



## Next Generation Networks and the EU regulatory framework for electronic communications:

Applicability of the existing framework and new regulatory issues

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## OUTLINE

**I Overview of regulatory issues raised by NGNs**

**II Specific issues**

1. "Control points" (bottlenecks)
2. How much regulatory intervention?
3. Interconnection issues
4. Consumer issues

**III Conclusions**



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## I Overview: the Challenge of NGNs for regulation

- NGNs: the future competitive marketplace for communications and information services
- NGNs shift competition from lower transport and network layers to higher layers of services and applications – leading to new sources of possible market power, bottlenecks etc ("control points").
- Identifying control points will be a major area of work for regulators in future
- Once "control points" identified, further market developments necessary before we can decide what, if any, action to take



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## Outline

**II Specific issues**

1. "Control points"
2. How much regulatory intervention?
3. Interoperability issues
4. Interconnection issues
5. Consumer protection aspects



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## 1. "Control points"

- **To recall: the regulatory approach of EU framework:**
- 1. **Identify markets**
  - product markets (eg call termination): Commission has published a guide listing product/services markets which may be subject to ex-ante regulation
  - geographical markets (eg local, national, global)
- 2. **See whether there are dominant operators on those markets (Significant Market Power)**
  - minimal and linked to degree of competition
  - flexible BUT harmonised at a European level
  - technologically neutral
- 3. **Regulate only where an operator has a dominant position in an identified market where competition is not effective**
- 4. **Rely increasingly on competition law**

## List of relevant markets that may justify ex-ante regulation

### RETAIL (6 separate markets)

- Access to PSTN (2 markets), telephone services (4 mkts)
- EU Minimum set of leased lines (up to 2 Mbit/s)

### WHOLESALE (12 separate markets)

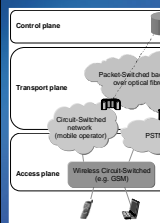
- fixed: call origination, call termination, transit
- fixed: carrier selection and pre-selection
- mobile: access & call origination, voice call termination
- mobile: international roaming
- leased line terminating segments, trunk segments
- unbundled (metallic) local loops, broadband access
- Broadcast transmission services

## "Control points" (continued)

- **Study done for EU by Devoteam/Siticom 2003 identified list of potential "control points" in four different areas:**
  - Network capabilities
  - Elementary services
  - Service access and content
  - User information
- **Study can be found at:**  
[http://europa.eu.int/information\\_society/to\\_pics/ecom/useful\\_information/library/studies\\_ext\\_consult/index\\_en.htm#2003](http://europa.eu.int/information_society/to_pics/ecom/useful_information/library/studies_ext_consult/index_en.htm#2003)

## Potential control points (I)

### Network Capabilities



- **Termination capabilities**
  - potential control point for the access operator
- **Network address translators and firewalls**
  - IPv4 to IPv6 translation between networks
- **Routing tables**
  - control over data flow and network usage
- **Quality of service capabilities and interconnect**
  - could become a control point for large operators
- **Network coverage**
  - could become a control point for large operators

SOURCE: Devoteam Siticom & Cullen International

**Potential control points (II)**  
*Elementary Services*

- **Call setup capabilities**
  - control over whether a service is performed over closed resources or open (shared) networks
- **Proprietary standards**
  - may dictate what functions and services can be supported
- **Non-proprietary standards**
  - may also affect balance of power between network operators and service providers
- **Interoperability**
  - degree of interoperability between transport layer and service layer will define the role of service providers
- **Application programming interfaces (APIs)**
  - proprietary APIs may define what functions can be supported. IPR's may make modifications illegal

**SOURCE: Devoteam Siticom & Cullen International**

**Potential control points(III)**  
*Service access and content*

- **Unnecessary software and service bundles**
  - security and/or quality may be a pretext for requiring service bundles
- **Walled gardens**
  - content restrictions imposed by access providers, differentiating availability of information and services
- **Tunnelling**
  - maintaining control over roaming users
- **Filter mechanisms and Digital Rights**
  - establishing access rights that depend on legal (and financial) status
- **End-user devices**
  - specific services linked to hand-set capabilities
- **Content**
  - certain types of content could become control points

**SOURCE: Devoteam Siticom & Cullen International**

**Potential control points (IV)**  
*User Information*

- **Authentication, single log-on, user profile management**
  - proprietary solutions can provide owners with significant control over how and what user data can be shared
- **Customer billing information**
  - access is important for roaming and 3rd party service and content providers
- **Access to customer information systems**
  - control of access by content providers to the customer base of an access provider
- **Name and number resolution (PSTN - IP conversion)**
  - could include ability to control routing (and therefore network usage)
- **Functions for determining location**
  - potential control point for operators that collect location information (mobile operators)

**SOURCE: Devoteam Siticom & Cullen International**

**Implications of these "control points"?**

- **Not certain if they will emerge**
  - Technological potential exists, but no consensus about what will emerge in the real world
  - Could emerge on all levels, including important software
- **They are not necessarily "bad"**
  - It is legitimate to strive for competitive advantage
  - Driver for investments and innovation
  - Competitive barriers are often temporary
- **Questions to be answered:**
  - Could a "control point" become an irreversible source of dominance?
  - Could it lead to market failure unless regulated?



## 2. How much regulatory intervention?

- **Some good reasons for not regulating:**
  - Inappropriate actions would alter risk and reward calculations that drive investment
  - The "control point" could be a part of a new service- presumed not to be regulated
  - Unstable business model and service environment may be prematurely frozen
  - Regulators rather than markets will pick winners and losers
  - The control point could fade away with new technology or other service alternatives
- **Two good reasons for regulatory concern:**
  - If control by a single entity would lead to an irreversible source of dominance
  - Or would lead to market failure unless regulated
- **These are difficult judgements which require many types of skills**



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## 3. Interoperability issues

- **Interoperability between which functions?**
- **Factors to consider:**
  - proprietary solutions with limited interoperability
  - standards, which define interoperability scenarios
  - IPRs and closed coding may prevent development of gateways



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## 4. Interconnection issues

- **Interconnection of networks**
  - Same regime for all types of traffic?
  - Or different regime for different types of traffic?
- **Interconnection markets**
- **Internet (peering, transit)**



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## 5. Consumer issues

- **Using VoIP as an example:**
  - How to deal with consumers' expectations about issues like access to emergency services and powered services?
  - What happens to end-to-end service quality?
  - Who is responsible for dealing with customer complaints about the service?
  - What happens to directory services?
  - What are the privacy and law enforcement implications of services provided across several jurisdictions?



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## Outline

### III Conclusions



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## Conclusions

- An NGN environment will offer greater opportunities for third party service providers, but it may create more bottlenecks ("control points").
- Important to develop an understanding of sources of market power in an NGN world
- Really important for regulators to develop cross-disciplinary expertise needed to assess impact of NGNs (eg "control points"):
  - Technology aspects
  - Legal aspects (eg Competition law)
  - Economic aspects
- Appropriate regulatory approach in NGN world is service rather than network- or technology-based
- Transparency, fairness and proportionality in rules and rule-making are essential
- Regulators around the world face similar problems: experience-sharing can be useful, and public consultations can bring invaluable input.



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## For more information ...

### EU regulatory framework

[http://europa.eu.int/information\\_society/topics/ecomms/index\\_en.htm](http://europa.eu.int/information_society/topics/ecomms/index_en.htm)

### See also

European Regulators Group (ERG)

<http://erg.eu.int>



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