New TV experiences on multi-platform

ITU Workshop
“The Future of TV for the Americas”

Shinya Takeuchi

NHK (Japan Broadcasting Corporation)

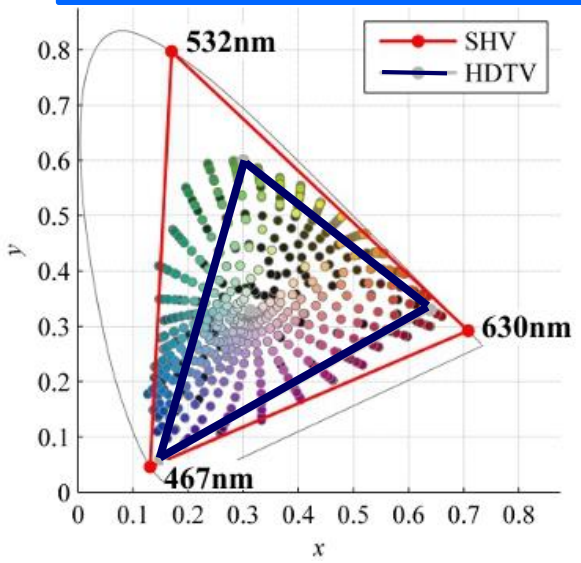
8K/4K Satellite Broadcasting launches

- 8K/4K UHDTV satellite broadcasting starts on 1st December, 2018 in Japan

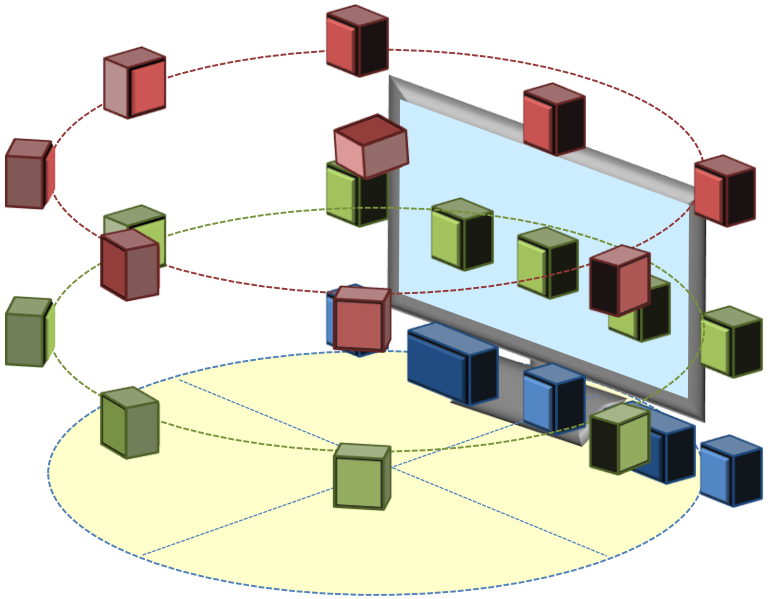
UHDTV Video

	Specification
Aspect Ratio	16:9
Resolution	8K : 7680 × 4320 4K : 3840 × 2160
Frame Rate	60Hz

