the concept of technology neutrality...

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The concept of “technology neutrality” is one of the key concepts which underpins the new regulatory framework for electronic communications networks and services (“ECNS”) which came into effect on 24 July 2003 across the European Union.¹

In essence, technology neutrality seeks to ensure regulatory even-handedness for relatively homogeneous products provided in a single market using alternative technologies for delivery. Under the new regulatory framework, regulators are obliged to examine markets, not services, to determine whether or not it is appropriate to subject them to ex ante regulation.

Adoption in the EU

Although the expression was used ad hoc in the past to denote the fact that new Community policy would, as a general principle, not be designed towards the picking of “winners and losers” among competing platforms of technologies, it only became institutionalised in Community law with the executive decision to move away from the old ONP approach, in favour of the approach underpinning the ECNS regime. The ONP framework was imbued with a number of working presumptions regarding
the nature and functionality of particular services (rather than "markets") justifying ex ante regulation.

The technology neutrality concept has quickly been adopted across a wide spectrum of regulatory measures impacting on the ECNS sector, even finding its way into the application of State aid policies. For example, selection criteria for investments in electronic communications infrastructure must adhere to the principle of technology neutrality. When a project involves the financing of a specific technology, it should only do so on the basis of a cost-benefit analysis which has taken due account of the range of possible alternatives for the provision of the service in question.¹

**International Adoption**

The concept has also quickly caught the imagination of regulatory bodies outside of the neutral paradigm. Of course, the differing histories and regulations surrounding each type of platform make absolute regulatory parity in the United States difficult to achieve, "but it is important to try to regulate comparable services in a manner that does not interfere with marketplace outcomes."²

Recently, Singapore has adopted a similar approach in the blending of its ex ante and ex post approaches, and Japan is currently evaluating the adoption of a market-based approach at whose heart lies the principle of technology neutrality.

**Analytical Justification**

The relative importance of the concept of technology neutrality under the new regulatory framework is threefold, insofar as:

- It seeks to bridge the gap between competition rules (which are based on the
types of dynamic changes that will result from future delivery of services over upgraded or increasing penetration of platforms based on different technologies. This technologically neutral approach to all transmission infrastructure is said to have the added policy benefit of encouraging companies to engage in both services-based and infrastructure-based competition, as well as encouraging investment in different broadband technologies.³

- In relation to remedy selection, the concept provides a litmus test that ensures that no particular technological solution is artificially stimulated (or penalised) through unjustifiably inconsistent regulation. To the extent that it is considered appropriate for remedies to differentiate between different technologies, such differentiation must be justified on the
grounds that it is proportionate in light of the specific market failure that the remedy seeks to address.

In order to adopt a consistent approach to the application of the technology neutrality concept to achieve these policy goals, however, a number of working principles should be applied in practice, namely:

- Any "forward-looking" analysis must be technologically neutral, if it is to anticipate the
the initial presumption should be that the net outcome of applying the concept will be the broadening of the relevant arena of competition, thereby potentially reducing the likelihood that the relevant market in question will be found to be characterised by a lack of effective competition (unless, of course, a single entity supplies multiple substitutable services that are based on differing technologies). 9

- The concept requires the neutral regulatory treatment of the same or equivalent services provided over different platforms, but not the treatment of all services on one platform in the same way. Thus, the often-used expression "platform neutrality" should be interpreted as identifying the types of services which are being provided over different platforms with a view to determining whether those services fall within the same relevant product market.

- The adoption of a technologically neutral approach to addressing perceived market failures or anti-competitive mischief need not necessarily yield identical regulatory results. The application of a consistent analytical approach to regulation of services provided on different platforms does not necessarily require an "identical" regulation for such services. 10 It might be the case that different measures achieve the same end on different platforms. In addition, the imposition of other remedies in related markets in which not all of the relevant platforms are used to deliver services might impact on the appropriate and proportionate form of regulation.

- The application of the principle needs to take into account the fact that the new framework does not encourage the regulation of new or innovative markets which have not as yet had the opportunity to develop (i.e., embryonic markets). It is important, when conducting technology-neutral market analyses to ensure that the distinction between new 'markets' on the one hand and new 'services' (which might fall within existing, even mature, markets) is not blurred. 11

- The final issue to bear in mind when applying the principle hinges on ensuring that substitutability analyses are based on comparisons of 'like with like'. In particular, there are various 'layers' that are involved in the delivery of electronic communications services, from the network layer at the bottom (e.g., a copper or fibre network) up to the end-to-end carriage service (e.g., SDSL), crossing a number of other layers between the two (e.g., SDH or PDH and ATM or Martins). Not all network structures have the same layers or the same number of layers. Any such differences are particularly important in the context of designing access remedies.

