HbbTV 2.0.4 Explained
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Summary

• 2.0.4 defines how HbbTV can integrate with 3 key features for the future
  – Accessibility features provided by the TV or STB
  – Live/linear services via broadband using DVB-I and DVB-DASH
  – Voice assistants such as Alexa and Google Assistant

• Also some smaller changes
  – Smaller additional features
  – Deprecations
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Accessibility integration

- Many TV operating systems provide accessibility features that the user can turn on/off and configure
  - Subtitles, user interface magnification, high contrast UI, screen reader, feedback on user actions
    - Screen reader integrates with W3C ARIA ("Accessible Rich Internet Applications")
  - Audio description, dialogue enhancement and in-vision signing
    - User preferences for stream selection decision for broadcast and broadband
- 2.0.4 enables apps to query;
  - Which features are supported
  - Detailed user settings for a supported feature
- Apps can also request a feature be suppressed
  - If the app thinks it can do a better job in its context
- For more details, please see presentation from Nigel Moore in the HbbTV webinar
  - [https://youtu.be/w-Q5mxsNAJc](https://youtu.be/w-Q5mxsNAJc)
- HbbTV doesn't make any particular accessibility feature mandatory in TVs and STBs
  - Choice of manufacturer, platform/operator, TV OS provider, …
  - Framework itself is mandatory so apps can ask the questions.
DVB-I integration

• Goal
  – Most (ideally all) HbbTV broadcast related applications to be able to run in connection with a DVB-I broadband-delivered service with as few changes as possible (ideally none)

• Some key features
  – How a video/broadcast object can show DASH delivered content
  – How DVB-I services and service instances appear in the HbbTV ChannelList
  – How HbbTV applications are started and stopped as different DVB-I services are selected
  – How DASH MPD and inband events map to the DSMCC stream event API
  – Support for both DVB-I "application controlling media presentation" and "application in parallel with media"

• Some features cannot be supported but hopefully few apps use them
Voice assistant integration

• Enable use of voice input to HbbTV app for selected media playback features
  – e.g. "play" / "pause" / "resume" / "skip ahead X minutes" / "fast forward" / "reverse" / "search"
• Apps have to first indicate they are "voice ready"
  – App needs to tell terminal when it's playing media & which voice inputs are supported for that media at that time
  – App may also provide metadata about media being played
• Additionally
  – Speech to text supported as a text entry method for all apps
  – Standard HbbTV remote control events shall be generated for "voice ready" apps
• Choice of voice assistant is left to manufacturer or TV OS provider
Accessibility and Voice APIs

• New API design used for accessibility and voice API
  – JSON-RPC messages sent and received via websocket
  – Not a conventional Javascript API
  – Follows the same model as ATSC3 APIs
• Apps discover URL for websocket server from the XML capabilities
Smaller additions

• Audio mixing enhancements
  – Mixing between broadcast audio and audio clips via Web Audio API becomes required

• Allow analytics reporting on exit from an HbbTV app
  – Support for W3C Beacon API

• Web platform update
  – Update from alignment with 2018 desktop browsers to alignment with 2021 desktop browsers

• Properly support 1920x1080 graphics
  – 2.0.3 has partial support for 1920x1080 graphics – coordinate space is always 1280x720 even if underlying graphics are 1920x1080
  – 2.0.4 permits coordinate spaces of 1920x1080 and higher
    • App signals what coordinate spaces it can support
Deprecations

• Deprecation is **not** removing from the spec
  – It is announcing that something will be removed in a later version
  – Deprecated features remain mandatory until actually removed
• Partial deprecation of A/V control object
  – Properties on AVComponent which have no equivalent on HTML5 *Track
• Streaming with MPEG-2 TS as the system format
  – By implication, support for DVB subtitles in IP
• Tiresias resident font
  – No longer multiple suppliers for this
• Native on-screen keyboard
  – Evidence is that apps that need text input do this themselves
Errata

• 62 errata included, a mixture of editorial, clarifications, filling gaps and addressing inconsistencies, details on integration of web APIs

• Some more significant examples
  – Switching broadcast / broadband video not being noticeable (colour shift etc)
  – Entropy and algorithms for the WebCrypto API
  – Indication for video playback at speeds > 1.0
  – CSS transforms on video elements
  – Make IPv6 explicitly optional
  – Improve spec for how W3C Page Visibility API is used
What Next – as of March 2023

• Request for Proposals for 2.0.4 unit tests will be issued
  – 247 unit test descriptions created and reviewed
• Some tests may be delivered in time for July 2023 test suite release (2023-2)
  – Most will likely be included in Feb/Mar 2024 release (2024-1)