



Application Discovery over Broadband (ADB) Phase 2

HbbTV Webinar Series
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Introduction and Motivation for ADB2

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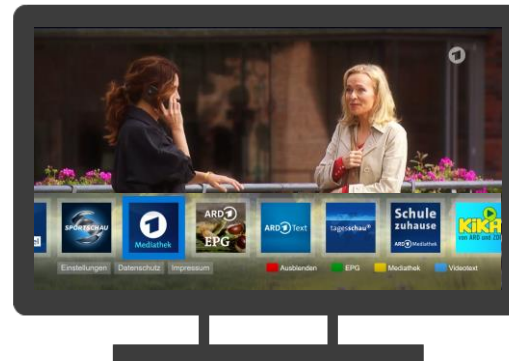
Regular usage of HbbTV



AIT contained
in broadcast

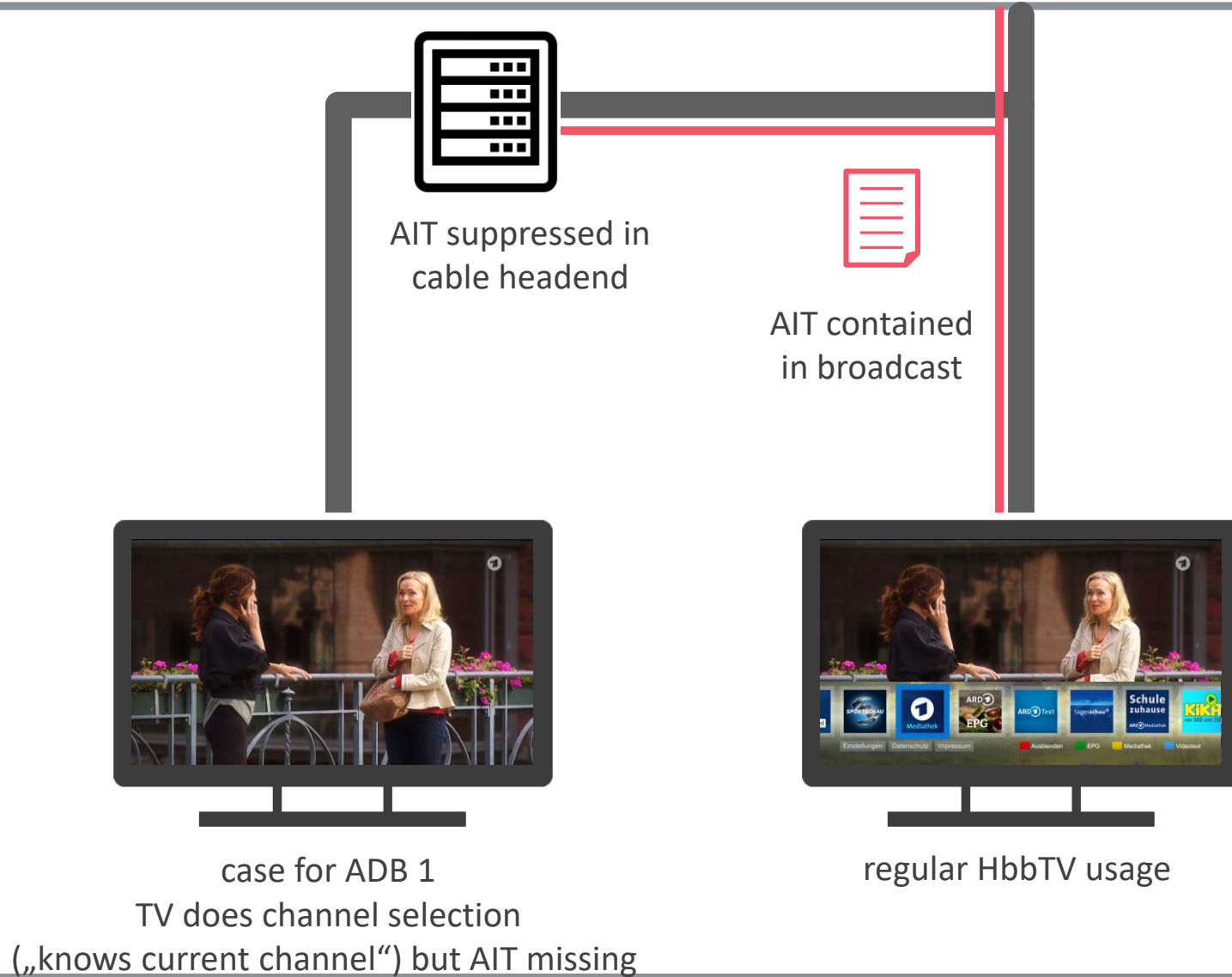
The AIT contained in the DVB multiplex carries the signalling info for HbbTV.

