IPTV and Telecom Sector:
Policy and Regulatory Considerations

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Presentation Session for Lausanne Business School and Michigan State University
30 June and 3 July 2006, ITU Headquarters, Geneva, Switzerland

Note: The views expressed in this presentation are those of the author and do not necessarily reflect the opinions of the ITU. Jaroslaw K. Ponder can be contacted at Jaroslaw.Ponder@itu.int
Agenda

- Communication Sector: Trends
- What is IPTV?
- Is IPTV Challenging?
- IP-environment and the ITU
- Conclusions
Trends in the Communication Sector

We all build the Information Society together!
Trends: Communication Sector

- Regulatory Reform
- Expansion of infrastructures
  - Fixed Telecom / Cable TV
  - Mobile / Wireless
  - The Internet
- **Two worlds:** The Internet <-> Telecom
- **Telecom:** Migration to the IP environment
  - Access Networks <-> Core Networks
  - IP-enabled Next Generation Networks
  - Next Generation Network
    - Multimedia/ Generalized mobility/ Convergence/ Integrity/
    - Multi-layer orientation/ Open character
  - Required investment worldwide > 400 Bill
A NGN is a **packet-based network** able to provide 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 enables **unfettered access** for users to networks and to competing service providers and/or services of their choice.
- It supports **generalized mobility** which will allow consistent and ubiquitous provision of services to users.

**What is different?**

- Multimedia
- Generalized mobility
- Convergence
- Integrity
- Multi-layer orientation
- Open character
What drives NGN development?

**Financial performance**
- Revenue growth
- Margin protection
- Reduced OPEX and CAPEX

**Operational issues**
- Obsolescence & modernization
- Reliability, resilience & quality
- Capacity & scalability
- Simpler and faster provision of service

**Competitive issues**
- New service roll-out/substitution & service differentiation
- Market share growth & protection
- Convergence of voice, data and IT enables provision of new offerings in packages
NGN impact

- Convergence
- Market structure
- Market potential
- Business models
- Price strategies
- Sell strategies
- Customer preferences
- Customer protection
- Regulatory model
- What next...

Now

<table>
<thead>
<tr>
<th>Service A</th>
<th>Service B</th>
<th>Service C</th>
</tr>
</thead>
</table>

Future

- Services A, B, C
- IP Platform (QoS)
- Access Networks
Trends: Communication Sector

- Fixed-Mobile Convergence
  - Services layer
    - KT: One Phone / BT: Fusion Phone
  - Hardware layer
    - Siemens / Nokia / Lucent / Alcatel...

- Service Convergence
  - N-play services → Content

- Challenging
  - VoIP - Voice
  - VoIP - Video
  - VoIP - Velocity
Next Generation Access Networks

- **Fixed**
  - xDSL
  - Cable TV
  - PLC
  - FTTx

- **Wireless**
  - Mobile infrastructures; 2G to 3G and beyond 3G
  - WiFi and WiMAX
  - Satellite
  - Digital broadcast infrastructures
  - Wireless Mesh networks
Service Driven Next Generation
Access Networks

Upstream / (Mb/s)

Downstream / (Mb/s)

- Fixed voice/Fax/Dial-up
- Advanced videophony
- Local web server/teleworking
- Broadband/Video/Telephony/Video Games
- TV/VoD/Interactive TV
- Broadband+/Multi VoD/HDTV
- Broadband+/Multi HDTV

Note: Adopted from TPSA
Service Driven Next Generation Access Networks

Upstream / (Mb/s)

Downstream / (Mb/s)

- FTTx
- Peer to Peer
- Fixed BWA
- VDSL
- ADSL 2+
- ADSL
- Mobile Broadband
- TV / VoD Interactive TV
- Broadband + Multi VoD HDTV
- Broadband + Multi HDTV

Note: Adopted from TPSA
Life cycle of next generation access technologies is relative and depend on the regional or country particularities.
Broadband penetration rates, 2006

Top 10 Broadband Economies
Total penetration (per 100 inhabitants), by technology

EU Broadband Penetration Rates

Commission services based on data from COCOM
Few countries started development of FTTx infrastructure.

