

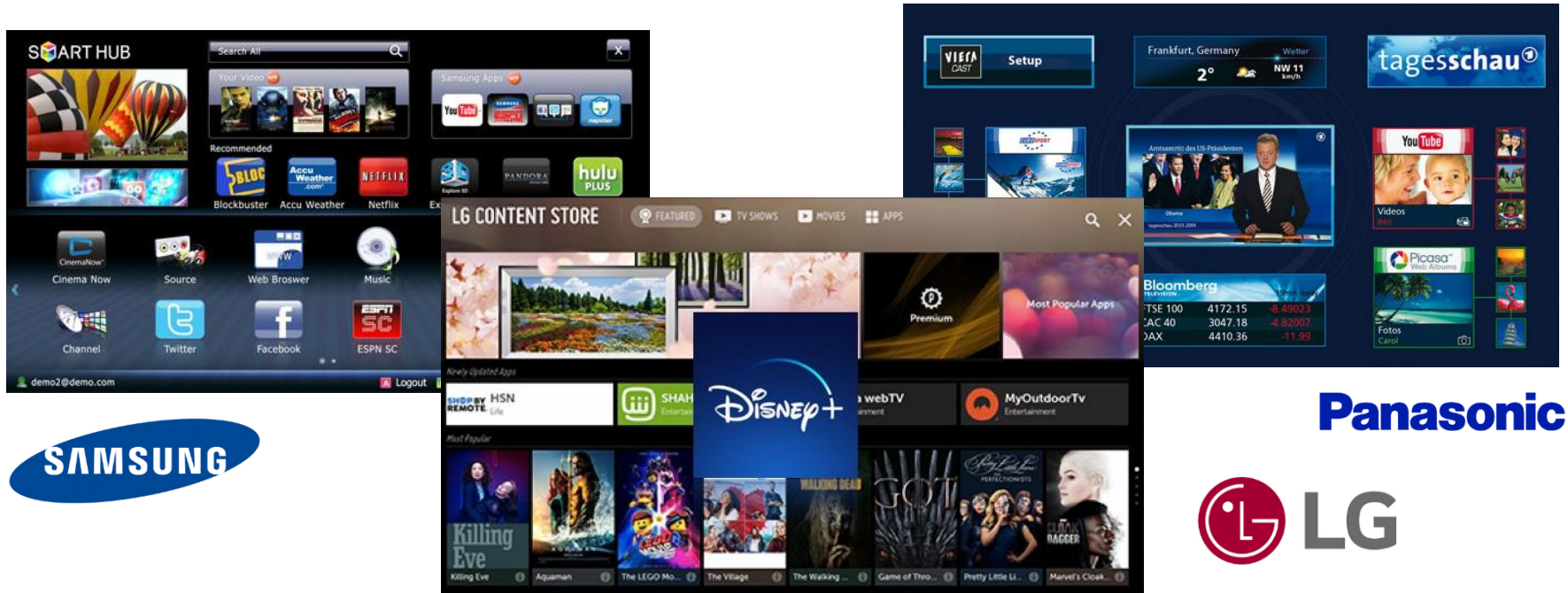
HbbTV – Overview and Application Examples

Klaus Merkel

Institut für Rundfunktechnik

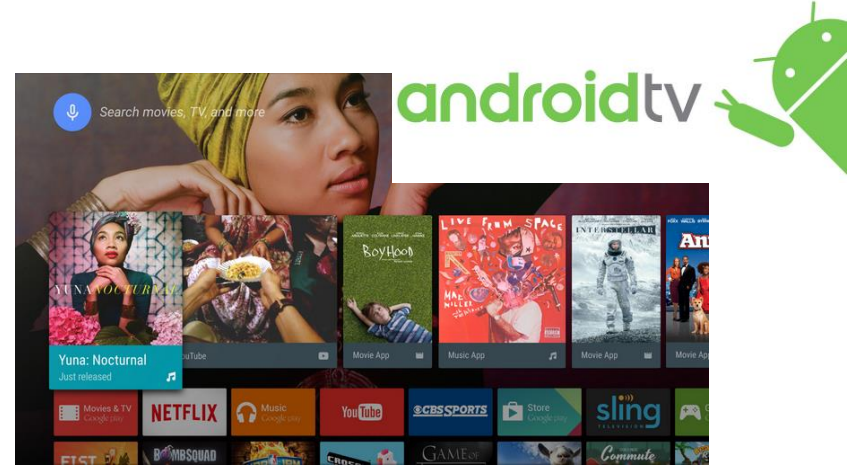
HbbTV Webinar Series, June 17th 2020

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

The Amazon logo, featuring the word 'amazon' in a bold, black, sans-serif font with a curved orange arrow underneath it.

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*



▶ 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*



▶ provides lots of cross linking options
(„red button“ plus more)

HbbTV: one click from broadcast to broadband



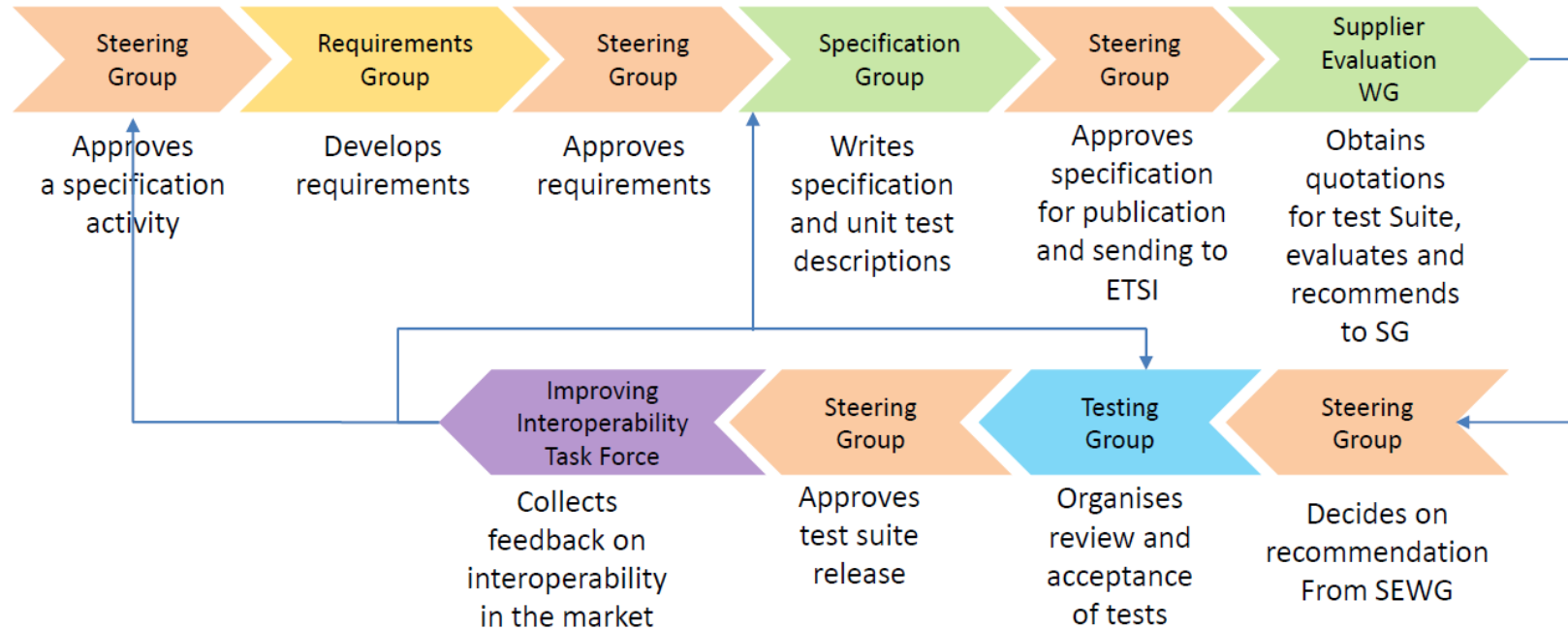
(Swiss TV SRF)

