However, networks could be upgraded to provide more sophisticated services, particularly if restrictions on supplying telephone service are lifted.

IV.1.3 Market opening

The combination of market and commercial developments described above, and the blurring of traditional divisions between services and between service providers or operators, is leading to an inevitable opening of markets even if the major part of telecommunications services are still provided by the traditional operators.

This inevitably implies that in some markets, service providers may be competing against fully integrated network and service operators or even against integrated equipment and service providers. In addition, mergers, alliances and agreements are being agreed or planned in advance of the opening of some markets.

These commercial developments raise the important issue of competitive safeguards at a number of levels and the need for the definition of an appropriate regulatory framework. These are highlighted in Section VI of the Green Paper.

IV.2 Technological Developments

Technological developments are one of the main forces shaping the telecommunications sector. Over recent years, developments in integrated circuits and digital technology have led to the modernisation of fixed telecommunications networks in order to achieve cost savings and performance improvements. This has also led to the rapid emergence of mobile telephone networks.

Over the coming years, the sector will be influenced by technology developments in four main areas:

- broadband transmission and switching
- multimedia applications
- wireless technologies
- intelligent networks.

The implications are explored more fully below.

IV.2.1 Broadband technologies will permeate the network infrastructure

The widespread deployment of optical fibres supporting Synchronous Digital Hierarchy (SDH) transmission and Asynchronous Transfer Mode (ATM) switching technologies, ultimately in both local access and core networks, will change the fundamental nature of infrastructure. It will evolve from one that is today limited in the capacity it can provide to customers, to one of virtually unlimited capacity. The task of operators and service providers will be to ensure that such capacity is made available to users as efficiently as possible by deploying appropriate technologies in the local access network.

SDH represents an evolution of current transmission hierarchies, not only allowing optical fibre capacities to be more suitably exploited, but adding flexibility of access and superior reliability through topological and network management features. ATM, based on fast packet switching concepts, will complement SDH by providing high bit-rate switched services to end users. It is this technique which is generally regarded as the basis for the future Broadband ISDN.

Although capacity may be huge, using the available bandwidth and sharing it among users is still a problem. In the shorter term, novel methods of enhancing the information-carrying capacity of existing copper-based cables are emerging, spurred on by current regulatory constraints and market conditions in the US. HDSL³⁸ provides high-speed digital capacity to the customer premises over copper-pair cable. A similar copper-based technology, ADSL,³⁹ is being employed by some operators

³⁸ High-bandwidth Digital Subscriber Line

³⁹ Asymmetric Digital Subscriber Loop

for video-on-demand services, as a means of addressing the entertainment market. Such approaches can be seen as both complementary and competitive to optical fibre solutions, depending on the configuration chosen. They are complementary in that they provide high-speed terminations in partial-fibre networks. They are competitive insofar as advances in data compression technology are able to compensate for lack of available bandwidth, thereby enabling the copper pair to deliver a sufficient number of video channels to the home.

Developments in broadband technology, complemented by parallel developments in techniques for data compression, mean that future telecommunications networks will be able to handle real-time television in a way that was previously the preserve of the cable TV and broadcasting networks. This technological convergence of two previously separate fields paves the way for innovation and increased investment in the fixed network infrastructure.

IV.2.2 Convergence will encourage multimedia applications

The fields of computers and telecommunications began to converge over a decade ago, resulting in the birth of a new family of innovative services which became known as *value-added* telecommunications services (such as voice mail or video-conferencing). A similar convergence between telecommunications and audio-visual worlds now promises to bring with it even more radical changes through the introduction of multimedia services. The real significance of this convergence is that, unlike the previous case of information technologies (IT), the services resulting from this new combination of telecommunications and audio-visual sectors will not be limited to business users, but will have mass market appeal. The consequences in terms of both service and manufacturing industry impact are potentially enormous.

The convergence arises primarily from technological synergies which enable both media and telecommunications vehicles to be combined into a single delivery platform. This platform has been popularly labelled the *information superhighway*; in essence it refers to tomorrow's telecommunications infrastructure.

Multimedia services will require convergence at the user terminal level, in the form of a multifunction processing and display device combining the attributes of an advanced PC and a digital television receiver. Until digital television becomes a reality, PCs are leading the way with local multimedia applications being produced on CD-ROMs, identical in make-up to Compact Discs. The evolution of new terminal products into a mass market consumer electronics item will take a number of years, but the challenge for the telecommunications industry will be to encourage users to migrate from local CD-ROM-based applications to those supplied over remote connections via a cheap and efficient broadband network infrastructure.

IV.2.3 Wireless solutions are playing an increasingly important role in the access network

The 1994 Green Paper on Mobile and Personal Communications reviewed the main technology and market trends in the mobile area. The Paper recognised that the

advent of personal communications promises to revolutionise the sector and expand the market. However, this requires a convergence of fixed and mobile networks, not only at the level of a single, global service offering to users, but also through a substitution by wireless technologies of network elements hitherto made up of wired cable systems.

Early examples of such substitution include the use of analogue mobile technology for fixed rural communications by operators in Spain and eastern Germany, and the application of DECT-based⁴⁰ systems to the local subscriber loop by Ionica, recipient of a new operating licence in the UK. Although both solutions represent new ways to tackle old problems, it is perhaps significant that the truly innovative approach is that proposed by the new market player. It is also noteworthy that speed of service roll-out appears to be as important as cost in assessing the viability of radio-based solutions, an indication of the changing competitive market.

By granting mobile telephone licences to at least two operators in all Member States, governments have already taken an important step towards the introduction of parallel alternative radio-based infrastructures.

IV.2.4 Network Intelligence will cement elements of infrastructure together

The requirement of mobile communications networks to track the whereabouts of thousands of users, and the meshing of fixed and mobile networks to implement future concepts of terminal and personal mobility will raise new demands for enhanced intelligence in the fixed telecommunications network. This requirement will be compounded by an increasing need to provide for customer control of bandwidth-on-demand and network management services in the context of broadband infrastructures.

The market for value-added telephony services, expected to receive a new impetus when voice telephony services are liberalised in 1998, has already resulted in a shift of the architecture of switched telephone networks towards the so-called Intelligent Network concept.

Closely linked to the development of the intelligent network is that of network management. Sophisticated telecommunications network management systems will allow diverse telecommunications infrastructures to be managed as a whole. Network intelligence and network management systems are the cement holding together the various elements which make up an end-to-end service, allowing multiple organisations to compete and co-operate in order to supply services to the customer.

⁴⁰ Digital European Cordless Telecommunications, see Glossary

IV.2.5 Different network architectures are possible; some will depend on convergence between telecommunications and audio-visual sectors

Table IV.2.1 below shows four possible configurations of network infrastructure based on the technological trends described above. These are based on studies carried out on behalf of the Commission⁴¹ and represent current perceptions of network architectures most likely to be implemented over the next decade. They reflect the widely-held views that:

- the fibre-to-the-home concept requires a convergence of telecommunications and audio-visual services to become financially viable;
- the large investment already made in existing copper-based networks will lead operators to apply technologies aimed at enhancing its capacity;
- a combination of optical fibres and coaxial cable will constitute the standard cable television network architecture for some time to come;
- new possibilities are opened up by the use of wireless technologies in the local access network.

Whilst at present separate services tend to use separate infrastructures, in the future it will be possible for at least two of the network infrastructures highlighted in Table IV.2.1 to handle both telecommunications and broadcasting services, as well as the many new services associated with multimedia. The table comments on each configuration without making any predictions as to which is most likely to be taken up. It is probable that all four architectures will be deployed in the light of specific circumstances and needs.

The technological developments associated with the evolution of network infrastructure, and the inevitable convergence between telecommunications and audio-visual sectors that this makes possible, emphasise the need for a review of the current regulatory environment concerning telecommunications infrastructure to ensure that unnecessary barriers to these developments are removed.

⁴¹ See, in particular, *Impact of liberalisation of alternative terrestrial infrastructure for non reserved services*, Coopers & Lybrand, 1994

Table IV.2.1: Evolution of access network architecture

Architecture	Comments
Fibre to the Home (FTTH)	<ul style="list-style-type: none"> - Needs convergence of telecommunications and audio-visual fields - Requires sufficient revenues to support investment - High costs due to both equipment and civil works - Application may be limited to high-density areas - High investment requirement may lead to high usage tariffs and risk of cross-subsidy from basic telephony services
Fibre to the Curb (FTTC) plus coax	<ul style="list-style-type: none"> - Can be supported by entertainment services alone. - No obvious solution for voice services - at present mainly overlay, with trials of integrated solutions under way in the US - Probably the standard CATV architecture over the coming decade - High costs mainly due to civil works associated with installation
FTTC plus copper	<ul style="list-style-type: none"> - Maximises use of existing infrastructure - Allows continued separation of telecoms/audio-visual service provision - Needs sufficient revenues from telecoms & <i>quasi</i>-entertainment services - Defensive TO strategy for entertainment services, but currently seen as expensive in relation to potential revenues
FTTC plus Radio tail	<ul style="list-style-type: none"> - Requires separate provision of telecoms and audio-visual services in the short term, due to narrow bandwidth available on radio path - European mobile/PCN leadership is crucial - Under-developed fixed infrastructure areas are the initial beneficiaries - Needs rapid evolution of data compression technology - Evolution to UPT could result in low per-user costs and greater capacity

IV.3 Regulatory Agenda

The combination of the market developments and technological innovation outlined above have been the driving force behind the shifting regulatory agenda for telecommunications in Europe. This pattern, mirrored in other jurisdictions, such as in the United States and Japan, has led to political recognition that regulatory reform of the telecommunications sector is a key element in maintaining economic competitiveness, sustaining growth and employment, and in opening to every citizen the opportunities provided by new, advanced networks and services.

These trends were a key element in the acceptance of the inevitability of the liberalisation of voice telephony services for the general public during the 1992 Telecoms Review. They were also a factor in the Council Resolution agreed at the Council Meeting of 17 November 1994 which endorsed the liberalisation of infrastructure in parallel with the liberalisation of voice telephony services i.e. by 1 January 1998, subject to certain transitional arrangements.

That regulatory agenda at a national and European level, both inside and outside of the Union, is itself a major driver of further change in the sector. The successful opening up of telecommunications services and equipment to competition has inevitably created pressures for the extension of this approach to communications infrastructure, whilst at the same time technology has increasingly provided ways to stretch the boundaries of current arbitrary delimitation between the monopoly and liberalised areas. With the advent of the Information Society and the linked challenges flowing from the convergence of the telecommunications, broadcasting and information technology sectors, new momentum for the removal of unnecessary restrictions on the development of new markets and services has been created.

IV.3.1 Regulatory trends at a national level within the EU

At a national level the growing political importance of telecommunications and, in particular, the role of advanced networks and services has been recognised by every Member State⁴². This is reflected in the speed with which some Member States are opening infrastructure provision to competition.

As indicated in Section III.3, the United Kingdom has allowed fully competitive provision of infrastructures (both self provision and use of third party infrastructures) for all telecommunications services since the early nineties. This is also the position in two of the accession Member States, namely, Sweden and Finland.

As indicated in Table III.3.2 the self- or competitive provision of infrastructures for various telecommunications services is allowed to at least a limited extent in every Member State. At the same time, the Netherlands and Spain both have plans to licence a second national infrastructure provider, and the further relaxation of restrictions on the use of alternative infrastructure is under consideration in France.

Equally, some Member States⁴³ are already actively addressing regulatory issues raised by convergence as they recognise the difficulties created by divergent regulatory regimes within their own systems for telecommunications and

⁴² See in particular :

- *Consultation Publique organisée par Bruno Lasserre à la demande de Gérard Longuet : Quelle réglementation pour les télécommunication françaises?*, Direction Générale des Postes et Télécommunications, April 1994, and *Les autoroutes de l'information*, Rapport au Premier ministre par Gérard Théry, September 1994

- *Study of the International Competitiveness of the UK Telecommunications Infrastructure*, DTI, February 1994

- Report by McKinsey for the Ministerie van Verkeer en Waterstaat, *Telecommunicatie in Nederland : op weg naar wereldklasse*, June 1993

- See also the text of the recent agreement concerning telecommunications submitted by the Ministry of Public Works to the Council of Ministers in Spain, 7.10.94

⁴³ See for example Théry Report referred to above.

broadcasting. Decisions at a national level to introduce infrastructure competition are speeding this process.

IV.3.2 The regulatory developments at a European level

At a European level, since the publication of the 1987 Green Paper, the telecommunications sector has been subject to a gradual process of liberalisation, accompanied by the creation of a common regulatory framework and the application of competition rules.

The successful liberalisation of the terminal market increased pressure for the measure which opened up first value-added services and then data communications. Market pressures from users, combined with new technologies, were the determining factor in the 1992 Telecoms Review. However, agreement on voice liberalisation raised regulatory issues, such as interconnection, the content and financing of universal service and tariff rebalancing, which could only be given a partial answer, if the future framework for infrastructure provision remained an unknown quantity.

IV.3.3 The regulatory agenda in North America and Japan

Information Highways

In 1993, early on in the new Presidency, the Clinton/Gore Administration launched its National Information Infrastructure initiative⁴⁴. In the two years that followed the launch, the concept of NII gradually developed into a comprehensive approach towards the future communications infrastructure in the United States. Its main emphasis is on three closely related elements: (i) the realisation of sufficient capacity in a broadband backbone infrastructure in the US, (ii) on the improvement of the

⁴⁴ President Clinton, Vice President Gore : Technology for America's Economic Growth, A new Direction to Build Economic Strength, February 22, 1993.

In the report the importance of high-speed communication links for businesses such as banks and insurance companies was emphasised. It further noted that such a network, or "Information Superhighways", would also be of enormous value to schools, hospitals and other public organisations. The report compared the potential of such "Information Superhighways" with the effect that public investment in the railroads had on US economic and social development in the 19th Century. It announced 5 specific programs:

- Implementation of the High Performance Computing and Communications Act program established by the High-Performance Act of 1991 introduced by then Senator Gore;
- Create a Task Force on Information Infrastructure;
- Create an Information Infrastructure technology program;
- Provide Funding for networking pilot projects through the NTIA of the Department of Commerce;
- Promote dissemination of federal information

accessibility of that backbone infrastructure, and (iii) on the development of applications to be carried over the networks.

An extensive organisational structure was established for the discussion and elaboration of issues related to the 'Information Highway'. In this overall structure, the Information Infrastructure Task Force⁴⁵ serves as a platform for government officials, and the later established IITF Advisory Council⁴⁶ as a platform for the industry.

Some of the support for NII initiatives that the Administration provides, concerns funding. This is the case for the high-capacity backbone via the High-Performance Computer and Communications Program which was launched in 1991.

The Department of Commerce's NTIA had in 1994 a total of \$26 million at its disposal for the development of applications. With matching additional funding, the NTIA fund was awarded to approximately 100 different projects, ranging from tele-education to tele-medicine.

A second important element of the NII initiative is regulatory reform. In this regard, the Administration serves as a motor, while at the same time setting an overall framework. That framework has been set out in a White Paper⁴⁷ and a related Memorandum⁴⁸ at the beginning of 1994. Five important principles were set out:

- encourage private investment;
- provide and protect competition;
- provide open access to the network;
- take action to avoid creating a society of haves and have-nots;
- encourage flexible and responsive governmental action.

Later in 1994, the US Administration extended this view on telecommunications to the international arena, and Vice President Gore advocated the implementation of the above 5 principles to the international environment at two major ITU conferences⁴⁹.

¹⁵ The National information Infrastructure: Agenda for Action, Information Infrastructure Task Force: Realising the Information Future, September 15, 1993

¹⁶ Presidential Documents, Executive order 12864 of September 1993, United States Advisory Council on the National Information Infrastructure

⁴⁷ Administration White Paper on Communications Act Reforms, January 1994

⁴⁸ Memorandum to distribution, February 17, 1994, Subject: Title VII of the Administration's Communications Act Reform White Paper

⁴⁹ ITU Conference, Buenos Aires, March 21, 1994
ITU Conference, Kyoto, September 1994

In Japan the concept of Information Society and the infrastructures that this requires has been the focus of considerable government attention over the last two years. Important efforts were made to develop a comprehensive policy for the Information Society.

In May 1994 the Telecommunications Council, the advisory board of the Ministry of Post and Telecommunications, published a major policy document⁵⁰, which was complemented by MITI's publication later in May of a paper addressing similar issues⁵¹.

In relation to the establishment of fibre-optic networks, the MPT policy paper emphasised the importance of competition from private companies. It underlined the role of the Government as one of formulating policies for the promotion of private investment. It further expressed the expectation that telecommunications carriers and CATV operators will build networks competitively.

The MITI report addressed a wide range of issues relating to multimedia applications and Information Technology. With regard to infrastructures, the report concluded that "it is considered to be of the greatest importance that the government, through deregulation in telecommunications, broadcasting, and other areas, creates an environment in which private enterprises improve telecommunications infrastructures in a competitive situation".

Regulatory initiatives in the United States and Japan

The United States

The main thrust of telecommunications regulation in the United States over the last 10 years has been the increase of competition, building on its gradual introduction from the middle of the fifties. Through a combination of legislative / regulatory intervention and by legal actions brought under the US anti-trust legislation, competition had been established by the mid-1980s in the provision of equipment, in services, and in long distance infrastructures. In particular, a settlement of the anti-trust action brought against AT&T led in 1984 to the so-called Modified Final Judgement (MFJ) which required the divestiture of AT&T. This removed the provision of local voice telephony services from AT&T (which were subsequently provided by spun off Regional Bell Operating Companies (collectively known as the RBOCs⁵²), leaving it to provide international / long distance and other enhanced

⁵⁰ Telecommunications Council: Reforms toward the Intellectually Creative Society of the 21st Century. Program for the Establishment of High-Performance Info-Communications Infrastructure. Summary Report, May 1994

⁵¹ Ministry of International Trade and Industry: Program for Advanced Information Infrastructure, May 1994

⁵² There are 7 RBOCs: Nynex, Bell Atlantic, Ameritech, BellSouth, Southwestern Bell, Pacific Telesis and US West

telecommunications services. The RBOCs were in turn restricted from manufacturing or providing long distance telecommunications.

A central feature of the US telecommunications and also CATV markets has been, firstly, the distinctions drawn between local and non-local services and between telecommunications and broadcasting services, and secondly, the use of line of business restrictions to maintain these market restrictions.

In the long distance market, there are now hundreds of carriers in the US, the largest of which are AT&T, MCI and Sprint. In contrast, the local exchange business is still predominantly monopolistic⁵³ with the local exchange carriers having exclusive rights to provide and operate infrastructure in each local area. There are at present about 1,328 local exchange carriers⁵⁴, owned by the RBOCs (75% of the 145 million access lines in the USA) or by independents (25%).

Until a Court ruling three years ago, the RBOCs under the terms of the MFJ were not allowed to provide information services (which were taken to include cable television). The independently owned local exchange companies whilst not subject to the MFJ, were restricted by the Cable Act of 1984⁵⁵ from providing cable TV services and even after the relaxation of the MFJ, the RBOCs faced the same constraints on providing video programming.

In effect the Cable Act allows telecommunications companies to construct and *operate* cable services only in service areas other than their own⁵⁶. They may not operate a cable network in their own service area⁵⁷. This policy is being reshaped by the emergence of a regulatory policy at a federal level on so-called 'video-dialtone services'⁵⁸. At the same time, court actions have been brought with some success to challenge the restrictions in the Cable Act.

⁵³ Although in certain areas increasingly the pressure is felt of the Competitive Access Providers or CAPs, or of competitors providing switched telephony where State legislation allows for this. Such States are few however.

⁵⁴ FCC: 58th Annual Report/Fiscal year 1992

⁵⁵ According to the Cable Act it is "unlawful for any common carrier to provide video programming directly to subscribers in its telephone service area, either directly or indirectly through an affiliate owned by, operated by, controlled by, or under common control with the common carrier". Communications Act, Section 613

⁵⁶ They are allowed to construct and then *lease* a network to a cable company in their own service area. This is the so-called "channel service".

⁵⁷ Regulators in the US appear supportive of the attempts of local operators, particularly, the RBOCs to enter fully into the cable market. This has been a major factor in the Federal Communications Commission policy on video dialtone which would allow market entry as "common carriers", i.e. giving access their cable networks on a non-discriminatory basis. See also: US Department of Commerce, NTIA: Telecommunications in the Age of Information, October 1991

⁵⁸ See, inter alia : CC Docket No.87-266 Telephone Company-Cable Television Cross-ownership Rules, ss 63.54-63.58, and Second Report and Order, Recommendation to Congress, and 2nd Further notice of proposed rule-making, 7 FCC Rcd. 5781, Aug 1992

On the other hand long distance and CATV companies are keen on entering the local telecommunications market. Cable TV networks are, in terms of geographical coverage, as ubiquitous as the public telecommunications network. Of the 93 million households in the United States more than 55 million (or 60%) subscribe to cable television⁵⁹, the networks of which pass 97% of all households.

The telecommunications market is substantially larger than the CATV market, however, in terms of revenues. The market for local exchange companies alone generated revenues of \$95 billion in 1992⁶⁰, while the 1993 total revenues for the cable companies was around \$22 billion⁶¹.

Regulation of telecommunications services over cable networks is generally a matter for State rather than Federal Authorities. The legislation in most States prevents cable companies from providing public switched telecommunications services. Only 6 out of 50 States presently allow cable entry into telecommunications, though such restrictions are currently under review. Cable companies are, however, allowed to provide non-switched telecommunications services and are increasingly active as CAPs (Competitive Access Providers)⁶².

Recently, not least because of the National Information Infrastructure initiative of the Clinton/Gore Administration, regulatory and market pressure has grown for a relaxation of all these current restrictions. The legislative initiatives (reflecting many of the same concerns confronted by the EU) which were presented to Congress during 1993/94 had as their main objective the abolition of the business restrictions on RBOCs, long distance carriers and CATV companies. They also sought to creating certain safeguards, in particular in relation to universal service. Whilst the legislation failed to complete its passage through Congress before the mid-term elections, the underlying pressures for legislative reform are unlikely to disappear.

Japan

With the adoption of new legislation in 1985, competition was introduced in Japan to the existing carriers NTT (for domestic telecommunications) and KDD (for international telecommunications) in both services and infrastructures. Now, 9 years later, there are 84 Type I carriers in Japan, carriers that are allowed to have their own infrastructure.

⁵⁹ Cable Television Developments, NCTA (National Cable Television Association), April 1994

⁶⁰ USTA (United States Telephone Association): Phone facts 1993

⁶¹ Cable Television Developments, NCTA (National Cable Television Association), April 1994

⁶² MFS and Teleport are the most well-known CAPs. Teleport is now owned by a consortium of major cable companies, including Cox, TCI, Comcast Corp., Continental Cablevision Inc. and Time-Warner Entertainments.

Among the Type I carriers are three international carriers⁶³ and four national carriers⁶⁴. There are 66 mobile communications carriers, two satellite carriers⁶⁵ and 9 regional carriers⁶⁶ (that provide leased line services in limited regions such as Kansai around Osaka, and Kanto around Tokyo).

In the local loop the pro-competitive policies have had considerably less impact. This appears to be largely due to the low tariffs of NTT and to certain regulatory constraints in relation to, in particular, interconnection. Potential new entrants are the CATV network operators. About 20% of Japanese households are connected to a CATV network⁶⁷. In December 1993 the Ministry of Post and Telecommunications decided to relax the rules on the usage of CATV networks and to allow the provision of telecommunications over CATV networks. So far, only two CATV operators have decided to introduce voice telephony over their networks.

Although the situation and trends in Japan and the USA may differ in the detail, they do not in their overall direction. In both countries competition in infrastructure has been allowed, already some time ago. In both the United States and in Japan, based on the experienced benefits in long distance and international telecommunications, measures are now being taken to extend competition to the local infrastructure.

IV.4 Conclusions on the Major Developments

The rapidity of technological and commercial developments combined with evolution in the regulatory environment in many parts of the world is already leading to a substantial degree of services and network competition and is making infrastructure competition inevitable.

Moreover, because of the risks and uncertainties associated with some applications and technologies, market forces are required to unlock the significant potential for innovation and investment for the development of telecommunications and the Information Society. Many of the fastest growing parts of the telecommunications sector are in niche markets, subject to competition from new players.

At the same time, attention must be paid to the social challenges and consequences of harnessing these market, technological and regulatory trends.

⁶³ NTT, International Telecom Japan Inc. and International Digital Communications Inc.

⁶⁴ NTT, DDI, Japan Telecom (linked to the railway companies) and Teleway Japan

⁶⁵ Japan Satellite Systems Inc. and Space Communications Corp.

⁶⁶ Often linked to regional energy companies.

⁶⁷ Including all facilities, also those of less than 50 drop terminals, there were more than 8 million subscribers to CATV in Japan. White Paper on Telecommunications, 1994, Ministry of Post and Telecommunications, Japan

V UNIVERSAL SERVICE

V.1 Universal Service in telecommunications

The agreement to liberalise all telecommunications services from 1 January 1998, has necessarily focused attention on the adjustment of tariff structures whilst safeguarding universal service and financing any remaining burden through internal transfers, access fees or other mechanisms. In the context of the liberalisation of telecommunications services, it is therefore important to establish common principles for universal service and the means by which any uneconomic or non-commercial burdens of provision are financed. Additionally, in the context of the liberalisation of infrastructure, it is important to establish whether there exists any additional burden on the ability of telecommunications organisations to finance universal service tasks.

The Commission reaffirms the fundamental importance of maintaining and developing universal service in the European Union, on the basis of a common minimum set of services and infrastructure. This political priority was recognised in Council Resolution 94/C48/01 on universal service principles in the telecommunications sector, which set out certain policy orientations concerning the major elements constituting universal service⁶⁸ at Community level. It also stated that national regulatory authorities must take due account of the fact that in numerous cases, market forces would be expected to lead to such provision being made on a commercial basis, without further intervention⁶⁹.

However, it recognised that the obligation to provide a basic voice telephony service at an affordable price to all customers reasonably requesting it could result in market operators being obliged to provide service to customers whom they would otherwise have insufficient economic incentive to serve.

