Hybrid Television Broadcasting: Integrated Broadcast-Broadband (IBB) Technologies, Standards and Services 2015

Apia, Samoa

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Hybrid Broadcasting

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Freeviewplus NZ

- NG FTA of NZ
- Game changer
- TVNZ, Maori TV and Mediaworks
- 19 Live channels
- On-demand content from 3 broadcasters
- FTA+VOD
- STB NZ$150 (unified) + Panasonic, LG, SONY
- Agnostic to the content is consumed

Freeviewplus - Australia

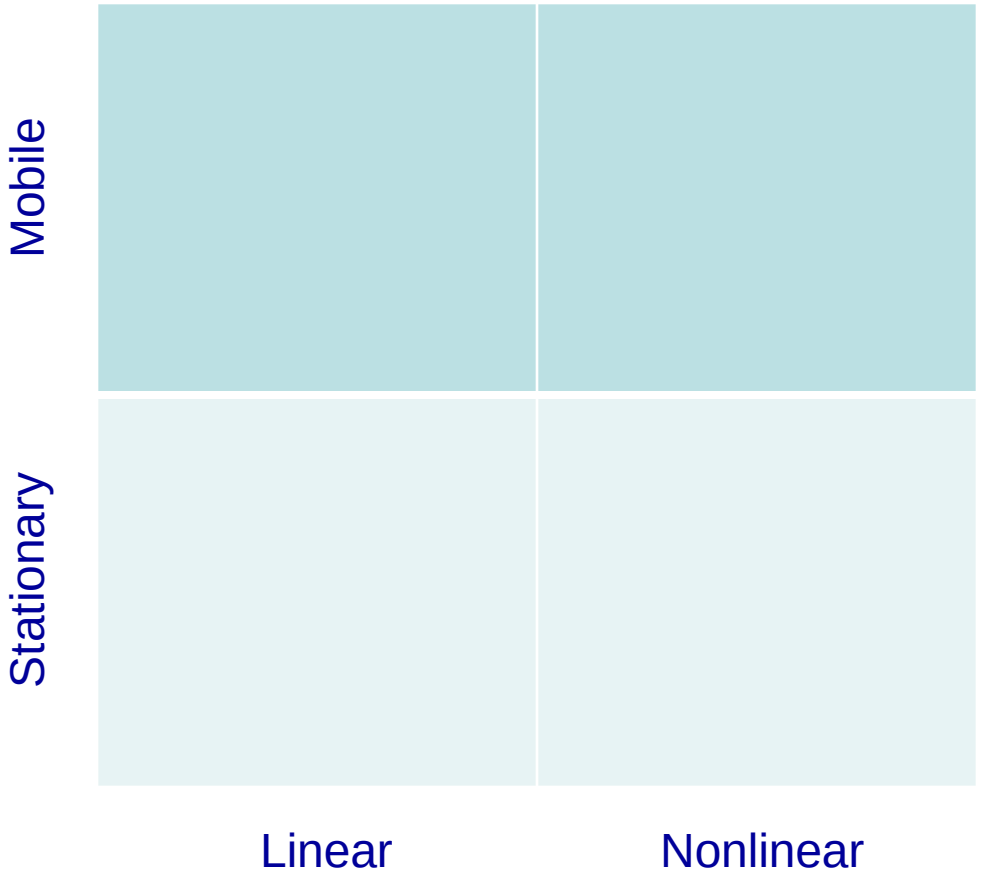
- Launched in Sep 2014
- STB AUS$129
- Aggregation and Curation (a range of activities and processes done to create, manage, maintain, validate, deliver a component of media)
- Samsung-2015

Outline

- Linear Digital Television
  - DVB-T,T2,S, S2, C, C2, ISDB, DTMB, ATSC, ATSC-n, .. FOBTV
- IBB
  - HbbTV
  - Hybridcast
  - iCon
- Mobile IBB
  - Malaysia Astro On the Go
  - Japan mmbi
- IPTV
- OTT
  - Singapore Toggle
  - Malaysia tonton

