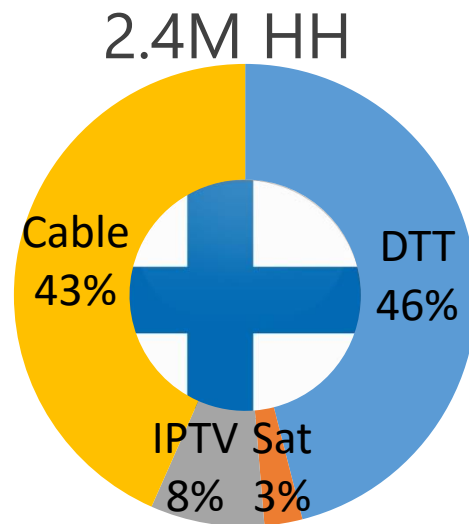
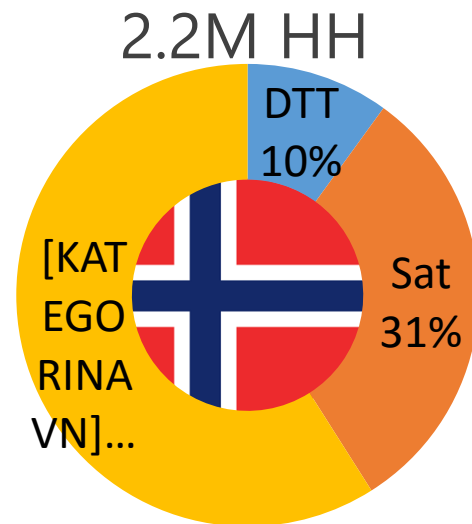
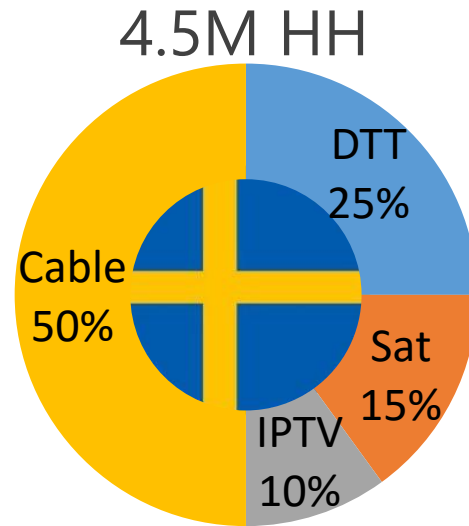
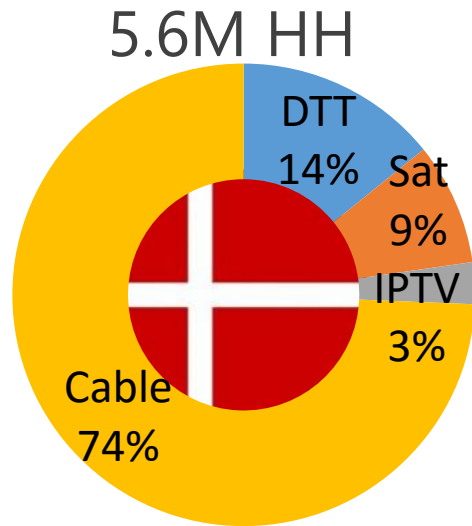


HbbTV in Nordig

HbbTV Symposium Madrid

erik.vold@nrk.no

Nordic region



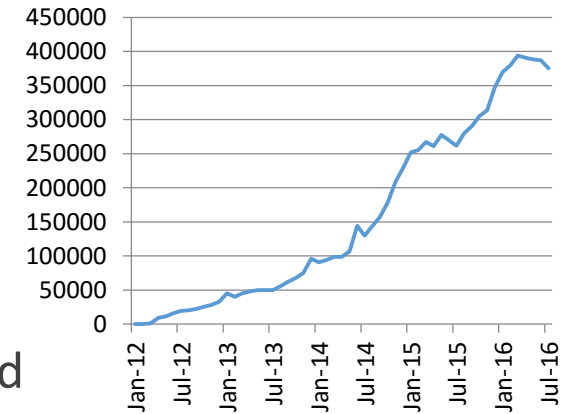
NorDig Unified IRD spec:

HbbTV 1.5

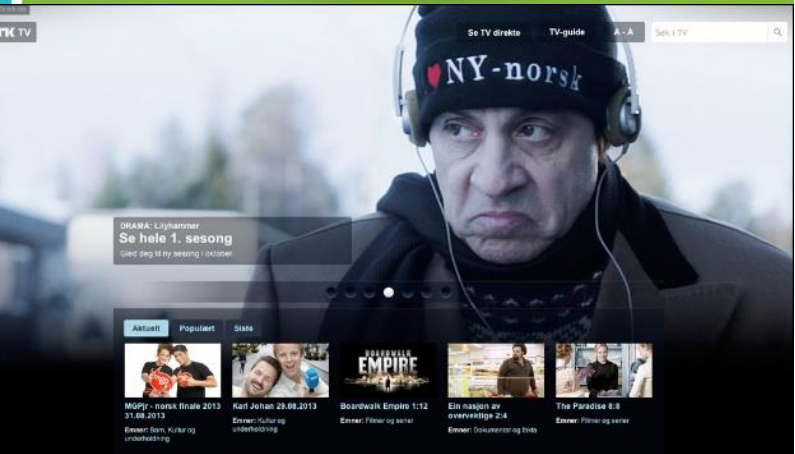
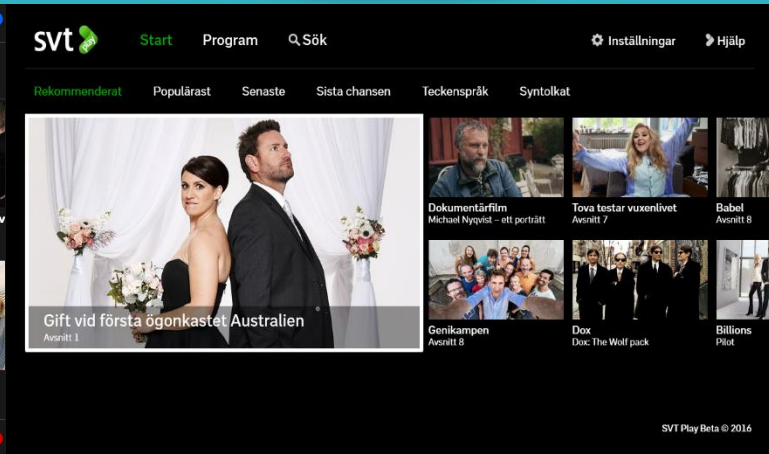
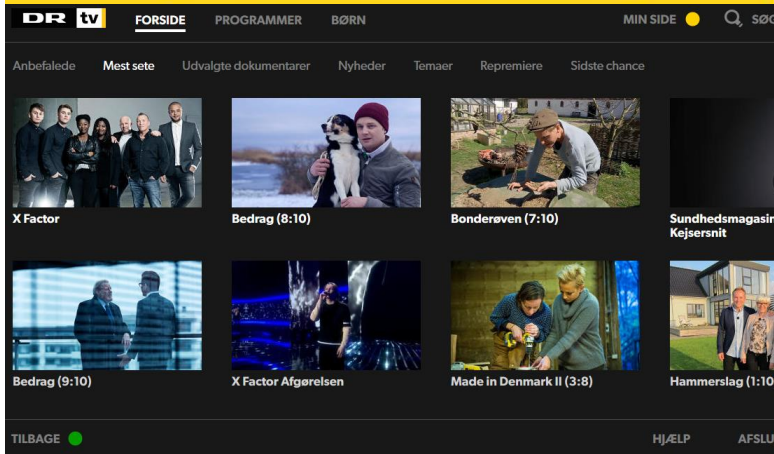
HbbTV 2.0.1 > dec.16

Nordic region & Ireland

DR: Unique users –
Only promoted with
red button

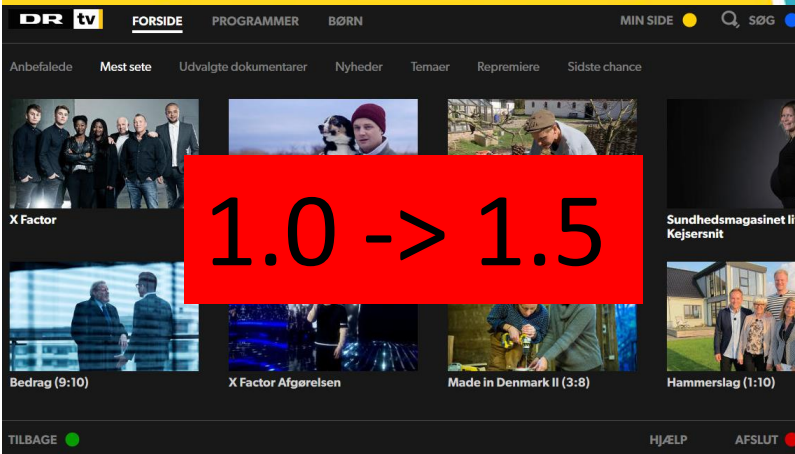
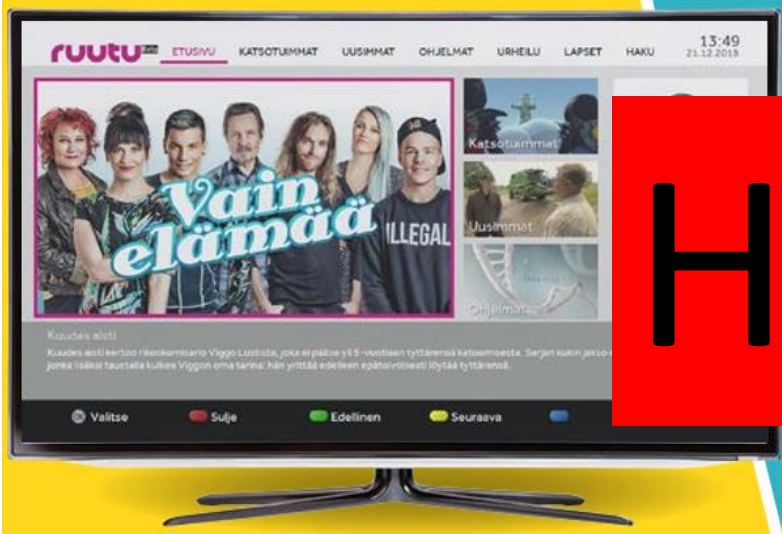


