Regulatory Approaches to Next Generation Networks: An International Comparison

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Regulatory Approaches to NGNs: An International Comparison

- The evolution of the network: PSTN -> NGN
- Public policy challenges associated with the migration to NGN
- NGN: deployment – regulatory initiatives
  - The United Kingdom (UK)
  - Netherlands
  - Germany
  - Japan
  - The European Regulators' Group
- Commonalities and differences
- Concluding remarks

The Evolution of the Network: PSTN/PLMN to NGN

- The ITU provides a widely cited Definition of NGN:
  - "A Next Generation Network (NGN) is a packet-based network able to provide services including Telecommunication Services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies. It offers unrestricted access by users to different service providers. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users."

See http://www.itu.int/ITU-T/studygroups/com13/ngn2004/working_definition.html.

The Evolution of the Network: PSTN/PLMN to NGN

- Many operators, especially incumbents, look to migrate to NGNs.
  - Enhance economies of scope and scale.
  - Accelerate time-to-market for new IP-based services.
- NGN combines two different worlds: the PSTN/PLMN and the Internet.
  - Different technology.
  - Different culture.
  - Substantially different regulatory traditions.
- What should happen when worlds collide?

Regulatory Challenges with NGN

- Three primary reasons for regulation of electronic communications, all related to market failure:
  - Addressing distortions of competition, especially those caused by some form of market power.
  - Addressing social needs that the free market might not, typically because the social value exceeds the private value to parties that might otherwise invest.
  - Allocating scarce resources that are unique to each country.
- The move to NGN raises issues in all three areas.