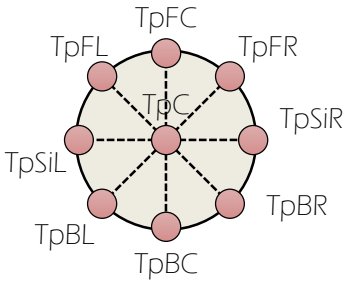
Wide color spaces



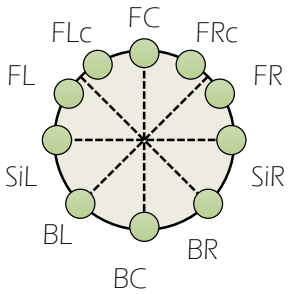
22.2 Surround Multi Channel Sound



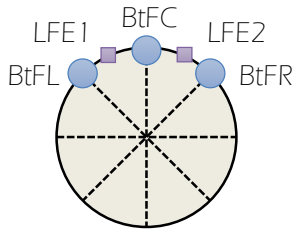
Top layer
9 channels



Middle layer
10 channels



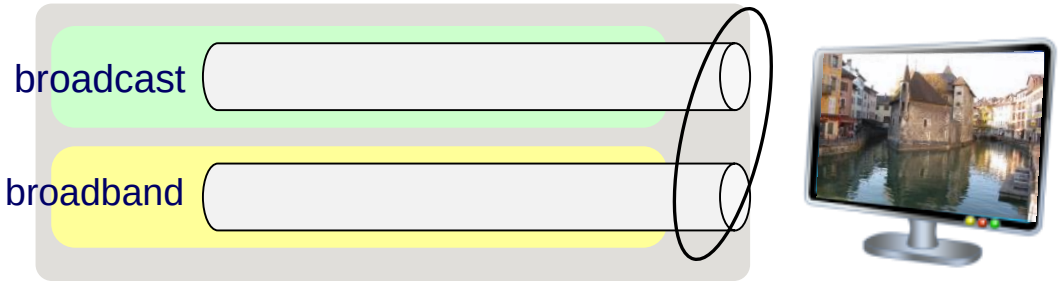
Bottom layer
3 channels
+ 2 LFE

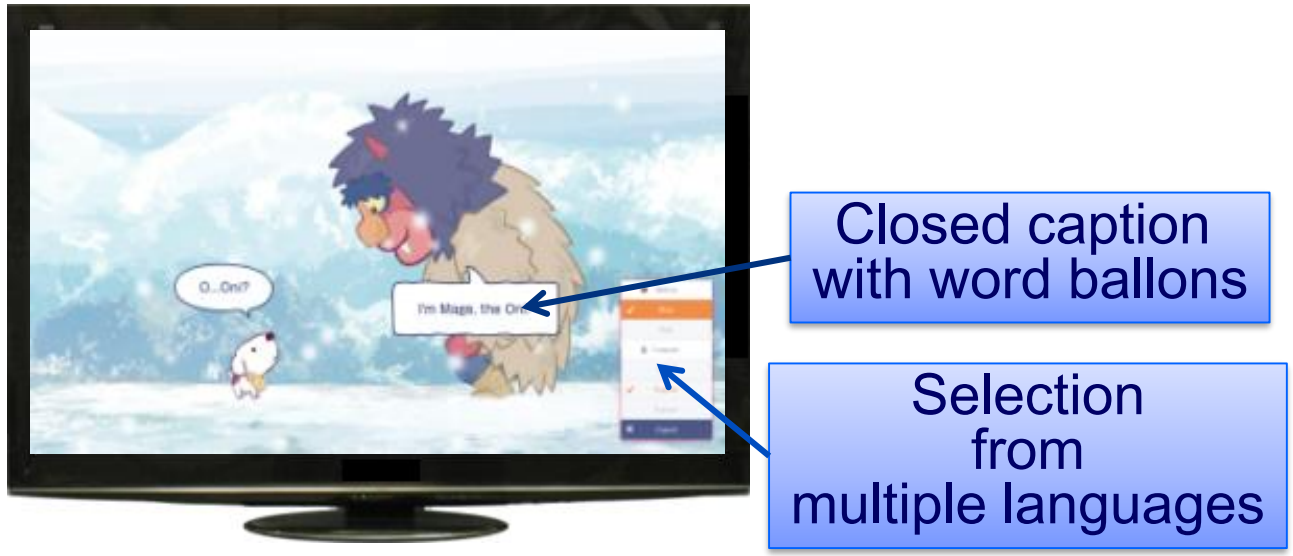


Audio Mode 8K/4K UHDTV satellite broadcasting
Stereo / 5.1 / 5.1+2, 22.2

Multimedia Broadcasting Service

- Flexible delivery through broadcasting and broadband networks
- Closed captions and superimposes
  - Show more closed captions at one time on the screen
  - Rendering Closed captions in different forms by an application