**Application of Doctrine in Particular Context**

Beyond the level of general principle, market definition analyses across the Member States have raised a number of practical issues where the application of the principle of technology neutrality is anything but clear-cut. We discuss briefly three of those issues below.

**Access points**

The breadth of the range of access obligations contemplated by Article 12 of the Access Directive, together with the scope of the Unbundled Local Loops and Wholesale Broadband Access (as defined in the Commission's Recommendation), bring to the fore the issues raised above flowing from the existence of services, and the potential for the grant of access, at different layers in the network hierarchy.

While unbundled loops effectively provide access at the bottom of the (copper) network stack to 'raw' copper with which the access seeker can do as it pleases, the provision of (or requests for access to) services further up the stack is inherently driven and constrained by application functionality. The nature and structure of the particular platforms or applications mean that different physical access points are appropriate for different applications (e.g., ATM or IP). In addition, different logical access points on an application platform must be carefully assessed in relation to the signals they send and incentives they provide, depending on the terms on which access is provided.

**Limits to neutrality**

In addition to balancing the constraints imposed by the differences between access and services on different application platform and at different logical points on a single platform, sector-specific regulators must also make cross-platform assessments that take account of the limits of technological neutrality. More particularly, these limits are measured in terms of the underlying structural differences that exist all the way up the network stack, from fundamental structural differences at the basic network layer (e.g., between PSTN and co-axial cable networks) to the traffic management differences at the transmission layer, when comparing the substitutability of both wholesale and retail services and designing appropriate and effective remedies.

In addition, there may not be functionally equivalent wholesale services on different
The concept has also quickly caught the imagination of regulatory bodies outside of the European Union. For example, the OECD has endorsed the concept as a means of spurring inter-modal competition (i.e. between cable, wireless, fixed lines, satellite platforms) and as a means of resolving some of the present problems with particular platforms, including unbundling of local loops. The technologically neutral approach has also found favor in the United States, where it is seen as a vehicle for deregulation.

Platforms may not as yet be provided, despite the existence of functionally equivalent (and competing) retail services (e.g., there is no functional equivalent to bitstream services on most co-axial cable networks). Such functional limitations must be borne in mind by sector-specific regulators in designing remedies – i.e., the appropriate and proportionate ‘means’ to achieve a particular ‘end’ might well differ between platforms.

**Old services on new platforms**

Where services falling within the same relevant markets are provided over networks with different structures and broader functionality, sector-specific regulators must ensure that regulation does not skew the competitive environment so that it effectively chooses the winning network (or networks), either by imposing constraints that preclude entry by any entity that does not replicate the network, application and service decisions of existing providers (e.g., to ensure that their ‘efficient’ costs are the same as such operators) or by allocating shared or common costs among the providers’ services in a manner that drives them to provide particular services.

Particular problems occur in this context in relation to the allocation of shared or common costs where a new platform is used to provide ‘old’ services in mature markets (in which efficient service provision does not require the network functionality that generates the higher common costs of the new network) and ‘new’ services in emerging or embryonic markets (which cannot be the subject of regulation under the ECNS framework) which inherently lack economies of scale, thereby further increasing the ‘per unit’ cost of such service provision. The particular case raised by the arrival of 3G networks is discussed in the next section.

A coherent regulatory approach to the allocation of costs between ‘old’ and ‘new’ services falling within mature, maturing and emerging (or embryonic) markets, where services are provided over both new or existing networks (both mobile and fixed) must be developed, to ensure that ad hoc decisions on individual cases do not send inconsistent and ‘chilling’ signals to the market.

**Case Study: 2G v. 3G mobile termination**

As discussed above, the application of the technology neutrality concept to new generation mobile services requires the careful balancing of a number of policy considerations. Nowhere is the delicacy of that balancing act better illustrated than in the selection of remedies for wholesale voice call termination services, one of the listed markets in the Commission’s Recommendation.

Clearly, if the economic analysis of the market failure identified for wholesale voice call termination services suggests that the service is identical when supplied over both platforms, technology neutrality requires that the same ‘form’ of solution needs to be fashioned for mobile call termination across 2G and 3G platforms. Having acknowledged this, however, many sector-specific regulators will be tempted to factor into their assessment the fact that there are real differences in the costs of 2G and 3G networks and that their respective demand parameters differ significantly. This might mean that, even if the optimal form of remedy is to be the same, the actual level of optimal charges might need to differ across platforms.

