

ACHIEVING THE INTERNAL MARKET FOR E-COMMUNICATIONS

REPORT OF A CEPS TASK FORCE

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PREFACE

This report is divided into two main parts. Section 1 contains the views expressed during the meetings of an earlier CEPS Task Force on e-communications, “Policy Challenges for the Information Superhighway”, which was active between September 2005 and June 2006. Among the 54 participants and 28 invited guests and speakers were representatives of European telecoms operators, telecoms manufacturers, industry associations, consultancy firms, law firms, distinguished scholars in the field and representatives from national regulators, the European Commission and the European Parliament. .

Section 2 summarises the findings of the latest CEPS Task Force “Achieving the Internal Market for e-communications”, which met during the period September-December 2007. The first two meetings of this group focused on issues such as functional separation, the list of relevant markets, the ladder of investment, geographical segmentation of markets and spectrum policy. The third meeting was held after the European Commission presented the proposed review on 13 November 2007, and was dedicated to an extensive analysis of the proposals. This discussion led to the drafting of an interim report, which was presented at the European Parliament on 29 January 2008. A final Task Force meeting was then held again in the European Parliament on 9 April 2008.

This present report is the result of a collective effort, and profits from views of some of the most distinguished scholars in this field, as well as from the lively debate that took place during the Task Force meetings, animated by industry players, representatives of the European Commission, national regulatory authorities (OFCOM in the UK), the European Parliament and the European Investment Bank.

Special thanks go to Magnus Lemmel for acting as Chairman of both Task Forces, to Staffan Jerneck for chairing the final meeting of the Task Force and to Anne-Marie Boudou, Alice Felci, Donatas Mykolaitis and Sarah Cheliout for organisational support. Special thanks also go to Malcolm Harbour, MEP, for ensuring the constant attention of the European Parliament to the activities taking place in the CEPS Task Force, and for all the MEPs who participated in the Task Force meetings in January and April 2008.

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1. FINDINGS OF THE 2005-06 CEPS TASK FORCE

In the 11th and 12th Reports on the implementation of the 2002 new regulatory framework (NRF) for electronic communications, the European Commission noted an increased take-up of broadband lines, significant penetration of 2G mobile services, encouraging development of 3G and online applications such as VoIP and a resurgence of M&As in Europe. Available evidence shows, however, that Europe is still lagging behind the US in terms of investment in infrastructure and productivity growth. In addition, whereas some of the member states of the European Union are performing quite well in terms of competition and growth, others (including some of the EU15) inevitably lag behind.

This mixed picture raises a key question: Were the latest encouraging results achieved because of the NRF or independently of the NRF? The CEPS Task Force “Policy Challenges for the Information Superhighway” observed that the implementation of the 2002 regulatory framework for electronic communications has been delayed by a number of concurrent factors. As a result, it was too early to state that the NRF has significantly contributed to economic growth and employment in the European Union (see Renda, 2006).

While the European Commission was working on the review of the NRF, which led to the Communication adopted in June 2006, the CEPS Task Force “Policy Challenges for the Information Superhighway” engaged in a very lively discussion on the following three issues:

- problems that have emerged in the implementation of the NRF;
- transitional measures that could be taken before the entry into force of the future framework; and
- suggestions on how to amend the NRF.

Below, we report some of the main findings reached by the CEPS Task Force and included in the Final Report, *Last call for Lisbon? Suggestions for the Future Regulation of e-communications in Europe*, published by CEPS in June 2007. As will immediately be clear to the reader, many of these suggestions are still valid, one year later, and can be applied to the current proposal presented by the Commission in November 2007.

1.1 Problems that emerged in the implementation of the NRF

The CEPS Task Force was concerned about several issues that emerged in the implementation of the NRF, as outlined below.

- *Concern was raised that market analyses are too resource-intensive and time-consuming for both national regulatory authorities (NRAs) and market players.* As acknowledged also by Commissioner Viviane Reding, it is not an easy task to define at least 450 markets in a timely manner, which adds considerable complexity to the NRF. Moreover, NRAs had to cope with new policy tools – partially borrowed from competition policy practice – and this might have slowed down the process even further. A cause of delay in the implementation of the NRF was also the suspensory effect of appeal procedures before the national courts, which also deserve careful attention in the upcoming review.
- Other problems have emerged as a result of the fact that *the NRF has only partially adopted the tools of competition policy.* The equation between a finding of SMP (significant market power), i.e. dominance, and the application of regulatory remedies might be justified by the need to open up previous monopolies (e.g. by mandating access to incumbents' fixed networks), but is far less justified where no previous monopolies existed (e.g. in mobile termination). To be sure, with the migration to IP-based (internet protocol) networks, such a link will become weaker. In addition, concerns emerged on the *partial application of the 'three-criteria test'*.¹

¹ The *'three-criteria test'* is an economic test developed by the Commission to check whether a market should be subject to ex ante regulation. The three criteria are: 1) the presence of high and non-transitory entry barriers of a structural, legal or regulatory nature, 2) a market structure that does not tend towards effective

Uncertainty might emerge since the three-criteria test is to be considered as a gating mechanism to decide whether or not it is appropriate to carry out a market review in a specific sector or market. However, peculiar features of national markets may suggest the definition of relevant markets that are either narrower or (more likely) broader than those listed in the Recommendation. If the three-criteria test is applied only as an *ex ante* gating mechanism generally valid for the EU25, then regulatory intervention might end up being less precise than it would be with a full application of the three criteria.

- The Task Force observes that the ‘ladder of investment’ model adopted by most NRAs *still has to fully demonstrate its potential to promote investments and infrastructure-based competition in the EU27*. Recent empirical evidence – especially in some EU member states – is consistent with the ladder hypothesis, as it shows a decrease in resale accompanied by an increase of bitstream access and shared access in Europe.² At the same time, more recent empirical studies have shown strong evidence that mandatory network sharing significantly affects incentives to invest in alternative technologies.³ However, the Task Force agreed that: 1) it is too early to draw conclusions on the actual explanatory power of the investment ladder metaphor, and 2) the ladder model should not lead NRAs to micro-manage market evolution.
- The Task Force also agreed that *the treatment of emerging markets under the NRF leads to regulatory uncertainty*. NRAs should be given more guidance on how to identify emerging markets: the current approach leads to a short-circuit between the technology-neutrality principle and regulatory forbearance for new services, and the SSNIP test – currently recommended – seems far from appropriate, as it often leads to a denial that an emerging market is really separate from an already existing one.

competition within the relevant time horizon and 3) the insufficiency of competition law alone to address the market failure(s) above.

² See M. Cave, presentation at the CEPS Task Force, 7 November 2007.

³ See Röller (2007) and Waverman et al. (2007). See also Wallsten (2007).

- *The Article 7 procedure* is not responsible for the lengthy implementation of the NRF, but *might prove burdensome in the future*. Its scope should be clarified to make it more sustainable in the long term, and consistent with principles of better regulation.

1.2 Transitional measures

As the future framework will become effective only in 2010, the Task Force suggests that the European Commission should consider the following transitional measures:

- *The list of relevant markets can be shortened* by removing retail markets and some of the wholesale markets. In particular:
 - Retail markets may be removed from the list if key wholesale services are already subject to unbundling obligations;
 - Wholesale markets 8, 9, 11, 12 and 13 should be retained in the list;
 - Markets 10, 14, 15, 17 and 18 may be removed; and
 - Market 16 may be kept in the list, but it should be accompanied by a careful application of the peculiar economics of mobile termination.
- *Action should be taken by NRAs to encourage investments in NGNs (next generation networks)*. There is no 'one-size-fits-all' solution for promoting investments in new infrastructure in the EU25, and the best option might differ depending on market conditions. For example, countries in which more than two platforms are already available (or are likely to emerge in the short run) might profit from regulatory forbearance more than countries with less than two platforms. An alternative possibility is to agree upon temporary access regulation (sunset clauses) so as to smooth the build-up of new infrastructure both by incumbents and other licensed operators (OLOs).
- In the future framework, *spectrum policy should seek a more coordinated, pan-European approach*, promoting spectrum liberalisation and trading as a key driver of growth and employment, while at the same time bearing in mind that the availability of harmonised spectrum resources is crucial. Existing spectrum rights should not be undermined; however, as technology

advances, the Commission is paying increased attention to mixed collective approaches to spectrum allocation.

1.3 Suggestions for the review

The Task Force suggests a number of changes to be introduced in the future regulatory framework. Such changes would at once ensure continuity for NRAs, regulatory certainty for industry players and make the necessary adaptation of the theoretical framework to the competitive dynamics of future IP (internet protocol)-based networks.

- In the future framework, *the review of an NRA's decision should be streamlined in order to make it more efficient and sustainable*:
 - the scope of the Article 7 review should be clarified, and extended to cover spectrum policy decisions; and
 - measures aimed at preventing lengthy appeals procedures should be envisaged.
- *The 'competition policy dimension' of the NRF could be strengthened*:
 - the automatic application of remedies on SMP players should be reconsidered;
 - the three-criteria test should be awarded a higher status and included in the text of the future Framework Directive; and
 - multi-sided market issues should be duly taken into account when assessing SMP in future markets.
- *The 'better regulation dimension' in the NRF should be strengthened* by introducing the following modules of impact assessment in NRAs' decisions:
 - identification of alternative policy options;
 - application of the three-criteria test to the preferred policy option;
 - public (on-line) consultation with stakeholders;
 - assessment of the impact on the internal market and consistency with the *acquis*; and
 - assessment of the proportionality of the chosen remedy.
- *Spectrum policy should be awarded an important role* in the future framework. Coordination/harmonisation of national spectrum allocation procedures should be achieved by reinstating a

coordination mechanism in the text of the Framework Directive similar to that provided in Article 7 of the NRF – as had been decided initially by the Commission when preparing the current Framework Directive. However, the proposed changes in spectrum policy should not undermine existing frequency rights, especially when such rights have been assigned through an auction process. Regulatory certainty and commitment are vital for ensuring adequate incentives to (re)invest.

- *The scope of universal service should be made less technology-specific.* The Task Force recommends that under the review of the NRF, the need for universal service obligations to provide the minimum set of leased lines is assessed by NRAs only for specific and limited geographical areas deemed structurally uncompetitive in the long term. The Universal Service Directive should not establish any obligation to provide a minimum set of leased lines on a nationwide basis, and should be limited to those cases in which market forces alone cannot deliver the expected universal service.