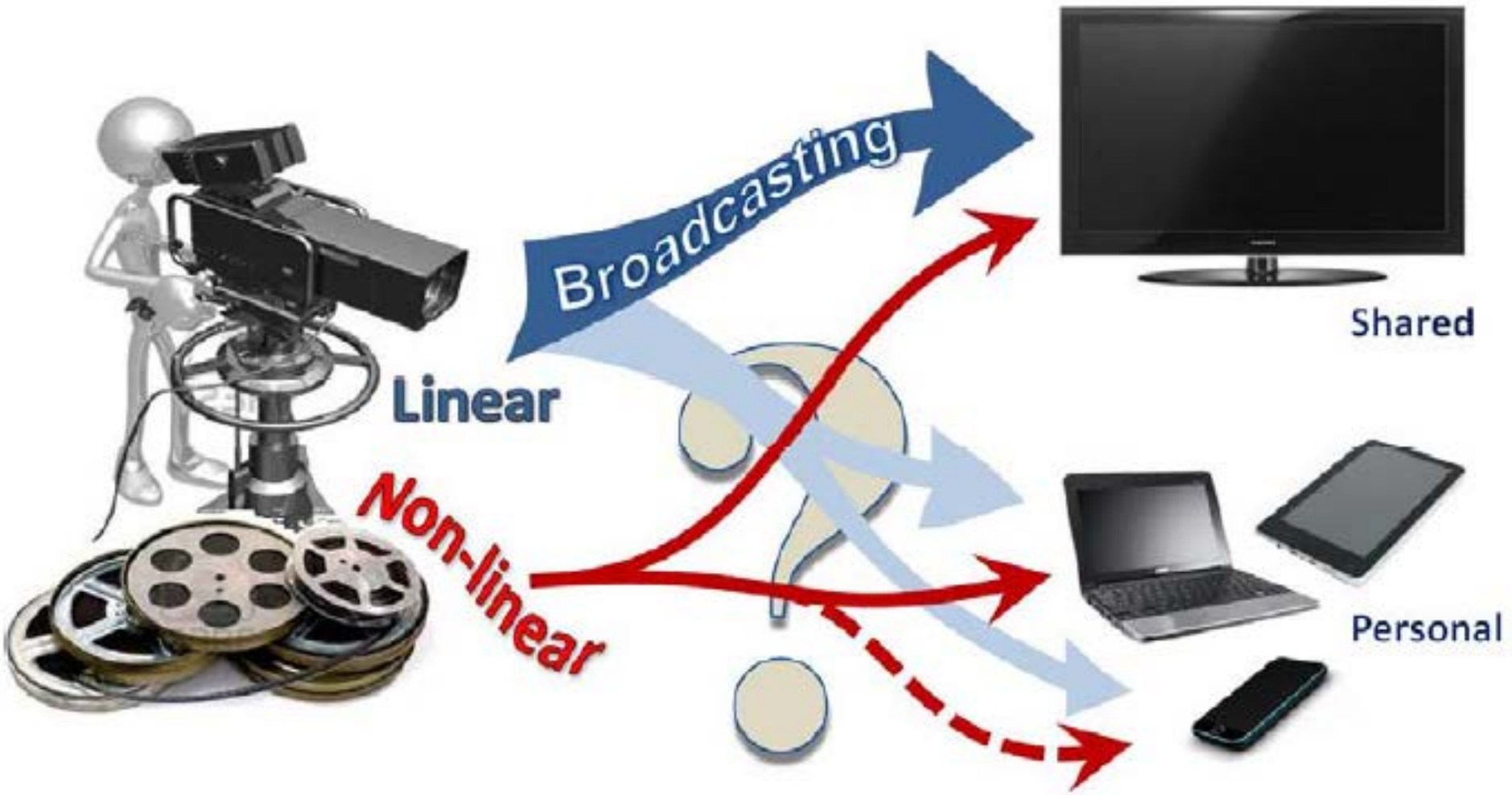
Media/TV consumption to be served

- Stationary vs. Mobile
- Linear vs. Nonlinear

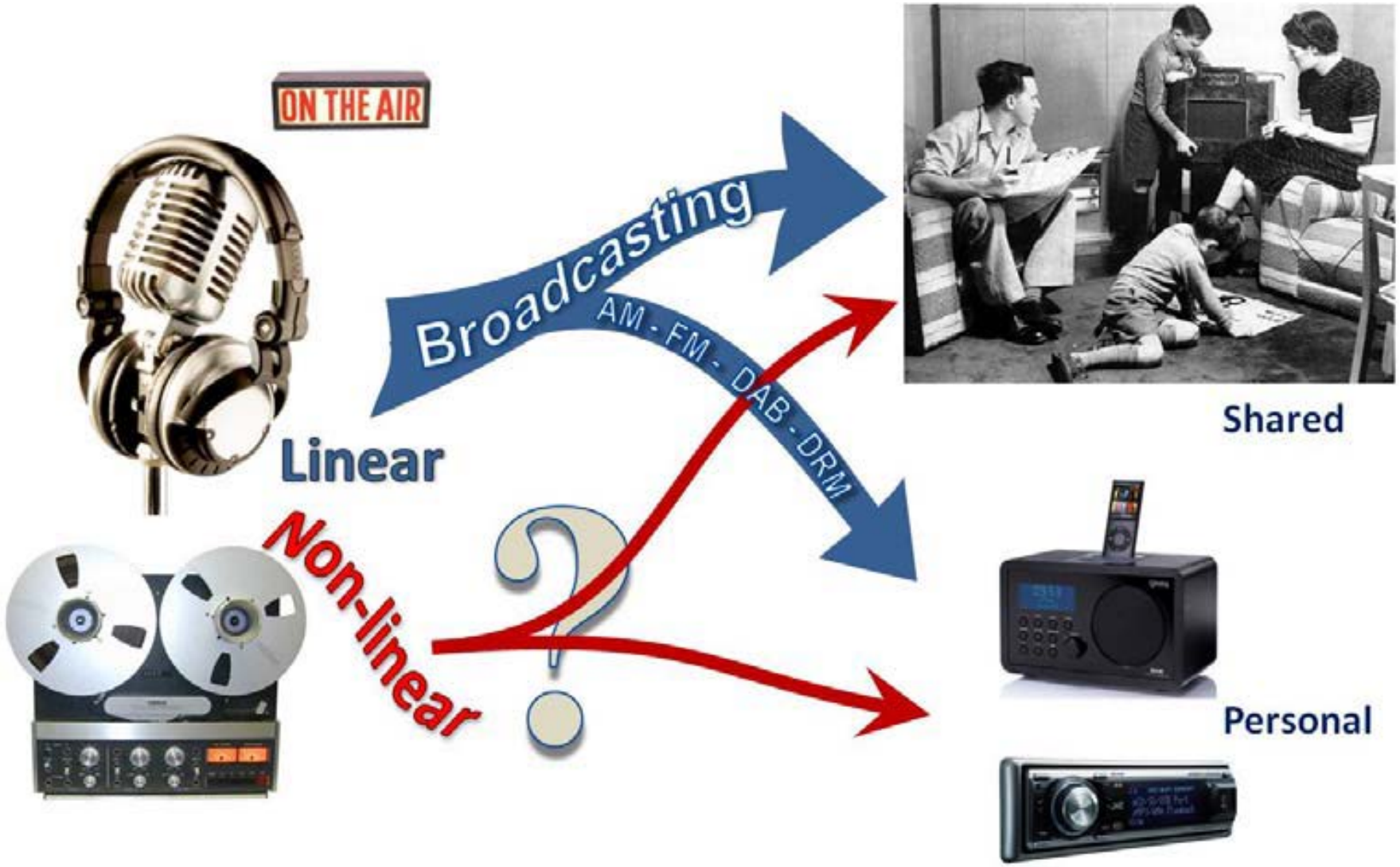


Source: Dr Amal Punchihewa © MMRG

How to deliver linear & non-linear TV content



How to deliver linear & non-linear Radio content

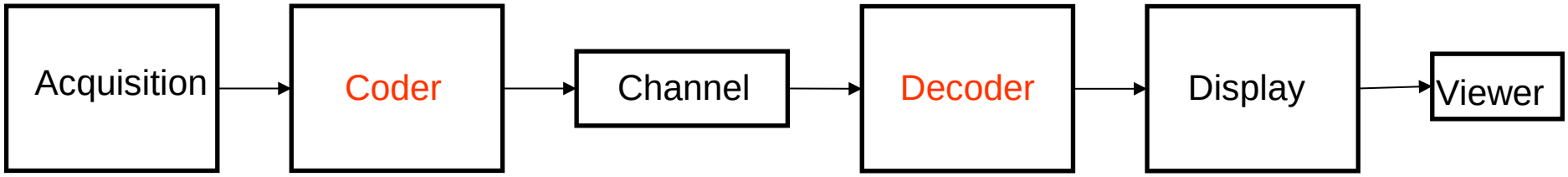


Traditional Broadcasting

- Linear TV
  - At scheduled times, missed it then catch the delayed version, …
- Public or commercial
  - Funding or business model, FTA, adverting, License fee, subscription, …
- Terrestrial, Satellite, Cable
  - Now cloud, IP etc. …
- Return channel
  - One-to-many service, no return channel
- Telephone, SMS, email and the Internet
  - Return channel for interactivity – request, comments, voting,….

Basics of DTV

- Complete chain from capture to receiver need to be digital to realize the full advantage of digital



- Visuals and audio are acquired using digital cameras
- Source and Channel encoding are done on video and audio data
- Digital receiver receives digitally processed signals

DTV Standards

- ATSC - Advanced Television System Committee in USA
  - Currently in USA and Canada
  - Mainly Terrestrial standard, extended to other forms such cable
- ISDB – Integrated Services Digital Broadcasting
  - Mainly in Japan, Brazil and some other south American countries
  - Extended to forms such as terrestrial, cable and satellite standard
- DVB – Digital Video Broadcasting
  - Most of the countries in the world
  - Developed through a consortium known as DVB in Europe
  - Many variants or forms of DTV operations
- DTMB – Digital Television Broadcasting System - China

Transmission standards

- Following table gives the transmission standards overview extracted from the “Guidelines for the Transition from Analogue to Digital Broadcasting”, ITU, page.186, 2010. Please study reports from the ITU website - http://www.itu.int/publ/D-HDB-GUIDELINES.01-2010/en

Standard	Modulation	Description in Report ITU-R BT.2140[6]	Recommendation ITU-R BT.1306[7]	Applicable standards
ATSC	Single carrier 8-VSB	Brief: part 1 section 2.6.2.1 Detailed: part 2, section 1.5	System A; annex 1 table 1a	A/52,A/53, A/65, A/153
DTMB (also referred to as ChinaDTV)	Multi carrier OFDM	Brief: part 1, section 2.6.2.2 Detailed: -	-	GB 20600-2006
DVB-T	Multi carrier OFDM	Brief: part 1, section 2.6.2.4 Detailed: part 2, section 1.6	System B; annex 1 table 1b	EN 300 744
ISDB-T	Multi carrier Segmented OFDM	Brief: part 1, section 2.6.2.5 Detailed: part 2, section 1.8	System C; annex 1 table 1c	ARIB STD-B31 ABNT NBR 15601

Digital Broadcasting Standards

Interactive Television

ETS 300 800 Return channels in CATV systems (DVB-RCC)
ETS 300 801 Network-independent Interactive protocols (DVB-NIP),
ETS 300 802 Return channels in PSTN / ISDN systems (DVB-RCT),
ETS 300 813 Interfacing to PDH networks,
ETS 300 814 Interfacing to SDH networks

Conditional Access

EN50221 Common Interface for conditional access and other applications,
TS101 197 Technical specification of SimulCrypt in DVB systems

Subtitling

prETS 300 743 Digital broadcasting systems for television, sound and data services; Subtitling systems

Interfaces

prETS 300 813 DVB interfaces to PDH networks,
prETS 300 814 DVB interfaces to SDH networks,
prETS 300 815 DVB interfaces to ATM networks