The Resolution, therefore, recognised that "universal service might be financed through internal transfers, access fees or other mechanisms, which take due account of the principles of transparency, non-discrimination and proportionality, while ensuring compliance with competition rules in order to make a fair contribution to any burden which the provision of universal service represents". In addition, it noted the particular circumstances associated with the provision of universal service in peripheral regions with less developed networks and "that the concept of universal service needed to evolve to keep pace with advances in technology, market development and changes in user demand".

At the current time, most of the TOs internally cross-subsidise less profitable telecommunications services and/or less profitable customers with revenues from more profitable services and/or more profitable customers. However, the agreement

⁶⁸ Commission Directive 90/388/EEC on competition in the markets for telecommunications services, identified the provision and exploitation of a universal network as a service of general economic interest within the meaning of Article 90(2) and from that basis proceeded to examine whether a derogation from the Treaty rules was justified (i.e., the maintenance of special and exclusive rights for the provision of voice telephony as defined in the Directive) in order to derive sufficient revenue to finance this task.

⁶⁹ OJ C48/1, 16.2.94

to liberalise all telecommunications services by 1998, subject to possible transitional periods for certain Member States, means that TOs in conjunction with national regulatory authorities have already embarked on the necessary adjustment of tariff structures. It was in order to allow Member States with less developed networks, i.e. Spain, Ireland, Greece and Portugal, to achieve the necessary structural adjustments, in particular of tariffs, that an additional transitional period of up to five years was granted to these countries.

General commercial and technological trends provide the potential to improve universal service, within a competitive environment.

The dramatic technological and commercial changes in the telecommunications sector mean that the real cost of telecommunications is continuing to fall as quality rises. The real task of policy in the context of universal service must be to ensure that the potential benefits associated with these changes are passed on to all consumers and users and not just to a privileged few. Although provision of the local loop⁷⁰, or at least new provision of the local loop, continues to be one of the more expensive aspects of building telecommunications networks, a number of factors are mitigating the real cost burden of this item.

Firstly, wireless or radio connections are becoming a realistic and potentially cheaper alternative to connecting customers on fixed networks. This emphasises the need for TOs to be allowed full freedom with respect to the technologies they are permitted to use to connect customers to the public network. It also raises the issue of permitting the use of radio technologies in the provision of public telephones by other operators.

Secondly, competition and technological progress is bringing down the unit cost of the transmission and switching equipment required to service the local loop and through digitisation is improving service quality and enabling new services to be provided, even though many TOs have so far failed to market these services to customers.

Thirdly, the provision of telecommunications services jointly with other services, such as cable television, is reducing the cost of supplying telephony, particularly to residential customers.

At the same time that the cost of supplying telecommunications services is falling in real terms, technological changes are shifting the balance of network costs from usage sensitive to fixed costs and reducing the importance of distance in determining costs. This is a further argument for national regulatory authorities to support the re-balancing and reduction of prices.

Reducing usage and distance sensitive tariffs yields substantial gains. Many users are better off, telecommunications usage is stimulated leading to further reduction in unit costs and peripheral and isolated customers benefit. However, customers who use

⁷⁰ The local loop is the connection from customer premises (residential or business) to the local concentration point and then on to the local exchange.

the telephone as a lifeline or whose usage is low may be vulnerable to re-balancing. This emphasises the importance of national regulators managing the re-balancing process, removing general tariff distortions and developing targeted schemes to deal with customers with particular needs.

The economic interests of consumers and users - an appropriate adjustment of pricing structures

The agreement on liberalisation of telecommunications services means that a process of adjusting and re-balancing pricing structures is underway. This process is a key factor in the development of the sector and the full exploitation of existing and new telecommunications services. It is high and distorted tariff structures which are holding back the widespread development of both traditional and advanced telecommunications and information services in Europe. Infrastructure liberalisation can serve to reinforce the move towards more efficient pricing structures, stimulate demand and further encourage development of the sector

The dual aim, therefore, should be to provide consumers and business with a diverse offering of quality telecommunications services at competitive prices whilst guaranteeing universal access to basic telecommunications services for all citizens. The goal of providing affordable access to basic telecommunications services for all citizens emphasises the need to provide service as cost effectively as possible and implies that access should be provided at prices below cost for some, if the process of re-balancing pricing structures leads to some customers leaving the network, being dissuaded from joining or facing unreasonably high prices for basic telecommunications services. This is not an argument for maintaining inefficient, across the board subsidies for access but for developing targeted schemes for needy citizens and uneconomic customers.

In several countries, such special tariff packages targeted at the needs of low income, "lifeline" or low user customers have already been introduced. Some schemes work automatically by offering a multiple tariff package. Customers pay a reduced line rental for usage up to a given number of units. Beyond a certain level of usage, it becomes cheaper to switch to standard tariffs. Also significant, in terms of the volume of subsidy required are schemes which aim at providing basic telecommunications services at affordable rates in the context of varying geographical conditions and population densities. This issue is dealt with further in the section on less developed networks.

Table V.1 - Special tariff schemes for targeted user groups

	Description of scheme
Belgium	Reduced tariffs for several groups including persons over 65 years and the handicapped.
Denmark	*
Germany	*
Greece	*
Spain	*
France	*
Ireland	Free rental and subsidised usage scheme provided to specific user groups
Italy	*
Luxembourg	*
Netherlands	*
Portugal	*
UK	BT's customers are covered by a special tariff, the Light User scheme. Under this scheme customers consuming less than 240 units pay a reduced line rental. Current scheme under review.
Austria	*
Finland	There are no special schemes. Finnish legislation requires all tariffs to be cost oriented.
Sweden	*

* Up to date details on actual or planned targeted schemes not available.

As price structures re-balance, the traditional "access loss" declines. The "access loss" is the loss associated with the shortfall of revenue from rental and connection charges with respect to the non-traffic sensitive costs allocated to the provision of

exchange lines or access. However, it may well be that even with no constraints on re-balancing, commercially minded TOs will still choose to retain some cross-subsidy from usage revenue to fixed or access charges. After all, Telecommunications operators benefit from the close relationship they have with a large base of customers.

It is important not to confuse this "access loss" with the cost of providing universal service. The latter arises principally because of the obligation on TOs to provide service to customers at common tariffs irrespective of geographical location or usage. If TOs were permitted to fully price discriminate between customers, or de-average tariffs, the only cost associated with the universal service obligation would be the provision of loss making schemes for needy customers and the cost of providing emergency services and other related requirements.

However, the obligation on TOs to provide service at common tariffs to all is expected to remain in place for the foreseeable future, even if TOs are being allowed more flexibility in the way they can offer tariff packages to groups of customers. It is also likely that TOs are increasingly required to provide special tariff packages or options targeted at needy customers as tariff structures adjust and re-balance. This raises the question of how any financial burden associated with this obligation to supply service at common tariffs to uneconomic customers and other aspects of universal service obligations (USOs) are financed in a competitive environment. This is dealt with in Section VII.

Infrastructure liberalisation will not undermine the provision of universal service in the context of services liberalisation.

There is no stable or non-contentious answer concerning the cost of universal service and why it occurs. The actual burden of universal service can not be estimated simply by considering the existing cost structures of the current TOs, since these do not reflect potential productivity increases and cost savings which could occur in a competitive environment.

In addition, the full and effective implementation of the provisions of the ONP Leased Line Directive in conjunction with pricing adjustment in preparation for full telecommunications services liberalisation implies that the pricing structures of TOs for their core services (leased capacity and voice telephony) must move in the line with costs. The adoption of the measures proposed in Part One of the Infrastructure Green Paper to allow immediate alternative provision of leased capacity for currently liberalised telecommunications services would further reinforce pricing adjustment for leased lines.

In addition the implementation of full liberalisation of telecommunications services implies that competing service providers will take a share of the market and a consequent share of the burden of uneconomic universal service obligations.

The question arises as to whether full infrastructure liberalisation has significant additional impacts on the ability of TOs to fulfil their share of the obligation to provide a universal network.

The adjustment of pricing and revenue structures implied by the liberalisation of telecommunications services means that this ability is not additionally threatened by infrastructure liberalisation. Indeed, so long as the universal service obligation is shared appropriately between competitors, infrastructure liberalisation is far more likely to lead to positive benefits for the sector by encouraging innovation, an extension of coverage, the exploitation of new technologies and the creation of new services. One example is competition in mobile and cellular telephony. In contrast, competition on the basis of simple re-sale is limited to the adjustment of pricing structures and the offer of new tariff packages.

Full infrastructure liberalisation may have important financial impacts if new operators, for example, market high capacity leased circuits to large users or use access to large users to market service to very profitable customers or are able to cross-subsidise their activities from other areas. This, however, is an argument for allowing TOs greater flexibility in their tariff offerings to large users and in applying fair competition rules.

In any case, there is no evidence that full infrastructure liberalisation undermines the financial ability of TOs to continue to fulfil their share of uneconomic universal service obligations, even where significant inroads into the relevant market share have been made. This is the case in the US where a number of states have allowed local infrastructure competition (in addition to inter-exchange competition), in the UK, Sweden, Australia and Finland. Experience does emphasise, however that well-functioning mechanisms must be in place for dealing with interconnection and interoperability, financing uneconomic universal service obligations and indeed monitoring universal service provision.

V.2 The development of Universal Service

It has taken the best part of a century for the voice telephone network to evolve to its current state with much of the change in terms of new services coming in the last decade or so. Thirty five years ago, average telephone penetration in Europe was about 10 lines per 100 inhabitants as opposed to the current average of about 45.

In several Member States, universal telephone service is not yet a reality because waiting times exist, penetration rates are low or access to telephone service in some form is limited. At the same time, the current rapid take-off and growth of mobile or wireless based telecommunications now offers the prospect, in conjunction with the fixed telephone network, of mass market development in personal communications. This in time will lead to substantially higher levels of telephone penetration than has been the case even in the mature or "saturated" traditional telephone markets.

Developments in integrated or multimedia communications services and the emergence of the Information Society raise the important question of access to such services for all citizens.

At the current time, the local access part of the public telephone network is only used on average for several minutes daily. Bearing this in mind and the currently limited development of new services, the Commission believes that it is premature to extend the notion or definition of universal service to new areas.

At the same time, access to new forms and means of information provision can be supported via public initiatives using for example the "public library" approach.

For the moment, in the context of the new integrated services, emphasis should be put on action in the neighbouring fields of data protection and privacy, the audio-visual area and content, intellectual property rights and the economic interests of consumers so that, in conjunction with the measures proposed here relating to the lifting of restrictions on the use of telecommunications infrastructures, service development in the new areas can be fostered.

These neighbouring areas have been outlined in the Commission's Action Plan on the Information Society and the Commission is currently pursuing its work in these fields with the objective of ensuring the development of a coherent and effective regulatory framework for the benefit of both economic operators and every citizen in the Information Society.

However, it is important to keep under review the question of universal service in the communications sector in the light of technological and market developments.

VI. EMPLOYMENT, SOCIETAL AND CULTURAL ISSUES

VI.1 Employment and the Information Society

The productivity gains which come from computerisation techniques, and the ability rapidly to access, process, mobilise and disseminate information, are already essential to the competitiveness of modern industry. This will become even more true as advanced technologies and new, high value-added services become widely available. Small businesses stand to benefit the most: the new communication services will enable them to make savings of, on average, 4% of their turnover⁷¹.

Increased competitiveness will impact employment, both safeguarding jobs which would otherwise have been lost and allowing new jobs to be created as European companies benefit from the competitive advantage derived from new telecommunications technologies and services. Particularly important in employment terms will be the effects of the new technologies in small and medium sized enterprises - traditionally the principle source of employment generation in Europe.

Recognition of the benefits of an early transition to the Information Society is a major driving force behind the political initiatives in Europe, the United States and other countries to build and develop national or regional information infrastructures.

At the same time, the impact on employment must be monitored and appropriate strategies formulated to help adjustment across industries and services to new technologies and new ways of working, which in enhancing business efficiency inevitably impact more traditionally labour intensive sectors. In the context of the

⁷¹ White Paper on Growth, Competitiveness and Employment, COM(94) 700

follow-up to the White Paper on Growth, Competitiveness and Employment, the Commission is paying particular attention to these issues.

The reformed European Social Fund, is designed to contribute to this adjustment process, in particular as regards the development of appropriate training and retraining measures. Complementary to these actions are various training initiatives envisaged under the Leonardo programme, as well as measures under the new Community Initiative programmes ADAPT and SME which actively promote the facilitation of industrial change.

A number of studies will assess the relationship between the Information Society and employment, including one assessing the impact and benefits of the information society for regional, economic and social cohesion. Work is also underway to define the conditions necessary to capitalise on employment growth linked to technological change. This will include guidelines designed to facilitate the process of economic and social adaptation. The analysis will be assisted by the work of a High Level Group of Experts, set up under the Commission's Action Plan on Europe's Way to the Information Society (COM(94) 347), as well as by the outcome of a major colloquium on the social and societal issues of the Information Society to be held in late 1995.

VI.2 Employment and the telecommunications sector

Europe needs a dynamic telecommunications sector

The telecommunications industry is a key sector of the European economy, representing over 3% of GDP. In addition to being large in absolute terms, it is also subject to greater than average long-term growth - an estimated rate of 7% over the next two decades compared with only 2-4% (equivalent to projected GDP growth) in other, larger sectors such as other utilities, motor industries, chemicals and food.⁷²

However, such figures do not fully reflect the situation in the Union, because they focus on the contribution of the TOs to the European economy, rather than including the contribution to the economy made by other facilities providers, resale companies, value-added service suppliers and equipment manufacturers. Moreover, technological developments - in particular, digitisation techniques and broadband communications systems - are expanding the scope of the sector by blurring the boundaries between it and other industries such as broadcasting. Studies carried out in the United States suggest that a full definition of the information sector shows it to be responsible for over 16% of US GNP, rising to 40% if financial and legal services are included.

The information industry is therefore central to the economic health of Europe. Consequently, it is essential that the European telecommunications sector, which provides the fundamental infrastructure of the Information Society, is a dynamic and innovative one. Experience has shown that the best spur to innovation, investment

⁷² Study for CEC by Arthur D Little, October 1991

and technological progress in the telecommunications industry is competition. This is why the White Paper on Growth, Competitiveness and Employment identified the removal of distortions to competition in the European telecommunications sector as a priority for action. To give shape to that priority, Part I of this Green Paper calls for the liberalisation of telecommunications infrastructure in Europe within the time scale already agreed for liberalising telecommunications services.

In implementing this principle it is essential to monitor the effects such liberalisation can have on employment. In fact in the short term, and only in relation to the traditional employers - the TOs, there is likely to be a negative impact on employment. On a wider canvas, the liberalisation process should have a positive effect on employment as has been indicated. It is important to bear in mind that the key issue must not be the impact on employment in the telecommunications sector alone, or in individual organisations within the sector, but the wider impact of an efficient and innovative telecommunications sector on the European economy as a whole.

Without liberalisation, the current decline in telecommunications employment cannot be reversed

The general trend in Europe over recent years has been for employment in the telecommunications sector to fall, largely reflecting the decrease in employment within the TOs in Member States.

The reduction in TO workforces is a global phenomenon, which is as much a result of technological and commercial evolution as of increased competition in the sector. There is no doubt of course that the prospect of greater competition is one incentive to reduce labour costs. Equally, however, it is clear that other important factors are also at work:

- in particular, changes in technology - most significantly, the increasing convergence between communication and computing technologies - are having a fundamental effect, leading to a shift in both the overall size and the skill-level of the optimal TO workforce. Modern equipment requires fewer, more highly skilled people to operate it, and is more reliable, requiring less maintenance.
- Another important factor is the impact of modern management techniques. Like many other large corporations over recent years, TOs have sought to "down-size" their organisation by contracting out those support functions which do not need to be carried out in-house.

These are pressures which all TOs are facing, irrespective of whether they operate in a liberalised market.⁷³ Under current conditions, therefore, the downward trend in sector employment seems likely to continue.

⁷³ OECD studies show that the phenomenon exists irrespective of whether there is competition in a market. "Between 1982 and 1992, employment in PTOs was reduced by over 10% in nine member countries. Five of these countries had competitive markets and four monopoly provision of PSTN services."

Infrastructure liberalisation can create new jobs as part of a structural re-adjustment of employment

In contrast, experience elsewhere suggests that liberalisation of European infrastructure markets would result in job creation in the sector.

Liberalisation leads to increased investment, faster expansion of markets and greater innovation in both service and technology development. This is the clear lesson from sectors such as mobile⁷⁴ and satellite communications⁷⁵. The experience in liberalised markets has been that this expansion of investment and service provision has also been accompanied by shifts of employment away from traditional operators and towards job creation in other areas: firstly, through employment within the new market players⁷⁶; secondly, through the creation of 'in-house' and 'out-house' employment in managing private facilities and networks which exploit the newly liberalised markets⁷⁷, and finally, increased investment following liberalisation underpins growth in the equipment sector and so impacts employment.

However, much of the employment created in these areas does not figure in telecommunications employment statistics, which have traditionally focused on the incumbent TO in each Member State. A fully quantified analysis of the employment impact of liberalisation in the European telecommunications sector is therefore not available at this time. Nevertheless, a range of estimates already exists. OECD studies, for example, suggest that overall telecommunication employment has not

⁷⁴ Competitive licensing of GSM operators, for example, has been the trigger for an explosion in the European market for cellular telephony, with users increasing by 3 million to a total of 11 million in 1994 alone.

⁷⁵ The "open skies" policy on satellite communications in the United States has resulted in an annual 30-40% growth rate in VSAT network sales in the US - compared with only marginal development in the non-liberalised EC market - and has made the US industry the world leader in this area. Only now that the EU market has been liberalised by Commission Directive 94/46/EEC of 13 October 1994) are major growth opportunities of 50% annually forecast.

⁷⁶ In the US, redundancies in AT&T and the RBOCs have been off-set by a generally consistent pattern of employment growth in companies such as Sprint and MCI (The Benefits of Telecommunications Infrastructure Competition, November 1993, OECD). In the UK, new entrant operators and service providers have directly created 25,000 jobs, 17,000 of them since the market was opened to full competition following the 1992 duopoly review. Studies have suggested that even a more established market entrant such as Mercury has indirectly contributed to the creation of as many as 10,000 jobs in addition to its direct employment of 10,500 staff by the beginning of 1994 (Communications Outlook, 9 June 1994, OECD). In Japan as many jobs have been created in the New Common Carriers and Type II carriers (i.e. resale, valued-added services) as have been shed by NTT - even though the restructuring of NTT has been more radical over recent years than in any other TO in the OECD.

⁷⁷ In the US, for example, the number of organisations seeking interconnect arrangements between their own networks and those of local telephone companies has grown from 42 to 692 since divestiture of the Bell system. Around half of these organisations do not offer telecommunications services to others. (Source: The Benefits of Telecommunications Infrastructure Competition, November 1993, OECD)

been impaired by liberalisation⁷⁸. Other observers believe that liberalisation would result in positive overall employment growth in the sector.

The Commission has launched a major study which should give a ~~further~~ quantitative basis for assessing the extent to which competition is creating new job opportunities.

Conclusion

The current employment situation in the telecommunications sector can be summarised thus:

- the traditional source of telecommunications employment, the dominant TOs, has been in decline for several years. This is a feature of competitive and monopoly markets alike and results from the adjustment by TOs to technological and commercial changes;
- New employment opportunities for the sector result from new entrants and new service areas, in particular, in the area of mobile communications.
- The best means of reversing the overall trend is through the increased investment and market expansion which would flow from liberalisation, strengthening growth and employment in every sector of the European economy.

However, quantitative employment effects within the telecommunications sector alone should not be the principal consideration in the liberalisation debate. As stressed at the beginning of this chapter, the central and overriding argument for telecommunications liberalisation must be that it will lead to greater efficiency in the information sector generally, and to productivity and competitiveness gains for the wider European economy taken as a whole. As such, it will be an important step in the fight against unemployment in all sectors of European industry.

⁷⁸ The Benefits of Telecommunications Infrastructure Competition, November 1993, OECD

VI.3 Societal and cultural aspects

As recognised in the Bangemann Group Report on *Europe and the Global Information Society*, information and communication technologies now pervade our lives, affecting the way we work, the way we learn, the way we spend our leisure time and the way we interact with each other. Moreover, this process is accelerating as we approach the 21st century. The Information Society is rapidly developing; new investment opportunities are being created everywhere and the application of information and communication technologies are affecting all industries and services in our society.

These technologies will have a strong impact on our whole economic system, growth, competitiveness and employment. They will also have other significant effects on our society, and on our ability to attain societal goals.

The major investments in communications infrastructures and networks are being undertaken to widen and develop the provision of telecommunications services to industry, commerce and individual customers. Communications technologies are already being exploited in many industrial and service sectors. There is the prospect of further widespread expansion of IT into banking and insurance, publishing and the media, marketing and household applications.

However, the series of recent reports on the development of the Information Society and information highways have also rightly emphasised the important role that new communications technologies can play in the provision of public services and improving the quality of work and of life.

The potential fields of application are many and include major areas of public expenditure, such as education, healthcare and transportation.

- Education and training

The development of the Information Society will have an especially important impact on systems of education and training at every level. Not only will appropriate systems be required to equip young people (and to retrain adults) to deal with the new technologies and new ways of working, but the Information Society itself is dependent on the ability of people to use it. In consequence, education and training have an important role to play. A successful introduction of new information and communication technologies will demand successful education and training systems at all levels.

In education and training, applications range from linking up universities, research centres, schools and training centres to developments in on-line and in open and distance learning. Under LEONARDO, the Community action programme on training and SOCRATES (the proposed Community action programme on education), measures are also included for the promotion of information and communication technologies and open and distance education and learning. Telematic links between the training centres, schools and universities is envisaged and is therefore included within these programmes.

The use of broadcast media (cable, television, interactive) can play an important role in stimulating the use of new technologies within educational and training

institutions. This will encourage awareness of new technologies amongst the general public, including amongst those not actively in full-time education.

- Healthcare

In medicine, exploitation of communications offers the possibility of both improvements in quality and lower cost healthcare. The benefits include in particular improved and more rapid access to information for health professionals; the possibility of providing remote expert services over long distance links; improvements in providing near 'real time' toxico- and pharmacovigilance and epidemiology; improved organisation of health care services, reducing time lost spent in transmitting data and test results and other administrative procedures, and improved quality of diagnostic tools.

The "new" telematics currently available can make a considerable contribution towards improved ergonomics for many jobs and also to reducing both health and safety risks of certain activities by removing the employee from the site of the particular hazard (e.g. heat or chemicals, etc.). It can also be of assistance to workers in isolated sites by providing rapid and an improved quality of medical attention in the case of accidents or illness.

- Transport

The applications in the area of transport cover both public and private means, including the management of road traffic congestion, travel guidance systems and improved air traffic control. Telework and more flexible working times can also contribute to a reduction of traffic and resulting improvements in the environment.

Developments in communications infrastructures and networks offer the potential in many other areas for simultaneously improving efficiency and the quality of life. For instance communications networks and services can assist in care for the elderly and other community initiatives.

There is also the potential to develop teleworking and other more flexible working practices which are better suited to the needs and mutual benefits of both individuals and employers. Telework may be particularly interesting for persons who have difficulties accessing the work place, such as people with disabilities, people involved in caring for family members, or those living in remote areas.

In addition, the new communications technologies can be exploited in other public service areas such as libraries, museums and related informational, educational and cultural fields. Many of these concerns are at the heart of the applications programmes being supported by the European Union.

Assessing the risks for Society and meeting the challenges

In all of these areas, the liberalisation of infrastructure will be a facilitator of the improved services and choice which the Information Society may bring about. At the same time, full account must be also taken of the risks which future social changes present. In particular, consideration must be given to the impact of new patterns of work on individuals, for example, the need to combat isolation amongst

patterns of work on individuals, for example, the need to combat isolation amongst home workers or those employed in geographically dispersed offices for teleworkers. Any examination of these issues must also address the potential impact on, and any necessary resulting changes to, the organisation of work and current employment and other social legislation.

At the same time greater competition will lead to an explosion in the volume and types of information available to each citizen, with a need as a result to avoid an "information over-load". Adequate measures will be needed, as highlighted above in relation to education and training, to prepare our society for these changes.

Additionally, it is essential in this new environment to avoid the emergence of a two-tier Information Society, based on "information haves and have nots", in which only part of the population has access to new technologies, is comfortable using it and can fully enjoy its benefits.

In pursuing general societal goals, such as ensuring equal opportunities for every citizens, and extending the benefits of the Information Society to households, industry, government and public services, Member States are likely to be faced with situations which will require regulatory intervention in order to guarantee the provision of infrastructure.

The need to avoid the emergence of a dual society based on information "haves" and "have nots" could result, for example, in a 'social case' for regulatory intervention to facilitate access for schools or educational centres were connected to the Information Society.

Identifying the solutions to avoid these risks lies outside the scope of this Green Paper, but is nevertheless an important element in the various measures being prepared in connection with the Commission's Action Plan on Europe's Way to the Information Society.

The cultural dimension

The *Bangemann Group Report*, recognised "the enormous richness of the European heritage", which, once new products and services are available to every citizen, will lead to "more opportunities for expression of the multiplicity of cultures and languages in which Europe abounds". For that reason the Action Plan recognised the role of the Information Society and of cultural goods (particularly, the cinema and television programmes, as "privileged mediums of identity, pluralism and integration. It called for them to "retain their specificity within the framework of new multimedia products and services".

A final area of consideration is the need to take account of the linguistic diversity within the Union, in order to ensure that this does not unduly limit the development of new multimedia services, as well as the possibilities for Europe's audio-visual industry. For that reason the Action Plan foresees the adoption of a Communication addressing European linguistic issues and the means to stimulate the emerging language-based industry.