Table 1. Main proposals for the review contained in the previous Task Force Report

Issue	NRF	Future framework
Three-criteria test	Not included in the Framework Directive	Included in Art. 15 of the Framework Directive
Link SMP-remedies	Automatic	Not automatic
Scope of Article 7 review	NRAs draft measures affecting internal market, policy objectives and consistency with the <i>acquis</i> , but excluding national measures on spectrum	NRAs draft measures affecting internal market, policy objectives and consistency with the <i>acquis</i> , after impact assessment by NRAs, including national measures on spectrum
Scrutiny by national courts (Art. 4)	Appeal to an independent body, which may be a court, with optional suspensory effect	Appeal to an independent body, with time limits, and suspensory effect only under exceptional circumstances
Impact assessment	No mandatory IAs for NRAs	Mandatory, 'light touch' IA for NRAs
Spectrum policy	No coordination	Coordination through Article 7 review
Universal service	PSTN-based	Technology neutral

2. MAIN FINDINGS OF THE 2007-08 CEPS TASK FORCE

This section summarises the main findings of the current CEPS Task Force, meeting in 2007-08, with a view to stimulating further reflection during the co-decision process. The next section (2.1) describes the reaction of Task Force members to the new proposed list of relevant markets, and section 2.2 illustrates pending issues as regards the regulatory approach to be adopted on Next Generation Access Networks (NGANs). Section 2.3 describes our findings as regards functional separation. Section 2.4 deals with current proposals on spectrum policy, with specific emphasis on the new Communication on the digital dividend included in the proposed review. Section 2.5 contains some suggestions as regards institutional and governance issues, including the trade-off between the creation of a pan-European Authority or the institutionalisation of the ERG (EECMA or BERT), and the extension of the Commission's veto power over remedies chosen by NRAs. Section 3 presents two country case studies from two countries that are seldom brought to the attention of EU policy-makers – Romania and Turkey. Finally, section 4 concludes, by summarising the main findings of the Task Force.

2.1 The list of relevant markets

- The CEPS Task Force *agrees with the Commission's decision to reduce the list of relevant markets* by removing most of the retail markets. The new proposal, in fact, mirrors to a large extent what the previous CEPS Task Force had suggested in June 2006 (with

significant exceptions, such as former market 17, now regulated separately, and market 1, which remained in the list), and is in line with the opinions expressed in the current Task Force.⁴

- At the same time, the CEPS Task Force wishes to recall that *a reduction of the list does not imply the deregulation of the e-communications sector*, or the impossibility to regulate certain markets, should the conditions for ex ante intervention emerge or persist.
- In addition, the prospective reduction of the list *will not necessarily lead to less regulation*. During the Task Force meetings, it was pointed out that most of the markets removed are currently either not regulated at all or are subject to light regulation. Secondly, a lot will depend on the market definition that will be adopted, with some markets being now broader than before (former market 11).⁵
- *A reduction of the list is in line with better regulation principles*. As a matter of fact, during the first years of implementation of the 2002 framework, NRAs had a clear incentive to define relevant markets in line with the list included in the 2003 Commission Recommendation, since deviating from that list would have meant having to run the three-criteria test. Removing markets from the list means that NRAs will have to explicitly show that the conditions for ex ante regulation are met in their specific jurisdiction – in line with the principle that there should be ‘no regulation without justification’.
- The suggested prioritisation of market analyses (so-called “modified greenfield approach”) further strengthens the alignment of the new framework with better regulation principles: as a matter of fact, demonstrating that ex ante regulation is necessary in a given market requires proof that other attempts to regulate other

⁴ On market 15, see Ulrich Stumpf’s presentation at the first meeting of the CEPS Task Force and that of Lars Backlund and Giuseppe Rossi on market 18.

⁵ See presentation by Henning Never (Deutsche Telekom) at the first meeting of the CEPS Task Force.

(upstream) markets did not create the conditions for long-run competition.⁶

- However, *the effect of the reduction of the relevant markets and of the prioritisation of market analyses may be smaller than expected*, if NRAs do not have to motivate their decisions when regulating markets included in the (revised) Recommendation. In this respect, the Commission proposal only partially hits the target.
- The CEPS Task Force considers that *geographical segmentation in market definition*, besides the geographical differentiation of remedies, is essential to ensure that markets evolve towards sustainable competition overtime. Such a need was advocated by scholars, regulator and players active in many countries, including the UK, Germany, France, Spain and Romania.⁷ Proposals discussed by Task Force participants include:
 - *The definition of 'cabled areas' as geographically separate markets*: in these areas, NRAs could consider backing away from access regulation due to infrastructure-based competition.⁸
 - *The use of local switches as basic geographical unit (BGU) in market definition*: as a matter of fact, most of the current regulatory remedies for (former) markets 11 and 12 are related to the areas covered by the local switches.⁹ This option is also backed by international references (UK, Canada).
- *Some of the relevant markets should be analysed in light of advanced economic tools, such as two-sided market theories*:
 - The *removal of market 15* has long been advocated by the CEPS Task Force, as this market is found to be competitive in many EU countries. In addressing this market, NRAs should

⁶ See U. Stumpf, op.cit. Another proposal that was discussed in the Task Force to streamline market analyses in the next years was to analyse markets 11 and 12 together, as BSA is more a remedy than a market. See Deutsche Telekom's presentation (Never, 2007) at the first meeting of the CEPS Task Force.

⁷ See presentation by Romtelecom, 9 April 2008.

⁸ See Martin Cave, presentation at the second meeting of the CEPS Task Force.

⁹ A. Acebal (Telefónica SA), presentation at the first meeting of the CEPS Task Force.

- consider whether there can be a restriction of competition on one side of the market, if the other side is fully competitive.¹⁰
- As regards *market 18*, it is necessary to ensure that inter-platform competition is duly taken into account: defining technology-specific markets (i.e. ignoring inter-platform competition between, say, satellite, cable and xDSL platforms) would fail to accurately portray the competitive landscape in the broadcasting sector as it appears today. In addition, as broadcasting markets are multi-sided markets, where operators using different technologies compete for the same customers, the current shift of SMP towards content providers should be taken into account.
 - More generally, *the proposed package provides little guidance to NRAs on market analysis*. Areas where more guidance would be needed are certainly the application of the three-criteria test; the application of ‘cluster market’ concepts;¹¹ the approach to emerging markets; and the application of margin-squeeze tests in an all-IP context and under functional separation, etc.
 - Finally, *it is not clear what will happen for those markets that are currently regulated, but have been removed from the list* – an example being market 18 in many countries. NRAs should be called upon to revisit such market analyses as soon as possible, under the basic assumption that these markets are not eligible for continued ex ante regulation.

KEY MESSAGE 1

- The CEPS Task Force agrees with the proposed shortening of the list of relevant markets, and acknowledges that the European Commission’s proposal mirrors most of the suggestions included in the Final Report of the previous CEPS Task Force on e-communications for the period 2005-06.

¹⁰ U. Stumpf, presentation at the first meeting of the CEPS Task Force.

¹¹ There is indeed a chapter on bundling in the paper accompanying the new Recommendation, but it is unclear how this will translate into actual practice.

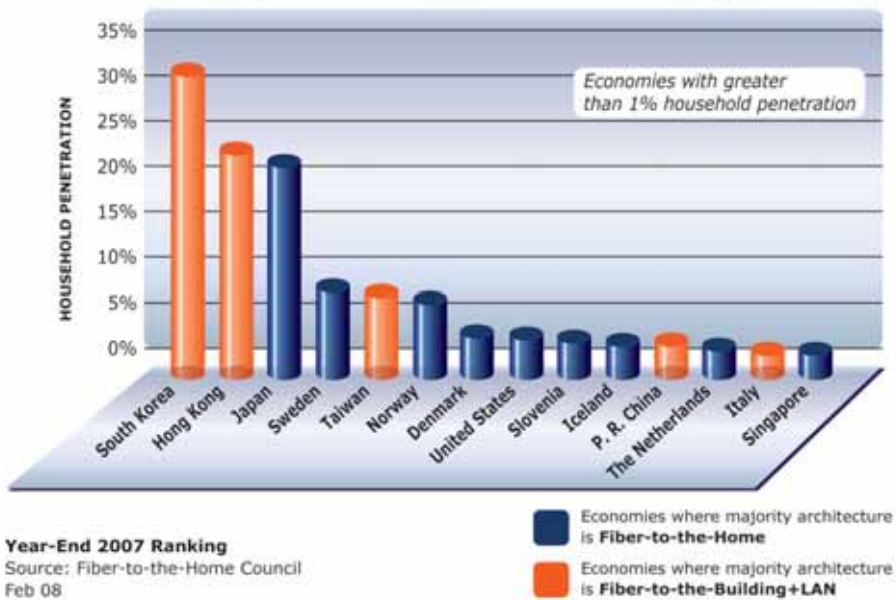
- However, the expected reduction in the level of regulation is uncertain; the lack of clear guidance to NRAs and the lack of clear rules on market definition and emerging markets may jeopardise the effect of this appreciable initiative.
- More guidance and training to NRAs are needed to ensure that current regulatory tools are properly applied. In particular guidance on geographical segmentation and the application of the three-criteria test are needed to ensure that markets evolve towards sustainable competition.
- For markets that are currently regulated, but have been removed from the list, the NRAs should be obliged to perform new market analyses as soon as possible.

2.2 Incentives to invest in next generation networks

- Encouraging investment in the roll-out of Next Generation Access Network infrastructure is key for the competitiveness of Europe. The number of FTTH connections in Europe reached 1 million at the end of 2007, with peaks currently in Sweden and Italy and a fast development in countries like France.¹² At the same time, Europe significantly lags behind the US, Japan and Korea in the deployment of these new network infrastructures, with Japan having reached already 11 million subscribers. Figure 1 below shows the current ranking in terms of household penetration of FTTH or FTTB+LAN, as published by the FTTH Council on 28 February 2008.

¹² IDATE News 407, 28 February 2008.

Figure 1. Economies with more than 1% penetration of FTTH/FTTB+LAN



- The proposed review of the regulatory framework adopted by the Commission in November 2007 lacks clear provisions on the regulatory approach to be adopted *vis-à-vis* Next Generation Access Networks. As investing in NGANs is essential for the competitiveness of the EU27 and the transition towards the ‘information society for all’, the CEPS Task Force believes that *more regulatory certainty should be ensured on a number of issues related to NGANs*.
- The traditional regulatory concept for access regulation focused on regulated access to existing telecommunications networks. In the context of legacy access regulation, regulation took place in a rather static environment. Regulated access was understood as a means to create effective competition in the former monopolistic markets mainly by redistributing market shares from the incumbent to new entrants. *This ‘old regulatory approach’ was successful as long as the political aim was confined to redistribution, but it is deficient for providing incentives for investments in new infrastructure, namely Next Generation Access Networks (NGANs)*.