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

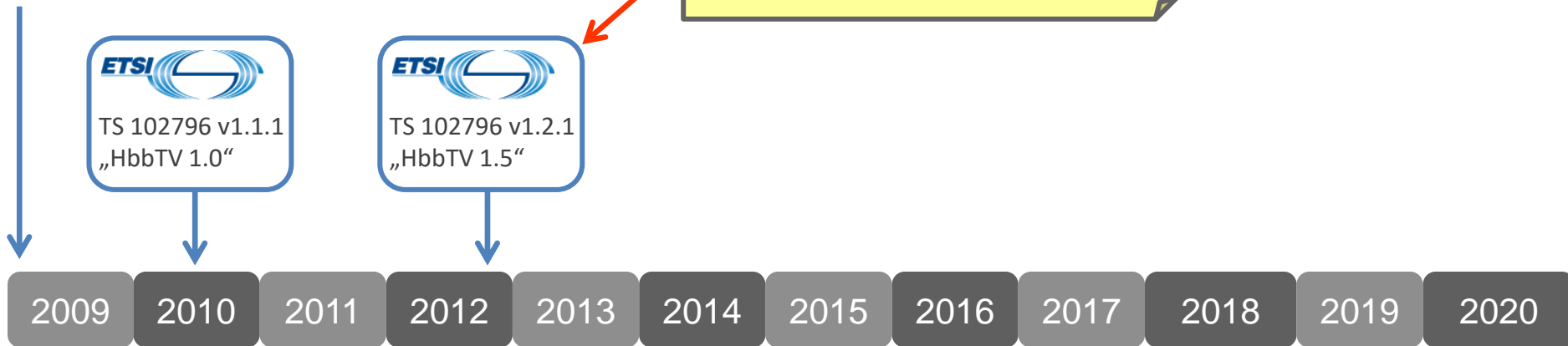


HbbTV internal development process for specifications and test resources

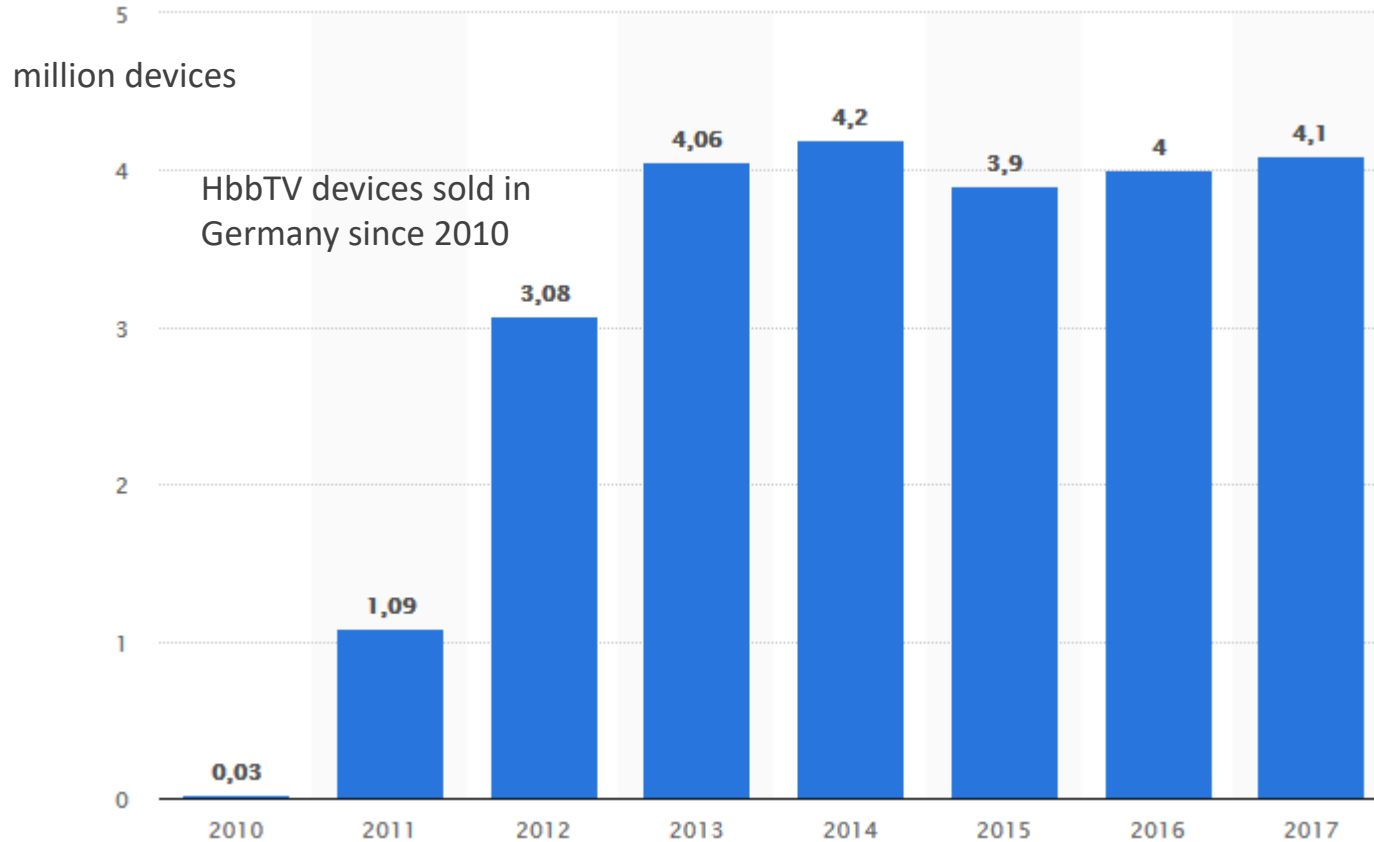
HbbTV specs published by ETSI

Starting to write first HbbTV specification

Main addition:
MPEG DASH adaptive streaming

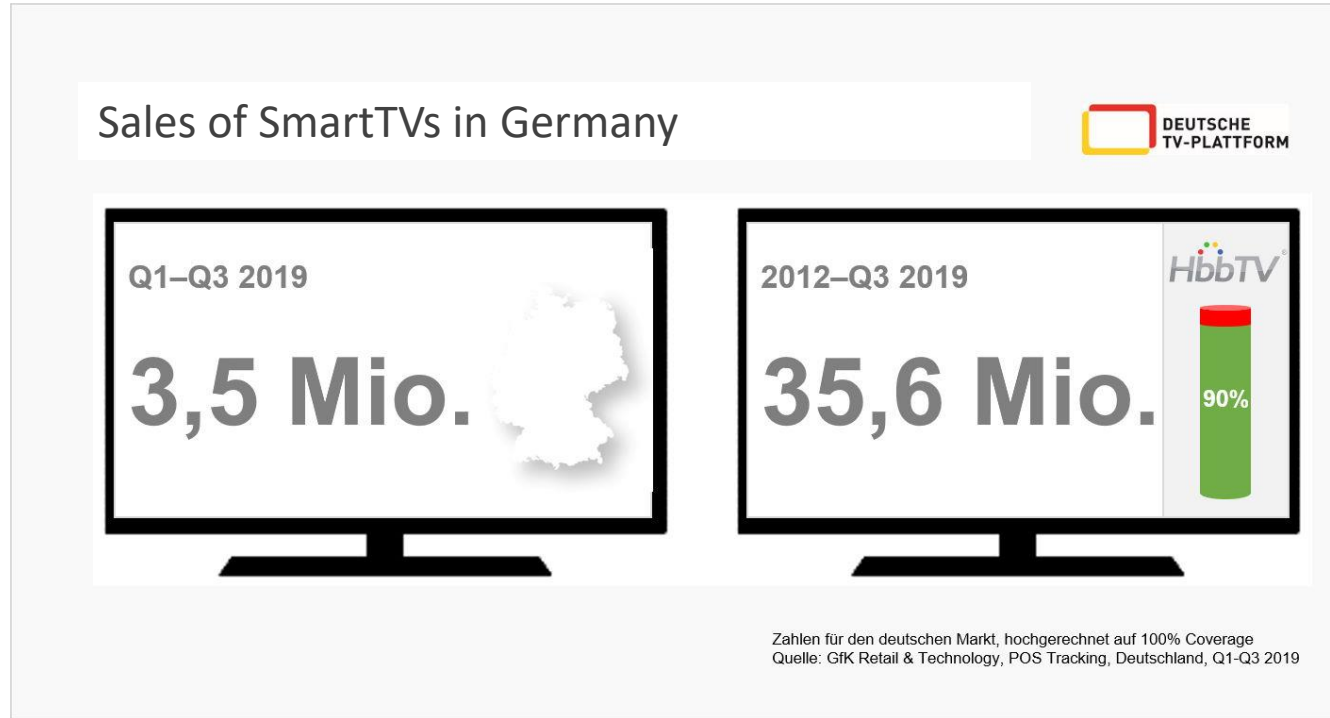


HbbTV in the German market



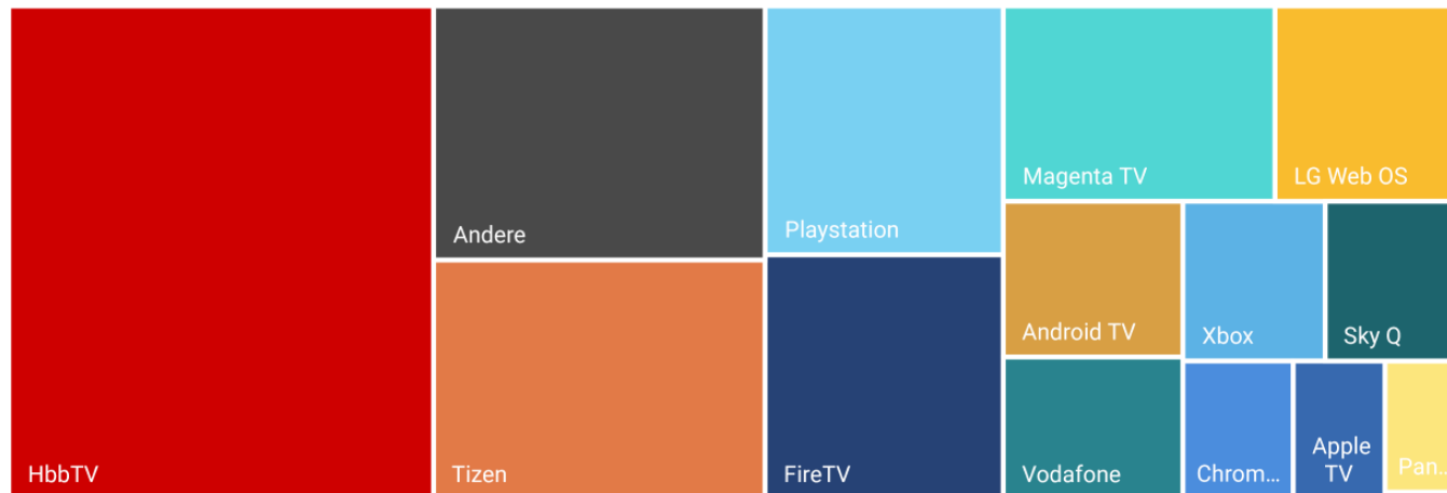
Source:
Statista / GfK

HbbTV in the German market



→ 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

Member Login



[Home](#) [Overview](#) [Membership](#) [Working Groups](#) [Deployments](#) [News](#) [Resource Library](#) [Contact](#)



Italy



General Information:

- 25 Mln 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:

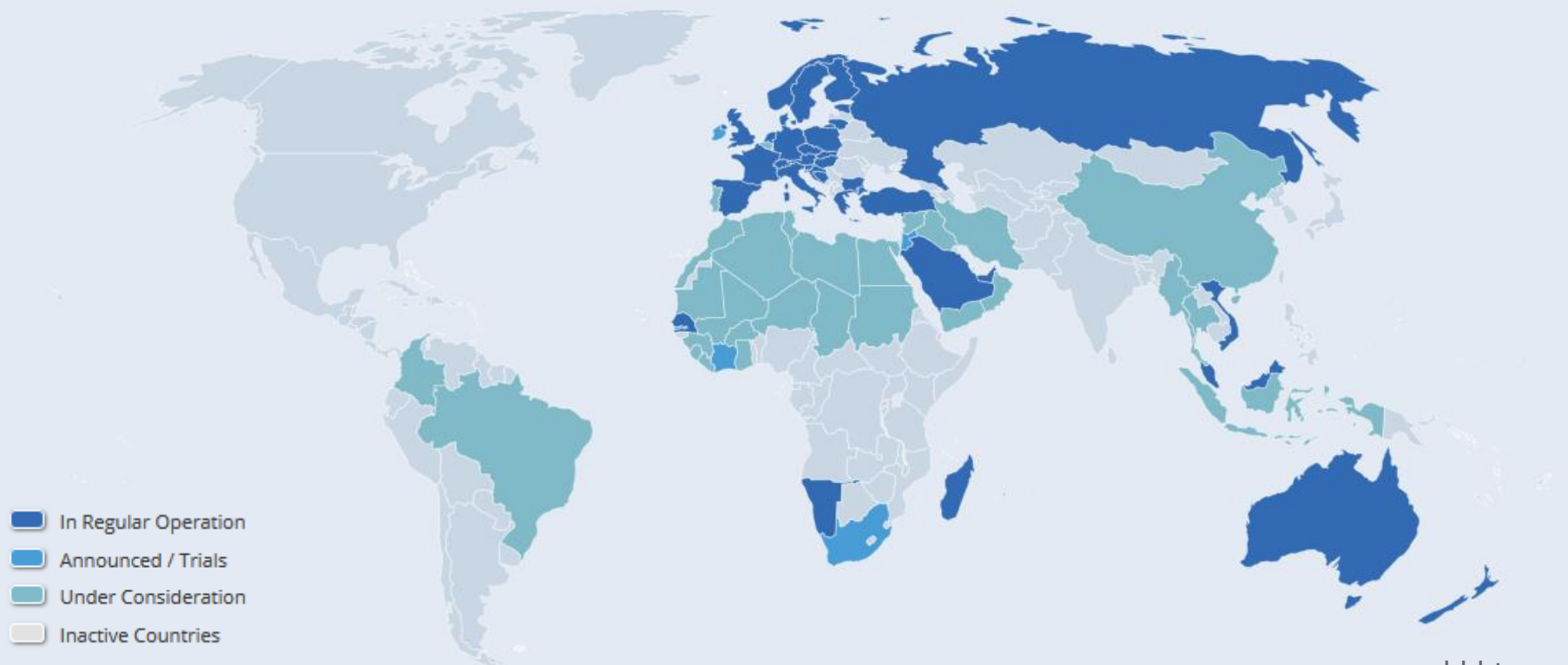
