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IP-based Networks : Optimal integration of information and communication Technologies (IPTV)

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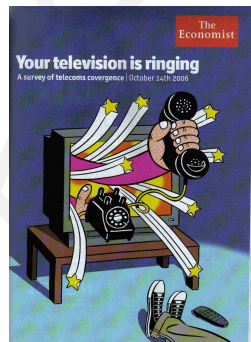**Committed to connecting the world**

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# Table of content

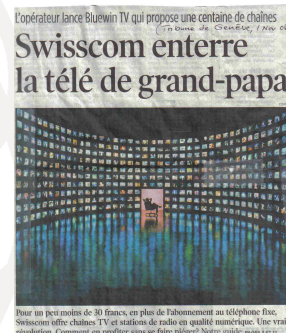# 1. Introduction

# 2. Market, Services, Regulation, Standards

# 3. Conclusions

# 1.Introduction

*IP-based Networks :* *Resolution 50 (Doha, 2006) Optimal integration of information and communication technologies*

**Swisscom offers IPTV - 1 November 2006**

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- Main Driver for IPTV: video on demand (VoD)
- To provide IPTV: audio and video codecs and encrypting divices are used, E.G MPEG-2 and MPEG-4, DSL lines, fibre-optic, modems or set-top boxes
- Several standards development organisations (SDO) pursue activities on IPTV but no globally accepted standards were available to cover all aspects of end-to-end solution from Provider-to-consumer until ITU initiated the IPTV Focus Group in April 2006.

Taking into account pre-standard deployments and the emergence of NGN, ITU–T chose three IPTV functional architecture approaches that enable service providers to deliver IPTV services:

- "Non-NGN IPTV functional architecture", which is based on existing network components and protocols or interfaces.
- "NGN-based non-IMS IPTV functional architecture", which uses components of the NGN framework reference architecture to support the provision of IPTV services.
- "NGN IMS-based IPTV functional architecture", which uses components of the NGN architecture, including the IMS component, to support the provision of IPTV services, in conjunction with other IMS services if required.

(IMS stands for "IP multimedia subsystem," an architecture that carries IP multimedia to mobile devices.)

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# Definition of IPTV

IPTV, defined by ITU-T as "multimedia services such as television/video/ audio/text/graphics/data delivered over IP-based networks managed to support the required level of quality of service (QoS)/quality of experience (QoE), security, interactivity and reliability", is one of the most significant business cases and drivers for the deployment of next generation networks (NGN).

QoS: Quality of Service
QoE: Quality of Experience
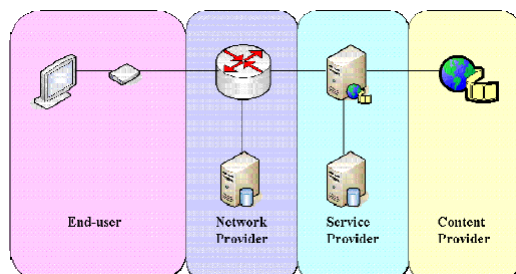
IPTV Functional Domains

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IPTV and Mobile Scenario (Samsung)