- Markets susceptible to ex ante regulation will remain a moving target during the migration to all-IP NGNs.¹³ The main problems include:
 - The way in which new wholesale products will affect market definitions and the 3-criteria test;
 - Access to sub-loop and fibre loop;
 - Backhaul, duct and in-house wiring sharing;
 - New WBA products; and
 - New IP interconnect products, impact of new charging regimes (bill & keep) on termination markets.¹⁴
- *There are potentially very significant problems stemming from the application of current regulatory tools to all-IP networks.* These include market definition, the assessment of SMP in a multi-sided market environment, the application of margin squeeze tests when competitors have widely diverging cost structures, etc. At the same time, some participants also observed that phasing out regulation right away might constitute a risk.
- To be sure, *the migration towards NGNs will dramatically affect the 'investment ladder' model*, by completely changing the architecture of networks.¹⁵ Although opinions on the functioning of the ladder as a regulatory model for Europe are still mixed, there is full convergence on the need to provide for an update of the regulatory tools used by NRAs.¹⁶
- In an all-IP world, the main legacy bottlenecks are represented by civil engineering works, and in particular ducts, which represent

¹³ U. Stumpf, presentation at the first meeting of the CEPS Task Force.

¹⁴ See U. Stumpf, presentation at the first meeting of the CEPS Task Force; and Alexander De Streel, presentation at the third meeting of the CEPS Task Force.

¹⁵ See Martin Cave, presentation at the second meeting of the CEPS Task Force.

¹⁶ Some recent empirical studies have found that regulation ultimately hampers investment in alternative infrastructure, a finding which contrasts with the "ladder" approach (Waverman et al., 2007; Röller, 2007). At the same time, Martin Cave showed evidence that is consistent with the ladder hypothesis during the second Task Force meeting, in November 2007).

more than 50% of Capex for a new network.¹⁷ Many Task Force members – including fixed-line operators – considered *duct-sharing as a potentially viable solution to enable the endowment of more than one player with adequate infrastructure to provide their services*, provided that all ducts – not only the incumbents’, are subject to this regulatory approach. Ducts, masts or other essential civil works infrastructure of all owners, including all other existing ducts of alternative telecommunications operators, other utilities and public undertakings as well as those owned by local communities, could be made available in order to facilitate infrastructure-based competition and to lower barriers to entry for all market players.¹⁸

Recently, several fixed line telecom operators that participate in the CEPS Task Force have proposed measures for a sustainable solution to ensure a more effective and efficient approach to the roll-out of NGA infrastructure. The proposal seeks to incorporate all major political objectives related to NGA, including the provision of appropriate incentives to invest in order to close the ‘investment gap’, ensuring fast penetration and usage of the NGAs to the benefit of consumers, and allowing entry and participation of alternative operators by means of mandatory regulated access. The main principles underlying the proposal are described below.

- As a general rule, *regulation should focus on the deployment and availability of basic infrastructure like ducts and masts* in order to facilitate market entry and network roll-outs by third parties.
- *Geographical segmentation can promote NGA infrastructure investment*, if the local competitive situation is taken duly into account, and represents a suitable model towards gradual deregulation.

¹⁷ See V. Hennes (France Telecom), presentation at the third meeting of the CEPS Task Force.

¹⁸ Such alternative basic infrastructures are already widely used in a lot of regions. For example, sewers are used in Paris, Tokyo (850km), Vienna (400km), Hamburg (100km) and Berlin (50km); gas and water systems are being examined as potential conduits for FTTH networks and technology developed in recent years has demonstrated the ability to safely and efficiently transmit data through cable systems installed inside gas or water pipes; aerial FTTH installation is ideal when an overhead infrastructure exists and is very fast and cost effective (see OECD, 2008).

- In areas where this is not sufficient and sustainable competition is unlikely to develop, access obligations to the sole NGA infrastructure must be granted. This means *obligating NGAN operators that exclusively serve a particular area to grant access to other NGAN operators on a reciprocal basis where the economic conditions do not allow for a competitive network to be rolled-out.*¹⁹
- *In case of mandated access, risk-sharing should be allowed between investors and access-seekers.* In particular, this can be achieved by either long-term contracts with minimum quantities – which allows for risk-sharing²⁰ – or risk-free short-term contracts with a risk premium – the investment risk remaining solely with the investor.²¹ At the same time, pricing flexibility should be allowed in retail markets, i.e. allowing low retail prices during the penetration phase.

This proposal would not entail a permanent modification to the access regime. On the contrary, the four incumbent players that agreed on the proposal clarify that once the investment has been completed and penetration levels have reached a threshold, the regulatory regime would go ‘back to normal’.

KEY MESSAGE 2

- The CEPS Task Force considers that the Commission proposal provides insufficient guidance to NRAs and industry players on how regulation will apply to Next Generation Access Networks.
- Clarification of what regulatory remedies will apply (if any), and under what conditions, is essential for encouraging investment in these valuable new networks.
- Guidance on regulatory tools (e.g. the future of the investment ladder) is missing in the current proposal.

¹⁹ The areas where the present obligation applies would have to be identified by NRAs through an assessment of whether network competition is likely to emerge in the area under scrutiny in the medium- to long-term.

²⁰ The risk-sharing contract will be available for a limited period only, i.e. while risk-sharing is still relevant.

²¹ The risk premium in the latter contract is reduced as penetration increases.

- Market analysis should follow a geographical approach to better promote infrastructure investment.
- Regulation of NGANs should focus on the deployment of basic infrastructures like ducts and masts in order to facilitate market entry and network roll-outs by third parties.
- Where network competition is found to be economically not feasible in the medium- to long-term, access to NGANs should be mandated, at the same time ensuring that both investors and access-seekers share the investment risk.

2.3 Functional separation

The CEPS Task Force discussed extensively the inclusion of functional separation in the set of remedies listed in the Access Directive (proposed new Arts 13a and 13b). The main findings of our discussion are summarised below.

- *Functional separation as a remedy was already possible under Art. 8(3) of the Access Directive. Its explicit inclusion as an additional remedy was therefore not necessary, unless the Commission wanted to clarify the exceptional nature of the remedy and the precise steps that must be followed to implement it at national level.*
- *Depending on market conditions, functional separation can thus prove a useful remedy or a quite disproportionate and harmful solution, as testified by the ongoing debate in some member states – with Sweden and Italy considering such remedy, whereas in the Netherlands the existence of significant infrastructure competition led the NRA to reject such remedy as unduly intrusive. In France, ARCEP recently warned against the difficulty of implementing functional separation.²² Finally, in Germany the idea of mandatory functional separation was explicitly rejected.*
 - *The only available experience on functional separation in Europe is the UK, which led to a remarkable increase in ULL in the past*

²² See *La Lettre de l'Autorité de Réglementation des Communications Électroniques et des Postes*, n. 55, March/April 2007.

months, and is generally seen with favour, in particular by the incumbent player and the NRA. But some commentators have also reported some problems in the Quality of Service²³ and excessively costly implementation.²⁴

- *However, countries that have not experienced separation also exhibited a remarkable increase in ULL through mandatory network sharing. This is the example of Germany and France.*²⁵
- The potential advantages of functional separation are mostly rooted in the *problem of non-price discrimination*, as confirmed by the wording of the proposed new Art. 13a of the Access Directive. Other advantages mentioned by members of the Task Force include:
 - *Regulatory certainty.* Competitors know that they will receive the same level of service as the incumbent's downstream operations; this may provide certainty for future investment decisions.
 - *Focus and withdrawal of regulation.* By focusing on the key bottleneck, the regulator can look to withdraw regulation more speedily in other areas (in the UK, sub-national deregulation of wholesale broadband access is now being considered).
 - *Benefit to consumers.* The boost to competitors may ultimately translate into improved choice for consumers generally (Ofcom).
- Potential risks and shortcomings of functional separation identified by participants in the Task Force include:

²³ A. Gavosto (Telecom Italia), presentation at the first meeting of the CEPS Task Force.

²⁴ *Ibid.*, stating that setting up Openreach cost €70 million in 2006, plus €30 million in 2007.

²⁵ Other countries where functional separation has not been implemented experience a broadband penetration rate above the European average (18.2%). According to the COCOM report reflecting the situation as of July 2007, this is the case of Austria, Estonia, Germany, Belgium, Luxembourg, Sweden, Finland, the Netherlands and Denmark.

- *Functional/structural separation as a remedy in other network industries has had a very mixed track record. Most of the objectives initially set out were not met, whereas adverse impacts emerged as regards infrastructure investment, regulation and quality of service.*²⁶
- *In telecoms, separation as a remedy bears an even bigger risk of altering the fast-changing dynamics of this industry and further contributing to its unprecedented uncertainty, at a time when Europe is at the crossroads of the massive deployment of fibre access networks.*²⁷
- *Functional separation can create an everlasting monopoly, whereas e-communications markets are normally converging towards a structured oligopoly.*²⁸ The transitional nature of sector-specific regulation in the e-communications sector would thus be hampered by such a structural remedy.
- *Functional separation can jeopardise the emergence of integrated multi-play offers, thus hindering the development of welfare-enhancing business models.*²⁹ As an alternative to separation, effective equivalent access to the upstream resource of the integrated operator can be achieved based on: i) replicability measures, ii) operational/quality of service regulation and iii) efficient economic regulation, all under the supervision of an efficient competition authority.³⁰

²⁶ See J. Salanave (IDATE), presentation at the first meeting of the CEPS Task Force.

²⁷ Ibid. See also Salanave & Girieud (2008), who state that “the risk/reward ratio of mandated functional separation remains particularly unfavourable for the telecoms industry at a time of unprecedented transition”.

²⁸ See presentation by A. Gavosto and V. Hennes. It was objected that if separation applies – as it should – to the point of the network that constitutes an enduring bottleneck, then it does not create a monopoly. Rather, it deals with one that already exists.

²⁹ It was argued, however, that separation and equivalence merely mean that all service providers purchase the same local access input on the same terms, price, etc.; thus, it should have no bearing on the ability of the service provider to bundle services.

³⁰ See V. Hennes’ presentation at the third meeting of the CEPS Task Force.

- *Functional separation is hardly suited for those countries that do not have a real legacy fixed-line infrastructure, as it may ultimately hamper facilities-based competition and hinder legal certainty. This is particularly important in Central and East European countries, where fixed-line penetration is often very limited (e.g. 27% in the Czech Republic, 19% in Romania).³¹*
- *While the Commission advocates convergence in national markets, implementing functional separation in some countries can lead to greater fragmentation, as potential entrants in some national markets would find very different entry conditions depending on whether the NRA has decided to separate the infrastructure or not.*
- In summary, the CEPS Task Force did not question the potential usefulness of functional separation in those countries where market conditions suggest the (voluntary) adoption of this remedy (e.g. the UK). At the same time, however, the CEPS Task Force suggests that the exceptional nature of the remedy should be more strongly stated; a clarification of the wording of Art. 13a would thus be needed. The text of the article should state that the NRA has to: i) *convincingly prove that reiterated attempts to apply less intrusive remedies have failed*, and there are no prospects that they would succeed in the future, ii) *demonstrate that implementation failure cannot be attributed to the NRAs' own responsibility* and iii) *provide the Commission with an extensive impact assessment*, which includes the short- and long-term impact of the proposal on the incumbent, other operators and consumers, and also quantifies the expected impact on investment and innovation in the market affected. The impact assessment, in line with best practices in the use of better regulation tools, should provide quantification of impacts also for alternative (less intrusive) policy options, and should be communicated to the Commission for review.