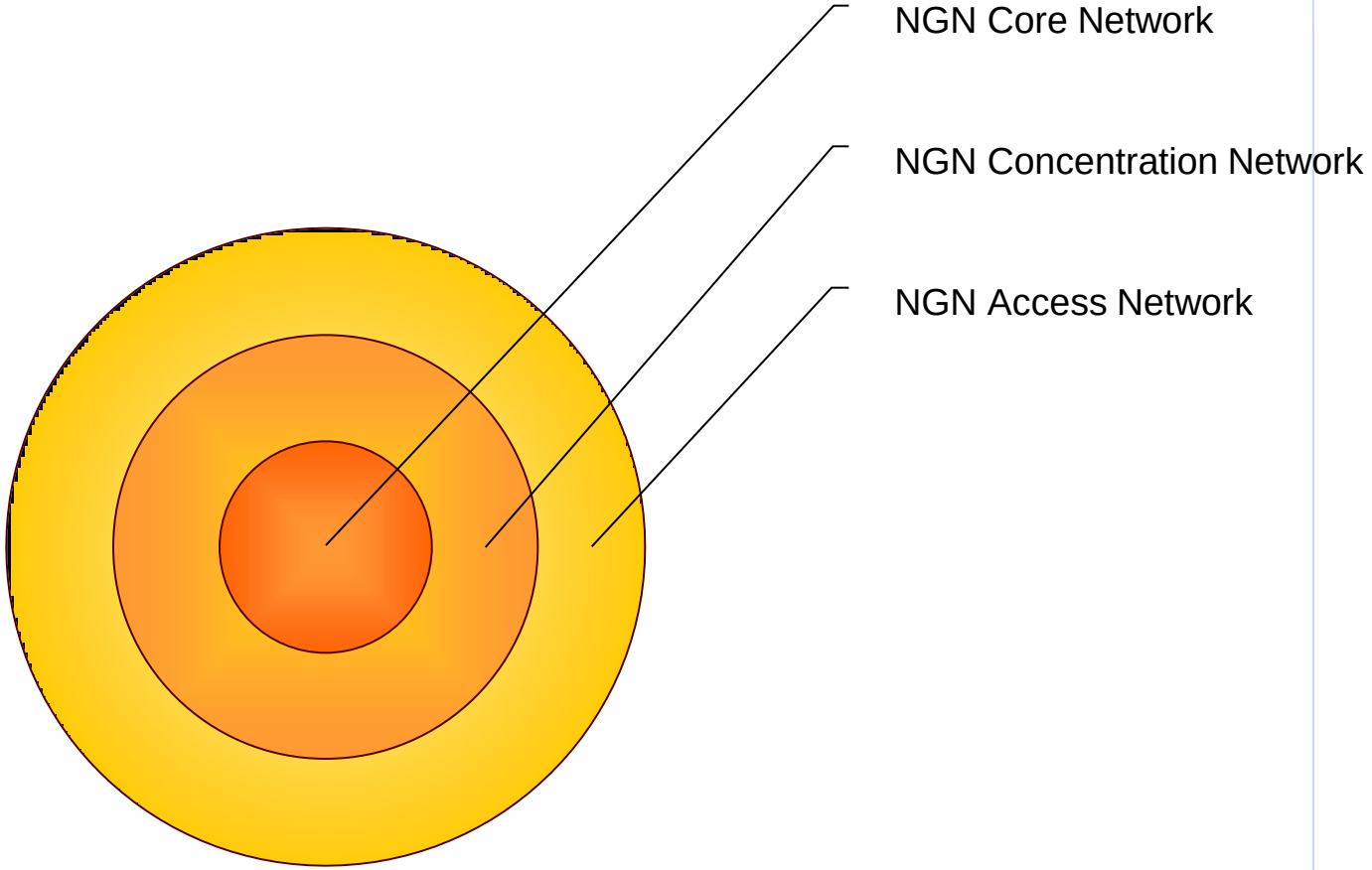
Regulatory Challenges with NGN

- Market power
  - NGN might introduce new forms of competition, thereby mitigating market power.
  - Other forms of market power (last mile, termination monopoly) are likely to persist.
  - NGN might introduce new bottlenecks in upper layers of the networks.

Regulatory Challenges with NGN

- Public needs / public goods
  - Access to emergency services
  - Lawful intercept
  - … and more
  - These are largely the same issues raised by the migration to converged IP-based networks in the US.
- Numbering
  - Geographic or non-geographic numbers?
  - Far greater salience in Europe than in the US, due to differences in charging arrangements.

Regulatory Challenges with NGN



Policy issues are somewhat different in the NGN core, concentration, and access networks

NGN in the UK

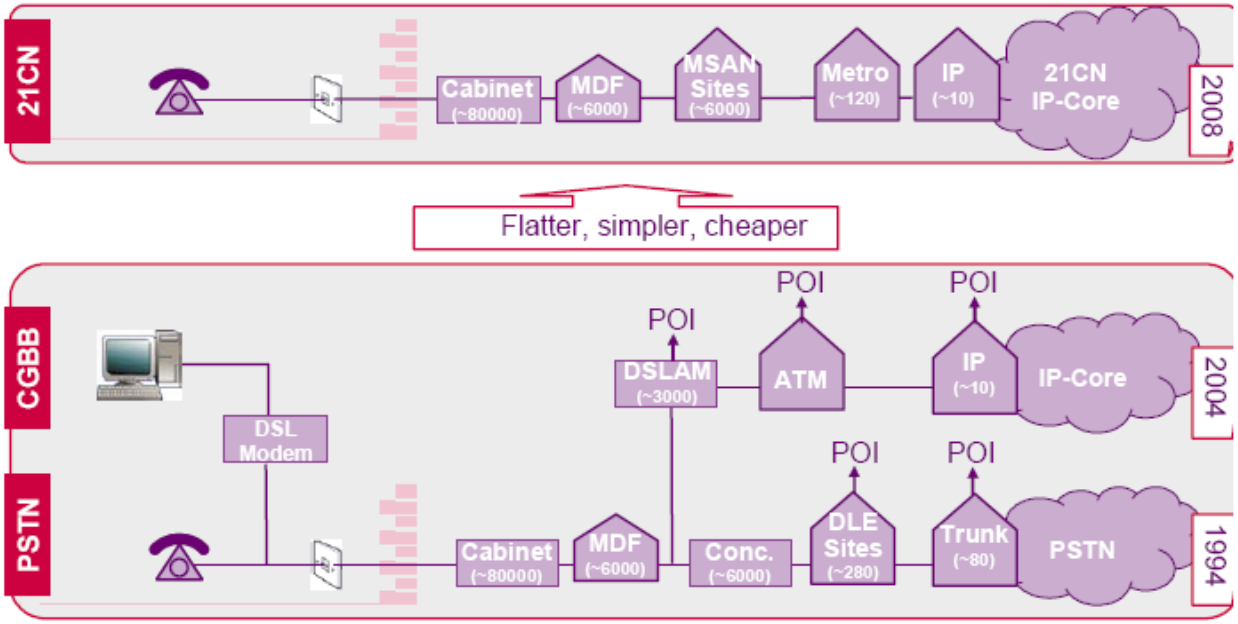
- Vertical separation of British Telecom
  - Access services division: OpenReach
  - Provides wholesale products to BT and to competitors on a nondiscriminatory basis (Equivalence of Input).
  - Distinct branding, uniforms.
  - Employee compensation reflects results of OpenReach, not the results of BT.
  - Separate board to monitor effectiveness of Equivalence of Input.