Each channel has its own AIT to signal its individual HbbTV application

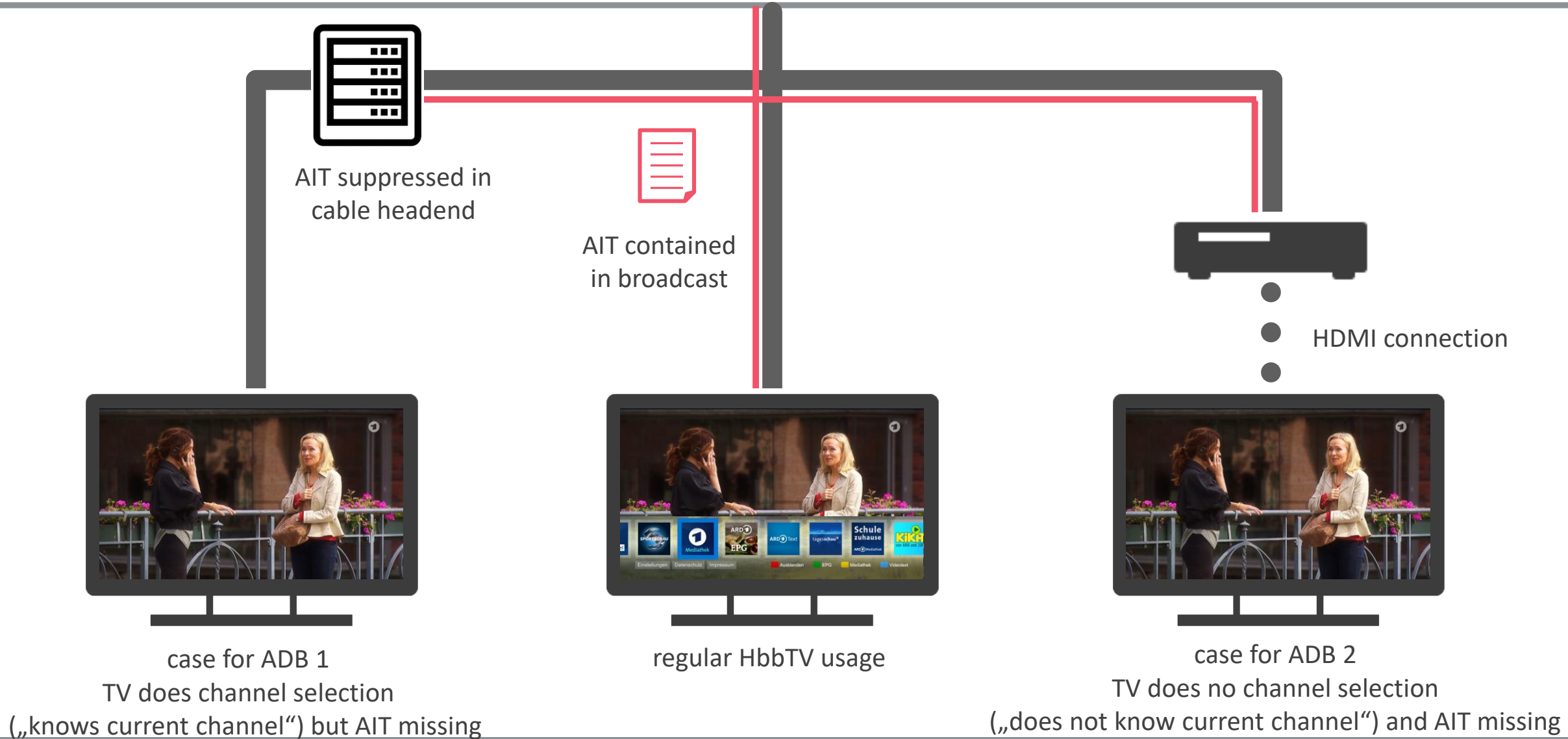


regular HbbTV usage

Usage scenarios for ADB



Usage scenarios for ADB



The Role of broadcast components in HbbTV



- Besides **application discovery (AIT)**, HbbTV makes also use of broadcast components like **stream events** and **timelines**

<i>Signaling Information</i>	<i>Purpose</i>	<i>Use Cases</i>
Application Discovery (AIT)	Used by the terminal to find and launch the application	Required for any use of HbbTV
Stream Events (HbbTV1/2)	Deliver messages from the broadcaster to the application via the broadcast path	Push notifications to applications
Timeline (HbbTV2)	Used by the application to synchronize application content broadcast content	Applications with content-related overlays, supplemental audio or video

Deficits when broadcast components are lost

- Loss of broadcast components leads to loss of HbbTV functionality that relies on it
- These problems motivated the creation of HbbTV Application Discovery over Broadband

<i>Signaling Information</i>	<i>Implications of Loss</i>	<i>Workaround</i>
Application Discovery (AIT)	Television will not launch a broadcaster application	Application Discovery over Broadband, Phase 1 or 2
Stream Events	Stream event data must be delivered via broadband, imposing additional latency and infrastructure cost	Application Discovery over Broadband, Phase 2
Timelines	Application content cannot be synchronized to broadcast content (only some use cases require this)	Application Discovery over Broadband, Phase 2



TS 103464 v1.1.1 (Sept. 2016)
ADB Phase 1
[now obsolete]



TS 103464 v1.2.1 (May 2020)
ADB Phase 1 (including updates)
ADB Phase 2



Application Discovery Over Broadband Solution / Technical

Joe Winograd, CTO

Verance

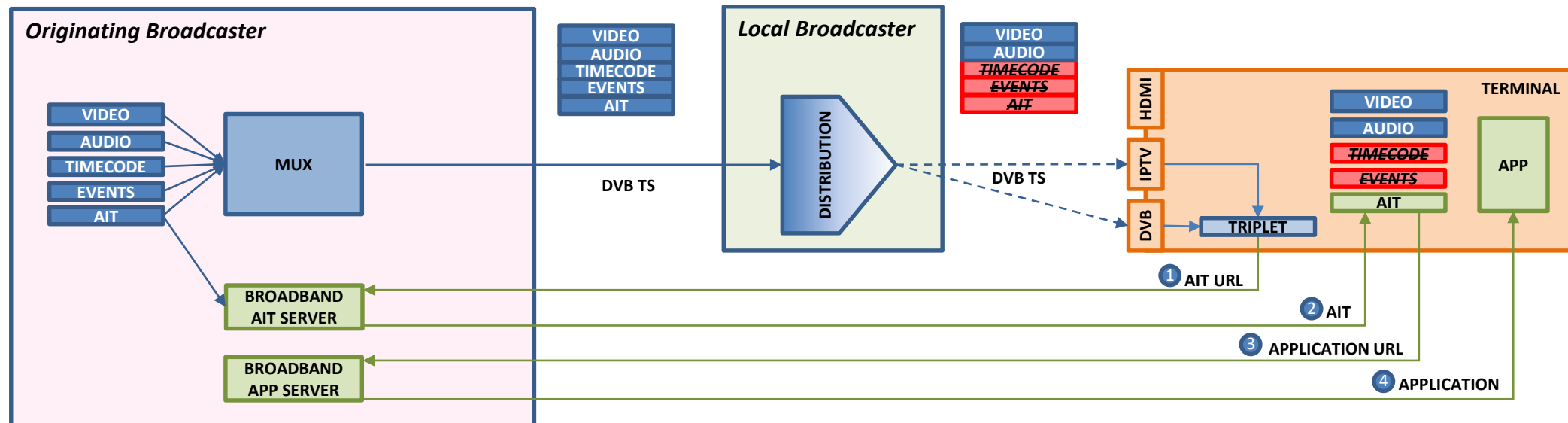
jwinograd@verance.com



Application Discovery over Broadband (ADB)

