OpApp Spec Update Explained

Highlights of the Update

- IP linear services fetched and presented by the OpApp including
  - Support for HbbTV red-button apps overlaying the service's video
  - Integration with DVB-I service discovery
- Features identified during HD+ OpApp development & deployment
- CI Plus CAM integration
- Bug fixes and clarifications

Some Basic Data

- 150 total issues
  - 27 closed without changing the text
- Timing
  - Some bugs reported in 2018
  - Requirements from the Requirements Group in late 2019 (HbbTV-RG-00181-007)
    - Resulted in a burst of Spec Group activity in 2020
  - Little activity in 2021 and 1st half of 2022
  - More activity since 2nd half of 2022

Features from Existing OpApp Deployments

- Allow OpApp state change on onProgrammesChangedEvent (#10171)
  - Enables OpApp to show UI when programme changes within a linear service, e.g. show title of new programme, ask for parental access control authorisation
- OpApp-specific persistent storage (#10172)
  - Allow separate management of persistent storage between OpApps and regular HbbTV apps
- Adding OpApp version update requests (#10175)
  - Allow OpApp update process to take account of currently installed OpApp version
- OpApp can transition to transient state when errors happen (#8745)
  - ChannelChangeError event, PlayStateChange event to 'unrealized' or 'connecting'

Selected Smaller Improvements, Clarifications, Optimisations

- Additional OpApp startup locations (#12107, #12903)
  - Specify more arguments to tell an OpApp why it was started / launched / shown
  - Reduce private extensions previously used
- Enable communication between OpApp and regular app (#12683)
  - Re-use HbbTV websocket based design
- Enable re-use of terminal parental access control PIN by OpApp (#12887)
- Explicit support for IP-only deployments (no broadcast scan, no broadcast channel list) (#12889)
  - Previously implicit which caused some confusion
- Improve support for keeping apps running all the time (#12873)
  - App go into a new "silent" context if not killed when TV starts a global VOD app
- Support for prolonging visual display for an opApp when channel is scrambled (#11400)
- User presses "EXIT" when OpApp visible but no linear channel is selected (#12409)
  - Reduce hard-coded behaviour to avoid users being presented with a black screen

- Original spec allowed op app to present IP content as if it were a channel, but
  - No support for HbbTV red button apps
  - Terminal had no visibility of what was happening
- Gap originally raised in early 2021 from German perspective
- Also needed in UK

- *"Channels for which streamed media presentation is handled by an operator application using an HTML5 media element"*
  - Either in terminal channel list (discovered from a DVB-I service list or equivalent)
  - or transiently created by op app (also using DVB-I metadata)
- Video, audio and subtitle presentation by op app
  - typically using MSE/EME
- Terminal fully aware
- Supports regular HbbTV applications ("red button" services) as for broadcast channels

Op app presented channels (3)

- Approach:
  - Op app may implement a linear channel player (e.g. with a javascript DASH player)
    - Runs in "second window" with subtitles composed behind any regular HbbTV app
    - Handles requests from terminal to play, stop, resize, describe or select components etc. while an op app presented channel is selected
  - Backwards compatible for regular apps
    - Broadcast and IP linear channels work the same way
  - Re-uses JSON-RPC and DVB-I elements from HbbTV 2.0.4

CI Plus CAM Integration

- Scenario
  - Operator includes OpApp on a CI Plus CAM
  - User inserts CAM into TV set
  - First channel list installed as today
  - Then OpApp is installed
- Original OpApp spec allowed CAM to trigger OpApp installation over broadband
  - Update allows CAM to trigger installation from CAM for users who have not connected TV to broadband
    - Also covers update of OpApp from CAM and what happens if the CAM is removed