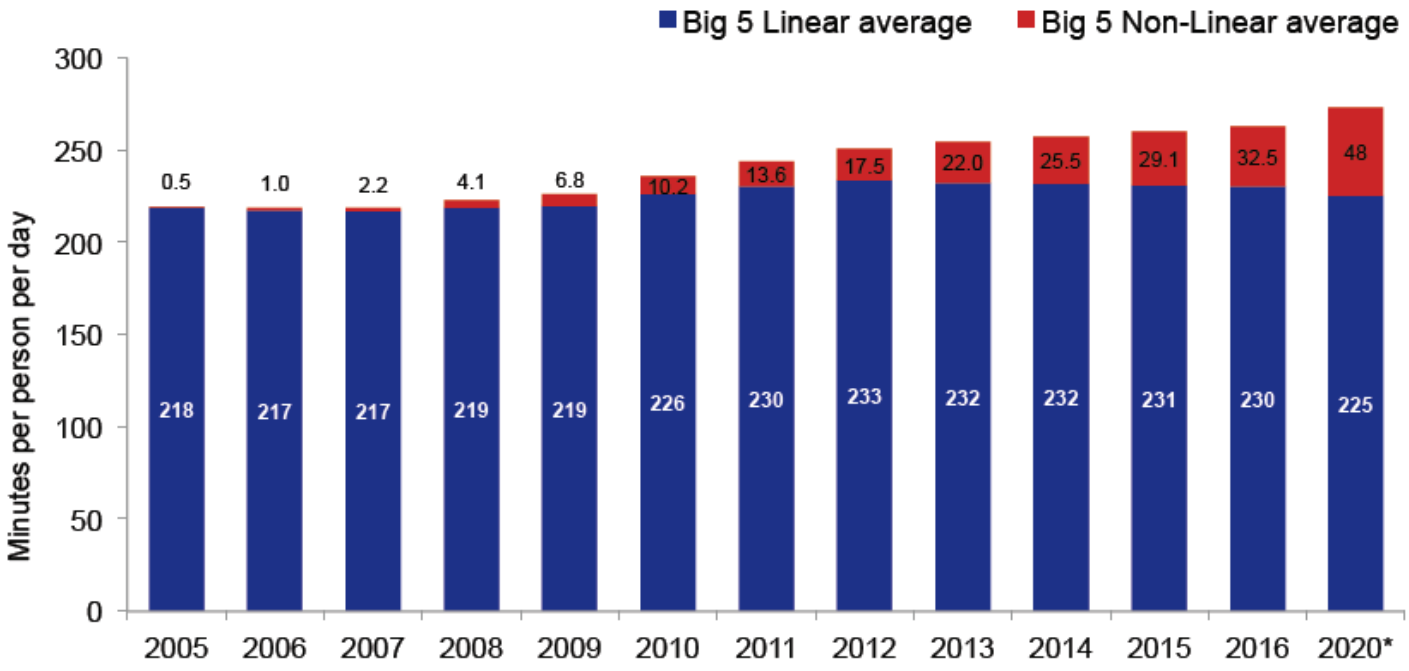
Linear TV audience

- Linear TV audience is growing all around the world

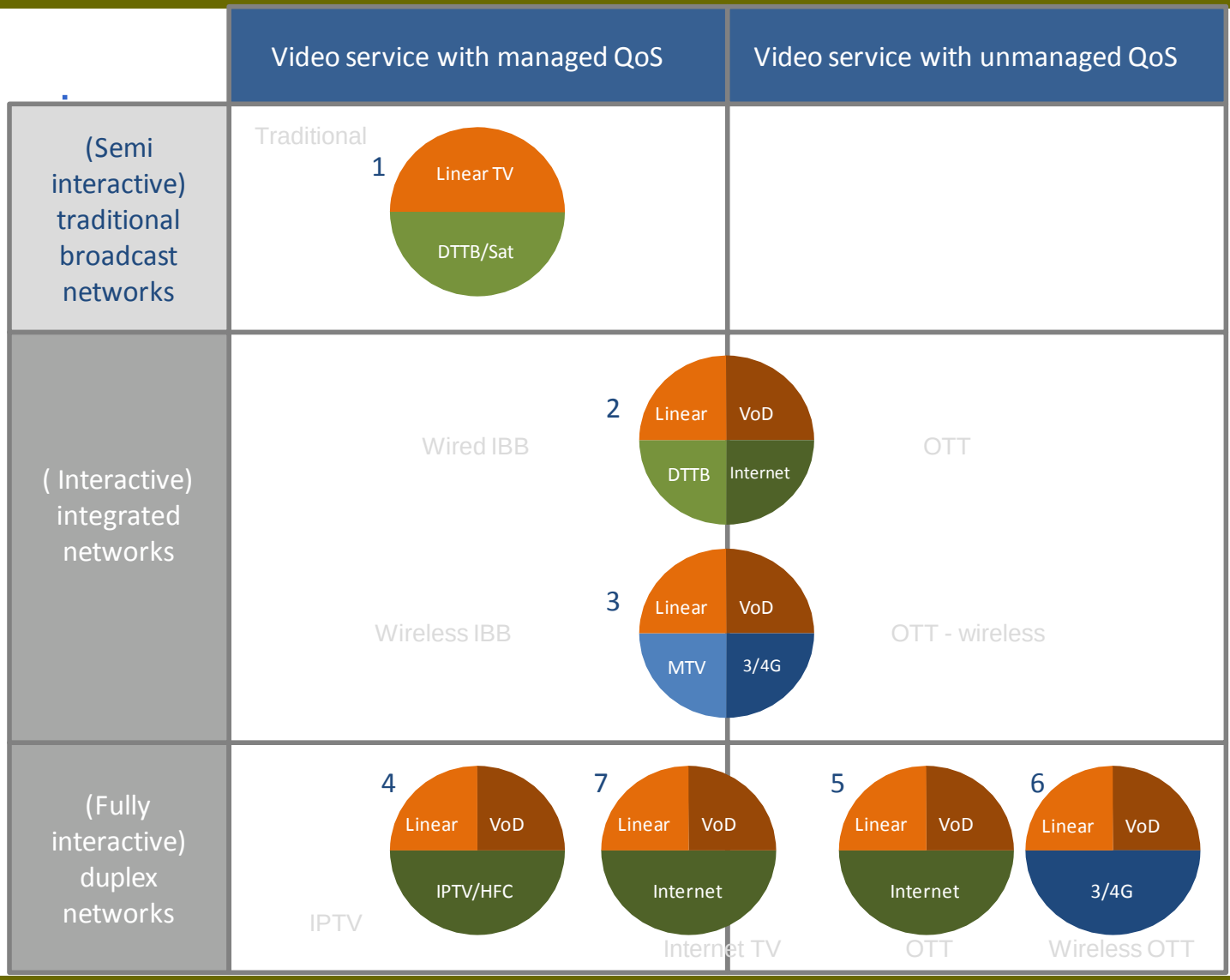
[Source: IHS – ScreenDigest]

- Cross-platform Television Viewing Time FY 2012

Note: Forecast from 2012 // * 2020 forecast by EBU. Non-Linear includes DVR



Classification



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IBB Integrated Broadcast Broadband

- With the availability of devices connected to broadband gives viewers option to access additional content
- Almost all the traditional broadcasters are currently offering their viewers to access some selected content as catch up or additional contents related to the lined up programmes via broadband networks
- There are number of systems that can operate in hybrid configuration
- The most of these systems have explored ICT-Information and Communication technologies to build such system

IBB - Integrated Broadcast Broadband

- The ITU-R SG6 are currently studying the Integrated Broadcast-Broadband (IBB) Systems, and based on the Recommendations established at ITU-T SG9, in July 2013
  - they established the Recommendation ITU-R BT. 2037: General requirements for broadcast-oriented applications of integrated broadcast-broadband systems and their envisaged utilization,
  - in February 2014 they also established the Recommendation ITU-R BT. 2053: Technical requirements for integrated broadcast-broadband systems
- Currently working towards a new Recommendation ITU-R BT. [IBB-SYSTEM]

(Wired) IBB

- Wired Cu (Copper) or Fibre
- IBB - Integrated Broadcast Broadband
- Three systems
  1. HbbTV
  2. Hybridcast - Japan
  3. iCon - Korea
- MHP - Italy was considering MHP
- Italy has now moved to HbbTV

What is HbbTV?

