

Overview of the family of ITU-T IPTV Recommendations

Masahito Kawamori

Coordinator, ITU-T IPTV-GSI

masahito.kawamori@ties.itu.int



Introduction

The ITU

INTERNATIONAL TELECOMMUNICATION UNION

ITU Secretary-General
Hamadoun
Touré

UN Secretary-General
Ban Ki-moon



■ **United Nations agency** for telecommunication and ICTs

■ **Members:**

- ➔ **192 Governments** and regulatory bodies
- ➔ **700 Private Sector**
- ➔ **20 Academia**

ITU-T

develops ICT standards

ITU-R

manages radio spectrum and satellite orbits



ITU-D

promotes ICT development

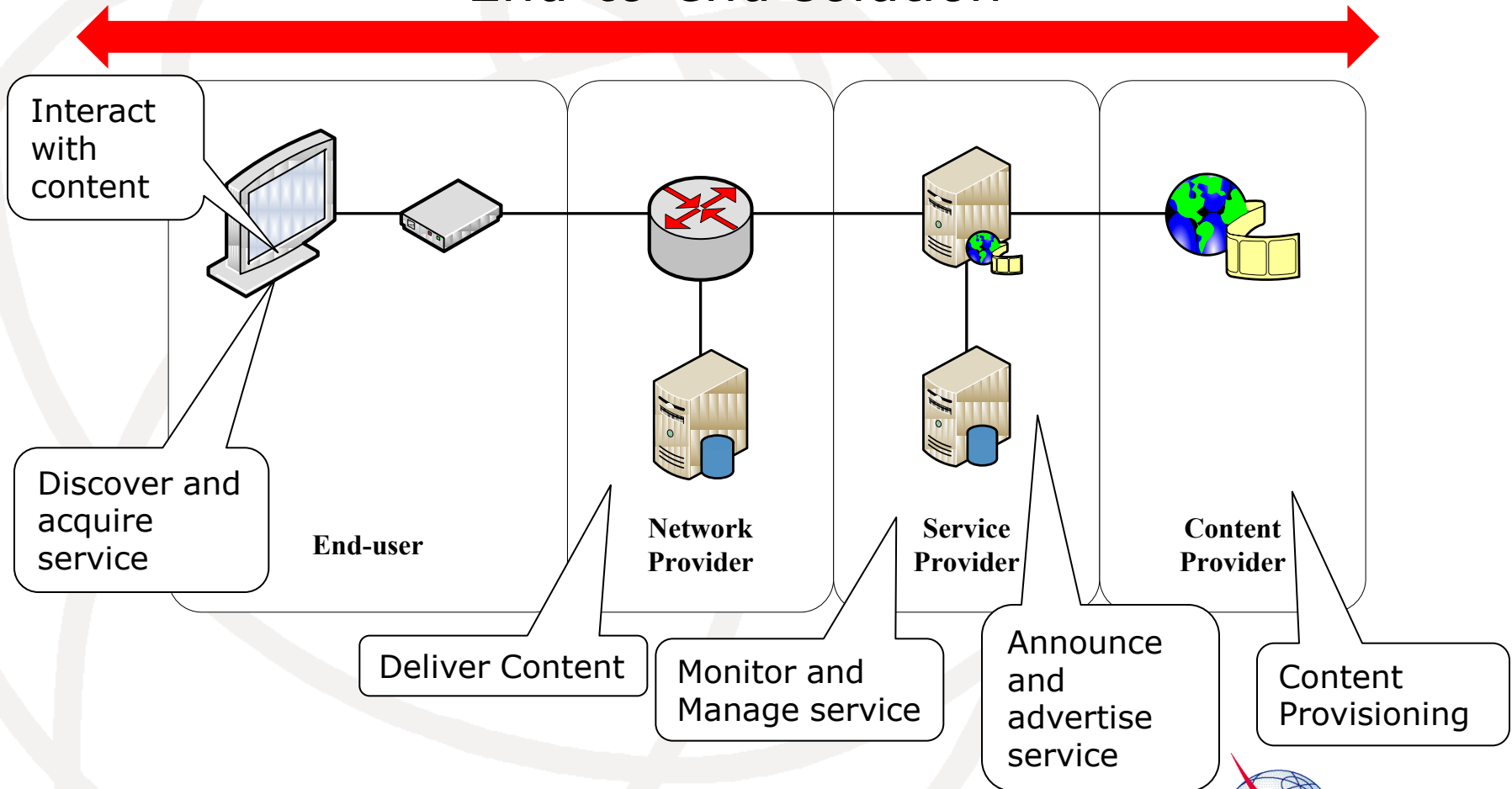
General Secretariat

coordinates work of ITU

IPTV Value Chain

ITU-T IPTV standards cover all IPTV value chain

End-to-end solution



Overview of ITU-T Recommendations for IPTV