VII THE EXTENSION OF THE PRINCIPLES OF THE EUROPEAN UNION'S TELECOMMUNICATIONS POLICY TO INFRASTRUCTURE

The European Union's policy with regard to the regulatory framework for the telecommunications sector has evolved along three main axes :

- **liberalisation** (in order to stimulate competition in equipment, services and now infrastructure provision);
- **harmonisation** (to support the evolution of a common regulatory framework for access to telecommunications networks and services which have remained within the monopoly domain, as well as providing a framework for a basic minimum offering of telecommunications services within the Union and the development of harmonised standards, and
- **fair competition** (through the full application of the Union's competition rules to the sector)

This framework has been developed in an evolutionary and gradual fashion on the basis of the Commission's 1987 Green Paper on the development of the common market for telecommunications services and equipment⁷⁹, and subsequent Green Papers addressing the areas of satellite communications⁸⁰ and mobile communications⁸¹, as well as important Communications from the Commission, such as those on the consultation on the 1992 Telecoms Review⁸² and on the development of universal service⁸³.

These policies have also been shaped by key Resolutions of the European Parliament⁸⁴ and of the Council⁸⁵, which have set the overall political framework for

⁷⁹ COM(87) 290, 30.6.87

⁸⁰ Green Paper on a common approach in the field of satellite communications in the European Community, COM(90) 490, 20.11.90

⁸¹ COM(94) 145 final

⁸² Communication on the Consultation on the Review of the situation in the telecommunications services sector, COM(93) 159 final, 28.4.93

⁸³ Communication on developing universal service for telecommunications in a competitive environment, COM(93) 543 final, 15.11.93

⁸⁴ See, inter alia, Resolution of the European Parliament on the Commission Communication of 21st October 1992 concerning the 1992 Review of the situation in the telecommunications services sector, 20.4.1993 and Resolution of the European Parliament on the Commission Communication of 15 November 1993 on developing universal service for telecommunications in a competitive environment, 4.5.94

⁸⁵ Council Resolution of 30th June 1988 on the development of the common market for telecommunications services and equipment (88/C257/EEC OJ C257/1, 4.10.88) ;

telecommunications in the Union, as well as important policy documents in neighbouring fields. The policy has then been turned into concrete form through a series of adopted and proposed legislative measures since 1987. (Details of the most important measures and proposals are set out in Annex 3).

A common approach to infrastructure must build on these elements, but must also take full account of key policy objectives relating to the trans-European telecommunications networks and services; economic and social cohesion within the Union; the strengthening of competitiveness of the European economy and supporting growth and development of employment.

The approach is consistent with the Commission's Green Paper of April 1994 on Mobile and Personal Communications which promoted the vision of the emerging personal communications environment, based on the full convergence of wireless and wired technologies and networks, as well as with the challenges posed by the development of the Information Society.

The common approach is therefore based on the extension and development of existing Union policies in telecommunications and in neighbouring fields which are considered below.

VII.1 General Principles

In developing a coherent policy towards infrastructure, it is necessary to build on the principles already successfully applied to the development of the markets for telecommunications services and equipment in relation to the fixed, satellite and mobile communications networks. These principles, which flow from the obligations set out in the EC Treaty, form the basis of the political consensus which has emerged concerning the development of the telecommunications sector, in particular, the consensus flowing from the 1992 Telecommunications Review⁸⁶. They are set out below:

Council Resolution of 19th December 1991 on the development of the common market for satellite communications services and equipment (92/C 8/01 ; OJ C8/1, 14.1.92) ;

Council Resolution of 22nd July 1993 on the review of the situation in the telecommunications sector and the need for further development in that market (93/C 213/01, OJ C213/1, 6.8.1993).

Council Conclusions of 28th September 1994 on the recommendations to the European Council in Europe and the global Information Society and on the Commission's Action Plan on Europe's Way to an Information Society.

⁸⁶ See Council Resolution 93/C213/01 of 22 July 1993 and Council Resolution 94/C48 of 7 February 1994 on universal service principles for telecommunications.

MAIN TREATY PROVISIONS RELEVANT TO TELECOMMUNICATIONS POLICY

The general principles applied to the sector are derived from the provisions of the EC Treaty ("the Treaty"), in particular:

Article 3(c) requiring the creation of an internal market characterised by the abolition, as between Member States, of the obstacles to the free movement of goods, persons, services and capital;

Article 3(g) requiring the institution of a system ensuring that competition in the internal market is not distorted;

Article 3(l) strengthening the competitiveness of Community industry;

Article 3(n) encouraging the establishment and development of trans-European networks;

Article 3(s) contributing to the strengthening of consumer protection

Article 5 under which the Member States are bound to fulfil their obligations under the Treaty;

Articles 30 to 37 concerning the free movement of goods;

Articles 52 to 66 concerning the freedom to provide services and the freedom of establishment;

Articles 85, 86 and 90 setting out the Community competition rules;

Article 100(a) concerning the adoption of directives for the approximation of provisions laid down by law, regulation or administrative action in the Member States as directly affect establishment or functioning of the internal market.

Articles 110 to 115 concerning the common commercial policy;

Article 129a requiring the Community to contribute to the attainment of a high level of consumer protection

Articles 129b concerning the establishment and development of creation of Trans-European Networks.

Beyond the Treaty Articles and the principles of the 1987 and subsequent Green Papers, the Commission has issued Guidelines on the application of competition rules to the telecommunications sector⁸⁷.

⁸⁷ OJ C233, 6.9.91.

VII.2 Exclusive and Special Rights over Infrastructure

In Part I of the Green Paper a simple principle was put forward in relation to telecommunications infrastructure; namely, that there should be a free choice of underlying infrastructure for the delivery of services which are open to competitive provision⁸⁸.

This approach reflects the proposals already set out in the Green Paper on Mobile and Personal Communications.

The application of this principle would require the limitation of the scope of exclusive and special rights⁸⁹ over infrastructure to the provision of voice telephony services to the general public (until 1 January 1998). In order to comply with this requirement, it would be necessary to show that, where the number of licences in any given geographical area is limited, that limitation results from objective, proportional and non-discriminatory factors⁹⁰.

According to Part I of the Green Paper the maintenance of such restrictions is currently justifiable only in relation to the provision of voice telephony services for the general public. Action is therefore proposed in two stages.

In a first stage restrictions were to be removed on *"the use of infrastructures for the delivery of satellite communications, mobile communications and terrestrial communications services already liberalised"*.

Action during the first stage would be limited to allowing such telecommunications to be provided over third party or own infrastructure already authorised in Member

⁸⁸ The applicable principles of Union telecommunications policy and law applied to exclusive and special rights, from which the proposal for free choice of the underlying infrastructure for competitive services is derived, are set out in detail in Part I of the Green Paper sections V and VI.

⁸⁹ Directive 90/388/EEC on competition in the market for telecommunications services as amended by Directive 94/46/EC defines both exclusive and special rights.

"Exclusive rights" means the rights that are granted by a Member State to one undertaking through any legislative, regulatory or administrative instrument, reserving it the right to provide a telecommunication service or undertake an activity within a given geographical area."

"Special rights" are defined as "the rights that are granted by a Member State to a limited number of undertakings through any legislative, regulatory or administrative instrument which, within a given geographical area,

- limits to two or more the number of such undertakings authorised to provide a service or undertake an activity, otherwise than according to objective, proportional and non-discriminatory criteria, or
- which designates, otherwise than according to such criteria, several competing undertakings as being authorised to provide a service or undertake an activity, or
- confers on any undertaking or undertakings, otherwise than according to such criteria, legal or regulatory advantages which substantially affect the ability of any other undertaking to provide the same telecommunications service or to undertake the same activity in the same geographical area under substantially the same conditions."

⁹⁰ One example of this would be limitations imposed on the number of licences on the basis of essential requirements, such as the effective use of radio frequency spectrum, within radio-based networks or on the grounds of protection of the environment or town planning objectives.

States. The proposals would permit the use of both fixed and wireless networks, and, in particular, networks such as those operated by utility companies or cable television networks.

The second stage would, as indicated in Part I, *"involve licensing providers of new infrastructures for liberalised services and the full use of such new, and existing, infrastructure for the provision of public voice telephony service, once liberalised"*.

The Council, in its Resolution of 17th November 1994 concerning Part I of the Green Paper, has confirmed the principle of general liberalisation of infrastructure by 1 January 1998, including the additional transition periods for certain Member States in line with Council Resolution 93/C213/02. A number of Member States have urged the Commission in an associated statement to come forward as quickly as possible with proposals to provide for the use of alternative network infrastructure for services which are already liberalised.

It is in this context that Part II of the Green Paper now examines the competitive and other safeguards that need to be put in place with regard to infrastructure competition in line with existing telecommunications policy, set against the context of liberalisation of voice services for the general public. These issues are addressed below.

VII.3 Licence award procedures, selection criteria and the conditions which may be attached to licences for infrastructure

VII.3.1 The basic approach to licensing infrastructure; licensing infrastructure, and the position of services

The basic approach to licensing infrastructure

In the telecommunications field, Directive 90/388/EEC (the Services Directive) as amended by Directive 94/46/EC, Directive 90/387/EEC of 30 June 1990⁹¹ (the ONP Framework Directive) and the Green Paper on Mobile and Personal Communications recognise the continuing role for Member States in licensing the provision of telecommunications infrastructure and services.

Such national licensing must be consistent with the overall framework provided by Community law. The manner in which licences are granted must not lead to the creation of special rights (see section above).

In order to promote the development of trans-European telecommunications networks and services, the grant of national licences for such networks should be co-

⁹¹ Council Directive 90/387/EEC of 28 June 1990 on the establishment of the internal market for telecommunications services through the implementation of open network provision, OJ L192/1, 24.7.90

ordinated to facilitate the networks becoming operational throughout the countries covered at the same time.

The Services Directive, the ONP measures and the two Directives ensuring the mutual recognition of type approvals for terminal equipment⁹² established the overall framework for national licensing by identifying the limited range of restrictions which may be imposed within national authorisations for telecommunications or equipment intended for use by the general public. These restrictions are limited to those justified by:

- *essential requirements* (namely, network security, network integrity, prevention of frequency interference, the effective use of the frequency spectrum, environment protection, rights of way and, in justified cases, interoperability of services and data protection, and in the case of terminal equipment, user safety and the safety of the employees of the operator).
- *public service requirements in the form of trade regulations* (concerning conditions to ensure the availability, permanence and quality of the service)⁹³

These two categories of restrictions also form the basis for determining the approach to the future licensing of infrastructure. As regards the establishment of new communications infrastructures, these essential requirements should also include, where applicable, , the protection of the environment and town planning objectives.

Licensing of infrastructure, and the position of services

In addressing licensing for infrastructure, it is important to recall the basic distinction drawn earlier in this Paper between communications infrastructure and services. In most Member States the monopoly provision of infrastructure has meant that a formal distinction has not been necessary in licensing both telecommunications networks and the provision of reserved and non-reserved telecommunications services over them.

In practice, future infrastructure licences will almost always be granted to licensees who also intend to provide a range of telecommunications services (which might nevertheless be confined to the provision of leased line capacity). This has implications both for the licence award procedures and for the specific conditions which may be attached to future licences, which will include conditions likely to relate both to the infrastructure and the services.

⁹² Council Directive 91/263/EEC of 29 April 1991 on the approximation of the laws of Member States concerning telecommunications terminal equipment including the mutual recognition of their conformity; OJ L128/1, 23.5.91, as supplemented by Council Directive of 29 October 1993 supplementing Directive 91/263/EEC in respect of satellite earth station equipment (93/97/EEC; OJ L290/1, 24.11.93).

⁹³ The Services Directive, limited the imposition of trade regulations to basic data services, namely the provision of packet and circuit-switched data services for the public, subject to verification by the Commission of their compatibility with Treaty. The provision of such basic services were seen as forming a particular task entrusted by the Member States to telecommunications organisations.

At the same time, a framework for infrastructure licensing must also ensure :

- an appropriate level of regulatory supervision of independent service providers who sell capacity and/or combine a range of telecommunications services from different network operators. Such a framework must address, in particular, how and to what extent such service providers should contribute to the cost of universal service.
- sufficient flexibility to tackle the convergence between broadcasting, information technologies and telecommunications. Increasingly, communications infrastructure will be the vehicle over which both telecommunications services and non telecommunications services are delivered.

In relation to convergence, a parallel can usefully be drawn with broadcasting where cable television networks may be entirely independent of the content / programming passing over them. Whilst the customer is aware of a single cable network, the network and programming may be subject to quite different types of regulatory supervision.

The basic approach to licensing proposed in this Green Paper does not extend the framework governing the provision of telecommunications infrastructure or services to non-telecommunications activities, primarily broadcasting, nor does it regulate the use of infrastructure for such activities. Nevertheless, in the context of broadband networks and convergence, the future approach to licensing must ensure that telecommunications-related safeguards on services and networks are not undermined.

**SUMMARY OF THE APPROACH TO THE OVERLAP BETWEEN THE LICENSING OF
INFRASTRUCTURE AND SERVICES IN THE CONTEXT OF CONVERGENCE.**

To provide the necessary flexibility, licensing must be considered at three levels:

- A harmonised approach must be developed to the licensing of communications infrastructure, independent of its ultimate use.
- The conditions which may be attached to the use of that infrastructure for the delivery of telecommunications services are defined in line with existing telecommunications policy in the Union (essential requirements and, in the case of public telecommunications infrastructure providers enjoying rights of way, public service requirements in the form of trade regulations). That should not prevent subject to the provisions of the Treaty the application of other conditions related to non-telecommunications activities, in particular, broadcasting or indeed the requirement for a separate licence or authorisation for such activities.
- Finally, conditions may also be imposed in certain cases on the provision of the telecommunications services over that infrastructure. These will in most cases continue to be regulated through a single licence for both the underlying infrastructure and the telecommunications services provided over it, with the exception of independent service providers who do not own infrastructure over which they operate. In parallel, the provision and content of non-telecommunications services, in particular, broadcasting, may continue to be subjected to a different supervisory controls.

These elements in the basic approach must now be extended to address (i) the procedures for awarding licences for infrastructure, (ii) the criteria used for selecting licensees and (iii) the conditions which may be attached to licences.

VII.3.2 Licence award procedures

In line with the requirement for the withdrawal of special and exclusive rights over infrastructure, market forces, rather than regulatory authorities at a national or Union level, should generally decide future market structures, subject to the application of the Community competition rules and the overall safeguards found in the Treaty. Licensing procedures should not be regarded as a mechanism for imposing a particular market structure.

It is nevertheless accepted that essential requirements linked in particular to environmental, frequency and other physical considerations and public service requirements in the form of trade regulations will continue to justify the grant of a limited number of licences or authorisations for the establishment and operation of infrastructure. Where the number of operators is limited by a Member State, this is a potential restriction on the freedom to provide services and may distort competition. It must therefore be justified under European law.

Future licence awards should be made by the Member States or their National Regulatory Authorities on the basis of common principles:

- Licensing award procedures must respect the principle of the separation of regulatory and operational functions established in Union telecommunications policy.
- Award procedures must be open, non-discriminatory, and transparent.

In order to guarantee that licensing procedures are open, non-discriminatory and transparent, Member States should ensure that :

- all applicants are subject to the same assessment procedures, unless there is an objective reason for differentiation;
 - all selection criteria and conditions to be attached to the licence are known to the applicants in advance;
 - reasonable time limits are set and applied
 - effective and rapid appeal procedures are established for unsuccessful applicants.
- Any limitation on numbers should be based on the essential requirements and in the case of public telecommunications infrastructure, and/or public service requirements in the form of trade regulations and should respect the provisions of the Treaty relating to the free circulation of services as well as the principle of proportionality, by imposing the solution which is least limiting and must give priority to competitive provision.
 - The granting of national licences for infrastructure to support trans-European telecommunications networks and services should be co-ordinated, in order to

encourage the growth of such networks and to allow them to become operational at the same time in all the Member States traversed.

VII.3.3 The selection criteria for the award of licences and authorisations

Licenses must be granted on the basis of pre-announced criteria. In cases of networks intended for the general public, criteria may be based on public service requirements in the form of trade regulations⁹⁴.

Such selection criteria should be proportional to the scope and object of the licence, and may include criteria related to the permanence, availability and quality of services. This may imply also the infrastructure provider satisfying criteria relating to technical competence and financial resources.

Common principles governing the award of licences and the selection criteria⁹⁵ which may be used in selecting licensees should be developed on a harmonised basis, alongside the overall limits imposed by the competition rules on the conditions which may be attached to licences. In the absence of harmonisation at a Union level, such criteria should be subject to prior scrutiny for compatibility with the Treaty rules⁹⁶.

Member States should refrain from the automatic grant of new licences to particular undertakings, or from the automatic exclusion of certain undertakings (such as other telecommunications companies or utility companies) from the grant of a licence.

Selection criteria related to the use of the infrastructure concerned for non-telecommunications activities (such as broadcasting) are not precluded, although any such limitations would also have to be compatible with Community law..

Any refusal to licence a particular undertaking (including the exclusion of particular undertakings from a licensing process) must be duly justified to allow for its assessment under the applicable Treaty rules and also with the principle of proportionality.

Furthermore, the prohibition on discrimination on the grounds of nationality in the EC Treaty and EEA Agreement prevents restrictions being imposed to limit applications from undertakings based in other Member States or in the EEA.

⁹⁴ Public service requirements in the form of trade regulations are defined in Community law (See section VII.3.1 above).

⁹⁵ Examples of criteria which would not be an acceptable basis for assessing bids because they would discriminate against non-national bids would include the impact of a particular bid on local employment; local sourcing of equipment or components comprising infrastructure, willingness to sub-contract to local firms or to enter into partnerships or other arrangements with companies in that Member State.

⁹⁶ Examples of criteria which would not be an acceptable basis for assessing bids because they would discriminate against non-national bids would include the local sourcing of equipment or components comprising infrastructure, willingness to sub-contract to local firms or to enter into partnerships or other arrangements with companies in that Member State.

The principle of mutual recognition of licences or authorisations is not fully applicable to national licences for the provision infrastructure encompassing rights of way. However, in order to facilitate licence applications in Member States other than an applicant's home Member State, evidence relating, for example, to the legal status or financial standing of the applicant may be the subject of mutual recognition.

VII.3.4 The range of conditions which may attached to infrastructure licences

Basic principles

Any conditions attached to licenses for the establishment and operation of communications infrastructure must proportionate to the objective sought, transparent and non-discriminatory. The requirement of transparency means that licences should be published. The requirement of non-discrimination means that the same licence conditions should in principle apply to publicly and privately owned infrastructure operators. At the same time differential licensing conditions may be appropriate between infrastructure supporting public telecommunications services and infrastructure supporting corporate networks, or between public infrastructure providers facing different market conditions (for example, a significant difference in the date on which each is allowed to enter the market).

Restrictions on establishment / ownership linked to nationality

The principle of non-discrimination on grounds of nationality mentioned above requires that the conditions attached to a licence must not restrict the establishment (and therefore indirectly the ownership) of infrastructure by nationals of Member States or companies or firms controlled by nationals of Member States⁹⁷.

Any other restrictions on ownership or control must be compatible with Community law and with the Community's commitments taken on a multi-lateral basis.

The scope of essential requirements and public service requirements in the form of trade regulations

Building on the framework provided by Community law, licenses for infrastructure should not contain conditions other than those justified on the grounds of (i) essential requirements, and (ii) in the case of public telecommunications infrastructure, public service requirements in the form of trade regulations as published in advance.

Infrastructure not intended for the use of services for the general public (such as infrastructure for corporate networks) should only be subject to conditions based on the essential requirements.

⁹⁷ Articles 4 and 36 of the Treaty establishing the European Economic Area from 1 January 1994 extends those principles to prevent restrictions being imposed on ownership by nationals of EEA States or undertakings controlled by nationals of EEA States. Similar provisions are contained in the European Agreements and Interim Agreements entered into between the Community and Poland, Hungary, the Czech Republic, the Slovak Republic, Romania and Bulgaria.

Conditions attached to licences must be consistent with Community law relating to the freedom of establishment and the free circulation of services and ensure a high standard of consumer protection and respect for competition rules.

Essential requirements.

Conditions imposed on the basis of essential requirements should respect the following principles:

- Restrictions linked to *network security, integrity and interoperability* of services are likely to apply, in particular, to interconnection with other networks. The prevention of frequency interference and the effective use of frequency spectrum are specific concerns for radio-based communications.
- Conditions in licences should encourage *efficient use of both physical infrastructure and other resources* (e.g. duct sharing, required spectrum for wireless communications).
- The *protection of the environment* is a concern which is relevant specifically to the establishment of network infrastructures, and the definition of essential requirements in the context of new infrastructure licences should be expanded to include it. In this respect an in-depth assessment should be made in order to provide precise information on the possible negative environmental impact of telecommunications infrastructure projects.
- The *restriction of access to rights of way* is primarily an issue for national law, but subject to compatibility of the application of those national rules with the EC Treaty and, in particular, the competition rules. Rights of way are essential to the provision of competitive infrastructure and should be granted in a non-discriminatory manner.

Nevertheless, it is accepted that national or local authorities may wish to limit the numbers of undertakings granted rights of way, in order to limit the potential impact on, for example, the environment, traffic management and urban planning. Equally such limitation may be justified in order to protect the legitimate interests of owners of private land.

At the same time, certain types of infrastructure provider may be licensed to establish and operate networks and/or services without being granted their own rights of way. This could be the case, for example, with the establishment of metropolitan area networks, using the ducts and rights of way of an unrelated company, such as a local water or electricity company. No restrictions should be imposed on the ability of such infrastructure providers to deal with public or other authorities in the case of public land, or with private landowners.

Furthermore, licence conditions applied to infrastructure providers who do not benefit from rights of way should be subject to less onerous obligations, especially as regards coverage and interconnection requirements

- *Data protection and privacy* are issues of general concern and the scope for national intervention (and therefore licensing conditions) in these areas will be

determined by the framework provided by the Commission's proposals in the area⁹⁸.

Public service requirements in the form of trade regulations.

Public service requirements in the form of trade regulations may be applied in the case of licences for public telecommunications infrastructure⁹⁹. These conditions¹⁰⁰ could be included in individual licences or in the form of trade regulations or "*cahier de charges*" applicable to public infrastructure providers. These obligations should be subject to verification of compatibility with the Treaty, in particular as regards their proportionality and their adequacy to attain the pursued objectives of general interest.

This requirement of proportionality implies in particular using the least restrictive means of achieving the pursued objective. For example, to achieve the objective of securing permanence of service, a system of interconnection payments is less restrictive than preventing competing infrastructures. A subjective economic assessment of the capacity of a specific market should not normally be used.

VII.3.5 Other aspects of licensing infrastructure

VII.3.5.1 Duration.

In line with the approach proposed in relation to mobile communications where there is currently considerable variation in licence duration in different Member States, the duration of licences for the provision of infrastructure remains an issue for national rather than Union determination.

In general, however, to accord with the Community competition rules and the rules on the free movement of services, Member States in setting licence terms should take full account of market forces and the need to avoid restricting the introduction of new technologies and services.

⁹⁸ See, in particular, the amended proposal for a Council Directive covering the protection of personal data and privacy in the context of public digital telecommunications and in particular the Integrated Services Digital Network (ISDN) and Public Digital Mobile Networks, COM(94) 128 final, 13.06.94. These initiatives are discussed in greater detail below.

⁹⁹ Article 3 of Commission Directive 90/388/EEC acknowledged the use of such additional conditions in the form of trade regulations for the provision of packet or circuit switched data services for the general public, (subject to verification by the Commission of their compatibility with the Treaty). Such trade regulations relate to conditions to ensure the availability, permanence and quality of the service. Companies without rights of way should not be subject to the same level of obligations as those with rights of way, especially with regard to coverage.

¹⁰⁰ Such conditions are currently applied in national licences, and relate, inter alia, to price levels, minimum service quality, geographical coverage, access to emergency services, provision of facilities for the customers with special needs, billing, and conditions ensuring the financial standing and technical competence of the licensee. Not all such conditions are directly applicable to infrastructure.

In order to ensure no unfair restrictions on competition or undue limitation of new technologies and services, initial licence terms and 'standstills' on further licences should be based on the period required to ensure a sufficient start up period and/or a commercial return on the investment made in the network concerned.

VII.3.5.2 Licence fees.

One-off and annual fees levied on infrastructure operators should comply with the principles of non-discrimination, transparency and proportionality.

The levying of excessive fees on operators in the form of licence, frequency or other fees (such as payments to local authorities for the use of public land) can potentially create barriers incompatible with the internal market. They may also raise important competition issues, where the practical effect is to deter market entry or deny users a fair share of the benefits which lower fees might be expected to produce.

In assessing whether fees charged are proportional, account must be taken of the balance between coverage of administrative costs and the real commercial value of the resource being allocated. Fees should not be levied in a discriminatory fashion.

VII.3.5.3 Changes of ownership.

Provisions restricting changes in the ownership of the licensee must be justifiable in terms of the need to ensure continuing compliance with the essential requirements or public service requirements in the form of trade regulations imposed in licences.

VII.3.5.4 Freeing TO's from non telecommunications-related obligations

The range of potential conditions for licensing set out above are consistent with the Union's telecommunications policy in general. It follows, therefore, that only in exceptional cases should obligations be placed on network operators which do not relate to the telecommunications tasks carried out by that undertaking.

The imposition by Member States of non-telecommunications-related obligations harms the competitive position of network operators both in their national markets and in attempting to meet the pan-European needs of customers for networks and services. It also risks creating barriers within the internal market for networks and services in the Union because of the divergent obligations imposed in different Member States on the operators of networks in that territory.

Concerns over such obligations led the Commission in the 1992 Review to indicate that *"with further progress towards a competitive environment, telecommunications operators must be free to respond to the dynamics of the market place if they are to operate effectively. The degree of freedom must be proportionate to the level of*

*liberalisation. Major aspects of this freedom include tariff policy and equality of treatment.*¹⁰¹

The Bangemann Group Report made a similar recommendation for the acceleration of the on-going process of liberalisation of the telecommunications sector by, *inter alia*, "removing non-commercial political burdens and budgetary constraints imposed on telecommunications operators".