³¹ See presentation by Romtelecom to the CEPS Task Force, 9 April 2008.

KEY MESSAGE 3

- The CEPS Task Force considers that the Commission proposal to include functional separation in Art. 13a of the Access Directive is not useful, unless the main reason for such inclusion is the exceptional nature of the provision, which warrants more stringent conditions and a higher burden of proof on the NRA. Otherwise, such remedy was already covered by Art. 8(3) of the same Directive.
- Functional separation is no panacea: it might prove useful in some national markets, but quite disproportionate in others. The Commission (and the EECMA) should therefore avoid sacrificing economic efficiency to achieve more consistent regulatory remedies in Europe – i.e. mandating separation in many national markets.

2.4 Spectrum policy

The CEPS Task Force dedicated a full-day meeting to spectrum policy issues, some of which are relevant to the review of the 2002 regulatory framework. The main issues are related to the digital dividend and to technology and service neutrality. Given the differentiated nature of Task Force participants, which ensures that all views are represented, the debate did not lead to a single solution on how to allocate spectrum that will be freed by the analogue switchoff. The participants expressed various opinions, which are summarised in this section.

- *Broadcasters need spectrum to update their technology* – e.g. migrate from MPEG2 to MPEG4, which will enable a number of advanced services and better compression. They also face significant demand for more programme channels and for the launch of High Definition TV (HDTV). All this should be taken into account when allocating the digital dividend.
- At the same time, the *currently available spectrum to mobile is not sufficient*, in light of the expected growth of mobile voice and high-speed data traffic in the next few years. Allocating part of the UHF band to mobile applications would have the advantage of contributing to bridging the digital divide, especially as the IMT-2000 family of technologies now includes also WiMAX, after the

WRC-07. One participant estimated that there would be a need for about 1280-1720 MHz (including already used by IMT-2000) by years 2015-2020.³² These include:

- 698–862 MHz for coverage and capacity, particularly in remote areas and for deep indoor coverage;
 - 2300–2400 MHz for advanced applications; and
 - 3400–3800 MHz for the very advanced applications: longer-term additional parts of the range 3800–4200 MHz will be needed.
- *There is a clear need to open up the digital dividend to mobile multimedia services and wireless broadband access technologies, which can bridge the digital divide due to extensive coverage potential. A study presented at the Task Force estimated that the contribution to productivity and GDP from investment in telecoms and especially mobile is greater under the ‘mobile allocation’ than under the ‘TV allocation’ scenario, with an added value of 0.6% to GDP growth, millions of additional jobs and GDP/head increases over 20% by 2020.*³³
 - *More generally, the CEPS Task Force considers market-based mechanisms and non-exclusive allocation of spectrum to be essential for Europe. More precise guidance should be given to NRAs on how to design auctions for the release of spectrum, and technology/service neutrality should be carefully implemented. The GE-06 agreement for frequency use between 470 and 862 MHz does not need significant revision, but mobile services will be given a co-primary status in the sub-band 790-862 MHz in Europe. In this respect, the results of the WRC-07 (with 2 global and 1 regional band opened to IMT technologies in the UHF band) are to be seen with favour.*³⁴

³² See presentation by Erik Ekudden (Ericsson), at the second meeting of the CEPS Task Force, quoting Report ITU-R M.2078.

³³ Presentation by E. Bohlin, C. Blackman, and S. Forge, CEPS Task Force second meeting. The study concluded that an allocation of a substantial part of the digital dividend to mobile broadcast services would also help bridge the digital divide.

³⁴ See Chris Woolford (Ofcom), presentation at the second meeting of the CEPS Task Force.

- *The Commission should provide clearer guidance for use of licence-exempt spectrum in the 300Mhz-1GHz bands on a non-interference basis. After the switchover, many ‘white spaces’ will be available for low-power technologies, which can bring new services such as ‘Super-WiFi’.³⁵ Neighbourhood meshes are one option to be further considered and tested at national and EU level. However, compatibility between such new services and existing services will have to be further studied and demonstrated.*

KEY MESSAGE 4

- Spectrum in the ‘digital dividend’ bands should be allocated on a non-exclusive basis, subject to non-interference conditions.
- Broadcasters’ needs as regards technological improvements – e.g. migrating from MPEG 2 to MPEG 4 – and demand for new services, increased capacity and HDTV should be duly taken into account.
- Mobile multimedia services and BWA should be allocated sufficient spectrum: however, no radical change in the GE-06 is needed, especially after the WRC-07.
- License-exempt spectrum usage should be promoted on a non-interference basis.

2.5 Institutional and governance issues

Institutional and governance issues lie at the core of the Commission proposal for the review of the 2002 regulatory framework. The proposed creation of a European e-communications authority or body (EECMA or BERT), the extension of the Commission’s veto power to remedies proposed by the NRAs and the independence of national regulators have been subject to a hectic debate in the past months, and the TF participants agreed that these novelties should be analysed jointly, not separately, and also in conjunction with other features introduced by the Commission in

³⁵ See J. Beveridge (Microsoft), presentation at the second meeting of the CEPS Task Force.

the proposal, such as functional separation as an additional and exceptional remedy.

Below, the main findings of the Task Force are summarised. Section 2.5.1 deals with the proposed European Authority or enhanced ERG, whereas section 2.5.2 deals with the extension of the Commission's veto power.

2.5.1 The creation of a new European e-communications authority

The proposal adopted by the Commission in November 2007 entails the creation of a European Electronic Communications Markets Authority (EECMA). In the Commission's view, the EECMA should replace the ERG, the ENISA and – partly – the COCOM. Its main functions would be that to advise the Commission on market analyses (Phase II); intervene whenever an NRA is not complying with a veto decision under Art. 7 of the Framework Directive; deal with the analysis of transnational markets and pan-European services (including spectrum and ETNS 3883 services); and provide network security. The main reason why the Commission decided to propose the creation of the EECMA was the need to secure sufficient convergence in the regulatory practices at national level. However, some of the Task Force participants questioned whether the creation of such a new body was really needed. In addition, the Task Force agreed that some of the features of the EECMA and its institutional positioning within the architecture of the framework need further clarification.

2.5.1.1 The case for EECMA

The case for the EECMA exists as regards the following arguments:

- *Internalisation of cross-country externalities, especially as regards certain services that overcome national borders (e.g. international roaming, mobile communications on board aircrafts, VoIP, spectrum, the provision of pan-European services to multi-location businesses); and*
- *Ensuring economies of scale in regulatory decisions.*
- *In addition, the ERG has proven to be weak and lacking in accountability, although CEPS Task Force participants acknowledged that the ERG has taken important steps in acting as a forum of exchange of best*

regulatory practices (but not deregulatory ones: bitstream, WLR, naked DSL, SMS).

On the other hand, the main arguments against the EECMA are the following:

- *No transition towards ex post competition policy.* The creation of the EECMA is hardly in line with the transient nature of sector-specific regulation.
- *No justification based on market facts.* Markets are not sufficiently integrated. As was stated by the Commission in the June 2006 Impact Assessment, “Until Europe had truly pan-European electronic services, it is unlikely that a pan-European regulator will be justified”. Such a change in the Commission’s approach does not seem to be supported by market facts.
- *Increased administrative burdens.* The EECMA adds another administrative layer, costly today and difficult to dismantle in the future. This, to some extent, can limit the simplification effort sought by the Commission in reducing the list of relevant markets.
- *Governance does not guarantee independence.* In particular, the EECMA Administrative Board will be formed by 12 members, 6 of whom will be appointed by the Commission, and 6 by the Council.³⁶ As the Administrative Board has very important powers in the EECMA (e.g. the appointment of the Director and Chief Network Security Officer, adoption of the Authority’s annual work programme and budget, the approval of the general report on the Authority’s activities and the adoption of the financial rules applicable to the Authority), such a mixed appointment seems to jeopardise its role as independent advisor to the Commission, and overall independence from national governments.
- *Accountability is not guaranteed.* There are currently no provisions to appeal an EECMA decision, and the binding nature of EECMA opinions will have to be seen once the new body starts interacting with the Commission. As the *Meroni* doctrine impedes the creation of a new agency with discretionary executive powers, the EECMA becomes a hybrid institution – not an agency, nor a real authority –

³⁶ See Article 25 of the proposed regulation, COM(2007)699 rev 2.

whose decisions are currently not subject to any transparency or consultation obligations.³⁷

- *Simple majority voting can create problems.* For example, under article 7 the Commission has to take “utmost account” of the opinion of the EECMA when deciding on remedies. This can lead to a situation in which an NRA wishing to impose a certain remedy could be challenged by a simple majority of other countries, with no significant possibility of appealing the Commission decision.³⁸
- *The EECMA may impede regulatory competition and discovery by experimentation.* If the EECMA de facto mandates convergence in regulatory approaches, regulatory competition and ‘races to the top’ may be hampered by a “centralised approach to a highly fragmented market”. In this respect, the EECMA seems to be a solution in search of a problem: if in 2010-11 – when the Commission proposal is expected to take effect – national markets will have converged significantly, then the EECMA may be a useful additional layer to ensure that firms engaging in cross-border operations find similar conditions in member states. At the same time, by that date the market may well be in need of less regulation, not more.
- *The consolidation of competences from the former ERG and the ENISA is not justified,* as the two bodies require different skills and competencies. In addition, the same authority would be given a

³⁷ In *Meroni*, the ECJ however held the delegation of ‘discretionary power’ as unlawful. According to the ECJ: “The consequences resulting from a delegation of powers are very different depending on whether it involves clearly defined executive powers the exercise of which can therefore, be subject to strict review in the light of objective criteria determined by the delegating authority, or whether it involves a discretionary power implying a wide margin of discretion which may, according to the use which is made of it, make possible the execution of actual economic policy.”

³⁸ For example, the Commission may veto a remedy chosen by an NRA as insufficient, de facto forcing it to resort to functional separation. This would occur with the backing of a simple majority vote by the EECMA. The result would be that functional separation is imposed in one member state against the will of the regulator and the regulated, and with no reasonable possibility to appeal the Commission decision.

plethora of powers of a different nature, from a mere advisory role (for e-communication markets) to binding powers (for network security).

In summary, the provisions at hand do not clarify what will be the balance of power between the Commission (INFSO and COMP) and EECMA; and the case for appointing such a new body appears weak at best.

