# ITU Workshop on "TV and content delivery on Integrated Broadband Cable Networks"

*Hangzhou, China, 26 May 2017*

# ITU-T SG9 OVERVIEW

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# Television and sound transmission and integrated broadband cable networks

- use of telecommunication systems for contribution, primary distribution and secondary distribution of ***television, sound programmes and related data services*** including interactive services and applications, ***extendable to advanced capabilities such as ultra-high definition, 3D, multiview and high-dynamic range television, etc.***;
- use of cable and hybrid networks, primarily designed for television and sound-programme delivery to the home, as integrated broadband networks to ***also carry voice or other time critical services, video-on-demand (e.g. over-the top (OTT)), interactive services, multiscreen services, etc.*** to customer premises equipment (CPE) in the home or enterprise.

# Structure of SG9

**WP1/9** Video Transport

- Q1/9 Television and sound transmission
- Q2/9 Conditional access and content protection
- Q3/9 Digital programme switching and insertion
- Q4/9 Guidelines for implementations and deployment

**WP2/9** Terminals and Applications

- Q5/9 APIs for advanced content distribution services
- Q6/9 Set-Top Box and terminals
- Q7/9 Cable television delivery of IP packet-based data (Cable Modems)
- Q8/9 Voice and video IP applications over cable television networks
- Q9/9 Advanced service platforms

Q10/9 Work Programme, Coordination and Planning

# SG9 Management Team

| Role | Name |
|---|---|
| Chairman: | Mr Satoshi MIYAJI (KDDI, Japan) |
| Vice-chairman: | Mr Blaise Corsaire MAMADOU (Central African Rep.) |
| Vice-chairman: | Mr Tae Kyoon KIM (ETRI, Korea Rep. of) |
| Vice-chairman: | Mr Zhifan SHENG (ABS, China) |

| Role | Name |
|---|---|
| Advisor | Mr Stefano POLIDORI (SGD, TSB) |
| Administrative Assistant | Ms Rosa ANGELES-LEON DE VIVERO (SGD, TSB) |

# History of SG9

## 1997 - 2000

Digital Cable Television and Emerging IP Technology

- J.83 (1995): Digital Cable Television Modulation
- J.90 (1998): Cable EPG、J.94 (1997): SI
- J.112 (1998): Cable Modem – DOCSIS1.0
- J.132 (1998): MPEG-2 Transport over SDH

## 2001 - 2004

DOCSIS2.0, Cable Telephony (VoIP), Optcal Transport

- J.122 (2002): Cable Modem – DOCSIS 2.0
- J.144 (2001): Full Reference Quallity Assessment
- J.160～J.179: Cable Telephony (MGCP)
- J.185, J.186: Video over Optical Access Network
- J.190 (2002): Home Network Architecture
- J.200～J.202: Interactive Application for TV

## 2005 - 2008

DOCSIS3.0, Advanced Television Experience, IPTV

- J.83rev (2007): 256QAM addition to Annex C
- J.210～J.214, J.222.0～J.222.3: DOCSIS3.0
- J.360～J.370: Cable Telephony Ver.2 (SIP)
- J.601 (2005): Large Screen Digital Imagery
- J.700 (2007): IPTV Requirements and Framework
- J.901 (2008): Free Viewpoint Television