Home networking

H.622.1: Req & Arch for IPTV Home networks

Applications and end-systems

H.750: Metadata for IPTV Services

H.721: IPTV Terminal (Basic)

H.770 : IPTV Service discovery

H.761: Ginga-NCL

H.740: Application Event Handling

H.762: LIME

H.763.1: Cascading style sheets for IPTV services

H.264: video

Architecture, requirements, network

Y.2007: NGN Capability Set 2

Y.Sup 5: IPTV Service use cases

Y.Sup 7: NGN Release 2 Scope

Y.1910: IPTV Functional Architecture

Y.1901: IPTV Service Requirements

Q.3010: Authentication protocol

Quality of Experience

H.701: Content Error-Recovery

G.1080: IPTV QoE

G.1081: Performance Monitoring

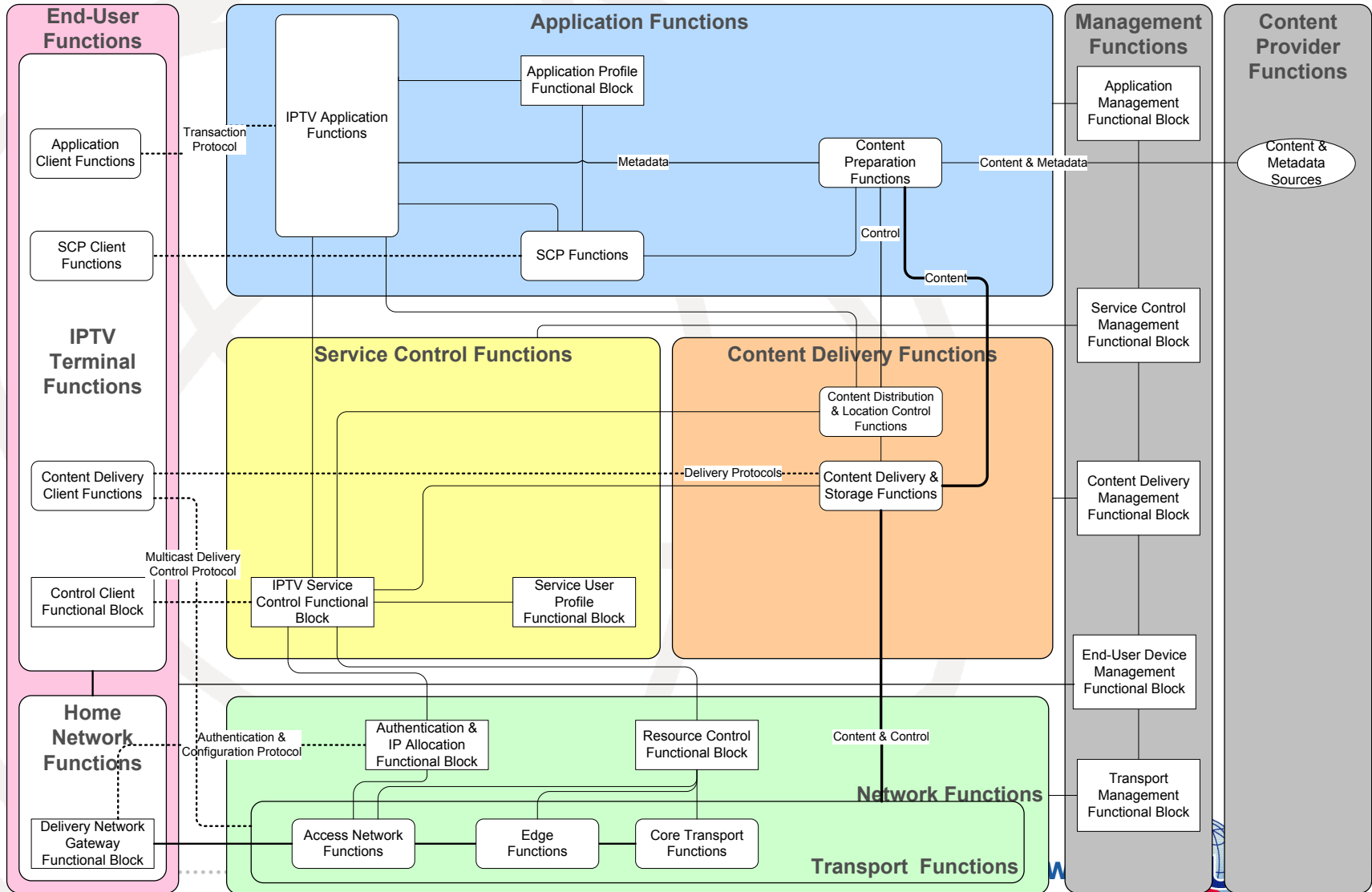
G.1082: Improving robustness of IPTV performance