In order to allow telecommunications organisations to effectively compete once voice telephony services have been opened to competition, Member States must by 1 January 1998 adapt existing licensing conditions or bring to an end other obligations, (imposed through other means than a licence) which are unrelated to a specific operator's telecommunications activities.

VII.3.5.5 Promotion of competitive service provision : obligations on infrastructure providers

As recognised in the consultation on the Green Paper on Mobile and Personal Communications¹⁰², service providers, whether integrated into or independent of network operation will play a central role in the development of the future telecommunications environment. A key factor in this development will be ensuring the ability of service providers to obtain and offer a range of different telecommunications services, particularly, in meeting the needs of users for full personal communications on a pan-European basis.

The relationship between infrastructure provider and service provider is primarily a matter of commercial agreement (within the framework provided by Community law). At the same time, it is important to recall that Article 4 of Directive 90/388/EEC imposes an obligation on the Member States to ensure that telecommunications organisations make access available to their networks on objective and non-discriminatory terms and that they supply leased lines within a reasonable period. Even after 1998 it is likely that such an obligation will continue to apply on a transitional basis until effective competition is established.

Furthermore, account must also be taken of the obligations placed on Member States within the framework of Directive 92/44/EEC (the ONP leased lines Directive) to make sure a minimum set of leased lines is made available throughout the Union.

Nevertheless, in order to promote competition and, in particular, innovative combinations of networks and services, providers of public telecommunications infrastructure should make their facilities available to independent service providers,

¹⁰¹ COM(93) 159 final

¹⁰² Communication concerning the consultation on the Green Paper on mobile and Personal Communications, COM(94) 492, 23.11.93. During the consultation process, a consensus amongst market participants emerged in favour of priority being given to the commercial autonomy of market players.

with a requirement for operators to justify to the national regulatory authority on request any refusal to deal.

Whilst priority should be given to commercial agreements between service providers and infrastructure providers at this stage, the position should be kept under review to see whether refusals by infrastructure providers to deal with independent service providers is restricting competition.

The terms on which such facilities are made available should respect Open Network Provision principles as far as they apply.

VII.3.5.6 Service providers

Whilst the focus of this Section remains on the licensing of communications infrastructure, both this Green Paper and the Commission's Green Paper on Mobile and Personal Communications point to the development of independent service provision as one of the future distribution channels for telecommunications services, alongside service provision activities of businesses where service provision and network operation are fully integrated activities.

Consideration must nevertheless be given to what, if any, constraints are to be placed on such independent service providers, in order to clarify the overall regulatory picture in the emerging communications market.

This evolution in service provision contrasts with today's markets where the provision of the voice telephony service (and hence the regulatory controls on such provision, including guarantees of universal service) is an integral part of network operation.

To accommodate the emergence of new types of distribution channels and innovative services, existing Union principles should be applied and adapted. In particular, consideration must be given to whether, where service providers do not provide their own infrastructure, it is disproportionate for Member States to require an individual licence for the service provider. The conditions attached to the licence simply duplicate the conditions already applied in the licence covering the third party infrastructure which the service provider is using. Such duplication might act to restrict the free movement of services within the Union and limit the introduction of new innovative services.

In the light of this, service provision (as opposed to network establishment and operation) should not be subject to individual licensing in the Member States. It may be subject to class licences or to a requirement for declaration by Service Providers of their activities to the National Regulatory Authority(ies) of the Member State(s) in which they choose to operate.

Nevertheless, in the case of independent service providers offering voice telephony services on a resale basis, consideration may need to be given as to how and when such resellers should be obliged to make a contribution, appropriate to their market position, to the provision of universal service (via access charges or a universal service fund).

If additional safeguards are considered necessary, they should fully respect the principle of proportionality.

VII.4 Interconnection and interoperability

VII.4.1 The importance of interconnection

The emergence of interconnection as a priority issue for European telecommunications policy is emphasised in the Bangemann report on *Europe and the Information Society*.

"Two features are essential to the deployment of the information infrastructure needed by the Information Society: one is a seamless interconnection of networks and the other that the services and applications which build on them should be able to work together (interoperability).

"In the past the political will to interconnect national telephone networks resulted in hundreds of millions of subscriber connections world-wide. Similar political determination and corresponding effort are required to set up the considerably more complex information infrastructures.

"Interconnection of networks and interoperability of services and applications are recommended as primary Union objectives."

Interconnection of networks and their underlying infrastructure is a pre-requisite for interoperability of telecommunications services. Users are physically connected to a network via the physical infrastructure, but they subscribe to one or more services supplied over that network. The traditionally integrated nature of fixed voice telephony has hitherto made such distinction largely invisible, but increasingly it is becoming important to separate conceptually services from networks and infrastructure.

Issues of interconnection may arise whenever there is a (potential) competitive relationship between two organisations, and the one demands the use of facilities from the other for the delivery of its telecommunications. Issues also arise, on the other hand, when the relationship between the organisations is complementary, such as between a long distance and local operator, or between national operators in different countries handing on international calls for termination. Both types of relationship can raise problems concerning abuse of dominant position.

Interconnection issues generally involve services (in particular voice telephony), networks and infrastructure, and are therefore closely related to the ongoing reform process leading to the full liberalisation of voice telephony in 1998¹⁰³. The future regulatory framework for interconnection will be based on application of the competition rules in conjunction with a specific ONP Directive on interconnection,

¹⁰³ Derogations exist for certain Member States up to 2003

and will be contained in legislative proposals that the Commission will be submitting in the course of 1995.

The goal is an open interconnected environment, where there are no *a priori* restrictions on network interconnection, and where telecommunications-based services can operate seamlessly over interconnected networks. The regulatory approach to interconnection in this open environment will involve:

- removal of current barriers on interconnection
- commercial negotiation as the basis of interconnection agreements, within a defined framework which will ensure a fair and timely dispute resolution mechanism when called for
- supervision of the negotiation by the national regulatory authorities
- common principles for interconnection set at EU level.

VII.4.2 Application of the competition rules

All interconnect agreements are subject to screening under Articles 85 and 86 of the EC Treaty. In the context of Article 85, all agreements, which restrict competition and have an effect on trade between the Member States are prohibited. Interconnect agreements may not therefore, for example, in principle, limit the commercial freedom of one of the parties by determining the pattern of its action or abstention from action in the market. Network operators/infrastructure providers who are also service providers should not restrict their customers' ability to access telecommunications-based services provided by others.

Up to now in the telecommunications sector Article 85 has normally been implemented on a case-by-case basis by the Commission and the national courts. Given the calls from sector players for a stable and predictable regulatory environment for interconnection¹⁰⁴, the Commission will consider further measures setting out the conditions under which interconnection agreements are compatible with the principle of undistorted competition.

Another principle applying to interconnect agreements is set out by Article 86 of the Treaty which prohibits the abuse of a dominant position. The implications of this Treaty provision are in particular that:

- a network operator with a dominant position in the market for infrastructure provision should normally not be able to prevent another party from offering services by refusing interconnection.;

¹⁰⁴ Commission Communication on the consultation on the Green Paper on Mobile and Personal Communications, COM(94) 492 final, 23.11.94

- infrastructure providers with a dominant position should not place unreasonable restrictions on the customer's choice of service provision nor set unreasonable or unjustified charges;

These obligations apply in principle only to dominant network providers. There is no general definition of a dominant position set out in Article 86. However, the Court of Justice has defined the concept as a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition from being maintained on the relevant market by affording it the power to behave to an appreciable extent independently of its competitors, its customers, and ultimately of consumers¹⁰⁵. In the telecommunications area, the existence of dominance depends on the availability of alternatives. The ownership of a universal fixed public switched telephone network connecting most of the population of the Member States means that the owners of such networks are likely to retain a dominant position with regard at least to the local loop even after liberalisation, given the current high cost of duplicating the local loop. Indeed, termination of international, long distance fixed network calls and mobile network calls will in most case not be possible without co-operation of the relevant telecommunications organisations, giving those companies the power to control the price of interconnection. The ability of a firm to set or control market prices is a sign of dominance.

Given the importance of the local loop in providing access for new market entrants to potential customers, the analysis of interconnection agreements under Article 86 EC will therefore focus inter alia on agreements involving local infrastructure providers, in order to prevent abuses of dominant position.

In a first phase, specific rules could further be envisaged to deal with the issue of the opening up of the current infrastructure monopolies involving, for example, organisations to which the right to interconnection should be granted (in principle those providing services to the public), terms (including tariff principles) and conditions, notably the access points. The aim would be to require Member States to set out a regulatory framework allowing the emergence of effective competition.

VII.4.3 Proposal for a Directive on interconnection concerning public networks

With regard to interconnection to public telecommunications networks, there is a need to set out a specific and harmonised regulatory framework at the level of the Union to ensure the European-wide provision of services by setting conditions for access to and use of these telecommunications networks.

The aim is to ensure that the users needs for "any-to-any" communication are met (subject to technical feasibility and the willingness of both parties to communicate). It is neither necessary nor practicable to insist on direct interconnection of every network to every other network. A mixture of direct and indirect interconnection of networks, with associated end-to-end interoperability of telecommunications

¹⁰⁵ See Case 27/76 *United Brands v Commission* [1978] ECR 207

services, driven by market needs, will meet the customer demand for 'any-to-any' communication.

Discussion between Member States and the Commission on the proposal for a Directive on the application of open network provision to Voice Telephony resulted in agreement on a number of basic principles in relation to voice telephony interconnection. Building on this consensus and the market need for well defined regulatory environment for interconnection, the Commission has announced its intention to propose a Directive on interconnection in the context of open network provision¹⁰⁶, (subject to the outcome of the review of ONP) in order to harmonise conditions for public network access.

The main lines of the proposed ONP Interconnection Directive would be as follows:

General principles for open access

All parties should have the right to enter into commercial and technical agreements to interconnect.

Requests for interconnection should be normally be met, by those undertakings within the scope of the directive under mutually agreed terms.

Conditions for interconnection should be based on the established principles of open network provision i.e. conditions on access and use should:

- be based on objective criteria
- be transparent and published in an appropriate manner
- guarantee equality of access and must be non-discriminatory, in accordance with EU law.
- comply with essential requirements (interoperability of services, protection of data, network integrity, network security, etc.)

A framework for negotiation

A negotiating framework should be set ensuring that commercial negotiations result in a fair and timely agreement. Regulatory authorities should have a responsibility to prevent any abuse of negotiating power, and for ensuring the provision of adequate information, cost-oriented pricing structures, and for issues of unbundling, collocation, end-to-end quality, network integrity and security, etc.

¹⁰⁶ Commission Communication on the present status and future approach for open access to telecommunications networks and services (Open Network Provision), COM(94) 513 final, 29.11.94

A common approach to interconnection charges.

The approach will take account of the current consultation between the Commission and Member States being carried out in the context of Council Resolution 94/C48 on Universal Service principles in the telecommunications sector¹⁰⁷

It will establish clear, Europe-wide rules for the setting of interconnection charges, the financing of universal service, and for implementing appropriate cost accounting systems. (See section VII.4.4 below)

A mechanism for dispute resolution.

A timely mechanism for dispute resolution between the parties must be established, with defined roles for the national regulatory authorities and the Commission.

VII.4.4 Principles for interconnect charges to public networks

Principles for interconnect charging, to be agreed at EU level, are identified below.

- a) Interconnection charges should be a matter for commercial agreement between the parties involved, subject to supervision and if necessary timely intervention by the National Regulatory Authority, and subject to the competition rules.
- b) Interconnection charges should encourage efficient and sustainable market entry. Charges should be based on underlying costs of an efficient operator.
- c) The cost of inefficiencies should not be passed on to interconnecting operators. Charges should promote efficiency gains by the incumbent operator. It should not threaten the financial ability of any operator to fulfil its licence obligations.
- d) Charges should be transparent, non-discriminatory and sufficiently unbundled. Published interconnect tariffs are the best mechanism for ensuring this.
- e) Charges related to recovering losses due to tariff imbalances resulting from obligations imposed by the National regulatory authority should be identified separately. It is anticipated that these charge elements will quickly decline as tariffs are progressively rebalanced in Europe. Until then, they may be recouped through charges on interconnecting operators.
- f) Any residual charges related to the provision of uneconomic universal service obligations should also be separately identified. Such charges relate to the cost of serving uneconomic customers (i.e. customers who do not generate sufficient revenue to recoup the cost of providing service to them), or to providing services such as emergency services. (The imposition of a geographically averaged standard connection cost is covered in the above formulation, in that it makes some customers uneconomic.)

¹⁰⁷ OJ C 48, 16.2.1994, p.1.

Residual costs of this type may remain for the foreseeable future. They may be recouped through charges on interconnected operators, but in order to reflect the underlying costs, the charges should not generally be traffic or capacity dependent. Costs of this type may also be recouped via Universal Service Funds.

- g) Approved cost accounting systems should be implemented by the operators under the supervision of the National regulatory authority in order to ensure transparency and non-discrimination for interconnection charges.

The Commission is currently consulting the sector on specific application of these principles, based on recommendations contained in independent studies carried out for the Commission by Arthur Anderson¹⁰⁸ and WIK/EAC¹⁰⁹. These studies are available from the European Commission on request. (See Annex 2 for details.)

VII.5 Open access to public infrastructure - application of the competition rules and ONP principles

VII.5.1 A policy of Open Access

A policy of open access to public telecommunications infrastructure will ensure that the Union goal of a rich choice of public telecommunications services delivered over an interconnected mesh of separately owned and operated network infrastructures can be achieved.

Principles for open access have already been drawn up in Community law¹¹⁰ and further harmonised under the Union policy of open network provision. In applying these principles to public telecommunications infrastructure, the aim must be to ensure a coherent regulatory framework across all Member States for access to and use of infrastructure, while at the same time not imposing a regulatory burden that would hinder future development of the market. Failure to observe these principles could result in distortion and lack of choice in the future telecommunications and information services market.

Telecommunications infrastructure is the foundation of all telecommunications services. As shown in Figure II.1, telecommunications infrastructure covers the physical facilities which enable and support the provision of telecommunications transmission capacity. Public infrastructure providers with privileged access to limited national resources (e.g. rights of way, radio frequencies) have certain responsibilities towards other market players.

¹⁰⁸ Study on cost allocation and the general accounting principles to be used in the establishment of access charges in the context of telephone liberalisation in the EC.

¹⁰⁹ Study on Interconnection in the context of Open Network Provision

¹¹⁰ Services Directive 90/388/EEC. OJ L 192, 24.7.1990, p.10.

The principle of open access requires public telecommunications infrastructure providers to provide access to their facilities on an equal and non-discriminatory basis, and not to restrict the choice of services available over their infrastructure. According to the competition rules, infrastructure providers which enjoy a dominant position must provide access in this way and may not refuse to deal with potential users. Application of this principle to non-dominant players requires a more flexible approach depending on the market conditions and the technology in question.

The competition rules, in conjunction with the existing open network provision framework, contain the necessary flexibility with which to apply the policy in a developing technological and market environment, in accordance with the principles of proportionality and subsidiarity. The aim is to ensure that:

- a) Separately owned and operated public network infrastructures are interconnected in Europe
- b) Adequate transmission capacity¹¹¹ is assured throughout the European Union, allowing organisations to build telecommunications systems for their own and third party use.
- c) National licensing conditions for public telecommunications infrastructure providers include the ONP principles of transparency and non-discrimination, and do not limit users' choice of telecommunications-based services lawfully provided in the EU.
- d) There is transparent accounting for infrastructure provision, to ensure fair competition and avoid unfair cross-subsidies.
- e) Common technical specifications, based on European standards, are used.

The main lines of action are as follows:

VII.5.2 A new ONP Directive on interconnection to public networks.

In line with the re-examination of scope of the open network provision rules currently underway, a new European Parliament and Council Directive on interconnection in the context of open network provision will be proposed in 1995, to take effect after 1.1.98 when voice telephony and/or infrastructure has been liberalised. It will ensure a harmonised approach to the interconnection of separately owned and operated public networks and infrastructures.

Details of the proposed Directive are given in Section VII.4 above.

¹¹¹ Transmission capacity is used as a general term to cover facilities like leased lines. In the future, the precise transmission capacity made available to the customer could vary under customer control, and may not conform precisely to the definition of leased lines given in Council Directive 92/44/EEC.

VII.5.3 Revision of the ONP Leased Lines Directive to cover infrastructure provision.

Adequate provision of public transmission capacity on a Union-wide basis is seen as an essential foundation for a flourishing telecommunications services market. Market demand is expected to lead to adequate provision to serve the major metropolitan areas, but reliance on market demand alone is unlikely to lead to full coverage of outlying areas. In order to encourage development of less favoured regions within a Member State, and cohesion throughout the Community, the availability of adequate transmission capacity should be guaranteed by Member States throughout their territory.

A revision of the ONP Leased Lines Directive¹¹² is therefore proposed, such that Member States would have to ensure that a minimum level of transmission capacity was available throughout their territory and between Member States. The revised Directive would apply to organisations offering public transmission capacity of major importance (subject to the outcome of the review of ONP with regard to its scope of application), with the likely exception of new entrants with limited market share¹¹³.

Recognising that competition in the market will serve to keep down prices, the requirements in the current ONP Leased lines Directive for cost-oriented pricing and pre-publication of tariffs would be relaxed once effective competition was in place. Safeguards against collusive behaviour leading to higher prices are provided in the EC competition rules.

The transmission capacity to be made available would be the 'minimum set' defined in Annex II of the ONP leased lines Directive, which currently specifies:

- ordinary and special quality voice bandwidth analogue circuits
- 64 kbit/s digital circuits
- 2 Mbit/s digital circuits (structured/unstructured).

ETSI standards for these types of circuit are becoming available. ETSI are also developing standards for higher capacity leased lines (at 34 Mbit/s, 140 Mbit/s and 155 Mbit/s).

VII.5.4 Application of open network provision principles to the provision of public telecommunications infrastructure

As noted above, public telecommunications infrastructure providers with rights of way or frequency allocations have privileged access to limited national resources, and therefore carry some responsibility towards other market players in the telecommunications sector. It is proposed that the principles established under the

¹¹² Council Directive 92/44/EEC. OJ L 165, 19.6.1994, p.27.

¹¹³ Discussions on the future application of specific ONP Directives are currently underway. A proposal to make a link between market share and the obligations under ONP to provide a minimum set of harmonised offerings, is being considered.

policy of open network provision should apply in a general way in the form of harmonised national licensing conditions for the provision of public telecommunications infrastructure.

General open network provision conditions are set out Directive 90/387/EEC. They call for technical specifications, supply and usage conditions and tariffs to be:

- transparent
- non discriminatory, offering equality of access
- based on objective criteria.

Examples of specific cases where these principles should be incorporated into the licences or authorisations of public infrastructure providers are given below.

Vertically integrated infrastructure providers

Application of open network provision conditions should be envisaged when infrastructure provision is a business activity carried out by a vertically integrated supplier who also offers telecommunications services, in view of the possible conflict of interest. Application of harmonised conditions according to ONP principles will ensure transparency and fair access to the underlying infrastructure.

Such infrastructure providers should meet all reasonable requests for use of facilities, on commercially negotiated terms. Refusal to allow access to or use of a facility should be referred to the national regulatory authority. Conciliation and dispute resolution procedures established under ONP measures may then apply. In the case of a dominant infrastructure provider, refusal to allow access could constitute an infringement of obligations under the competition rules, giving rise to the additional legal remedies under those rules.

Shared use of facilities

It will often be in the public interest to encourage third party access to facilities such as underground ducts, radio towers, and buildings in order to minimise the environmental impact of duplication. Such facility-sharing arrangements should be on the basis of commercial and technical agreements between the parties concerned, subject to possible examination under the competition rules. Supervision of such agreements by the National Regulatory Authority according to the principles of open network provision would also help to avoid any unfair allocation of resources.

To end current bottleneck situations or to avoid such situations in relation to concerns linked to the protection of the environment and town planning objectives, National Regulatory Authorities could make the shared use of facilities mandatory.

Non-discriminatory access to services

As noted in the above Section VII.4 on Interconnection, access for many customers will, even in a competitive environment, continue to be controlled by the owner of the local network infrastructure. That infrastructure may be copper, fibre or radio technology. It will commonly be the case that the local network infrastructure provider is also a service provider. In addition to the application of the competition rules, the application of ONP principles in this situation will ensure that users can access services provided by other service providers on fair and non-discriminatory terms.

Circumstances where users' ability to access services may be legitimately constrained are:

- technical incompatibility which prevents certain services being offered over certain networks or to certain users
- limitations imposed by the regulatory authorities for public policy reasons, in accordance with the Treaty.

As these examples show, the approach of defining basic principles for public telecommunications infrastructure at a Union level, while ensuring that those principles are applied at a national level through relevant licences or authorisations, provides an appropriate balance for the variety and complexity of the infrastructure market structure. The approach is particularly suited to the evolving switched broad band local network infrastructures.

VII.5.5 The need for urgent adoption by the European Parliament and the Council of the Re-submitted proposal for an ONP Voice Telephony Directive

This Directive concerns the harmonisation of conditions for open and efficient access to and use of fixed public telephone networks and public telephony services, and the availability throughout the Community of a harmonised voice telephony service.

Rapid implementation of this Directive will ensure that service providers have open and non-discriminatory access to the public telephone network infrastructure.

VII.5.6 Application of cost accounting principles established under ONP to public telecommunications infrastructure provision.

Transparent accounting is necessary to allow the National Regulatory Authorities to deal with interconnection disputes. It would also help the application of the competition rules. This is important in the case of vertically integrated organisations offering telecommunications services and/or broadcasting services in addition to infrastructure.

Many infrastructure providers will be vertically integrated organisations offering telecommunications services and/or broadcasting services over their infrastructures

Other organisations will be purely service providers who rely on infrastructure purchased from the vertically integrated organisations.

Accounting separation between the telecommunications activities and broadcasting activities will be necessary. Within the telecommunications business unit, a cost accounting methodology should be used which allows the cost of infrastructure provision to be separated from the cost of providing other telecommunications services. It should be subject to separate audit.

The aim is to provide the necessary transparency to ensure that third-party service providers are not being under- or over-charged for the use of telecommunications infrastructure.

The requirement for separate accounting builds on the existing requirements for implementation of cost accounting systems in the ONP leased lines Directive.

VII.5.7 Technical standards appropriate for infrastructure offerings

The ONP leased lines Directive identifies specific technical standards whose implementation is mandatory for the minimum set of leased lines.

ONP also offers a mechanism whereby standards considered suitable for achieving Community goals can be referenced in the *Official Journal of the European Communities*. The ONP 'List of Standards' is published regularly in the *Official Journal*.

Publication in the *Official Journal* does not imply that a particular offering *should* be made available; rather, it identifies for users and suppliers the preferred standards to be followed *when* an offering is made available. It would not in any way impede the introduction of innovative technologies.

This principle can be readily extended to infrastructure offerings.

The ONP framework Directive also lays down a mechanism for making the implementation of particular standards mandatory in exceptional circumstances. This mechanism provides a safeguard for those situations where normal market forces do not result in adequate implementation of standards to meet users' needs.

VII.6 Safeguarding and developing universal service in a competitive environment

VII.6.1 The Key Issues

Council Resolution 93/C213/01 on the review of the situation of the telecommunications sector and the need for further development in that market¹¹⁴

¹¹⁴ OJ No C 213, 6.8.1993, p.1.

established as a major goal for Community telecommunications policy the liberalisation of all public voice telephony services, whilst maintaining universal service.

This Resolution recognised the importance, for the individual consumer and for the competitiveness of industry and commercial users, of a Union-wide telecommunications system offering to all users, including specific social groups, reasonable and affordable charges for access and use, high quality of service and technological innovation. The importance of universal service was equally emphasised in the Resolution of the European Parliament of the 20th April 1993 whilst supporting the liberalisation timetable and recognising the need to take full advantage of the potential for exploiting alternative infrastructures in Europe to supply and develop telecommunications services.

Three key issues must be addressed at a Union level with respect to universal service in the telecommunications sector. The first concerns the elements that comprise universal service, the second the methods for costing universal service and the third, the means of financing uneconomic aspects of universal service provision in a competitive telecommunications environment.

VII.6.2 The elements that comprise universal service

Council Resolution, 94/C48/01, has confirmed the general principle of universal service in telecommunications, i.e. access to a defined minimum service of specified quality to all users at an affordable price and respecting the principles of universality, equality and continuity.

The main elements of a Union-wide definition of universal service have been developed within the context of Open Network Provision, in particular Council Directives 90/387/EEC and 92/44/EEC, the re-submitted position on the proposal for a Directive on the application of open network provision to voice telephony, and Council Recommendations 92/382/EEC and 92/383/EEC.

The basic elements with respect to voice telephony involve the setting of appropriate targets and their implementation by National Regulatory Authorities and include the following :

- Provision of the basic telephone service
 - includes the publishing of target and achieved delivery periods, specification of contractual terms, etc.
- Quality of service
 - includes the publication and monitoring of quality targets and actual performance
- Tariff policy
 - includes tariff flexibility, i.e. the possibility for targeted provision for socially desirable purposes.

- Publication of information about the service.
- Dispute resolution procedure for users
- Subscriber directories
- Operator assistance and directory enquiry services
- Public pay-telephones
- Access to emergency services
- Specific conditions for disabled users and persons with special needs.

In addition, targets or recommendations are proposed for a number of advanced features, including itemised billing, touch-tone dialling, call forwarding, calling line identification, green number or freephone services, call transfer and access to directory and operator services in other Member States.

In order to establish common universal service principles Union-wide, the Commission is re-submitting its proposal for a Directive on ONP and Voice Telephony to Council and Parliament and seeks rapid adoption.

Given the rate of technological progress and its effect on costs and availability of increasingly sophisticated services, together with the need to ensure that the benefits of the Information Society extend to all citizens and not just to the privileged minority, the definition of universal service must be dynamic and reflect such progress. Ultimately, the most essential factor is that all users should be connected to a network which offers them access to an increasing range of services. Which services should actually be subsidised will depend upon political considerations as well as the level of competition in their provision, which should anyway ensure reasonable prices.

In this way, universal service may be structured to encourage simultaneously maximum telephone penetration as well as enhanced consumer choice among services and service providers.

