



ITU-T SG9 overview

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Chairman, ITU-T SG9

KDDI Corporation, Japan

INTRODUCTION OF ITU-T SG9

Current structure of SG9

ITU-T 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

Q3/9 has been merged to Q1/9.

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

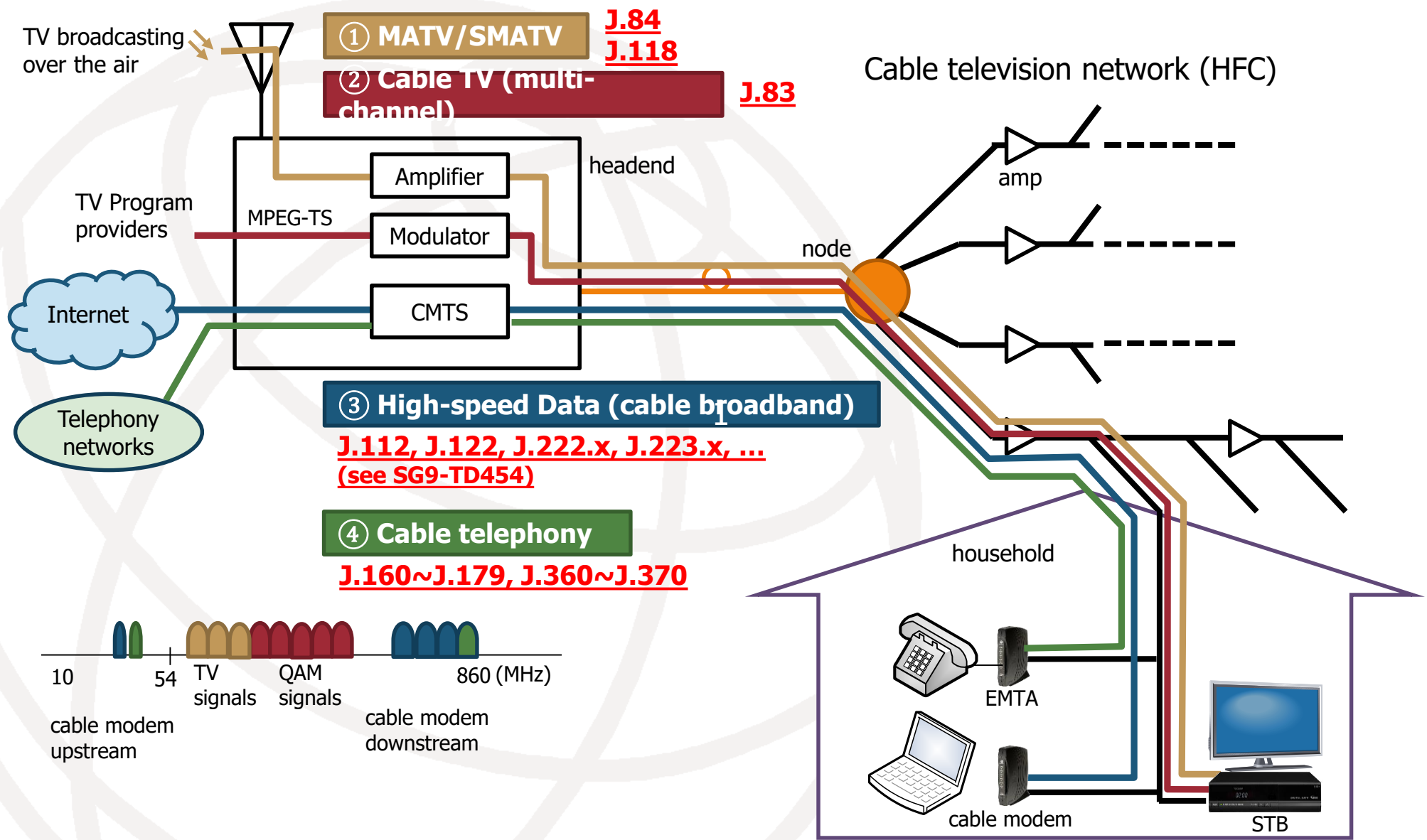
SG9 Management Team

Role	Name
Chairman	Mr Satoshi MIYAJI (KDDI, Japan)
Vice-Chair	Mr Blaise Corsaire MAMADOU (Central African Rep.)
Vice-Chair	Mr TaeKyoon KIM (ETRI, Korea Rep. of)
Vice-Chair	Mr Zhifan SHENG (NRTA, China)

