Open Screen Protocol / HbbTV Companion Screen Compatibility

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Current status of HbbTV Companion Screens

- Spec: Stable since initial HbbTV 2.0 publication
- Device implementations: In development with embedded browser vendors, products expected TBD
- Broadcaster services: Experiment / prototyping stage

Goals

- Enable adoption by more devices
  - Google provides Cast integration for TV manufacturers https://www.google.com/chromecast/built-in/tv/
  - Open Screen Protocol makes things more ... open (good!)
- Enable broadcasters to open HbbTV "broadcast-related" web applications on compatible receivers
- Enable users to launch general web content on TV devices

Open questions

- Signaling capability requirements
  - TV devices may contain multiple browser engines (implementation / vendor specific). The browser for broadcaster interactive applications may be separate from the general purpose browser.
  - Can we signal a desire to use HbbTV broadcast-related features, so that the receiver can select the right browser engine?
- Application whitelisting
  - TV vendors may want to limit the URLs that can be presented on their devices
- Browser support is essential
  - We want to achieve interoperability between browsers and TV devices

Proposal

- Developing one single protocol preferred over layering Open Screen Protocol on top of the HbbTV Companion Screen and Synchronization protocols
- Let's focus on developing a single Open Screen Protocol that can be extended to support HbbTV specific features in future

Migration path for HbbTV to Open Screen Protocol

- A W3C-developed secure transport is beneficial to HbbTV
- Can groups such as HbbTV extend Open Screen Protocol to add domain specific features?
  - Broadcast service timeline (UDP based in HbbTV)
  - Cross-device wall-clock synchronization (UDP based in HbbTV)
  - Launching companion apps from the TV (low priority?)

Synchronization

- W3C Timing Object
  - Can the Open Screen Protocol support synchronization via Timing Object?
    - http://webtiming.github.io/timingobject/
- Consider for Presentation API V2

Protocol Layers in HbbTV CSS

- Discovery
  - SSDP / DIAL
  - HbbTV 2.0.2 section 14.7.2, Terminal and service endpoint discovery (DIAL)
- Transport
  - Web Socket (HbbTV 2.0.2 section 14.5, App to app communications)
  - UDP for synchronization (HbbTV 2.0.2 section 13.7 Wall clock synchronization)

Protocol Layers in HbbTV CSS

- Application Protocol
  - App-to-app communication
    - "pairingcompleted" message (plain text)
  - Wall clock synchronizaton
    - UDP messages, timestamps, round trip time measurements
  - Timeline synchronization
    - UDP messages, media identifier and timeline information
- Security
  - None

Relationship between W3C and HbbTV

- HbbTV is project based. HbbTV may not be able to express a view on something that isn't in scope of their current project
- HbbTV are mostly interested in adopting completed W3C specs
- HbbTV members may separately want to work at W3C to develop such specs for consideration by a future HbbTV version

References

- HbbTV v2.0.2 spec
  - https://www.hbbtv.org/wp-content/uploads/2018/02/HbbTV_v202_specification_2018_02_16.pdf
- DVB CSS specs
  - ETSI TS 103 286-2 (covers Wall Clock and Timeline sync) http://www.etsi.org/deliver/etsi_ts/103200_103299/10328602/01.01.01_60/ts_10328602v010101p.pdf
- Presentation from M&E IG Meeting at TPAC 2017
  - https://www.w3.org/2011/webtv/wiki/images/1/11/Hbbtv-presentation-api.pdf