Popular catch-up services in Nordic region

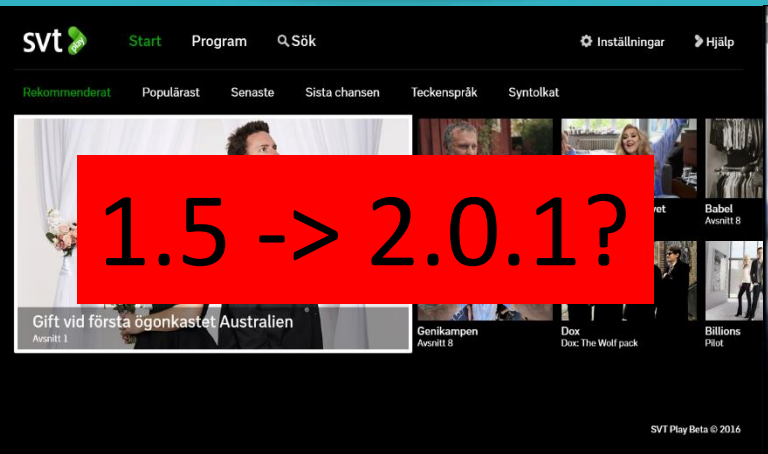


Popular catch-up services in Nordic region

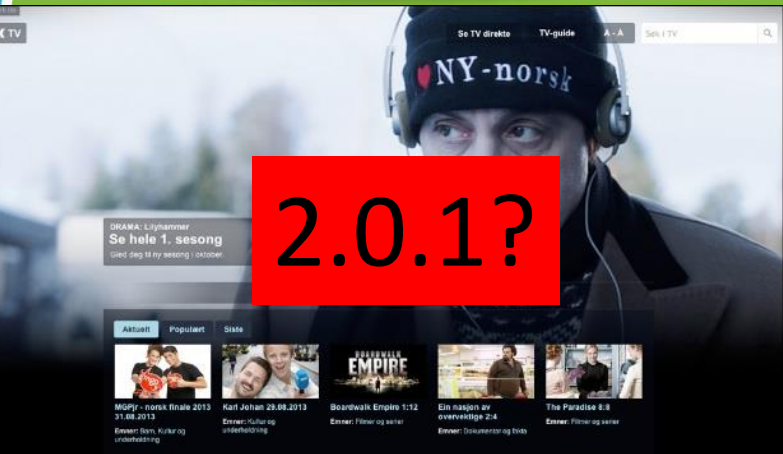
HbbTV 1.5



1.0 -> 1.5



1.5 -> 2.0.1?



2.0.1?

Popular catch-up services in Nordic region



Now (reach most IDTVs):
 VOD with PD and LQ/HQ selector
 Cross device login, MyPage, subs.

New with HbbTV1.5 (reach 82%):
 Live and adaptive MPEG-DASH
 Design with animations

Now: MPEG- DASH
 HbbTV in portal

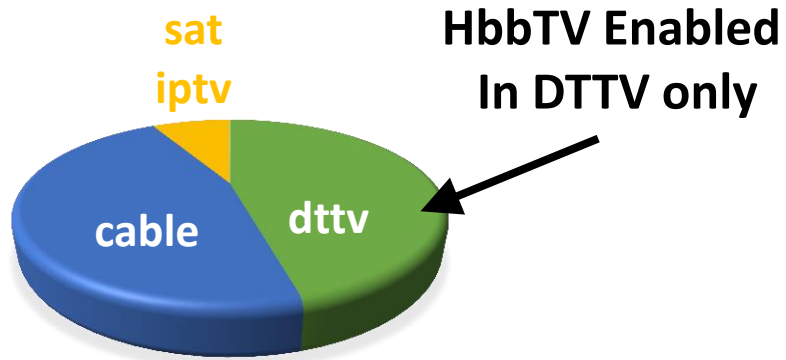
Consider: Second screen
 AIT signalling
 HbbTV2.0.1