**IP Network**

IPTV

20Mbps

Home Gateway

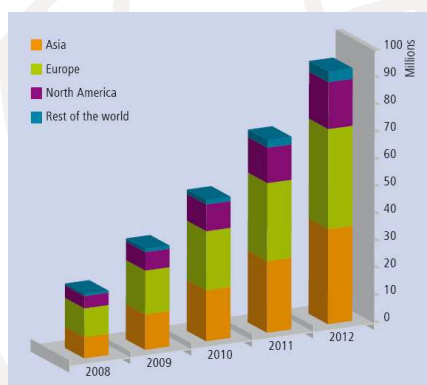Home Network

IPTV Operator

IP Mobile TV    4Mbps
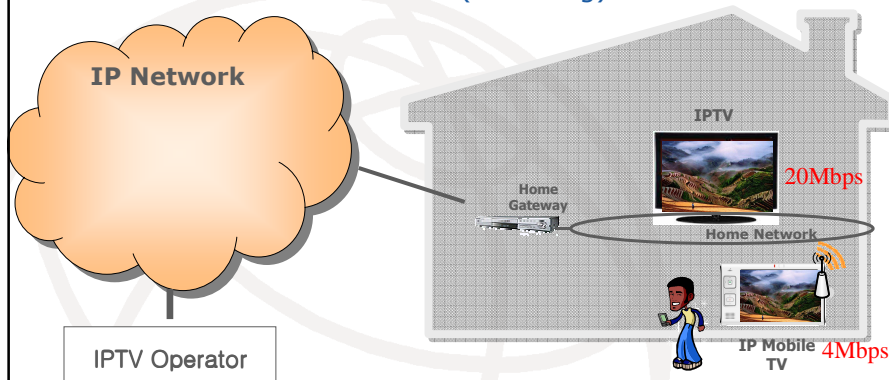
- The IP Mobile TV terminal shall get the same contents as the fixed IPTV terminal
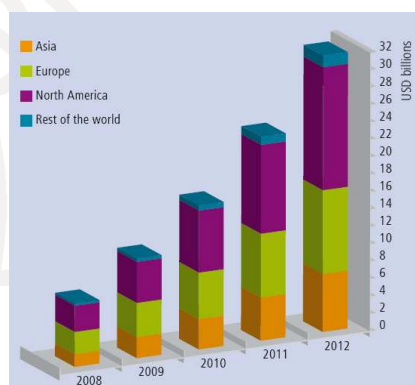- The terminal (fixed or mobile) shall act as a node of home network.

# 2. Market, Services, Regulation, Standards

■ **Market**

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Forecast of global IPTV subscribers