Phase 1: DVB Triplet

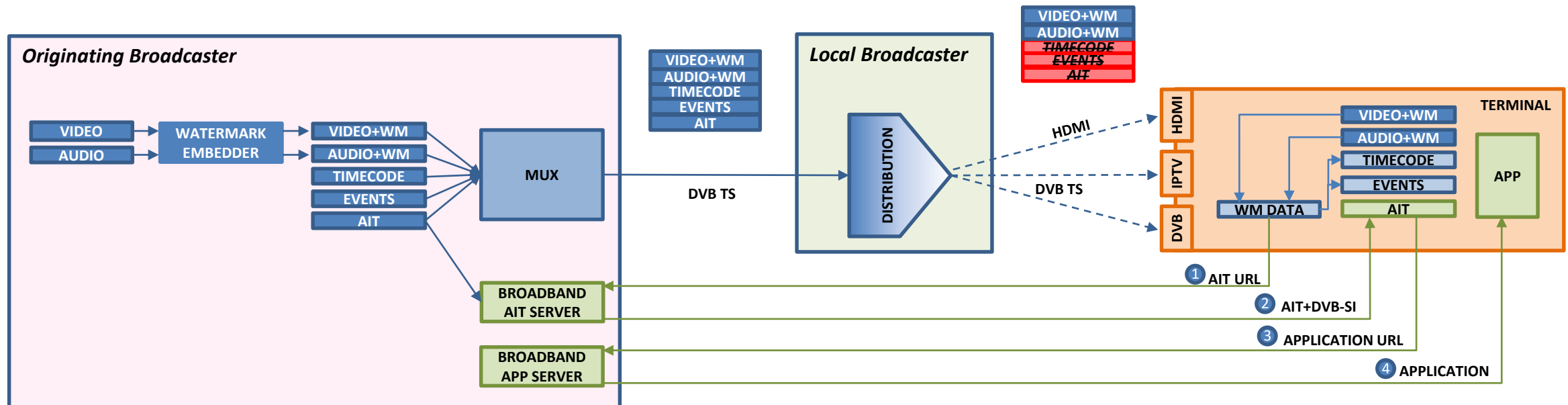
- ADB Phase 1 solution is applicable to live viewing from a DVB transmission
- It uses the centralized DNS service **hbbtvdns.org** to convert the DVB triplet into the hostname of a Broadband AIT Server
- The terminal retrieves an AIT from the Broadband AIT Server, which enables application retrieval from an Application Server (steps 1-4 below)



Application Discovery over Broadband (ADB)

Phase 2: Watermarking

- Watermarking extends use cases for Application Discovery over Broadband to include:
 - Application discovery via HDMI and other non-DVB interfaces
 - Support for live, time-shifted, and on-demand viewing
 - Timecode
 - Stream Events
- For ADB Phase 2, use of audio watermarking is required and video watermarking is optional



ADB Capabilities Summary

	<i>TV Interface Support</i>		<i>Discovery over Broadband</i>		
	DVB w/ missing DVB-SI	HDMI or other non-DVB	Application	Timeline	Stream Events
Phase 1	✓		✓		
Phase 2, audio watermark only	✓	✓	✓	✓ -	✓ -
Phase 2, audio and video watermarks	✓	✓	✓	✓	✓

✓ : Supported
✓ - : Supported with reduced functionality

Questions?

Industry Perspectives on ADB2



U.S.

Jason Patton

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Watermark Embedding & Detection

U.S. Broadcasters Embedding the Watermark

- ABC/Disney
- Capitol
- CBS
- Cox
- FOX
- Graham
- Gray
- Hearst
- Meredith
- NBC
- News-Press & Gazette
- PBS
- Pearl
- Scripps
- Sinclair
- Tegna
- Telemundo
- Univision

Television Manufacturers Detecting the Watermark

- 5 successful lab integrations across different TV manufacturers and chip makers
- 3 successful field integrations in different U.S. cities across different TV manufacturers
- Recognized by standards organizations in the U.S. as an essential feature