- Innovative services can be offered *directly* on a "Connected TV" or on an appropriate set top box, without the consumer having to buy extra equipment using HbbTV technology
- The Hybrid Broadcast Broadband TV (HbbTV) is a new international standard
- HbbTV standards are
  - developed by the "HbbTV Association"
  - published by ETSI (European Telecommunications Standardisation Institute)
- HbbTV launched in Australia on September 2014, July 2015 NZ and may be in Malaysia in 2015
- It is also in the process of being tested in Indonesia, Myanmar, Vietnam, Thailand and Singapore

Countries Adopting HbbTV

- In Asia-Pacific Australia, New Zealand, FreeviewPlus
- Malaysia
- Vietnam
- Indonesia
- Myanmar
- Thailand
- Singapore
- …

ARD connects HbbTV to second screen

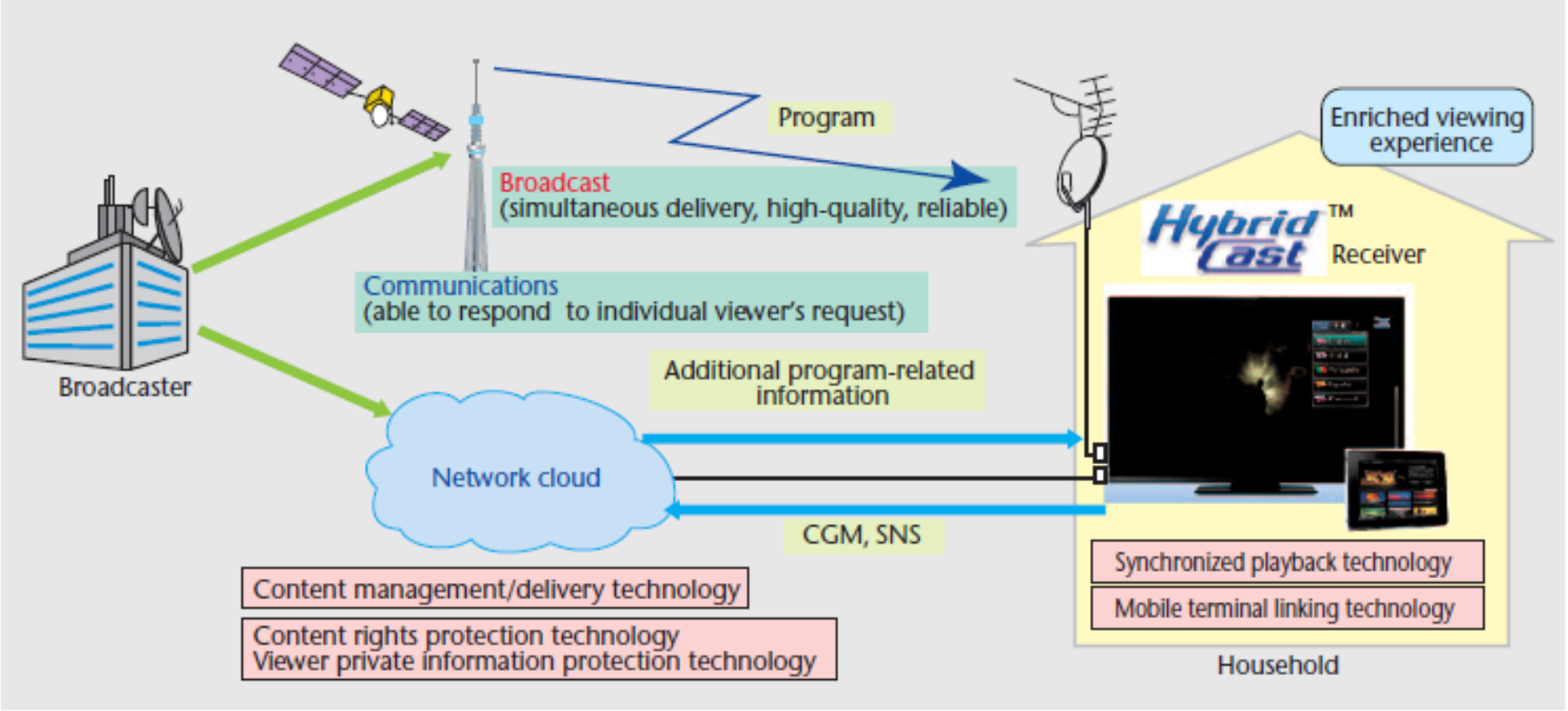
- ARD connects HbbTV to second screen

NRK outlines HbbTV future

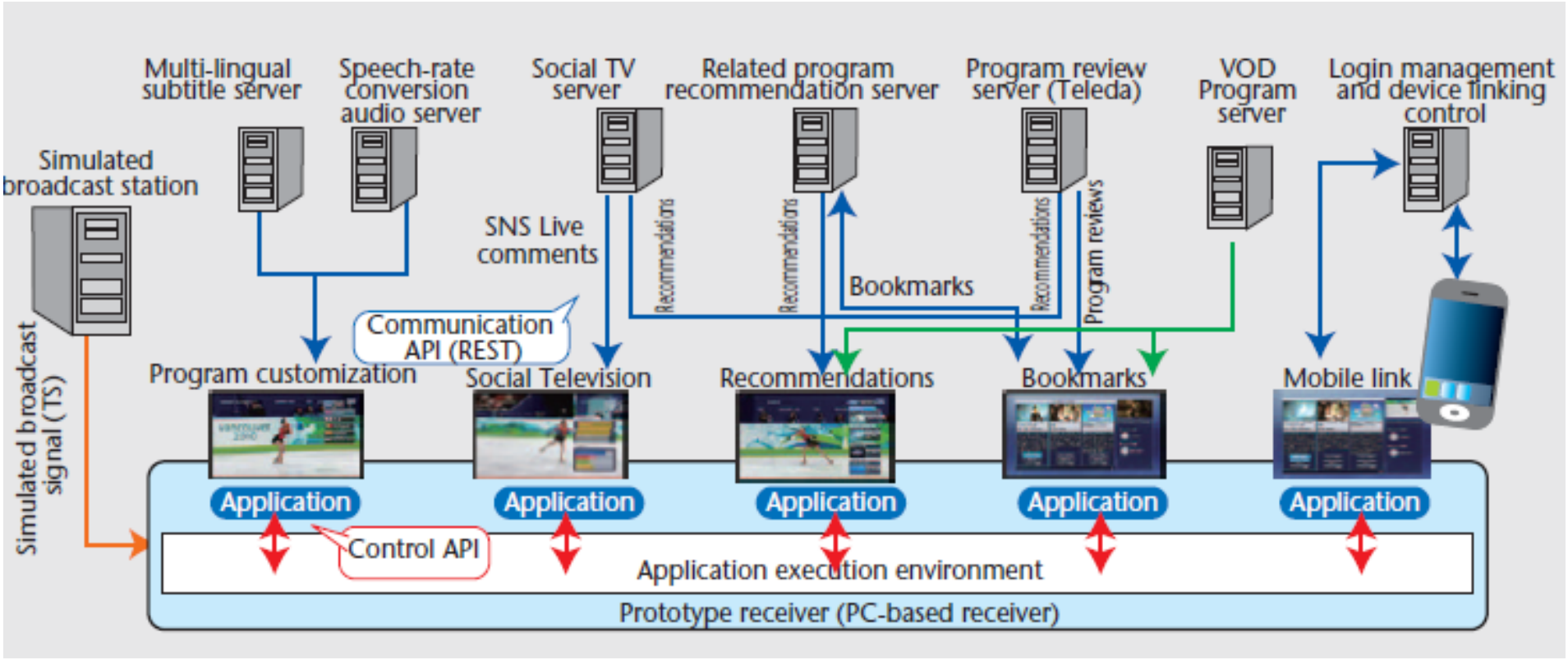
Hybridcast

- Hybridcast
- 2013 Sep
- Broadcast-oriented managed applications
- Standardisatised at IPTV Forum, Japan
- Submitted to ITU for world standardisation as a IBB system