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

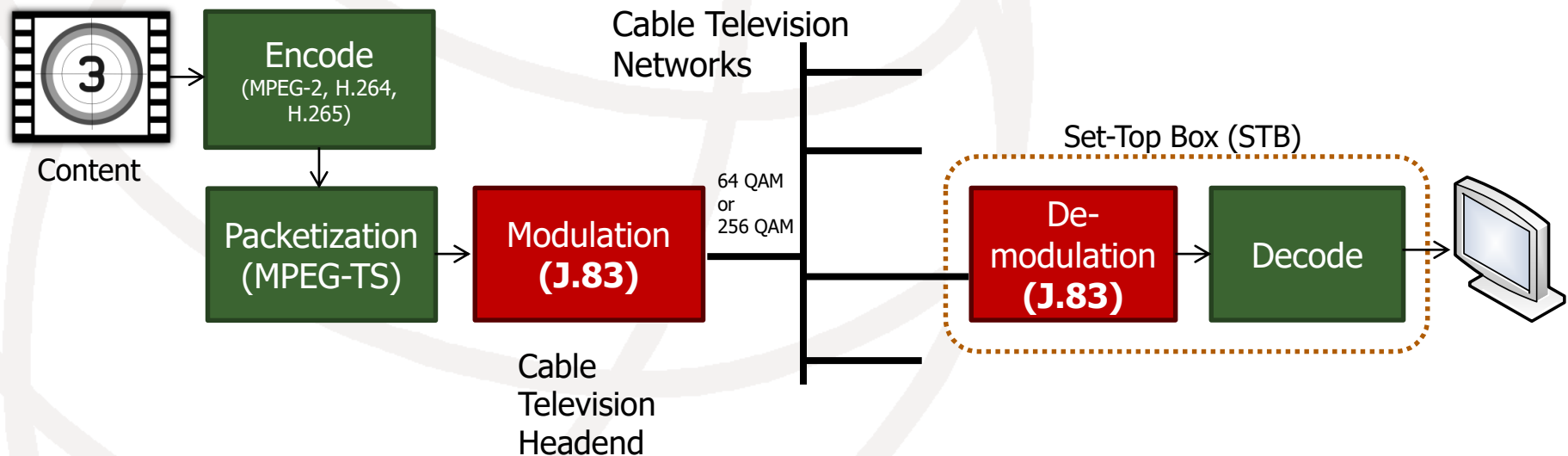
HOW CABLE TV WORKS

How efficiently cable network carries services



The most popular Recommendation

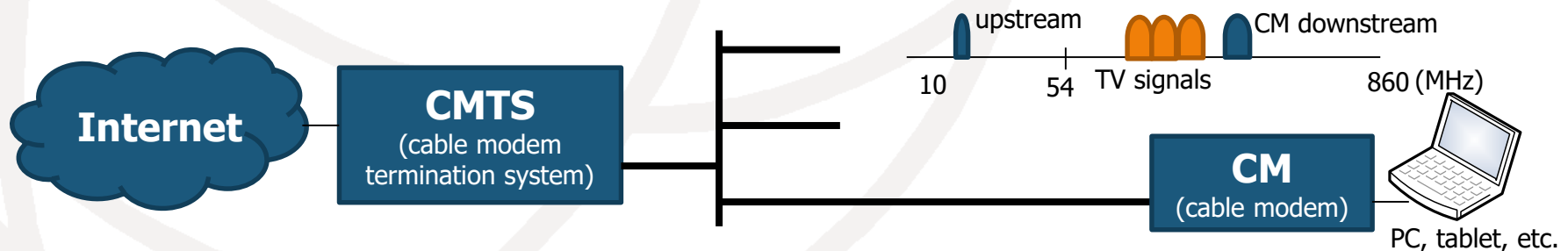
- **J.83 (1995, 2007) – Digital multi-programme systems for television, sound and data services for cable distribution**
- **Fundamental technology for digital cable TV transport**
 - J.83 is widely deployed to all over the world regardless of the regional digital TV technology standards.
 - One TV bandwidth unit (6MHz/8MHz) can carry two or more HDTV programs. Typical frequency range is, for example, 54 MHz – 860 MHz (depending on regions).



