

# HBBTV TEST MATERIALS 2.0.4

FOR HBBTV WEBINAR

MAY 28, 2024



# SOFIA DELIVERABLES

- Packages 12, 13 and 14
  - 12: DVB-I Service List
  - 13: DVB-DASH Streams for DVB-I Tests
  - 14: DVB-I Guide Data Server
- No individual tests, but offering support to tests from
  - DVBI\_APPLC, DVBI\_KEY, DVBI\_CHAN, DVBI\_VBO, DVBI\_COMP
  - DVBI\_APP2AV, DVBI\_EVENTS, DVBI\_GUIDE, DVBI\_PVR
- Small-scale hosting of the above

# PROJECT TEAM

- Juha Joki (reporting, project management)
- Tomi Sarparanta (Service list and content guide scripting)
- Aki Nieminen (DASH manifests and stream creation)

# GENERAL NOTES

- A development code repository was created in Sofia Digital external Gitlab
  - Shared with OBS (main developer for tests)
- Python 3 and PHP scripting were used for service list and content guide generation
  - Simple setup in any server
- All DASH manifests are LIVE
  - A simple vod2live script was written to modify static MPDs for LIVE use
- A test server was setup to host the materials for faster validation and acceptance purposes (hbbtnv-test.dtv.fi)

# DASH IMPLEMENTATION

- Video and audio tracks are encoded with the FFMPEG tool
- PNG images for the QR Codes are pre-generated by a java tool for each target resolution
- FFMPEG PNG overlay filter is invoked after the video resolution scaling to maintain the best possible QR Code quality
- Dash segments are generated with the MP4BOX tool

# DASH IMPLEMENTATION

- A Python script (`CreateManifest.py`) combines the tools together to write a manifest for each test according to specific requirements of the test
- Parameters:
  - test may use N number of video track resolutions
  - test may use N number of audio tracks with given languages
  - test may use N number of events (emsg or mpd) triggered at given intervals
  - test may use a predetermined sequence of periods triggered at given intervals, and each period may use a different set of video and audio tracks.

# SERVICE LIST IMPLEMENTATION

- A Python3 script creates the correct service list according to config.xml file that part of each individual test needing a DVB-I Service List entry
- Config.xml includes the Service definitions for the services used in the test
  - Complete DVB-I Service element with the required service instances
- Parametrization is offered for DASH and AIT base server URL's.
- Easily deployable to different environments
- Current list is available at
  - <https://hbbtnv-test.dtv.fi/servicelist.xml>

# GUIDE IMPLEMENTATION

- Content Guide Data is created by PHP scripts
- Program.php generates information for programinfo endpoint according to a set of parameters given in the parameters when invoking the script
  - Program information is defined in an TV-Anytime format XML file, the PHP script uses a template system to update the program start and end time
  - [https://hbbtn-test.dtv.fi/pkg06/org.hbbtn\\_DVBI\\_APPLC0640/program.php?pid=crid://example/org.hbbtn\\_DVBI\\_APPLC0640-1.0](https://hbbtn-test.dtv.fi/pkg06/org.hbbtn_DVBI_APPLC0640/program.php?pid=crid://example/org.hbbtn_DVBI_APPLC0640-1.0)



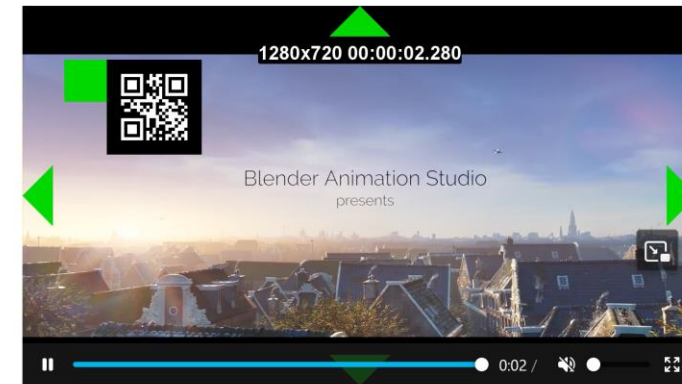
# GUIDE IMPLEMENTATION

- Schedule.php creates the schedule or current program data for scheduleinfo endpoint
  - Schedule events are generated from templates for program information, group information and schedule information
  - Now/next request: <https://hbbtnv-test.dtv.fi/pkg06/org.hbbtnv DVBI APPLC0640/schedule.php?sid=tag:dvbi.test,2023:org.hbbtnv DVBI APPLC0640-1&now next=true>
  - Schedule request: <https://hbbtnv-test.dtv.fi/pkg06/org.hbbtnv DVBI APPLC0640/schedule.php?sid=tag:dvbi.test,2023:org.hbbtnv DVBI APPLC0640-1&start=1716896871&end=1716911271>
- There are no dependencies to a database instance or external EPG data systems
  - Easily deployable to any environment support for PHP