Forecast of global IPTV service revenues



Source:MRG, Inc

# Broadband and Convergence networks
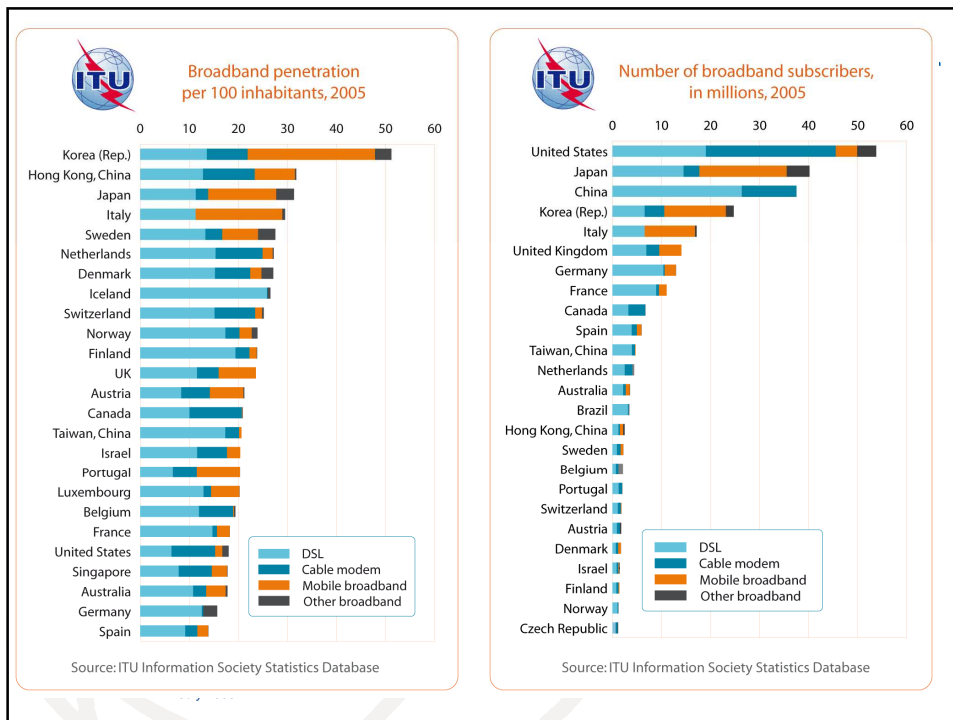# are becoming reality

- Converging worlds: Fixed Telecoms + Mobile Telecoms + Internet access + Television + Computing
- One network + multiple access + many services
- Drivers:
  - Revenues from fixed voice calls decrease
  - A single network is cheaper to operate
  - Bundling of services
  - Adding new services quickly
- Convergence affects
  - Companies
  - Consumers
  - Regulators
- Handsets are rather diverging than converging

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# Revenue Status: fixed-line telephony

- Voice revenue is falling:
  - France Telecom: -10% annually
  - Deutsche Telekom: - 6%
  - BT: - 5%

  *(Source: Forrester, quoted in The Economist 14 Oct 06)*
- Global revenues
  - in 2005
    - from fixed-line voice calls: $ 600 bio
    - From data: $ 202 bio
  - prediction for 2010
    - Fixed-line phone calls will account for less than half of operators' revenues in developed countries

    *(Source: Informa, quoted in The Economist 14 Oct 06)*
- New core product: broadband Internet access

**Broadband penetration per 100 inhabitants, 2005**

Korea (Rep.)
Hong Kong, China
Japan
Italy
Sweden
Netherlands
Denmark
Iceland
Switzerland
Norway
Finland
UK
Austria
Canada
Taiwan, China
Israel
Portugal
Luxembourg
Belgium
France
United States
Singapore
Australia
Germany
Spain

DSL
Cable modem
Mobile broadband
Other broadband

Source: ITU Information Society Statistics Database

**Number of broadband subscribers, in millions, 2005**

United States
Japan
China
Korea (Rep.)
Italy
United Kingdom
Germany
France
Canada
Spain
Taiwan, China
Netherlands
Australia
Brazil
Hong Kong, China
Sweden
Belgium
Portugal
Switzerland
Austria
Denmark
Israel
Finland
Norway
Czech Republic

DSL
Cable modem
Mobile broadband
Other broadband

Source: ITU Information Society Statistics Database

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# IPTV to the rescue?

- Telecom incumbents are responding to demise of fixed-line telephony by:
  - Reducing call charges, increasing monthly rental fee
  - Launching VoIP services themselves
  - Expanding broadband internet access
  - Jumping into television as a new business
  - Etc.
- But times are changing (risk vs. opportunity)
  - Consumption of TV is changing
  - Delivery of TV is changing

# IPTV / Internet TV

| | IPTV | Internet TV |
|---|---|---|
| **Users** | Local | Worldwide |
| | Customers & IP-address known, closed network | Any users (gen. unknown) |
| **Video Quality** | Controlled QoS | Best effort |
| **Video format** | MPEG-2,-4, MS VC1 | Windows Media, Real-Networks, QuickTime etc |
| **Receiver dev.** | Set-top box w/ TV; PC | PC |
| **Resolution** | Full TV display | QCIF/CIF |
| **Reliability** | Stable | Subject to contention |
| **Security** | Users authenticated | Unsafe |
| **Copyright** | Content protected | Often unprotected |

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# ▪ Services

Bluewin TV. Vivre et partager la diversité.

Vivre et partager.

Sur Bluewin TV, vous assistez en direct au match que vous souhaitez. Mais aussi à plus de 500 grands films sur simple pression d'une touche et pas moins de 140 chaînes TV internationales.

Zattoo
La télévision sur l'ordinateur.

