New technologies and their impacts on regulation

Knud Erik Skouby

ITU GSR 2005

Overview

- Techno-Policy objectives & Technological trends
- Technological Trends
- Impacts of technological changes on telecom market
- Impact on telecom regulation
- New Regulatory Paradigm
Techno-Policy Environment and Technological Trends

- Technology
  - Digitalisation
  - Computerisation
  - Packet based Switching
  - Internet Protocol (IP)
  - Next Generation Access Networks (NGAN)
  - Convergence & converged services
  - Ambient ICT

- Policy
  - Enabling of changes
  - Competitve environment
  - Creation of adequate infrastructures and services
  - User empowerment

- Market
  - Techno-economic efficiency
  - Cost / prices
  - Tech development
  - New infrastructures and services

Technological Trends: First Wave

- Digitalisation
  - From Analogue to Digital
  - Compression Technologies (Audio/Video)
  - Modulation technologies
  - Forward Error Correction (FEC)

- Computerisation
  - Processing Power
  - Miniaturisation
  - Storage capacity

- Packet based switching
  - From Circuit switched to packet switched
Technological Trends: Second Wave

- Emergence of the Internet
- New Generation access Networks (NGAN)
- Convergence & Converged Services
- Ambient ICT

The Internet and IP
- Separation between network technology and services
- Intelligence moved from the core to the edge of a network
- Scalability
- Distributed design and decentralised control

New Generation access Networks (NGAN):
- 2.5G, 3G and beyond 3G
- WiFi, 802.11b, g, a….
- WiMAX (802.16)
- Satellite & Combination of satellite and WiMAX
- Combination of WiMAX and WiFi
- IPDC
Convergence & Converged Services
- Broadband, Platform for Convergence
- Mobile Broadcast Convergence
  - DVB-H
  - DMB
  - MediaFLO
- Fixed Mobile Convergence (FMC)
- Next Generation Network (NGN)
- Converged Services
  - VoIP
  - IPTV
  - SoD (VoD, AoD, ....)
  - ....

Ambient ICT
- use of ICT in other socio-economic sectors
- influence efficiency and quality in the production processes
- E-banking, E-health, E-government
- Windows of opportunity for developing countries
### Impacts of technological changes on Telecom market

- Improved possibilities for competition
- Improved possibilities for Innovation
- Market Convergence
- New business models
  - Public, Gated, and Walled Garden models
  - Revenue sharing within the value chain & incentives for investment
  - Development towards **self organisation** paradigm
- Regulation
  - Licensing
  - Numbering
  - Universal Access; complementarities and competitiveness of NGAN
  - Vertical horizontal integration/separation
  - Converged services like IPTV
  - …

### Impact on the Telecom Market

- Vertical Separation of Networks and Services
- Service and Network Convergence
- Death of distance and cheaper bandwidth
- Low cost wireless access in rural areas
- Market Convergence
- More competition in particular on services
- New business models
  - VoIP
  - MVNOs
  - Infrastructure providers
Impacts on regulation

- Need for unified Licensing
- Less demand for price regulation
- Facilitation of National Internet Access Points
- Internet Settlements: Developing countries become net contributors as services move to IP-networks
- Universal access threatened by VoIP
- Flexible and adaptive Spectrum management a key for infrastructure development in rural areas.

A New Regulatory Paradigm

- Regulatory activities and organisations must reflect the changing technology and market developments.
  - Good regulation can be a vital factor in supporting growth and new technologies
  - Failing regulation can be a major barrier
  - Regulation has to adapt to the changing environments
- New Paradigm
  - Based on the establishment of an open and level playing field for commercial companies, non-commercial, community-based or end-user-organized network initiatives
  - Reflect
    - existing best practice
    - Emerging technology and market developments
A New Regulatory Paradigm - Elements

- Increased emphasis on universal access/service policies in developing countries
  - other regulatory fields should support this
    - E.g. frequency regulation including new and more open frequency management policies
- A coherent national ICT-policy
  - regulation encompasses
    - the regulation of communication infrastructures,
    - residential as well as business
- An appropriate regulatory paradigm
  - includes technology and market convergence
  - leads to
    - new competitive possibilities, as different infrastructures can be used for conveying the same kinds of services
    - new services being developed
    - new questions regarding the interrelationships between infrastructure and content regulation.
- National developments in ICTs take place in a wider international context
- The influence on basic/First Wave technology developments limited
- Local and national initiatives play a significant role on Second Wave
- The organizational aspects of regulation must be adapted to the changing technology
  and market developments in terms of scope and regulatory practices
  - Convergence leads to new technology solutions and the development of new market opportunities
  - Developing countries
    - Leapfrogging
    - Windows of opportunity
    - lack of regulatory resources can