Security and Content Protection

X.1911: Req & arch for IPTV security

Some of the Standards

Y.1910: IPTV Architecture



H.721: Basic Terminal Model

- Defines Terminal supporting VoD and Linear TV
- Targeted at Embedded TV sets in the retail market as well as STB
- Managed network model (agnostic as to IMS) – SIP-aware HGW friendly
- Network attachment and Service Discovery compliant with H.770
- FEC for Error Recovery, compliant with H.701
- Supports Portal service (MAFR such as H.761 and H.762)
- Implemented and deployed

ITU-T H.721 IPTV Terminals

- Terminals based on ITU-T H.721 are available in the retail market
- Customer can buy a TV or PC at a shop, connect to network, and receive an IPTV service
- Conformance Tests ongoing to ensure conformance and interoperability

Set-top boxes



TV sets (also 3D!)



PC



ITU-T H.721 connected IPTV



- Supports service discovery and IPTV portal (Interactive pages)
- requires no difficult configuration – just plug and watch
- Supports H.770

H.761 Ginga-NCL for IPTV

- ITU-T H.761 (Ginga-NCL) is an adaptation of Ginga-NCL, the middleware standard for Brazilian digital TV broadcasting
- Syntactically based on XML and LUA (script language), which is used in games and widgets (e.g. Verizon)
- Similar implementation to W3C SMIL
- Often used as a glue language for other multimedia frameworks, such as HTML and H.762 (LIME).
- Good integration with Video streaming
- Can be used for mobile as well as fixed

H.762: LIME

- ITU-T H.762 – LIME (Lightweight Interactive Multimedia Environment)
- Based on simple HTML and JavaScript
 - ➔ Just like very Simple Web designing
- Not a new “language” but a simple profile of HTML and Javascript for creating Interactive content
- Some specific features for IPTV – APIs for VOD, Remote control, color buttons, focus control, etc.
- Suitable for any type of terminals, esp. resource-limited ones like TV sets
- Mobile as well as Fixed
- Integration of Web technologies and Multimedia

Conclusions

- ITU IPTV Recommendations will encourage innovation, ensure interoperability and –ultimately– help players remain competitive
- They are enablers of innovation on broadband and Next Generation Networks
- ITU IPTV (e.g. H.721) are already implemented and deployed
 - ▶ Turnkey solutions
- Interoperability events in 2010, more in 2011 and beyond
- Open architecture of ITU IPTV standards are truly global & open standards that can be deployed across a wide range of applications