Use Case of Multimedia Broadcasting Service

Broadcasting program

Data Information

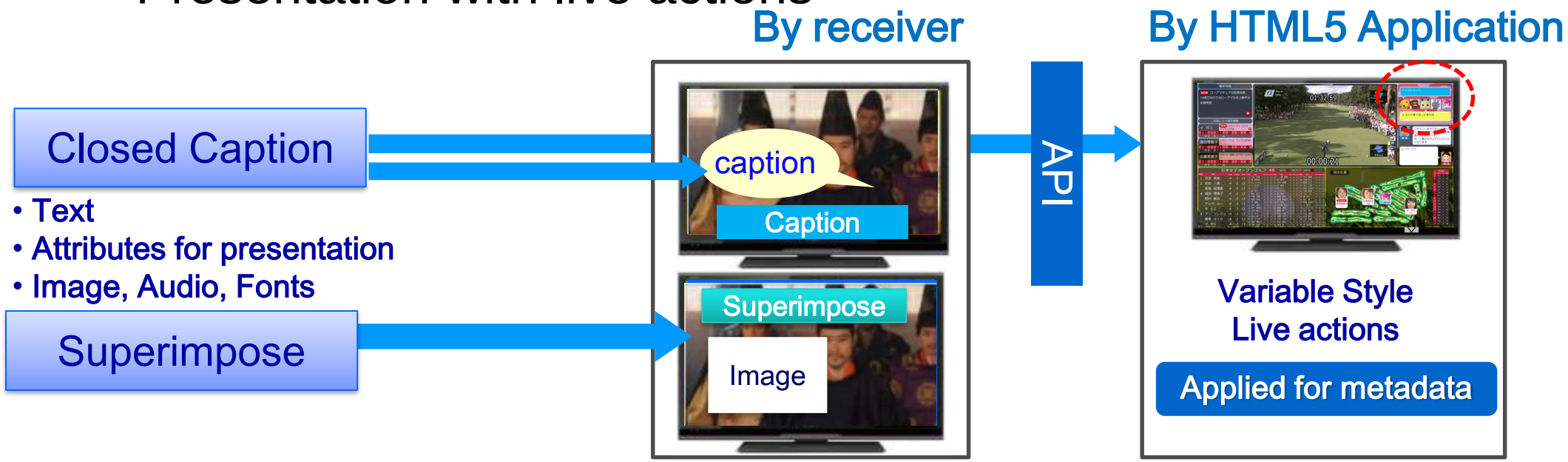
Information related to program (Such as SNS)