Hybridcast system concept

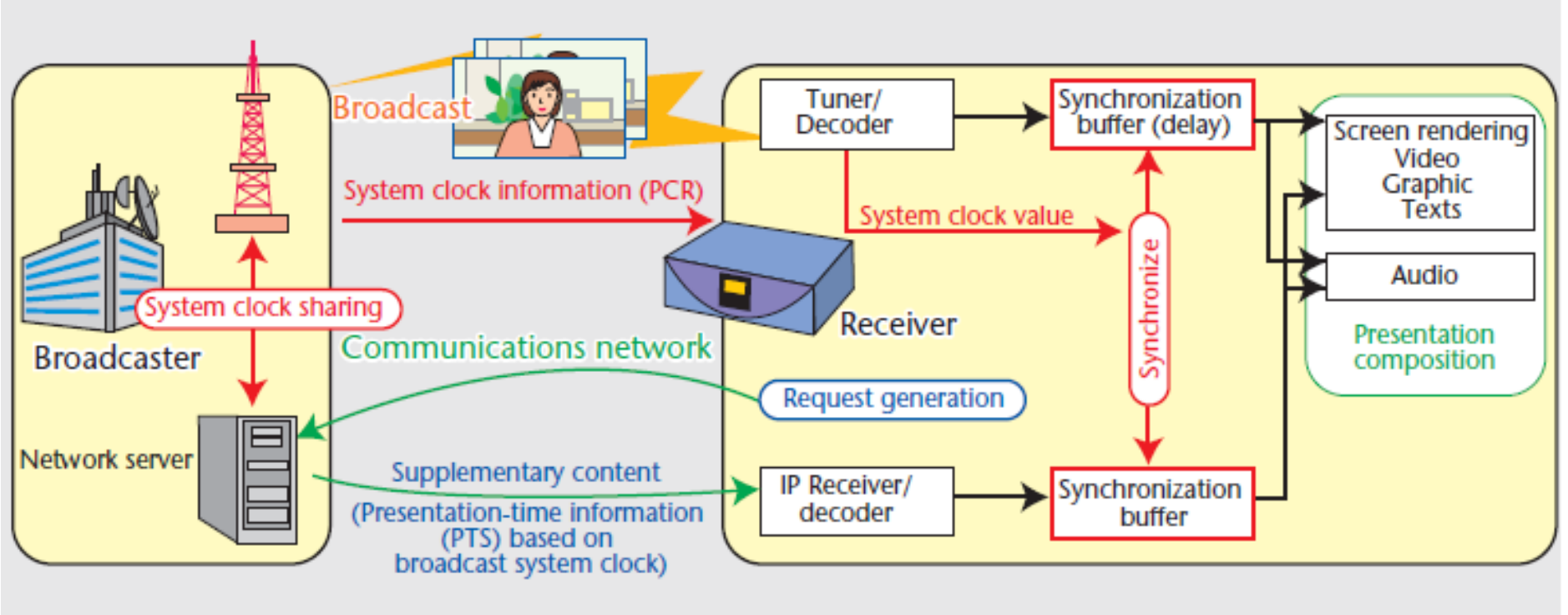


Hybridcast system architecture



Tx/Rx system architecture for sync Brct

Transmitter/Receiver system architecture for synchronized broadcasting



iCon

- KBS launched iCon in Korea on March 19, 2013
- iCon is the first terrestrial hybrid TV (OHTV) service in Korea
- The service includes EPG, program search, video clip, vote, etc.
- Advertising market share on the Internet has been rapidly increasing and a smartphone is the most necessary media for the age group under 30’s

iCon

- About half of viewers in Korea use a smartphone while watching TV
- In future, OHTV 2.0 service will be provided by KBS
- The service uses HTML5 and second screen devices such as smartphones or tablets
- KBS is planning to launch VOD service in fourth quarter of 2014

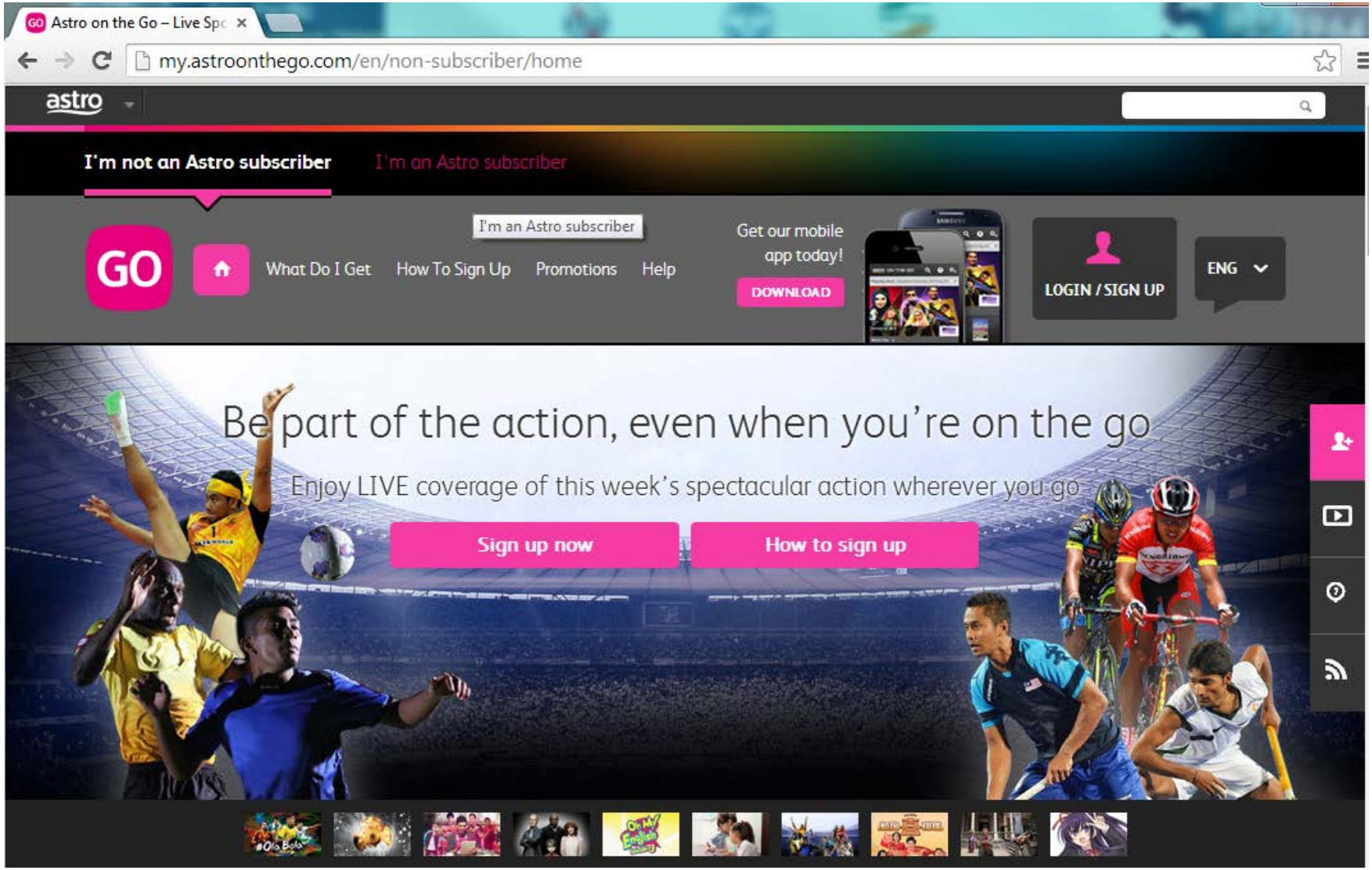
Specifications for IBB systems

- Hybridcast
  - IPTVFJ STD-0010, “Integrated Broadcast-Broadband system specification V1.0”, IPTV Forum Japan and IPTVFJ STD-0011, “HTML5 Browser specification V1.0”, IPTV Forum Japan
- HbbTV
  - ETSI TS 102 796 V1.2.1, “Hybrid Broadcast Broadband TV” and ETSI TS 102 809 V1.2.1 “Signaling and carriage of interactive applications and services in Hybrid broadcast/broadband environments”
- OHTV - Korean system TTAI OT-07.0002
- DVB-MHP
  - ETSI TS 102 728 V1.2.1, “Globally Executable MHP (GEM) specification 1.3 (including OTT and hybrid broadcast/broadband)”

Mobile IBB – Astro on the Go

- Collaboration between TM and Astro
- Astro – well known DTH provider in Malaysia
- Telecom Malaysia, National Telco in Malaysia
- Use Apps to interface