- 3,37 Mln (source: HbbTV elaboration on broadcasters data, April 2020)

- Reach

According to dataxis viewers are reached by DTT (67%), Satellite (29%) and IPTV networks (4%). About 80% of the viewers can potentially be reached with HbbTV services.

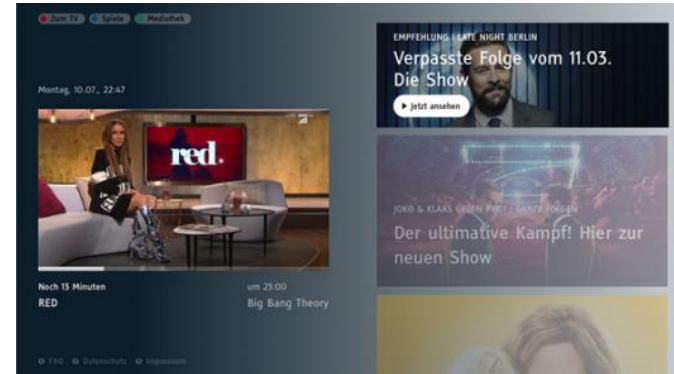
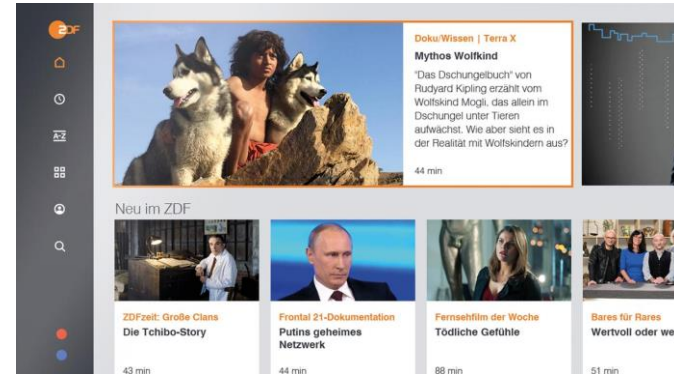
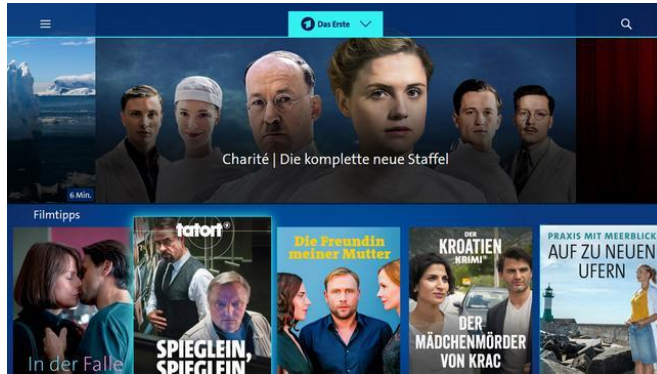
HbbTV website gives some information
on country specific deployments

HbbTV international deployments



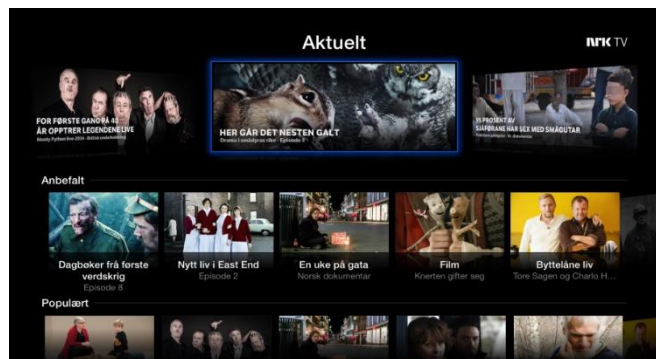
www.hbbtv.org

Video portals via HbbTV



Video portals of the 4 big broadcasting groups in Germany

Video portals via HbbTV



Norway



Turkey



Greece



Australia

Video portals make the main HbbTV offering in many countries

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

BOSCH
Yaşam için teknoloji

“Buzdolabında ne olduğunu telefondan göreyim” teknolojisi.

