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**Annex to the**

**COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE  
EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**on the Review of  
the EU Regulatory Framework for electronic communications networks and services**

**{COM(2006) 334 final}**

**IMPACT ASSESSMENT**

**The Communication on the functioning of the regulatory framework for electronic communications networks and services**

***IMPACT ASSESSMENT***

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## Commission Legislative Work Programme reference

2006/INFSO/001

### 1. INTRODUCTION

This Impact Assessment (IA) describes the options considered for the Review of the regulatory framework for electronic communications networks and services (eCommunications) and provides background for the proposed changes presented in the Commission's Communication on the Review.

The regulatory framework for eCommunications includes five Directives adopted by the European Parliament and the Council in 2002 that became applicable from 2003: the Access Directive (2002/19/EC), the Authorisation Directive (2002/20/EC), the Framework Directive (2002/21/EC); the Universal Service Directive (2002/22/EC), and the e-Privacy Directive (2002/58/EC)<sup>1</sup>. Alongside these Directives are several complementary measures as described in Annex 1.

In keeping with the principles of 'better regulation', these five Directives have to be reviewed periodically, with the first review taking place in 2006.<sup>2</sup> In parallel, the Commission is reviewing the list of markets susceptible of ex ante regulation in the Recommendation on relevant markets<sup>3</sup> under the current Directives.

#### **Main characteristics of the regulatory framework**

- The framework provides a common set of rules for all communications that are transmitted electronically. Its objectives are to encourage competition in the eCommunications markets, to improve the functioning of the Internal Market and to protect the interests of European citizens.
- Competition is not an end in itself, but a means to promote innovation, investment and consumer welfare.
- Where market forces alone may not fully meet the public interest, the framework safeguards consumer interests and guarantees basic user rights in areas such as universal service and processing of personal data and right to privacy.
- The framework is technology-neutral, applying the same regulatory principles regardless of the specific technology involved, and is designed to be future proof, and to take account of the convergence of digital technologies that allow everything from phone calls to entertainment to be delivered over all sorts of networks to all sorts of devices - PCs, televisions, mobile phones, wire and wireless technologies and more.

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<sup>1</sup> OJ L 108, 24.4.2002, p. 7; OJ L 108, 24.4.2002, p. 21; OJ L 108, 24.4.2002, p.33; OJ L 108, 24.4.2002, p. 51; and OJ L 201, 31.07.2002, p. 37 respectively.

<sup>2</sup> The Liberalisation Directive, i.e. Commission Directive 2002/77/EC on competition in the markets for electronic communications networks and services (OJ L 249, 17.09.2002, p. 21), is not covered by this review.

<sup>3</sup> OJ L114, 08.05.2003, p. 45.

## **2. PURPOSE OF THE REVIEW AND THE IMPACT ASSESSMENT**

The purpose of this review is to examine:

- how well the regulatory framework has achieved its objectives; and
- how the framework should be changed in the light of technological and market developments<sup>4</sup> so that it continues to meet the needs of the sector over the coming decade.

The Review also takes into account policy developments that have taken place since the framework was adopted that need to be incorporated into the EU legal framework.

The Commission Communication is launching a public consultation on its proposals. The domains covered by the review are diverse and often technically complex. This Impact Assessment therefore aims to inform stakeholder debate on the main issues and options, and their implications, in a form accessible to a broad public and decision-making constituency.

The description of problems and analysis of options and impacts are grouped in six main areas, which are closely related to the objectives the regulatory framework seeks to achieve. Specifically the Commission has identified a problem in the way that spectrum is managed within the EU; current approaches are too rigid and will not allow EU citizens and industry to reap the benefits of new wireless products and services. The review exercise has also brought to light a number of areas where the current framework could be improved, as described in the Commission Staff Working Document associated to the Communication.

The key players who will be affected by the proposed changes are:

- National regulatory authorities, who have responsibility for applying EU rules at the national level; and
- Operators, service providers, broadcasters and others who may be directly affected by changes to the framework. This is not a homogeneous group: its members may often have conflicting interests.

The affected population is every business, society, government department, institution and citizen in Europe, since all are users of electronic communications.

In conformance with the principle of proportionality, this Impact Assessment does not present detailed and full quantitative analysis of the possible options at this stage. The analysis will be refined in the second report that will provide a more detailed impact assessment on the Commission's legislative proposals for amendment of the Directives (including quantification of potential costs and benefits where appropriate).

## **3. CONSULTATION AND EXPERTISE**

The proposals in the Communication draw upon an extensive prior consultation process, which has included:

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<sup>4</sup> See Annex 3 on technological and market evolution.

- Public call for input on the review, which involved a public hearing with over 440 participants in January 2006, and over 150 written submissions<sup>5</sup>;
- Discussions with Member States in two High Level meetings with Ministries in September 2005 and March 2006, and in the Communications Committee and the Radio Spectrum Committee; and
- Discussion with regulatory authorities, including Radio Spectrum Policy Group, European Regulators Group, Working Party on the Protection of Individuals with regard to the Processing of Personal Data (‘Article 29 Working Party’).

In general, the contributors to the call for input considered that the regulatory framework is sound and well established. In some areas, however, the views were differing and some stakeholders sought far-reaching changes. The results of the public call for input have been taken into account in the review and this impact assessment as reflected in the analysis of Chapter 5.

In addition, major sources of information relevant to this impact assessment are the Commission Reports on Implementation of the Regulatory Package in general<sup>6</sup>, and on the market reviews (“Article 7 procedure”) in particular<sup>7</sup>; as well as studies and surveys commissioned from the external consultants for the review<sup>8</sup>.

In view of the broad scope and the cross-cutting nature of the subject matter at hand, an inter-service steering group of the Commission services has been established.<sup>9</sup>

Annex 2 provides further details on consultation, expertise and information sources.

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<sup>5</sup> The contributions are available at:  
[http://ec.europa.eu/information\\_society/policy/ecommm/info\\_centre/documentation/public\\_consult/reviiew/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecommm/info_centre/documentation/public_consult/reviiew/index_en.htm)

<sup>6</sup> The latest report is the 11<sup>th</sup> Implementation Report on European Electronic Communications Regulation and Markets 2005, COM(2006)68, available at:

[http://ec.europa.eu/information\\_society/policy/ecommm/implementation\\_enforcement/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecommm/implementation_enforcement/index_en.htm)

<sup>7</sup> Communication on Market Reviews under the EU Regulatory Framework - Consolidating the internal market for electronic communications, COM(2006) 28, available at:

[http://ec.europa.eu/information\\_society/policy/ecommm/article\\_7/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecommm/article_7/index_en.htm)

<sup>8</sup> Preparing the next steps of eCommunications - a contribution to the Review of the eCommunications regulatory framework, Hogan & Hartson LLP and Analysys Consulting, 2006; An assessment of the regulatory framework for electronic communications – growth and investment in the EU eCommunications sector, London Economics and PricewaterhouseCoopers, 2006; and Eurobarometer Special – eCommunications household survey, 2006; available at:

[http://ec.europa.eu/information\\_society/policy/ecommm/info\\_centre/documentation/studies\\_ext\\_consult/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecommm/info_centre/documentation/studies_ext_consult/index_en.htm)

<sup>9</sup> The following Commission serviced were invited to participate: Secretary-General; Legal Service; Competition; Economic and Financial Affairs; Education and Culture; Employment and Social Affairs; Energy and Transport; Enlargement; Enterprise and Industry; Health and Consumer Protection; Informatics; Internal Market; Justice, Freedom and Security; Regional Policy; Trade; Research; and Eurostat.

#### 4. THE OBJECTIVES IN THE CONTEXT OF THE i2010 INITIATIVE

The Commission's "i2010 Initiative: European Information Society 2010" adopted in June 2005<sup>10</sup>, set out the contribution of the ICT sector to the EU's renewed Lisbon strategy to stimulate growth, competitiveness and employment.

The i2010 Initiative builds on three main pillars:

- **A Single European Information Space** offering affordable and secure high bandwidth communications, rich and diverse content and digital services.
- World class performance in research and innovation in ICT by closing the gap with Europe's leading competitors.
- An Information Society that is inclusive, provides high quality public services and promotes quality of life.

i2010 also highlights the importance of spectrum availability to boost innovation in ICT and of more flexibility in managing this resource so as to achieve a more efficient use of it.<sup>11</sup>

The regulatory framework for eCommunications falls under the first pillar – the Single European Information Space. The review of the regulatory framework provides therefore an opportunity to modernise and update the framework to ensure that it supports the i2010 policy and the renewed Lisbon Programme.

More specific objectives of the review are to examine:

- the impact of the regulatory framework on investment and growth, and explore alternative approaches;
- how to improve spectrum management in the EU, and introduce greater flexibility of use;
- whether the current model of devolving responsibility to national regulatory authorities (NRAs), with Community procedures to ensure consistency of approach, are sufficient to deliver the i2010 objectives;
- how to reduce the administrative burden associated with the market review procedure;
- the adequacy of current provisions on consumer protection, in particular those concerning universal service; and
- how to improve network security.

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<sup>10</sup> COM(2005) 229, see: [http://ec.europa.eu/information\\_society/eeurope/i2010/i2010/index\\_en.htm](http://ec.europa.eu/information_society/eeurope/i2010/i2010/index_en.htm)

<sup>11</sup> In addition, the Commission Communication on EU spectrum policy priorities for the digital switchover in the context of the upcoming ITU Regional Radiocommunication Conference 2006, COM (2005)461, sets out the proposed EU strategy aiming to lower the barriers to access radio resources and to take advantage of the synergies resulting from a common European approach.



## **eCommunications in the wider economic perspective**

The telecoms sector continues to represent the largest segment by far of the overall European ICT sector accounting for 44.4% of the total value in 2005, which is up from 43% a year earlier. In 2005 the ICT sector was worth €614 billion with telecommunications accounting for €273 billion. Overall growth in revenue terms in the sector continues to be strong and again has outpaced general GDP growth for the EU which was 1.5%. ICT represents just over 5% of the EU GDP. ICTs drive about 40% of productivity growth and one quarter of overall growth in Europe. The contribution of the telecoms sector to Europe's growth, jobs and prosperity is therefore crucial.<sup>12</sup>

## **5. AREAS OF ANALYSIS – OPTIONS AND IMPACTS**

Impact analysis of the review of a package comprising five directives is a complex task. The analysis of impacts in this section therefore concentrates on the six objectives listed above. The analysis:

- focuses on high level and impacts that have the main policy implications;
- provides a preliminary, mostly qualitative set of impacts of different options;
- addresses impacts on key stakeholders without going into detail;
- captures both positive and negative effects of the options; and
- prepares the ground for a deeper and more advanced impact analysis at the second stage of the review.

### **5.1. Investment and growth**

#### *5.1.1. The problem*

The regulatory framework aims to create a stable and predictable regulatory environment that encourages innovation and stimulate new investment in communications networks and services, by both new entrants and existing operators. The question is whether the right balance between flexibility and predictability has been found, and to what extent the current framework contributes to investment and innovation.

In the Commission's 'call for input' most incumbent operators and some Ministries considered that the regulatory framework should encourage more investment, and called for major changes, but this was not the majority view. Some have called for a firm date to be set for the withdrawal of sector-specific regulation; other for regulatory holidays for major new investments. The arguments put forward for regulatory holidays are based on the large investments being made by operators in NGN (Next Generation Networks)<sup>13</sup> core networks and fibre local access networks.

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<sup>12</sup> The 11<sup>th</sup> Implementation Report, COM(2006) 68.

<sup>13</sup> On NGN, see Annex 3.

### 5.1.2. The objective

The objective is to ensure that the regulatory framework promotes competition investment and innovation, which are seen as the best means of ensuring that user needs are met.