# USAGE OF DASH MATERIAL TOOLS

- CreateManifest.py script offers a base and test specific methods for creating the correct (LIVE) manifests
- DASH.js Test Player available including debug output
  - Test Player can be used to play out any test-related DASH asset:
    - [https://hbttv-test.dtv.fi/videos/dash/dashjs/index.html?muted=1&video=/videos/agent327\\_spring/MANIFEST-live.php?ast=session&id=DVBI\\_EVENTS0010-1](https://hbttv-test.dtv.fi/videos/dash/dashjs/index.html?muted=1&video=/videos/agent327_spring/MANIFEST-live.php?ast=session&id=DVBI_EVENTS0010-1)
    - [https://hbttv-test.dtv.fi/videos/dash/dashjs/index.html?muted=1&video=/videos/agent327\\_spring/MANIFEST-live.php?ast=session&id=DVBI\\_EVENTS0020-1](https://hbttv-test.dtv.fi/videos/dash/dashjs/index.html?muted=1&video=/videos/agent327_spring/MANIFEST-live.php?ast=session&id=DVBI_EVENTS0020-1)

DashJS (unmute to activate an audio track)



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[Text\(-1\)](#) [Text\(0\)](#) [Text\(1\)](#) [Text\(2\)](#) [Text\(3\)](#)  
[Video\(0\)](#) [Video\(1\)](#) [Video\(2\)](#) [Video\(3\)](#) [Video\(4\)](#)  
[Audio\(0\)](#) [Audio\(1\)](#) [Audio\(2\)](#) [Audio\(3\)](#) [Audio\(4\)](#)

```
2024-05-28T12:38:58 DASH-EVENT time=0, dur=1, scheme=DASH-EVENT.xsd, value=optionaltest, id=0, data="TEST"
2024-05-28T12:38:58 DASH-EVENT time=0, dur=335544.319921875, scheme=DASH-EVENT.xsd, value=optionaltest, id=7, data="TEST"
2024-05-28T12:38:58 DASH-EVENT time=0, dur=1, scheme=DASH-EVENT.xsd, value=optionaltest, id=6, data=""
2024-05-28T12:38:58 DASH-EVENT time=0, dur=335544.319921875, scheme=DASH-EVENT.xsd, value=optionaltest, id=4, data=""
2024-05-28T12:38:58 DASH-EVENT time=0, dur=335544.319921875, scheme=DASH-EVENT.xsd, value=optionaltest, id=1, data="TEST"
2024-05-28T12:38:58 Event time=0.001, dur=2, scheme=http://hbttv.org/refapp, value=1a2b3c, id=1, data="MPD event(1) DVBI_EVENTS0020"
2024-05-28T12:38:57 play {"url": "/videos/agent327_spring/MANIFEST-live.php?ast=session&id=DVBI_EVENTS0020-1", "description": "", "laur": ""}
2024-05-28T12:38:57 ---
```

# USAGE OF DASH MATERIAL TOOLS

- Vod2Live php script (`MANIFEST-live.php`)
  - Converts a vod (static) mpd manifest to a live (dynamic) manifest at runtime as per a test case scenario
  - Supports single-period and multi-period presentations
  - Each playback is normalized to use an `availabilityStartTime=0..N` session
    - *a test always is consistent predetermined sequence of periods, events, video+audio track selection and qrcode timestamps*
  - No segment file manipulation
    - Not suitable for real longer time LIVE tests, but good for 10 minute or so test run times

# STATUS

- Packages are feature complete
- Documentation, tools and assets are available in the SVN Test repository
- Bugfixes / maintenance period started
  - Caveat: The deliverables are not tests but supporting material, so a single fix may potentially affect many tests
- Some of the materials are easily recycled to other HbbTV Conformance activities
  - For example, live subtitle testing



**SOFIA  
DIGITAL**

**THANK YOU**