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# What Swisscom offers:

- 140+ channels; 70 radio stations
- Live events: exclusive rights for Swiss Ice hockey Natl League; German Bundesliga, UEFA Cup (soccer) etc.
- Video on Demand – more than 500 films
- – Personal video recorder made simple
  - One touch suffices to record
  - Storage capacity: 100 hours
  - Pause ("Live-pause"), fast-forward, rewind
  - "catch-up TV"
- Remote and Automatic serial recording (e.g. daily news)

*Swisscom web site*

- Recording can be programmed from anywhere via Internet or mobile phone
- TV-Guide (EPG = Electronic Programming Guide)
- Image within image: keep watching main program, but zap thru other channels shown on small window
- Parent Control: block individual channels or shows
- Set limit of monthly expenses (for video downloads)

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- **Regulation**

- Today's upgraded networks based on the Internet protocol (IP) allow telecommunication providers to offer not only voice and data, but also video services known as IP television, or IPTV.

- However, its deployment can bring challenges for existing laws and regulations:

**ITU Initiative: Child Online Protection (COP)**
**is a global initiative created by ITU, as part of the Global**
**Cybersecurity Agenda, which aims to tackle cybersecurity**
**holistically.**

Key Objectives of COP are to:
- Identify risks and vulnerabilities to children in cyberspace
- Create awareness
- Develop practical tools to help minimize risk
- Share knowledge and experience

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- **Broadcasting or telecommunications?**

Broadcasting and telecommunications are converging, but to which of these does IPTV belong? Various approaches have been taken to this question, ranging from simply not classifying IPTV, to defining it as a regulated broadcasting service.

Or, some services offered over IPTV platforms are seen as broadcasting, but not others.

In the United States, for example, IPTV has yet to be classified, although the Federal Communications Commission (FCC) has addressed barriers to its deployment

## Regulating content

Countries have various regimes for regulating the content of video transmissions. Restrictions might apply only to free, over-the-air broadcasts, or only to subscription television services.

Alternatively, specific content regulations may be developed for different types of operator

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## ▪ Licensing issues

There is also a variety of approaches towards the licensing of IPTV.

=European countries, for example, take a technology-neutral approach that considers any television service, provided over any platform, to be broadcasting.

=Canada says a broadcasting licence is needed for any television service (including VoD) that is provided over a managed IP network.

=In some countries, such as the Republic of Korea, new licences have been developed for IPTV services.

= In Pakistan, IPTV providers must not only obtain a licence for an IPTV channel distribution service, they must also hold a fixed local loop licence for the same coverage area.

= In Singapore, all companies wanting to offer any form of subscription television require a licence.

- Clarity is required

For regulators, there is no right or wrong approach.

What is important is to give IPTV service providers certainty about how they will be regulated

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- **Standards**

# ITU-T's Focus Group on IPTV (FG IPTV)

- Created in April 2006
- Open to basically anybody (even to non-members of ITU !!)
- All FG IPTV documents publicly available at no charge !!
- Mission statement of FG IPTV
  "The mission of IPTV Focus Group 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 (SDOs), Fora and Consortia."

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Below is a list of recent ITU standards approved or 'consented' by ITU-T's
Study Group 16:

- Rec. H.701 - Content Delivery Error Recovery for IPTV services
- Rec. H.721 - IPTV Terminal Device: Basic Model
- Rec. H.760 - Overview of Multimedia Application Frameworks for IPTV
- Rec. H.720 - Overview of IPTV terminal devices & end systems
- Rec. H.750 - High-level specification of metadata for IPTV services
- Rec. H.622.1 - Architecture and functional requirements for home networks supporting IPTV services
- Etc…

# 3. Conclusions

The IPTV architecture is access agnostic, meaning that access can be through fixed line, cable or wireless systems, for example.

IPTV services can be provided to fixed or mobile devices.

ITU–T has approved, consented or determined standards on IPTV functional architecture, requirements for the support of IPTV services, overview of IPTV terminal devices, high-level specification of metadata for IPTV, quality-of-experience requirements for IPTV services, and home networks supporting IPTV services.

Activities are going full steam ahead to prepare and finalize standardization of aspects related to IPTV security, protocols, traffic management.

IPTV: New Challengers for Regulators (**ITU Initiative: Child Online Protection (COP)**

# Thank you for your attention!

International Telecommunication Union