HbbTV’s tools for improving interoperability

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HbbTV: Improving Interoperability

- Plugfests
- DRM Reference Application
- Device Test Suite
- DASH Content Validator
HbbTV Test Suite

• Designed to provide at least minimum conformance of devices entering the market
  – Approximately 2000 tests
  – Covers HbbTV 2.0.1, and tests coming for OpApps and 2.0.2 (HDR, NGA, HFR)
• Additional materials for regional platforms build on this (e.g. Freeview Play, Tivú, DRM Test Suites)
• Not sufficient alone, but the foundation on which to build interoperability…
DVB-HbbTV DASH Validator

- DVB-HbbTV Conformance Software Tool: “DASH Validator” - extension to DASH-IF Conformance Software, built with DVB’s support
- The tool checks DASH media (mpd and segments) conforms to DASH-related media specifications (including now, HbbTV and DVB profiles)
- Thus, it provides crucial information for content generators and service providers.
- Open source
- Accessible online via DASH-IF:

  https://conformance.dashif.org
DASH Validator - Features

- Docs, code and issue tracking:

- Checks include:
  - MPEG-DASH MPD validation (XML, DASH schema, and MPEG-DASH MPD rules)
  - Segment Validation (ISO BMFF and MPEG-DASH segment rules)
  - Cross-representation validation (MPEG-DASH cross-representation rules)
  - Live MPD segment access validation

Note: The checks are done at the ISO BMFF level (no checks on track media level)
DRM Reference Application

• HbbTV Application and sample DASH content including DRM
• Tested on wide selection of current receivers in the market
• A recipe for application developers to use as a reference!
  – Open source licence
  – Workflow and documentation to replicate using common tools
DRM Reference Application - Features

• [http://refapp.hbbtv.org/production](http://refapp.hbbtv.org/production)
  – Updated in line with Test Suite, 3 times a year
  – HbbTV 2.0.1 and 1.5 Playready and Marlin DRM streams
    • Also non-DRM streams for reference and including MSE/EME for non HbbTV browsers
  – Subtitle and audio stream* selection via color buttons
  – Live* and VOD DASH profiles
• [http://refapp.hbbtv.org/staging](http://refapp.hbbtv.org/staging)
  – Intended for early access testing of new features
  – Low latency* streams with multiple moof/mdat signaling
• [https://github.com/HbbTV-Association/ReferenceApplication](https://github.com/HbbTV-Association/ReferenceApplication)
  – Docs, code and issue tracking
  – Complete tool chain for re-creating all test assets locally

* = New features now available!
HbbTV Plugfests

- Run by HbbTV Association (and others in country)
- Voluntary & Open (including non-HbbTV members)
- Variety of participants
  - Manufacturers
  - App developers
  - Operators/broadcasters
  - Service providers
The IITF is a forum to raise issues of interoperability,
  • But please note, the HbbTV association must respect antitrust rules, and cannot be party to sharing details of specific implementations.

IITF will re-direct to the appropriate working group in HbbTV where possible,
  – or consider further appropriate approaches to improving interoperability that have cross industry support.

See also https://www.hbbtv.org/resource-library/

“HbbTV Tools” Webinar: Wednesday 28th November 5-6pm CET

Contact: iitf@member.hbbtv.org
But that’s not all you should do...

HbbTV Test Harness & Test Suites

Manual & Automated Application Testing

Device Zoo

Stability, Usability, Performance

Quality of Experience

Security & Compliance

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