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sense and simplicity

Use of Web Technologies in TV Standards in Europe

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Summary

- TV Standards in Europe using Web Technologies
  - Scope
  - Examples
- Web Technologies Used
- Incremental extensions to web technologies
- Other System Components
- Web technologies as components of non-standard solutions

Scope

- Typically these standards are a (mostly) complete system description – not just a presentation technology
- They include;
  - Still image formats
  - Video and audio codecs, system layers
  - Broadcast and broadband transport protocols
    - Both for the presentation technology and for video/audio
  - Rules for starting and stopping applications / services / .. including signalling in the broadcast to drive these rules
  - Security
    - Trust models for applications
    - Content protection (incl. but not limited to DRM)
- Historically big debates about the goal
  - Making existing web content work on TV
  - Use of web technologies to create TV focussed services
  - Or something in between

Examples

- DVB-HTML
  - Developed by DVB in 2000/2001 as an alternative to / alongside Java in their Multimedia Home Platform
  - Not widely adopted - used in some MHP deployments for basic teletext services (e.g. Telenet in Belgium, Poland, ..)
- Open IPTV Forum Declarative Application Environment (DAE)
  - Developed in 2008/9
  - Starts from CEA-2014 as used for remote UI in DLNA
    - Includes more W3C specifications than CEA-2014 revision A
    - Most of the incrememental extensions defined by CEA are omitted
    - Uses the CEA-2014 A/V <object> for presenting on-demand video since it pre-dates the HTML 5 Media Tags
  - Defines new <object> types and JavaScript APIs for many TV functions
  - More detailed presentation later in this workshop

Examples

- HbbTV
  - Developed in 2009
  - Combines a selection from OIPF specifications with a selection from the broadcast transport and signalling spec used by DVB-HTML
  - Ruthless focus on simplicity and time to market
  - Being deployed in Germany, will be deployed in France in 2011
  - Adopted as ETSI TS 102 796 in June 2010
- UK DTG Connected TV
  - Developed in 2010/11
  - Very large intersection with HbbTV but includes more from OIPF
  - Includes advanced graphics (CSS3, HTML5 Canvas, …)
  - Includes more than one application running at one time & (Web) Notifications
  - More detailed presentation later in this workshop

Web Technologies Used

- DVB-HTML
  - Based on “XHTML Modularization”, ECMA-262, CSS 2 (aligned with CSS-TV), DOM-2 (core, views,style, events)
- OIPF DAE
  - Based on XHTML 1.0, CSS 2.1, ECMA-262 3rd edition, pieces of DOM-0, DOM-2 (core, events, HTML, views), XMLHttpRequest
  - Optional SVG 1.2
  - HTML 5 Media Tags, W3C widgets, others added in release 2
  - More detailed presentation later in this workshop
- HbbTV
  - Same web technologies used as mandatory ones in OIPF release 1
- UK DTG CTV
  - Includes all mandatory web technologies in OIPF
  - More detailed presentation on extensions later in this workshop

Incremental Extensions to Web Technologies

- DVB-HTML
  - Application lifecycle, synchronising to video, dvb-tv media type, @dvb-viewport, Key Events, custom HTML DOM, custom CSS DOM
- OIPF DAE
  - Broadcast TV, video presentation, channel lists, favourite lists, …
  - Recording / download of TV content, management and playback
  - Parental access control & exchange of messages with DRM agent
  - Application lifecycle, query device capabilities, communication services
- HbbTV
  - Selection from OIPF release 1
  - Additional support for synchronising to video
- UK DTG CTV
  - Selection from HbbTV / OIPF release 1
  - UK specific extensions to OIPF

Other System Components

- Broadcast
  - AVC and MPEG-2 video codec
  - HE-AAC, MPEG-1 L2 and perhaps Dolby E-AC3 audio codecs
  - DVB/EBU subtitles
  - MPEG-2 transport stream as a container format
  - Carriage of files of an application through the broadcast
  - Linkage from a TV channel to specific applications/pages/....
- Broadband
  - Same video, audio, subtitle and container formats as broadcast
    - Perhaps minus the legacy MPEG-2 video and audio codecs
    - Perhaps MP1 L3 and/or WAV added as stand-alone audio formats
  - MP4 files as a container, both fragmented and unfragmented
  - Broadband video streaming protocol

Other System Components

- Security
  - Trust models for applications
    - Either fine grained (DVB-HTML, OIPF) or coarse (trusted or not – HbbTV / CTV)
    - How does an application become trusted?
  - Content protection
    - DRM
    - Device authentication
    - Encryption of content between the service provider and the device without the burden of DRM

Web technologies as components of non-standard solutions

- Many non-standardised solutions include web technologies as one part of a solution where other aspects are non-standard.
  - Details are frequently proprietary
- There are several HTML 4 + JavaScript deployments
  - Many IPTV operators use a browser to provide either
    - The operator's UI and/or
    - 3rd party applications
  - Virgin Media in the UK use the old Liberate solution based on HTML 3.2.
    - Their EPG is rumoured to be entirely written in JavaScript – not really HTML.
  - Some (not all) of the CE manufacturer “Connected TV” solutions include a browser. Some are closer to standards than others.


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