ATSC 3.0 Next Gen TV

FEBRUARY 2017



About the ATSC

- Standards development organization for digital television
 - Founded in 1983 by CEA, IEEE, NAB, NCTA, and SMPTE
 - Focused on terrestrial digital television broadcasting
- ATSC is an open, due process organization
 - Approximately 140 member organizations
 - Broadcasters, broadcast equipment vendors, cable and satellite systems, consumer electronics and semiconductor manufacturers, universities
- ATSC Mission Statement:
 - To create and foster implementation of voluntary Standards and Recommended Practices to advance terrestrial digital television broadcasting, and to facilitate interoperability with other media.



ATSC Members

















































































































































































































































ATSC 3.0 Participation

- 373 individuals on reflector/document system
 - Many others focused on 3.0 development efforts
- 150 organizations
 - Broadcasters
 - Consumer Electronics Manufacturers
 - Professional Equipment Manufacturers
 - R&D Laboratories
 - Universities

- International Participation
 - Canada
 - China
 - Europe (including DVB)
 - Japan (including NHK)
 - South Korea
 - United States



The Goals of ATSC 3.0

- To improve the television viewing experience
- To add value to broadcasting's service platform
 - Extending reach, adding new business models
 - Providing higher audio and video quality, more accessibility
 - Personalization and interactivity
- To address changing consumer behavior and preferences
 - TV content on all devices, both fixed and mobile













OVERVIEW OF ATSC 3.0



ATSC 3.0 Video



Key Advancements in 3.0

- Additional capacity
 - More channels, more pixels
- Better reception
 - Indoor, moving vehicles, handheld/mobile devices
- Integrated OTA and OTT delivery
- Enhanced consumer experience
 - Improved video and audio quality
 - Lots of choices
 - Interactivity
 - Advanced emergency and accessibility features
- New creative tools and business models
 - Better pictures & sound
 - Multiple audio & video tracks for one program possible
 - Interactivity
 - Alternative content, targeted content





Key Technology Enhancements in 3.0

Integrated Internet Compatibility

- Unique convergence of OTA and Internet
- Over the air delivery of up to 24Mb/s IP into homes
- Fully integrated broadcast (OTA) / broadband (BB) core
 - Content can be seamlessly provided to consumer over broadcast and broadband & combined at receiver
 - Localized insertion of ads or other content
 - Network handoff 3.0 to/from LTE & Wi-Fi depending on most reliable network available (inside home or on the go).
- Downloadable interactive applications
 - Second screen
 - WEB based browser environment



PC

4G

Smartphones

Internet

WiFi

Tablet

Key Video Features in 3.0



- Resolutions up to 3840 × 2160
 - Plus spatial scalability (SHVC)
- High Frame Rate
 - Up to 100, 120, 120/1.001
 - Plus 24, 25, 30, 50, and 60 (integer & fractional)
 - Temporal sub-layering enables backward compatible HFR
- Dynamic Range
 - PQ & HLG transfer functions (plus SDR)
 - Static metadata for PQ
 - And maybe more (stay tuned...)
- Color
 - Wide Color Gamut BT.2020 (plus BT.709 for SDR content)
 - YC_BC_R non-constant luminance
 - And maybe more (stay tuned...)

Dolby AC-4



Key Audio Features

- Enhanced, immersive experience
 - Sound with improved azimuth, elevation, and distance perspective
 - Use of channels and objects or "elements"
- Targeted to various devices (fixed, mobile) and set-ups
- Personalization
- Support for audio-only content as well as A / V content
- Hybrid broadcast / broadband delivery supported
- Normalization of content loudness and contouring of dynamic range



Key Audio Features in 3.0

- Metadata also allows rendering to be customized to the user's sound system
 - Sound is placed in the most accurate position the user's sound system supports
 - Able to adapt to various speaker placements
- Works for headphones, too





Key Accessibility Features

- Visually Impaired (VI)
 - Descriptive Video Service
 - Aural Emergency Alert Crawls
- Hearing Impaired (HI)
 - Closed Captions
 - Dialog Boost
 - Closed Signing







NEXT STEPS



Schedule

- ATSC 3.0 is a suite of 20+ standards
 - One or more standards per layer
 - Each standard moves through the process independently
 - Core elements (PHY Layer, etc.) approved in 2016
- Final approval of entire standard expected by second quarter of 2017
- FCC considering rules to authorize voluntary use of ATSC 3.0
- ATSC 3.0 selected by South Korea; launching this spring