Bosch Home Connect kameralı buzdolabını keşfetmek için kumandadaki **KIRMIZI** tuşa basın.

TÜRK KİME DENİR?
KAVIMDEN IMPARATORLUĞA TÜRKLERİN KISA TARİHİ
GÜN
CNN TÜRK

BOSCH
Yaşam için teknoloji

“Buzdolabında ne olduğunu telefondan göreyim” teknolojisi.

Bosch Home Connect buzdolaplarının iç kameraları sayesinde siz evde olmasanız da buzdolabınızda ne var ne yoksa telefonunuzda! #DolaptaNeVarNeYok

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

SevenOne Media

Regio XXL AddOn – Regional adaptation of your advertising

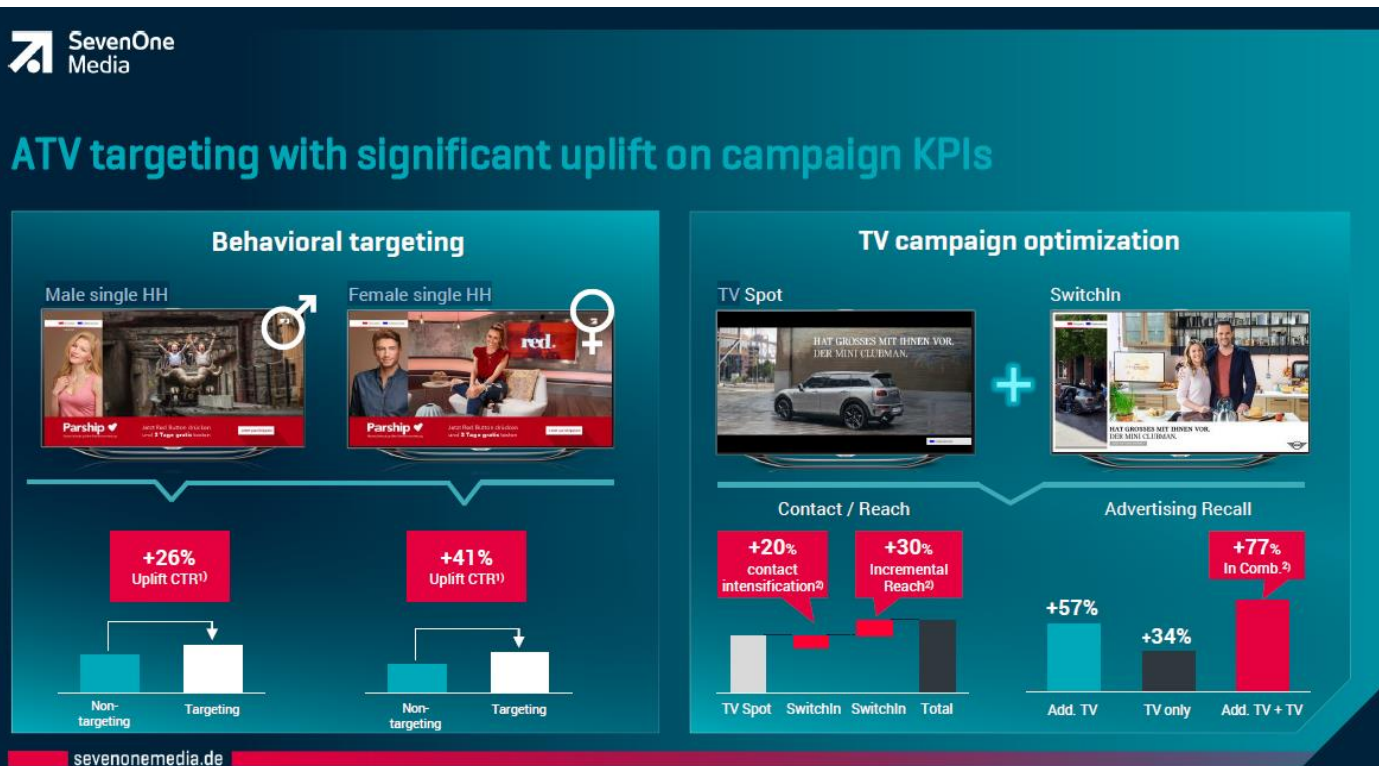
- Regional AddOn for classic national TV Spot
- Two strong placements
 - During the linear TV Spot
 - As Regio XXL Reminder in the programme



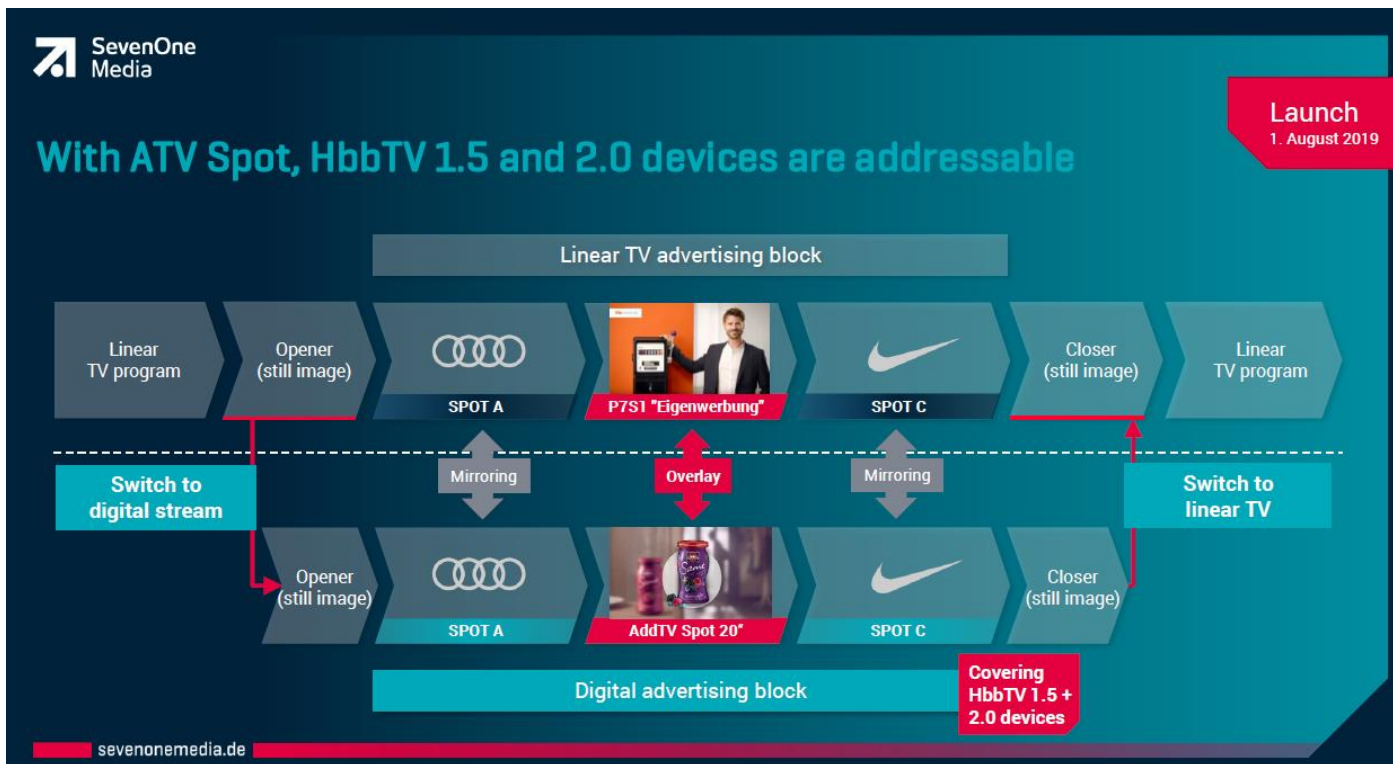
Autohaus Mustermann
Musterstraße 7
80333 München