Cable modem Recommendations

- **Cable modem system provides bi-directional IP communication over one-to-N split networks.**
 - 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.
- **Cable modem Recommendations**

SG9 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 series (2007)	DOCSIS 3.0	42 x <i>n</i> Mbps	30 x <i>n</i> Mbps
J.223 series (2016)	C-DOCSIS	42 x <i>n</i> Mbps	30 x <i>n</i> Mbps
J.docsis31 series	DOCSIS 3.1	up to 10 Gbps	up to 1 Gbps



SG9 Highlights in the past study periods



2000

Digital Cable Television and Emerging IP Technology

J.83 (1995): Digital cable TV modulation
J.90 (1998): Electronic program guide

J.112 (1998): Cable modem – DOCSIS1.0
J.132 (1998): MPEG-TS transport over SDH

2001
2004

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

J.122 (2002): Cable modem – DOCSIS 2.0
J.160~J.179: Cable telephony (MGCP)

J.185, J.186: Cable TV over FTTH (RF-based)
J.190 (2002): Home Network Architecture
J.200~J.202: Interactive TV applications

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 framework for cable TV
J.901 (2008): Free viewpoint television (FTV)

2009
2012

Integrated Broadcast and Broadband, Hybrid Terminal

J.205, J.206 (2012, 2013): IBB framework
J.295, J.296 (2012): Hybrid set-top box

J.380.1~8, J.706, J.707: Target ads
J.381 (2012): Advanced cable transport
J.603 (2011): 4K/8K real-time transmission

2013
2016

Evolution of Transport Technologies

J.183rev, J.288 (2016): 4K/8K QAM transport
J.195, J.196 (2014 – 2016): HiNoC v1 and v2
J.223 (2016): Cabinet DOCSIS (C-DOCSIS)

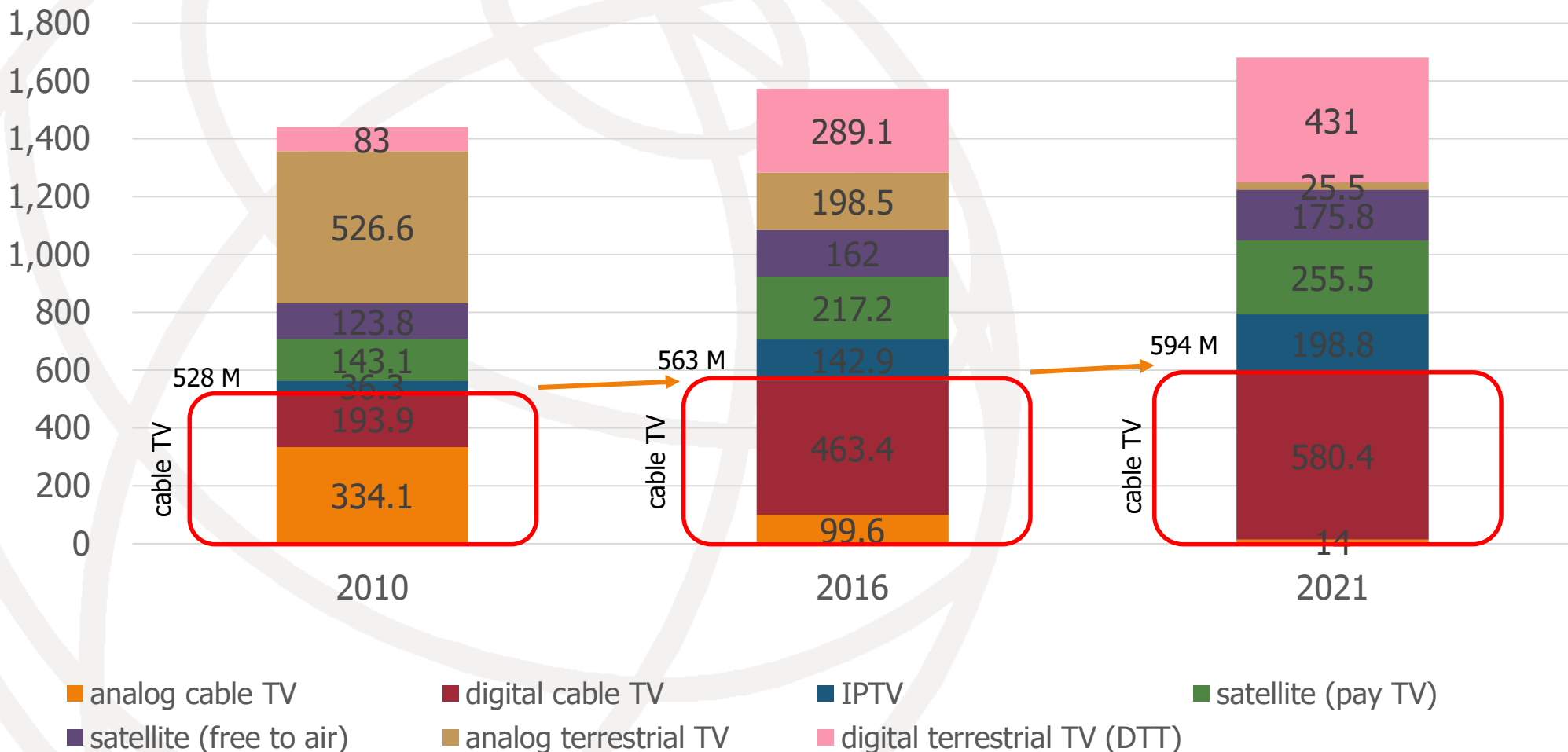
J.301, J.302 (2014 – 2016): Augmented Reality
J.382 (2014): DVB-C2
J.1010, J.1011 (2016): Exchangeable CA/DRM