The level of uncertainty related to 3G investments will also mean that many sector-specific regulators might be inclined to consider the impact on investments resulting from any regulatory intervention effected by them, at least by taking into account the risks associated with a nascent market. Accordingly, there will be some temptation to adopt an approach to 3G voice call termination which is more “light touch” than its 2G counterpart, at least at the outset.

Having acknowledged the above, it is also equally true that an approach which does not regulate voice call termination on 3G networks is likely to create serious regulatory loopholes. Thus, 3G operators which also operate 2G networks will inevitably bypass 2G regulation for voice call termination, thereby leading to high unregulated 3G termination charges and the inefficient use of network assets. Moreover, the super-profits generated in this way will be used to fuel the migration of existing 2G customers to (wholly unregulated) 3G networks.

Even in the face of these conflicting policy considerations, however, perhaps the choice is simpler than first meets the eye. If the increased functionality of 3G networks is not necessary to carry a voice call (which can be handled more than adequately over 2G networks), and if customers are indifferent as to the nature of the network carrying their voice calls (which will inevitably be the case), there appears little efficiency justification for treating 3G differently to 2G. Given that one of the other guiding principles under the new framework is that regulation should not provide incentives for inefficient service delivery, and that the efficient delivery of voice services only requires the functionality of 2G networks, it is arguably the 2G cost base that should be adopted as the basis for regulation. Having said this, 3G operators that do not operate a 2G network are likely to feel disadvantaged if forced to use a cost base that will never reflect the realities of service provision over their networks, let alone their high initial costs. It will, therefore, be important for sector-specific regulators to ensure that such 3G operators are able to
negotiate appropriate capacity arrangements with 2G operators, to continue to promote efficient mobile voice call delivery.

Conclusions

At a basic level, the recognition of the technology neutrality principle in the ECNS framework is a reaffirmation of the requirements that sector-specific regulators are required to define markets by reference to demand and supply-side substitutability assessments of ‘like’ services and to design and impose remedies that are proportionate and appropriate. Similarly, the limitations on the application of the principle that flow from the technical and functional differences between networks, applications and services should also be an inherent part of any assessment of the proportionality and justifiability of any remedy.

Having said this, the explicit recognition of the principle of technology neutrality is a helpful reminder for sector-specific regulators having to migrate rapidly from the prescriptive environment of the ONP framework to the market driven analyses required in the implementation of the ECNS regime. It also serves as a valuable reminder to sector-specific regulators that a technologically neutral approach to addressing perceived market failures need not necessarily yield identical results (i.e., the appropriate regulatory ‘means’ to achieve a particular ‘end’ might differ across platforms). There will be times, however, when the application of relatively clear general principles may be somewhat problematic in specific instances, as the discussion in the Section headed Application of Doctrine in Particular Context above, illustrates.

References

5. Speech by Commissioner Erik Lilikanen at the Technology Media and Telecoms Conference; Morgan Stanley; “EU Policy for the Development of the European Telecoms Sector”, Barcelona, 21 November 2003; Speech /03/568.
7. Commissioner Lilikanen, op cit.
9. And the designation of an undertaking or undertakings with Significant Market Power under the process outlined in Article 16 of the Framework Directive.
10. See, for example, a series of studies authored by Peter Alexiadis and Miranda Cole for the European Commission, entitled: Adapting the EU Regulatory Framework to the Developing Multimedia Environment, January 1999 [Squire, Sanders & Dempsey LLP; Analyysi]; Consumer Demand for Telecommunications Services and the Implications of the Convergence of Fixed and Mobile Networks for the Regulatory Framework for a Liberalised EU Market, January 2000 [Squire, Sanders & Dempsey LLP; Analyysi]; Market Definitions for Regulatory Obligations in Communications Markets, May 2002, [Squire, Sanders & Dempsey LLP; WIRK Consult]. For example, it would be inappropriate to rely on the same pricing structure applying to circuit switched voice (including its settlement regime) to IP Telephony, as the underlying costs of providing services over such different technologies differ.
11. Refer to the Recommendation and the Guidelines, op. cit.
12. In this regard, refer also to the Study prepared by Dr. Tomasso Valetti for DG Information Society, “Access Services to Public Mobile Networks” (September 2003).
13. Regardless of the fact that 3G services are still considered to be embryonic.
14. For example, the subscription elasticity is quite likely to be high for 3G services, while much lower for the more mature 2G services.
15. For example, the termination mark-up could arguably be higher for 3G given the presence of network externalities. Similarly, retail substitution options for 3G services may be higher for 3G services than for their 2G counterparts.
16. For example, it is as yet unclear how 3G services will involve, their cost and demand parameters are unknown, and there might exist increased possibilities of substitution for such services which might mean that the voice call termination market failure becomes less relevant over 3G than over 2G networks.

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