ATSC 3.0 Update
Introduction

- ATSC approved work on the next gen of digital broadcast technology at end of 2011
  - “ATSC 3.0”

- Backwards-compatibility was not a requirement
  - Clean break from ATSC 1.0 possible
Introduction (cont.)

• Some critical areas being considered
  – Increasing peak throughput, robustness and spectral efficiency at Physical Layer
  – Leveraging audio/video codec evolution
    • HEVC/UHD
    • New, immersive audio codecs
  – New transport layer
    • Alternatives to MPEG2-TS
  – New runtime environment
    • Moving beyond the DAE (Declarative App. Environment)
  – Hybrid services
    • Leveraging combined broadcast and broadband connections
ATSC 3.0 Organization

Technology Group

Specialist Group

Ad-Hoc Group

TG3

S31: Requirements & Program Management
  - S31-1: Data Collection & Documentation

S32: PHY Layer
  - S32-1: Common Elements

S33: Management & Protocols
  - S33-1: Service Delivery & Synchronization
  - S33-2: Service Announcement & Personalization
  - S33-3: Interactive Service & Companion-Screen

S34: Applications and Presentation
  - S34-1: Video
  - S34-2: Audio
  - S34-3: Presentation Logic & Service Frameworks
  - S34-4: Runtime Environment for Applications
ATSC 3.0 Process Flow

• Started with list of system requirements (148 total)
• Subsets of requirements parceled down to specialist and ad-hoc groups
• Some groups have put out open CFP’s and are considering proposals from member companies
Relevant topics to the W3C: Transport Layer

• It was decided early in the process to support IP for broadcast transport
• Two proposals have essentially resulted from the discussion
  – ROUTE/DASH, using a FLUTE derivative
  – MMT/DASH, using an MPEG standard
Relevant topics to the W3C: Transport Layer (cont.)

• Both proposals will leverage ISO BMFF file container
  – Compatible (in theory) with W3C Media Source Extensions

• Both proposals leverage hybrid delivery
  – Use of UTC for synchronization
  – Looks like DASH will be delivery mechanism for broadband
    • Both sets of proposal proponents have promised that OS libraries like DASH.js should work with either proposal
Relevant topics to the W3C: Transport Layer (cont.)

• Hybrid delivery critical
  – Broadband delivery over HTTP looks to be reaching consensus
  – Hybrid delivery allows for supplemental content, repair data, early retrieval of content (e.g. for faster channel change) among other benefits
Relevant topics to the W3C: Runtime Environment

• Initial decision to adopt portions of HbbTV 2.0 as ATSC 3.0 runtime
  – Constraints/extensions as needed
  – Based on OIPF DAE, but with additional HTML5 technologies also addressed

• Open call for extensions to HbbTV 2.0 recently concluded
  – MSE/EME, Service Workers have been proposed
  – Web & TV IG’s recent liaison response also being considered
Other Areas Related to W3C

• Program announcement and Service Guide
  – Group has reached agreement to leverage OMA BCAST 1.0

• Content watermarking
  – Open CFP with several respondents
  – Most proposals require embedded watermarking client
    • How will web-based runtime environments be extended has not yet been decided

• Emergency Alerts
  – Rich emergency alerting and how runtime environment is affected is yet to be addressed
  – M-EAS (A/153 Part 10) to provide model for functionality