2.5.1.2 From EECMA to BERT: Preliminary remarks

The proposed new EECMA has been the subject of heated debate in the European Parliament during the first months of 2008, especially in the ITRE Committee. This debate ultimately led to the development of an alternative proposal, which would certainly solve some of the problems identified above. As explained by MEP Pilar del Castillo during the last Task Force meeting, the EP may consider, as an alternative to the EECMA, the creation of an enhanced, institutionalised ERG (or ‘ERG plus plus plus’), legally based as an EU body and renamed as Body of European Regulators in Telecoms (BERT). The BERT would be composed mostly of representatives of NRAs, but with a General Manager (or Director) and a resident staff of 10-15. It would be independent and accountable to the European Parliament, and would vote with a 2/3 majority. The BERT would play a purely advisory role to the European Commission, which could refer to the new body within the Art. 7 procedure; but would play a guidance role for NRAs, similar to (and possibly stronger than) that performed so far by the ERG. In addition, BERT would have an enhanced responsibility for spectrum policy and pan-European services. Finally, it is still unclear whether the BERT will host an arbitration panel, aimed at solving controversies that may emerge in the implementation of the Art. 7 procedure, especially if the Commission’s veto power is extended to remedies identified by NRAs (see below, section 2.5.2).

The proposal to create the BERT is still being finalised by the EP Rapporteur; accordingly, the CEPS Task Force can only offer some general remarks on the pros and cons of undertaking such an initiative. In particular:

- The *BERT* appears as a more sustainable solution than the *EECMA*, and poses less problems as regards the need to secure that sectoral *ex ante* regulation is removed once markets become sufficiently competitive.

- Compared to the EECMA, the *BERT would not solve the problem of red tape*, especially if the Commission is obliged to refer to it all decisions taken ex-Art. 7. Of course, the additional administrative layer would be less burdensome if such a referral is not mandatory, but only optional.
- For what concerns the role played by the BERT, the *potential for this body to contribute to the achievement of the internal market for e-communication services would have to be tested in practice*, and would mostly depend on the extent to which the new body would intervene to ensure that NRAs treat analogous regulatory issues consistently, at the same time refraining from the adoption of ‘one-size-fits-all’ approaches.
- Just like the EECMA, also the *BERT – unless the final proposal will propose the creation of an arbitration panel within the new body – would not solve the problem of appeals to the Commission’s decisions*, which is likely to become even more urgent if the veto Commission’s veto power ex-Art. 7 is extended to remedies (again, see section 2.5.2 below).

Table 2 below summarises the main differences between the EECMA and the BERT, as they stand today.

In summary, the CEPS Task Force considers that the proposed BERT would share the potential benefits of EECMA as regards the need for more coordination of policy at EU level, and especially as regards the partial coordination of spectrum policy and the promotion of pan-European services. At the same time, BERT would create fewer problems as regards the transition towards competition policy, budgetary allocation, balance of powers, voting procedures, the consolidation with ENISA and (potentially) appeals to Commission decisions. Finally, BERT would still entail additional red tape, and its transparency and independence features still have to be fully defined. To be sure, such a body would represent the ‘missing piece’ in the framework puzzle only if it provides a sustainable and effective forum for appeals to Commission decisions under Art. 7. This would be even more important if the veto power of the Commission is eventually extended also to remedies imposed by NRAs.

Table 2. EECMA vs. BERT

Issue	EECMA	BERT
Transition towards ex post competition policy	<i>Very difficult: EECMA would be very difficult to dismantle, and would have scant incentives to enable the full transition. Staff is estimated at 134.</i>	<i>Easier: BERT is mostly composed of representatives of NRAs, plus limited in-house staff (10-15).</i>
Market integration	<i>The idea of a new regulator was rejected by the EC in June 2006 as markets were not sufficiently integrated: things have only marginally changed since then.</i>	<i>BERT could continue the activity of the ERG with stronger legal basis. Whereas market integration would be a precondition for EECMA, it could be a mission for BERT.</i>
Administrative burdens	<i>EECMA adds red tape during Art. 7 procedures, although simple majority voting can speed up its internal procedures.</i>	<i>BERT does not solve the problem of red tape, and qualified majority could increase the time needed for an opinion. If EC referral is optional, the burden may be limited.</i>
Independence	<i>EECMA's administrative board does not ensure independence.</i>	<i>Depends on who appoints the Director. It is dependent on NRAs, but potentially independent from the Commission.</i>
Accountability	<i>To the European Parliament</i>	<i>To the European Parliament</i>
Transparency	<i>No provision on transparency</i>	<i>To be addressed</i>
Voting rules	<i>Simple majority</i>	<i>2/3 majority</i>
Consolidation with ENISA	<i>Yes, although the synergies are very limited.</i>	<i>No, ENISA would remain a stand-alone agency.</i>
Spectrum	<i>Enhanced responsibility for pan-European services. Would have to be coordinated with other bodies such as RSPG and RSC.</i>	<i>Mandate to identify actions needed for pan-European services. Would have to be coordinated with other bodies such as RSPG and RSC.</i>
Appeals to EC decisions	<i>Not solved</i>	<i>The issue would be tackled only if an arbitration panel or an analogous procedure is created within BERT.</i>

2.5.2 *The extension of the Commission's veto power*

- The Commission's proposal extends the scope of the Art. 7 review to remedies proposed by NRAs after a market analysis. Opinions in the CEPS Task Force were not unanimous in this respect, with some participants rejecting the proposal as inefficient (as NRAs know best the conditions of their domestic market), and others considering it to be a better safeguard against mistaken NRA decisions than the scrutiny by national (administrative) courts, often badly equipped to deal with complex problems of sectoral regulation.
- The Task Force reiterates its recommendation to *enhance the status of the three-criteria test* and include it (in a clarified version) in the text of the Framework Directive.
- *The standards of the review and the role of the Commission should be clarified*: Is the review of remedies just an 'internal market check', or a full EU appeal?
- A more precise definition should be given as regards *what constitutes "affecting trade between Member States"*.³⁹

2.5.3 *Checks and balances*

- A key feature of complex, multi-level regulatory frameworks is the system of checks and balances. In this respect, the CEPS Task Force has identified a number of problems related both to the 2002 framework and the currently proposed review. These problems add to the ones identified in the previous sections on the EECMA or BERT (2.5.1) and on veto power over remedies (2.5.2).
 - First, the *objective of the framework* is not clearly stated: Stimulate broadband as in i2010 Action Plan (industrial policy) *or* just ensure markets are functioning properly (neo-classical model)? The real objective should be linked to long-term consumer welfare, including dynamic efficiency (innovation, incentives to invest in R&D) and a wide availability of advanced products and services at reasonable cost.

³⁹ See e.g. Case C-376/98 *Tobacco Advertising Directive*.

- Secondly, the *incentives for NRAs are inefficient*. This is due to the incomplete, ‘hybrid’ application of competition policy tools and the low burden of proof for regulating markets included in the 2003 recommendation.
- Thirdly, *the approach to centralisation and regulatory convergence appears unsatisfactory*. On the one hand, NRAs’ defence of national interests prevents the full achievement of the benefits of centralisation (account of countries externalities); on the other hand, insufficient accountability and unclear mandates in the Commission and ERG (later EECMA or BERT) control prevent the achievement of the benefits of decentralisation.
- Fourthly, *the problem of appeals is only mildly tackled* in the Commission proposal, which hints at a future Commission initiative that will arguable clarify the criteria to be applied for suspending the effects of a NRA decision under appeal. In addition, the proposal mandates reporting on subjects, number and duration of appeals as well as suspension.
- Fifthly, *participation of affected undertaking is not considered* when questioning NRAs’ measures (EC phase two decisions). Whatever institutional setting is adopted, a mandatory hearing of the affected operators before the Commission and – depending on the weight of its opinion – a future authority or body of regulators, must be introduced.
- Finally, *training of NRAs is needed* – more than centralised regulatory bodies – to ensure the correct implementation of the regulatory tools provided by the current framework. The independence and accountability of NRAs is dependent on: i) a more dynamic view of the market, ii) regular reporting on dynamic indicators (e.g. Ofcom) and iii) external evaluation, on the basis of NRA management plans (e.g. OPTA).

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- The CEPS Task Force believes that there might be a case for more centralisation with a European authority, but limited to specific issues where the EECMA may internalise cross-country externalities and/or achieve economies of scale in regulatory decisions. In general, the CEPS Task Force is rather sceptical towards the creation of a new European authority, which would imply more bureaucracy instead of less.
- In addition, current governance features of the EECMA and lack of accountability and transparency measures call for a significant revision of the Commission proposal as it stands today.
- Compared to the EECMA, the proposed BERT would exhibit similar potential benefits; at the same time, the BERT would create fewer problems as regards the transition towards competition policy, budgetary allocation, balance of powers, voting procedures, the consolidation with ENISA and (potentially) appeals to Commission decisions.
- BERT would still entail additional red tape, and its transparency and independence features still have to be fully defined.
- The BERT would represent the 'missing piece' in the framework puzzle only if it provides a sustainable and effective forum for appeals to Commission decisions under Art. 7. This would be even more important if the veto power of the Commission is eventually extended also to remedies imposed by NRAs.
- The Task Force reiterates its recommendation to enhance the status of the three-criteria test and include it (in a clarified version) in the text of the Framework Directive. The standards of the review and the role of the Commission should be clarified.
- Several changes are needed in the current system of checks and balances, including the incentives for NRAs, the accountability of the institutions involved (including the EECMA or the BERT), the need to consult affected stakeholders on phase 2 decisions and the possibility of appealing Commission decisions, especially if taken with the support of an EECMA simple majority vote. In this respect, a BERT with an embedded arbitration panel would represent a step forward in the direction of both better regulation and sustainable consolidation of the internal market.

3. COUNTRY CASE STUDIES: ROMANIA AND TURKEY

During the final meeting of the CEPS Task Force on “Achieving the Internal Market for e-communications”, two country case studies were presented and discussed. The countries covered are a new member state (Romania) and a large market that currently does not belong to the EU27 (Turkey), but that has chosen to design its regulatory framework for e-communications on the basis of the European regulatory framework. The situation in the two countries was presented by important industry players such as Romtelecom and Turkcell. Below, we report the highlights of the two case studies.

3.1 Romania

The case of Romania is enlightening, especially for what concerns the functioning of the 2002 regulatory framework in a new member state.⁴⁰ With a population of 22 million and 7.5 million households, Romania is the seventh largest nation in the EU. Around 47% of its inhabitants live in rural areas, whereas in the EU over 70% of the total population live in urban areas. Compared with the EU average, Romanian income levels are low, both in absolute and relative terms; in addition, income distribution is highly skewed towards the upper-income earners and towards the large cities, so that the highest 20% of earners in Romania account for over 40% of total income. These peculiar features explain, at least partly,

⁴⁰ The CEPS Task Force did not deal directly with spectrum policy in Romania. For a case study, see Bohlin et al. (2008).