Content on Mobile



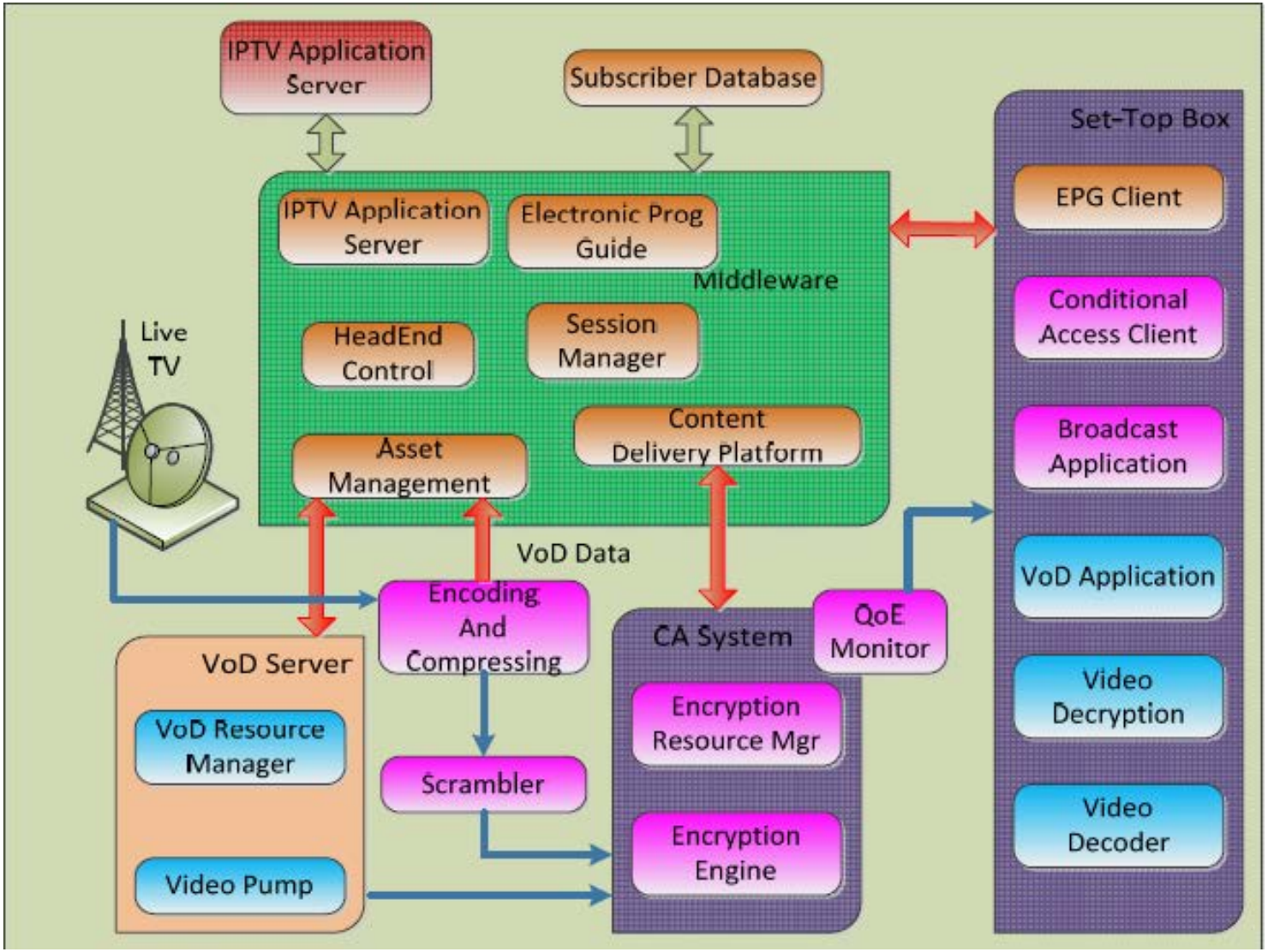
Mobile IBB – mmbi

- NOTTV
- April 2012
- On NTT Docomo devices
- ISDB-Tmm
- Sub-spec of ISDB
- Mainly used for time-shift services
- Uses XML based BML meta data
- Encrypted
- MEG4 AVC/H264

IPTV

- Multimedia services such as television, video, audio, text, graphics, and other data delivered over IP based networks managed to provide the required level of Quality of Service/Quality of Experience (QoS/QoE), security, interactivity and reliability [ITU]

A Simplified IPTV system - Architecture



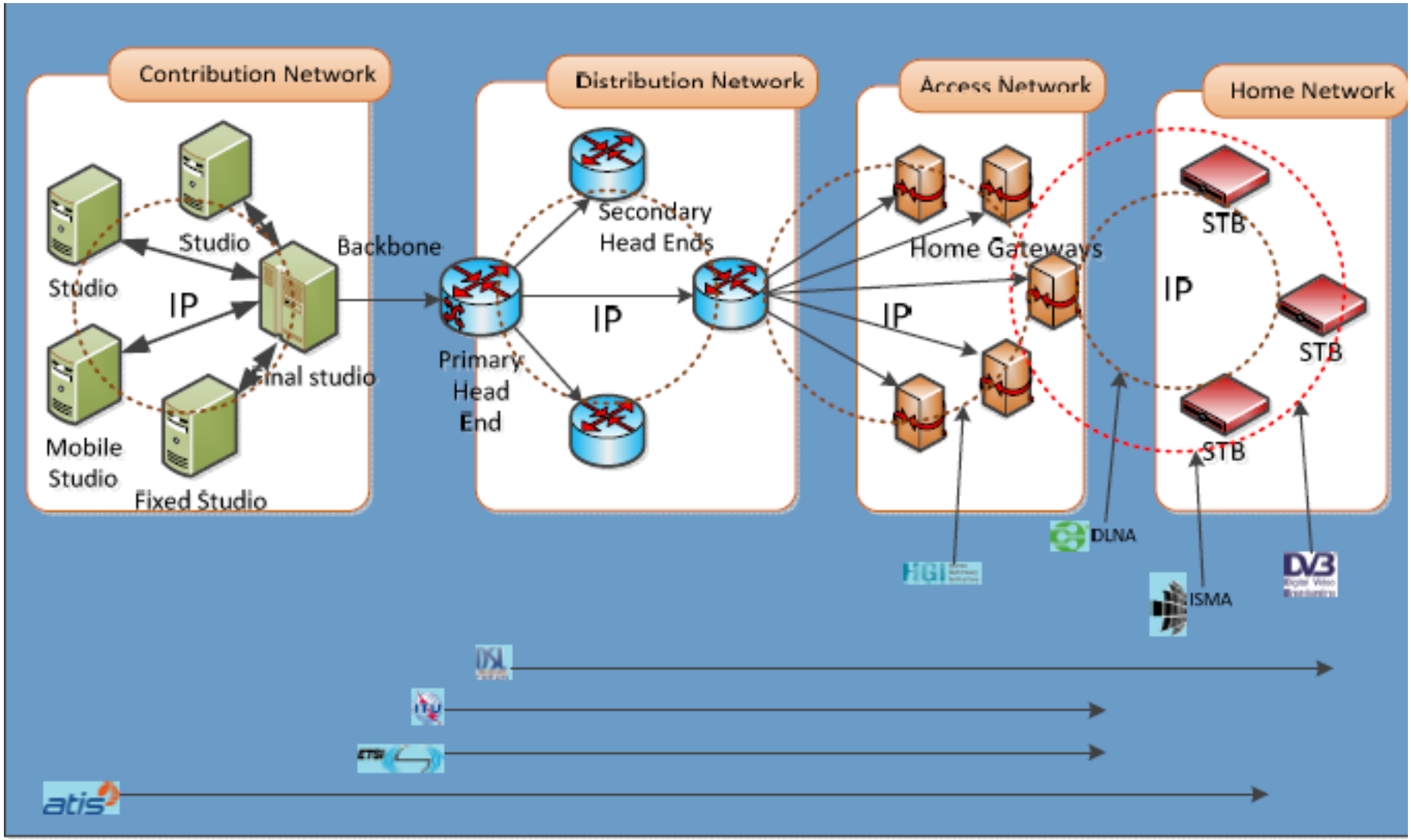
Building Blocks

- Headend equipment - Ingress, VOD server
- Networks - Core, Distribution, Access
- Set-top-boxes
- Middleware
- Technologies CA, MPLS, DSLAM, ….