NGN in the UK

- Promising approach reflects competition law, not pursuant to the regulatory framework.
  - Many claim that the system is working well, including Martin Cave (*Six Degrees of Separation*)
  - In reality, the measure is a bit extreme, and it is a bit early to say whether it is effective.
- Much interest in this approach
  - European Commission
  - Italy
  - Babcock and Brown / eircom
  - Australia and New Zealand

NGN in the UK

Comparison of existing BT voice and broadband networks with 21CN



Key:

PSTN	Public Switched Telephone Network	Conc	Concentrator
CGBB	Current generation broadband	DSLAM	DSL Access Module
21CN	BT's 21st Century Network	DLE	Digital Local Exchange
MDF	Main distribution frame	MSAN	Multi Service Access Node

Source: Ofcom (2005), Next Generation Networks
Future arrangements for access and interconnection; Figure 1, page 11

NGN in the UK

- New structure of BT's 21CN implies a flatter network with fewer Points of Interconnection (PoI) for purposes of network access.
  - Previously ~ 3,000 locations DSLAM access.
  - Previously ~ 280 Digital Loop Exchange (DLE) sites for voice access.
  - In 21CN, interconnection planned only at the metro nodes, i.e. only at 100 – 120 sites.
- Impact on competition?
- Risk of stranded investment by competitors?