Industry Perspectives on ADB2



Germany

Klaus Merkel

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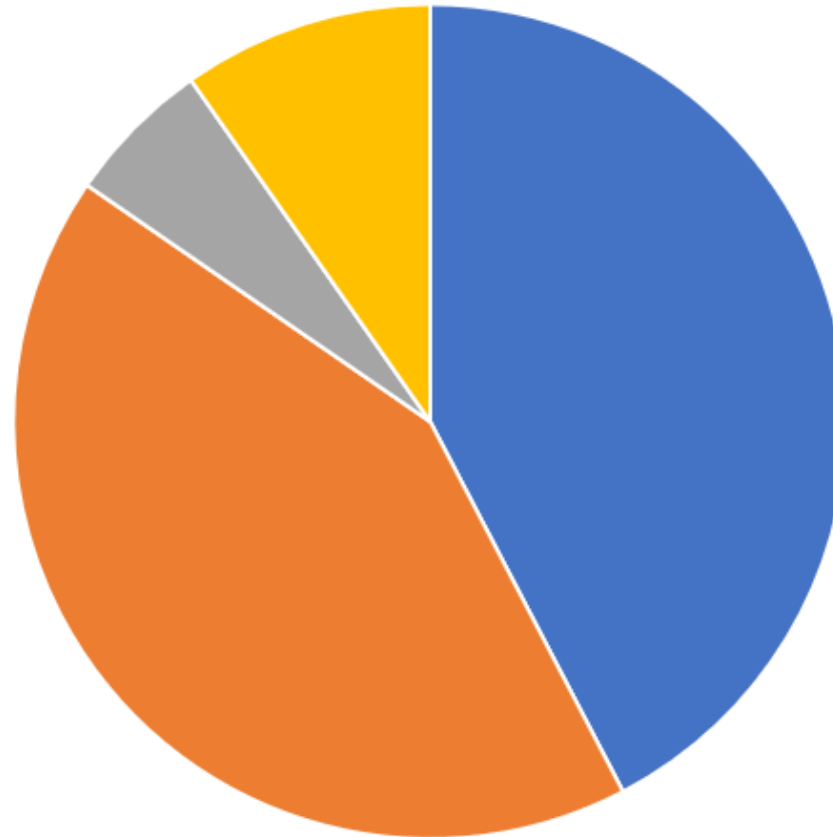
- Cable operators refusing to retransmit AITs for ARD/ZDF channels had been one of the triggers to start ADB1 work
- meanwhile AIT retransmission happens due to new contracts with cable operators – so ADB1 is obsolete in this market segment

BUT

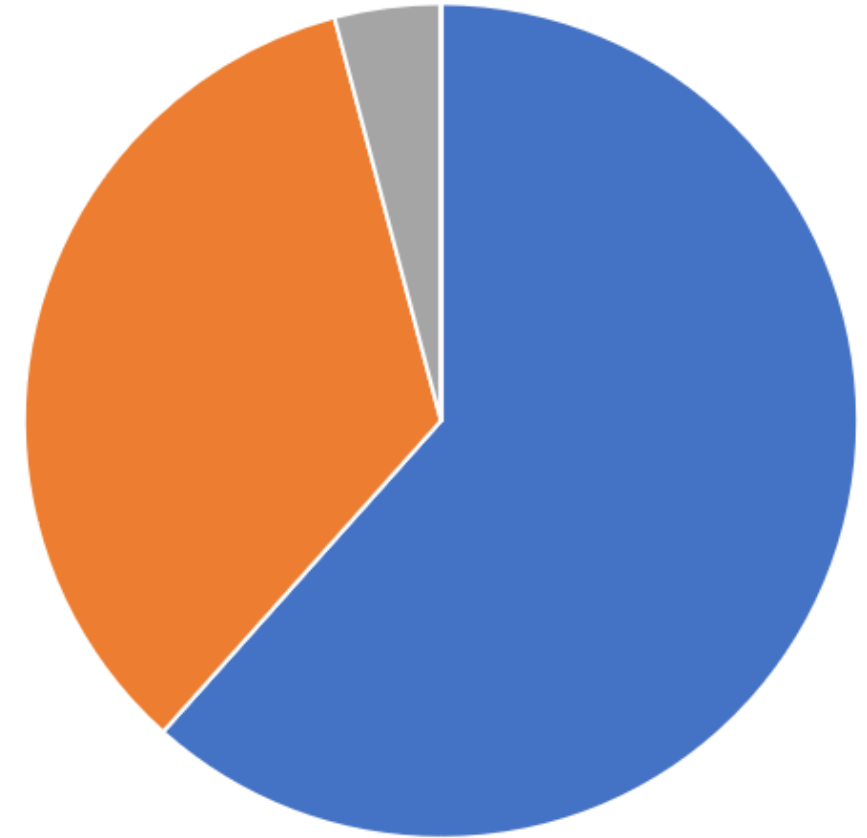
- ADB1 has become of interest in the context of OTT platforms
- proof of concept has been implemented in cooperation TARA Systems/ IRT/ Zattoo
- activities are ongoing ...

ADB2 perspective in Germany

Relative market share of distribution paths for Linear TV in general



... and reception of HbbTV services



■ DVB-S ■ DVB-C ■ DVB-T ■ IPTV/OTT

- Cable is significantly underrepresented in HbbTV reach – IPTV missing at all
- Reason: Set-Top-Boxes by operators which do not support HbbTV – and operators do not really plan to change this
- currently we have a technical reach of roughly 15 Mio connected HbbTV sets
- potential for ADB2: roughly some 5 Mio more HbbTV devices

→ ADB2 perspective very simple: increasing reach

→ major broadcasters in Germany are planning ADB2 showcase / proof of concept

→ cooperation with manufacturers highly welcome for this showcase!