### 5.1.3. Policy options

#### Option 1 - Remove or restrict sector-specific regulation

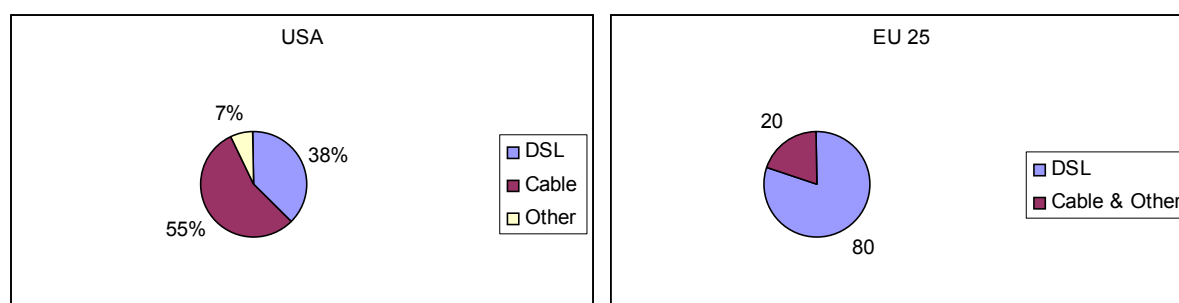
This option of removing or restricting *ex ante* regulation would focus on creating regulatory predictability.

The advantage of setting a fixed date for withdrawal of sector specific regulation is that it set a clear deadline for the removal of *ex ante* regulation. The disadvantage is that it takes no account of the state of competition in the market at the time. Competition progresses at different rates in different markets. Removal of *ex ante* regulation in a market where an incumbent operator retains its dominant position is likely to prohibit the development of sustainable competition and to cause consumer harm.

The investments needed for network modernisation are substantial, but the fact that investments in NGN represent large capital outlays is not in itself justification for regulatory forbearance, since the operational savings from rationalisation and the use of modern technology are also considerable.<sup>14</sup>

In the case of fibre local access networks, comparison is often made with the United States where regulated access to new fibre investment by telecommunications operators is the exception. In this connection, it is worth pointing out the differences between the EU and the USA. In the United States, relatively few subscribers use xDSL (Digital Subscriber Line) technology due to the length of the copper loops, so the telecommunication companies are the minority player in the broadband market, which is dominated by cable (TV) companies - the opposite of the situation in Europe (see Figure 1).

**Figure 1. DSL and cable markets shares in the United States and the EU**



Source: OECD, European Commission

<sup>14</sup> For example, BT has announced it will have invested £10 billion by the end of the decade on its 21CN initiative, and claims that “21CN will completely transform BT’s networks reducing complexity and radically reducing BT’s cost base with identified savings of around one billion pounds a year by 2008 / 09”. BT Press release DC06-109, 6.3.2006.

A counter example can be found in Japan, where significant investment in fibre is also taking place, despite the incumbent (NTT) having an obligation to offer unbundled access to its fibre. The main driver for this investment is intense local competition (in particular with electricity utilities) and strong evidence of demand for more bandwidth among consumers<sup>15</sup>.

### *Option 2 – Adopt an ‘open access’ model for new network infrastructure*

Today, structural separation cannot be imposed under the current directives, but could in principle be imposed under competition law instruments. Under this option, Member States would be required to grant the NRAs the powers to ensure that the infrastructure provider is providing non-discriminatory access to all operators by separating infrastructure provision from service provision to a greater or lesser extent.

The ‘open access’ model for new infrastructure investment works well in a greenfield situation, where there is no pre-existing network. Thus, for example, the Commission Guidelines on criteria and modalities of implementation of structural funds in support of electronic communications<sup>16</sup> recommend this approach. The model offers complete predictability (in that the access rules are known from the start) and can be attractive to investors prepared to accept low returns over a long period (as opposed to the high returns and short periods typical of the services sector).

It is more complex to introduce an open access model in the existing local access network where the incumbent already owns the infrastructure (ducts and poles, as well as the copper).

The general view, as confirmed by two OECD reports<sup>17</sup>, is that complete structural separation is rarely justified in the communications sector. Overall, the costs of structural separation appear to be greater than the expected benefits, in particular due to the fact that even after structural separation, regulation of the independent local loop operator remains necessary to prevent monopoly pricing. Other disadvantages concern the adequate level of investment in network infrastructure when providers do not receive the revenues and consequent incentives that flow from vertical integration. Experience in other sectors (e.g. railways) has shown the problems of co-ordinating investment when infrastructure and services are separated. This problem is more acute in the communications industry, where technological change is rapid and where investment demands are pressing.

### *Option 3 – No change to the regulatory framework*

The current framework is based on regulation of markets. This market based approach is a response to convergence; it allows inter-platform competition to be fully taken into account, and avoids the technology-specific regulation. The same regulatory principles apply regardless of which kind of existing or potentially new technology is involved. Regulation can be lifted when sufficient investment has taken place to create effective competition.

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<sup>15</sup> See ‘The Business Case for Incumbent Telco Fibre Networks’, prepared by Heavy Reading for the Fibre-to-the-Home (FTTH) Council Europe, January 2006:  
[http://www.europeftthcouncil.com/extra/Market\\_Development/FTTH\\_Council\\_Incumbent\\_Exec\\_Sum\\_m.pdf](http://www.europeftthcouncil.com/extra/Market_Development/FTTH_Council_Incumbent_Exec_Sum_m.pdf)

<sup>16</sup> SEC(2003) 895, 28.7.2003.

<sup>17</sup> DAFPE/COMP/WP2 “The benefits and costs of structural separation” – Note by TISP, of 10.01.2003 and DSTI/ICCP/TISP(2005)10 “Draft Report to Council on experiences with structural separation” of 28.10.2005.

On the other hand, NRAs have already now a margin of manoeuvre to adapt the remedies to market failures concerned. For example, in one Member State duct sharing has been imposed on the incumbent. This remedy has been proposed in some responses to the ‘call for input’. It addresses the real cost of installing a local access network, which is not the cost of the fibre, but the cost and time it takes to be granted rights of way and to dig up roads and pavements to lay ducts. In practice, however, other NRAs may only be able to follow this approach in situations where ducts have been installed relatively recently and are not congested<sup>18</sup>.

This option therefore implies that *ex ante* regulation should not be removed “en bloc” but progressively as an outcome of market analysis, while further efforts are made to foster consistency in remedies applied by NRAs (see Chapter 5.3 below).

Studies show that the level of investment in the sector in Europe over recent years has been at least as high, if not higher, than in other regions. On the other hand, it is found that slow implementation of regulatory reform and poor application of the framework holds back investment.<sup>19</sup> The Commission Staff Working Document associated to the Communication describes the flexibility available to NRAs under the framework for dealing with new and emerging markets.

#### **Recent trends in investments**

In 2005, aggregate investment – measured in terms of capital expenditure - rose to more than € 45 billion, representing an increase of 6% over 2004.<sup>20</sup> It was the third consecutive year of increased year-over-year investment levels since 2003. The steady nature of this overall increase suggests that the investment cycle has improved and that the sector is considered a more attractive growth opportunity because of its broader structural characteristics. Moreover renewed emphasis on investment was accompanied by rising capital market valuations of the sector over time.<sup>21</sup>

#### *5.1.4. Comparison of options and impacts*

**Option 1** (*limitation of ex ante regulation*) is favoured by incumbents and opposed by new entrants. It is not clear that on its own it would lead to more investment, and it carries a strong risk of reducing competition and causing consumer harm.

**Option 2** (*‘open access’ model*) is favoured by new entrants and opposed by incumbents. Structural separation represents a major intervention into the property rights of infrastructure owners. It is not clear that it will lead to more investment, because it denies the infrastructure owner the revenue streams that are available to a vertically integrated operator. In addition it implies never-ending regulation of the infrastructure provider.

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<sup>18</sup> Some ducts are 30-40 years old, are in a poor state of repair and congested with cables.

<sup>19</sup> See further details in the Commission Staff Working Document associated with the Communication and in particular the study Growth and Investment in the EU e-Communications Sector, London Economics and PricewaterhouseCoopers, 2006.

<sup>20</sup> The 11<sup>th</sup> Implementation Report, COM(2006) 68. Data from Infonetics Research, ECTA, ETNO, ECCA, OECD and the European Commission sources (ECTA: European Competitive Telecommunications Association, ETNO: European Telecommunications Network Operators' Association; ECCA: European Cable Communications Association).

<sup>21</sup> The benchmark Dow Jones EURO STOXX (SM) Telecommunications (SXKE) – encompassing mainly incumbent operators - rose from 321.73 on 1 Jan 2003 to 417.11 on 1 Dec 2005 (approximately 30%). Sector performance in 2005 alone was more disappointing, though.

**Option 3** (*maintain the current model*) is supported by certain empirical evidence, which reinforces the conclusion that competition drives investment, and that slow implementation of regulatory reform (and poor application of the framework) holds back investment. The framework has the flexibility to handle new and volatile markets, and has the tools for regulators to take account of the need for risky investments to generate an adequate return on capital when mandating pro-competitive access obligations. Duct sharing is possible under the current framework and does offer advantages in certain situations.

See Annex 4 for the summary tables on main likely impacts arising from the each of the three policy options.

The Commission considers that option 3 is the most appropriate option and has proposed this in the associated Communication.

## **5.2. Radio spectrum**

### *5.2.1. The Problem*

The importance of radio spectrum as a production factor for electronic communications services and networks (such as mobile, wireless and satellite communications, TV and radio broadcasting) and other applications (short range devices, defence, transport, radio location and GPS/Galileo satellite system) has increased dramatically during the last decade<sup>22</sup>. It is estimated that the total value of radio spectrum dependent services in the EU is in excess of 200 € billion, i.e. between 2 % and 2.5 % of annual European gross product.<sup>23</sup>

Since most spectrum throughout the EU is already allocated to some usage or users, any new allocation can only be made at the expense of existing uses or users<sup>24</sup>. The need to balance the demands of very different sectors constitutes a challenge to any spectrum regulator. Spectrum policy must take into account not only the needs of electronic communications, but all other spectrum uses, including research, aeronautical, maritime, space, audio visual (content), defence industry, earth observation, medical, inclusion, road safety, scientific, etc. This balance is often more effectively sought at EU level, since policies competing for radio spectrum are increasingly developed and agreed for the European Union as a whole.

This raises the issue of efficient management of the whole spectrum at EU level. A better coordination of spectrum management along binding common rules needs to be considered. The first results achieved on the basis of the Radio Spectrum Decision<sup>25</sup>, and the possibility to reach consensus on strategic spectrum issues through the Radio Spectrum Policy Group, as well as the experiences from the application to radio equipment of the Radio and

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<sup>22</sup> For further discussion on radio spectrum, see Study on conditions and options in introducing secondary trading of radio spectrum in the European Community, Analysys Consulting, DotEcon, Hogan & Hartson, 2004, and Study on spectrum management in the field of broadcasting, Aegis Systems Ltd, Indepen Consulting Ltd and IDATE, 2004.

<sup>23</sup> See the above cited study by Analysys et al. The estimate covers the European Economic Area, i.e. all EU Member States and Iceland, Norway and Lichtenstein.

<sup>24</sup> The alternative is for new services to be given "virgin" spectrum at increasingly higher frequencies, which can however substantially increase the cost of new systems

<sup>25</sup> Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community, OJL 108 of 24.4.2002, p.1.

Telecommunications Terminal Equipment Directive (R&TT&E Directive 1999/5/EC) already contribute to the development of a European dimension for radio spectrum policy.

The overall question to be addressed here is whether the current mechanisms are capable and sufficiently efficient to deliver satisfactory results or whether there is need for change to ensure more coherence in the spectrum management specifically for electronic communication services.

Provisions concerning radio spectrum management for electronic communication services exist within the present regulatory framework. However there are several developments that show that current spectrum management approaches are not able to meet the potential market demand for spectrum:

- Currently radio spectrum remains rigidly segmented between classical services (broadcast, fixed communications, mobile communications). Rapid technological development in combination with the digitalisation of transmission as well as the convergence of communication services has blurred the link between radio access platforms and the services on which spectrum management was traditionally based.
- In the context of the growing internal market and global trade flows for wireless services and equipment, national borders are increasingly irrelevant for optimal radio spectrum use. Mobile telephone equipment manufacturers and operators increasingly have to think and act globally to benefit from economies of scale and remain competitive. Fragmentation of the management of access rights to spectrum is not conducive to these general industrial trends, since it limits investment across the EU and stifles innovation.
- Due to their physical characteristics there is a high demand for radio resources below 3 GHz. For historical reasons, these bands are often used by long-established sectors (e.g. for broadcasting, transport or defence purposes), which do not make optimal use of spectrum efficiency gains generated by new technology.
- There are strikingly diverging conditions to access radio resources between incumbent users (notably between broadcasters vs. mobile operators) while the services provided by both increasingly overlap. The resulting constraints create very large discrepancies in demand and economic valuations with regards to similar spectrum bands<sup>26</sup>.