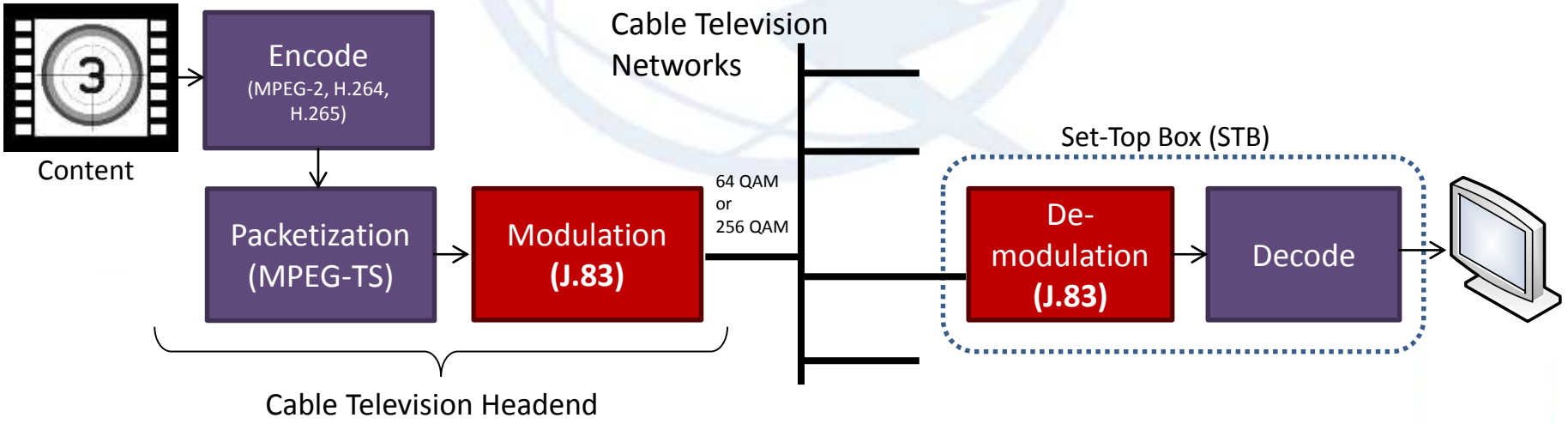
## 2009 - 2012

Integrated Broadcast and Broadband, Hybrid Terminal

- J.205, J.206 (2012, 2013): IBB Framework
- J.249 (2010): Reduced Reference Quality Assessment
- J.295, J.296 (2012): Hybrid Set-Top Box
- J.380.1～8, J.706, J.707: Targetted Ads
- J.381 (2012): Advanced Cable Transport
- J.603 (2011): 4K/8K Realtime Transmission

# The most popular Recommendation

- J.83 (1995, 2007) – *Digital multi-programme systems for television, sound and data services for cable distribution*
- Fundamental technology for digital cable TV transport
  - J.83 is widely deployed to all over the world regardless of the digital TV regional technology variations.
  - One 6 MHz TV bandwidth unit can convey two or three HDTV channels (30 Mbps with 64 QAM and 42 Mbps with 256 QAM), and typical frequency range is 54 MHz – 860 MHz (depending on regions).