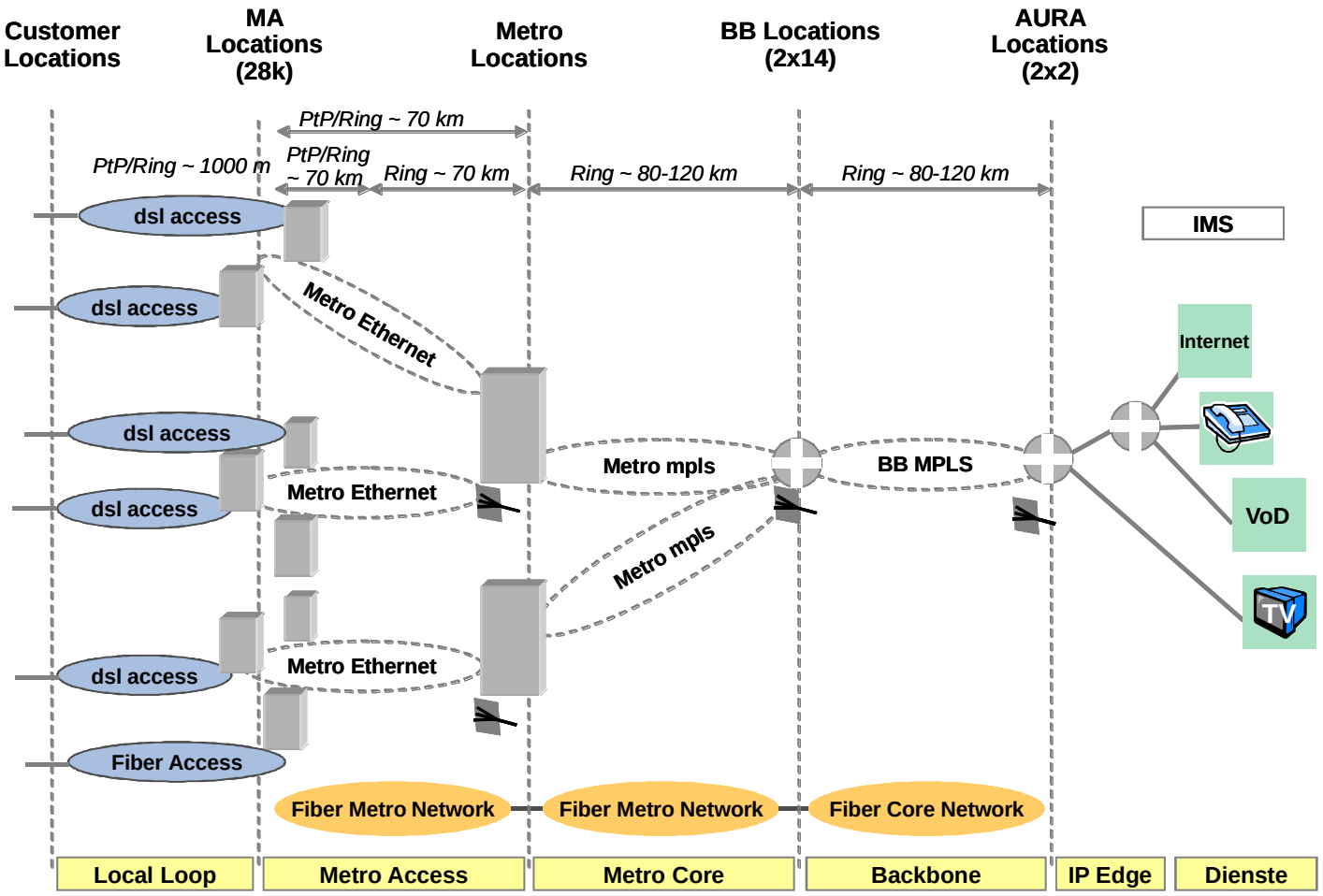
NGN in the UK

- Factors to consider, per Ofcom:
  - Was the decision unilateral by BT, or was industry consulted?
  - Who benefits from the change?
  - To what extent is the investment depreciated?
  - Did the competitor make the investment after the changes were already announced?
  - What is the economic impact on the competitor?

NGN in the UK

- Major focus on consultation fora.
- Creative adjustments to WACC (cost of capital)
  - Access: Beta = 0.90, WACC = 10.0%
  - Rest: Beta = 1.23, WACC = 11.4%
  - Consider Real Options for migration to NGN.
- Voice over IP:
  - Providers of Publicly Available Telephone Services (PATS) to implement access to emergency services within six months.
  - Notification and consumer education where not feasible.

NGN in the Netherlands



NGN in the Netherlands

- Massive deployment of VDSL.
  - Current KPN network: 1350 MDFs.
  - Future KPN network: 200 metro core locations.
  - 28,000 cabinets before and after.
- OPTA had intended
  - KPN to offer sub-loop unbundling to replace LLU.
  - Gradual phasing out of MDFs.
- Currently in limbo.
  - Studies questioned the SLU business model.
  - OPTA asked KPN to make an alternate proposal.

NGN in Germany

- Characteristics highly favorable to VDSL.
  - 7,900 Main Distribution Frames (MDFs).
  - About 290,000 street cabinets.
  - Short loops.
- Deutsche Telekom intends a migration to NGN core and a VDSL access network.
- Again, there would be a large reduction in PoI.