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<sup>26</sup> It is generally agreed that the high prices paid at the 3G mobile auctions set back the large-scale deployment of 3G services by several years. The choice of operators to bid was, however, influenced by the offer of a specific limited numbers of licenses and the assumption by bidders that no further spectrum would become available. The bid calculations were therefore based on a combination of assumed spectrum value and the perceived value of an oligopolistic position with the latter driving up the bids over any spectrum value. See the above cited study by Analysys et al. for more discussion on 3G auctions.

- Incentives for investing in efficient radio resources usage vary greatly amongst spectrum users<sup>27</sup>. Service providers which are established in the market typically use mature technology, and may have less incentive to upgrade to more efficient state of the art technology that could free spectrum for competing players. Access to available spectrum to new and innovative applications is often in consequence only available in higher, less attractive frequencies, which in turn often limits the viability of the business cases of new services. Today, it is increasingly impossible to accommodate new services or technologies since as a result of legacy assignment there is no "empty" spectrum in large parts of Europe<sup>28</sup>.
- Technological innovation, such as the introduction of effective "cognitive" technologies, may in time significantly reduce the risk of interference between different spectrum users, reducing the need for granting exclusive access to spectrum resources and allowing a more extensive application of general authorisations incorporating light technical spectrum usage constraints. The application of these innovative technologies could thereby lower access barriers to spectrum and increase its efficient use.
- Legacy issues dating back to the way spectrum was originally awarded, such as the conditions and pricing of the original licences, can constrain the ability of market players to compete on an equal footing in a wider, less restrictive electronic communications services market.
- Fragmentation in decision-making, where successive or parallel entities adopt different rules or interpretations, creates uncertainty among operators and may impede consistent delivery of services.

The current regulatory framework establishes general principles for spectrum management for electronic communications which are difficult to apply correctly in practice<sup>29</sup>. Consequently, there is sometimes a lack of coherence at EU level in the optimal utilisation of the radio spectrum resource. The mismatch between regulation and market requirements in wireless communication services impairs the efficient use of spectrum. Furthermore, burdensome and lengthy administrative decisions constitute a hurdle for market players. The resulting inefficiencies in the distribution and use of spectrum create costs, lead to wasted opportunities for business and reduce the take-up of innovative services and products to the detriment of consumers. In addition, it may prevent economies of scale in the EU and push innovation outside Europe to other regions where spectrum necessary to access large markets can be obtained more quickly and effectively.

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<sup>27</sup> For example, mobile operators, who are generally recognised to be efficient users of spectrum, are making very large investments into infrastructure to further improve their spectrum efficiency. On the other hand, terrestrial distribution of television, which has access to a similar amount of spectrum, leaves much of it unused in any given location. Without entering into a debate on the comparative benefits of these two services, there is a serious question whether the global cost of investment in infrastructure and spectrum for services is optimal from the perspective of EU growth and development as a whole.

<sup>28</sup> This lack of available spectrum does not reveal the actual usage of spectrum. Recent studies by OFCOM and FCC demonstrate that even in highly-congested urban environments, the use of spectrum is largely sub-optimal, except for some mobile services.

<sup>29</sup> With the exception of the coordination of technical radio spectrum usage conditions which already today can be coordinated pursuant to the Radio Spectrum Decision and equipment regulation under the R&TTE Directive.

### 5.2.2. *The Objective*

Improving the way radio spectrum is managed to optimise its usage will require adapting the current spectrum management mechanisms. For this purpose, it is essential to anchor more firmly within the regulatory framework provisions aiming at maximising the social and economic benefits of radio resources and to allow for the synergy of a coherent EU approach. The fundamental objectives are:

- **to facilitate access to radio resources for market players;** although no single approach is likely to fit all situations, the baseline approach remains that spectrum usage conditions should be enshrined within general authorisations, as stipulated by the regulatory framework. It is proposed that individual licensing should only be allowed on the basis of a clear justification that the risk of harmful interference cannot be managed other than by attributing individual rights. Where individual rights are applied, the aim is to be least restrictive in the prerogative to exploit and dispose of these individual rights and to shift from administrative decisions towards a market-based approach;
- **to give spectrum usage right holders substantially more freedom** to exert these rights in terms of choice of radio network and access technologies used as well as services offered; this implies ensuring technology and service neutrality when defining spectrum usage rights; and
- **to ensure that there is a coordinated approach to spectrum management at EU level** amongst Member States where the internal market for electronic communications services depends significantly on radio spectrum. This would include the possibility of agreeing common authorisation conditions in appropriate cases.

These measures aim to respond more efficiently to the actual needs of the market, while seeking to achieve an appropriate coordination where required for the internal market.

### 5.2.3. *Policy options*

The options described below build on prior analysis made by the Commission in its Communications: A Forward Looking Spectrum Policy<sup>30</sup> and A Market Based Approach to Spectrum Management<sup>31</sup>. Considering the objectives and challenges to secure more efficient use of spectrum in the Community through better spectrum management, three main options may be envisaged:

- Option 1: Create an EU entity (e.g. an agency) in charge of managing EU aspects of spectrum.
- Option 2: Adapt and improve the regulatory framework while keeping existing institutional arrangements; coherence at EU level would be achieved through regulatory committee structures to coordinate actions and establish common rules.
- Option 3: Aim at increasing the efficiency of spectrum management by continuing to work on the basis of the existing regulatory framework.

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<sup>30</sup> COM(2005) 411.

<sup>31</sup> COM(2005) 400.



The following discussion of options cover the introduction of flexibility and the reduction of obstacles to access to radio spectrum resources through the use of general authorisations and the introduction of a market-based approach.

The three options need to be envisaged in the context of the continuous application of the Radio Spectrum Decision in its present form which already provides for some harmonisation of the technical use of spectrum, and of the R&TT&E Directive which harmonises requirements on radio equipment, both aiming at improving the functioning of the internal market.

*Option 1 – Create an EU entity (e.g. an agency) in charge of managing EU aspects of spectrum*

Under this option, an entity at EU level, e.g. an agency, would be vested with the power to adopt regulation applicable throughout the European Union covering certain aspects of spectrum related to EU policies, such as the use of general authorisations, the introduction of a market-based approach and the authorisation of services with a European scope.

Responsibilities for applying the provisions would remain at the national level, as well as issues such as monitoring, enforcement and border coordination.

Provisions in the revised regulatory framework would establish the principle that radio spectrum for electronic communications be governed by technology and service neutrality, whereby users would be free to introduce the technology and services they consider most appropriate.

*Option 2 - Adapt the regulatory framework and improve coordination at EU level through wider use of committee mechanisms*

This option seeks to strengthen the internal market by improving the efficient use of spectrum through targeted changes to the regulatory framework, while retaining the existing institutional arrangements. This option would enable increased flexibility through common agreement at the European level to limit regulatory restrictions to the minimum, achieved via comitology decisions, while retaining the role of the national regulators in implementing and applying such a framework.

Provisions in the revised regulatory framework would establish the principle that radio spectrum for electronic communications be governed by technology and service neutrality, whereby users would be free to introduce the technology and services they consider as most appropriate.

Where general authorisations are not possible, comitology decisions could designate exclusive spectrum usage rights in certain bands as tradable in all Member States, pursuant to a general provision introduced in the Framework and Authorisation directives. In those cases, market mechanisms would replace administrative decision making for the assignment of spectrum. Exceptions to such spectrum trading would have to be limited in time and scope and duly justified.

### *Option 3 - No change to the regulatory framework*

Although the current framework is a light regime with general authorisations for the provision of services as a principle and the granting of exclusive individual rights as the exception, in practice the current choice in spectrum management is to subject most bands systematically to individual rights. There is presently no mechanism to ensure a coherent designation of bands where the use of spectrum is subject to general authorisation only or to ensure a coherent and certain introduction of trading of spectrum rights.

The principle of technology neutrality is not clearly defined and no coherent application can be ensured between Member States. Although general authorisations are foreseen under the current framework, implying a service neutral approach, the current practice does not in many cases reflect this.

Spectrum usage rights can and usually are subject to conditions which designate the service for which the right has been granted. Under the current framework, harmonisation of conditions attached to individual spectrum rights cannot be done with binding force<sup>32</sup>.

The provision<sup>33</sup> in the present regulatory framework relating to the authorisation of pan-European services and the common selection of rights holders is weak.

The current principles applicable to spectrum allocation are succinctly listed in the Framework Directive and no clear procedural obligations apply to allocation of spectrum. These decisions directly influence spectrum assignment, which is subject to specific procedures.

Total coherence between objectives of equipment standardisation under the Radio and Telecommunications Terminal Equipment Directive and spectrum management cannot be ensured.

The current framework may not be sufficient to fully coordinate the publication of information regarding rights and obligations in order to support the introduction of spectrum trading in a coordinated way.

#### *5.2.4. Comparison of options and impacts*

**Option 1** (*create an EU entity/agency in charge of managing EU aspects of spectrum*) could achieve a high level of harmonisation, higher efficiency in the internal market and more streamlined decision-making. A European-level entity could adopt decisions speedily and, where pan-European authorisations are concerned, with consistent applicability. It could, however, be argued that the concept of an EU entity covering spectrum in general goes beyond the scope of the present review, and changing the organisational structure of European spectrum management could require substantial time and resources.

**Option 2** (*wider application of committee mechanisms to improve coordination at EU level*) builds on the existing cooperation between Member States and the Commission. Compared to the existing situation, it would lead to a more consistent set of rules within the EU and a greater consideration of the European dimension. The central role of national administrations

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<sup>32</sup> Art 19 Framework Directive.

<sup>33</sup> Art 8 Authorisation Directive.

in the common decision-making would ensure that their concerns form part of the input. Consistency in application between the European and the national levels would also be strengthened. The transitions of markets for services from national to cross-border or pan-European would be encouraged and supported. This option also safeguards the existing technical expertise at the national level. Inevitably this parallel system means however some duplication of activities already carried out in the Member States and could delay the decision process.

**Option 3 (no change):** Keeping the rules covering the current mix of spectrum management mechanisms (i.e. dominant national administrative model, voluntary trading and general authorisations) would not ensure the efficient use of the spectrum in the EU and would risk further fragmenting the use of the spectrum in Europe, as national reform processes of varied extent and scope are under way in the Member States. It could have substantial negative effects for the strengthening of the internal market and for the competitiveness of Europe vis-à-vis other world regions. Voluntary cooperation between authorities cannot guarantee coherence of solutions.

Both Options 1 and 2 would allow for the introduction of more flexible use of spectrum including spectrum trading and greater use of unlicensed bands. Under these options, spectrum users would assume greater responsibility for coordination amongst themselves and interference management.

See Annex 4 for the summary tables on main likely impacts arising from the each of the three policy options.

The Commission considers that Option 2 is the most appropriate and has proposed this in the associated Communication.

### **5.3. Regulatory models and the Internal market**

#### *5.3.1. The Problem*

The regulatory model in the current framework has two sides. On the one side, it devolves regulation of markets to national regulatory authorities on the grounds that they are closest to their markets and therefore placed to regulate them. On the other side, in order to avoid the fragmentation that such decentralisation could bring, it gives the Commission power to ensure consistency of national regulatory authorities' measures in certain well-defined areas, namely the markets to be regulated and operators to be regulated on those markets.

Market players continue to complain about differences in approach of NRAs in different countries, and point to the increased cost for business of handling 25 different regulatory approaches.

#### *5.3.2. The Objective*

The objective is to find the best model for delivering a single market in eCommunications, in the light of the prevailing political and institutional context.

### 5.3.3. Policy options

#### *Option 1 - A single European regulatory body*

A European regulator acting outside the domestic politics of all Member States would remove the national influences that sometimes colour many decisions of NRAs, and could be expected to lead to greater consistency of regulation within the internal market. Operators active in several Member States would not have to deal with several national authorities and differences in implementation.