VII.6.3 Costing and financing uneconomic universal service in a competitive environment.

Two important steps are required in the context of both services and infrastructure liberalisation in the light of the discussion in section V.1. The first is to assess the uneconomic cost of universal service obligations based on common principles. The second is to put in place practical mechanisms for the financing of uneconomic universal service obligations.

The Commission believes that National Regulatory Authorities should support tariff rebalancing and put in place targeted schemes for needy users and uneconomic customers instead of favouring general subsidies for access.

Only telecommunications-related public service obligations should be treated as universal service obligations in voice telephony. National Regulatory Authorities should calculate the cost of uneconomic Universal Service Obligations as the net cost of providing service to uneconomic customers, plus any costs associated with the uneconomic provision of public telephones, emergency services and other social obligations such as targeted schemes.

Uneconomic customers would be those whom, in the absence of regulatory obligations, the incumbent would choose not to continue to serve at affordable rates. The definition of uneconomic customers is not simply those whose revenues from fixed and usage charges do not cover their share of costs¹¹⁵.

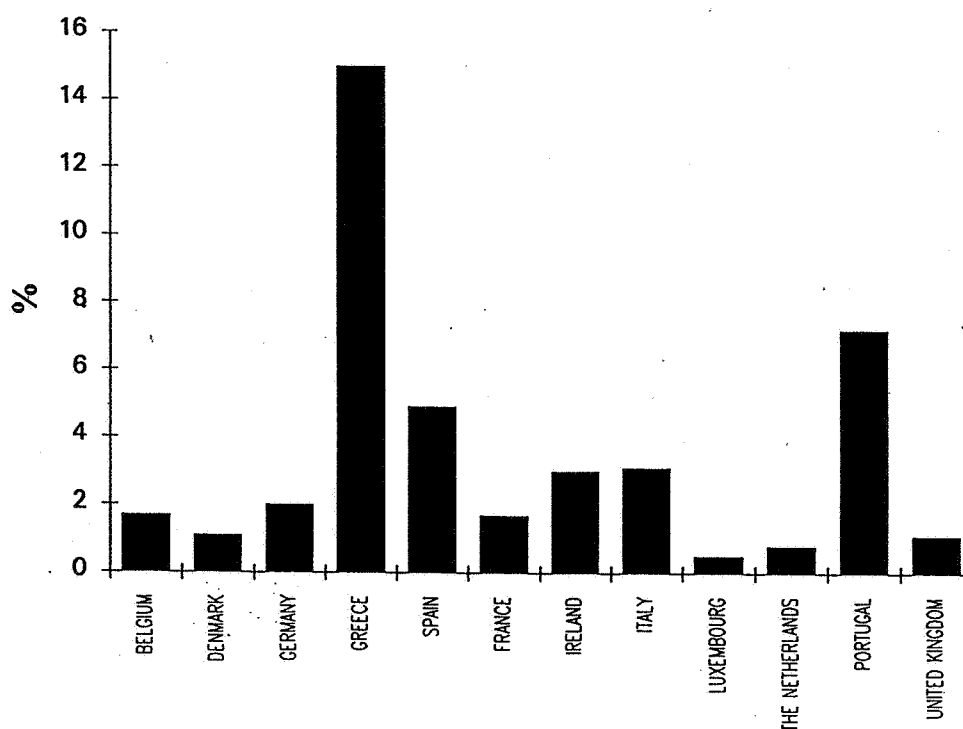
Such a definition exaggerates the cost of universal service since it fails to take into account the revenues from incoming calls to such customers. If a customer leaves the network, the TO also loses the usage revenues associated with inward calls to that customer unless a substitute for these calls occurs. An individual customer is therefore uneconomic or loss making only if the exchange line rental plus the profits on calls made, plus the profits on additional calls which the customer generated as a result of joining the network, fails to cover the net cost of service. Moreover, a customer who is currently unprofitable may become commercially desirable in the future.

A more appropriate basis, therefore for assessing the uneconomic cost of fulfilling universal service obligations is one that uses long run avoidable or incremental costs.

Studies have shown that the burden associated with uneconomic customers in well developed networks is relatively low and generally only a few percentage points of overall turnover.

¹¹⁵ The universal service cost is the net cost of providing service to uneconomic customers, plus any cost associated with the uneconomic provision of public telephones, emergency services and other social obligations. It takes account of all traffic sensitive costs and revenues associated with those customers. (See also section V.1)

Table VII.6.3 - Estimated cost of USO as a percentage of turnover in 1992.¹¹⁶



In principle there are a number of ways of financing the universal service obligations imposed on TOs, in a competitive environment. It is assumed in practice that such financing will be generated from within the telecommunications sector.

Operators and service providers should contribute and the financial responsibility for universal service should be spread as broadly and equitably as possible subject to the principle of proportionality. The financial mechanism will be set out in the framework of the amendments to the current regulatory framework, to be proposed before the end of 1995.

Since voice telephony currently generates the main turnover in the telecommunications sector, the revenues could be raised, for example, from all eligible operators who originate or terminate calls on the public switched network. However, the approach to financing universal service should be consistent with the principle of proportionality. Therefore, contributions to universal service should avoid delaying the development of new services, which currently have higher costs and lower volumes such as mobile telephony. Such services might be exempted as

¹¹⁶ Source : Analysys

long as, given their higher underlying costs and tariffs, they could not be said to undermine the ability of the voice telephony providers to finance universal service.

At the same time the financing of uneconomic universal service obligations should be made quite separate from the issue of interconnection charges. The preferred method of financing the cost of USOs would be through national universal service funds. All telecommunications network operators and service providers would contribute on the basis of their level of activity in the market.

Alternatively the USO burden could be treated like a common cost and recovered in an access charge that is added to interconnection charges.

Both mechanisms have advantages and disadvantages. Adding access charges to interconnection charges does not necessitate the creation of new structures. It involves less transaction costs and bureaucracy, once the amounts have been defined, since the charges are invoiced together with the interconnection charges by the incumbent telecommunications organisation responsible for the provision of universal service.

The disadvantages of this mechanism are:

- the possible conflict of interests which arises because the dominant operator is granted the right to oversee and collect subsidies from its competitors to cover a portion of its own expenses. The former will have no incentive to reduce its cost of providing universal service, since this would also benefit its customers.
- the absence of transparency because the mechanism is based on the TO's calculation of its costs and on its own price structure and charges. Given the complexity of accounting systems and the subjective choices to be made as regards cost allocation, the actual cost of universal service will never be certain. Access charges might be funding profits instead of compensating costs.
- As the universal service obligation is imposed only on the dominant operator, no other operator is allowed to compete to provide the uneconomic service (e.g. in a given rural area) in a more efficient way. New entrants have little incentive (or possibility) to compete in the more high-cost areas of the market as they are not entitled to the subsidy which the incumbent enjoys. The logical result is that they will concentrate their offers on large business users rather than domestic users. The latter are excluded from the benefits of increased choice and efficiency brought about by competition.

Although the universal service fund mechanism may be more cumbersome to set up, it does not involve the distortions that may be inherent in an access charge system. Moreover, it can be designed to favour more efficient competition and faster productivity increases and cost savings, since all operators may compete to provide universal service and be compensated by the universal service fund. The entitlement to subsidised service can be linked to needy or uneconomic customers or to particular areas rather than tying the universal service obligation to the incumbent

operator. In addition the entitlement could be reduced over time as the gap between costs and affordable prices declines¹¹⁷.

In general, therefore, preference should be given to financing universal service obligations by means of universal service funds rather than via access charges.

VII.6.4 Universal service should be monitored and reviewed

National Regulatory Authorities have a key role to play in developing and reinforcing universal service as competition in the telecommunications sector occurs. There is a real possibility to pass on the benefits of cheaper and better quality telecommunications to all, particularly if, as pricing and structural adjustment proceed, universal service concerns are targeted rather than dealt with by arbitrarily subsidising access for all.

In order to assess progress, transparent measures should be put in place to effectively survey, monitor and review universal service indicators. As a minimum such surveys should include numbers of residential access lines and penetration per household, numbers and availability of public pay phones and should detail the schemes available for those on low incomes, or low users or those with particular needs.

¹¹⁷ Universal Service Funds are special arrangements, administered by an independent body, for the collection of contributions from eligible operators to the cost of universal service obligations and the transfer of funds to operators taking on these obligations.

Universal service funds are in operation or under development in a number of countries and are normally established under strict regulatory oversight, see WIK study on "Network Interconnection in the domain of ONP" for details of universal service funds and their operation in specific countries.

There are two important characteristics of universal service funds which distinguish them from the use of access charges to finance the cost of universal service obligations. Firstly, payments and receipts are in a lump-sum form rather than added to interconnection charges and are, therefore, less distortionary. Secondly, the use of universal service funds makes it easier for competing or additional operators to share in the provision of universal service by allowing them to share in the possible subsidies associated with it.

The idea of universal service funds is based on the understanding that new entrants should have the option of either paying (i.e. directly into a fund) or providing service (i.e. part of the actual universal service). Where they do the latter they should receive the same amount of "credit" for such provision as the incumbent would have done. Common basic principles of schemes, currently operating or under development, include (i) un-economic customers need to be defined and identified, (ii) eligible operators are assigned an amount of universal service obligation which is proportional to their revenue or market share, (iii) the obligation may be discharged by operators in "cash or kind", i.e. by paying into the fund or providing service to un-economic customers, or a mixture of the two, (iv) operators who provide un-economic service in excess of their assigned obligation would receive the appropriate payment (or balance) from the fund, and (v) the administration of the USF is carried out by a regulatory authority or an authorised, neutral third party. The issue of financing universal service was discussed in detail during the public consultation on future regulation in France (See Consultation Publique, DGPT, April 1994). It is also an issue currently being considered by OFTEL in reviewing the UK's current regime for interconnection.

In addition, the concept of universal service should be reviewed to assess the implications of the changing technological situation, market developments and changes in user demands.

VII.6.5 Conclusions

- Universal service consists of access to a defined minimum service of specified quality to all users at an affordable price based on the principles of universality, equality and continuity. A key aim across the European Union should be to ensure that the benefits of cheaper and better quality telephony and other benefits of increased competition and choice are passed on to all users.
- Tariff re-balancing remains a major objective in the context of the liberalisation of telecommunications services, whilst catering for the needs of users vulnerable to re-balancing.
- In the interests of further developing common Union-wide principles and elements of universal service, the Commission is re-submitting to Council and Parliament its proposed Directive on the application of open network principles to voice telephony.
- Instead of generally subsidising local access, NRAs should favour tariff re-balancing and in conjunction with TOs arrange for specific tariffs targeted at the requirements of needy or uneconomic customers. Such targeted or social tariffs should be arranged within the framework of an optimal or multiple tariff structure.
- Only telecommunications-related public service obligations should be treated as universal service obligations in voice telephony. NRAs should calculate the cost of USOs as the net cost of providing service to uneconomic customers, plus any costs associated with the uneconomic provision of public telephones, emergency services and other social obligations. Network operators should be freed from non-telecommunications related obligations.
- The uneconomic costs of USOs should be financed either through national universal service funds or where not possible via access charges to be added to interconnection charges. Preference should be given to financing through universal service fund rather than via access charges. Operators and service providers should contribute, subject to the principle of proportionality and the financial responsibility should be spread as broadly and equitably as possible.
- For those countries which have embraced 1998 as the deadline for the full liberalisation of telecommunications services, infrastructure liberalisation will not entail an additional burden on the financial ability of TOs to honour their universal service obligations. In fact universal service may be enhanced to the extent that other infrastructures can be exploited or service quality improved. However, to the extent that competing infrastructure operators are likely to target high volume or sophisticated users, TOs should be given more flexibility in responding to competition in their pricing of bulk capacity or bulk usage, subject to competition rules.

- In order to thoroughly monitor universal service provision, NRAs in conjunction with the Commission should periodically survey main indicators of universal service, in particular penetration of residential lines, waiting times, provision of public pay phones and the availability of targeted schemes for the needy and uneconomic customers.
- The Commission seeks views on the most appropriate and practical means of developing means of financing the burden of uneconomic universal service obligations in a competitive environment, bearing in mind the comments above and the different situations of Member States.

VII.7 The particular circumstances of peripheral regions with less developed networks

Council Resolution 93/C213/01, which established the deadline of 1 January 1998 for the liberalisation of all public voice telephony services, granted Member States with less developed networks, i.e. Greece, Ireland, Portugal and Spain, an additional period of up to five years in order to achieve the necessary structural adjustments, in particular of tariffs.

Additionally, Council Resolution 93/C213/01 also noted that Member States with very small networks can, where justified, be granted a transitional period of up to two years.

Subsequently, Spain has established 1998 as a target date for the total liberalisation of voice telephony. In order to fully prepare for the 1998 deadline, the intervening period is being used to extend service coverage throughout the country, adjust pricing structures to competitive conditions and establish the way in which public service obligations with respect to voice telephony will be defined and financed.

Pricing and structural adjustments are also being prepared and undertaken in the other three countries granted additional transition periods for services liberalisation. No firm indication has yet been given on whether these countries intend to use part or all of the additional period granted.

VII.7.1 Pricing and structural adjustment

Concern has been expressed about introducing services liberalisation while price structures are substantially out of line with costs because competing operators could target highly profitable telecommunications services or highly profitable customers, such as large business customers for long distance or international services and gain market share merely on the basis of existing substantially distorted tariff structures. This could undermine the ability of the TOs to meet investment requirements.

On the other hand, postponing competition is likely to delay structural and pricing adjustments, limit investment from additional sources and exacerbate divergence with other Member States. The example of the rapid take-off of competitive mobile communications demonstrates that there is considerable pent-up demand for modern,

effective telecommunications even in peripheral regions with less-developed networks.

Table VII.7.1 - PSTN tariffs in Greece, Ireland, Portugal and Spain, beginning of 1994.¹¹⁸

	Peak 3 minute local call (ECUs)	Peak 3 minute intra-EU call (ECUs)
Greece	0.03	0.95
Ireland	0.14	1.11
Portugal	0.05	1.25
Spain	0.06	1.17
EU average	0.12	0.84

Table VII.7.1 demonstrates that, even taking into account differences in pricing and cost structures because of specific national situations, considerable divergence from Union averages for tariff structures still exist for the countries concerned. This emphasises the need for National Regulatory Authorities to continue their programmes of adjusting and lowering TOs' pricing structures in preparation for liberalisation.

VII.7.2 Service coverage and investment

The four countries which have been granted additional transition periods for full telecommunications service liberalisation have levels of network penetration or service coverage which are below the Union average. Moreover, within the countries concerned, and indeed in some specific regions in other Member States, there are areas with significantly lower levels of penetration.

¹¹⁸ Source : Tarifica, Omnicon

However, substantial investment programmes have and/or are being undertaken to close the gap with other Member States. Depending on the priorities which have been set by national governments for the use of Union Structural Funds, the extension of coverage to some of these areas is benefiting from financial assistance.

The role of telecommunications in promoting economic development and competitiveness and ensuring social and regional cohesion has been clearly recognised by the Commission. Funding under the Community Support Framework and on-going lending programmes by the European Investment Bank continue to make a substantial contribution to the development of telecommunications services and network investment in the Member States concerned.

The Structural Funds have been contributing substantial amounts to the modernisation of telecommunications infrastructures in Member States, particularly in less developed one, and important telecommunications programmes have been agreed in the context of the 1994-1999 Structural Fund programmes. The Commission has been careful to choose the appropriate intervention rates to ensure that the benefit of Community financial assistance goes to the consumer and that this assistance is intended to materialise investments which would not have otherwise taken place. This is particularly true for investment programmes in telecommunications with revenue bearing potential and also in cases where the investor, from the Member State point of view, is not a public body but private capital has also been mobilised. The Commission will ensure that these principles, which of course are applied after careful examination of the economic and other aspects of the investments concerned, will continue to apply in a liberalised environment in the telecommunications sector.

Current levels of network penetration and investment in the four countries compared to the Union average are given in Table VII.7.2.

Table VII.7.2 - Network penetration and investment in Greece, Ireland, Portugal and Spain¹¹⁹

	Mainlines per 100 inhabitants (thousands) end of 1993	Capital expenditure by TOs as a percentage of revenue¹²⁰
Greece	45.8	40.6 %
Ireland	32.3	23.4 %
Portugal	33.5	45.6 %
Spain	36.4	57.4 %
EU average	45.4	37.0 %

¹¹⁹ Source : IDATE, 1994

¹²⁰ Capital expenditure is an average over the five years 1989-1993.

VII.7.3 Universal Service Obligations in the context of less-developed networks

The same principles of universal service provision and financing uneconomic universal service obligations in a competitive environment as outlined in the previous section apply in the context of less developed networks. The objective must be to ensure that the potential benefits associated with commercial and technological changes in a competitive telecommunications environment are passed on to all consumers and users. In particular, this means that all the benefits of increased competition and choice should be made available to users.

Less favoured regions face a number of difficulties, in particular, because lower per capita levels of GDP produce smaller revenues and because low population densities and more difficult geographical conditions cause higher infrastructure costs.

Council Resolution 94/C 48/01 recognised that in pursuing the objective of maintaining and developing a universal telecommunications service, account will be taken of the specific circumstances of the peripheral regions with less-developed networks and the role which the appropriate Community support framework may play having regard to national priorities.

The additional considerations that apply, therefore, in the context of the agreement on the liberalisation of all telecommunications services are firstly, the timing of services liberalisation and secondly, the extent to which Member States exploit additional financing mechanisms for required investments.

At the same time, calculating the cost of providing uneconomic universal service obligations in situations where network coverage is still being increased substantially and where pricing structures are still significantly distorted is more problematic than estimating the burden of uneconomic universal service obligations where coverage is already extensive.

A number of policy options are, therefore, available during the transition to a competitive environment in the context of Member States which have been granted additional periods. One is to delay the assessment of the cost of uneconomic universal service obligations until pricing structures are adjusted, network coverage is extended and competition is introduced. A second is to exploit network access charges to allow for the introduction of competition in advance of adjustment and extension of network coverage. A third is to examine other means of providing and financing extensions of universal service, in particular by examining requirements for universal service on a regional basis.

Nevertheless in choosing between the various policy options, these Member States must continue to focus on the extension of universal service and the development of advanced telecommunications infrastructures and services. This is vital to meet the needs of an advanced economy and will be central to attracting inward investment over the longer term. In this context full use should also be made of appropriate Community support frameworks, including Cohesion Funds to assist network development.

VII.7.4 Infrastructure liberalisation

As argued in Part One of the Green Paper and in the previous section of this document, the Commission believes that there are significant benefits in linking infrastructure liberalisation with the timetable established for the liberalisation of telecommunications services, provided the appropriate safeguards dealt with in this part of the Green Paper are put in place.

In the case of the Member States granted (according to Council Resolution 93/C213/01) additional transition periods for structural adjustment in the context of services liberalisation, the Council Resolution of 17 November 1994 recognised the principle of general liberalisation of infrastructures by 1 January 1998 and linked additional transition periods of up to five years for infrastructure liberalisation to the use of the additional transition periods for services liberalisation

VII.8 Competitive Safeguards

A major condition for the full development of the potential offered by the removal of exclusive and special rights over infrastructures and the development of a common regulatory framework will be the strict application of the Treaty competition rules¹²¹ to the provision and operation of communications networks in the Union, and the services delivered over them.

Those rules will be central not only to the determination of who will be the main market participants, but also to ensuring that all actors can compete on a fair basis.

In a market which will be for many years characterised by the presence of dominant operators controlling bottleneck facilities, a level playing field will only be possible by reinforced scrutiny of compliance with the competition rules. Otherwise the emergence of competition will be stifled. This will imply, where required, the establishment of the appropriate procedures and safeguards, in particular in the following areas:

VII.8.1 The examination of interconnection agreements

As mentioned in chapter VI.4.2 procedures, according to a regulation to be adopted by the Council, should be envisaged to set out the conditions under which agreements are compatible with the principle of effective competition.

¹²¹ Articles 85, 86 and 90 of the Treaty and the rules of the control of concentrations set out in Regulation 4064/89/EEC of 21 December 1989, OJ L257, 21.9.90. In order to clarify the application of the Treaty rules to the telecommunications sector, the Commission adopted guidelines in 1991 (91/C233/02).

VII.8.2 The conditions of access applied to competing infrastructure providers and for service provision

Refusal, by an infrastructure provider in a dominant position, to grant access to its network should be closely monitored; as should potential discrimination in cases where such an infrastructure provider also provides services competing with those of the service provider requesting access.

VII.8.3 Schemes established for financing universal service

To avoid universal service becoming an excessive burden for new entrants, the neutrality of the mechanisms put in place for its financing should be assessed.

VII.8.4 Access to rights of way

When granted to a sole company, rights of way substantially affect the ability of other undertakings to compete. Granting rights to establish infrastructure without granting rights of way would effectively prevent, or at least delay for many years, the establishment of competition in the local loop. Objective reasons of non-economic nature, such as environmental concerns or the risk of traffic congestion, could justify a limitation on the number of rights of way granted.

The Member States should in those cases, examine how joint use of facilities could be encouraged, and, where required, made mandatory, in order to overcome bottleneck situations.

The broader issues of access to rights of way in a regulatory context is addressed in VI.10.1 below.

VII.8.5 Cross-ownership of different networks and joint provision of network and services

Cross-ownership should not be excluded a priori, given the possible synergies and economies of scope and scale, in particular between cable television networks and telecommunications and other utilities.

Vertical integration, i.e. infrastructure providers who also provide telecommunications services, also may offer considerable advantages to the users. Allowing end-to-end responsibility by the same company may, for example, be perceived as important.

Such combination of activities across distinct markets should, however, be closely monitored. This implies, firstly, the establishment of transparent accounting structures, including the separation of accounts for telecommunications and non-telecommunications activities, as well as the implementation of transparent cost

accounting systems for infrastructure providers who also provide telecommunications services. Secondly, it implies a review at a certain date to assess whether such transparency suffices to avoid possible abuses, such as cross subsidisation, or whether further action is required.

Even with the inclusion of appropriate safeguards in both the European and national regulatory frameworks, the role of the Treaty competition rules is likely to be of increasing importance.

This is particularly true, given the fact that they give rights to businesses which can be relied on within the national legal system, as well as through the intervention of the Commission.

The competition rules, alongside national legislation, will also determine to a large extent who will be the major market players, as clearance from competition authorities will be required for many of the new global and regional partnerships and alliances involving European partners, such as those between BT and MCI, DBPT and France Telecom and now with Sprint, and between Unisource and AT&T.

According to their co-operative or concentrative nature, such ventures will continue to be considered either under the provisions of Article 85 EC¹²² or under the rules relating to the control of concentrations¹²³.

One factor in any such assessment will be the potentially positive benefits of such co-operation through the promotion and creation of pan-European networks and services or improved interconnection and interoperability at a European level.

¹²² Article 85(1) EC indicates : The following shall be prohibited as incompatible with the common market: all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States and which have as their object or effect the prevention, restriction or distortion of competition within the common market, and in particular, those which: (a) directly or indirectly fix purchase or selling prices or any other trading conditions; (b) limit or control production, markets, technical development, or investment; (c) share markets or sources of supply; (d) apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage; (e) make the conclusion of contracts subject to acceptance by the other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject matter of such contracts.

2. Article 85(2) Any agreements or decisions prohibited pursuant to this Article shall be automatically void.

3. The provisions of paragraph 1 may, however, be declared inapplicable in the case of [any agreement] which contributes to improving the production or distribution of goods or promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit, and which does not: (a) impose on the undertakings concerned restrictions which are not indispensable to the attainment of these objectives; (b) afford such undertakings the possibility of eliminating competition in respect of a substantial part of the products in question.

¹²³ Commission Notice of 14 August 1990 regarding the concentrative and co-operative operations under Council Regulation (EEC) 4064/89 of 21 December 1989 on the control of concentrations between undertakings, (Revised version to be published)

At the same time, any assessment of the competitive impact of these new arrangements will have to take into account the extent of competition in the home markets of the participants.

With the advent of new forms of co-operation across traditional industry divides in order to meet the demands of the Information Society, the competition rules will continue to play an important role. Already in North America, there have been a spate of mergers and joint ventures designed to link network, service, equipment and content providers within one unit.

Future policy will have to tackle the potential bottleneck created by content, the raw material for many future services. The Commission will in particular ensure that co-operation across traditional divisions of industry does not reinforce current dominant positions in the separate markets for content, technical facilities and services. The Commission has already refused to allow a merger aiming to combine delivery networks with ownership of programmes and films since this would, in particular, have allowed the incumbent (EU) telecommunications operator involved to reinforce its dominant position in the market for cable network service, in which the operator had *already* extended its dominant position in the separate market of voice telephony¹²⁴. The ultimate test will be whether competitors could still reasonably enter the market if the co-operation was allowed. This test should always be applied to the least competitive market involved, which is, currently, the market for the provision of communications networks.

With the development of multimedia applications in parallel with the introduction of digital TV technology expanding television services possibilities, the Commission is likely to have other complex multimedia co-operation agreements to consider over the next few years. The introduction of competition in the public communications network-provision market as well as the development of open application systems, would reduce the possible anti-competitive effects of such co-operation and convergence.

The application of the competition rules must progress alongside with the achievement of other Union policy goals such as cultural diversity and evolving policies in areas equally at the core of the Information Society such as media concentration and intellectual property rights. This is returned to below.

At the same time, currently divergent situations in the Member States should not in themselves be a pretext to avoid or delay the introduction of competition in network provision.

VII.9 The international dimension - international trade in telecommunications services

Measures to create an internal market for telecommunications services have a substantial external impact in both the Union's bilateral relations and, in particular, with its relations with:

¹²⁴ *Media Service GmbH*, Commission Decision of 9 November 1994, see Press Release IP/94/1045, 9.11.94

- the GATT/WTO
- international and regional telecommunications organisations such as the ITU and CEPT, and
- the Union's bilateral relations.

As Union policy is developed internally this needs to be reflected in the international sphere.