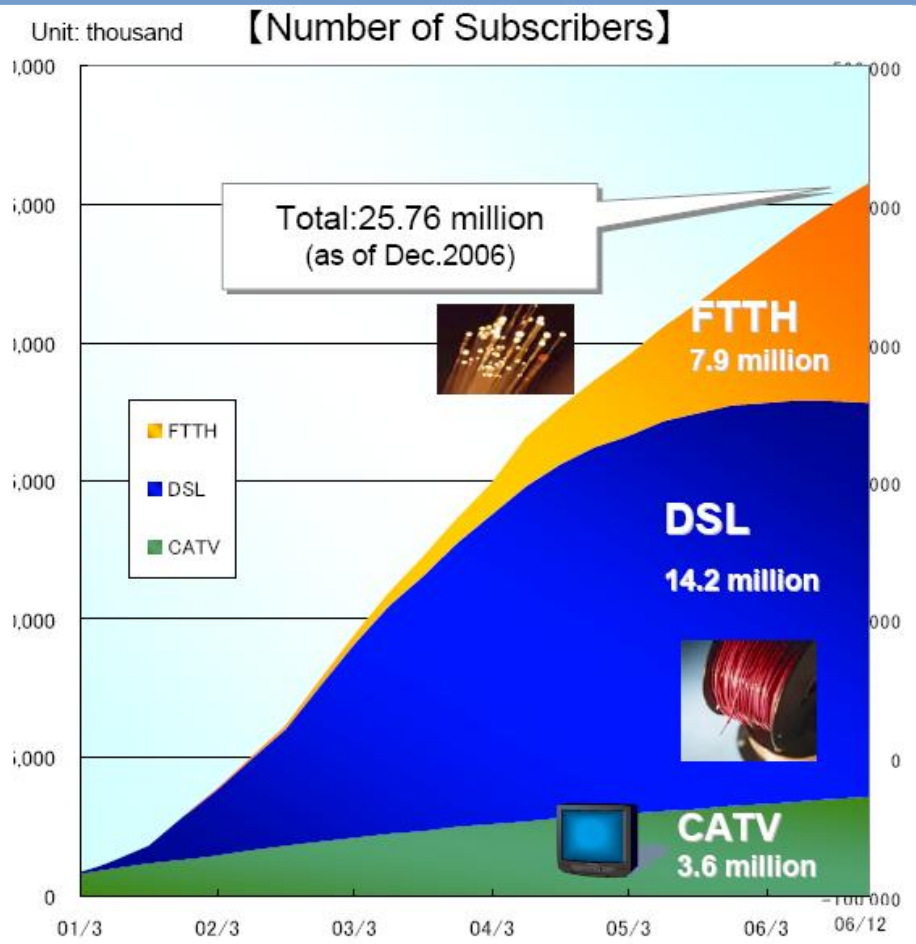
NGN in Germany

- The German government has tried to provide Telekom with a “regulatory holiday” in exchange for a commitment to deploy VDSL widely.
- The German regulator (BNetzA) seeks to open ducts to competitors, potentially providing cost-effective access to street cabinets.
- The European Commission has launched an infringement proceeding to challenge the regulatory holidays.

NGN in Germany

- Study group on NGN interconnection.
  - Recognition that current arrangements are unlikely to be sustainable under an NGN.
  - Need to address reduced PoI.
- Series of studies on economics and technology.
- Definite interest in migration to Bill and Keep.
- Much useful analysis, but no final resolution.

NGN and Japan



Presentation, Hideo Shimizu May 2007

NGN and Japan

- Basic principles for competition policy in the transition to IP-based networks:
  - Ensuring fair competition at the telecommunications layer (comprising the physical network layer and the telecommunications service layer),
  - Ensuring fair competition focusing on the vertical integration business model,
  - Ensuring competitive and technological neutrality,
  - Protecting consumer interests,
  - Ensuring that competition rules are flexible, transparent and consistent.

NGN and Japan

- MIC introduced principles to ensure network neutrality:
  - IP-based networks should be accessible to users and easy to use, allowing access to content and application layers,
  - IP-based networks should be accessible and available to any terminal that meets the relevant technical standards, and should support end-to-end telecommunications,
  - Users should be provided with equality of access to telecommunications and platform layers at a reasonable price.

Comparisons: NGN Access

- Major goals of the European framework:
  - (a) ensuring that users, including disabled users, derive maximum benefit in terms of choice, price, and quality;
  - (b) ensuring that there is no distortion or restriction of competition in the electronic communications sector;
  - (c) encouraging efficient investment in infrastructure, and promoting innovation; …
- How should one resolve tensions among the goals?

Comparisons

- Different deployment focus in different countries, especially as regards core versus access.
- Correspondingly different regulatory focus.
- Enormous national variations in approach.
- Transitional arrangements are difficult.
  - Changes in the number of PoIs arise wherever a migration is in prospect.
  - When should old obligations be phased out?
  - What obligations are necessary to deal with market power in the new NGN?

Comparisons

- Interconnection and access are, of course, key issues.
  - Access concerns are prominent everywhere, even in the UK where access plays a secondary role.
  - VDSL raises different concerns than fiber; bitstream, at least, should continue to be workable.
  - Interconnection is widely seen as a key issue, but is still largely unresolved.

Comparisons

- Ancillary issues arise in all of these countries, e.g.:
  - VoIP access to emergency services.
  - IP and lawful intercept.
  - VoIP and telephone numbering.
- These are largely the same issues that we see with convergence and VoIP in the US.
- The UK approach to VoIP access to emergency services was conspicuously well thought out.

Concluding Remarks

- The UK approach to NGN regulation has largely been to establish robust consultation mechanisms, and then to defer making the hard decisions.
- Many issues may not yet be sufficiently ripe at the time to lend themselves to a conclusive resolution.
- There can be merit in deferring judgment until an issue's time has come.

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