Several variations of a European Regulator can be identified:

- a central authority replacing the NRAs;
- a centrally-managed but geographically-dispersed authority, with the existing NRAs being subsumed into a European Regulatory authority, and in effect becoming the local offices of the European regulator; local offices might have some limited power for local decision-making (e.g. in areas such as rights of way);
- a ‘European Central Bank’ model, whereby the NRAs would remain as independent entities, but would be obliged to act in accordance with the guidelines and instructions issued by the European regulator; and
- a European regulator that acted as an appeals body for decisions taken by national regulators, but without power to instruct an individual NRA in advance of a decision.

Other variations would confine a European regulator to dealing only with cross border issues.

#### *Option 2 - Maintain the decentralised model but strengthen the Commission’s role to achieve internal market objective in selected areas*

The option of maintaining the existing decentralised regulatory model but strengthening the role for the Commission role to achieve internal market objectives in selected areas would mean a step back from the idea of a centrally managed European regulatory authority and would focus on strengthening harmonisation measures in a number of areas. The main areas are discussed below; other areas are listed in Chapter 5.7.

*Commission veto on remedies:* The Article 7 procedure (see Chapter 5.4 below) allows the Commission to “veto” market definition and assessment of SMP (significant market power) notified by the NRAs. However, the Commission has no veto power on remedies, only a possibility to comment. A Commission power to veto certain proposed remedies could contribute to more harmonised approach across the EU.

*Commission approval of actions taken by NRAs with regard to access and interconnection (Art 5(1) of the Access Directive):* Article 5(1) of the Access Directive empowers NRAs to impose obligations, under certain conditions, on non-SMP undertakings in order to ensure adequate access and interconnection and interoperability of services. Unlike other obligations that can be imposed on companies by the NRAs, these obligations can be imposed without conducting market analysis. In order to avoid over-regulation and a fragmentation of the Internal market by the imposition of inconsistent obligations under this article, the Commission could be given the possibility to veto NRA measures taken in this area.

It should be noted that some of the other proposals listed under Chapter 5.7 would also give the Commission the ability to adopt technical implementing measures under a committee procedure, but this is already foreseen in the current framework and they do not imply any fundamental change in the regulatory model.

#### *Option 3 – No change to the regulatory framework*

This option would maintain the status quo. It would be open to the NRAs to strengthen their cooperation in the European Regulators Group (ERG, which is composed of the heads of the national regulatory authorities<sup>34</sup>), and to develop common EU wide approaches to common problems.

#### *5.3.4. Comparison of options and impacts*

**Option 1** (*a single European regulator*) could achieve a high level of harmonisation in the internal market. However, a central European authority replacing NRAs or centrally-managed European authority would represent a dramatic change of the current regulatory system, resulting in a complete centralisation of electronic communications regulation at the EU level.

For these reasons, it is a sensitive issue from a political perspective, because it would entail transfer of powers over electronic communications regulation to a supra-national body. There would be a strong national resistance to the fact that a trans-national body was regulating domestic issues. Depending on the precise institutional structure, a European regulator could in some cases represent another layer of regulation which would increase the overall administrative burden.

The European regulator for telecommunications / electronic communications has been discussed on previous occasions and in both cases was rejected by Member States. There is no reason to suppose that the present political climate is any more conducive to this concept than in the past.

The option of a European regulator may offer the best prospects for creating a truly single market in eCommunications, but until Europe had truly pan-European electronic services, it is unlikely that a pan-European regulator will be justified.

**Option 2** (*strengthened role for the Commission to achieve internal market objectives*) is consistent with the i2010 policy of creating a single European information space. It would lead to a more consistent set of rules within the EU, and would improve the situation for companies doing business in several Member States. It does however involve some transfer of responsibility from NRAs to the Commission, for example by enabling the Commission to veto decisions on remedies.

**Option 3** (*no change*) avoids any renegotiation of the balance of responsibility between the Commission and Member States. To date the NRAs have tended to emphasise their independence, and have been reluctant to limit their freedom of action in pursuit of harmonised European-wide solutions. It is not certain that NRAs could deliver the consistent regulatory practices that are demanded by market players.

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<sup>34</sup> See: <http://erg.eu.int>

See Annex 4 for the summary tables on main likely impacts arising from the each of the three policy options.

The Commission considers that option 2 is the most appropriate and has proposed this in the associated Communication.

## **5.4. Market review procedures**

### *5.4.1. The Problem*

Experience with implementation of the framework has shown that the procedures associated with market analysis (the so-called ‘Article 7 procedure’<sup>35</sup>) could be streamlined. The working of Article 7 mechanism was analysed in Commission’s progress report published in February 2006.<sup>36</sup>

Under the regulatory framework, the independent national regulatory authorities (NRAs) must define their national eCommunications markets on the basis of competition law – starting from a list of 18 markets pre-established by the Commission Recommendation on Relevant Markets<sup>37</sup> - and to assess whether the markets identified are characterised by the presence of at least one operator with significant market power (“SMP”). If these markets are found not to be competitive, then they are subject to ex-ante regulation, in order to stimulate competition.

The main aspects of the current procedures that govern the amount of work for NRAs are

- (a) the number of markets to be analysed, and
- (b) the level of detailed required for every market analysis and subsequent notification to the Commission.<sup>38</sup>

### *5.4.2. The Objective*

Based on the Commission and stakeholder experience, this section examines how to achieve least burdensome and the most effective way of dealing with market analysis and notification, i.e. Article 7 procedure. The objective is therefore, in line with simplification and better regulation principles, to simplify market analysis and notification.

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<sup>35</sup> Article 7 of the Framework Directive.

<sup>36</sup> Communication on Market Reviews under the EU Regulatory Framework - Consolidating the internal market for electronic communications COM(2006) 28 available at: [http://ec.europa.eu/information\\_society/policy/ecomms/article\\_7/index\\_en.htm#communication%20art7](http://ec.europa.eu/information_society/policy/ecomms/article_7/index_en.htm#communication%20art7)  
Member States began using the Article 7 notification procedure in August 2003. By mid-January 2006, the Commission received 334 notifications from 20 Member States. In all cases, the Commission assessed the notifications within the Article 7 deadlines of 1 month and required an extra 2 months when it had serious doubts as to the compatibility of the proposed measures with Community law. By the same time, the Commission had issued a total of 198 decisions. The Commission is expecting many more notifications to come, possibly reaching 500 notifications by the end of 2006.

<sup>37</sup> OJ L114, 08.05.2003, p. 45.

<sup>38</sup> The administrative costs relating to Article 7 procedure will be assessed, where appropriate, in the second impact assessment report of this review.

### 5.4.3. Policy options

The following options suggest possible ways of simplification of the Article 7 procedure. They present different ways of achieving the objective of less burdensome regulation but they have to be seen in relation to the other objectives/ themes of the review.

#### *Option 1 - Remove Article 7 notification procedure*

Regulation could be left entirely to Member States without any oversight and “control” from the Commission. NRAs might still find it necessary to carry out market reviews but they would no longer have to inform the Commission.

More radical approaches such as abolishing sector specific regulation or having a European regulator, as discussed in Chapter 5.3.3 above, would also entail removal of the Article 7 procedure.

#### *Option 2 - Relax notification requirements for Article 7 procedure*

This option supposes that the current regulatory framework will remain in place but with improvements in the way in which it is implemented. By 2009/2010, NRAs in all 25 Member States will have conducted at least two and possibly three market reviews under the current notification procedure of Article 7 of the Framework Directive. Based on experience, some streamlining of the procedures could be contemplated.

NRAs would still be obliged to conduct market reviews and undertake national and European consultations but for certain market analyses and notifications the current level of detail would no longer be required; similarly to the European Merger Control Regime, a simplified procedure would be introduced that could apply to the following categories of cases:

- notifications of markets which had been found competitive in the first review, unless either substantial changes in competitive conditions had occurred since the former review; and
- notifications where only minor changes to a previous notification were involved (such as the details of a remedy).

For cases falling under the simplified procedure, a standard notification form could be established that would limit the information required to the minimum so as to reduce significantly the administrative burden for NRAs, operators and the Commission. In such cases, in exceptional circumstances, if the Commission detected serious problems with the measures under consultation, it could still require the measure to be notified *in extenso*. Also, in the case of Member States that had recently joined the EU, the Commission would routinely require a first complete round of market analysis to be notified *in extenso*.

#### *Option 3 - No change to the regulatory framework*

The ‘do nothing’ option implies not taking legislative measures, but action could be taken by NRAs under the existing legislation to address some of the problems identified in this section. The European Regulators Group (ERG) has the possibility of addressing the problems raised in this section by improving coordination between NRAs and providing more precise guidance on appropriate remedies (e.g. through revision of the ERG Common Position on remedies).

#### 5.4.4. Comparison of options and impacts

**Option 1** (*remove Article 7 notification procedure*) reduces the administrative workload on NRAs but risks much greater diversity of regulatory practices in the different Member States, and could have a significant negative impact on the Internal Market. It fundamentally alters the regulatory model of the framework, which combines decentralised regulation by NRAs with coordination by the Commission to ensure consistency in key areas.

**Option 2** (*relax notification requirements for Article 7 procedure*) offers ways to streamline the Article 7 procedure without losing the benefits of coordination. It offers some reduction in administrative workload, but not as much as in the first option. It maintains the overall regulatory model of the framework.

**Option 3** of doing nothing is not in line with the better regulation policy of the Commission, since it maintains all the current administrative procedures when experience shows that they could be reduced.

See Annex 4 for the summary tables on main likely impacts arising from the each of the three policy options.

The Commission considers that the option 2 is the most appropriate one.

### 5.5. Consumer Protection and Universal Service

#### 5.5.1. The Problem

A central goal of the regulatory framework is to deliver substantial consumer benefits, and to do this in the context of an inclusive Information Society. The regulatory framework relies in large part on enhanced competition to provide choice, innovative services and value for money to consumers while the provision of universal service is one of two mechanisms that complement a competition-based approach to satisfying the needs of end-users and protecting consumers' rights.

#### **Telecom liberalisation and consumers**

In the 1980s traditional telecoms monopolies controlled all forms of telecommunications – voice and data. Starting with handsets in 1988 and progressively adding services until 1998, the EU liberalised all telecoms services. Operators began entering each others' markets, new entrants invested in services and infrastructure. On average, for the same telecoms services, consumers spent almost 24% less in 2005 than in 1996. When taking into account the general evolution of prices in the economy as relative prices (i.e. corrected for the evolution of the harmonised consumer price index) prices went down about 35% in 1996-2005<sup>39</sup>

In 2005 the Commission conducted the review of the scope of universal service according to the criteria set by the Universal Service Directive, and concluded that market developments did not justify extending the scope to mobile communications or high-speed/broadband internet access. The Communication of May 2005 also sought public comment on several questions with longer-term implications for universal service provision, which stimulated a

<sup>39</sup> Annex to the Commission Staff Working Paper, Horizontal evaluation of the performance of network industries providing services of general economic interest, SEC(2005)1781, see: [http://ec.europa.eu/comm/internal\\_market/economic-reports/index\\_en.htm](http://ec.europa.eu/comm/internal_market/economic-reports/index_en.htm)



wide range of different reactions. In general, the responses indicated acceptance of the need to change the universal service provision in the long term, but a hesitation to make immediate changes.<sup>40</sup>

The Commission has identified several detailed areas where consumer rights can be improved, as set out in the Commission Staff Working Document annexed to the communication, and it is not intended to analyse these in detail at this stage. The main political question is whether the 20<sup>th</sup> century concept of universal service remains valid in the 21<sup>st</sup> century.<sup>41</sup>

### *5.5.2. Policy options and next steps for Universal service*

The options range from removing the provision of universal service completely, and relying instead on horizontal consumer protection legislation to protect users, or going in the opposite direction and expanding the scope of universal service and use it to meet social goals other than those for which it is currently designed. Closely associated with the question of the scope of universal service is the question of finance – should the cost of universal service be borne by the state or by the sector players?

