HbbTV – Overview and Application Examples

Klaus Merkel
Institut für Rundfunktechnik

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Web Services add value to TV screens

TV manufacturers are offering specific stores for TV apps on their devices.
Web services add value to TV screens

Big US players are aiming to be present on TV screens
- by sticks STBs/Boxen via HDMI
- via AndroidTV
Web Services add value to TV screens

All these approaches of manufacturers and web companies leave two major issues open:

• they have different technological concepts/profiles
  → Services have to be adopted for each SmartTV platform individually

• they allow no or no qualified integration of broadcast and web services
  → no really „hybrid“ world of services can be generated
„Unique Selling Points“ of HbbTV

HbbTV (= „Hybrid broadcast broadband TV“) is the answer to both of these points:

• they have different technological concepts/profiles
  → Services have to be adopted for each SmartTV platform individually

[Image: HbbTV icon with a standardised TV browser profile]

• they allow no or no qualified integration of broadcast and web services
  → no really „hybrid“ world of services can be generated

[Image: HbbTV icon with a cross linking options]

► provides lots of cross linking options
  („red button“ plus more)
HbbTV: one click from broadcast to broadband

(Swiss TV SRF)
The HbbTV association

- Founded in 2010
- Currently 78 members
- Members are CE manufacturers, broadcaster, platform operators & technology companies
- Core task: developing and maintaining HbbTV specifications & providing resources to support testing and addressing interoperability issues
The HbbTV association

HbbTV internal development process for specifications and test resources
HbbTV specs published by ETSI

Starting to write first HbbTV specification

Main addition:
MPEG DASH adaptive streaming

ETSI
TS 102796 v1.1.1 „HbbTV 1.0“

ETSI
TS 102796 v1.2.1 „HbbTV 1.5“

HbbTV in the German market

HbbTV devices sold in Germany since 2010

Source: Statista / GfK
HbbTV in the German market

Sales of SmartTVs in Germany

Q1–Q3 2019
3,5 Mio.

2012–Q3 2019
35,6 Mio.

→ appr. 12-15 mio. connected HbbTV devices in the German market
HbbTV in the German market

*Reach of TV platforms supporting SmartTV apps in German households*

Source: Teravolt study „Technische Reichweite von TV-Plattformen in Deutschland“
https://www.teravolt.tv/plattformreichweite/
HbbTV in the Italian market

General Information:
- 25 Mn TV households

HbbTV – Key Facts:
- Italy has adopted the HbbTV 2.0 standard in 2017
- Still strong legacy of MHP devices, but declining over time in favor of HbbTV terminals

HbbTV Connected Devices:
- 3,37 Mn (source: HbbTV elaboration on broadcasters data, April 2020)

HbbTV website gives some information on country specific deployments
HbbTV international deployments

www.hbbtv.org
Video portals via HbbTV

Video portals of the 4 big broadcasting groups in Germany
Video portals via HbbTV

Video portals make the main HbbTV offering in many countries

Norway

Greece

Turkey

Australia
Video portals via HbbTV

LOVEStv (operational):
National platform in Spain bundling video offers across broadcasters

Salto (testing phase):
French platform by public broadcaster France Télévisions and commercial networks TF1 and M6
Using HbbTV for advertising

HbbTV ad banners next to the TV picture – one click leads to a related microsite

HbbTV helps to further develop the classical TV ad model
Using HbbTV for advertising: targeting options

Regio XXL AddOn – Regional adaptation of your advertising

- Regional AddOn for classic national TV Spot
- Two strong placements
  - During the linear TV Spot
  - As Regio XXL Reminder in the programme

sevenonemedia.de
Using HbbTV for advertising: targeting options
Using HbbTV for advertising: broadcast spot replacement
ARD: „Smarter Teletext“

„Right from the start, ARD Text has relied on the standard HbbTV for Internet-capable televisions. The HbbTV version of the text brings the contents of classic teletext to the screen in a modern form. The range is constantly being developed and further functions added.“
Homeshopping via HbbTV

HbbTV shopping app on the HSE24 homeshopping channel
RTL launched in 2016 a new game portal (other big commercial broadcasters did earlier)