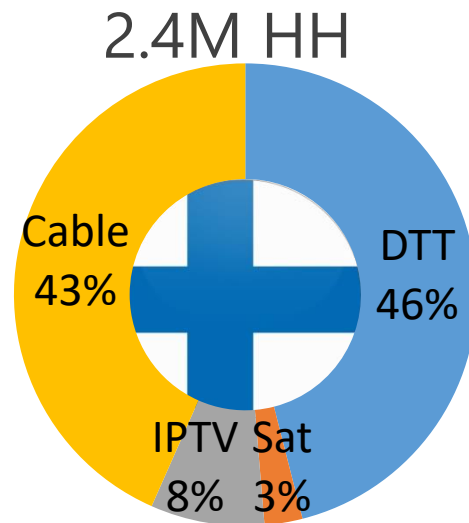
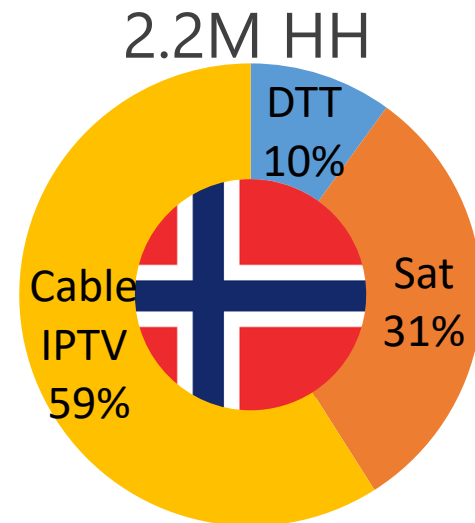
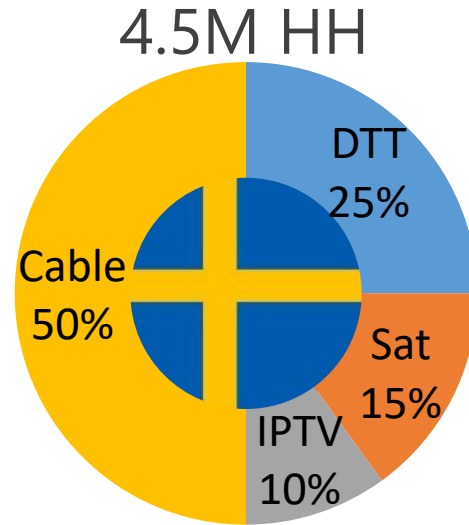
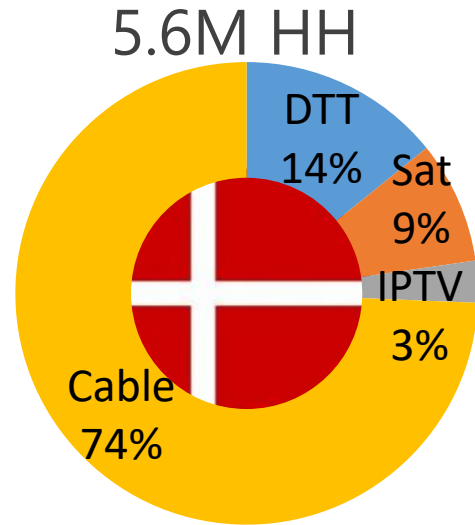
→ communication with broadcasters in other countries welcome to align ADB use

Industry Perspectives on ADB2



Norway
Erik Vold
NRK

Nordic Region



NorDig Unified IRD spec:

HbbTV 2.0.2 > 1.7.20

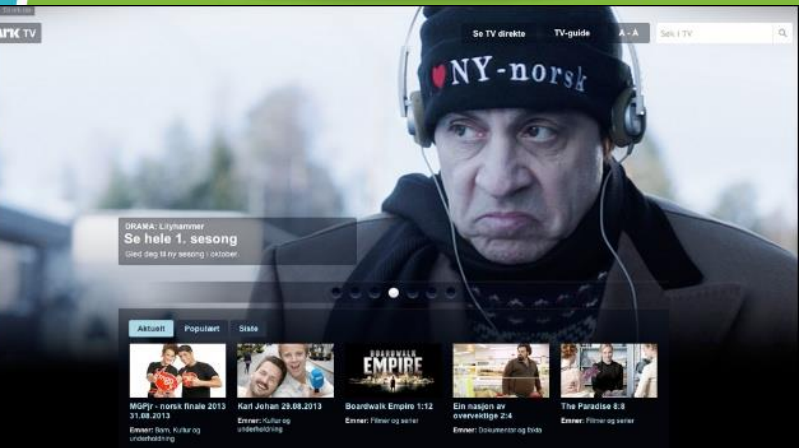
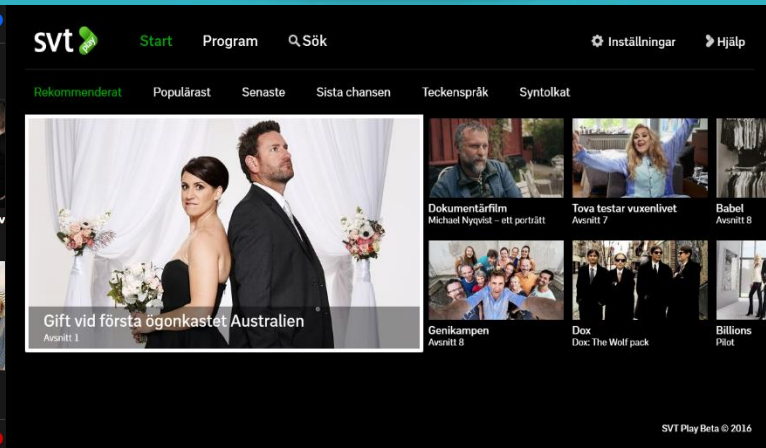
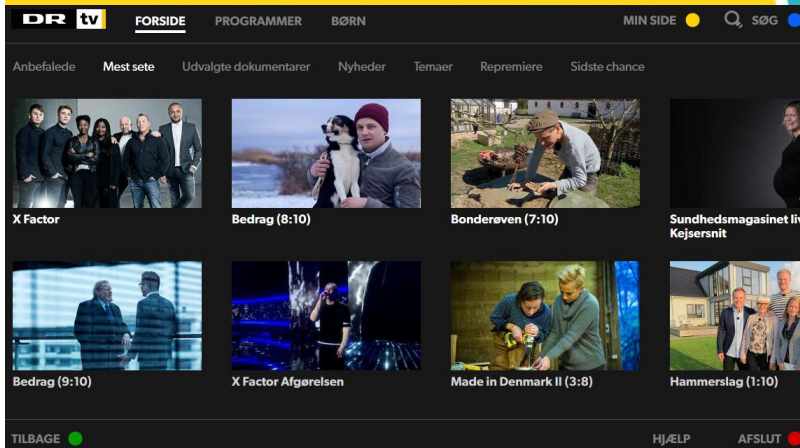
Nordic region & Ireland