Home / Building passed

The customer base is still very small but grows very fast in most of leading economies.
Trends: Communication Sector

**Number of countries with broadband commercially available**

![Graph showing the increase in the number of countries with broadband commercially available from 2002 to 2006.](image)

**Evolution in Pricing Strategy**

![Graph showing the evolution in pricing strategy from 2004 to 2006.](image)

**Growth in max. broadband speeds**

![Graph showing the growth in maximum broadband speeds from 2003 to 2006.](image)

**Median price and speed, 2004-6**

![Graph showing the median price and speed from 2004 to 2006.](image)
<table>
<thead>
<tr>
<th>Economy</th>
<th>Company</th>
<th>Speed</th>
<th>Price per month US$</th>
<th>US$ per 100 kbit/s</th>
<th>Change 2005-06</th>
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<tr>
<td>Japan</td>
<td>Yahoo BB</td>
<td>51'200</td>
<td>14.2</td>
<td>0.03</td>
<td>-12.5%</td>
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<tr>
<td>Korea (Rep.)</td>
<td>Hanaro</td>
<td>51'200</td>
<td>40.59</td>
<td>0.08</td>
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<tr>
<td>Netherlands</td>
<td>Internet Access Ned.</td>
<td>20'480</td>
<td>27.97</td>
<td>0.14</td>
<td>-81.3%</td>
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<tr>
<td>Taiwan, China</td>
<td>Chunghwa</td>
<td>12'288</td>
<td>22.67</td>
<td>0.18</td>
<td>--</td>
</tr>
<tr>
<td>Sweden</td>
<td>Bredbandsbolaget</td>
<td>24'576</td>
<td>56.08</td>
<td>0.23</td>
<td>-6.5%</td>
</tr>
<tr>
<td>Singapore</td>
<td>StarHub</td>
<td>30'720</td>
<td>73.17</td>
<td>0.24</td>
<td>-85.0%</td>
</tr>
<tr>
<td>Italy</td>
<td>Libero</td>
<td>12'288</td>
<td>37.23</td>
<td>0.30</td>
<td>-73.8%</td>
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<tr>
<td>Finland</td>
<td>Elisa</td>
<td>24'576</td>
<td>85.64</td>
<td>0.36</td>
<td>-51.4%</td>
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<tr>
<td>France</td>
<td>Free</td>
<td>10'240</td>
<td>37.29</td>
<td>0.36</td>
<td>-90.1%</td>
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<tr>
<td>United States</td>
<td>Comcast</td>
<td>4'096</td>
<td>20.00</td>
<td>0.49</td>
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<tr>
<td>Germany</td>
<td>Freenet.de</td>
<td>6'016</td>
<td>30.95</td>
<td>0.52</td>
<td>--</td>
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<tr>
<td>United Kingdom</td>
<td>Pipex</td>
<td>8'128</td>
<td>50.89</td>
<td>0.63</td>
<td>-53.6%</td>
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<tr>
<td>Hong Kong, China</td>
<td>Netvigator</td>
<td>6'144</td>
<td>51.17</td>
<td>0.83</td>
<td>-0.1%</td>
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<tr>
<td>Portugal</td>
<td>Sapo</td>
<td>8'128</td>
<td>75.82</td>
<td>0.93</td>
<td>-0.8%</td>
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<tr>
<td>Canada</td>
<td>Bell</td>
<td>4'096</td>
<td>41.26</td>
<td>1.01</td>
<td>-3.93%</td>
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<tr>
<td>Average</td>
<td></td>
<td>18'278</td>
<td>44.33</td>
<td>0.43</td>
<td>-45.5%</td>
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<tr>
<td>Best practice (top 20%)</td>
<td></td>
<td>40'960</td>
<td>27.59</td>
<td>0.10</td>
<td>-46.9%</td>
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# New Market Structure

## Checking box

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<tr>
<td><strong>Voice</strong></td>
<td></td>
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<tr>
<td><strong>Internet</strong></td>
<td></td>
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</tr>
<tr>
<td><strong>Television/Radio</strong></td>
<td></td>
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<tr>
<td><strong>Services on Demand (VoD...)</strong></td>
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N-play economics...