Further liberalisation in a range of telecommunications service and in infrastructure raises a number of important international considerations, namely : (i) the implications for the Union of third country entrants into its market; (ii) the interests of Union companies in third countries and whether similar market opportunities are available; (iii) how to ensure comparable and effective access; and (iv) the interaction between the Union and action in international fora promoting market liberalisation.

VII.9.1 Participation by non-EU or EEA nationals or companies controlled by such nationals in the EU market

Participation of third country companies in the EU is already significant. Many non-EU companies are key players in the Union's value-added and liberalised telecommunications services markets. Increasing participation is seen in the mobile sector, in business communications (outsourcing, one-stop shopping, Virtual Private Networking), as well as in the area of 'private' ('non-public') corporate communications.

Moreover, market access has not been limited to areas liberalised through EU legislation: *de facto* market access has been available as Member States remove monopolies in fields which have only recently been addressed by EU telecommunications policy. For example, US companies, in particular, are key participants in nearly all of the mobile and cable consortia being set up in the Union. This includes operators with local monopolies in their home markets. Similar developments can be seen in the areas of satellites, simple resale of voice telephony and the provision of call direct or third country calling services.

VII.9.2 Interests of Union companies in third countries

Opportunities

European companies, too, are increasingly participating in third country markets, not only in value-added and 'non-public' services but also as providers of public voice telephony, in so far as this is possible within the constraints of current regulatory restrictions in other countries. (See USA and Japan below). Examples include Telefonica's purchase of a three-quarter share (indirect) of the assets of the Puerto Rico long distance telephone company, where it is now providing telephone services in competition with AT&T and others; and British Telecom's joint venture with and participation in MCI, the second largest long-distance carrier in the US. Cable & Wireless has a share of 17.5% in the New Common Carrier IDC in Japan and France

Télécom has created Japan Multimedia Services along with 19 companies (mostly Japanese) to provide information services (financial, tourism, real estate etc.). Currently JMS is in negotiations with NTT to offer a Japanese version of Minitel Videotex service using NTT's circuits.

Obstacles

Access for EU companies to many third countries is hampered by limitations on services that can be provided, ownership restrictions, unreasonable reciprocity requirements or burdensome conditions imposed that are not applied to domestic companies. Difficulties encountered in two key markets, namely the USA and Japan are highlighted.

The USA

In addition to a number of statutory restrictions on ownership, the US government will increasingly make market access for third country companies conditional upon achieving reciprocity in those countries. European industry reports that market access is either prohibited by ownership restrictions or narrow reciprocity requirements, or else the environment is rendered too uncertain to justify participation. In particular this has been achieved by :

- Use by the FCC of discretionary clauses in statutory legislation¹²⁵ to:
 - make the level of market access authorised conditional upon the same degree of market access being available in the country of the firm applying for authorisation (leading to long delays); and
 - impose a number of restrictive conditions on the provision of service, again on the grounds of conditionality (leading to a reduced ability to compete with US firms).

These measures raise two sets of questions. Firstly, the justification for seeking equivalence narrowly by telecommunications sub-sector, at the same time as market access in other sub-sectors may be enjoyed. Secondly, questions arise as to at what point, if any, it can be justified to seek reciprocity or impose restrictive conditions to protect *per se* the position of national carriers, as distinct from seeking a degree of equivalence in order to protect national carriers from being unduly penalised by the workings of the international voice telephony system and its increasingly out-dated methods of re-imbursement mechanism between carriers.

¹²⁵ Section 214 of the Communications Act of 1934 and the Cable Landing Licence Act: Section 214 requires that common carriers may not construct or acquire new lines or extend existing lines unless the FCC determines it would be in "the present or future public convenience and necessity" and it provides that the FCC may attach such conditions to the issuing of the certificate of authorisation as it thinks are in this public interest. However, there is no definition of what is in the public interest, nor are there any set criteria for the FCC to use in order to arrive at a decision. Authorisations for some foreign companies to provide certain services are currently being delayed while "equivalency" is being sought. See also Section 2 of the Submarine Cable Landing Act.

- The Communications Act limits foreign ownership of operators of telecommunications services requiring radio licences in the US¹²⁶. European firms are only able to obtain radio licences for common-carrier mobile services in the US through minority ownership without control. TOs deemed to be representatives of foreign governments are prohibited from holding a radio license altogether.
- "Dominant carrier rule": The FCC classifies as "dominant" all US or foreign-owned carriers, irrespective of their size or market power, on those routes where their foreign affiliates have the ability to discriminate against unaffiliated US international carriers through control of bottle-neck services and facilities in the foreign market. Any company affiliated with a major TO will be presumed to be dominant on the route to the country of that operator. The classification as "dominant" or "non-dominant" for a foreign company is a crucial issue because dominant carriers face much heavier regulation. The practical effect is that burdensome regulations may be imposed in the United States on foreign companies which are far smaller than US companies which escape regulation.

Japan

In spite of many areas of liberalisation implemented by the Ministry of Posts and Telecommunications, as well as the government's declared general policy objective of deregulation, European users and TOs find that market access is impeded by an array of remaining regulatory obstacles, as well as by the dominant presence of NTT and KDD. In addition, European companies feel they need greater transparency in implementation of Japan's regulatory framework. In particular:

- *restrictions for type I business:* European companies can choose to enter the Japanese market through shares in existing service provider firms. However, only one third foreign ownership is allowed for type I carriers (those which use their own infrastructure) with further restrictions on access to management in the case of NTT and KDD. In addition, licenses for new type I carrier are authorised by the regulatory authority applying the demand supply clause (e.g. not granting license when MPT estimates that the market and business perspective which must be submitted by the applicant is not realistic).
- *restrictions for type II business:* In case European firms decide to establish themselves independently (and without setting up their own infrastructure to avoid the constraints outlined above) they need to obtain a license as type II carriers. European service provider firms are primarily interested in offering international telecommunications services. In this case, the

¹²⁶ Section 310 of the Communications Act imposes limitations on foreign investment in radio communications: no broadcast or common carrier licence may be held by foreign governments, or companies in which more than 20% of the capital stock is owned by a foreigner (25% if the ownership is indirect). The Act provides for waivers to be made by the FCC in the specific case of indirect ownership, if it finds that this would be in the public interest, but the FCC has never used this possibility.

Telecommunications Business Law prescribes obtaining the status of special type carrier on the ground that they offer "public" services. It is this status which is the origin of procedural difficulties and business constraints, such as:

- the conditions attached to obtaining an authorisation by MPT (submission and authorisation of "operating agreements", obligation to recruit of local expert staff, etc.)
- the obligation to negotiate non-tariff based contracts with a type I carrier is deemed by industry to be onerous and obliges firms to discuss with their potential competitors
- the obligation to publish tariffs and to obtain authorisation for new services which a firm wants to introduce
- the lack of a clear definition of value added services, leading to an uncertainty in obtaining authorisation for services
- the difficulty to access relevant regulatory rules and legislation¹²⁷
- the uncertainty about response times and about the decision criteria applicable when dealing with the regulatory authority¹²⁸
- *limitation of international service provision:* Certain international services are subject to restrictions (third country calling, breakout, re-routing, interconnection to PSTN, resale of international leased lines).
- *limitations applicable to wireless services:* In principle, no radio station licence is granted to foreign entities¹²⁹.

VII.9.3 Ensuring comparable and effective market access in third countries

Liberalisation in the Union must go hand in hand with expanding comparable and effective market access in third countries.

WTO/GATS multilateral negotiations

This overall aim is necessarily linked in particular to the on-going negotiations in the WTO (the World Trade Organisation). These multilateral negotiations provide the

¹²⁷ The Telecommunications Business Law Enforcement Rules are not available in European languages.

¹²⁸ Since 1 October 1994, the Administrative Procedure Law entered into force. As a consequence, the telecommunications regulatory authority, MPT, has published "typical response times" and applicable criteria for interaction between applicants and regulatory authority. The practice of these new rules needs to be verified in practice.

¹²⁹ i.e.: a non-Japanese citizen; a foreign government or its representative; a foreign juridical person; or a juridical person one third or more of whose senior managers are, or voting rights are held by, any of the preceding kinds of persons or bodies.

best way of achieving a balanced set of commitments in all services sectors, along with the establishment of international trading rules.

Trade negotiations in general, and services trade policy in particular, have two key aims: firstly, the establishment of trade rules and disciplines which are mutually advantageous; and secondly, a reduction of barriers to trade by means of a balanced contribution by all parties to the removal of trade restrictions, such as foreign ownership restrictions and reciprocity requirements.

Furthermore, effective market access for telecommunication services hinges on the conditions of competition within a country or region, and involves a range of issues related to national or regional regulatory frameworks, so that general trade rules and disciplines need to be clarified in order to provide a set of rules or guidelines on access to and use of public telecommunications transport networks and services.

The Uruguay Round of trade negotiations on services resulted in a general framework of rules governing trade in all service sectors and the exchange of legally binding liberalisation commitments (together known as the General Agreement on Trade in Services or GATS). The GATS framework applies to a country's "measures" (legislation or rules) that affect trade in services. Some GATS rules apply to trade in all service sectors, notably those concerning Most Favoured Nation Treatment¹³⁰ and Transparency¹³¹, whilst others apply only to sectors inscribed in the country's schedule of liberalisation commitments.

For the telecommunications sector, the general GATS framework is supplemented by the provisions of the Telecommunications Annex on access to and use of the public telecommunications transport networks and services for the provision of telecommunications and other services.

Since most countries were not ready to make commitments on so-called "basic" services at the end of the Uruguay Round, these are being negotiated in an extension of the Round with a deadline scheduled for April 1996. To date about 25 countries have joined these negotiations, including the European Community, the US and Japan.

The mandate and modalities for the continuing negotiations are set in a Ministerial Decision, supplemented by a second GATS Annex on telecommunications. The scope of the negotiations is broad: no "basic" telecommunications services are to be excluded a priori. As for the rules applicable during the period of negotiations, parties have agreed to a standstill clause. This standstill commitment is a general one, whereby countries undertake a broad political commitment not to apply measures (legislation or rules) which would improve their negotiating position. It is intended to provide some guarantees on the overall balance of countries' regulatory behaviour while negotiations are under way. Parties have also agreed to suspend the

¹³⁰ "With respect to any measure covered by this Agreement, each Member shall accord immediately and unconditionally to services and service suppliers of any other Member, treatment no less favourable than that it accords to like services and service suppliers of any other country." Art II.1, GATS.

¹³¹ A requirement to make publicly available information on conditions affecting access to and use of public telecommunications transport networks and services.

application of most favoured nation treatment for the course of the negotiations. This principle (which includes a requirement to list any legislation or rules which are inconsistent with its provisions) will become applicable to "basic" telecommunications only when the negotiations end.

In the event of a failure of the negotiations, parties could request an MFN exemption for measures which are inconsistent with MFN, thereby retaining their right to discriminate among WTO parties.

VII.9.4 Interaction between liberalisation in the Union and multilateral processes

Effect of the Uruguay Round results on the Union market

The European Community has made a commitment to bind a range of so-called value-added services, which will come into force at the same time as the WTO itself, scheduled for January 1995. At this time everything in the commitment will be subject to the GATS and its Annexes, and will be formally bound open to competition to third country companies. The commitment, like that of most countries, excludes "basic" services - the largest part of the market - reserving these for the on-going negotiations in Geneva, as described above.

Possibilities for "protection" of the EU market

Given that the WTO/GATS process is still ongoing, there is at present no mechanism to ensure that market access granted in the Union, de jure or de facto, is adequately compensated elsewhere. Whilst some Member States have in place legislation which may be used to limit the possibilities for foreign companies to invest in telecommunications ventures or to provide services, the EC Treaty does not generally allow the discrimination between EC-owned companies and non-EC owned companies established in the Community.

Until the results of the WTO/GATS negotiations are clear, it is important that the Union reserves its right to maintain equivalent conditions to those currently prevailing in third country markets with regard to market entry or the licensing of non-EU or EEA nationals or companies controlled by such nationals. The objective of imposing such conditions would be to promote open markets in third countries for European network operators and service providers through negotiations.

Timing for external trade liberalisation

Any future WTO/GATS commitments by the European Community in the area of "basic" telecommunications services will have to be properly related to the internal process within the Union and timetable outlined in the Council Resolution of July 1993. Similarly the Union's position on the shaping of the "rules of the game" will need to remain closely linked to developments in the internal regulatory framework in order to ensure consistency between its internal and external positions.

Common Community positions in international organisations

Major future standards, frequency and numbering decisions will be taken in the ITU (International Telecommunications Union), which will involve co-ordination in the

ITU's committees and working groups dealing with these issues. The current global developments in the ITU will facilitate the future development of telecommunications at a world level but will in some cases also require the strengthening of co-ordination mechanisms, as set out in the Council Resolution of 30 June 1988, which provided that common positions are to be adopted in international fora, wherever relevant.

The Union's principal trading partners attach major significance to their position in international organisations and commit substantial resources and political weight to their international negotiating position in the ITU. The Union also takes a strong interest in the work of the ITU's BDT¹³².

¹³² Bureau de Developpement des Telecommunications

Bilateral relations

Finally, Union policy must be seen in the context of the overall relations of the EU with regard to other parts of the world: the deepening of its relations with developed countries and an active role in Europe's regional telecommunications bodies, structured around the CEPT, as well as building up relations with the Mediterranean countries; the contribution to the full use of telecommunications in the developing countries in the context of its relations with the African, Caribbean and Pacific (ACP) countries in the framework of the current Lomé convention; as well as assisting development projects elsewhere, and particularly in Central and Eastern Europe and the New Independent States of the former Soviet Union.

For Central and Eastern Europe and the New Independent States of the former Soviet Union, in particular, promotion of co-operation and technical assistance to support the integration of their communications networks with the rest of Europe and the world, will remain a major goal during the rest of the decade, on the basis of the relevant Community programmes (PHARE/TACIS), the respective Association Agreements which have been concluded and the Partnership and Co-operation Agreements which are being negotiated with Russia and other republics of the former Soviet Union.

VII.10 Access to rights of way, numbers, frequencies, and directory services

In order to guarantee the successful development of a competitive market for infrastructure, steps must be taken to open up access to a number of resources which will be crucial to the effective establishment and operation of telecommunications networks and to the offering of services over them. These concern rights of way, frequency for wireless network components, numbering and directory and subscriber information.

VII.10.1 Access to rights of way

Member states should grant rights of way to communications network operators according to open and transparent procedures.

Where environment requirements (such as avoiding road congestion), or other essential requirements, prevent the granting of rights of way to all potential applicants, the Member States should introduce schemes for the sharing of ducts on a voluntary basis and consider, where it is deemed necessary to avoid bottleneck situations, the introduction of mandatory duct-sharing.

To introduce competition in the market for infrastructure provision, Member States will need to ensure that the incumbent telecommunications organisations are subject to the same regulatory conditions as their competitors regarding rights of way, and provide for mandatory sharing of facilities where necessary to bring down barriers to entry.

VII.10.2 Numbering

Because of the huge cost involved with major number plan changes, numbers for telecommunications services can be considered as a finite and potentially scarce resource. Moreover, numbering is as a key facilitator - a pivot in market liberalisation and the introduction of competition. It is therefore necessary to ensure that developments of telecommunications networks and services are not hampered on numbering grounds. This challenge needs to be addressed by careful management of the overall numbering schemes, at the global, European and national level.

Numbering is not an issue which results from infrastructure liberalisation *per se*; liberalisation of voice telephony services in 1998 will in any case lead to new demands for telephone numbers. Infrastructure liberalisation will however stimulate many new services, some of which will need new number allocations.

Principles of EU telecommunications policy governing numbering and number allocation were described in the Mobile Green Paper¹³³.

In summary, the Community approach involves:

- separation of operational and regulatory activities in Member States, with the national numbering plan under the control of the national regulatory authority
- setting out basic principles for access to and allocation of, numbers
- adopting specific measures for key access codes (112 for emergency services and 00 for international access)
- recognising ECTRA, and the European Telecommunications Office (ETO) and the European Numbering Office (ENO) within it, as a forum for developing and co-ordinating numbering policy for Europe, under the terms of the MoU with ECTRA and a Framework Contract with the ETO, signed in September 1994,
- developing common European positions and setting priorities for action at a European and international level.

There are fundamental decisions on numbering reform for Europe which must be taken by the middle of 1995. They are centred around four strategic options for numbering of telecommunication services in Europe¹³⁴, designed to provide a phased

¹³³ COM(94)145, 27.04.1994, Annex D, section 9

¹³⁴ "Strategic Options for Numbering of Telecommunication Services in Europe", Report by the ECTRA project team on numbering (PT/N), 1994. This report was based on a Commission study "The potential opportunities afforded by a new European telephony numbering space". Its four options are as follows. Option 1: Do nothing until market forces change; Option 2: Open European numbering space for special services e.g. freephone, premium rate, shared costs; Option 3: Implement a 3 digit country code for Europe with the last two digits managed by a European authority, opens ways for European carrier selection and migration of pan-European services into a common numbering scheme; Option 4: Implement a open and fully integrated numbering scheme for Europe i.e. such as the North American numbering scheme, opens ways to roll out seamless intelligent network services across Europe.

evolutionary approach to progress from the present situation to a fully integrated numbering scheme for Europe.

Priorities for European numbering policy are:

- opening up a European numbering space for special telecommunications services, in particular freephone services

Preparatory work is underway on a European numbering space for special services e.g. freephone, premium rate, shared costs, which will require allocation by the ITU of a virtual country code for Europe. This virtual country code can be seen as the first step in establishing a parallel European numbering space for pan-European services.

- a common European approach for numbering plans.

National numbering plans must be stable yet flexible, facilitate the development of trans-European services, and facilitate the long-term development of services.

- a "best practice" guide for NRAs on the administration and control of the national numbering schemes.

Strong guidelines are required, as a minimum, for the following issues: customer and number ownership, portability and tradability; number length and commercial value; access to unique services e.g. access to directory enquiry services and emergency services; and Data Network Identification Code (DNIC) and Data Country Code (DCC) allocation procedures.

Work is also done on the issue of user-friendliness of numbering. An investigation of the possible re-introduction of alpha-numeric dialling is part of this work.

In preparation for the future liberalised telecommunications environment, the Commission is preparing a reform package for submission to the Council before 1 January 1996. This package will have to address *inter alia* the subject of numbering reform in Europe.

VII.10.3 Access to Frequencies.

The availability of radio frequencies is an essential element for the development of radiocommunications equipment and services, in particular in the fields of mobile and personal communications, satellite communications, and broadcasting. Principles of EU telecommunications policy governing frequencies and frequency allocation were described in the Mobile Green Paper¹³⁵

A European framework for frequency allocation is now in place, providing:

¹³⁵ COM(94)145, 27.04.1994, Annex D, section 4

- separation of operational and regulatory activities in Member States with regard to frequency allocation
- technology-specific measures to promote the co-ordinated introduction of pan-European services (GSM, DECT, ERMES)
- recognition of the European Radiocommunications Committee (ERC) and its European Radiocommunications Office (ERO) as a forum for co-ordination of frequency allocation in Europe, under the terms of Memorandum of Understanding and a Framework Contract signed with the European Commission on 21 April 1994.

Priority actions for Europe in the area of frequencies are:

- rapid action in the short term in the areas of TETRA, satellite based personal communications systems, and UMTS¹³⁶, including the designation of harmonised European frequency bands for crucial systems and services¹³⁷
- comprehensive review of the frequency spectrum below 2000 MHz., including a review of the balance of frequency usage between broadcasters, network operators and mobile and personal communications operators.

In the medium to long term, the further growth of the mobile and personal communications sector can only be fostered if the sector is designated a bigger share of the total available spectrum. Best estimates available call for an extra 100-200 MHz in addition to the current allocations¹³⁸. Because the release of spectrum below 2000 MHz requires a long period, it is important to start this process early.

- responsive and co-ordinated frequency allocation procedures

¹³⁶ Replacement of the current ERC Recommendation on DCS-1800 by a Decision. For TETRA, a major future technology for trunked mobile radio, a similar action is needed to allocate the necessary frequencies. Further action is required for satellite-based personal communications systems including LEO systems. Finally, firm decisions are required for implementation of the frequency bands designated at WARC-92 for the UMTS/FPLMTS, which action is considered vital to the development of UMTS in Europe.

¹³⁷ On TETRA a final report is to be submitted by October 1995; on DCS-1800 a final report is due by March 1995; on Satellite Personal Communications Services (Satellite PCS) a final report is due by October 1995; on Universal Mobile Telecommunications System (UMTS) a first assessment is required of how spectrum requirements for second-generation mobile systems (i.e. GSM, DCS-1800, TETRA, TETS) are likely to converge to the UMTS and in what time scale.

Other key pan-European systems for which specific work orders have been agreed include: mobile satellite applications, VSAT/SNG, satellite (sound/TV) broadcasting, T-DAB (Terrestrial Digital Audio Broadcasting), wireless LAN's, mobile broadband systems, and microwave video distribution systems.

¹³⁸ GSM MoU Group, Comments to the Mobile Green Paper of the European Commission, 7 September 1994

Liberalisation of infrastructure will place an increasing load on the existing framework, in that it will stimulate both the demand for frequencies within Member States and the need for pan-European co-ordination. Increasingly pan-European operators will require co-ordinated frequency allocation across Member States

VII.10.4 Directory services in a fully liberalised environment

The diversification of service offerings in a fully liberalised communications environment will lead to an increasing importance of telecommunications directory services. On the one hand, directory services constitute the most important support tool for accessing telecommunications services and will therefore play a central role for the use of telecommunications services in a competitive environment. On the other hand, based on new technologies and in particular the interactivity introduced by videotex services, the directory services sector itself is currently entering the multimedia field and could substantially contribute to its development.

The introduction of a competitive environment in the telecommunications sector requires the extension of the principles of Community telecommunications legislation to directory and enquiry services. In addition it will also require the maintenance of a universal directory and of an enquiry service which easily accessible and affordable for all users.

The Commission therefore proposes the following orientations for the future development of the sector:

- Maintaining a complete universal telephone directory and at least one enquiry service which contains the details of all subscribers of fixed and mobile telephony services and is available for all users at an affordable price.
- Immediate lifting of all special or exclusive rights still existing in some Member States for the provision of telecommunications directory services.
- Access to raw subscriber data must be ensured on the basis of objective, transparent and non-discriminatory criteria, and in conformity with Community legislation, in particular the competition rules of the Treaty, the principles of open network provision (ONP), the provisions on the protection of personal data and privacy and be in compliance with the applicable copyright legislation (Copyright protection of data bases).
- Promotion of new technologies (electronic directory, CD-ROM, X.500 services) and the evolution towards multimedia.
- The appropriate safeguards in respect of the protection of privacy and personal data as well as the protection of intellectual property rights should be ensured.

The Commission intends to publish a communication which discusses in detail the regulatory aspects of the future development of the directory services sector in the European Union.

VII.11 Action in Neighbouring Fields

As indicated in Part I of the Green Paper, "the regulatory principles to be developed must also take full account of Union policies in neighbouring fields, such as in the audio-visual field, in the field of data protection and privacy and of intellectual property as well as in relation to the protection of the economic interests of consumers. This should allow Union policy in relation to infrastructure liberalisation to provide the consistent response called for by the Commission's Action Plan on Europe's way to the Information Society".

VII.11.1 Data protection and privacy

For the successful development of the competitive provision of infrastructure, it is essential that rapid progress is made on the pending proposals for both a general Directive on data protection and privacy and a sector specific directive, applying the principles of the general measure to the specific requirements of digital communications networks¹³⁹.

Progress is essential to overcome the barriers to the provision and operation of pan-European telecommunications networks and services created by the divergent national rules currently in place. It is also vital in reassuring the public about network liberalisation. The proposed rules, once adopted, will provide a clear framework for effective data security, storage, processing and privacy.

The practical operation of the General Directive and the specific Telecommunications directive must be monitored, and where necessary, adapted to the challenges of the Information Society.

The need for adequate data protection should also be taken into account in developing future network standards.

Given the role of operational and call data as an essential tool in competitive service delivery and network operation, access to such information must, within the limits of the data protection and privacy, also be subject to Treaty competition rules.

Security of Information Systems is addressed in a more general context of the Action Plan from 1992 in this area¹⁴⁰. Additionally, as part of the Action Plan on Europe's way to the Information Society the Commission has announced that it will publish a Communication on security issues and the role of the Member States.

¹³⁹ Proposal for a Council Directive concerning the protection of individuals in relation to the processing of personal data, COM(90) 314, OJ C277, 15.11.90 and Amended proposal for a European Parliament and Council Directive concerning the protection of personal data and privacy in the context of digital telecommunications networks, in particular the integrated services digital network (ISDN) and digital mobile networks, COM(94) 128 final, 13.6.94.

¹⁴⁰ See Council Decision of 31 March 1992 in the field of security information systems (92/242/EEC, OJ L123/19, 8.5.92)

VII.11.2 Audio-visual / media

The new communications environment brought about by the convergence of telecommunications, information technologies and broadcasting means that any approach to the liberalisation of infrastructures over which services and audio-visual programming will be delivered must take full account of evolving Union policy in these areas.

This was recognised by the Commission's Action Plan on Europe's way to the Information Society and, in relation to the cultural implications of any infrastructure policy, is mandated by the new Title IX on culture introduced by the Treaty on European Union and set out in Article 128(4) of the EC Treaty. That provision requires

"The Community shall take cultural aspects into account in its action under other provisions of the Treaty"

The Action Plan foresees a number of policy initiatives in relation to the audio-visual area. In particular, the Commission announced that it will prepare its report on implementation and a proposal for amendment of the 1989 *'Television without Frontiers Directive'*¹⁴¹

In the context of infrastructure, it is worth recalling that that Directive sought to promote the free provision of broadcasting services, on the basis of a general rule that regulatory supervision was the responsibility of the Member State in which the programmes concerned originated. Member States were therefore obliged to allow the transmission and retransmission of such programmes in their territory¹⁴².

The Action Plan recognises that the regulatory framework for audio-visual programmes must apply whatever the mode of transmission of such programmes.