Live Streaming

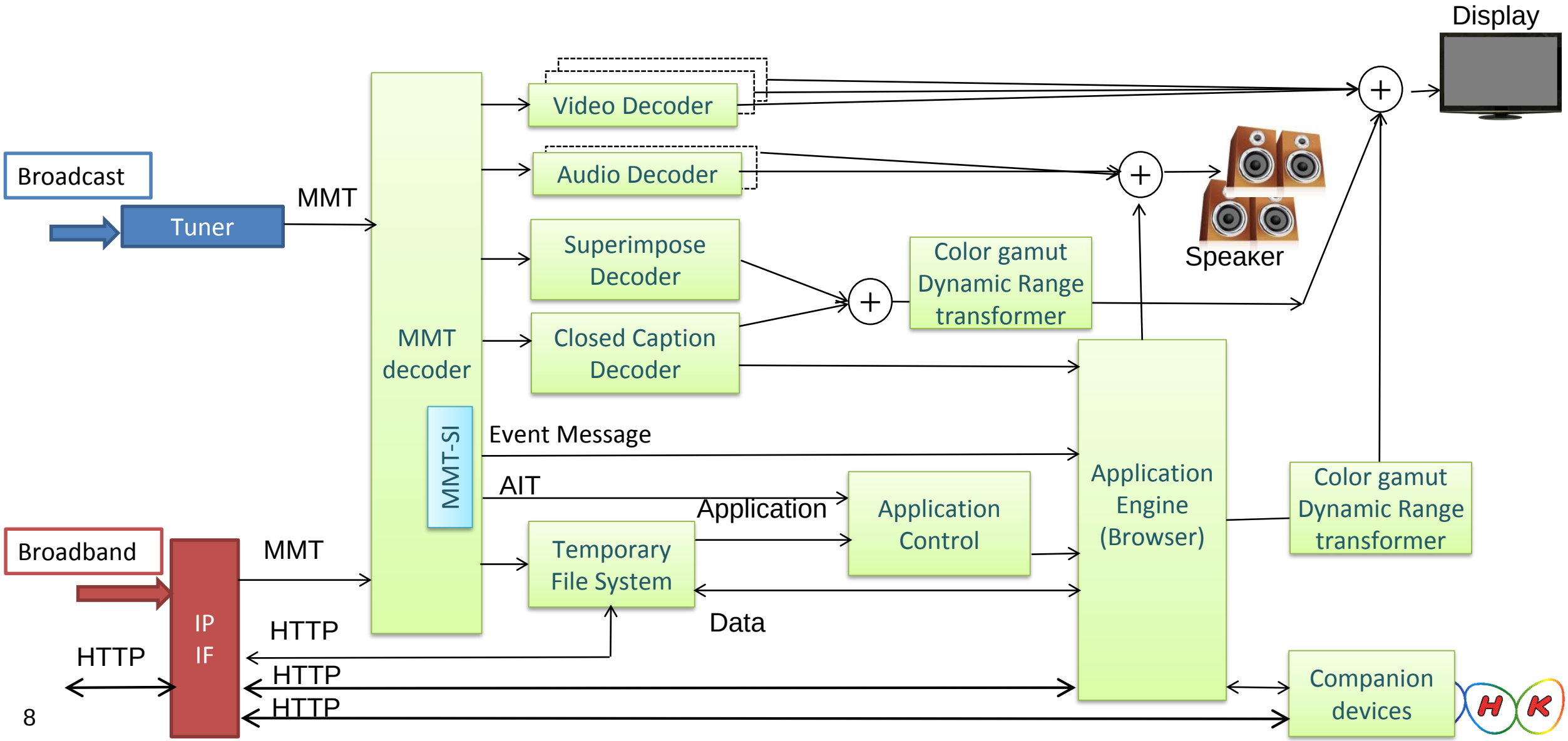
Secondary Screen

Method of Closed Caption

- "ARIB-TTML" based on TTML (Time Text markup language)
  - Image presentation in closed captions
  - Playing audio with closed captions
  - Presentation of external character
  - Presentation with live actions