1.7M HH

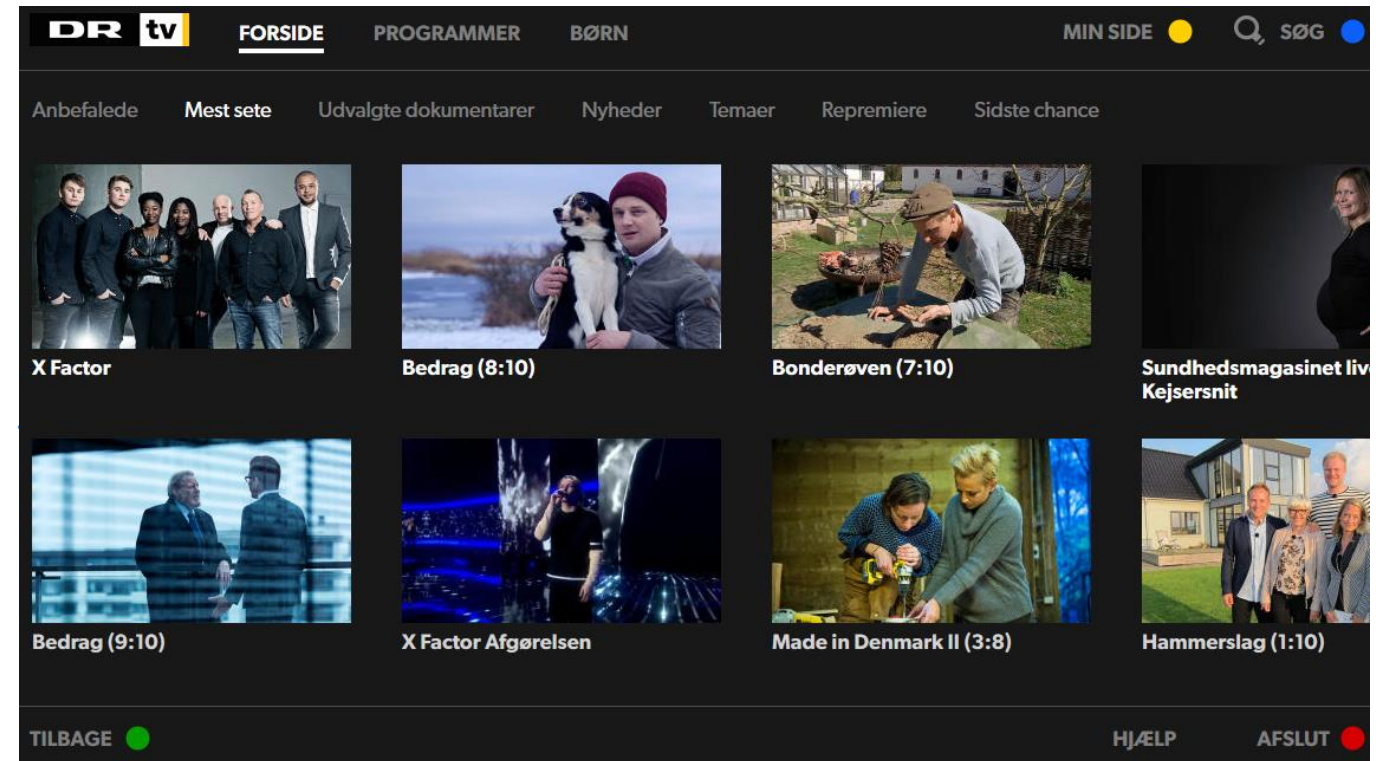
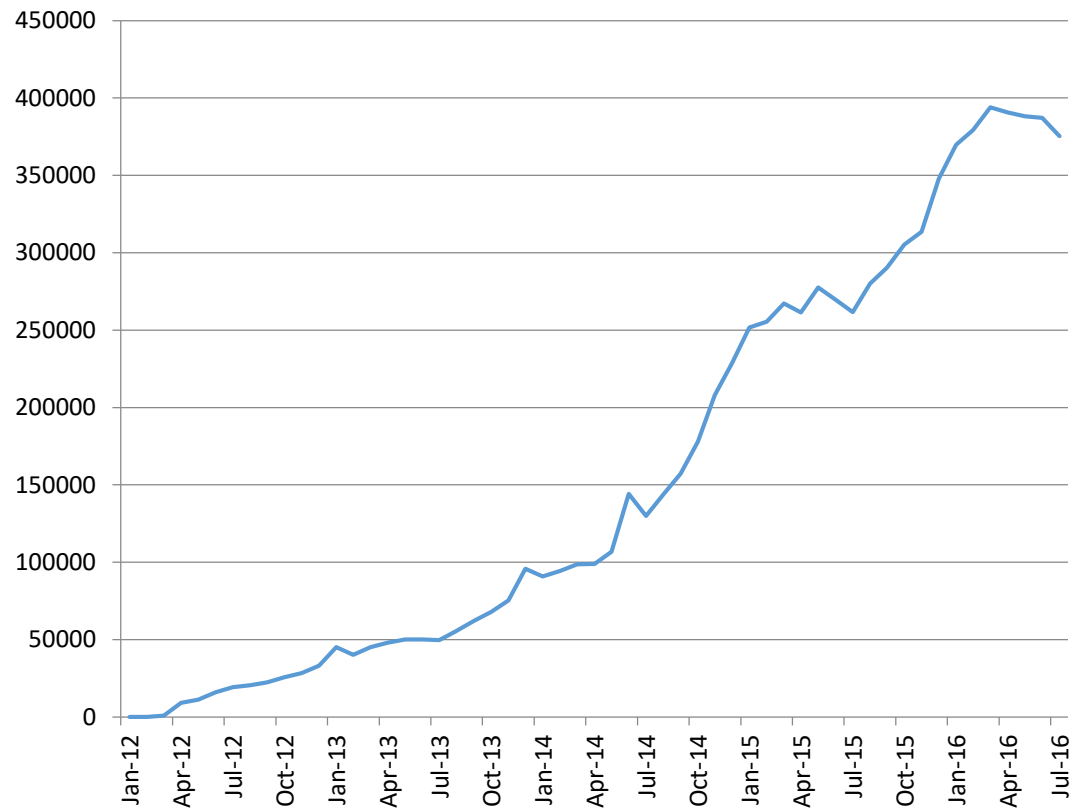


Popular catch-up services in Nordic region



HbbTV – Promoting itself with «red button»

DR (unique users) – Only promoted with red button

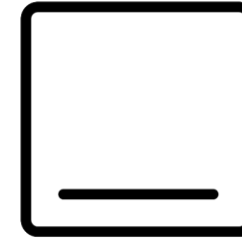


«Red button» / Contextual link



Accessibility Services

AD Audio Description



"Two dolphins are jumping out of the ocean."