Games can be played while watching TV
Provision of UHD content via HbbTV

Using HbbTV to present UHD versions of TV content (Dec. 2017)
Integrating Livestreams via HbbTV: richer content offering

First use of MPEG DASH-Livestreaming in Germany by public broadcasters during Olympic Summer Games 2016 providing up to 6 HD-Livestreams
Integrating Livestreams via HbbTV: Replay function

„Replay“ – Jumping back to the beginning of the current broadcast programme
• based on MPEG DASH Livestreams
• Whitelisting devices supporting this feature
• very good acceptance by users

Currently available for the ARD TV programmes:
Das Erste, rbb, MDR, SWR Fernsehen, WDR, SR Fernsehen, BR Fernsehen, ARD-alpha, hr-fernsehen, ONE, NDR
Integrating Livestreams via HbbTV: improving accessibility

Broadcast video plus HbbTV overlay pointing at signer version

IP-Livestream with signer launched by HbbTV app
HbbTV offerings for children

very popular childrens program – video portal with almost 2000 videos
HbbTV specs published by ETSI

Starting to write first HbbTV specification

ETSI
TS 102796 v1.1.1 „HbbTV 1.0“
2009

ETSI
TS 102796 v1.2.1 „HbbTV 1.5“
2010

ETSI
TS 102796 v1.3.1 „HbbTV 2.0“
2011

2012
2013
2014
2015
2016
2017
2018
2019
2020
Main building blocks of the HbbTV 2 specification

HbbTV 2.0.2:
on its 316 pages
• many normative elements specified
• many (70) references to other specifications
Main additional feature sets in HbbTV 2

- **Synchronisation of audio, video and apps**
  - Multi-stream synch. Broadcast → Broadband (e.g. additional audio, signer)
  - Inter-device synch. TV → 2nd screen (e.g. additional audio, multi-view apps, games)

- **Second Screen integration for smartphones and tablets**
  - App start
    - 2nd screen → TV
  - App start
    - TV → 2nd screen
  - App2App Comm 
    - TV → 2nd screen

- **New video features**
  - HTML 5 browser profile
    - HTML 5 video element
    - CSS3 animations
    - Web sockets
    - Downloadable fonts
    - etc.
  - HEVC Video (UHD)
  - Adaptive streaming (DVB DASH)
  - Dynamic ad insertion/ ad replacement
  - Subtitles (EBU-TT-D)
  - Push Video-on-Demand
HbbTV 2: launching an HbbTV app on the TV via mobile phone

Native „mediathek“ app on the mobile phone launches an HbbTV app on the TV screen. Subsequent communication between mobile app and HbbTV app allows to select and control the videos on the TV via the mobile app.

(Showcase ARD.de/IRT 2015)
HbbTV 2: playing IP audio in sync with broadcast video

Playing the IP audio via the speakers of the TV set

e.g. to provide

• additional language versions
• audio versions with improved dialog intelligibility
• clean audio (no commentary)
HbbTV 2: playing IP audio in sync with broadcast video

Playing the IP audio via a mobile phone for individual usage

e.g. to provide

• audio description
• additional language versions
HbbTV 2: playing IP video in sync with broadcast video

Playing an IP signer video via AR glasses for individual use of the signer.

(Demo using the Microsoft „Hololens“ at IFA 2017)
HbbTV 2: pushing info from and HbbTV app on the TV to a mobile

User journey starts on the TV screen.
HbbTV apps detects mobile device with launcher functionality.
Push can be done from TV to mobile / Subsequent communication possible

IRTs „Universal Launcher“ concept (Demo at IFA/IBC 2019)
“Universal launcher” allows immediate use of mobile (including direct communication) or using links to other web resources later.

HbbTV 2: pushing info from and HbbTV app on the TV to a mobile.
HbbTV 2 showcases in the „IRT Lab“

HbbTV 2: Down with the language barriers

By Klaus Merkel  June 17, 2020  General, Platforms and Services
Audio, Companion Screen, HbbTV 2, Hybrid, Streaming

On television, language barriers are reconciled by translations or subtitles. Thanks to artificial intelligence, audio tracks can now even be converted into foreign languages largely automatically and with much less effort. New features co-developed by IRT make it possible to offer viewers individual language versions via the TV speakers or via smartphones and headphones. A showcase aroused great interest at the IFA and IBC 2019.