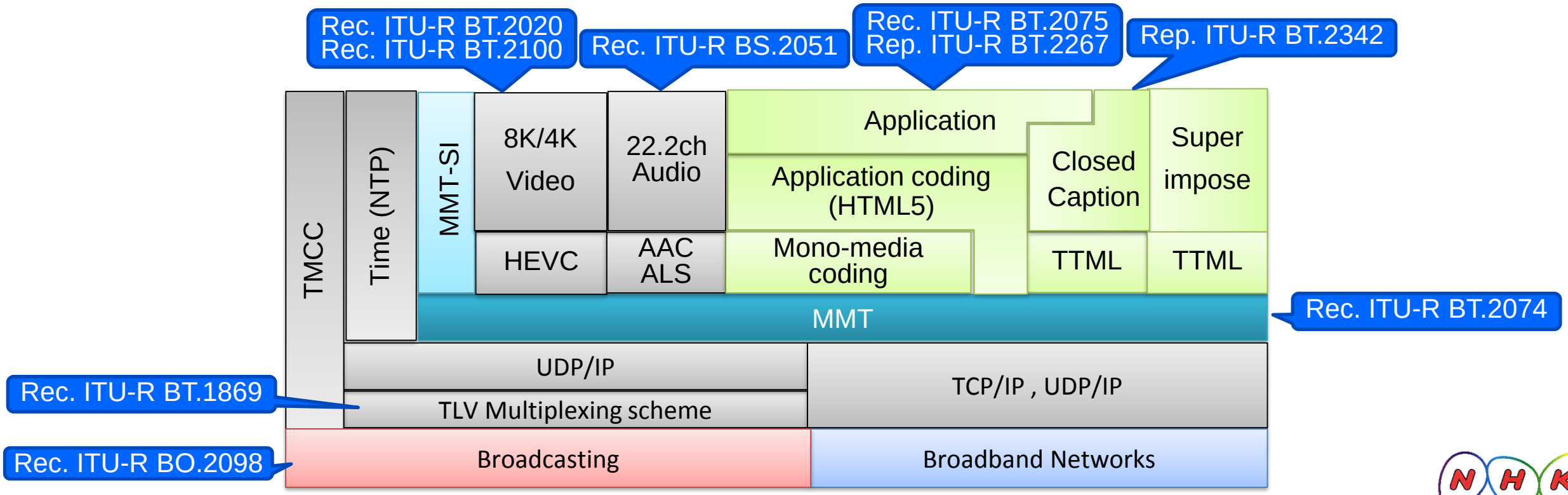


System Model of UHDTV Satellite Broadcasting



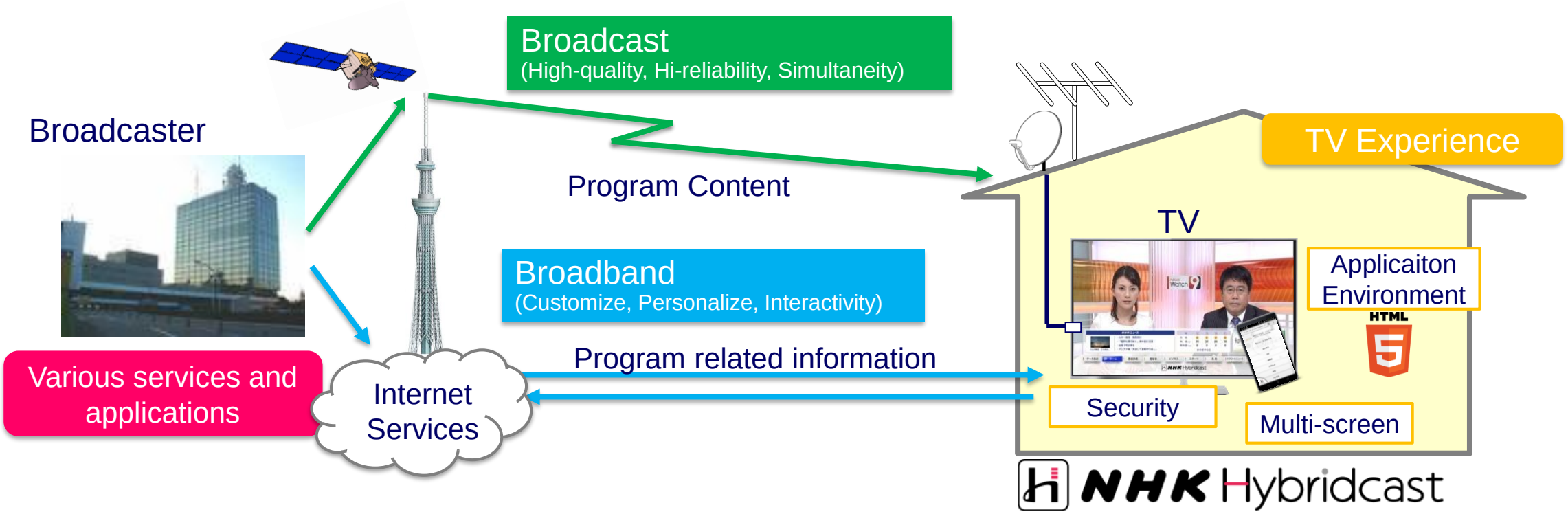
Layer Model

- Enables hybrid services, in which broadband are used together with broadcast to deliver content
- Uses IP-based media transport for hybrid services
- Video, audio, and data encapsulated into MMTP packet