CABLE TV MARKET SITUATION

TV households in the world

**Cable television is still growing and dominant as 35% share in 2021 (forecast).
Digital terrestrial TV (DTT) is rapidly growing toward 2021 mainly in developing country.**

Global TV households by platform (in million)

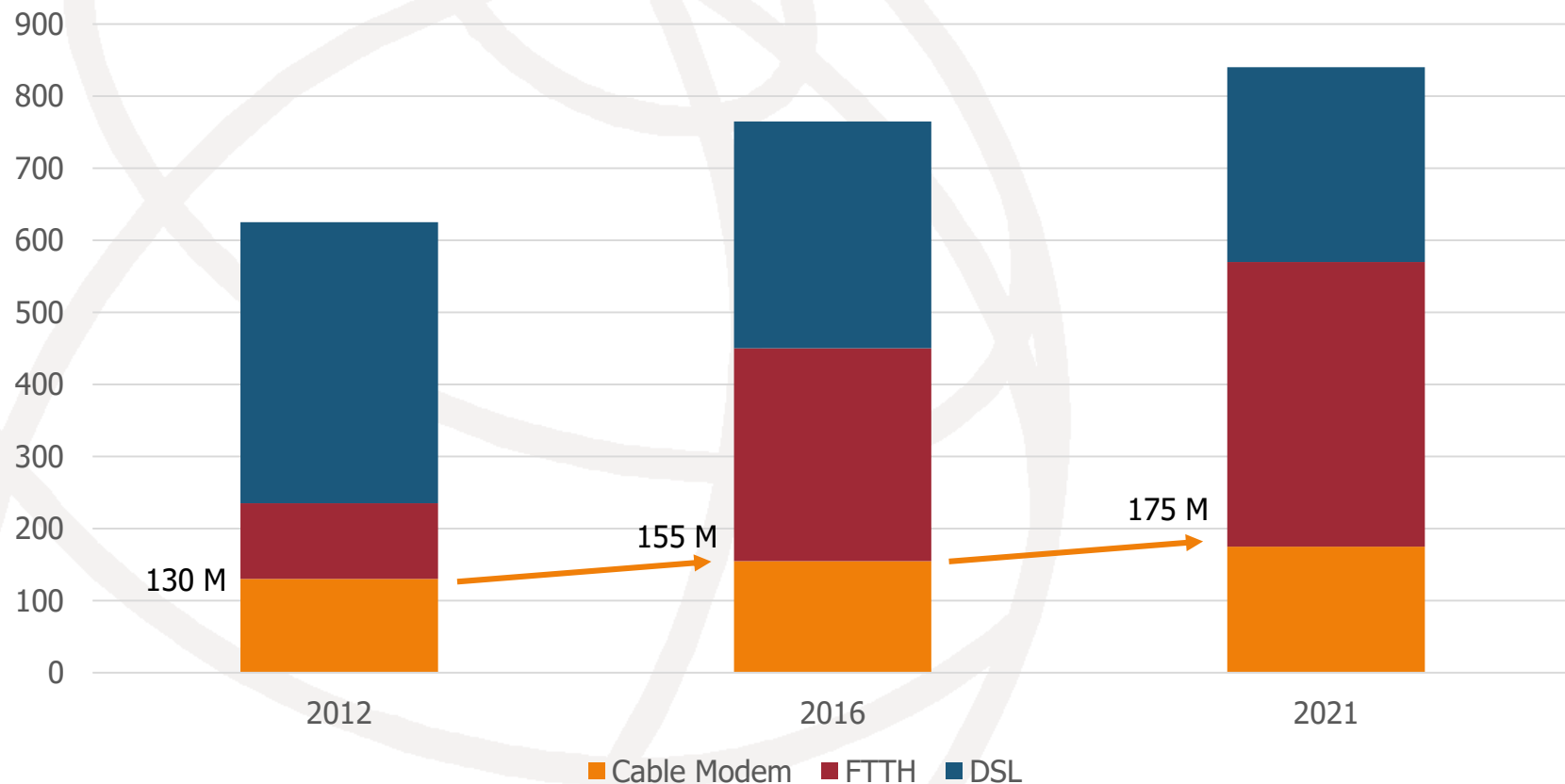


Cable television as broadband access

Cable television broadband access is still growing.

Cable modem can provide gigabit-class broadband Internet by DOCSIS 3.0 and 3.1.

Global fixed broadband subscribers by type (in million)



Cable television in the market

1

Global cable television market is still growing as television delivery networks.

2

Cable television is also very important network infrastructure for broadband Internet access. OTT needs such high-speed networks to efficiently provide services to customers.



What is cable television expected to be in the future?

Cable television in the market

Cable television is expected

as strong and efficient network infrastructure

for broadcasting as well as ICT convergence

to provide high-realistic entertainment experiences

e.g., 4K/8K/VR/AR

to be easy to deploy in developing countries

to facilitate rapid deployment



ITU-T SG9 has been conducting global standardization on cable television technology more than twenty (20) years as a de jure standardization development organization (SDO).

SG9 Key Missions in 2017 – 2020

● Bridging the Standardization Gap (BSG)

- considering requirements from various regions
- implementation and deployment guidelines (Q4/9)



● Evolution of cable TV networks

- 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.





Current work programme of ITU-T SG9

Bridging the Standardization Gap

J.dtt-dist-req

Open platform for TV program delivery over cable TV networks