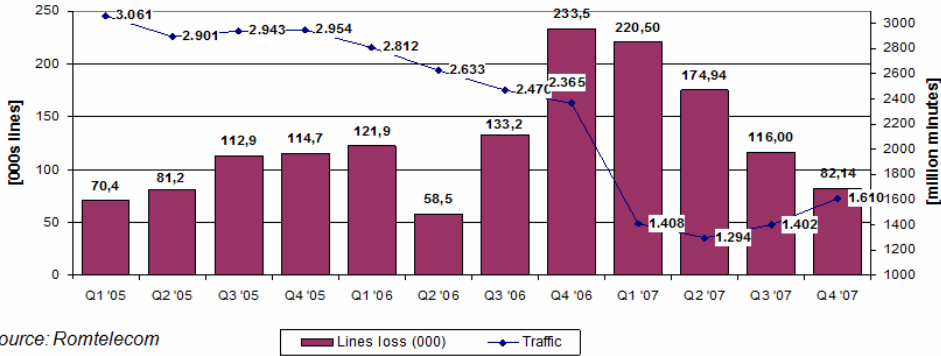
why Romania is still lagging behind in terms of ICT uptake, with PC penetration still being relatively low.⁴¹

In the telecoms sector, Romania exhibits the following peculiarities:

- *Low and declining fixed line penetration*, with almost no legacy network. Currently Romania has a fixed penetration of 19% of the population and 56% of households. This is very low by EU standards, and similar to the situation in other CEE countries (such as e.g. the Czech Republic).
- *Infrastructure-based competition in the fixed markets, especially in urban areas*. This is mostly due to:
 - *High and increasing mobile penetration*: with 22.8 million mobile subscribers, the dominant service platform for voice is mobile. There is also significant fixed-mobile substitution: mobile originating traffic exceeds fixed originating traffic by over 50% and this ratio is increasing very rapidly.
 - *High cable TV availability*, with penetration of analogue cable networks almost matching that of PSTN. This has ultimately led to fierce price competition, with Romtelecom introducing its unlimited on-net offers (full on-net unlimited for €11.2/month) and RDS offering a stand-alone fixed telephony plan for €0 with minutes included (100 on-net minutes and 50 minutes for calls to Romtelecom); and a high churn rate, which ultimately indicates a lack of dominance for wireline operators even in access markets.

⁴¹ Around 29% of households have access to a minimum of one PC, which compares with around 54% in the European Union.

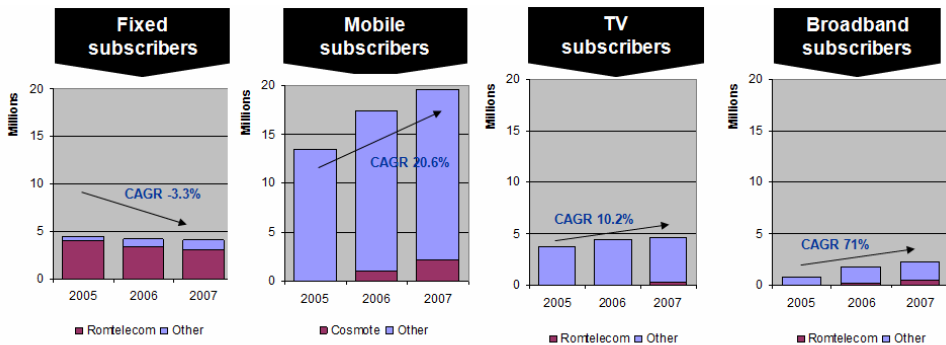
Figure 2. Usage and Churn in Romania, 2005-07



Source: Romtelecom

- Low broadband penetration.** Notwithstanding vibrant infrastructure-based competition between PSTN and cable, Romanian broadband penetration is still around 10% of total population, substantially below the average of 20% in the EU27. Romtelecom is practically a new entrant on the broadband market, reaching a market share of 17% by January 2008. This is a unique case in EU, since at the end of January 2008 over 80% of broadband was provided using a non-DSL technology. Infrastructure competition has led prices for broadband to decrease rapidly during the last year: 1Mbps subscription is now offered by Romtelecom (ADSL) for €7.5/month and by RDS (cable) for €5.69/month.

Figure 3. Key figures and statistics for communications in Romania, 2005-07



Source: ANRCTI data

The case study on Romania suggests the following conclusions:

- *No one size fits all approach.* National markets – especially new EU member states – face specific challenges that need a tailored approach, mostly aimed at encouraging investment in broadband infrastructure.
- *Standard regulatory measures (focused on the development of competition) already implemented have proven incapable of stimulating investments in the fixed infrastructure and bridging the development gap between Romania and the rest of the EU.*
- Regional differences and limited availability of a fixed network call for regulation at the sub-national level.
- In some European countries, most notably in new member states, the infrastructure of legacy fixed-lines is not as present as in old member states. This has led *mobile telephony to quickly become a substitute for fixed-line telephony* – a situation that can hardly be tackled with the current fragmentation of relevant markets in the 2003 and 2007 Recommendations.
- As regards the issue of *functional separation*, it is quite clear that such a remedy *would hardly be suitable in countries with underdeveloped infrastructures like Romania.*

Based on these findings, Romtelecom proposes the amendment of the Framework Directive in order to allow the implementation of an adequate industrial policy aimed to stimulate the growth of the telecoms sector and close the development gap between Romania and the EU. Such an amendment should allow NRAs in countries with underdeveloped fixed infrastructure and low coverage for fixed and broadband services, to consider giving *priority to the promotion of investments over pure competition-stimulation objectives.*

3.2 Turkey

The Turkish market offers large opportunities for growth and investment. Turkey started accession negotiations with the EU in October 2005, and is preparing itself for full integration with the EU. However, as also recently highlighted by recent academic papers,⁴² even if Turkey adopted a

⁴² See Atiyas & Renda (2007).

regulatory regime that is broadly in line with the EU framework, primary legislation is still more in line with the 1998 framework (the so-called ‘Open Network Provisions’) than with the subsequent, far-reaching regulatory framework. As remarked by the European Commission in its 2006 progress report, in many areas “Turkey has not adopted new legislation that would align it with the 2002 framework”. Even more importantly, the implementation of the current framework appears affected by a number of governance problems and undue political influence, worsened by the persisting government stake in the fixed incumbent Turk Telecom and its mobile subsidiary Avea.

As of today, Turkey certainly represents one of the most important emerging telecommunications markets: with a population of approximately 70 million, the lowest per capita GDP in OECD countries, a 27% penetration rate of fixed-line telephony (in terms of population), 88% penetration of 2G mobile at the end of 2007 and very low broadband penetration, it is fair to state that the potential for vibrant developments in this country is remarkable. The acquisition of mobile operator Telsim by Vodafone at the end of 2005 testifies to the attractiveness, as well as the growth potential, of the Turkish market for foreign, global operators.

The absence of adequate competitive safeguards and a poor investment climate have been considered as the major causes of the currently inadequate broadband uptake in Turkey. Turkey, with a 5.2% broadband penetration rate, lags behind most OECD countries.⁴³ In addition, Turkey exhibits also the lowest subscription rate, i.e. even if broadband covered the whole territory, broadband subscriptions would not exceed 21.8%, according to recent calculations.⁴⁴ Furthermore, Turkey’s broadband infrastructure is entirely dependent on DSL technology with almost no endowment of cable, fibre/LAN and other technologies, including 3G. Accordingly, Turkey hardly compares to the OECD average penetration rate.

Three major issues related to the current regulatory framework in Turkey are described below.

- *Need to withdraw the regulation of mobile retail tariffs.* The Turkish Telecommunications Authority (TA) passed a resolution on 25

⁴³ See the Commission’s 13th implementation report, p. 28.

⁴⁴ See Atiyas & Renda (2007).

September 2007, setting a floor on the leading mobile operator on-net calls. The TA stated that Turkcell should adjust its retail prices, which are lower than its call termination prices charged to the other operators. In this respect, it must be considered that intervening in mobile retail markets is unusual in current regulatory practices. For example, three member states (Slovenia, Belgium and Portugal) previously proposed to impose retail price controls in mobile markets, but the proposals were withdrawn after the negative reaction by the European Commission. As a result, today neither the Commission nor a single National Regulatory Authority has intervened to regulate mobile retail tariffs.

- *Need to lift the tax burden on mobile communications.* The first CEPS Task Force report (Renda, 2007) already recalled that in Turkey, mobile operators are subject to an impressive conundrum of taxes, which include a Special Communication Tax, the Treasury Share Premium, the Stamp Duty, the TGM Handset License Fee and TGM Handset Usage Fee. As a result, Turkey exhibits the highest tax rate worldwide, as shown in Figure 5. Such a high tax rate inevitably exerts a restrictive effect on penetration. With lower rates, a much higher market penetration could have been achieved instead of the current 88%, which hardly compares to 112% in the EU. A similar concern for high tax rates was expressed by the World Bank (2004) in its *Turkey Knowledge Economy Assessment Study*, in which a key recommendation was to “reduce the tax and regulatory burden on ICT”. GSMA (2005) published a study on the impact of taxation on mobile market growth, highlighting that “the degree to which taxation acts as a barrier for users, preventing potentially hundreds of millions people from affording mobile communications and holding back economic growth and social development in many countries”, and showing the magnitude of the Turkish ‘anomaly’. Similar conclusions were reported by Deloitte’s Global Mobile Tax Review 2006-2007, and are reported below in Figure 5. Mobile value-added services (VAS), such as purchasing musical contents over mobile handsets, are still struggling due to the high tax burden. Importantly, the tax burden has the worst effect on low-user groups, since fixed taxes have a higher weight on the overall usage. In this respect, Turkcell advocated the following measures:
 - fixed taxes should be lifted immediately;

- the special communications tax should be immediately decreased to the same level of fixed telephony (15%), and eventually lifted altogether;
- value-added services should be exempted from any kind of tax (apart from VAT); and
- one type of standard tax should be implied at average EU level.