Hybridcast

- Service Launch in 2013 in Japan



Hybridcast overview

- Hybridcast is a service platform on the digital broadcasting
  - The pioneer of HTML 5 on TV
  - Enables continuous enhancement of the services by its flexibility
- Technical characteristics
  - Web browser based (2K) + proprietary TV functions
  - Layout controls for flexible arrangement of broadcast video and other objects.
  - Alpha blending of broadcast and graphics

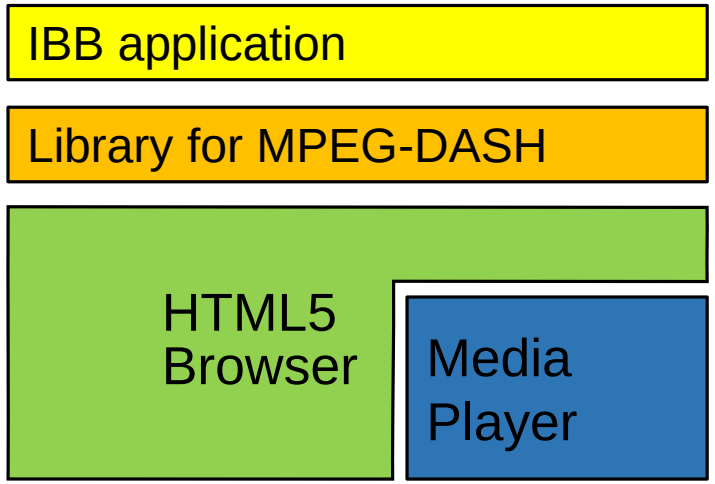
Rec. ITU-R BT.2075
Rec. ITU-T J.207