In view of the fundamental nature of these questions, the Commission considers that a broad consultation is necessary, one that needs more time than is available in the current review of the Directives. The Commission therefore proposes to issue a Green Paper on Universal service in 2007 to allow for a wide ranging public debate on the issues. This could in turn lead to further legislative proposals in 2008.

Further impact analysis will be undertaken in the course of this future consultation exercise.

## **5.6. Security**

### *5.6.1. The Problem*

Society is becoming more and more aware of how essential modern electronic communications networks and services are for everyday life, in business or at home. Security is not only important for the sector itself but also for all other sectors which increasingly rely on ICT.

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<sup>40</sup> See the Communication of May 2005, COM(2005) 203 and the Communication of April 2006, COM(2006) 163, the latter of which reports the outcome of the review and summarises the results of the public consultation:

[http://ec.europa.eu/information\\_society/policy/ecomms/info\\_centre/documentation/communic\\_reports/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecomms/info_centre/documentation/communic_reports/index_en.htm). The Impact Assessment Report (SEC(2006)445 that accompanies COM(2006) 163 is available

at: [http://ec.europa.eu/information\\_society/policy/ecomms/info\\_centre/documentation/commiss\\_serv\\_doc/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecomms/info_centre/documentation/commiss_serv_doc/index_en.htm)

<sup>41</sup> On the regulatory discussion see, for example, Rethinking universal service for a next generation network environment, OECD, 2006 (DSTI/ICCP/TISP(2005)5/FINAL), available at: <http://www.oecd.org/dataoecd/59/48/36503873.pdf>; Universal Service in an IP-enabled NGN Environment, Patrick Xavier, 2006 (a background paper for a ITU workshop on 23-24 March 2006) available at <http://www.itu.int/osg/spu/ngn/event-march-2006.phtml>; Universal Service Obligations and Broadband, OECD, 2003 (DSTI/ICCP/TISP(2002)4/FINAL); and the special issues of Telecommunications Policy Vol. 28, Numbers 3/4, April/May 2004, pp. 237-357.

In the electronic communications sector, the impact of the EU competition driven policy and technological developments have produced substantial benefits for consumers in terms of both choice and innovation including in the development of security products and services. However, the market appears to have failed so far to sufficiently address security problems, which was also expressed in the ‘call for input’. In today’s electronic communications environment, one weak link affects the integrity of the whole system.

Market and technology developments have resulted in more players being involved in electronic communications, and the trend towards internet protocol (IP) means that networks are in general more open than in the past. The growth of spam, viruses, spyware and other forms of malware, which is undermining users’ confidence in electronic communications, is partly due to that openness.<sup>42</sup>

The Commission Communication “A strategy for a Secure Information Society – Dialogue, partnership and empowerment” of 30 May 2006 (COM(2006) 251)<sup>43</sup> sets out a general strategy ranging from technology, self-regulation, to awareness and international cooperation. This section focuses on the need to provide an adequate, legal framework to protect citizens and businesses using electronic communications.<sup>44</sup>

### 5.6.2. *The Objective*

The objective is to strengthen and extend existing provisions on security and network integrity, thereby also highlighting the importance of the subject in a competitive and fast moving technological environment.

### 5.6.3. *Policy options*

#### *Option 1 - Introduce detailed new provisions on security and integrity*

This option would be to introduce detailed new provisions on security and integrity to solve the problems outlined above. EU legislation would impose detailed technical and organisational obligations for providers of electronic communications networks and/or services, such as obligations to:

- implement and maintain security measures to address security incidents and minimise the impact of such incidents on customers and on other interconnected networks;
- implement and maintain adequate risk management systems based on recognised international standards;

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<sup>42</sup> A number of factors are likely to contribute to increasing security threats. These include: The introduction of entirely new and potentially more destructive forms of malicious code and cyber attacks; the proliferation of new web applications, often with easy-to-exploit remote accessibility, the spread of instant messaging and peer-to-peer applications, the growth of mobile devices with always-on connectivity and remote access to critical sensitive data. See The Security Economy, OECD, 2004.

<sup>43</sup> [http://ec.europa.eu/information\\_society/doc/com2006251.pdf](http://ec.europa.eu/information_society/doc/com2006251.pdf)

<sup>44</sup> “Network and information security can be understood as the ability of a network or an information system to resist, at a given level of confidence, accidental events or malicious actions that compromise the availability, authenticity, integrity and confidentiality of stored or transmitted data and the related services offered by or accessible via these networks and systems.” Communication from the Commission “Network and Information Security: Proposal for a European Policy Approach”, COM(2001) 298.

- provide specific information to competent national authorities (e.g. on risk management systems, emergency plans), conduct audits of their information security systems and report to competent national authorities; and
- extend network integrity provision from PSTN (Public Switched Telephone Network) to mobile and IP-based networks used for public services.

Such detailed measures could be included in the existing regulatory framework or some of the requirements could take the form of a regulation.

*Option 2 - Introduce general security and integrity requirements together with enabling measures*

This option aims at strengthening specific security and integrity measures but without prescribing detailed requirements and obligations at the EU level. This ‘enabling’ option would include the specification of general obligations on network and service providers, with the Commission able to adopt (binding) technical implementing measures where needed<sup>45</sup>. Specific powers over enforcement and implementation would be granted to NRAs or other competent authorities. Any such technical implementing measures would be based on a broad public consultation and stakeholder dialogue as foreseen in the Commission Communication a strategy for a secure information society (COM(2006) 251).

*Option 3 - No change to the regulatory framework*

Under this option, the Commission would continue to rely on the existing provisions in the current regulatory framework and on initiatives carried out by private undertakings, industry associations, consumer protection organisations and security industry without reserve powers granted to NRAs or competent authorities. There would be differences in interpretation and application of some vaguely defined provisions, such as “appropriate technical and organisational measures”, among Member States. Some NRAs may impose very different requirements on market players and thus create difficulties or even barriers for companies operating in different Member States.

*5.6.4. Comparison of options and impacts*

**Option 1** (*introduce new, detailed provisions*) imposes detailed security and integrity measures at the EU level and would lead to a uniform application of security and integrity rules across the EU. It provides clarity and legal certainty as to what these obligations will be, but lacks flexibility to deal with newly emerging security threats. It also increases regulatory and administrative burden on market players.

**Option 2** (*introduce general requirements together with enabling measures*) provides such flexibility, but with the consequence that market players do not know in advance precisely what obligations could be applied to them.

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<sup>45</sup> The described approach would solve the current problem related to different definitions given by Member States to terms such as “appropriate technical and organisational measures” (see the study ‘Preparing the next steps of eCommunications’, Hogan & Hartson LLP and Analysys, 2006) and would provide with improved integration between national markets.

**Option 3** (*no change*) does not impose any new binding obligations. Some self-regulatory activities have been undertaken to date but the evidence suggests that they are not sufficient to resolve the problems identified above.

See Annex 4 for the summary tables on main likely impacts arising from the each of the three policy options.

The Commission considers that a mixture of the first and the second option offers the best balance of predictability and flexibility to allow future security threats to be addressed in a timely way.

## **5.7. Other areas**

Chapters 5.1 to 5.6 above have explored the areas where the main policy implications can be identified. There are also a large number of other detailed areas where the framework could be improved, as is evident from the list of changes in the Commission Staff Working Document annexed to the Communication. At this stage, it would not be proportionate to analyse each of these proposals in detail, and what follows is an outline of their impact to the main key players. As noted in Chapter 2, the analysis will be refined in the second report that will provide a more detailed impact assessment of the Commission's concrete legislative proposals.

### *5.7.1. Changes which would primarily affect government bodies or national bodies*

- (a) Make appeals mechanism more effective;
- (b) Introduce procedure for EU coordination of conditions attached to spectrum rights, general authorisation and selection for services with a pan-European scope;
- (c) Improve enforcement mechanisms of the framework;
- (d) Strengthen the obligation on Member States to review and justify 'must carry' rules;
- (e) Improve access to emergency services for disabled users via the number '112';

The key players in this category are governments or national bodies. The changes are designed to either make the eCommunications sector more productive (a-d in the above list) or to benefit consumers (e).

### *5.7.2. Changes which are primarily enabling in nature and which do not have immediate impact*

- (f) Amend Article 5 of the Access Directive: non-SMP access and interconnection;
- (g) Introducing a procedure for Member States to agree common requirements related to networks or services;

- (h) Introduce the possibility of binding Commission Decisions for numbering aspects;
- (i) Separate the provision of access to public communications networks from the provision of telephone services;
- (j) Adapting the regulatory framework to cover telecommunications terminal equipment, ensuring constancy with the R&TTE Directive 1999/5/EC;
- (k) Ensure that regulators can impose minimum quality of service requirements;
- (l) Introduce a Community mechanism to address eAccessibility issues;
- (m) Repeal of Regulation 2887/2000 on unbundled access to the local loop;
- (n) Delete Annex I of the Framework Directive, Article 27 of the Framework Directive, Article 5(4) of the Access and Interconnection Directive; and
- (o) Adapt 'telephone service' specific provisions to technology and market developments.

These changes are primarily about enabling the Commission to adopt implementing measures where appropriate. Such measures could lead to obligations on Member States and/or on market players and the impact of such measures would need to be assessed on a case by case basis.

### *5.7.3. Changes which will apply directly to market players but will not be implemented until around 2009-2010*

Some changes in this category will lead to new obligations on network operators and service providers, i.e.:

- (a) The amendment to Article 28 of the Universal Service Directive requiring cross border access to information society services;
- (b) Improving transparency and publication of information to end-users;
- (c) Requiring caller location information to be passed to emergency services; and
- (d) Oblige operators to take security measures, and grant powers to NRAs to determine and monitor technical implementation.

Other changes will remove current obligations on operators and/or service providers:

- (a) Remove obligation to provide directories and directory inquiry services (at retail level);

- (b) Delete the minimum set of leased lines; and
- (c) Withdrawal of Article 27(2) of the Universal Service Directive on ETNS (European telephony numbering space).

## **6. MONITORING AND EVALUATION**

The Commission annual implementation reports on European electronic communications regulation and markets provide comprehensive data and analysis of market, regulatory and consumer developments in the sector. The latest report of 2005 (published in February 2006) was the 11<sup>th</sup> consecutive report that for the second time covered the sector in 25 Member States.<sup>46</sup>

These reports are assembled on the basis of information received from various sources in particular through missions carried out in the Member States by staff of the Directorates General for Information Society and Media and for Competition, analysis of the notifications of national transposition and implementing measures received from Member States, market data received from national regulatory authorities and surveys commissioned on price developments.

The annual implementation reports will remain the main tool for monitoring and evaluating the implementation of the regulatory framework.

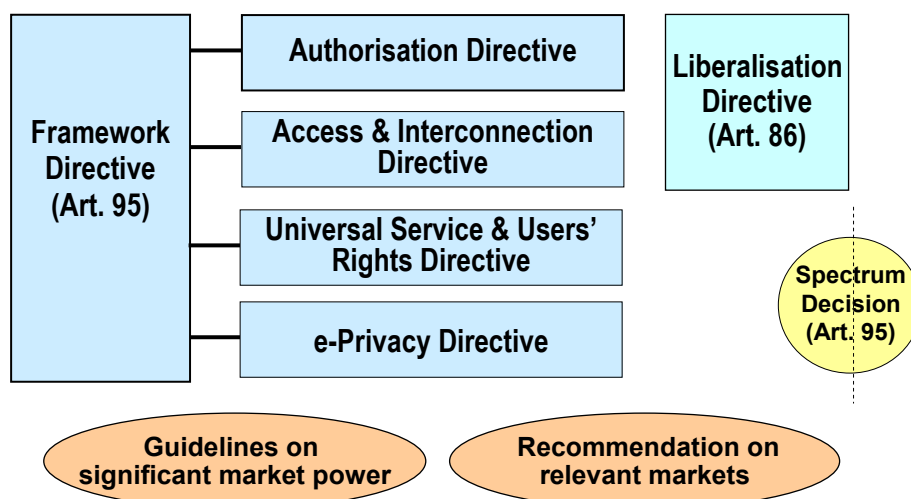
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<sup>46</sup> See footnote 6 for the web site where the reports are available.