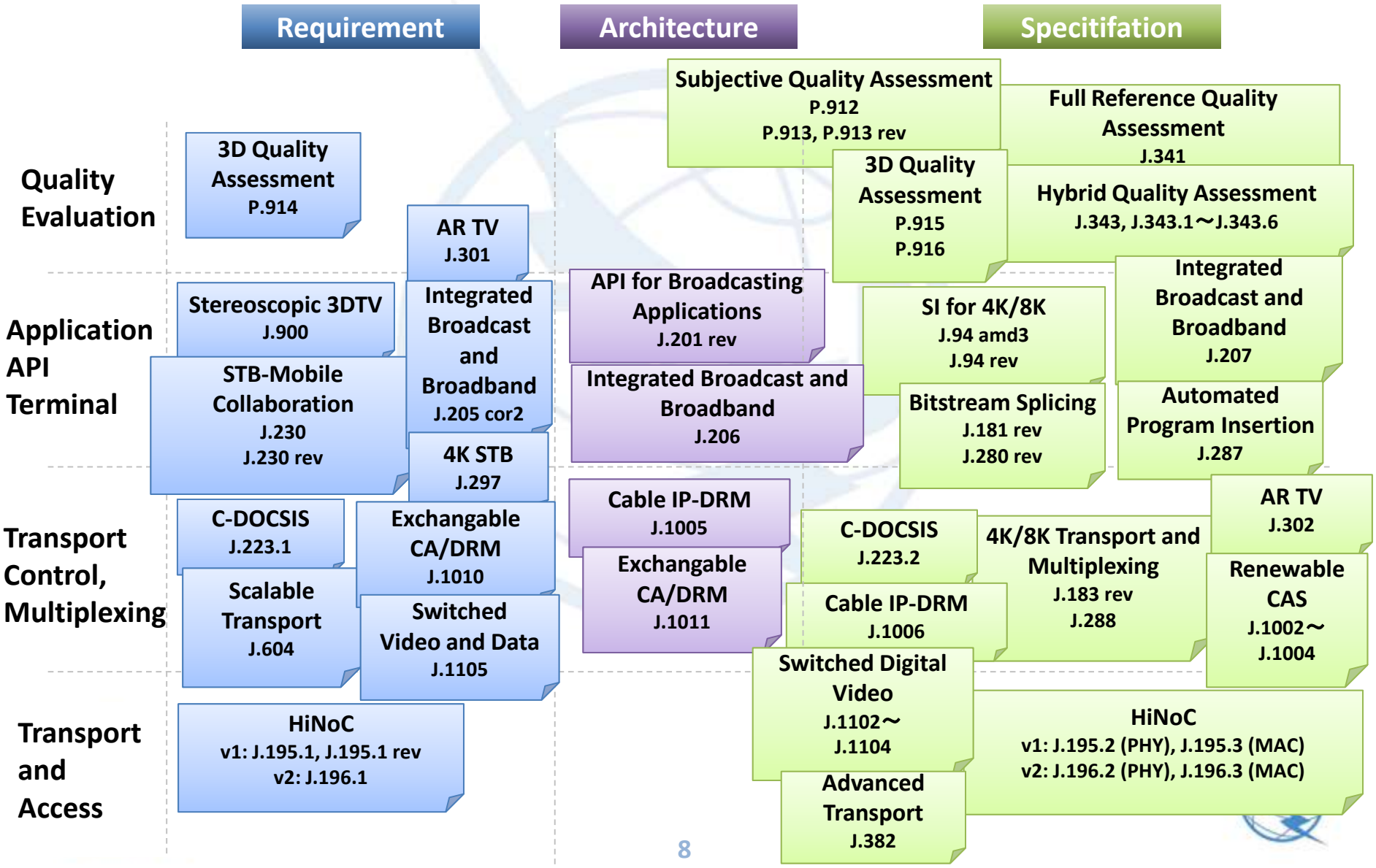
# Cable modem Recommendations

- Cable modem system provides *bi-directional IP communication over one-to-N cable television network infrastructure*.
  - Downstream technology is based on ITU-T J.83 with TDM multiplexing.
  - Upstream technology is based on TDMA access control.
  - Two different frequency spectrums are used for downstream and upstream.


- SG9 developed three versions of cable modem Recommendations

| Recommendation | DOCSIS Version | DS Phy Rate (6MHz TV system) | US Phy Rate |
|---|---|---|---|
| J.112 (1998) | DOCSIS 1.1 | 42 Mbps | 10 Mbps |
| J.122 (2002) | DOCSIS 2.0 | 42 Mbps | 30 Mbps |
| J.222.x (2007) | DOCSIS 3.0 | 42 x *n* Mbps | 30 x *n* Mbps |

# Recs. developed in 2013 – 2016



# SG9 Key Missions in 2017 – 2020

- **Bridging the Standardization Gap (BSG)**
  - considering requirements from various regions
  - implementation and deployment guidelines (Q4/9)

- **Evolution of integrated broadband cable networks and systems**
  - ultra-high speed cable modems
  - robust and flexible security
  - high-efficiency transport technology, etc.

- **Innovative services**
  - advanced definition video experiences (4K/8K/HDR etc.)
  - high realistic experiences (VR/AR etc.)
  - integrated broadcast and broadband services, etc.

# Thank you very much for your attention!!