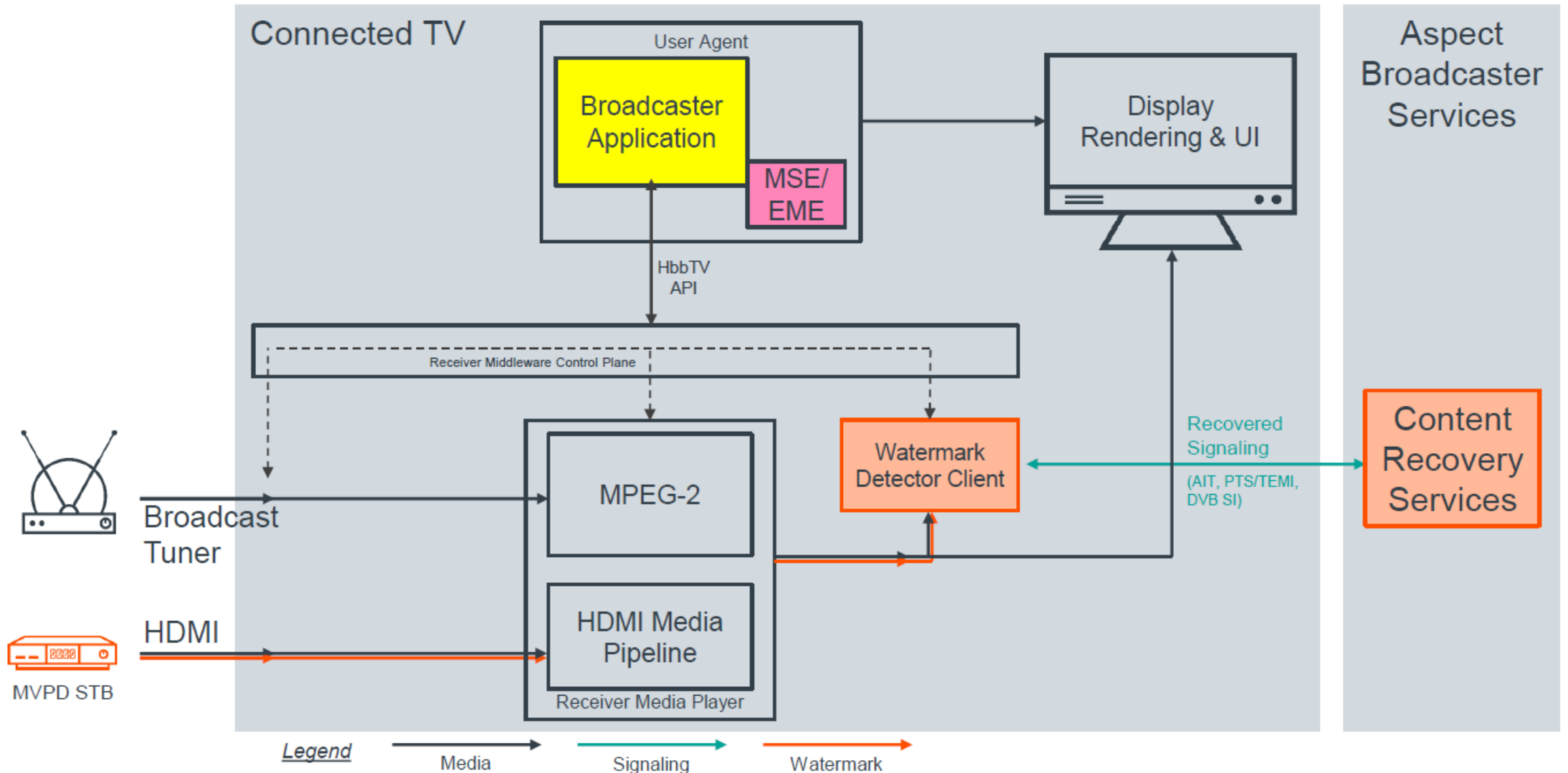


Enhanced dialogue



HbbTV/DVB Receiver Reference Architecture

Including HDMI Access to Rich Services



Industry Perspectives on ADB2



Netherlands

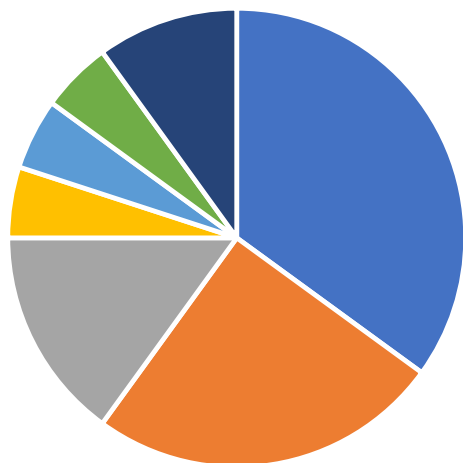
Frank Visser

Media Perspectives

TV market in the Netherlands

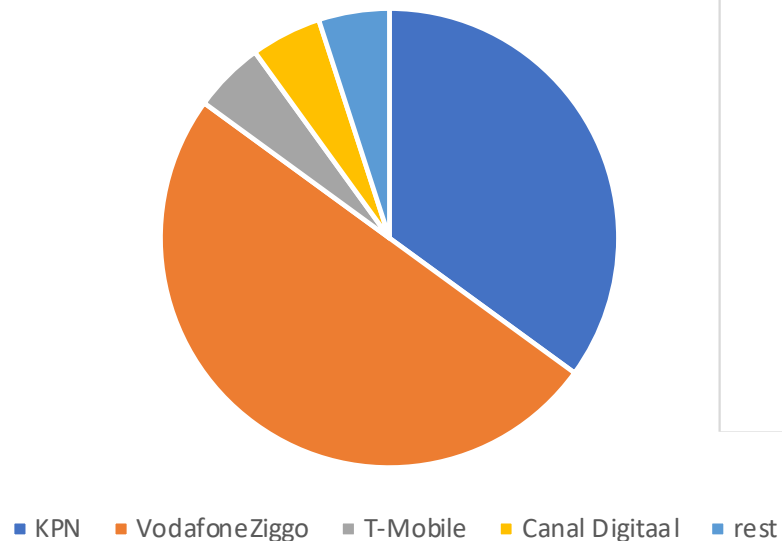
disclaimer: all data are best estimates

broadcaster market share



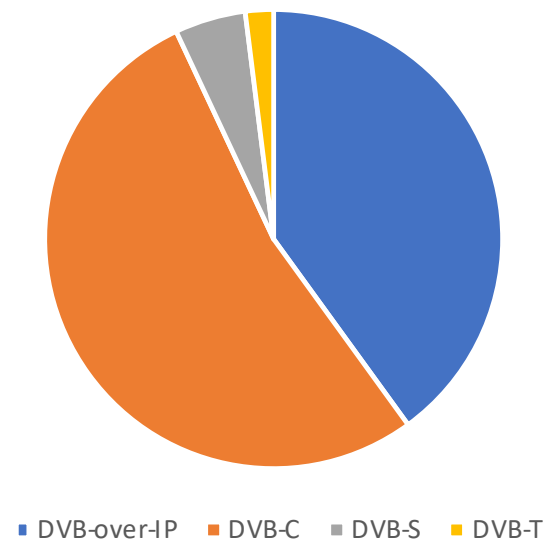
■ NPO ■ RTL ■ Talpa ■ Viacom ■ Disney ■ Discovery ■ rest

distributor market share



■ KPN ■ VodafoneZiggo ■ T-Mobile ■ Canal Digitaal ■ rest

technology market share



± 8.000.000 households (2020)
almost all TV's are connected through a set-top-box / hdmi
± 300.000 HbbTV polling TV's (~2017 stats)
a very small number connected directly to DVB-T

- Despite working group efforts, HbbTV has not taken off due to lack of TV's reached
- NPO and Talpa had a limited offering, RTL had none
- Targeted advertising is now introduced through both KPN (DVB over IP) and Ziggo (DVB-C) networks