Standards for IPTV

Name	Focus	Type of Organization	Primary Industry
Open IPTV Forum	End to end IPTV services, including interaction and quality of service	Industry consortium	Telecom
ITU-T	IPTV Focus Group	Formal standards Organization	Telecom
ATSI	IPTV based on IMS, and referencing relevant standards for the transport layer	Formal Standards Organization	Telecom
ATIS	IPTV for cable TV providers	Membership Organization	Cable-TV
SCTE(society of Telecommunications Engineers)	Technologies related to digital cable television	Industry association	Cable-TV
DVB Forum	IPTV and interactive television, primarily for broadcasters.	Industry consortium	Broadcasting

Standards for IPTV



What is OTT?

- Over the Top are the audio-visual services delivered over broadband and internet
- OTT are over unmanaged networks from the television services operators point of view
- As there is a return channel, full interaction is possible.

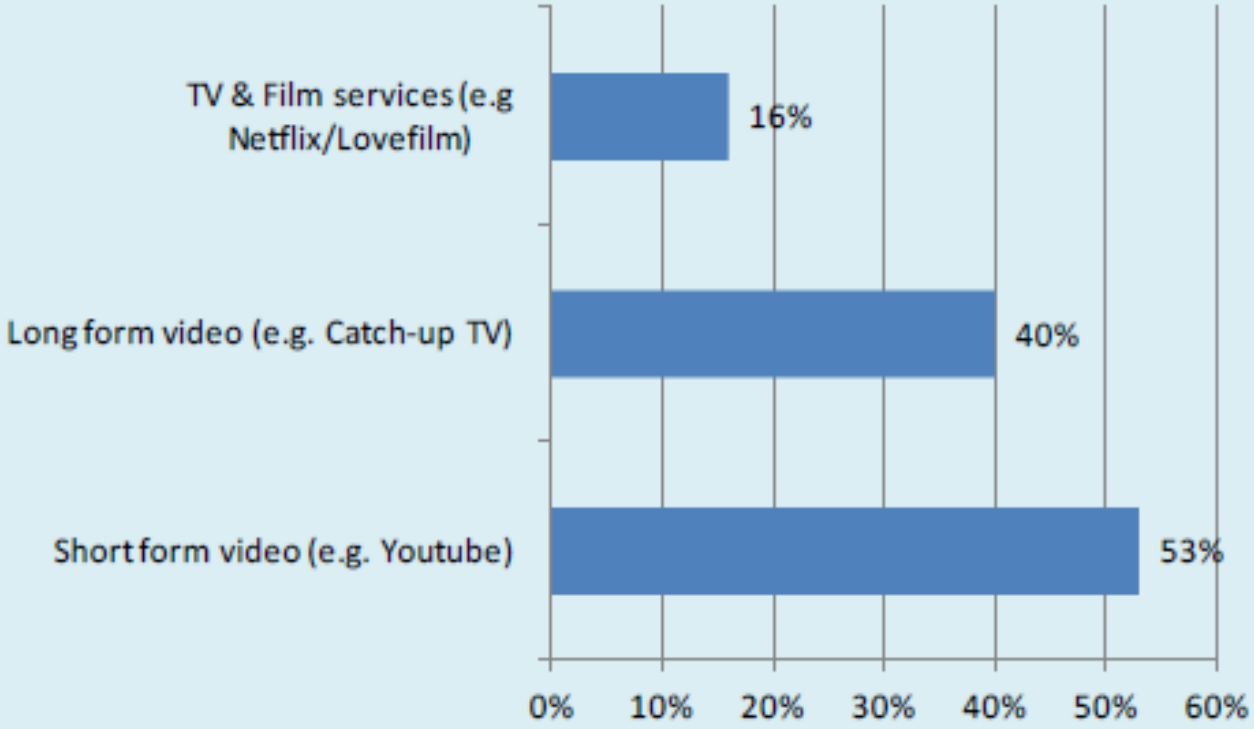
What is Over the Top?

- OTT is delivered directly from provider to viewer using an open internet/broadband connection, independently of the viewer's ISP, without the need for carriage negotiations and without any infrastructure investment on the part of the provider
- It is a 'best effort', unmanaged method of content delivery via the Internet that suits providers who are primarily broadcasters rather than ISPs

Tonton

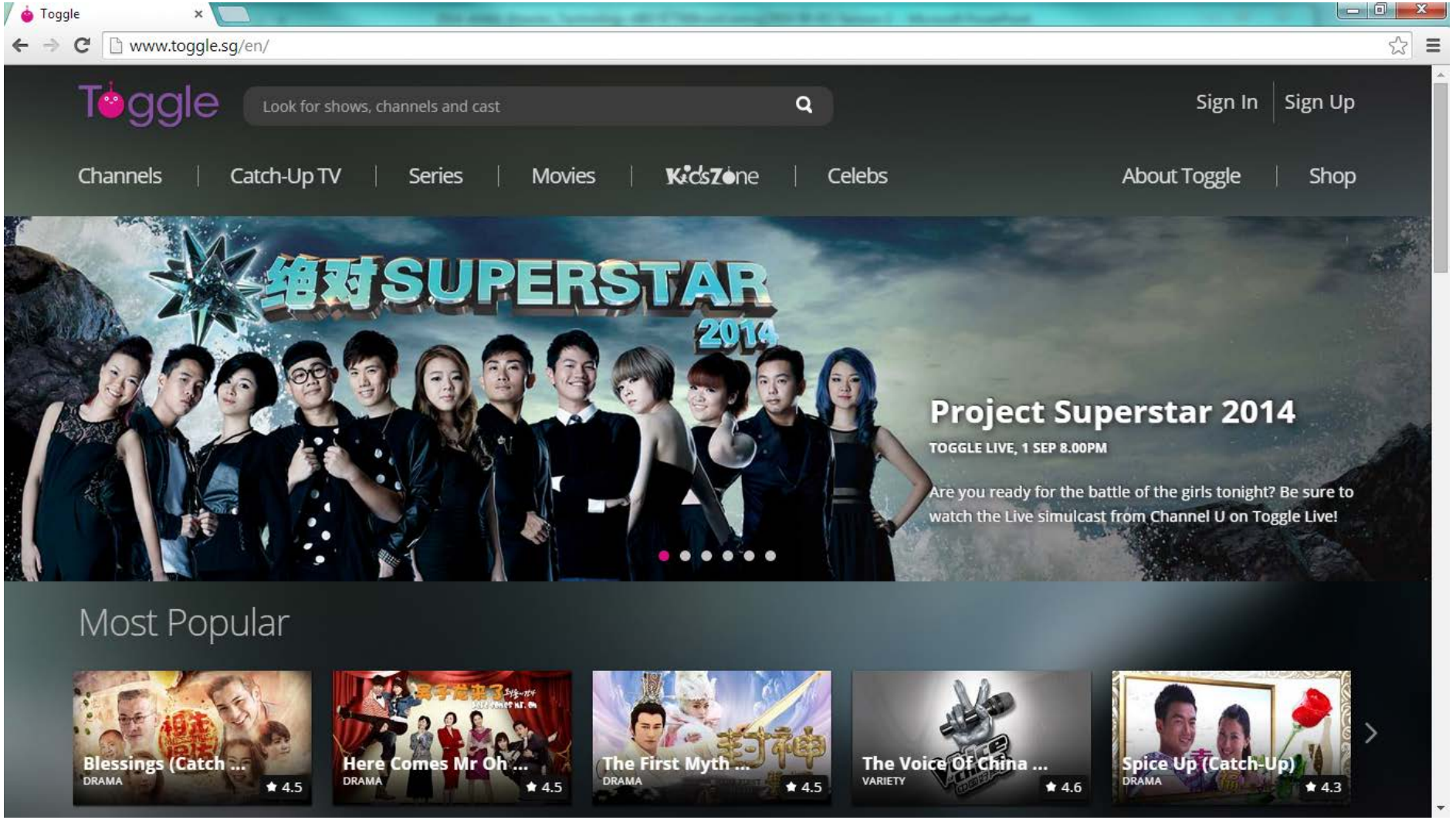
tonton-home
www.tonton.com.my
Login | Register
search
By Title
GO
tonton
Channels
Shows
Movies
Schedule
Premium
Live TV
News
tonton Music
Kerana Terpaksa Aku Relakan
Perkahwinan Indah telah ditetapkan oleh ibu bapanya.Indah dipaksa untuk berkahwin dengan Saiful. Sehari sebelum hari perkahwinannya, indah telah dianiayai oleh kakak tirinya, Zawati dan Zaid. Zawati meninggalkannya di RnR. Kemudian, Indah bertemu dengan Dato' Safiya dan Dato' tersebut menghulurkan bantuan kepadanya. Ketika Indah ...
VIEW SHOW
what is... PREMIUM
Kerana terpaksa...
AKU RELAKAN
Most Popular
Latest Videos
Featured Playlist
Page 1 of 13
Expand View | Total: 62 Media Files
Kerana Terpaksa Aku Relak
Episode 22
Derhaka Seorang Madu
Episode 8
Ramadan Jangan Pergi
Episode 4
Cerita Cinta Kita
Episode 9
Azam Ramadan Su
Episode 8