## Annex 1 - Overview of the regulatory framework for eCommunications

The current framework for electronic communications networks and services (eCommunications) emerged from the wide-ranging debate that was stimulated by the Commission's 1997 Green Paper on Convergence<sup>47</sup>, the main technological trend of which has been shaping the sector during the past decade.

The regulatory framework modernised and simplified the old telecommunications rules to reflect the emerging multi-platform convergent environment. Compared with the old set of 22 Directives applicable in the sector, the main legislative instruments of the framework comprise only six Directives and associated measures, which cover both commercial dealings between operators and with their customers, under the supervision of the national regulatory authorities.<sup>48</sup>



The framework provides a single, common set of rules for all communications that are transmitted electronically, whether wireless or fixed, data or voice, Internet-based or circuit switched, broadcast or personal.<sup>49</sup> Its objectives are to encourage competition in the electronic communications markets, to improve the functioning of the Internal Market and to protect the interests of European citizens.<sup>50</sup> Its legal basis is therefore Article 95 of the EC Treaty.<sup>51</sup> The

<sup>47</sup> COM(1997) 623, see.: <http://europa.eu.int/ISPO/convergencegp/greenp.html>

<sup>48</sup> More information on the framework can be also found at:  
[http://ec.europa.eu/information\\_society/policy/ecommm/todays\\_framework/index\\_en.htm](http://ec.europa.eu/information_society/policy/ecommm/todays_framework/index_en.htm)

<sup>49</sup> Regulation of commercial content services – such as Information Society Services and broadcasting – that may be offered over transmission infrastructures are covered by other Community instruments (such as the e-Commerce Directive 2000/31/EC and the TV Without Frontiers Directive 89/552/EEC). Information society services are defined in Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations as “any service normally provided for remuneration, at a distance, by means of electronic equipment for the processing and storage of data, and at the individual request of a recipient of a service” (Art. 1).

<sup>50</sup> Article 8 of the Framework Directive.

framework seeks to establish a stable and predictable regulatory environment in Europe that encourages innovation and stimulates new investment in communications networks and services, by both new entrants and existing operators. The aim is to ensure a level playing field for new companies in the market and provide users with basic services at affordable prices, while rolling back regulation as normal competition takes hold.

The rules also allow EU citizens and businesses to enjoy the full benefits of the Internal Market. Where market forces alone may not fully meet the public interest, the framework safeguards consumer interests and guarantees basic user rights in areas such as universal service and processing of personal data and right to privacy.

The framework is technology-neutral, applying the same regulatory principles regardless of the technology involved. It is designed to be future proof, and to take account of the convergence of digital technologies that allow everything from phone calls to entertainment to be delivered over all sorts of networks to all sorts of devices - PCs, televisions, mobile phones, wire and wireless technologies and more.

For purposes of market entry rules, for access and inter-connection of networks, and for *ex ante* regulation, the regulatory framework covers all transmission infrastructures (such as cable networks, satellite transmission networks, wireless networks and telecoms networks) in a consistent way. The framework operates at the level of communications infrastructure, and is essentially about securing a competitive market for transport of bits.

The **main elements of the framework's legislative instruments** can be summarised as follows:

- **Framework Directive** setting out the main principles, objectives and procedures for an EU regulatory policy regarding the provision of electronic communications services and networks.
- **Access and Interconnection Directive** stipulating procedures and principles for imposing pro-competitive obligations regarding access to and interconnection of networks on operators with significant market power.
- **Authorisation Directive** introducing a system of general authorisation, instead of individual or class licences, to facilitate entry in the market and reduce administrative burdens on operators.
- **Universal Service Directive** requiring a minimum level of availability and affordability of basic electronic communications services and guaranteeing a set of basic rights for users and consumers of electronic communications services.
- **e-Privacy Directive** setting out rules for the protection of privacy and of personal data processed in relation to communications over public communication networks.

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<sup>51</sup> The Liberalisation Directive, i.e. Commission Directive 2002/77EC on competition in the markets for electronic communications networks and services (OJ L 249, 17.09.2002, p. 21), which is not covered by this review, is based on Article 86.



- Commission Competition Directive consolidating the legal measures based on Article 86 of the Treaty that have liberalised the telecommunications sector over the years. (Not covered by this review).
- The Commission recommendation on relevant markets defining a list of 18 sub-markets to be examined by national regulatory authorities.

In addition, the Commission has adopted Radio Spectrum Decision (622/2002/EC) that seeks to ensure availability and efficient use of spectrum within the Internal Market and thus contributes to the implementation of the framework<sup>52</sup>.

The implementation of the framework depend heavily upon the work of the independent national regulatory authorities (NRAs) in each Member State while the processes created by the framework aim to ensure coordination and harmonisation of national efforts to create a consistent European market.

To manage and implement the system, the Framework established two committees<sup>53</sup>:

- **Communications Committee** (Chair and secretariat: Commission; Members: representatives of national ministries and regulatory authorities): regulatory and advisory functions on implementation of the directives.
- **Radio Spectrum Committee** (Chair and secretariat: Commission; Members: representatives of national ministries and regulatory authorities): deals with technical issues around harmonisation of radio frequency allocation across Europe and is developing an external radio spectrum policy across Europe.

and the Commission set up two policy groups:

- **European Regulators Group** (Chair: Elected from and by Members; Members: Heads of the independent national regulatory authorities; Secretariat: Commission): facilitates consistent application of the regime throughout Member States.
- **Radio Spectrum Policy Group** (Chair: elected from and by members; Members: High level governmental expert from Member States and high level Commission representative; Secretariat: Commission): a platform for Member States, the Commission and stakeholders to coordinate the use of radio spectrum.

A key element of the framework is a Commission Recommendation on relevant markets which identifies the markets that may justify ex-ante regulation. The so-called Article 7 procedure requires the national regulatory authorities to notify the regulatory measures they intend to take in a certain market to the European Commission and the other NRAs, prior to their adoption. Any proposal by a NRA to deviate from a market identified in the Commission Recommendation must be agreed with the Commission. This construction aims to provide flexibility, since a Commission Recommendation can be changed relatively quickly to take

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<sup>52</sup> Note that the Spectrum Decision is not only specific to electronic communication but it applies also to many other sectors using spectrum such as transport and earth observation.

<sup>53</sup> Meetings of these groups and committees may also be attended by experts from EEA states and by EU accession candidates. Moreover, other experts and representatives from stakeholder associations may be invited to attend non-restricted parts of meetings.

account of technological and market developments, while it also allows NRAs to specify markets which may be unique to a particular Member State.

The regulatory framework is based on five **fundamental principles of regulation**:

- (2) Regulation should be kept to a minimum.
- (3) Regulation should be based on clearly defined policy objectives of:
  - (a) fostering economic growth and competitiveness; and
  - (b) ensuring that objectives of general interest are met where they are not satisfied by market forces alone.
- (4) Regulation should strike the right balance between flexibility and legal certainty.
- (5) Regulation should be technologically neutral or objectively justifiable if it is not.
- (6) Regulation may be agreed globally, regionally or nationally, but should be enforced as closely as is practicable to the activities being regulated.

## ***Annex 2 - Information sources, consultation and expertise***

### Public ‘call for input’ on the review

- *Call for input on the forthcoming review of the EU regulatory framework for electronic communications and services (published on 25 November 2005)*
- *A public workshop on the review (24.01.2006)*

### Studies and surveys commissioned from the external consultants for the review

- *Preparing the next steps of eCommunications - a contribution to the Review of the eCommunications regulatory framework", Hogan & Hartson LLP and Analysys Consulting, 2006*
- *An assessment of the regulatory framework for electronic communications – growth and investment in the EU eCommunications sector, London Economics and PricewaterhouseCoopers, 2006*
- *Eurobarometer Special – eCommunications household survey, 2006*

### Commission Reports on Implementation of the Regulatory Package

- *Implementation reports on European Electronic Communications Regulations and Markets - Annual reports covering the period of 1997-2005*
- *Communication on Market Reviews under the EU Regulatory Framework - Consolidating the internal market for electronic communications (COM(2006) 28)*

### Committees and Working Groups

- *Communications Committee*
- *Radio Spectrum Committee*
- *Radio Spectrum Policy Group*
- *European Regulators Group*
- *Working Party on the Protection of Individuals with regard to the Processing of Personal Data (‘Article 29 Working Party’)*
- *eEurope Advisory Group*

### Stakeholder consultations and workshops organised in 2004-2006

- *Workshop on Wireless Access Policy for Electronic Communications Services (WAPECS) (February 2006)*
- *Workshop on mobile broadcasting - Technological developments, market opportunities regulations and policy (23 February 2006)*

- *Workshop on Spectrum Requirements for Road Safety (February, 2006)*
- *Conference on 112 single European emergency number (October 2005)*
- *Open Workshop on Public Policy treatment of digital terrestrial television (DTTV) in communication markets (September 2005)*
- *Workshop on Location-based Services and the e-Privacy Directive (July, 2005)*
- *Open Workshop Identifying policy and regulatory issues of Next Generation Networks (June 2005)*
- *Scope of Universal Service in eCommunications: public consultation on the Commission's preliminary review assessment and longer-term issues on universal service provision (May 2005)*
- *Premium Rate Services in Europe: Presentation of findings of study (by Cullen International and WIK Consult) with opportunity to comment (June 2005)*
- *Freephone Services in Europe: dedicated to cross-border access and access to "00800" (June 2005)*
- *Public consultation and workshop on combating 'spam' (November, 2004)*
- *Public consultation and workshop on traffic data retention (September 2004)*
- *Public consultation on the regulatory treatment of VoIP under the EU regulatory framework (June, 2004)*
- *Public consultation and public hearing on interoperability of digital interactive TV services (March 2004)*

#### Other Commission Reports

- *Horizontal evaluation of the performance of network industries providing services of general economic interest, Commission Staff Working Paper (SEC(2005) 1781)*

#### Other external studies (commissioned by DG Information Society and Media)

- *Study on pan-European market for premium rate services (September 2005)*
- *Report on the public policy treatment of digital terrestrial television (DTT) in communications markets (September 2005)*
- *Supply of services in monitoring of South East Europe – telecommunications services and related aspects; Report 1- Country Comparative Report (August 2005)*
- *Report on Telecoms Price Developments from 1998 to 2004 (October 2004)*
- *Telecoms services indicators 2004 (September 2004)*
- *Study on spectrum management in the field of broadcasting (June 2004)*

- *Study on conditions and options in introducing secondary trading of radio spectrum in the European Community (May 2004)*
- *Study on Internet protocol (IP) voice and associated convergent services (February 2004)*
- *Study on Internet Access Costs Via a Standard Telephone Line, ADSL, and Cable Modem (January 2004)*
- *Economic Expert Group on Remedies (November 2003)*
- *Study on Barriers to Competition in the Supply of Electronic Communications Networks and Services (November 2003)*
- *Study on the policy implications of convergence in the field of naming, numbering and addressing (September 2003)*
- *Study on regulatory implications of the introduction of Next Generation Networks and other new developments in electronic communications (June 2003)*
- *Study on the assessment of the Member States measures aimed at fulfilling certain general interest objectives linked to broadcasting, imposed on providers of electronic communications networks and services, in the context of the new regulatory framework (March 2003)*
- *Study on Interoperability, Service Diversity and Business Models in Digital Broadcasting Markets (March 2003)*

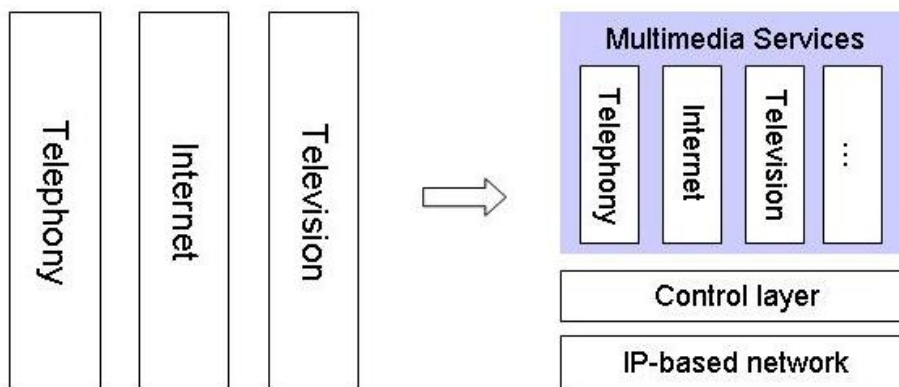
### Annex 3 Overview of technological and market evolution

The technological trends that were identified in 1999 - when the regulatory framework was designed<sup>54</sup> - are still evident today, but increasingly convergence is becoming a reality. Over the coming years, Next Generation Networks (NGN)<sup>55</sup> will progressively replace conventional networks, and Internet Protocol (IP) is set to become all pervasive. Fibre is being installed in the local access network, and wireless networks are proliferating.

