INTERCAI MONDIALE

Intercai Briefing

Regulation in the Era of NGN / convergence

– more questions than answers

Faced with separate infrastructures for their voice and data businesses, convergence and growing competition, almost all telecommunication operators and equipment manufacturers are making substantial investments in what can be referred to as IP-Enabled Next Generation Networks (NGNs). IP-based NGNs represent the "marriage" of the Public Switched Telephone Network (PSTN) with the world of the Internet. In the coming years, IP-enabled NGNs will be deployed by numerous service providers around the globe. The installation of a single network capable of supporting many services (voice, data, video) promises to reduce the operator's costs at the same time as increasing choice and flexibility for the customer – so far so good as far as the regulator is concerned!

NGN – economic consequences

Under an NGN environment, service related functions and intelligence can be provided independently of the underlying transport technology. This will allow for more fine grained division of labour and faster provision of new services and greater opportunity for innovation.

Different providers will be able to create value at the separate functional levels of access, transport, control and services. Customers will decide on the provision of services along the value chain in a more decentralised manner using specialized services or via vertically integrated providers offering service bundles.

Switching to NGNs may imply changes in the number of network hierarchy levels as well as a rearrangement of core network nodes, implying a geographic rearrangement of points of interconnect. Given this, it is likely that the number of interconnection points at the lowest network level could be reduced. These "leaner" NGN structures may imply problems of sunk costs / stranded investments for both incumbents and competitors – just how this will be dealt with is an open question for regulators.

NGN Access ➢ Includes Fibre to the Cabinet and Fibre to the Premises as well as DSLAM and MSAN ➢ Provides connectivity to end users ➢ Bills the customer ➢ Gigabit Passive Optical Networks for FTTP and active fibres for FTTC, may reduce the number of locations where access is possible ***Market Power in controlling access to the customer***	**NGN Core - Transport** ➢ Media gateway (transport layer) - ensures control of the physical layer of the network ➢ Not an "intelligent" component ➢ Create tunnels in or across networks ➢ Provides secure network traffic ➢ Guarantees a certain QoS ➢ Restricts communication with other network and nodes ➢ Redirects traffic ***Market Power by controlling interconnect conditions***
NGN Core - Control ➢ Sets-up communication ➢ Switching function - not associated to any physical point in the network ➢ Intelligent Service provisioning ➢ Controls of bandwidth ➢ Controls QoS to a certain extent ***Marketing Power by controlling how resources and services are provided***	**NGN Core - Service provision** ➢ Set-ups and manages a voice or multimedia communication ➢ Resolves name and numbers ➢ Determines a user's location ➢ Determines a user's status ➢ Restricts access to certain types of content and services ➢ Authenticates a user ➢ Authorises a user ➢ Collects information on the user's use of (network) resources and produces the bill ***Market Power by controlling how easily a third-party can access and use the underlying infrastructure***

Sources of market power

Some aspects of legacy networks will persist. Migration to NGN will not eliminate the concept and importance of Significant Market Power (SMP) or Dominance. Players along the value chain will claim market power at given points within the network architecture. In particular, market power associated with last mile bottlenecks will continue to be a significant regulatory concern for the foreseeable future, a perfect example is the current USA network neutrality debate, which reflects the lack of competition for broadband internet access.

Interconnection in NGN

Given the relative immaturity of NGN technology and limited practical application, policy makers and regulators are just starting to understand what interconnection means in a multi-service NGN environment. There is extensive economic literature which exists about interconnection in the traditional PSTN world, but

little that addresses the new order. Of course, there is some emerging literature that deals with interconnection in the world of IP-based networks. The prevailing approach is based on internet practice (peering, transit, private IXPs), but very different interconnection arrangements prevail in Telecoms and the Internet (different technology, different regulatory history and different industry structures).

Migration to IP-based NGNs will tend to put pressure on interconnection arrangements that are widely at variance with cost. Competition in services will expand opportunities to bypass inefficient interconnection arrangements through competitive infrastructure provisioning. Trying to address market inefficiencies in interconnection arrangements through *ex ante* regulation is likely to be difficult.

Cost determination according to Long Run Incremental Cost (LRIC) is determined by an "efficient" network – if the IP network is to be considered an "efficient" network then this would imply that the cost of IP networks might already be relevant for PSTN interconnection today. Or should cost be differentiated according to Service (e.g. voice, data etc.), Quality of Service class (best effort, priority, guaranteed), PSTN vs. IP, Core level vs. access level?

Technology neutrality principle

Increasing possibilities for conveyance over different networks are leading to questioning the need for different regulatory rules. Many are seeking to harmonize regulatory frameworks for different infrastructures based on technology neutrality. However, there are some problems attached to harmonization.

- For example, VoIP may not be subject to the same rules as circuit-switched telephony, which technology neutral regulation would require.
- Different levels of competition in different sub-sectors, e.g. fixed and mobile, may require the continuation of different forms of regulation.

Content Issues

Should any public service regulations of print and broadcast media apply to Internet media? Issues arise with regard to the different countries' control requirements:

- Access to illegal or harmful information
- Privacy protection
- Security problems
- Consumer protection and fraud
- Intellectual Property rights

Should these issues be part of a united convergence regulation or should they be dealt with by a single regulatory authority?

Separation of treatment of content and conveyance

Infrastructure and content regulation are two different fields. The most fundamental question is how to deal with infrastructure and content issues:

- Is the EU distinction between infrastructure and content appropriate and enduring?
- Should infrastructure and content issues best be addressed under a common regulatory framework?

The argument most stated for a common regulatory framework is that there are companies which cover the whole value chain from infrastructure to content provision. However, are vertical integration problems minor relative to the overall benefits of differentiating between infrastructure and content problems? Are the issues so different that they are best addressed by different specialized authorities? Is it mainly a question of coordinating the two sides of media and telecom regulation?

Trend of unbundling

Fixed telecom reform to date has been driven more by unbundling and separation than by converging activities. Broadcast TV, cable, satellite, mobile and internet services have all developed as independent networks for the most part outside the control of incumbent telecom operators.

- Does technology convergence mean that regulation must focus on the ICT sector as a whole?

Separation of treatment by holistic treatment

Technological convergence creates increasing overlap between the different ICT and media sectors; however, technological convergence is different from services and market convergence.

- Does convergence mean regulation should focus on markets, e.g. mergers and acquisitions, barriers to entry and monopoly power?