- https://lab.irt.de/hbbtv-2-down-with-the-language-barriers/
- https://lab.irt.de/speech-intelligibility-dialog-via-hbbtv-2/
- https://lab.irt.de/irts-universal-launcher/
- https://lab.irt.de/inter-device-synchronization-using-hbbtv2/
- https://lab.irt.de/2-immerse-motogp-multiscreen-experience-with-hbbtv-2-retail-devices/
- https://lab.irt.de/hbbtv-application-discovery-over-broadband/
- https://lab.irt.de/synchronised-holograms/
HbbTV specs published by ETSI

Starting to write first HbbTV specification

- 2009: TS 102796 v1.1.1 „HbbTV 1.0“
- 2010: TS 102796 v1.2.1 „HbbTV 1.5“
- 2011: TS 102796 v1.3.1 „HbbTV 2.0“
- 2012: TS 102796 v1.4.1 „HbbTV 2.0.1“
- 2013: TS 102796 v1.5.1 „HbbTV 2.0.2“
- 2014: TS 102796 v1.3.1 „HbbTV 2.0“
- 2015: TS 102796 v1.4.1 „HbbTV 2.0.1“
- 2016: TS 102796 v1.5.1 „HbbTV 2.0.2“
- 2017: Further improvements and feature additions – still ongoing ...
- 2018:
- 2019:
- 2020:
Examples of additional features in HbbTV 2.0.1:
• Monitoring of AIT/DSM-CC while IP AV content is presented
• “Audio from Memory” can be played via Web Audio API
• “Silent Tuning” without visible “Zapping-Banner” possible
• Support of "Clear Key" extension from W3C „Encrypted Media Extensions“ („EME“)

Main additional features in HbbTV 2.0.2:
• Integration of HbbTV with High Dynamic Range (HDR) video (both PQ10 and HLG)
• ... High Frame Rate (HFR) video (e.g. 100Hz or 120Hz)
• ... Next Generation Audio (NGA) (both AC-4 and MPEG-H audio)
• HbbTV does mandate these features for devices where they are available for broadcast
HbbTV specs published by ETSI

Starting to write first HbbTV specification

„Independent HbbTV Specs“:
• extending scope and/or functionality beyond the HbbTV „core specification“
• can be implemented on top of the HbbTV core specs
• some work with HbbTV 1&2, others only with HbbTV 2
HbbTV specs published by ETSI

„Application Discovery over Broadband“ and „HbbTV in IPTV networks“ support applying the standard „red button“ use case in scenarios where:
• broadcast does not carry application signalling
• there is an operator box between broadcast network and HbbTV TV set
• linear TV is distributed via managed IPTV or OTT

→ dedicated webinar planned
HbbTV specs published by ETSI

„HbbTV Operator apps“ allow platform operators to replace STBs implementing the operators specific functionality and GUI by an specific HbbTV operator app on a standard retail TV set.

→ dedicated webinar planned
HbbTV specs published by ETSI

„HbbTV Targeted Advertising“
- two part specification
  - defining technical tools allowing improved switching performance between broadcast and IP videos
  - defining temporal tolerances for the actual switching behaviour

→ dedicated webinar planned
The Global TV Market

Summary

• Seismic shift in TV set business: like ascendance of Koreans 15 years ago
  > Chinese supply chain dominates in future, levelling brand playing field

• Cord-cutting not a factor in Europe, but competition intensifying

• HbbTV critical in modernizing broadcast business model
  > Is marketing the greatest challenge?

• Mobile integration must be watched closely, emerging markets will lead.

„HbbTV critical in modernizing broadcast business model“
Thank you for your attention!

Klaus Merkel
Media Services and Platforms

Floriansmühlstraße 60
80939 München
Tel +49 89 323 99 – 225
www.irt.de
Mail: merkel@irt.de