 - ad-replacement is done in their set-top-box ecosystem
 - reshuffling the commercial agreements / margins
 - who's customer is it? GDPR? consent? other data?
- ADB2 would mean a way of reaching out to the TV viewer by the broadcasters directly
- Interest of the three main broadcasters, facilitating companies and advertising agencies to research the possibilities
 - ranging from data gathering only
 - to a full integrated broadcast, OTT and online offering

Industry Perspectives on ADB2



Targeted Advertising

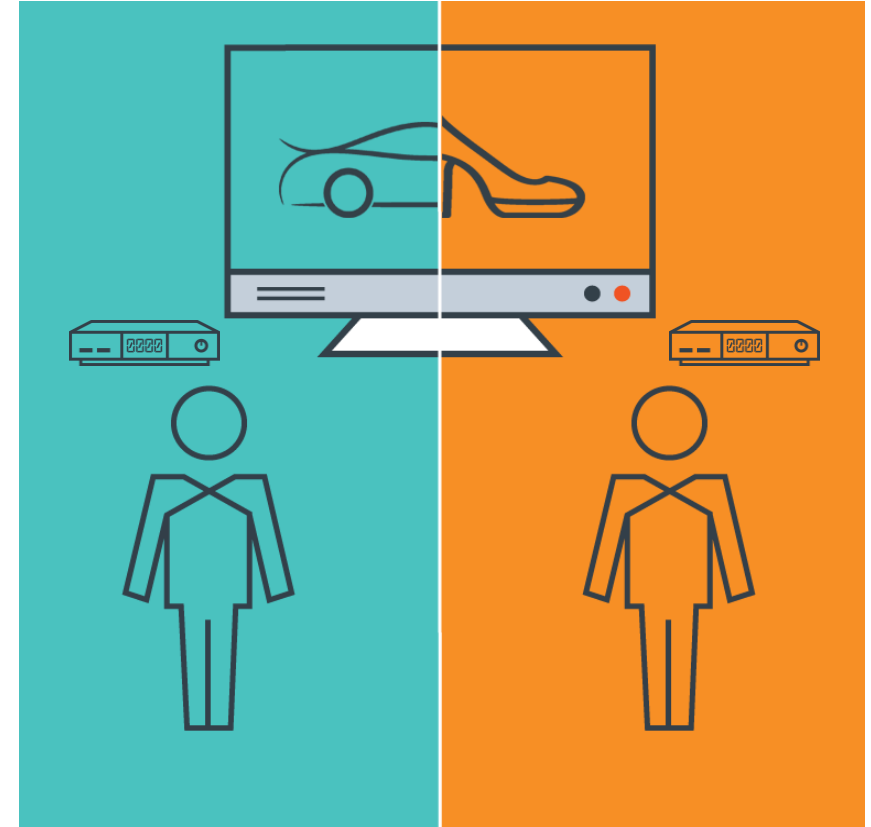
Matt Poole

HbbTV

DVB Architecture for Targeted Advertising

HbbTV Extensions Place Broadcaster at the Controls

- DVB and HbbTV released multipart specifications for signalling and insertion of Targeted Advertisements in 2019
 - DVB A178 spec defines signalling based on SCTE 35
 - HbbTV TA spec defines APIs for “fast switching”
- DVB and HbbTV are now working to extend Targeted Advertising features to support ADB2 use cases



Questions?