An additional issue is the extent to which divergent national regulations concerning content, and, in particular, the scope of such regulations risks creating barriers to the development of pan-European multi-media services.

The Commission is presently examining the possibility of clarifying the current framework provided by Directive 89/552/EEC

With regard to the issue of media concentration, as mentioned in the Action Plan, the Commission adopted on 5 October after consultation of all interested parties, a Communication¹⁴³ on the follow up to its Green Paper on *"Pluralism and media*

¹⁴¹ Council Directive on the co-ordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the pursuit of television broadcasting activities (89/552/EEC; OJ L298, 17.10.89).

¹⁴² To facilitate this mutual recognition the Directive harmonised certain minimum areas, with regard, inter alia, to advertising, sponsorship, protection of minors and consumer protection

¹⁴³ Commission Communication of 5th October 1994 on pluralism and media concentration COM (94) 353

*concentration in the internal market*¹⁴⁴". The Communication analyses the result of the consultation and concludes that a Community initiative on media ownership might prove necessary. A second phase of work is therefore going to be embarked upon in order to examine certain questions concerning the content of a possible initiative. A consultation will start with the distribution of questionnaire and of the results of two studies concerning the definition of media control and the feasibility of using audience measures in order to assess pluralism.

In this context the competitive provision of infrastructure, and hence delivery channels, will add an additional element to the debate.

With regard to the content of audio-visual programming, the Action Plan foresees the Commission building on the consultation on its Green Paper on *"Strategy options to strengthen the European programme industry in the context of the audio-visual policy of the EU"*¹⁴⁵. In order to promote the Information Society, the response should tackle both regulatory aspects, (e.g. promotion of European programmes), and incentive mechanisms (e.g. the follow up to MEDIA programme, the convergence of national support systems).

VII.11.3 Intellectual Property Rights

The Action Plan on Europe's Way to the Information Society indicated the need to review current and proposed rules governing intellectual property in the Union to ensure that they were adapted to the needs of the Information Society.

The Action plan announced a Green Paper on IPRs in the Information Society for early in 1995. The proposal for a directive on the legal protection of data bases¹⁴⁶ is also seen a critical to the developing framework for networks and for electronic information-based services.

VII.11.4 Economic interests of consumers

A key area which must be safeguarded in developing a competitive framework for infrastructure is that of the economic interests of consumers. In addition to being at the heart of the Treaty competition rules, the interests of consumers have been taken on added importance since the entry into force of the Treaty on Europe Union¹⁴⁷.

¹⁴⁴ COM(92)480

¹⁴⁵ Green Paper on Strategy Options to Strengthen the European Programme Industry in the Context of the Audio-visual Policy of the European Union, COM(94) 96 final

¹⁴⁶ Proposal for a Council Directive on the legal protection of databases, COM(93) 464 final, SYN 393. The Commission Action plan on Europe's way to an Information Society has announced a Green Paper on IPRs in the Information Society for early in 1995.

¹⁴⁷ Article 129a EC requires the Community to contribute to the attainment of a high level of consumer protection, either through internal market measures or through "specific action which supports and

This importance extends beyond the protection of the consumer, through developing universal service, adequate data protection and privacy rules and ensuring social and economic cohesion within the Union. Specific consumer issues in the Information Society were highlighted in the Bangemann Group Report. Mass consumer markets for home banking, teleshopping and entertainment services were seen as one of the principal driving forces behind the Information Society, which could be held back if adequate rules for consumer protection in this new context were not developed.

supplements the policy pursued by the Member States to protect the health, safety and economic interests of consumers and to provide adequate information to consumers".

The concept of consumer is defined in Article 2 of Directive 93/13/EEC of 5 April 1993 on Unfair Contract Terms in Consumer Contracts (OJ L95/29, 21.4.93) as "any natural person who is acting for purposes which are outside his trade, business or profession".

VIII FUTURE DEVELOPMENT OF THE REGULATORY FRAMEWORK TO MEET THE CHALLENGES OF CONVERGENCE

In the previous section the Green Paper set out how the existing principles of the Union's telecommunications policy can be extended to infrastructure. Yet the analysis set out in Section III of this Green Paper indicates that in the future any regulatory framework for infrastructure must be sufficiently flexible to meet the challenges thrown up by the convergence of telecommunications, information technology and broadcasting.

It is therefore necessary to highlight a number of issues which a common regulatory approach will have to address, within the overall framework provided by this Green Paper and the on-going initiatives in neighbouring fields outlined immediately above.

The basic challenge of convergence is that broadcasting (including cable TV services) and telecommunications networks and services are subject to different and separate regulation in all Member States. The content and style of regulation varies significantly between the sectors, reflecting differing objectives of the regulation concerned in the different sectors. Such differences in the basic regulatory objectives are likely to remain even in a converged environment. Furthermore current differences also reflect regulatory responsibilities often belonging to different ministries.

Any future regulatory framework must evolve in a manner which continues to take full account of these different regulatory environments. The reasons which have led to such differences are already reflected in existing Community action in neighbouring fields.

A further fundamental distinction can be identified between the three sectors. Regulation for information technology has been almost entirely technically focused.

Telecommunications regulation has in most Member States been focused on technical aspects of networks and services, but extending to providing a framework to ensure the public interest, for example, mandating universal service or basic levels of service quality for customers.

In addressing these issues, certain basic principles can be derived from the experience in the telecommunications sector which may assist the debate:

- Liberalisation of infrastructure and services must go hand in hand with the implementation of a clear regulatory framework, which can help to mimic competition (through principles of non-discrimination, transparency, etc.) pending the emergence of genuinely competitive markets, as well as seeking to ensure the right of establishment for all market players and the free circulation of services. A clear and predictable regulatory environment is also an essential condition for attracting investment into the emerging markets.
- Effective and independent regulation at the appropriate level will also be essential.

- The speed and dynamics of the emerging market may be too fast for detailed regulation to keep pace. Future structures are likely to require considerable flexibility and to rely on an increasing application of competition rules.
- Effective competition in the markets for telecommunications equipment and services have evolved without rigid structural safeguards, such as those developed in the mid-eighties in North American markets.

Where safeguards have been considered necessary proportional solutions have been chosen, such as transparent cost-accounting and separate accounting for different parts of a business.

Without the evolution of common regulatory principles there is a real risks that divergent regulation and regulatory structures both within individual sectors and between those sectors will act as significant barriers to the development and operation of competitive communications infrastructures, and, in particular, the promotion of inter-operability and interconnection of such networks within the Union. This raises a number of issues :

By whom and at what level the evolving sector should be regulated?

In practice, there are two issues which should be separated : the supervision of network and service provision in the Union (the means of delivery) and the regulatory framework for the free circulation of new services over such infrastructure. The latter has hitherto been an area of concern primarily in the broadcasting sector.

In relation to the overall approach to network and service provision, this Green Paper provides a clear picture of the evolving regulatory framework, which draws, in particular, on the consistent application of competition rules and the framework for licensing infrastructure and services in the Union and on the Open Network Provision rules.

This approach also, in line with the principle of subsidiarity, emphasises the role of national regulatory authorities in the day to day supervision of the sector. Solutions at a European level, such as the role of the Open Network Provision Committee in conciliation or the application of the Competition rules is confined to situations showing a clear European dimension.

In relation to licensing, day to day responsibility remains in the hands of national regulatory authorities and the Commission has not proposed a central licensing authority in the context of the draft proposals on the mutual recognition of licences for terrestrial and for satellite-based services.

At the same time the Green Paper on Mobile and Personal Communications recommended that :

"In order to promote the development of trans-European networks, in accordance with Article 129b of the Treaty, licences for future mobile communications systems directly impacting the development of such networks should be awarded, where required and most efficient, in a co-ordinated manner between Member States

*and/or at a Community level, taking due account of Member States interests and the interests of existing licensees"*¹⁴⁸.

Given the trans-European dimension of certain infrastructure projects, this recommendation cannot be confined to mobile and satellite-based mobile communications sector. Indeed, only co-ordinated national licensing of such trans-national projects will allow them to realise their full potential.

It is not within the scope of this Paper to make proposals on how and by whom the issue of content should be regulated. However, in the light of comments expressed during consultation in a number of areas, such as in relation to media ownership and intellectual property and of the call by the Bangemann Group for *"the establishment at the European level of an authority whose terms of reference will require prompt attention"*, comments on all these issues are invited.

Who will be allowed to provide networks and services? Can any infrastructure be used for any service?

The issue of who will be allowed to provide infrastructure and also services in a liberalised environment is of fundamental importance. Should telecommunications operators be allowed to enter the broadcast market? What approach should be followed where a market player, such as the dominant TO, has an important stake in a competitive infrastructure provider?

The issue will determine the extent of private sector investment in new infrastructures, and is already the subject of heated debate in markets such as the United Kingdom. On the one hand, allowing unrestricted entry for telecommunications operators into the broadcasting market risks undermining the ability of cable networks to invest and compete in the telecommunications market.

On the other hand, significant cost savings and synergies will flow from vertical integration and the linked greater use of networks. Furthermore, the Union has not at a regulatory level in the telecommunications field followed the earlier approach in North America of imposing line of business restrictions. Additionally, a requirement for divestiture would have an important impact on investment in competitive infrastructures in a number of Member States.

Discussion on the range of issues raised, within the overall framework provided by Community law will assist in the timely evolution of regulatory structures in a manner which will foster rather than hold back market development.

¹⁴⁸ Green Paper, Table of proposed positions, VIII.7

IX ISSUES FOR CONSULTATION

IX.1 Towards the Information Society

The purpose of this document has been to propose a framework and timetable for the future regulation of network infrastructure in the European Union by extending the principles of the Union's telecommunications policy to the provision of infrastructure for telecommunications and to launch a wide debate on the issues.

Provided the necessary safeguards are in place, opening up infrastructure provision will underpin the further development of the telecommunications sector, and this development is necessarily at the heart of the transition towards the Information Society in the European Union.

Liberalisation of infrastructure will reinforce the benefits of the liberalisation of telecommunications services by encouraging innovation and the exploitation of the new technologies, and by opening up greater possibilities to provide new services in new ways. A clear regulatory framework and timetable is required in order to give predictability to all sector actors, including both the traditional and new investors.

In the longer term and as integrated or multimedia services and applications develop, a regulatory framework will be required that addresses the issue of convergence between telecommunications and broadcasting. It is already possible technically to use communications infrastructure from each of these domains to provide services in either area. The development of the Information Society and of the new integrated applications will make it increasingly difficult to distinguish between the two service areas.

Opening up infrastructure provision is an essential step for the future development of the telecommunications sector and the Information Society, and this document puts forward the measures and principles that are required at a Union level to provide the necessary regulatory framework. At the same time it must be recognised that there are currently differences *within* Member States between regulatory regimes for telecommunications and for broadcasting and differences *between* Member States in the regulatory regime for cable TV services. Such differences threaten to impede the long term development of communications and information services in the Union.

This raises the longer term issue of the appropriate regulatory framework for dealing with the convergence of telecommunications and broadcasting.

IX.2 Major changes and positions

On the basis of the priorities established by Union policy in the field of telecommunications, the need for a coherent regulatory framework regarding the establishment and provision of telecommunications infrastructure, the analysis of market and technological developments and taking into account the applicable Treaty rules, the Commission invites comments on the proposals and on the application of the measures set out in the Table below..

1 Removal of special and exclusive rights over the use of infrastructure for the provision of telecommunications services

Part I of the Green Paper has proposed the basic principle that where services are open to competition there should be a free choice of the underlying infrastructure for their delivery.

From this basic principle two positions followed :

- The removal of restrictions on the use of own or third party infrastructure authorised in Member States for services already liberalised in the following areas:
 - for the delivery of satellite communications services.
 - for the provision of all terrestrial telecommunications services already liberalised (including the use of cable television infrastructures for this purpose).
 - to provide links, (including microwave links) within mobile networks for the provision of mobile communications services.
- The lifting of exclusive and special rights over the use of own or third party infrastructure for the delivery of voice telephony services to the general public, once those services are liberalised from 1st January 1998, and the replacement by licensing and authorisation schemes setting out the necessary safeguards within the framework of the overall review of Directive 90/388/EEC (the Services Directive) and of the ONP-framework to be tabled by 1 January 1996 in the context of the preparation for the full liberalisation of voice telephony services foreseen by Council Resolution 93/C213/02.

The Telecoms Council on the 17th November 1994 in considering Part 1 of the Green Paper, recognised the general principle according to which the provision of telecommunications infrastructure should be liberalised by 1st January 1998¹⁴⁹, including the additional transition periods for certain Member States in line with Council Resolution 93/C213/02¹⁵⁰.

¹⁴⁹ A number of Member States have urged the Commission in an associated statement to come forward as quickly as possible with proposals which provide for the use of alternative network infrastructure for the services already liberalised. The Commission in turn preserved its right to take action in this area within its competence and according to its obligations. On 21 December 1994 the Commission adopted in draft a Directive amending Commission Directive 90/388/EEC regarding the abolition of the restrictions on the use of cable television networks for the provision of telecommunications services.

¹⁵⁰ A maximum of five years for Ireland, Greece, Portugal and Spain and a maximum of two years for Luxembourg. At this stage, it is still not clear to what extent those Member States will exploit these derogations.

2. Safeguarding and developing universal service

Universal service consists of access to a defined minimum service of specified quality to all users at an affordable price based on the principles of universality, equality and continuity. The detailed elements of such a service are set out in Council Resolution and Commission statement 94/C 48 of 7 February 1994.

The underlying aim is to ensure that the benefits of cheaper and better quality telephone service and other benefits of increased competition and choice are passed on to all users

In the context of the current structural adjustments being undertaken in preparation for the liberalisation of telecommunications services, NRAs should seek to replace general across the board subsidies for access or local calls. This can be achieved by (i) completing tariff re-balancing in line with Council Resolution 93/C213/02 and (ii) the development of targeted schemes to ensure universal service for needy or uneconomic customers. Targeted or social tariffs should be provided by operators within the framework of an optimal tariff structure.

The basic principles for universal service in the context of liberalised infrastructure provision in the European Union should be:

- Only telecommunications-related public service obligations should be treated as universal service obligations. Network operators should be freed from non-telecommunications related obligations.
- Transparent schemes for the determination of the cost of universal service obligations and their financing should be established
- As regards the determination of the cost of universal service obligations, NRAs should calculate this cost as the net cost of providing service to uneconomic customers, plus any costs associated with the uneconomic provision of public telephones, emergency services and other social obligations.
- As regards the establishment of transparent schemes for financing universal service obligations, the uneconomic costs of particular elements of universal service obligations should be financed, either through national universal service funds or, where not fully covered, via access charges to be added to interconnection charges.
- Preference should be given to financing USOs through universal service funds rather than via access charges. Eligible operators and service providers should contribute and the financial responsibility should be spread as fairly as possible, subject to the principle of proportionality.
- Financing schemes should be administered either by the NRA or an NRA appointed body, should be subject to regulatory control and consistent with Treaty competition rules. They should encompass assessment by the NRA of the cost of universal service according to a transparent and published methodology, which may need to evolve to take account of changing competitive conditions.

In the context of services and infrastructure liberalisation, Member States should work towards (i) determining the cost of universal service and (ii) instituting means to finance universal service at a national level, taking into account the specific circumstances of Member States with less-developed networks or very small networks.

With this in mind, the Commission will propose a common framework before the end of 1995.

NRAs in conjunction with the Commission should periodically survey main indicators of universal service, in particular penetration of residential lines, waiting times, provision of public pay phones and the availability of targeted schemes for the needy and uneconomic customers.

Given the rate of technological progress and its effect on the costs and availability of increasingly sophisticated services, together with the need to ensure that the benefits of the Information Society extend to all citizens and not just to the privileged minority, the definition of universal service must be dynamic and reflect such progress.

3. Interconnection and interoperability

The basic framework

Interconnection agreements fall within the scope of the competition rules. The application of these rules to interconnection agreements should be clarified to the extent necessary. This should include the removal of the current restrictions on the interconnection of all types of communications infrastructure, comprising public and private networks (i.e. fixed - mobile - cable television - satellite-based networks).

As regards public telecommunications infrastructure, the principles of Open Network Provision should be extended as far as ONP applies¹⁵¹, within the context of a specific Directive on interconnection, to create a harmonised approach for public telecommunications infrastructures and to enhance interoperability of public networks and service throughout the Union. The Directive should:

- set out the rights and obligations on public telecommunications infrastructure providers with regard to interconnection requests, including obligations to interconnect and provide standard interconnect offerings.
- give priority to the commercial negotiation of public telecommunications interconnection agreements, within an overall framework to be supervised by national regulatory authorities.

¹⁵¹ Currently, ONP applies to public networks provided under exclusive or special rights. The future scope of the application of ONP to operators will be defined in the context of the current review of ONP.

- provide as elements of that framework, common rules promoting fair competition; transparency of interconnection agreements, technical standards (priority to be given to voluntary standards) and compliance with essential requirements.
- establish dispute resolution mechanisms at a national and European level.

An ONP Interconnection Directive should also lay down charging principles for interconnection of public telecommunications networks and services, and in particular:

- common principles for interconnection charges
- identification and recovery of uneconomic universal service costs based on net cost calculations
- cost accounting systems

Open access to infrastructure - application of ONP principles and the competition rules

Open access to the facilities of public telecommunications infrastructure providers will be fundamental in establishing an effective, competitive environment for telecommunications infrastructure and services within the Information Society. In addition to the application of the competition rules, the basic principles set out within the Open Network Provision framework must be extended and, where necessary, adapted to provide a common regulatory approach to communications infrastructure in the European Union. This approach entails:

- harmonised application of the general principles of ONP by the national regulatory authorities within their national regulatory regimes, alongside the application of the Treaty competition rules to the sector.
- In the context of ONP, such conditions will generally be applied through class licences or in the framework of authorisations for the provision of communications infrastructure.
- Such conditions are concerned with ensuring rights to access and compliance with essential requirements and ensuring cost orientation.
- adequate transmission capacity being guaranteed throughout the Union, in particular, through revision of the ONP leased lines directive.
- transparent accounting structures to be put in place by providers of public telecommunications infrastructures, including the separation of accounts for telecommunications and non-telecommunications activities, as well as the implementation of transparent cost accounting systems concerning infrastructure provision and service provision.

- Voluntary implementation of common technical standards (based on European standards), with consultative mechanisms for mandatory implementation where necessary to satisfy user needs.
- the relaxation, in a competitive environment, current regulatory mechanisms to ensure cost-orientation of tariffs.

4. Licensing

Licence award procedures

In order to promote a common regulatory framework for the licensing of communications infrastructure in the European Union, award procedures should respect the following principles:

- Member States should licence and/or authorise the establishment and provision of infrastructure in the European Union using open, non-discriminatory and transparent procedures.
- The number of licences granted may only be restricted on the basis of the essential requirements¹⁵² and in the case of networks intended for the general public, public service requirements in the form of trade regulations.

As regards the establishment of new communications infrastructures, these essential requirements should also include, in justified cases, the protection of the environment and town planning objectives.

As regards limitations on the number of licences with respect to essential requirements, only radio spectrum and environmental and town planning objectives would apply.

Any limitation must be consistent with the Treaty competition rules and the Treaty provisions concerning the right of establishment and the free circulation of services.

- Award procedures must indicate clearly the selection criteria and the conditions which will be attached to the grant of any licence.
- In order to promote the development of trans-European telecommunications networks and services, the grant of national licences for such networks should be co-ordinated, where appropriate, to facilitate the networks becoming operational throughout the countries covered at the same time.

¹⁵² Essential requirements are defined in Community law (See section VI.3 above) and relate to, inter alia, to security of network operation, network integrity, user safety and safety of employees, effective use of the radio spectrum, electromagnetic compatibility and, in justified cases, interoperability of services and data protection.

In the case of network infrastructure, essential requirements could also be, in justified cases, environmental and town planning objectives

Selection criteria for the award of licences and authorisations

- Licences must be granted on the basis of pre-announced criteria. In cases where networks are intended for use by the general public and the number of licences awarded is limited, criteria may be based on public service requirements in the form of trade regulations¹⁵³. In the absence of harmonisation at a Union level, such criteria should in any case be published in advance and be subject to prior scrutiny for compatibility with the Treaty rules.
- Under the EC and EEA rules, selection criteria may not discriminate on the grounds of nationality, nor take into account factors such as the sourcing of equipment.
- Any limitation on the number of licences granted and any refusal to licence a particular undertaking (including the exclusion of particular undertakings from a licensing process) must be duly justified to allow for assessment under the applicable Treaty rules and also with the principle of proportionality.
- The principle of mutual recognition of licences or authorisations is not normally applicable to infrastructure licences. This is the case, for example, with national licences for the provision of fixed networks encompassing rights of way. Mutual recognition should, however, apply to certain elements used in licensing procedures, such as evidence relating, for example, to the technical competence or financial standing of the applicant.

Conditions attached to communications infrastructure licences

Building on the framework provided by Community law, future licenses for infrastructure should respect the following principles :

- Licensing conditions for infrastructure must be based on objective grounds, be transparent, be non discriminatory and respect the principle of proportionality. Any fees for licences should respect the same criteria.
- Licences must not contain conditions other than those justified on the grounds of essential requirements and, in the case of public telecommunications infrastructure¹⁵⁴, public service requirements set out in the pre-announced criteria.
- Infrastructure not intended for the use of services for the general public (such as infrastructure for corporate networks or closed user groups), should only be subject to conditions based on the essential requirements.

¹⁵³ Public service requirements in the form of trade regulations are defined in Community law (See section VI.3). Trade regulations concern conditions relating to the permanence, availability and quality of services provided over infrastructure and may imply the infrastructure provider fulfilling conditions relating to technical competence and the financial resources of the licensee.

¹⁵⁴ Operators without rights of way should not be subject to the same level of obligations as those with rights of way, especially as regards coverage.

- With regard to ownership restrictions, licences may not contain conditions which restrict ownership by nationals of Member States or of the European Economic Area or undertakings controlled by such nationals.

Any other restrictions on ownership or control must be compatible with Community law and with the European Community's commitments taken on a multi-lateral basis.

- Licensing conditions must ensure a high standard of consumer protection and respect for competition rules.

Provision of Telecommunications Services

- Service provision (as opposed to network establishment and operation) should not be subject to individual licensing in the Member States. It may be subject to class licences, general authorisations or to a requirement for declaration by Service Providers of their activities to the National Regulatory Authority(ies) of the Member State(s) where they choose to operate.
- Nevertheless, in the case of independent service providers offering voice telephony services to the general public on a resale basis, consideration may need to be given as to how and when such resellers should be obliged to make a contribution, appropriate to their market position, to the provision of or financing of universal service. (via access charges or a universal service fund, as set out in the following point 3).

Access for Service Providers to any infrastructure should be based on commercial agreements, subject to the competition rules, and where appropriate, the framework of Open Network Provision rules set out below.

- The Commission will regularly review if additional safeguards for consumers are considered necessary. If so, they should be fully consistent with the Treaty provisions and respect the principle of proportionality. Preference should be given to rules agreed by sector participants (such as a code of conduct) over binding regulatory measures, and to general or class regimes over specific individual licenses or authorisations. However, where this Code of Conduct does not adequately protect consumer interests, binding regulatory measures should be introduced.

5. Ensuring fair competition

In a market which will, for many years, be characterised by the presence of dominant operators controlling bottleneck facilities, the full implementation of the competition rules will be indispensable to allow for the emergence of a competitive environment. This will imply, where required, the establishment of the appropriate procedures and safeguards. These will concern, in particular:

- screening interconnection agreements,

- reviewing the conditions for access granted to infrastructure providers and to service providers,
- monitoring joint ventures.
- assessing any scheme established for financing universal service;
- ensuring open and non-discriminatory access to rights of way.
- reviewing the effects of cross-ownership of different networks and of joint provision of network and services;

The latter requires transparent accounting structures and practices to be established by providers of communications infrastructures, including the separation of accounts for telecommunications and non-telecommunications activities, as well as the implementation of transparent cost accounting systems for infrastructure providers who also provide telecommunications services.

6. Access to rights of way, frequencies and numbering

In order to guarantee the successful development of a competitive market for infrastructure, access to certain basic resources must be guaranteed. This concerns rights of way, frequency for wireless network components, numbering and directory services.

Rights of Way

- Member states should grant rights of way to communications network operators according to open and transparent procedures.
- Where environment requirements (such as avoiding road congestion), or other essential requirements, prevent the granting of rights of way to all potential applicants, the Member States should introduce schemes for the sharing of ducts on a voluntary basis and consider, where it is deemed necessary to avoid bottleneck situations, the introduction of mandatory duct-sharing.
- To introduce competition in the market for infrastructure provision, Member States will need to ensure that the incumbent telecommunications organisations are subject to the same regulatory conditions as their competitors regarding rights of way, and provide for mandatory sharing of facilities where necessary to bring down barriers to entry.

Frequencies

Access to frequency spectrum will be increasingly important in ensuring the optimum combination of fixed and wireless technologies in future networks. In order to support this development a number of measures should be taken, in particular:

- CEPT/ERC should initiate a comprehensive review of the balance of frequency usage between broadcasters, fixed network operators and mobile and personal communications operators. This will also need to address the balance between these uses and the use of spectrum for defence and security purposes.
- Pan-European network operation requires greater co-ordination of frequency allocation across Member States.

Numbering

In order to facilitate network investments, an appropriate framework ensuring access to numbers must be put in place. In particular, this requires:

- Creation of a European numbering space for special services (e.g. freephone, premium rate, shared cost services) must be a priority for the EU.
- A "best practice" guidance for NRAs on the administration and control of the national numbering schemes is under development in the ETO,
- The reform package for submission to the Council before 1 January 1996 will address *inter alia* the subject of numbering reform in Europe.

Directories

Access to subscriber data for network operators and service providers and access for subscribers to a comprehensive directory service will be important elements. Such access should proceed, *inter alia*, on the following basis:

- Access to subscriber databases and to raw subscriber data must be ensured on the basis of objective, transparent and non-discriminatory criteria, and in conformity with Community legislation, in particular the competition rules of the Treaty, the principles of open network provision (ONP) and the provisions on the protection of personal data and privacy, as well as, where applicable, IPR legislation.
- Maintaining a complete universal telephone directory and at least one enquiry service¹⁵⁵ which contains the details of all subscribers of fixed and mobile telephony services and is available for all users.

