

HbbTV Symposium

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Operator Applications

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Why would HbbTV want to do this?

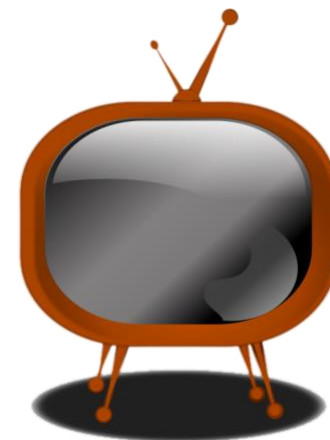


- Starting to happen in the market anyway; doing this in HbbTV:
 - ensures compatibility with existing specs and broadcaster apps
 - results in higher quality solutions at less cost than when defined by individual operators
- Expands the customer base for HbbTV platforms and technology
- Enriches HbbTV ecosystem; More attractive for HbbTV technology suppliers
- Makes life easier for consumers – the raison d'être for a standards organisation.

- And, more speculative, some operators blocking HbbTV claim that non-compatibility with their services is a reason to block – let's take that reason / red herring away

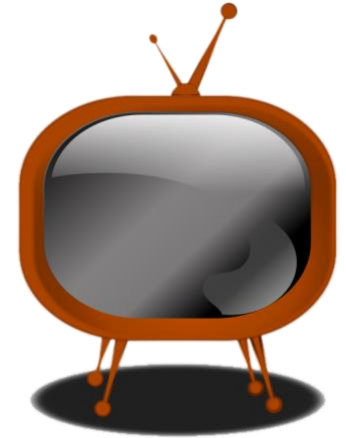
Three Variations

- “Standard”
 - Intended for TV sets; does not replace any part of manufacturer UI
 - Regular HbbTV 1.5/2 app signalled in all services in a network
 - E.g. red button starts Broadcaster App; green button starts Operator Environment
 - Already works today - Freeview Australia, Freeview New Zealand, Delta in Old Zealand (NL)
 - Not addressed further
- “Privileged”
 - Intended for TV sets; OpApp replaces some of the manufacturer UI
 - The primary focus of this presentation
- “Operator-specific”
 - Intended for STBs; OpApp provides most or all of the UI on a STB
 - Close to Privileged; differences are access to more settings and controls



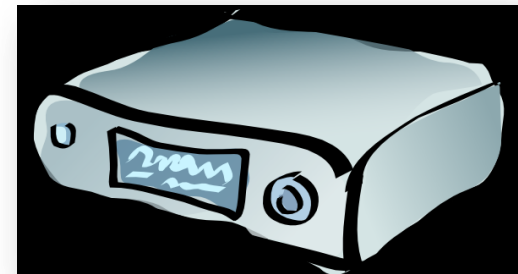
Privileged OpApp

- Runs directly on a TV
- Replaces some of the UI, providing a branded Operator experience. Can, e.g., use P+/P- to change channels; display channel change banners
- Assumes a bilateral agreement between Operator and TV maker
- Understood to act as a “Source”
 - Like any other Source that could provide TV channels (e.g., Cable, Sat or HDMI)
 - May persist over a power cycle – turn on the TV and you’re in the App again.
- Can easily integrate live TV with on-demand offerings, like an STB would



Operator-Specific OpApp

- Intended for “**non-initialised**”, white-label STBs
- Replaces (virtually) all of the UI on the STB to “**instantiate**” that STB for a particular Operator
- Like “Privileged”, assumes a **bilateral agreement**
- Close to Privileged;
 - differences are in access to more settings, controls & remote control keys
 - Also OpApp is responsible for everything that happens on the box



- User is in control
 - User chooses to run an Op App
 - User chooses to switch back to manufacturer UI
 - Apps can offer choices to the user but decision lies with them
- Broadcaster apps keep working as they do today
 - Also, clear rules for overlaying broadcaster content
- Clear to the terminal (and hopefully also to the user) what handles which keys & when
 - Manufacturer UI, Broadcaster App, OpApp
- OpApps have access to all regular HbbTV 2.0 features
 - VoD, companion screen, (DRM)

- From IP
 - Terminal requests location of app description from internet DNS system using name of operator
- From broadcast
 - DVB-SI “linkage descriptor” points to channel carrying OpApp
- From common interface module (CAM)
 - CI “uri-linkage-descriptor” points to app description in CAM
 - App description points to files either in CAM or on operator web server
- From hardcoded URI
 - URL in terminal points to app description on operator web server

“App description” = existing HbbTV XML AIT

- Terminals must authenticate OpApps
 - Critical as a rogue OpApp could be a significant web security problem
- Operators will want to authenticate terminals
 - Broadcasters already do this in some countries
- Spec will define how this works
 - Existing web standards used for OpApp distribution via web
 - Some work required for OpApp distribution via broadcast or CAM
- Public key for authentication to be addressed between operator and manufacturer
 - No HbbTV sponsored certificate authority
 - See later slide on bilateral agreement

- OpApps run in foreground or background
 - Think tabs on a browser
- When in foreground
 - Full access to graphics / UI layer
 - Access to (nearly) all remote control keys
 - Has full control over broadcast video
 - Can ask to be put in the background
- When in background
 - No access to graphics / UI layer except
 - Can show a Notification to give the user the option to bring it into the foreground
 - Like on a mobile phone or tablet
 - Limited access to remote control keys
 - Normal keys (colours, numbers, etc.) if not used by a broadcaster app
 - P+, P-, GUIDE, INFO, (MENU)
 - Limited control over broadcast video (channel changing)
- Broadband network available all the time

- Enabling the OpApp to draw the channel banner is complex
 - At least without giving the OpApp unrestricted access to the screen at all times
- OpApps can move from background to foreground for a short time when changing channel
 - Broadcaster app keeps running if required by base HbbTV spec but doesn't get any key events



- Channels outside an operator's offering
 - Some countries have regulations about an operator UI overlaying channels outside an operator's offering
 - OpApp just has to take care of this – anything else is too complex
- PVR
 - Is there any good user experience if the user books recordings with both OpApp and manufacturer UI?

- Concept assumes agreement between manufacturer and operator – “Bilateral agreement”
- Some example topics
 - Business terms
 - Authentication of app to terminal and terminal to app
 - Behaviour on power-on
- Specification will provide more example topics

- An Operator App (“OpApp”) is an HbbTV Application that provides access to live channels and other services from an operator
- When the user selects an OpApp they will get the operator UI
 - Channel up / down, channel banner, EPG, other services
 - User chooses operator UI or manufacturer UI
- Broadcaster HbbTV apps work as specified today
 - No need to even know an OpApp is present
- Aiming for spec completion end 2016 or early 2017
 - Publication will follow once test descriptions are written and reviewed