Figure 4. Impact of taxation on mobile users in Turkey

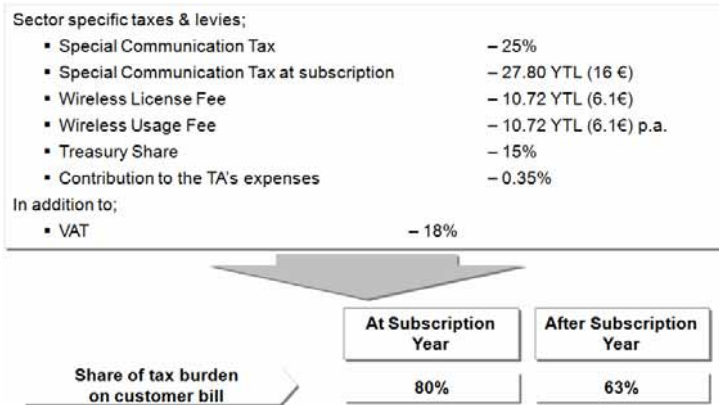
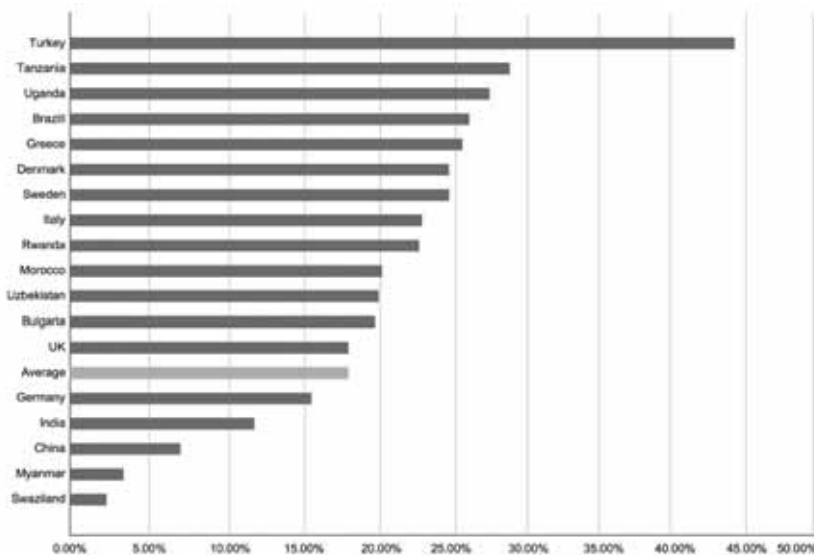


Figure 5. Tax as a share of total cost of mobile ownership (TCMO)



Source: Global Mobile Tax Review, 2006-2007, Deloitte.

- Delays in awarding 3G licenses.* In Turkey there are no 3G/UMTS services yet. An auction for four UMTS licenses was set to take place in May 2007, but was cancelled. Turkey's National Regulatory Board reportedly stated that the cancellation was due to the fact that there was insufficient interest in the tender. On 16 June 2007, the Telecommunications Authority announced that four licenses for IMT-2000/UMTS services and infrastructures would be awarded through auctions to be held on 7 September 2007. Only Turkcell participated in this tender and won one license on a bid of €311 million, plus VAT. The rest of the licenses were not sold. The 3G mobile phone license awarded to Turkcell was later cancelled by the Telecommunications Authority Board on 21 September 2007. The Authority had allegedly decided that the tender process had not been sufficiently competitive, and that granting a license to the sole operator who submitted the offer could increase the competitive advantage of the winning operator at the expense of others. There is currently a sector-wide feeling that the delay in awarding 3G licenses aims at keeping Türk Telekom's broadband services shielded from competition as long as possible.
- New reference interconnection rates.* From April 2008, Turkcell's termination rate has been reduced (33%), whereas Türk Telekom's fixed termination rates have slightly been reduced (10%). As a result of this decision, an estimated €70 million will be transferred from GSM operators to Türk Telekom. Apart from this action, the Telecommunications Authority has kept the asymmetry level for Avea (operational for 7 years now) at 23%. Figure 7 below shows the new levels of termination rates compared to the previous ones.

Figure 6. Old vs. new termination rates

Euro ¢	Old Termination Rates		New Termination Rates		Difference
	Rate	Asymmetry	Rate	Asymmetry	
Turkcell	6.48	-	4.33	-	33%
Vodafone	6.90	%7	4.52	%4	34%
Avea	7.95	%23	5.33	%23	33%
Türk Telekom	Single	0.90	-	0.81	10%
	Double	1.43	-	1.29	10%

Finally, the Turkish telecoms sector is also affected by a number of additional problems, which significantly affect the viability of doing business. These problems relate to the following areas:

- *Fixed telephony services.* Only the incumbent Türk Telekom is authorised to provide local-call service. Long distance telephony service operators are struggling to gain market share.
- *Broadband internet services.* The subsidiary of the incumbent holds 98% market share. No single local loop has been unbundled yet. So far, no alternative carrier has launched the service due to price squeeze policy of Türk Telekom.
- *Leased line markets.* No alternative infrastructure provider emerged other than the incumbent.

4. SUMMARY

The CEPS Task Force suggests a number of changes to be introduced in the future regulatory framework. Such changes would at once ensure continuity for NRAs, regulatory certainty for industry players and make the necessary adaptation of the theoretical framework to the competitive dynamics of future IP-based networks. Suggestions on the review package proposed by the Commission on 13 November 2007 are summarised below.

- *Suggestions on the proposed list of relevant markets*
 - The CEPS Task Force agrees with the proposed shortening of the list of relevant markets, and acknowledges that the Commission proposal mirrors most of the suggestions included in the Final Report of the previous Task Force.
 - However, the expected reduction in the level of regulation is uncertain; the lack of clear guidance to NRAs and the lack of clear rules on market definition and emerging markets may jeopardise the effect of this appreciable initiative.
 - More guidance and training to NRAs are needed to ensure that current regulatory tools are properly applied. In particular, guidance on geographical segmentation and the application of the three criteria test are needed to ensure that markets evolve towards sustainable competition.
 - For markets that are currently regulated, but have been removed from the list, the NRAs should be obliged to perform new market analyses as soon as possible.
- *Suggestions on addressing the migration to all-IP networks*
 - The CEPS Task Force considers that the Commission proposal provides insufficient guidance to NRAs and industry players

- on how regulation will apply to Next Generation Access Networks.
 - Clarification of what regulatory remedies will apply (if any), and under what conditions, is essential for encouraging investment in these valuable new networks.
 - Guidance on regulatory tools (e.g. the future of the investment ladder) is missing in the current proposal.
 - Regulation of NGANs should focus on the deployment of basic infrastructures like ducts and masts in order to facilitate market entry and network roll-outs by third parties.
 - Geographical segmentation can promote NGA infrastructure investment, if the local competitive situation is taken duly into account, and represents a suitable model to foster gradual deregulation.
 - Where network competition is found to be economically not feasible in the medium to long term, access to NGANs should be mandated, at the same time ensuring that both investors and access-seekers share the investment risk.
- *Suggestions on functional separation*
 - The CEPS Task Force considers that the Commission proposal to include functional separation in Art. 13a of the Access Directive is not useful, unless the main reason for such inclusion is the exceptional nature of the provision, which warrants more stringent conditions and a higher burden of proof on the NRA. Otherwise, such remedy was already covered by Art. 8(3) of the same Directive.
 - Functional separation is no panacea: it might prove useful in some national markets, but quite disproportionate in others. The Commission (and the EECMA) should therefore avoid sacrificing economic efficiency to achieve more consistent regulatory remedies in Europe – i.e. mandating separation in many national markets.
- *Suggestions on spectrum policy*
 - Spectrum in the ‘digital dividend’ bands should be allocated on a non-exclusive basis, subject to non-interference conditions.

- Broadcasters' needs as regards technological improvements – e.g. migrating from MPEG 2 to MPEG 4 – and demands for new services, increased capacity and HDTV should be duly taken into account.
- Mobile multimedia services and BWA should be allocated sufficient spectrum: however, no radical change in the GE-06 is needed, especially after the WRC-07.
- License-exempt spectrum usage should be promoted on a non-interference basis.
- *Suggestions on institutional and governance issues*
 - The CEPS Task Force believes that there might be a case for more centralisation with a European authority, but limited to specific issues where the proposed EECMA may internalise cross-country externalities and/or achieve economies of scale in regulatory decisions. In general, the CEPS Task Force is rather sceptical towards the creation of a new European authority, which would imply more bureaucracy instead of less.
 - In addition, current governance features of the EECMA and lack of accountability and transparency measures call for a significant revision of the Commission proposal as it stands today.
 - Compared to the EECMA, the proposed BERT would exhibit similar potential benefits; at the same time, the BERT would create fewer problems as regards the transition towards competition policy, budgetary allocation, balance of powers, voting procedures, the consolidation with ENISA and (potentially) appeals to Commission decisions.
 - The BERT would still entail additional red tape, and its transparency and independence features still have to be fully defined.
 - The BERT would represent the 'missing piece' in the framework puzzle only if it provides a sustainable and effective forum for appeals to Commission decisions under Art. 7. This would be even more important if the veto power of the Commission is eventually extended also to remedies imposed by NRAs.

- The Task Force reiterates its recommendation to enhance the status of the three-criteria test and include it (in a clarified version) in the text of the Framework Directive. The standards of the review and the role of the Commission should be clarified.
- Several changes are needed in the current system of checks and balances, including the incentives for NRAs, the accountability of the institutions involved (including the EECMA or the BERT), the need to consult affected stakeholders on phase 2 decisions, and the possibility of appealing Commission decisions, especially if taken with the support of an EECMA simple majority vote. In this respect, a BERT with an embedded arbitration panel would represent a step forward in the direction of both better regulation and sustainable consolidation of the internal market.

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GLOSSARY OF TECHNICAL TERMS AND ACRONYMS

2G

Second-generation mobile network or service. Generic name for second generation mobile networks, for example GSM.

2.5G

Second-generation enhanced. Name given to enhanced 2G networks.

3G

Third-generation mobile network or service. Generic name for third-generation networks or services under the IMT-2000 banner, for example W-CDMA.

Access charge (or access price)

Amount paid per minute, charged by network operators for the use of their network by other network operators.

All-IP NGN

All Internet Protocol Next Generation Network.

Analogue

Transmission of voice and images using electrical signals.

ARPU

Average Revenue Per User. Usually expressed per month but also per year.

ASP

Application Service Provider.

ATM

Asynchronous Transfer Mode.

Bandwidth

The range of frequencies available to be occupied by signals. In analogue systems it is measured in terms of Hertz (Hz) and in digital systems in bit/s per second (bit/s). The higher the bandwidth, the greater the amount of information that can be transmitted in a given time. High bandwidth channels are referred to as broadband which typically means 1.5/2.0 Mbit/s or higher.

Bit (binary digit)

A bit is the primary unit of electronic, digital data. Written in base-2, binary language as a "1" or a "0".

Bit/s

Bits per second. Measurement of the transmission speed of units of data (bits) over a network.

BPL

Broadband over Power Lines. Technology that allows internet data to be transmitted over utility power lines. (BPL is also sometimes called Power-line Communications or PLC)

Broadband

Although there exist various definitions of broadband that have assigned a minimum data rate to the term, it may be defined as transmission capacity with sufficient bandwidth to permit combined provision of voice, data and video, typically at speeds over 2 Mbit/s.

BWA

Broadband Wireless Access.

Byte

- (1) A set of bits that represent a single character. A byte is composed of 8 bits.
- (2) A bit string that is operated upon as a unit and the size of which is independent of redundancy or framing techniques.

CDMA

Code Division Multiple Access. A technology for digital transmission of radio signals based on spread spectrum techniques where each voice or data call uses the whole radio band and is assigned a unique code.

Connectivity

The capability to provide, to end users, connections to the internet or other communication networks.