- **To be considered by providers**
  - **Products:** complementary, substitutive or neutral goods
  - **Price:** Reservation prices
  - **Pure versus mixed bundling**

- **Bundling Advantages**
  - Reduces the costs
  - Increases demand
  - Locks in customers
  - Improves product performance
  - Differentiates the product offerings

- **N-play services and competition**
  - Exclusion of rivals
  - Cross-Selling
  - Product differentiation
  - Market barriers
  - Market Structure

- **Regulation...**
What is IPTV?
IPTV Challenges?
NGN and IPTV

• **IP-enabled NGNs**
  - New technical requirements
  - Standardization process

• **IPTV**
  - Unicast
  - Multicast

• **IPTV**
  - Free or Fee Based
  - Platforms
    - Internet / Fixed telecom / Cable TV / Mobile / Wireless
  - IPTV versus Streaming Video
    - High quality
    - Stored or live
What is IPTV?

- IPTV is defined as the secure and reliable delivery to subscribers of entertainment video and related services. These services may include, for example, Live TV, Video On Demand (VOD) and Interactive TV (iTV).
- These services are delivered across an access agnostic, packet switched network that employs the IP protocol to transport the audio, video and control signals.
- In contrast to video over the public Internet, with IPTV deployments, network security and performance are tightly managed to ensure a superior entertainment experience, resulting in a compelling business environment for content providers, advertisers and customers alike.

Source: ATIS IIF
• **Beijing RIC Information Consulting (2005): Global**
  - 2006: the global revenue of IPTV service → $8 billion with over 8 million subscribers.

• **21st Century Communications World Forum:**
  - 2006: 2-3 Million U.

• **Gartner (2006): Europe**
  - 2006: 3.3 million users
  - 2010: more than 16 Million Users
  - Additional revenues generated will grow from 336 Million to 3 Billion
IPTV: Market Trends

- **France**
  - 2006: 1.7 mln / Revenues 141 mln Euro
  - 2010: 5 mln / Revenues 682 mln Euro

- **UK**
  - 2006: 75 tys. → 2010: 1.9 mln.

- **Germany**
  - 2006: 47 tys. → 2010: 2.8 mln
  - 2010: Revenues: 465 mln Euro
  - Deutsche Telecom / Microsoft / Premiere

- **Hong Kong's PCCW**
  - 30% of the world's IPTV customers – and 61% of Asian subscribers – 2005: 500,000 subscribers
  - the churn rate has dropped by half

- **China**
  - Subject of special licenses
  - Shanghai Media Group (SMG)

Source: Gartner (2006)
Who has the interest?

- **Content providers / distributors**
  - Provision directly to the client
  - Bypass of traditional outreach methods
  - New financing mechanisms
  - True margin: Case of mobile industry...
  - Local content
  - Cross media ownership
  - Anti-siphoning
  - From Local to Global Market
    - IPTV fosters globalization: Cross border diffusion of the content
    - IPTV requires new international action
Who has the interest?

- **Telecom Operators**
  - New niche by minimal cost
  - STB: Digital Home / Approach: From last mile to last meter
  - ABC: Access / Box / Content
  - N-play services advantages

- **Consumers**
  - Personalization
  - Interactivity: Two way communication
  - Extended number of services
  - But...

- **Consumer Protection Issues**
  - Awareness and acceptance
  - Copyright
  - Protection for children.
  - Greater consumer literacy
  - Ultimately have to be the viewers themselves blocking content they personally were unhappy with
IPTV: Challenges

- **Infrastructure requirements**
  - 6-16 MBit/s for HDTV / Narrow Band TV
  - Bandwidth / Generalized mobility
  - ADSL2+/VDSL/FTTx/3G/4G/WiFi/WiMAX

- **Standardization process (STB)**

- **Compression Methods**

- **Network Neutrality**

- **Value Creation Chain**
  - Margin redistribution

- **Triple-play**
  - Distribution platforms / Interaction
  - Broadcasting / One way communication
IPTV: Who has the power?

- **Content Providers**
  - Service Provider
  - Service Provider
  - Service Provider

- **Network Operators**
  - Broadcaster
  - Wireless
  - Mobile
  - Cabel TV
  - Satellite
  - ISPs
  - Telcos

- **Access**

- **Customers**

- **Software Developers**

- **Broadcasting Authority**

- **Consumer Protection**

- **Communic. Authority**

- **National Broadcasting Regulation System**

- **Internet Consumer Protection**
What is to expect soon

• **Institutional Implications**
  - Convergence of the regulators
  - Review of the broadcasting systems

• **Incumbents**
  - Significant market power...
  - Economies of scale and scope
  - Collaboration with content providers and distributors