sevenonemedia.de

Using HbbTV for advertising: targeting options



Using HbbTV for advertising: broadcast spot replacement



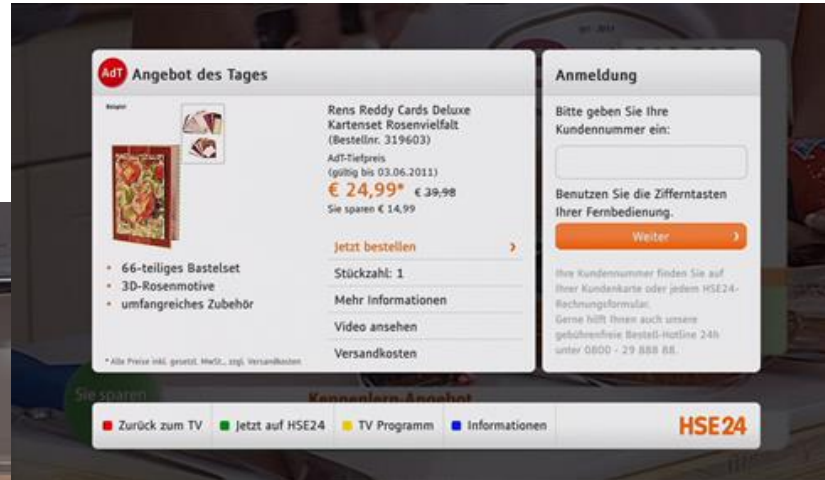
Teletext via HbbTV



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

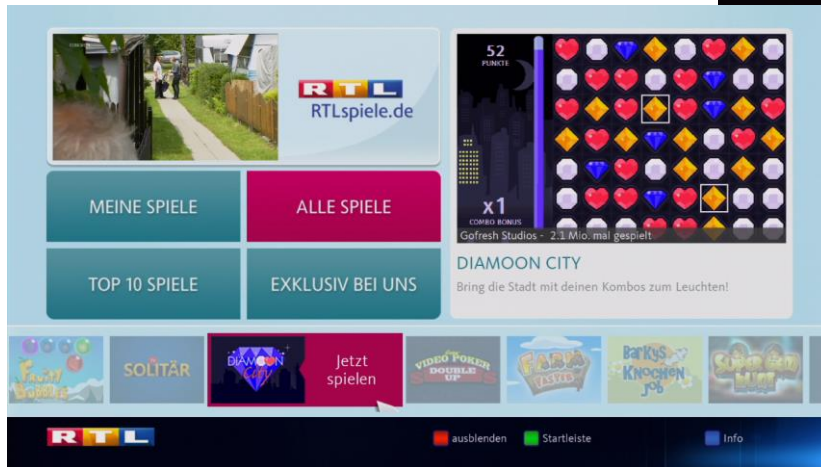


HbbTV shopping app on the HSE24 homeshopping channel

HbbTV brings gaming entertainment around the TV picture

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



HbbTV

Meine Taste für mehr Olympische Spiele

Olympia rund um die Uhr – mit HbbTV können Zuschauerinnen und Zuschauer die Zeitverschiebung umgehen. Über den Red Button eröffnet sich eine eigene Olympia Welt. Über 1000 Stunden zusätzlicher Livesport in HD sowie ein umfangreiches Angebot an Videos on Demand (Videos auf Abruf).

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



IP-Livestream with signer
launched by HbbTV app



Broadcast video plus HbbTV overlay
pointing at signer version

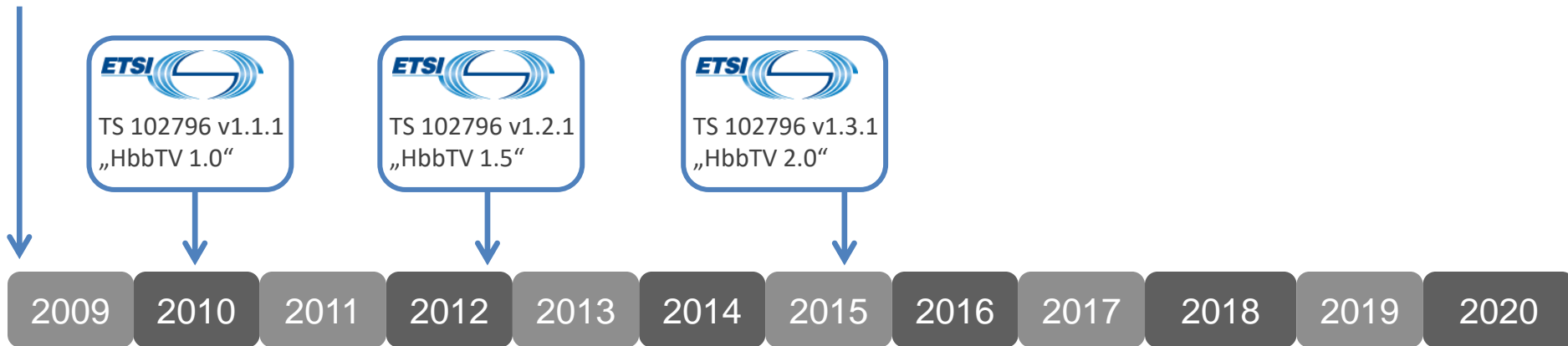
HbbTV offerings for children



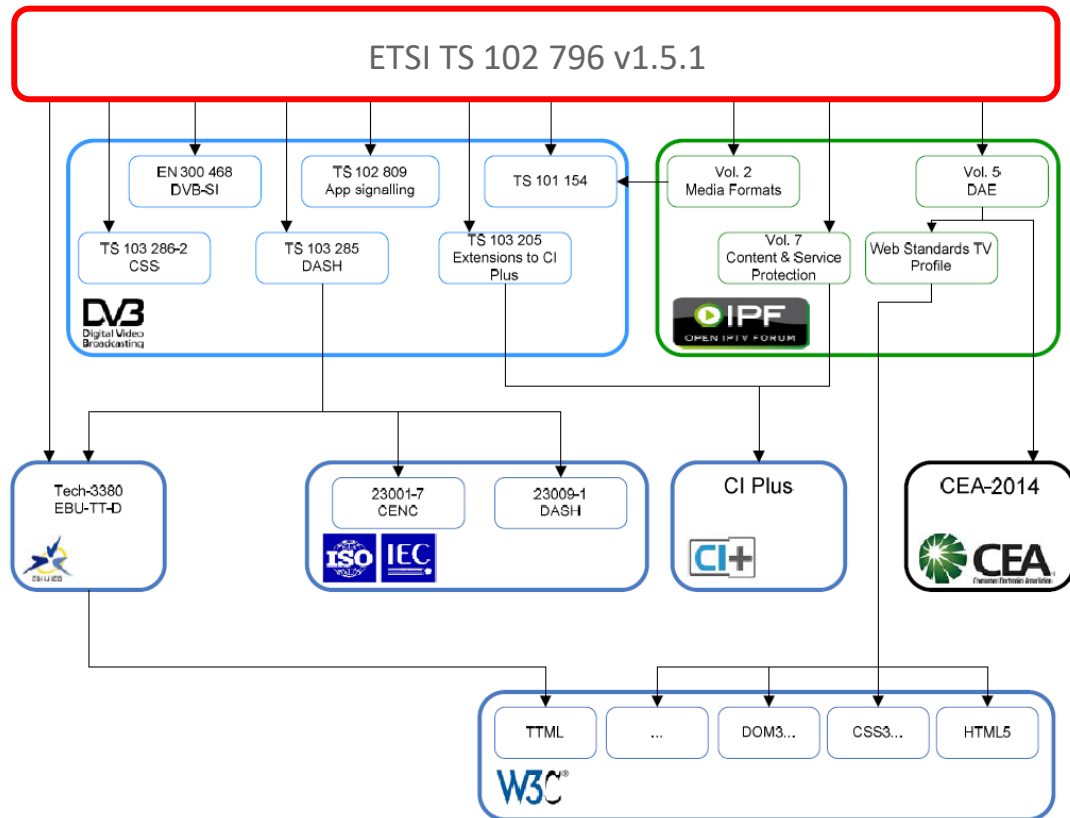
very popular childrens program – video portal with almost 2000 videos