Coverage

Refers to the range of a mobile cellular network, measured in terms of geographic coverage (the percentage of the territorial area covered by mobile cellular) or population coverage (the percentage of the population within range of a mobile cellular network).

Digital

Representation of voice or other information using digits 0 and 1. The digits are transmitted as a series of pulses. Digital networks allow for higher capacity, greater functionality and improved quality. Examples of digital cellular networks include GSM, CDMA, and TDMA.

Digital Dividend

The available UHF spectrum. The cleared, the potentially cleared and the interleaved spectrum.

DRM

Digital Rights Management. A system of information technology (IT) components and services along with corresponding law, policies and business models which strive to distribute and control intellectual property (IP) and its rights.

DSL

Digital subscriber line. See also xDSL.

e-commerce

Electronic commerce. Term used to describe transactions that take place on-line where the buyer and seller are remote from each other.

End-user

The individual or organisation that originates or is the final recipient of information carried via the internet (i.e. the consumer).

EoI

Equivalence of Input. As applied in the UK, it requires that competitors be provided with exactly the same set of regulated wholesale products, at the same prices and using the same systems and transactional processes, as the dominant provider's own retail activities; and

F2M

Fixed to Mobile communication.

Fixed line

A physical line connecting the subscriber to the telephone exchange. Typically, fixed-line network refers to the PSTN (see below) to distinguish it from mobile networks.

Frequency

The rate at which an electrical current alternates, usually measured in Hertz (see Hz). It is also used to refer to a location on the radio frequency spectrum, such as 800, 900 or 1,800 Mhz.

Fibre Optic Cable

A transmission medium that uses glass or plastic fibres rather than copper wire to transport data or voice signals. The signal is imposed on the fibres via pulses (modulation) of light from a laser or a light-emitting diode (LED). Because of its high bandwidth and lack of susceptibility to interference, fibre-optic cable is used in long-haul or noisy applications.

FTTB+LAN

Fibre To The Building+LAN.

FTTH

Fibre To The Home. The fibre deployment architecture in which optical fibre is carried all the way to the customer's home or premise, allowing for a high speed broadband connection.

FTTC

Fibre To The Curb. The deployment of optical fibre from a telephone switch to within 1,000 feet of a home or enterprise.

Functional Separation

Separation of an incumbent operator's network and service activities in distinct autonomously-managed divisions to ensure equivalence of access to the last mile infrastructure and treatment for the incumbent's service division and third-party service providers.

GSM

Global System for Mobile communications. European-developed digital mobile cellular standard. It is the most widespread 2G digital mobile cellular standard, available in over 170 countries worldwide.

HDTV

High Definition Television.

Hz

Hertz. The frequency measurement unit equal to one cycle per second.

IIA

Integrated Impact Assessment.

ICT

Information and Communication Technology.

ILEC

Incumbent Local Exchange Carrier. Refers to a telephone company in the United States that was providing local service when the Telecommunications Act of 1996 was enacted.

IMT-2000

International Mobile Telecommunications 2000.

Incumbent

The (former) monopoly service and network provider in a particular country.

Interconnection

The physical connection of telecommunication networks owned by two different operators. Network operators typically charge a per minute fee for use of their network by other operators (referred to as an 'interconnection charge', 'access charge' or 'network usage charge').

Internet backbone

The high-speed, high capacity lines or series of connections that form a major pathway and carry aggregated traffic within the internet.

Internet Content Provider

A person or organisation, that provides information via the internet either with a price or free of charge.

Internet Service Provider (ISP)

ISPs provide end-users, and other ISPs, access to the internet. ISPs may also offer their own proprietary content and access to online services such as e-mail.

Internet

The collection of interconnected networks that use the internet protocols (IP).

IP

Internet Protocol. The dominant network layer protocol used with the TCP/IP protocol suite.

IP telephony

Internet Protocol Telephony. IP telephony is used as a generic term for the conveyance of voice, fax and related services, partially or wholly over packet-switched IP-based networks. In this report, IP telephony is used interchangeably with voice over internet protocol (see VoIP). A third term, internet telephony, is used when referring to IP telephony conveyed partially or wholly over the internet.

IPR

Intellectual Property Rights.

Local Area Network (LAN)

A computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a wide-area network (WAN).

Local loop

The system used to connect the subscriber to the nearest switch. It generally consists of a pair of copper wires, but may also employ fibre-optic or wireless technologies.

LLU

Local Loop Unbundling. LLU requires those operators designated as having significant market power to make their local networks (i.e. the telephone lines that run from a customer's premises to the local telephone exchange) available to other telecommunications companies.

LRIC

Long-Run Incremental Cost. The costs caused by the provision of a defined increment of output, taking a long run perspective, assuming that some output is already produced. The 'long run' means the time horizon over which all costs (including capital investment) are variable.

M2M

Mobile to Mobile communication.

Modified Greenfield Approach

A Modified Greenfield Approach in the analysis of relevant markets takes account of non-SMP regulation and of SMP-related regulation originating in markets which are not a component of the value chain under review.

MNO

Mobile Network Operator.

MPEG2

The MPEG2 format, a video standard developed by MPEG group, is often used in digital TVs, DVD movies and in SVCDs. It is not a successor for MPEG1, but an addition instead. Both of these formats have their own purposes. MPEG1 is meant for medium-bandwidth usage and MPEG2 is meant for high-bandwidth/broadband usage.

MPEG4

MPEG4, the latest compression method standardized by MPEG group, is used for both streaming and downloadable web content, and is also the video format employed by a growing number of portable video

recorders. One of the best-known MPEG4 encoders is DivX which since version 5 has been fully standard-compliant MPEG4 encoder.

NGAN

Next Generation Access Network.

NGN

Next Generation Network. A packet-based network able to provide Telecommunication Services to users and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent of the underlying transport-related technologies. It enables unfettered access for users to networks and to competing service providers and services of their choice. It supports generalised mobility which will allow consistent and ubiquitous provision of services to users.

Number portability

The ability of a customer to transfer an account from one service provider to another without requiring a change in number.

OLO

Other Licensed Operator. Companies, other than the incumbent, which operate telecommunications systems.

Penetration

A measurement of access to telecommunications, normally calculated by dividing the number of subscribers to a particular service by the population and multiplying by 100. Also referred to as teledensity (for fixed-line networks) or mobile density (for cellular ones).

PLC

Powerline Communications. See BPL.

Protocol

A set of formal rules and specifications describing how to transmit data, especially across a network.

PSTN

Public Switched Telephone Network. The public telephone network that delivers fixed telephone service.

PTO

Public telecommunication operator. A provider of telecommunication infrastructure and services to the general public. The term public relates to the customer rather than the ownership of the PTO.

Public pay phone

Typically supplied and operated by the incumbent carrier, public payphones have been a traditional method of encouraging widespread access to telecommunication facilities.

RBOC

Regional Bell Operating Company. One of the U.S. regional telephone companies (or their successors) that were created as a result of the break-up of American Telephone and Telegraph Company (AT&T) by a U.S. Federal Court consent decree on 31 December 1983.

Roaming

A service allowing cellular subscribers to use their handsets on networks of other operators or in other countries.

Server

- (1) A host computer on a network that sends stored information in response to requests or queries.
- (2) The term server is also used to refer to the software that makes the process of serving information possible.

SMP

Significant Market Power. According to Art. 14(2) of the Framework Directive, “an undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers”.

Spectrum

The radio frequency spectrum of hertzian waves used as a transmission medium for cellular radio, radio-paging, satellite communication, over-the-air broadcasting and other services.

SSNIP

Small Significant Non Transitory Increase in Price. The SSNIP test is commonly used by competition authorities in the market definition exercise. As defined in the US Department of Justice 1984 Horizontal Merger Guidelines, “a market is defined as a product or group of products and a geographical area in which it is sold such that a hypothetical, profit maximising firm, not subject to price regulation, that was the only present and future seller of those products in that area would impose a ‘small but significant and non-transitory’ increase in price above prevailing or likely future levels.”

Switch

Part of a mobile or fixed telephone system that routes telephone calls to their destination.

TPN

Technological Protection Measure. Technologies, devices or components which in the normal course of their operation serve to prevent or restrict acts in respect to copyrighted work which are not authorised by the author or subsequent right holders.

UHF Band

Ultra High Frequency Band.

ULL

Unbundled Local Loop. See LLU.

UMTS

Universal Mobile Telecommunications System. The European term for third-generation mobile cellular systems or IMT-2000 based on the W-CDMA standard.

Universal access

Refers to reasonable telecommunication access for all. Includes universal service for those that can afford individual telephone service and widespread provision of public telephones within a reasonable distance of others.

VoB

Voice over Broadband. The generic term used to describe VoIP services that allow users to make and receive calls over a broadband access connection - for example digital subscriber line (DSL) or cable. (see also *VoIP*, *DSL*, *Fibre Optic Cable*)

VoIP

Voice over IP. The generic term used to describe the techniques used to carry voice traffic over IP (see also *IP*)

WACC

Weighted Average Cost of Capital. A calculation of a firm's cost of capital in which each category of capital is proportionately weighted.

WAPECS

Wireless Access Platforms for Electronic Communications Services.

WBA- *Wireless Broadband Access.* See BWA.

W-CDMA

Wideband Code Division Multiple Access. A third-generation mobile standard first deployed in Japan.

WiMax

A standards-based technology enabling the delivery of last mile wireless broadband access as an alternative to cable and DSL.

Wireless Fidelity (Wi-Fi)

Refers to Wireless Fidelity, the 802.11b specification for Wireless LANs from the Institute of Electrical and Electronics Engineers (IEEE). It is part of a series of wireless specifications which also includes 802.11a, and 802.11g.

Wireless LAN (WLAN)

A wireless network whereby a user can connect to a local area network (LAN) through a wireless (radio) connection, as an alternative to a wired local area network. The most popular standard for wireless LANs is the IEEE 802.11 series.

Wireless

Generic term for mobile communication services which do not use fixed link networks for direct access to the subscriber.

WLR

Wholesale Line Rental.

xDSL

While DSL stands for digital subscriber line, xDSL is the general representation for various types of digital subscriber line technology, such as ADSL (asynchronous digital subscriber line), HDSL (high bit-rate digital subscriber line), or VHDSL (very high bit-rate digital subscriber line).

LIST OF ACRONYMS

CEPT: European Conference of Postal and Telecommunications Administrations

COCOM: Communications Committee

ENISA: European Network and Information Security Agency

ERG: European Regulators Group

ETSI: European Telecommunications Standards Institute

GE-06: Geneva 2006 Agreement

IRG: Independent Regulators Group

ITU: International Telecommunication Union

NCA: National Competition Authority

NRA: National Regulatory Authority

NRF: New Regulatory Framework

RSC: Radio Spectrum Committee

RSPG: Radio Spectrum Policy Group

SMA: Spectrum Management Authority

WRC-07: World Radiocommunication Conference 2007

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