J.stb-cts

Set-top box compatible with cable, terrestrial and satellite broadcasting

Sup-digTV

Guidelines for implementing and installing of digital cable television

J.tda

Up-to-date collection of terms and definitions of ITU-T SG9

Evolution of cable TV networks

J.docsis31-series

Gigabit/sec-capable cable modem system specifications

J.dmcd-series

Exchangeable CA and DRM solutions (ECI)

J.fdx-req

In-band full-duplex cable modem system

J.roip-trans

System for transport of RF signals over IP network

J.dcas-oneway

Downloadable CAS for one-way cable television networks

Innovative services

J.atrans-tlvts

TLV packet transport over cable

J.acf-hrm

Harmonization for compatibility of IBB applications

J.stvos-series

Specifications of smart TV operating system (smart TVOS)

J.qamip-req

Technology for multi-room TV viewing experiences

J.302amd-1

Augmented reality (AR) smart TV



Collaboration with other SDOs



**ITU-T SG16
ITU-R SG6
ITU-D
and other Study Groups**



**TC Cable
ISG ECI**



TC100

CableLabs®



and so on...

as qualified by ITU-T A.4, A.5 and/or A.6

Towards WTSA-2020

Collocating a workshop in conjunction with a SG9 meeting is **to widely invite even non-member of ITU-T** to discuss and exchange the latest information on anything related to television technologies and business.

1	Hangzhou, China (May 2017)	over 80 attendees
2	Geneva, Switzerland (Jan 2018)	over 70 attendees
3	Bogota, Colombia (Nov 2018)	over 110 attendees

New members since the last meeting

- Shenzhen Skyworth Digital Technology (Associate SG9)
- JiShi HuiTong (吉視滙通) Technology (Associate SG9)
- CableLabs (Associate SG9)
- Indian Institute of Science (Academia)

towards WTSA-2020

**YOUR SUPPORT IS REALLY
APPRECIATED!!**



Thank you very much for your attention!!