HbbTV specs published by ETSI

Starting to write first HbbTV specification



Main building blocks of the HbbTV 2 specification

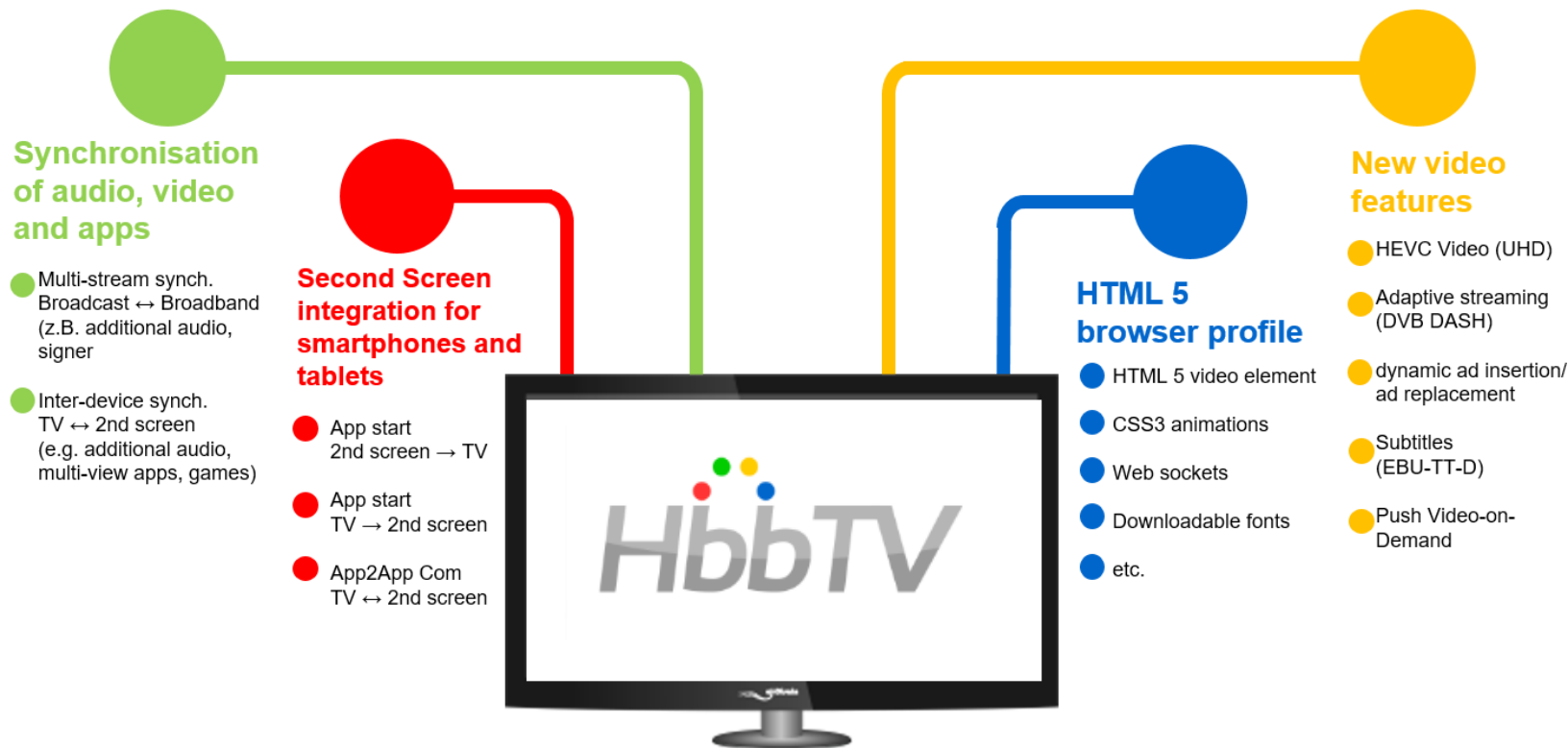


HbbTV 2.0.2:

on its 316 pages

- many normative elements specified
- many (70) references to other specifications

Main additional feature sets in HbbTV 2



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

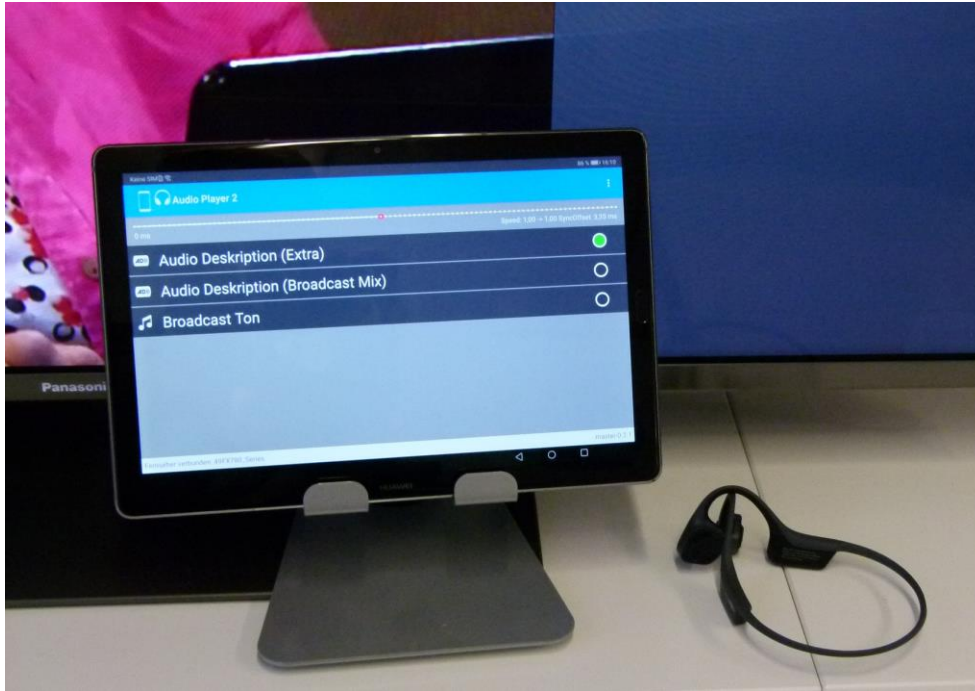


Playing the IP audio via the speakers of the TV set

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

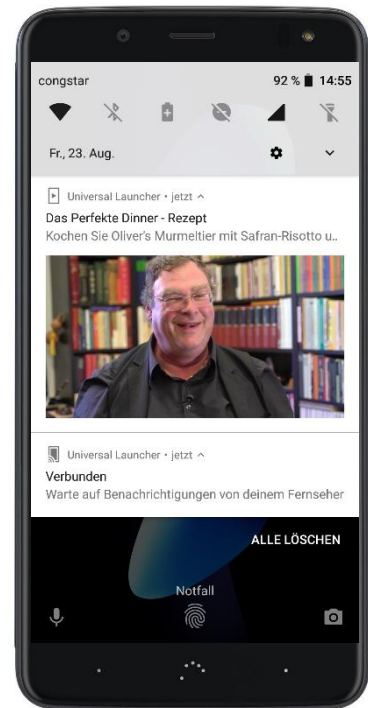
HbbTV 2: playing IP video in sync with broadcast video



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.

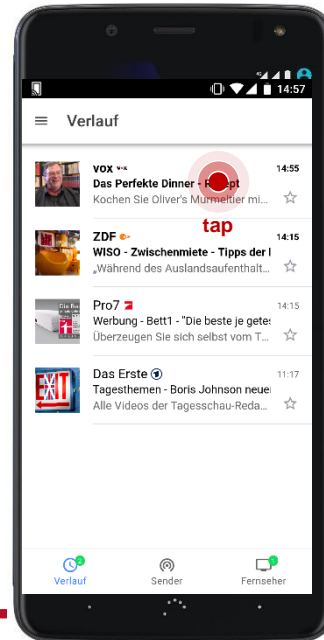
HbbTV apps detects mobile device with launcher functionality.

Push can be done from TV to mobile / Subsequent communication possible

IRTs „Universal Launcher“ concept (Demo at IFA/IBC 2019)

HbbTV 2: pushing info from and HbbTV app on the TV to a mobile

„Universal launcher“
allows immediate
use of mobile
(including direct
communication) or
using links to other
web ressources later



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



<https://lab.irt.de/>

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.



The HbbTV 2 app menu offers additional language versions (photo: ARD/IRT).