Type of VOD Services Consumed

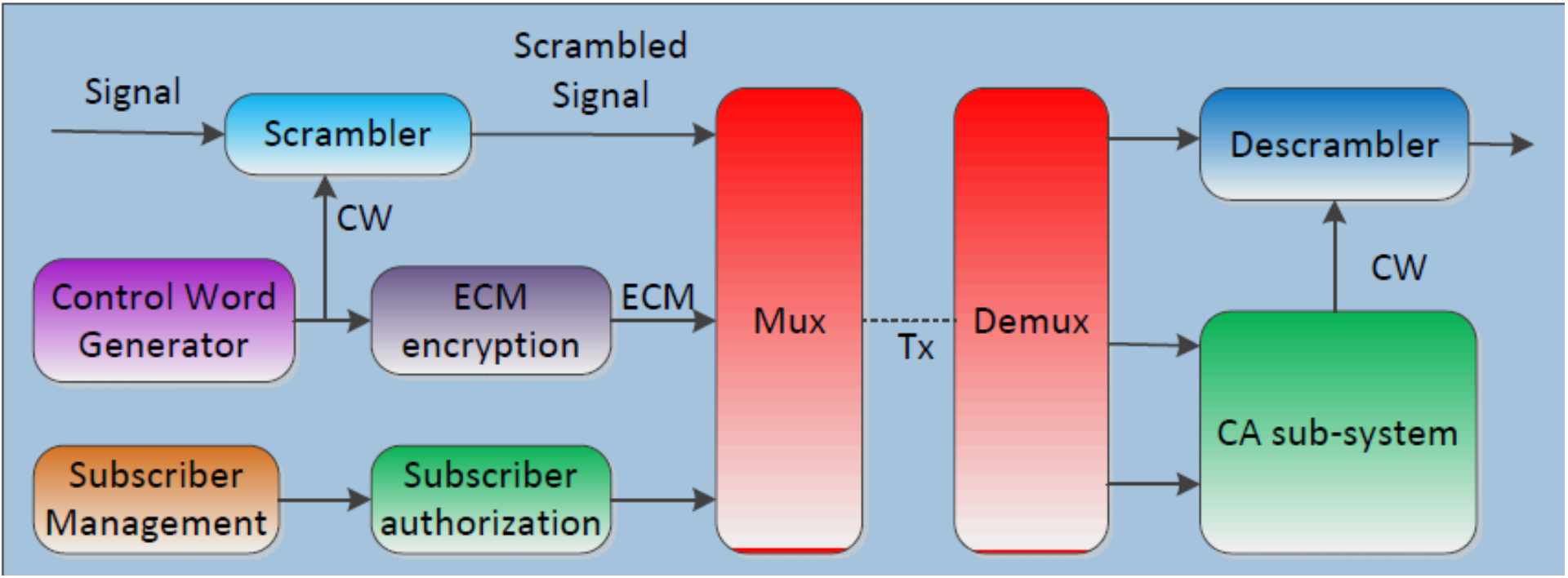


Source: Ofcom, 2013 (adapted)

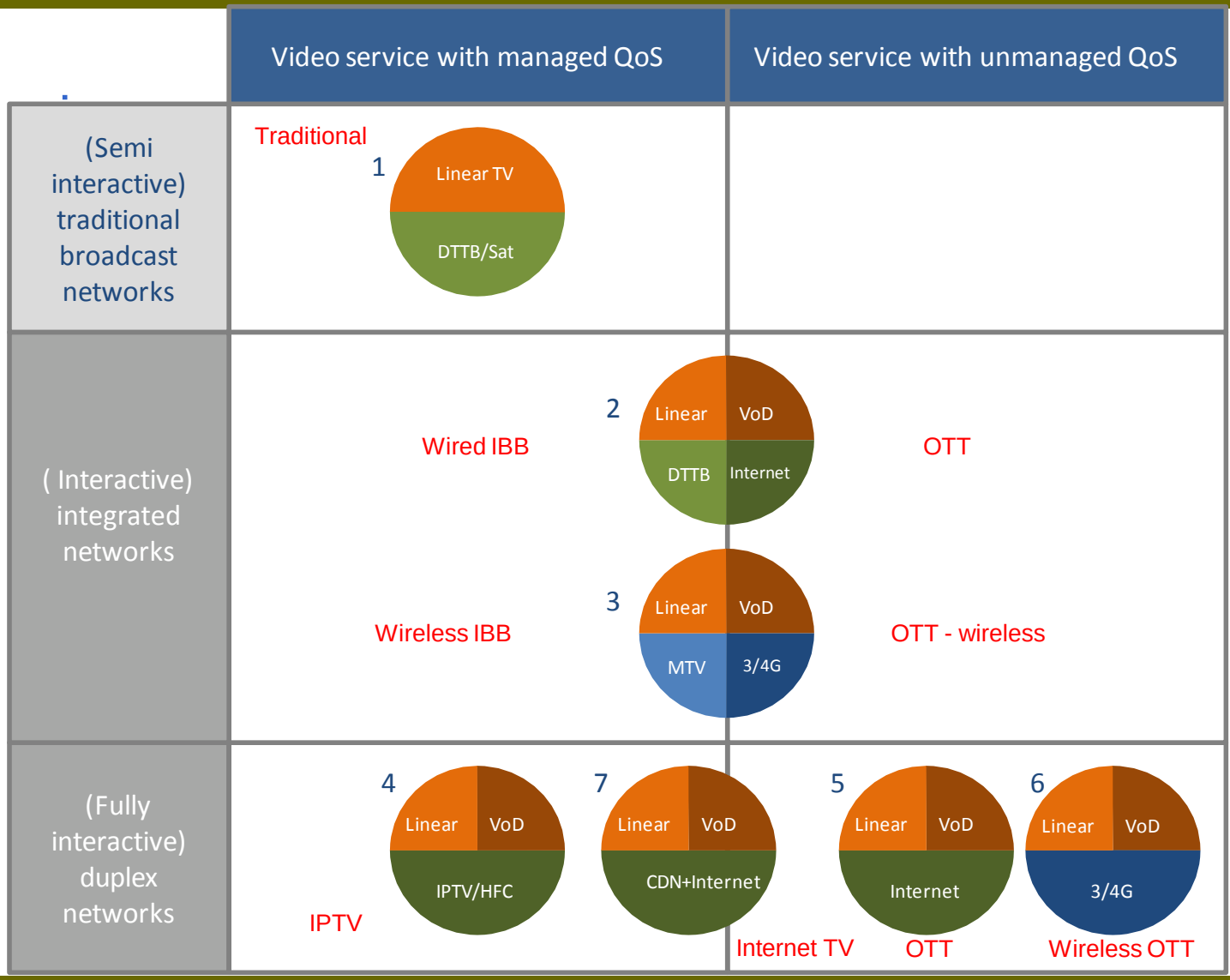
Toggle from MediaCorp Singapore



Security


Signal
Scrambler
Scrambled Signal
CW
Control Word Generator
ECM encryption
ECM
Mux
Tx
Demux
Descrambler
CW
CA sub-system
Subscriber Management
Subscriber authorization

Classification



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Summary and Recommendations

- OTT – over unmanaged networks, are improving
- IPTV – less penetration
- IBB – middle ground
- HbbTV, Hybridcasting, iCon, DVB-MHP…
- Technologies are evolving
- How we build infrastructure using such Technology will determine the services
- Regulation especially policies will play a key role in it
- Assurance to access to information - No information divide (Dr. AMAL Punchihewa)
- Less harm to the society