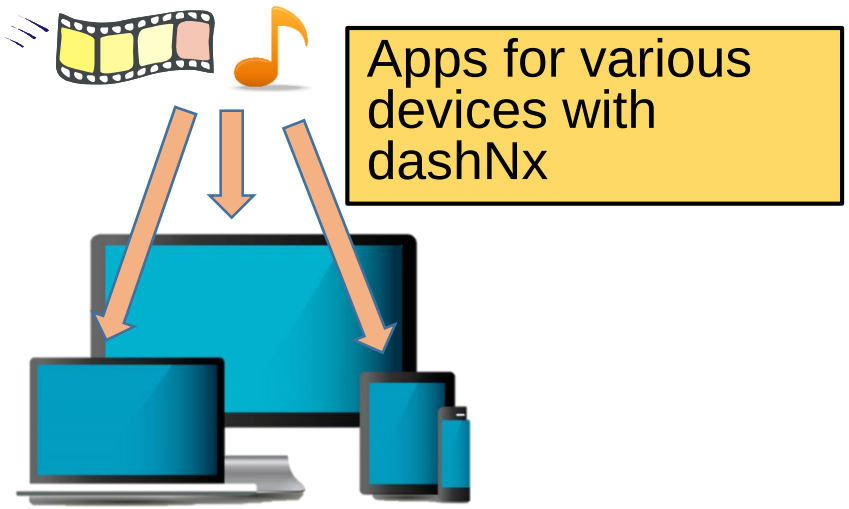
Screens of Current services

Multi-Resolution Video Services using Hybridcast

Report ITU-R BT.2267

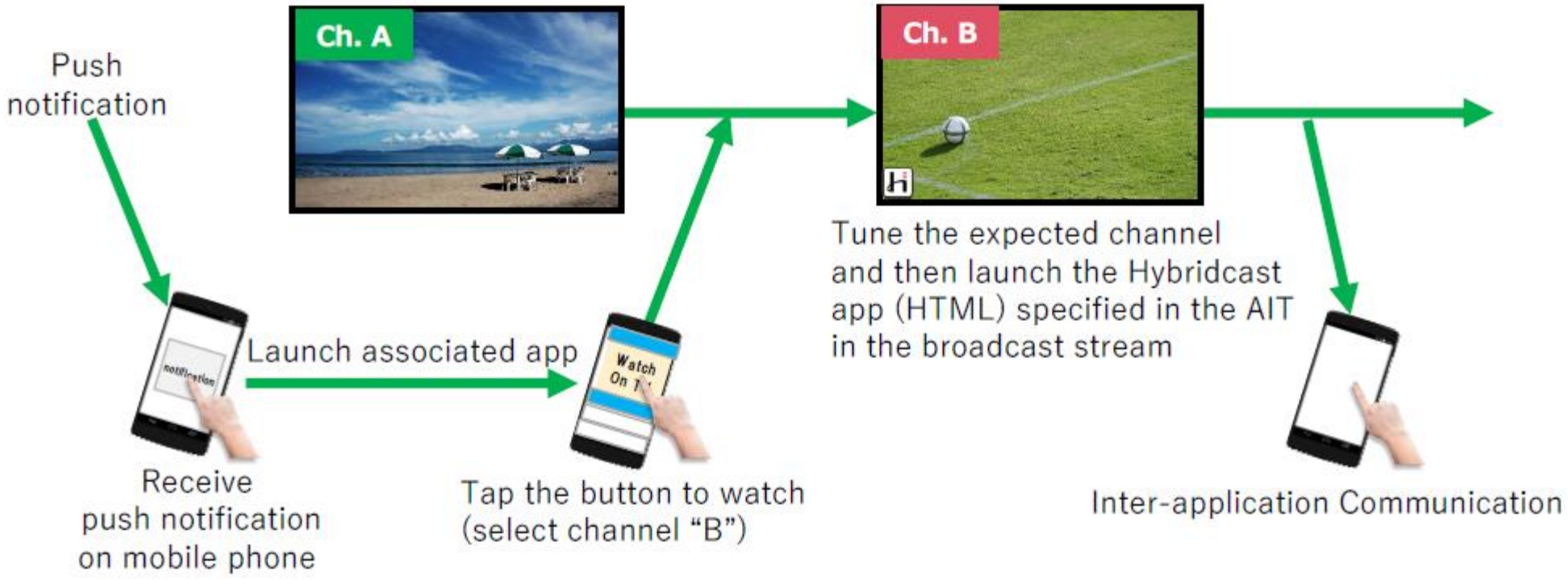
- MPEG-DASH Handling
  - Use of MSE (Media Source Extensions) and EME (Encrypted Media Extensions)
- MSE Library for TV (called dashNx)
- NHK offered 4K video trial for 2018 Pyonchang Olympic in many games
- Ad insertion
  - Some commercial broadcasters tested this with 4K video for;
    - Seamless playback of ads from different servers
    - Offering of personalized ads