The fundamental difference between NGNs and today's telecom networks is a shift from 'circuit-switched' voice-based single service networks to 'packet-based' multi-service networks (of which 'voice' will be only one of a palette of available services).

The NGN design implies that intelligence for the provision of various innovative services, which used to reside in the software-controlled switches inside the traditional networks, would be moved to the servers at the network edges. This enables the separation of service provision from network operation providing opportunities to those service providers, who are not at the same time operating the network facilities, to offer content, applications and services, possibly in competition with the facilities operators themselves.<sup>56</sup>

**Graph 1 Evolution from multiple separate networks to IP-enabled multi-service network (NGN)**



<sup>54</sup> Communication COM(1999) 539, "Towards a new framework for Electronic Communications infrastructure and associated services", see: <http://europa.eu.int/ISPO/infosoc/telecompolicy/review99/review99.htm>

<sup>55</sup> The mostly commonly used definition of NGN is by ITU-T (International Telecommunication Union – Telecommunication Standardization Sector), in short: NGN is a packet based architecture fostering the provisioning of existing and new/emerging services through a loosely coupled, open and converged communications infrastructure.

<sup>56</sup> On NGNs and electronic communications regulation, see, for instance: Next Generation Network Development in the OECD countries, OECD, 2005; IP voice and associated convergent services, Analysis: 2004; Regulatory implications of the introduction of next generation networks and other new developments in electronic communications, Cullen International, Devoteam Siticom 2003; Study on The Economics of IP Networks - Market, Technical and Public Policy Issues Relating to Internet Traffic Exchange, WIK-Consult, 2002. See also the web-site of the International Telecommunications Union (ITU) that provides an extensive collection of links to general and national NGN policies and regulatory initiatives: <http://www.itu.int/osg/spu/ngn/ngn-policy-regulatory-resources.html>.

It is difficult to estimate exactly how long the transitional period during which circuit-switched networks are replaced by IP-enabled next generation networks but the future direction of change is obvious. Operators and equipment manufacturers are making substantial investments to NGNs, which will be deployed by numerous service providers around the globe in the coming years.<sup>57</sup> Estimates by experts and industry indicate that most major EU telecom operators will have their core networks replaced by IP-enabled NGNs around 2010.<sup>58</sup> This will produce greater flexibility and substantial cost savings (both CAPEX and OPEX<sup>59</sup>) to the operators.

At the same time, traditional markets are maturing and competition is driving market players to invest in new technologies which are delivering new innovative services launched on a wide range of platforms. Some will be wireline-based, such as optical fibres and coaxial cables, and many will be wireless, such as wireless LAN, 3G mobile networks, Wi-Fi, WiMAX or satellite.<sup>60</sup>

Wireless is becoming pervasive providing consumers with expanded opportunities to use communication services outside the limited area dictated by fixed networks, triggering the development of nomadic services and applications.<sup>61</sup> In many Member States, the number of mobile subscriptions already exceeds the number of fixed line subscriptions.

Digital television is evolving towards high-definition television “HDTV” using advanced video coding “AVC”.<sup>62</sup> There is high interest in introducing multimedia services both in the traditional broadcasting as well as in the value chain of other electronic communications services such as mobile services (i.e. equipment manufacturers, operators and content providers). Furthermore, broadcasting services, representing an integral part of multimedia services, are beginning to merge with mobile services. Mobile broadcasting is an example of digital convergence that might become the next high growth consumer technology. Many field trials of “mobile TV” technology have been conducted in several Member States and first commercial services are already being launched.

Telecom providers are becoming content distributors and cable companies are offering communications and internet, with the result that consumers are offered triple offers by cable operators and telecommunications providers (TV, internet access and telephone), or quadruple play (including wireless). Services through internet service providers (ISPs) are also rapidly changing to offer internet broadcasting, video and near video on demand as well as telephony.

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<sup>57</sup> In the NGN investments China leads with a third of all NGNs worldwide, followed closely by the United States with 26%, and the United Kingdom third with 13%. See Worldwide NGN Migration Status and Vendors Opportunity Analysis Report, Dittberner Associates, November 2005, see: [http://www.dittberner.com/news/press\\_release.php?id=34](http://www.dittberner.com/news/press_release.php?id=34), <http://www.dittberner.com/reports/about.php?id=5>

<sup>58</sup> Source: OVUM and European Telecommunications Platform (ETP), Cisco Systems and Italtel. In 2003 Forrester Research predicted in its report ‘European Incumbent Telcos’ VoIP Road Map’ that transition to NGN (total end-to-end fixed voice traffic based on IP) would be completed in Western Europe by 2020; and 95% of enterprise voice calls would be VoIP-based by 2015.

<sup>59</sup> CAPEX = capital expenditures, OPEX = operational expenditures.

<sup>60</sup> Wi-Fi: wireless fidelity, WiMAX: Worldwide Interoperability for Microwave Access, LAN = local area network.

<sup>61</sup> See for example Development of voice over WiFi by integrating mobile networks, OECD, 2005 (DSTI/ICCP/TISP(2004)9/FINAL) and The implication of WiMAX for competition and regulation, OECD, 2006 (DSTI/ICCP/TISP(2005)4/FINAL).

<sup>62</sup> See Digital Switchover Communication COM(2005) 204 final, 24.05.2005.

For the consumer, the convergent and global internet-based environment brings the possibility for innovation, new products and value for money as well as ever-increasing choice and complexity in terminals and services. This development also gives rise to new and more complicated threats to privacy and security.



*Annex 4 Summary tables on main impacts arising from the policy options*

<b>INVESTMENT AND GROWTH (Chapter 5.1)</b>			
<b>IMPACT ON:</b>	<b>OPTION 1</b> <i>Limitation of ex ante regulation</i>	<b>OPTION 2</b> <i>'Open access' model</i>	<b>OPTION 3</b> <i>No change</i>
<b>EU competitiveness</b>	Strengthens the position of incumbents, risk of re-monopolisation of those markets which are not competitive and therefore reduced competitiveness of EU companies in some markets/Member States.	Negative implications for current infrastructure owners. Possible loss of efficiency for EU firms through structural separation.	Impact depends on how NRAs apply the current rules. Good application can increase competition and hence competitiveness of EU markets.
<b>Internal market</b>	Fixed date for removal of ex ante regulation could distort EU market (with local monopolies in some markets/countries and competition in others).	Same model in all MS would promote internal market.	Depends on how consistently the framework is applied in Member States.
<b>Compliance cost for businesses</b>	Compliance costs reduced	Compliance costs remain for infrastructure operator; lower costs for service providers.	Cost of compliance with existing regulation (which should normally gradually decrease as markets become effectively competitive)
<b>Competition</b>	Can lead to more infrastructure-based competition where alternative infrastructures are possible, however risk of re-monopolisation where infrastructure is difficult to duplicate (e.g. local loop).	Strong service-based competition, less infrastructure-based competition where infrastructure can be duplicated.	Outcome depends very much on implementation (correct application of principles, access and interconnection prices, etc.).

<b>Innovation and investment</b>	May lead to more investment by incumbents (although not certain) but can drive alternative operators and new entrants out of market due to high entry barrier	Risk of underinvestment in infrastructure, lower investment incentives for companies due to de facto structural separation of infrastructure and services.  Encouragement for alternative operators to innovate and invest (in services rather than infrastructure). Higher predictability for investors.	Competitive environment fostered by this type of regulation should normally induce investment (as supported by certain empirical evidence) but implementation plays a crucial role and it is necessary to avoid overregulation. Lower predictability of regulation can have slightly negative impact on investment and innovation.
<b>Consumers &amp; households</b>	Risk of re-monopolisation and, as a consequence, higher consumer prices in markets where structural obstacles to competition persist (and where it is difficult to tackle them by competition law), risk of reduced choice for consumers in some markets. However, if alternative networks develop sufficiently fast, it could provide for sustainable competition and consumer benefits.	Bigger choice of operators and services in the short term (may lead to price wars) but in the longer term risk of degradation of infrastructure and/or slow deployment of new of upgraded high-speed infrastructure.	Positive impact on consumers in the form of more v choice and cheaper services. However, risk of slower development of new and innovative services and high-speed networks if the right balance between regulation for competition and creating investment incentives is not found by the regulatory authorities.
<b>Operators</b>	Positive impact on incumbents and operators with SMP, negative impact on some alternative operators and/or new entrants.	Short-term positive impact on alternative operators and new entrants, negative on infrastructure owners.	Positive impact on alternative operators and new entrants, negative impact on incumbents and other regulated undertakings.
<b>Administrative burden for EU and national administrations</b>	Substantial reduction of administrative burden if the sector-specific regulation is phased out.	Administrative burden associated with regulation of local loop to prevent monopoly pricing.	Administrative burden associated with regulation of markets which are found uncompetitive and with market analyses done by NRAs.

<b>Employment and labour markets</b>	Could have positive employment effect for incumbents and big operators, probably negative employment effect on small alternative operators.	Initially positive employment effects for alternative operators and new entrants, however this may change as markets begin to consolidate.	Positive employment effects for alternative operators and new entrants, however, the overall effect may be negative as further consolidation and rationalisation could lead to loss of jobs in the electronic communications sector.
<b>Social inclusion</b>	Impact depends also on accompanying measures such as universal service. If re-monopolisation of some markets occurs as a result of no sector-specific regulation, higher prices and delays in rolling out new services can lead to widening the digital divide.	Stronger service competition will lead to higher penetration of new services. Impact depends also on accompanying measures such as universal service. However, the risk of problems with maintenance and investment in infrastructure in a longer term (see above) is not excluded.	Impact depends also on accompanying measures such as universal service. More competitive markets do generally lead to higher penetration of new services and could contribute to more inclusive provision of electronic communications services.