7. Action in Neighbouring Fields (Data Protection, Audio-visual, Media and IPRs)

Common rules concerning data protection and privacy are fundamental for the development of the information society and for removing other constraints on effectively exploiting the competitive provision of communications infrastructures

¹⁵⁵ The terms on which such directories and enquiry services are made available to the general public will be discussed in a forthcoming Commission Communication on directories and directory services.

In this context rapid progress should now be made on the proposed General Data Protection Directive and the proposed specific Directive on the protection of privacy in the digital network environment¹⁵⁶.

The Commission has already identified in its Action Plan on Europe's Way to the Information Society that work will continue in the area of Information Security, and, in particular, that it will :

- publish a Communication on security issues and the role of Member States
- make proposals with regard to the harmonisation of national rules on unauthorised access, and
- prepare a Green Paper on the legal protection of encrypted broadcasts.

Action in all of these areas can substantially contribute to the creation of an appropriate environment for infrastructure competition.

The Commission has also identified in its Action Plan on Europe's Way to the Information Society, initiatives in a range of areas which will help to shape the new regulatory environment both for infrastructure and for services. These policies will substantially influence the extent to which investment can be mobilised to finance competing networks.

These actions include :

In the field of media ownership, the recently adopted Communication on the follow up to the Green Paper on media pluralism and subsequent public consultation;

In the field of audio-visual policy, the possible revision of Directive 89/552/EEC (the "television without frontiers" directive) and following up the Audio-visual Green Paper with regard to the issue of content.

In the field of intellectual property, the adoption as a matter of priority of the pending proposal on the legal protection of data bases; the preparation of a Green Paper on intellectual property in the Information Society and the preparation of a directive on private copying.

Additionally, the Commission has already proposed a Directive¹⁵⁷ aimed at the harmonisation of the laws, regulations and administrative provisions on contracts negotiated at a distance between suppliers and consumers.

The Commission will undertake work during 1995 on the regulatory approach to be applied to ensure the free circulation of new services, which will help ensure that the Commission's actions in the relation to infrastructure and the services to be provided over them remains consistent

¹⁵⁶ Modified proposal for a Council Directive concerning the protection of personal data and privacy in the context of public digital telecommunications networks, in particular the Integrated Services Digital Network (ISDN) and public digital mobile networks, COM(94) 128 final, 13.6.94.

¹⁵⁷ OJ C156/14, 23.6.92

8. The Societal and Social Impact

The services carried over infrastructure in Europe will have a major effect on the quality and way of life for Europe's citizens. Priority attention will also be given to studying and monitoring the societal and social impact of the diffusion of new technologies and of a competitive environment for communications infrastructure (in particular, in relation to the areas of employment and cultural policy, as well as the need to avoid the development of a society of information "haves" and "have nots").

In this regard the Commission's Action plan announced a number of reports and Communications in this area, including a report by the High Level Group of Experts.

Consideration in this context must also be given to the need for retraining and re deployment of employees as the traditional telecommunications sector adapts to a competitive environment.

The Commission also proposes setting in motion a comprehensive action programme to investigate potential health hazards associated with the proliferation of fixed and wireless infrastructures and to accelerate the preparation of necessary safety standards, as well as providing general guidance.

9. A global approach to infrastructure and ensuring fair access to third country markets

The Union must actively contribute to on-going discussions at a global level concerning the Information Society, and, in particular, the evolution of common global approaches to issues promoting the development of infrastructures, capable of meeting the needs for global communications. The meeting of the G7 in February to be hosted by the Commission will substantially assist this aim.

The main principles with regard to worldwide developments are :

- Common Community positions are required in international fora to assist in developing a global approach to standards, frequency and numbering. (This concerns, in particular, positions within the International Telecommunications Union and the World Radio Conferences.
- Emphasis on the on-going multi-lateral talks on basic telecommunications as the key to opening up access to third country markets. The overall aim must be to ensure comparable and effective market access, and, in particular, the lifting of ownership restrictions, for EU network operators and service providers.
- Until the results of the GATT/WTO negotiations are clear, it is important that the Union reserves its right to maintain equivalent conditions to those currently prevailing in third country markets with regard to market entry or the licensing of non-EU or EEA nationals or companies controlled by such nationals. the objective of imposing such conditions would be to promote open markets in third countries for European network operators and service providers through negotiations.

- Common Community positions on issues having a direct impact on the operation and interconnection of networks, such as restrictions on encryption, rules on intellectual property and data protection and privacy.

10. Future Evolution of the Regulatory Environment - Towards the Information Society

The Commission is looking beyond the immediate steps needed to liberalise telecommunications infrastructure by 1 January 1998 and to put in place the accompanying regulatory framework.

This Green Paper is intended to initiate the debate, in parallel with that launched by action in other neighbouring fields, on the future evolution of the regulatory environment beyond 1998 to meet the challenges of technological and market convergence.

In addressing these issues, certain basic principles derived from the experience in the telecommunications will assist the debate:

- Liberalisation of telecommunications infrastructure and services must go hand in hand with the implementation of a clear regulatory framework, which can help to mimic competition (through principles of non-discrimination, transparency, etc.) pending the emergence of genuinely competitive markets.
- Effective and independent regulation at the appropriate level will be essential.
- The regulatory framework should lay down basic principles at a European level on the basis of the rules in the Treaty, as well as clear criteria for their application in a predictable manner at a national level. Increasing reliance on competition rules is to be expected.
- Effective competition in the markets for telecommunications equipment and services should evolve without rigid structural safeguards, such as those developed in the mid-eighties in North American markets.

Where safeguards have been considered necessary proportional solutions have been chosen, such as transparent cost-accounting and separate accounting for different parts of a business.

These principles must be applied to the challenges of multi-media and the Information Society, taking full account of the regulatory patterns established in the converging sectors.

IX.3 Timetable for action

Council Resolution 93/C 213 of 22 July 1993 called for the Commission to prepare, before 1st January 1996, the necessary amendments to the Community regulatory framework, in order to achieve liberalisation of all public voice telephony services by 1 January 1998. Linking the liberalisation of infrastructure to liberalisation of voice telephony means that the same time scale must be observed for the regulatory measures identified in this Green Paper.

The specific measures in the 'reform package' are expected to include measures to be adopted by the Commission and measures to be adopted by the European Parliament and the Council.

The proposed timetable is as follows:

By 15 March 1995	Submission of public comments on the Green Paper
May 1995	Commission Communication to the European Parliament and the Council on the public consultation on the infrastructure Green Paper
June 1995	Council Resolution on Infrastructure .
Before 1 January 1996	Publication by the Commission of proposals for specific measures to extend the existing EC regulatory framework
	Commission Communication to the European Parliament and the Council on the principles and financing of Universal service

IX.4 Public consultation

With the adoption of Part I of the Green Paper on 25 October 1994 the Commission opened a broad public consultation on the principle and timetable for the liberalisation of infrastructure in the European Union. That debate is now complemented by the publication of Part II which examines the overall regulatory framework for infrastructure which will be required after 1998, when infrastructure competition can be extended to cover voice telephony services for the general public.

The Commission invites comments on all the issues raised by this Green Paper, including, in particular, on the major changes required and on the evolution of the regulatory framework to meet the challenges of convergence.

The Commission intends to organise a series of hearings in Brussels with interested parties early in 1995, allowing an opportunity for discussion of the issues raised in both parts of the Paper.

In order to respond urgently to the evolving Information Society, the Commission would ask that written comments on both Parts I and II to be forwarded to the Commission by no later than 15th March 1995¹⁵⁸.

The Commission will subsequently report to the European Parliament and Council on the results of the consultation process.

¹⁵⁸ Unless a request is made to the contrary, written comments received during the public consultation will be made available in full after the conclusion of the Consultation process.

ANNEX 1 : GLOSSARY OF TECHNICAL TERMS

Access Charges

Charges made by owners/operators of telecommunications networks and services to operators and / or service providers interconnecting with them, the purpose of which is to compensate the network operator for any loss-making obligations imposed upon it through regulatory means, such as *Universal Service Obligations* or political constraints to tariff adjustments for local service.

Where access charges are used, they are often added to, and integrated with, *interconnection charges*.

ADSL

Asymmetric Digital Subscriber Loop, a digital transmission technique for enhancing the information-carrying capacity of copper-pair cables in the local access network. It is designed for video-on-demand services by delivering video signals to the customer premises with a low-capacity return channel for customer ordering purposes.

Alternative network infrastructure

Infrastructure capacity established by organisations other than the telecommunications organisations, for own use or for offering capacity to other users or to service providers. When offered to others, it is referred to as Third Party infrastructure.

ATM

Asynchronous Transfer Mode. A fast packet-switching technology for providing high-speed switched services, including multimedia and video, over optical fibre networks.

CAP

Competitive Access Provider. Term applied in USA to companies providing services directly to customer premises in competition with the local Regional Bell Operating Companies (RBOCs).

CATV networks

Cable Television Networks. Systems authorised for the distribution of broadcasting / television programmes. In many cases also suitable for the transmission of telecommunications.

CEN/CENELEC

European Committee for Standardisation and European Committee for Electrotechnical Standardisation, major European standardisation organisations.

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CEN/CENELEC

European Committee for Standardisation and *European Committee for Electrotechnical Standardisation*, major European standardisation organisations.

CEPT

European Conference of Postal and Telecommunications Administrations. Membership of CEPT is made up of National Regulatory Authorities (NRAs), and encompasses the twelve EU Member States, and most other European countries, including the countries of Central and Eastern Europe. Following these recent reforms, CEPT's activities are now divided between: the *ERC* (the European Radiocommunications Committee) and *ECTRA* (European Committee for Telecommunications Regulatory Affairs) dealing with telecommunications; CERP (the European Committee for Postal Regulation) dealing with postal affairs. (see also *ECTRA* and *ERC*).

Closed User Group (CUG)

Closed User Groups (CUGs) refer to entities not necessarily bound by economic links, but which can be identified as being part of a group on the basis of a lasting professional relationship among themselves, or with another entity of the group, and whose internal communications needs result from the common interest underlying this lasting relationship. In general, the link between the members of the group is a common business activity.

Examples of activities likely to fall into this category are fund transfers for the banking industry, reservation systems for airlines, information transfers between universities involved in a common research project, re-insurance for the insurance industry, inter-library activities, common design projects, and different institutions or services of intergovernmental or international organisations.

In the context of the Commission Directive 90/388/EEC of 28 June 1990 on competition in the markets for telecommunications services, individual cases and definitions used in Member States are subject to screening by the Commission. The Directive indeed refers to the public and not to CUGs. The Commission must therefore ascertain that the definitions of CUG by Member States do not exclude voice telephony between users who have existing common links between themselves, such that they could not reasonably be regarded as being members of the public (i.e. any random person, without distinction of belonging or membership). *See Part I of this Green Paper , COM(94)440, 25.10.1994, section VI (1).*

Corporate network

Corporate networks are generally networks established by a single organisation encompassing distinct legal entities, such as a company its subsidiaries or its branches in other Member States incorporated under the relevant domestic company law.

DCS 1800

Standard for micro cellular communications systems developed by *ETSI*, building on the *GSM* standard, also referred to as PCN system standard. Such systems operate with very small cells, varying in size between a few hundred metres and a few kilometres.

Digital European Cordless

Telecommunications (DECT)

New digital cordless standard developed by *ETSI*, supported by Directive 91/288/EEC establishing harmonised frequency bands for DECT and a Council Recommendation on its co-ordinated introduction. DECT is also suitable as a technology for establishing local radio loops for fixed network subscribers.

ECTRA

The *European Committee for Telecommunications Regulatory Affairs (ECTRA)*, created as one of the three committees under the new *CEPT* structure. It currently includes three project teams covering licensing, numbering and testing.

ENO - European

Numbering Office

The *European Numbering Office* called for in the Council Resolution 92/C318/02 of 19 November 1992 on the promotion of Europe-wide co-operation on numbering of telecommunications services is located in Copenhagen, as part of the *European Telecommunications Office* (see also *ECTRA*).

ERC - European

Radiocommunications Committee

The *European Radiocommunications Committee (ERC)* is one of the three committees created under the new structure of *CEPT*. The *ERC* develops radiocommunications policies, assists *ITU* conferences and plays a general co-ordinating role in frequency matters. It has established the European Radiocommunications Office (*ERO*)

ERO - European

Radiocommunications Office

The *European Radiocommunications Office (ERO)* called for in the Council Resolution of 28 June 1990 90/C166/02 on the strengthening of the Europe-wide co-operation on radio frequencies, in particular with regard to services with a pan-European dimension was created by the *ERC* and started operations in Copenhagen in May 1991.

Essential Requirements

Essential requirements are non-economic reasons in the general interest which may cause a Member State to restrict access to the public telecommunications networks or public telecommunications services.

ETO - European

Telecommunications Office

The *European Telecommunications Office (ETO)* is an office which is being established under the umbrella of *ECTRA*.

ETS - European

Telecommunications Standard.

Standards established according to the procedures of the European Telecommunications Standards Institute (***ETSI***).

ETSI - European

Telecommunications Standards

Institute

The European standards organisation in the telecommunications field, having the task of producing European Telecommunications Standards (*ETS*), having European-wide application and acceptance, in the area of telecommunications.

Exclusive rights

According to Commission Directive 90/338/EEC as amended by Commission Directive 94/46/EC, an exclusive right exists where the service is reserved by the Member State for a single public or private undertaking within a given area.

FTTC - Fibre to the curb.

Used to designate the laying of optical fibre to a local distribution point (curb).

FTTH - Fibre to the Home

Used to designate the laying of optical fibre to individual homes

***GII - Global Information
Infrastructure—***

US term for world-wide information infrastructure or superhighway. See also *NII*

GSM - Global System for

Mobile communications

The central standard, developed by *ETSI*, for digital (2nd generation) mobile systems, using *TDMA (Time Division Multiple Access)* techniques. *GSM* has been supported by Directive 87/372/EEC establishing harmonised frequency bands for *GSM* and a Council Recommendation and Resolution on its co-ordinated introduction. The system supports roaming, and a broad range of features.

Green Paper(s)

Green Papers, in the European Union context, are European Commission consultative documents setting out basic policy goals for public debate. Key *Green Papers* issued in the telecommunications sector, are the 1987 *Green Paper on the development of a common market for telecommunications services and equipment (COM (87) 290)*; the 1990 *Green Paper on satellite communications (COM (90) 490)* and the 1994 *Green Paper on a common approach to personal and mobile communications in the European Union (COM(94) 145)*.

HDSL - High Bit-rate

Digital Subscriber Loop

Transmission technique for accommodating 2 Mbit/s Primary Rate ISDN and digital leased lines on existing local access network copper pair cables. Two such pairs are required for two-way transmission, and speeds up to 6 Mbit/s are currently possible, albeit over shorter distances. Could complement *FTTC*.

IBC

Integrated Broadband Communications

Infrastructure

See telecommunications infrastructure

Intelligent Networks (IN)

Advanced network concept allowing rapid and flexible introduction of new services such as freephone, premium rate customer-controlled routing and bandwidth-on-demand.

Interconnection-charges

Charges made by owners/operators of telecommunications networks and services to operators and / or service providers interconnecting with them, for access and use, including the conveyance of their

telecommunications traffic. Charges for connection and conveyance should be seen as distinct from *access charges*.

International Telecommunications

Union (ITU)

The United Nations specialised agency for telecommunications.

The structure of the ITU has recently been reviewed to adapt it to the changing information and telecommunications environment. Formal changes were agreed at an Additional Plenipotentiary Conference in December 1992 and came into operation in March 1993. These have separated the ITU into three sectors: Standardisation, Radiocommunications and Development.

IPRs

Intellectual Property Rights

Low Earth Orbiting satellite

(LEOs)

Non-geostationary satellites in low-earth orbits. *LEO* concepts play a particular role in current proposals for *satellite-based Personal Communications services*.

Memorandum of Understanding

(MOU)

MoUs in the telecommunications field in Europe have been entered into between operators and/or equipment manufacturers or other market participants for the roll out of new products and services.

Mobile Network Operator

Operator of mobile network infrastructure, supporting the transmission and provision of radio-communications services. The activities of *Mobile Network Operators* in most cases also integrate mobile *Service Provider* functions (direct service provision to end-users) within their overall business.

NRA - National Regulatory

Authority.

Directive 88/301 and 90/388 both require Member States to ensure the separation of regulatory activities from the operation and provision of services by *Telecommunications Organisations*.

NII - National Information

Infrastructure

The US concept for ubiquitous availability of communications infrastructure (both telecommunications and cable) for the whole range of voice, data, and multi-media services, as proposed by the Clinton Administration. Also known as Information Superhighway.

ONP - Open Network Provision

The *Open Network Provision* concept defined in Council Directive 90/387/EEC. *ONP* conditions currently apply to public networks operated under exclusive and special rights.

In the context of the reform of *ONP* foreseen in anticipation of full liberalisation and the lifting of exclusive and special rights, a debate has been opened on re-placing the criteria of special/exclusive rights by other criteria concerning major market importance.

Personal Communications

Services/Networks

(PCS) (PCN)

Personal Communications Services (PCS) is used as a generic term for services which provide person-to-person calling, independent of location, terminal used, the means of transmission (wired or wireless) and/or the choice of technology. In the UK, the term *PCN (Personal Communications Networks)* is more commonly applied.

Public Service Requirements in the

form of Trade Regulations

Category of licensing conditions aimed at ensuring permanence, availability and quality of services and defined by Commission Directive 90/388/EEC.

Public telecommunications

infrastructure

Telecommunications infrastructure intended for use by the general public (in contrast to private telecommunications infrastructure intended for own use or use by *closed user groups*).

Public Telecommunications

Services

Telecommunications services provided to the general public

*RACE - R&D programme in
Advanced Communications
technologies for Europe*

The current phase of the RACE programme is defined in Council Decision 91/352/EEC of 7 June 1991 adopting a specific research and technological development programme in the field of telecommunications technologies (1990 to 1994).

Service Providers

Service providers offer services to end users, either by using the basic service and infrastructure provided by network operators on a re-sale basis, or by providing services via own infrastructure where they form part of a network operation. Service provision may range from provision of basic voice or data service on a re-sale basis to the provision of sophisticated value-added services.

Special Rights

Special rights are defined according to Commission Directive 94/46/EC as:

"the rights that are granted by a Member State to a limited number of undertakings through any legislative, regulatory or administrative instrument which, within a given geographical area.

- limits to two or more the number of such undertakings authorised to a service or undertake an activity, otherwise than according to objective, proportional and non-discriminatory criteria, or

- designates, otherwise than according to such criteria, several competing undertakings as being authorised to provide a service or undertake an activity, or

- confers on any undertaking or undertakings, otherwise than according to such criteria, legal or regulatory advantages which substantially affect the ability of any other undertaking to provide the same telecommunications service or to undertake the same activity in the same geographical area under substantially the same conditions

Telecommunications

Infrastructure

The underlying physical components associated with the provision of telecommunications transmission capacity. The establishment of telecommunications infrastructure may require rights of way, frequency assignments, ducts, manholes, poles, cables, aerials, towers, buildings etc. Telecommunications infrastructure specifically excludes switching equipment associated with the provision of switched telecommunications services. See also

Alternative infrastructure and public telecommunications infrastructure.

Telecommunications

Organisation (TO)

Telecommunications Organisations as defined in Directive 90/388/EEC means public or private bodies to which Member States grant special or exclusive rights for the provision of a public telecommunications network and, when applicable, service.

1992 Telecoms Review

A review and wide public consultation during 1992 and early 1993 led to the adoption by the EU Council of Ministers of Resolution C93/213/01 of 22 July 1993, providing for the liberalisation of the provision of public voice telephony services by 1 January 1998, subject to additional transitional periods of up to 5 years for Greece, Ireland, Portugal and Spain, and a possible delay of up to 2000 for Luxembourg.

The Resolution also requested the publication of a *Green Paper* on mobile and personal communications, and the production of a *Green Paper* on telecommunications infrastructures and cable TV by 1 January 1995. The Council also requested that the necessary regulatory framework for the 1998 liberalisation deadline be prepared by 1 January 1996. See *Alternative Infrastructure*.

Telecommunications services

according to Commission Directive 90/388 (as amended by Commission Directive 94/46) telecommunications services means services whose provision consists currently, wholly or partly, in the transmission and routing of signals on the public telecommunications networks by means of telecommunications processes, with the exception of radio and television broadcasting to the public.

In this context, the term telecommunications services is generally understood to be concerned with the provision of transmission, switching and other activities for the purpose of the conveyance of signals, without regard to the content of the messages transmitted.

Universal Personal

Telecommunications (UPT)

Concept which should allow person-to-person calling across multiple networks at any terminal, fixed or mobile and irrespective of geographical location, based on personal and portable numbers. Essential concept for implementing full personal mobility in a communications environment.

Universal Service

The provision of telecommunications services permitting "access to a defined minimum service of specified quality to all users everywhere and, in the light of specific national conditions, at an affordable price" . The notion of Universal Service also includes, in particular, service to disadvantaged users such as deaf and other disabled users. Political orientations concerning the scope of Universal Service have been provided by Council Resolution 94/C48/01 and the associated Commission statement.

Universal Service Fund

Special arrangements for collecting contributions to the cost of ***Universal Service Obligations*** and transferring funds to those network operators taking on those obligations. Universal Service Funds are in operation in a number of countries, e.g. in U.S. and Australia, and are normally established under strict regulatory oversight. An alternative or supplement to ***access charges*** (which are normally paid directly to the operators of network infrastructure as a contribution to their cost of Universal Service Obligations). See also ***Access Charges***.

Universal Service Obligation

(USO)

The obligation placed upon one or more operators to provide **universal service** - usually the provision of basic services, in particular telephone service. **Uneconomic universal service obligations** means the provision of such services to those users whom an operator would not serve if it were to apply its normal commercial criteria of profitability. (See also section VII.6.2)

ANNEX 2 : STUDIES CARRIED OUT FOR THE COMMISSION IN PREPARATION FOR THIS GREEN PAPER

A number of external studies have been requested by the Commission to assist in the preparation of this Green Paper and in the subsequent consultation process.

The studies requested are :

"Future Policy for Telecommunications Infrastructure and Cable TV Networks", by Mercer Management Consultants;

"Requirements for the Development of a Multimedia Environment based on Telecommunications Infrastructure and Cable TV Networks", by Devotech;

"Investment requirements for Europe to achieve convergence", by KPMG;

"Study to provide quantitative data as background to the Green Paper", by IDATE;

"Overview and analysis of the legal and regulatory barriers to multimedia applications", by Coudert;

and in relation to the issue of alternative infrastructures:

"The impact of liberalisation of Alternative Terrestrial Infrastructure for Non-Reserved Services", by Coopers and Lybrand;

"The Effects of Liberalisation of Satellite Infrastructure on the Corporate and Closed User Group Market", by Analysys;

"L'impact de l'autorisation de la fourniture de services de télécommunications libéralisés par les câblo-opérateurs", by IDATE.

In addition, two studies on interconnection issues are available which have also been used in the preparation of this Green Paper:

"Network interconnection in the domain of open networks provision", by WIK;
and

"Cost allocation and the general accounting principles to be used in the establishment of access charges in the context of telephone liberalisation in the EC", by Arthur Andersen.

These studies will be made available on request. Please address inquiries to: the European Commission, DG XIII/A/1, Rue de la Loi 200, B-1049 Brussels - Office: BU9-4-185. Fax : (+32 2) 296.83.91.

ANNEX 3 : LIST OF KEY REGULATORY MEASURES AND PENDING PROPOSALS IN THE FIELD OF TELECOMMUNICATIONS

These measures concern:

The Directives on competition in the market for telecommunications services and for terminal equipment, setting out the basic principles for liberalisation in the European Union (as most recently amended to include satellite communications and equipment within their scope) :

- Commission Directive of 16 May 1988 on competition on the markets in telecommunications terminal equipment (88/301/EEC ; OJ L131/73, 27.5.88)
- Commission Directive of 28 June 1990 on competition on the markets for telecommunications services (90/388/EEC ; OJ L192/10, 24.7.90)
- Commission Directive of 13 October 1994 amending Directive 99/301/EEC and Directive 90/388/EEC in particular with regard to satellite communications (94/46/EC, OJ L268/15, 19.10.94)

The ONP framework and specific Directives which establish principles for open access, interconnection and harmonisation:

- Council Directive of 28th June 1990 on the establishment of the Internal Market for telecommunications services through the implementation of Open Network Provision (90/387/EEC ; OJ L192/1, 24.7.90)
- Council Directive of 5th June 1992 on the Application of Open Network Provision to Leased Lines (92/44/EEC ; OJ L165/27, 19.6.92)

Directives concerning the mutual recognition of terminal equipment which facilitate the free movement of telecommunications equipment within the single market and proposals for directive extending the principle of mutual recognition to the licensing of certain categories of telecommunications and satellite services:

- Council Directive of 29th April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity (91/263/EEC ; OJ L128/1, 23.5.91);
- Council Directive of 29 October 1993 supplementing Directive 91/263/EEC in respect of satellite earth station equipment (93/97/EEC; OJ L290/01, 24.11.93)

and in the area of services :

- Amended proposal for a European Parliament and Council Directive on the mutual recognition of licences and other national authorisations for telecommunications services, COM(94) 41 final, 22.3.94
- Proposal for a European Parliament and Council Directive on a policy for the mutual recognition of licences and other national authorisations for the provision of satellite network services and/or satellite communications services, COM(93) 652, 4.1.94,

Directives concerning the protection of the public interest in this field, such as the proposed Directive on data protection and privacy in the telecommunications field:

- Modified proposal for a European Parliament and Council Directive concerning the protection of personal data and privacy in the context of public digital telecommunications networks, in particular the Integrated Services Digital Network (ISDN) and public digital mobile networks, COM(94) 128 final, 13.6.94.