• **New role of software providers**

• **Higher network externalities**
IPTV: Regulatory Challenges

- **Definition of IPTV in legal system**
  - IP Hybrid-service
  - Information service
  - Broadcast service
    - Regional licenses: in Case of US on the regional level

- **China**
  - Specific regulation to the IPTV
• Cable franchises
  ▪ SBC versus Information Service
• April: House Energy and Commerce subcommittee:
  ▪ National Licenses to offer television service without winning the approval from local communities
• Interested Parties: Versizon, At&T, Bellsouth...
• Challenges:
  ▪ ISPs: Bandwith prioritisation
  ▪ Big telecoms: cherry picking and discrimination against lower income areas
  ▪ Verizon und SBC/AT&T intend to invest around 30 Billion shortly
Migration to the IP environment and the ITU

We all build the Information Society together!
NGNs as a global issue

Standardization

A NGN is a packet-based network able to provide 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 enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.

Challenges
- Multimedia
- Generalized mobility
- Convergence
- Integrity
- Multi-layer orientation
- Open character

FG NGN

SG: 11, 13, 19, 2, 12, 16, 17
Regulatory considerations

- New and emerging markets
- Interconnection
- Universal Service
- Best Practices...
  - National, Regional, International level

- Tariff policies, tariff models and methods of determining the costs of services on national telecommunication networks, including next-generation networks
- Regulatory impact of next generation networks on interconnection
- Strategy for migration existing networks to next-generation networks (NGN) for developing countries

http://www.itu.int/osg/spu/ngn/
ITU and IPTV

IPTV Focus Group

- **April 2006: Consultation**
  - More than 100 contributions from diverse stakeholders
    - Architecture and Requirements
    - QoS and Performance Aspects
    - Service Security and Contents Protection Aspects
    - Network and Control Aspects
    - End Systems and Interoperability aspects
    - Middleware and Application Platforms

- **April 2006: Focus Group on IPTV**
  - The mission of FG IPTV is to coordinate and promote the development of global IPTV standards taking into account the existing work of the ITU study groups as well as Standards Developing Organizations, Fora and Consortia.

- **July 2006: ITU Headquarters, Geneva**
Conclusions
Conclusions

- Telecom sector migrates to the **IP environment**
- **Regulatory environment** has to be defined as soon as possible in order to minimize investment risk
- International **standardization process** has to proceed as fast as possible
- The policy and regulatory changes will be implemented rather in a way of **natural evolution** then drastic revolution
- Innovation dynamics lets implement new **business models** as well as **new sell and pricing strategies**, e.g. triple-, quad-play
- **N-play services** become more and more popular among service providers
Conclusions

- N-play services does not mean **IPTV**
- IPTV is an **emerging technology** that may change the meaning of the communication sector
- IPTV becomes a new driver of the **convergence process**
- IPTV still requires intensive work on **standardization and regulation**
- International aspects are crucial for further expansion and require **involvement of international org.**

- Please do not wait and give your voice to this debate!
Thank you very much for your attention!

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Resources

- Full version of this presentation and others focusing on NGN: www.itu.int/osg/spu/presentations/

- NGN regulatory and policy resources: http://www.itu.int/osg/spu/ngn/ngn-policy-regulatory-resources.html

- ITU activities on NGN: www.itu.int/spu/ngn

- The Future of Voice: www.itu.int/spu/voice
ITU New Initiatives Project

- Concept Paper
- Background Materials
  - Internet Resources
  - Papers
    - Innovation Dynamics in the IP Environment
    - Market Potential of Voice and Next Generation Services
    - Regulatory Trends: New Enabling Environment
  - Regional Investigations
    - Asia
    - Latin America
    - South and Eastern Europe
- Workshop

www.itu.int/spu/voice
International Telecommunication Union

We all build the Information Society together!
The oldest specialized UN agency with more than 140 years of experience in communication sector

Headquarters in Geneva plus regional offices

ITU staff: more than 750 from more than 80 countries

189 member states, more than 640 sector members

ITU Agenda for Change

Structure of the ITU
  - ITU-T – Telecom Standardization
  - ITU-R – Radio-communications
  - ITU-D – Development Bureau
ITU’s Strategy and Policy Unit (SPU)

- **New Initiatives Programme**
  - Ubiquitous Network Societies (2005)
  - Today’s Networks Tomorrow (2005)
  - The Future of Voice (2007)
- **Many other activities...**

1 July 2006