**RADIO SPECTRUM (Chapter 5.2)**

<b>IMPACT ON:</b>	<b>OPTION 1</b>	<b>OPTION 2</b>	<b>OPTION 3</b>
	<i>An EU entity/agency in charge of managing EU aspects of spectrum</i>	<i>Wider application of committee mechanisms to improve coordination at EU level</i>	<i>No change</i>
<b>EU competitiveness</b>	Could enhance competitiveness of EU companies in all areas exploiting spectrum in their businesses.	Could enhance competitiveness of EU through increased flexibility and co-ordination of electronic communications spectrum management.	The current system does not ensure the most efficient use of spectrum in all MS and would therefore not contribute to increasing competitiveness of EU companies.
<b>Achievement of single market</b>	Internal market for wireless services would be completed' offering economies of scale for wireless applications. Problems during transition to harmonised spectrum may arise (due to diverging spectrum allocation in individual Member States).	Co-ordination mechanism between the Commission and MS would lead to more consistent application of rules across the EU and to strengthening the single market.	Different paths of spectrum management taken in different Member States could lead to further fragmentation of the internal market.
<b>Cost for businesses</b>	Lower cost of acquiring spectrum due to more flexibility and efficiency of the system. Economies of scale and scope for pan-European wireless operators and for manufacturers.	Similar to option 1, however, some compliance cost related to differences in regulation between Member States (in terms of spectrum management) could still remain.	Cost related to compliance with 25 rather different systems of spectrum management, cost related to rigidity and inefficiency of spectrum management in many Member States, high cost of acquiring spectrum for new entrants where administrative allocation of spectrum prevails.
<b>Competition</b>	Gradual centralisation of spectrum management would probably lead to consolidation of the wireless/mobile market with a few strong European players operating	Co-ordinated removal of restrictions and mandatory spectrum trading in certain bands could lead to more consolidation of the wireless/mobile market and more	Could result in a situation of unfair competition favouring those who currently hold spectrum and disadvantaging new entrants. Difficulties for pan-European

	across the EU. More competitive pressure on broadcasters currently controlling large amounts of spectrum. Flexibility and easier access to spectrum will also create emergence of new services which will increase competition among system and service providers. It would also increase competition between platforms for provision of e-communications services.	competitive pressure on broadcasters to make more efficient use of spectrum. Flexibility and easier access to spectrum will also create emergence of new services which will increase competition among system and service providers. It would also increase competition between platforms for provision of e-communications services.	wireless services to develop because of lack of co-ordination.
<b>Innovation and investment</b>	More flexible and harmonised approach could encourage more investment and innovation. New entrants would be able to acquire spectrum through spectrum trading or operate in unlicensed bands.	Similar to option 1.	Difficulties in responding to demands for spectrum in some bands could discourage investment and create barriers to entry for new entrants and hamper development of new technologies.
<b>Operators</b>	Positive impact on big wireless operators active in several Member States, some operators could lose their position (no longer guaranteed by the administrative allocation/assignment model). Lower barrier to entry for new service providers and new/alternative wireless technologies.	Similar to option 1.	Positive effect on those who currently hold spectrum and who have made major investments in licences. Negative impact on alternative operators and new entrants. Operators face differences between Member States progressing towards more flexible system and those using predominantly the administrative model.
<b>Consumers &amp; households</b>	Benefits from cheaper and more innovative services across the EU, choice between different technologies. Difficulties in dealing with national particularities and different usage patterns in Member States, in particular for public interest objectives.	Benefits from cheaper and more innovative services across the EU, choice between different technologies. Different usage patterns in individual Member States can be taken into account as spectrum management will still be done at national level.	Limited choice of services, higher prices of wireless services (due to scarcity of spectrum), big differences between Member States in terms of availability of alternative technologies and price.

<b>Administrative burden</b>	Gradual transfer of powers over spectrum regulation to a supra-national body may entail additional administrative cost. Risk of loss of expertise and local knowledge of competent national authorities.	Some additional administrative burden related to transition to a more flexible and co-ordinated approach. However, the overall administrative burden should decrease in time as more spectrum will be subject to spectrum trading or general authorisations.	No additional administrative burden (compared to the current situation), but no reduction either. Administrative burden on NRAs will differ according to the prevailing spectrum management model in their country.
<b>Employment and labour markets</b>	<p>Difficult to predict the end result, however, probably for the existing eCommunications services, increased competition will lead to withdrawal of inefficiencies and possibly a reorganisation of the market with positive employment effect on certain European wireless/mobile operators, and negative employment effect on inefficient operators.</p> <p>Flexibility and easier access to spectrum should create opportunities for new types of services with a positive impact on employment. Increased innovation opportunities should make the EU attractive for new technology development and be source of new employment.</p>	Similar to option 1.	Probably negative long term effect resulting from a lost potential for higher efficiency and growth of wireless technologies/services.
<b>Social inclusion</b>	More choice and cheaper wireless services could contribute to more inclusive information society. Impact on social inclusion depends also on other factors, such as universal service.	Similar to option 1.	Higher consumer prices and potential consumer lock-in in existing services/technologies would probably not contribute to higher social inclusion.

**REGULATORY MODEL AND THE INTERNAL MARKET (Chapter 5.3)**

<b>IMPACT ON:</b>	<b>OPTION 1</b> <i>A single European regulator</i>	<b>OPTION 2</b> <i>Strengthened role for the Commission to achieve Internal market objectives</i>	<b>OPTION 3</b> <i>No change</i>
<b>EU competitiveness</b>	Provides opportunity to enhance EU competitiveness (depending also on regulatory approach of the EU regulator) vis-à-vis the rest of the world.	Provides opportunity to develop competitive pan-European services.	Fewer possibilities to develop pan-European services.
<b>Achievement of internal market</b>	Internal market in electronic communication would be fully completed; high level of harmonisation in the internal market would be achieved.	Reinforcement of single market in some aspects (e.g. veto on remedies, Article 5(1) of the access directive) while preserving a certain degree of flexibility at national level.	Persistent obstacles/barriers to single market, slower and difficult up-take of trans-national services in Europe.
<b>Compliance cost for businesses</b>	Lower compliance cost for pan-European operators.	Lower compliance cost for operators of pan-European services, application of similar remedies in similar circumstances.	Compliance costs resulting from different rules in different MS (e.g. wireless services provided across the EU).
<b>Competition</b>	Competition among big pan-European players, consolidation of market players at the EU level, (depending on access and interconnection conditions set by the EU regulator).	More harmonised conditions for competition, less divergent regulatory interventions in different MS. Easier entry for providers of pan-European services.	Effectiveness of competition depending more on national regulation and implementation, differences in competition in individual Member States, higher risk of over-regulation in some Member States.

<b>Innovation and investment</b>	Potential for enhancing innovation and investment (economies of scale and scope). More incentives of foreign investors to invest in the EU (benefits of fully harmonised regulatory environment).	More incentives for innovation and investment in pan-European services, more consistent application of remedies and therefore possibly more certainty for investors.	Investment and innovation would happen more within national markets, less incentive to invest EU-wide, probably lower incentive for non-EU market players to invest in Europe (compared to other options).
<b>Consumers</b>	Consistent implementation of consumer provisions throughout the EU	Improved benefits for consumers if the framework is applied and implemented correctly in all Member States); potential for cheaper pan-European wireless services.	Diverging prices and service offerings, reduced possibility for consumer to benefit from new pan-European wireless services.
<b>Operators</b>	Probably more beneficial for big pan-European players than for the small ones.	Positive impact on operators providing pan-European services, creates more level-playing field for operators in different MS (compared to option 3).	Obstacles for operators providing services in several Member States, difficulties in complying with different regulatory regimes, risk of over-regulation.
<b>Administrative burden</b>	Depends on the model of EU regulator: if NRAs remain operational and EU regulator represents another layer of regulation, administrative burden will rather increase. If NRAs cease to exist, their expertise and local knowledge could be lost.	Veto on remedies could lead to delays in their application.	No additional administrative costs.
<b>Employment and labour markets</b>	Could increase employment as a result of increased European competitiveness.	Possibly some positive employment effect linked to new pan European services.	No major changes in employment.
<b>Social inclusion</b>	Depends on accompanying policies, such as universal service or support for low-income users.	Similar to Option 1.	Similar to Option 1.



<b>MARKET REVIEW PROCEDURES (Chapter 5.4)</b>			
<b>IMPACT ON:</b>	<b>OPTION 1</b> <i>Remove Art. 7 procedure</i>	<b>OPTION 2</b> <i>Relax Art. 7 notification requirements</i>	<b>OPTION 3</b> <i>No change</i>
<b>Single market</b>	No oversight from the Commission would necessarily lead to more fragmentation of markets and increase differences in regulatory approach of individual MS. Higher risk of slow and/or incorrect application in some Member States.  (Note: impacts of European regulator and no sector-specific regulation are analysed under the corresponding headings).	The system of notifications would continue to contribute to more consistent regulation and to creation of single market, notwithstanding the introduction of simplified procedure for certain cases.	The system of notifications would continue to contribute to more consistent regulation and to creation of single market.
<b>Compliance cost for businesses</b>	Cost related to compliance with differences in regulation in the 25 (or more) Member States, especially for pan-European operators. Compliance cost related to market reviews would remain in place.	Less divergence in regulatory approach of the NRAs (compared to option 1), therefore less compliance cost associated with differences in regulation across the EU. Compliance cost related to market reviews would remain in place.	Similar to option 2.
<b>Administrative burden for NRAs</b>	Lower administrative burden for NRAs since there would be no formal notifications to the Commission. Lower burden for NRAs in small countries and new Member States.	Lower administrative burden for NRAs (compared to the current situation) due to simplified notifications for certain cases. However, administrative burden for NRAs from new Member States would remain similar.	Administrative burden for NRAs and the Commission would stay the same (it could be lower than at present only if the number of relevant markets required for notification is reduced).

<b>Competition</b>	Differences in regulatory approach (market definition, use of remedies, etc.) can lead to very different outcomes in terms of competition in individual Member States.	This approach aims at creating similar competitive environment across the EU; however, the final outcome also depends on efficient and effective regulation pursued by individual NRAs.	Similar to Option 2.
<b>Innovation and investment</b>	Less incentive to invest for big market players operating in several Member States, probably lower investment from third countries (due to differences in regulatory environment in each MS).	Should create more consistent regulatory environment across the EU, therefore more incentives to invest in different Member States (although it has to be recognised that investment depends on a number of other factors) compared to Option 1.	Not significantly different from option 2.
<b>Consumers &amp; households</b>	Differences in NRA approaches create risk of increased differences in consumer benefits, choice and prices of services in the different Member States.	Provides more consistency of NRA approaches and hence allows consumers to benefit in all MS.	Similar to Option 2.
<b>Employment and labour markets</b>	No direct effect.	No direct effect. Indirectly, positive impact on single market could have indirect positive effect on employment.	No direct effect. Indirectly, positive impact on single market could have indirect positive effect on employment.
<b>Social inclusion</b>	No direct effect.	No direct effect.	No direct effect.

**SECURITY AND INTEGRITY (Chapter 5.6)**

<b>IMPACT ON:</b>	<b>OPTION 1</b> <i>A new detailed provision on security and integrity</i>	<b>OPTION 2</b> <i>Introduce general requirements together with enabling measures</i>	<b>OPTION 3</b> <i>No change</i>
<b>EU competitiveness</b>	Additional regulatory burden on companies could have negative impact on competitiveness in the short term, but a positive impact in the long term by increasing consumer confidence in ICT.	Similar to option 1, but actual regulatory burden depends on detailed implementation and results of stakeholder dialogue.	No additional burden on companies in the short term, but risk of negative impact if growth of ICTs is limited by lack of consumer confidence.
<b>Achievement of single market</b>	Could foster the single market since there would be no diverging interpretations or applications of the security requirements defined in EU law.	Similar to option 1.	No improvement of the single market in this area
<b>Compliance cost for businesses</b>	Increases compliance cost for businesses due to new obligations placed on them.	Similar to option 1, but depends on detailed implementation and results of stakeholder dialogue.	No further compliance cost imposed on businesses, differences in specific requirements in individual MS.
<b>Innovation and investment</b>	Risk of stifling innovation if too heavy burden is imposed on businesses. On the other hand, could create incentives for companies to invest more in security and help raise awareness of security problems.	Similar to option 1.	Risk of insufficient investment in security and prevention of incidents (especially for SMEs).

<b>Network Operators</b>	Obligations are predictable but, no flexibility for the legislation to adapt to new market situation, new threats or new solutions. No scope for greater involvement of the industry (co-regulation or self-regulation).	Security measures more “tailored” to the needs of the industry. More involvement and dialogue with stakeholders before concrete measures are taken; however less predictability and certainty about the final outcome.	Patchwork of different security measures imposed on undertakings in different MS; risk of insufficient incentive to invest in security measures; no economies of scale achieved at EU level.
<b>Consumers &amp; households</b>	More attention paid to security of services, applications and networks if new security legislation is properly enforced.  Prices of products and services could go up in the short-term if companies pass a part of their increased cost onto the consumer.	Similar to Option 1.	No improvements in security/integrity of networks for consumers, remaining differences between individual Member States; consumer trust in ICT systems could decline.
<b>Administrative burden for national and European public administrations</b>	Need of transposition of new measures in national legislations and their enforcement by NRAs.	Somewhat more than in option 1, due to more enforcement and implementation powers granted to NRAs.	No additional administrative burden.
<b>Employment and labour markets</b>	Could have positive employment effects on vendors of security products	Similar to option 1.	No direct employment effect.
<b>Social inclusion</b>	No direct impact on social inclusion. However, if the overall level of network and information security increases, this may have positive impact on up-take of new services/products by consumers.	Similar to option 1.	Insufficient overall level of security (unless changed by initiatives of the private sector) could deter some users from using ICT, particularly internet-related applications.