<https://lab.irt.de/hbbtv-2-down-with-the-language-barriers/>

<https://lab.irt.de/audio-description-via-bone-conduction-headphones-using-hbbtv-2/>

<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-immersed-motogp-multiscreen-experience-with-hbbtv-2-retail-devices/>

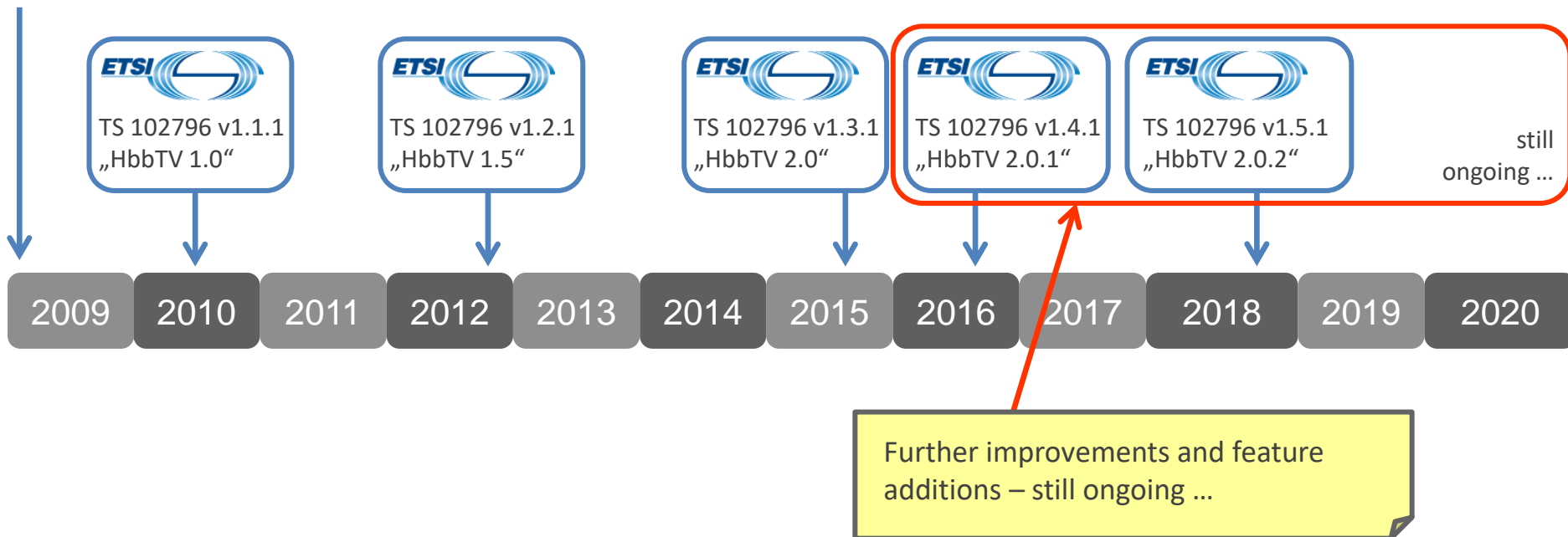
<https://lab.irt.de/hbbtv-application-discovery-over-broadband/>

<https://lab.irt.de/synchronised-holograms/>

<https://lab.irt.de/discovery-launch-and-app-to-app-communication-in-ard-mediathek/>

HbbTV specs published by ETSI

Starting to write first HbbTV specification



HbbTV Architecture – Overview over HbbTV standards

HbbTV 2.0.1 = HbbTV 2.0

+ clarifications/bugfixes

+ some features required by migrating markets UK and Italy

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“)

HbbTV 2.0.2 = HbbTV 2.0.1

+ clarifications/bugfixes

+ additional video/audio features

Main additional features in HbbTV 2.0.2:

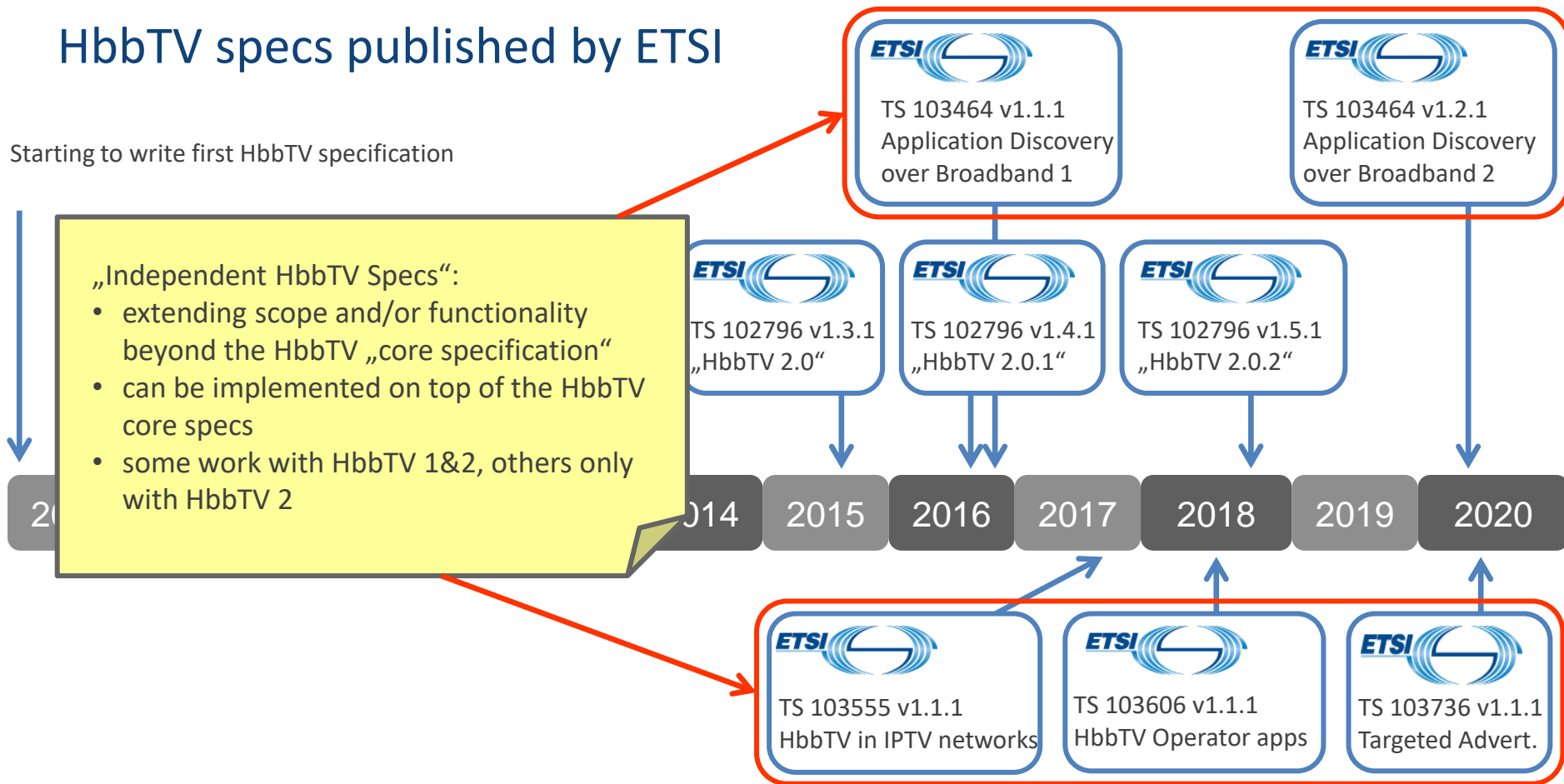
- Integration of HbbTV with High Dynamic Range (HDR) video (both PQ10 and HLG)
- ... High Frame Rate (HFR) video (e.g. 100Hz or 120Hz)
- ... Next Generation Audio (NGA) (both AC-4 and MPEG-H audio)
- HbbTV does mandate these features for devices where they are available for broadcast