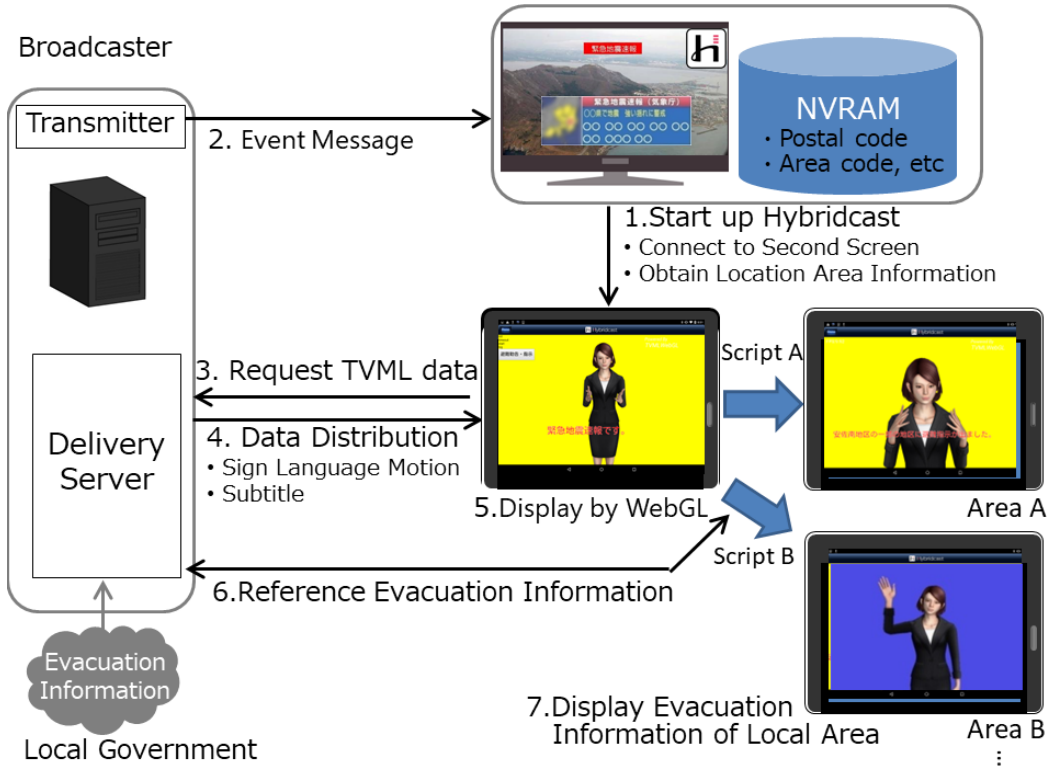
Hybridcast Connect

- To control TV Set by applications on Companion devices



Technical Realisation of Signing in Digital Television

- Sign-language CG system using mobile devices in IBB systems
- Single screen closed signing using IBB

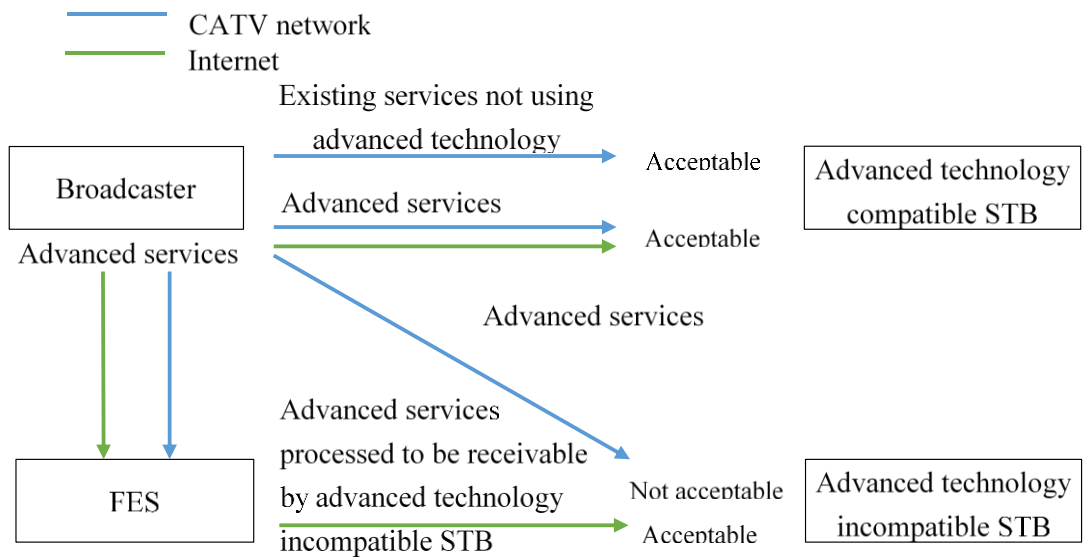


Video of sign language CG animation

Draft New Report ITU-R BT.[SIGNING]

Broadband CATV system using server-side reception and processing

- The introduction of new services that require furthering the capabilities of existing STBs and smoothly transitioning to new STB models
- Based on IBB systems



New Work Item of ITU-T SG9