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



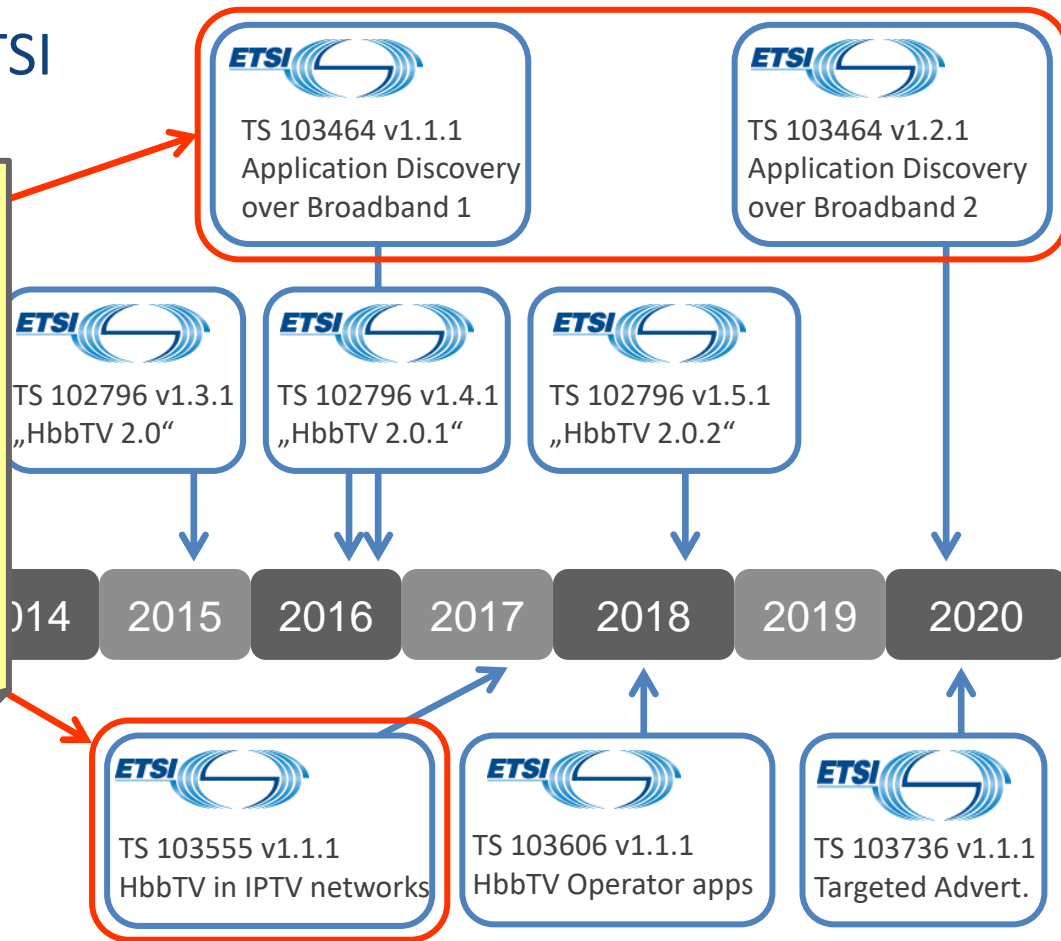
HbbTV specs published by ETSI

Start

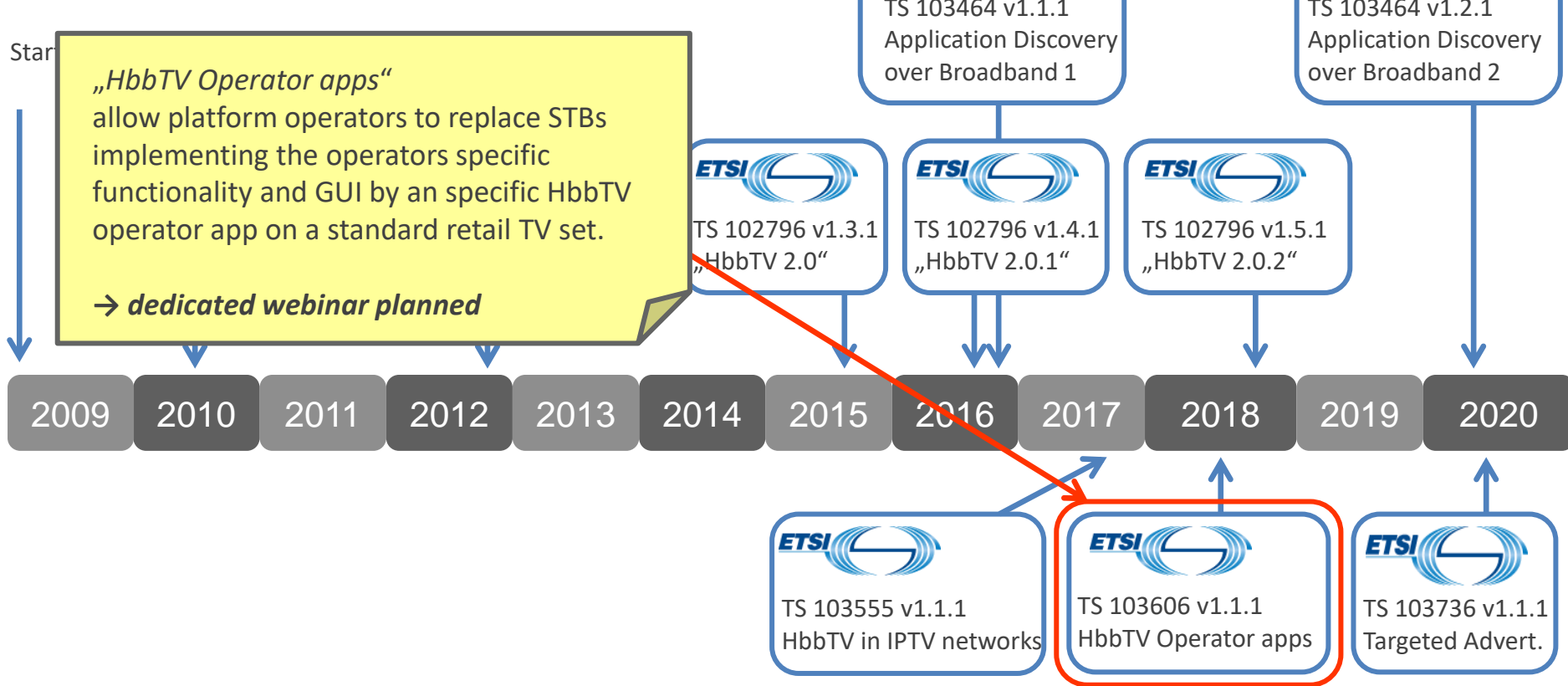
„Application Discovery over Broadband“ and „HbbTV in IPTV networks“ support applying the standard „red button“ use case in scenarios where:

- 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



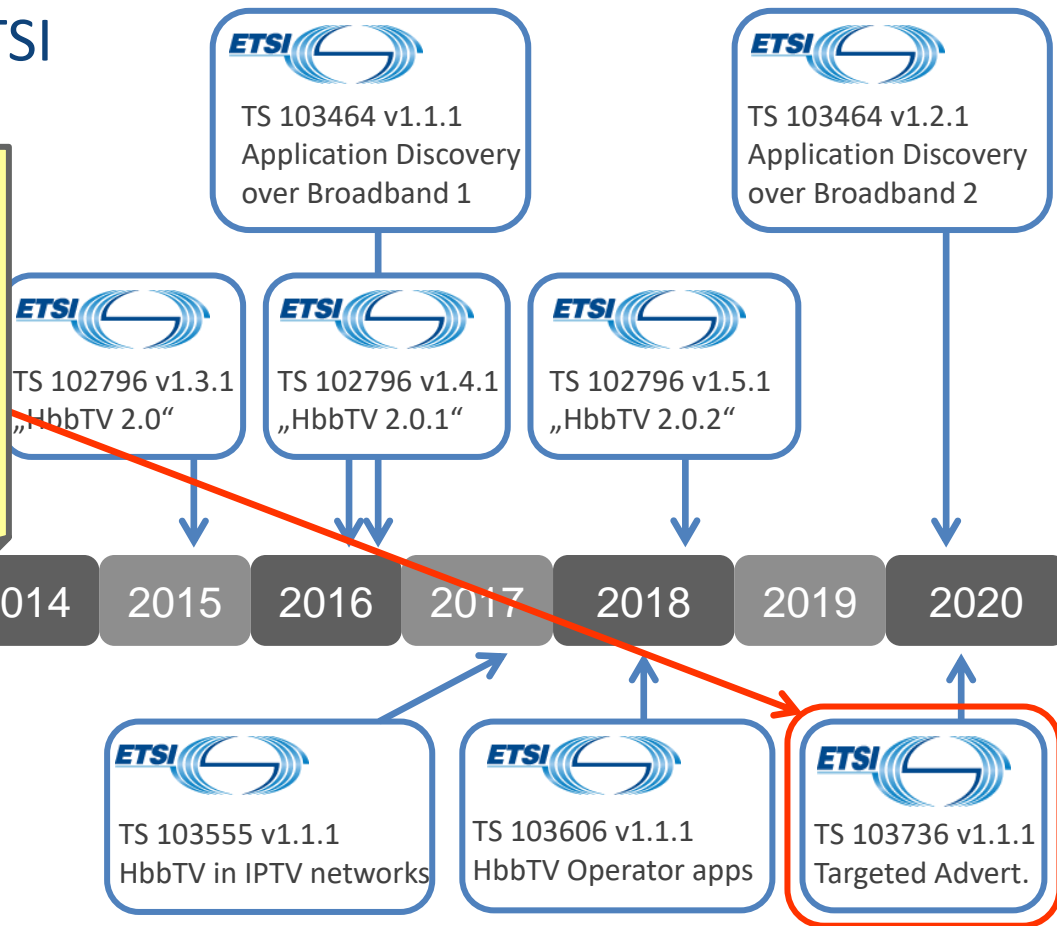
HbbTV specs published by ETSI

Start

„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*



„HbbTV critical in modernizing broadcast business model“

The Global TV Market

HbbTV Symposium 2019

Paul Gray

Research Director



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.

Thank you for your attention!

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