Plan for: HTML5+CSS3
 DVB-DASH

Consider: Second screen
 Live with DVR



Finland

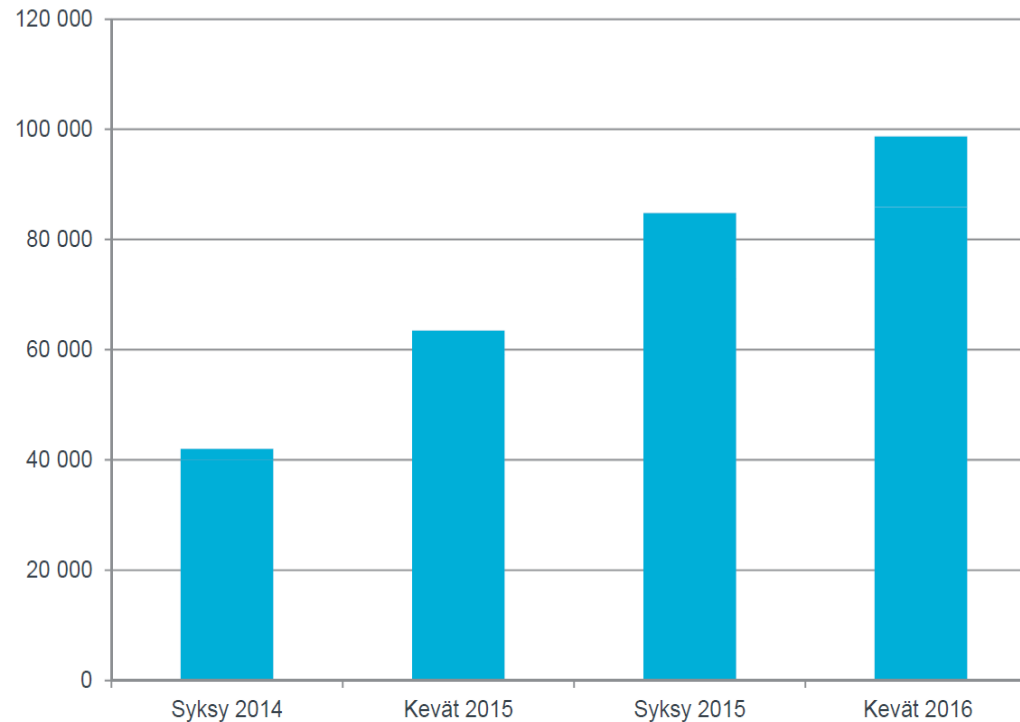


HbbTV applications including

- Red-Button services
- Catch-up TV
- Restart of ongoing program
- Common EPG app
- Sport results (Ice hockey)
- News app
- TV-Etusivu "Multithek)

- Interactive TV commercials (Trial)

Number of HbbTV users in Finland DTTV





Finland

Antenna Ready Smart HD

- Testing for HbbTV 1.5 compatible products
- Mandated to claim local HbbTV compliance from 2017

Smart HD logo scope:

1. HbbTV 1.5
2. NorDig Hybrid profile
3. DRM (MPEG CENC)
4. Antenna Ready HD baseline

Antenna Ready Smart HD testing

To ensure the proper functionality of hybrid services in TV sets, Antenna Ready Ry and the Finnish Federation for Communications and Teleinformatics (FiCom) have agreed to start testing smart TV receivers. Antenna Ready Smart HD testing ensures that Finnish broadcasters' Hybrid TV services function properly in TV receivers that operate in the terrestrial broadcast network and include hybrid features (HbbTV version 1.5 or later).

Tested and approved Antenna Ready Smart HD will receive both labels:

Antenna Ready HD approval label



Antenna Ready Smart HD approval label

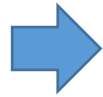


HbbTV 2.0.1

Providing tools for improved accessibility

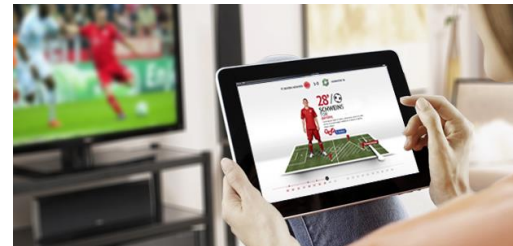
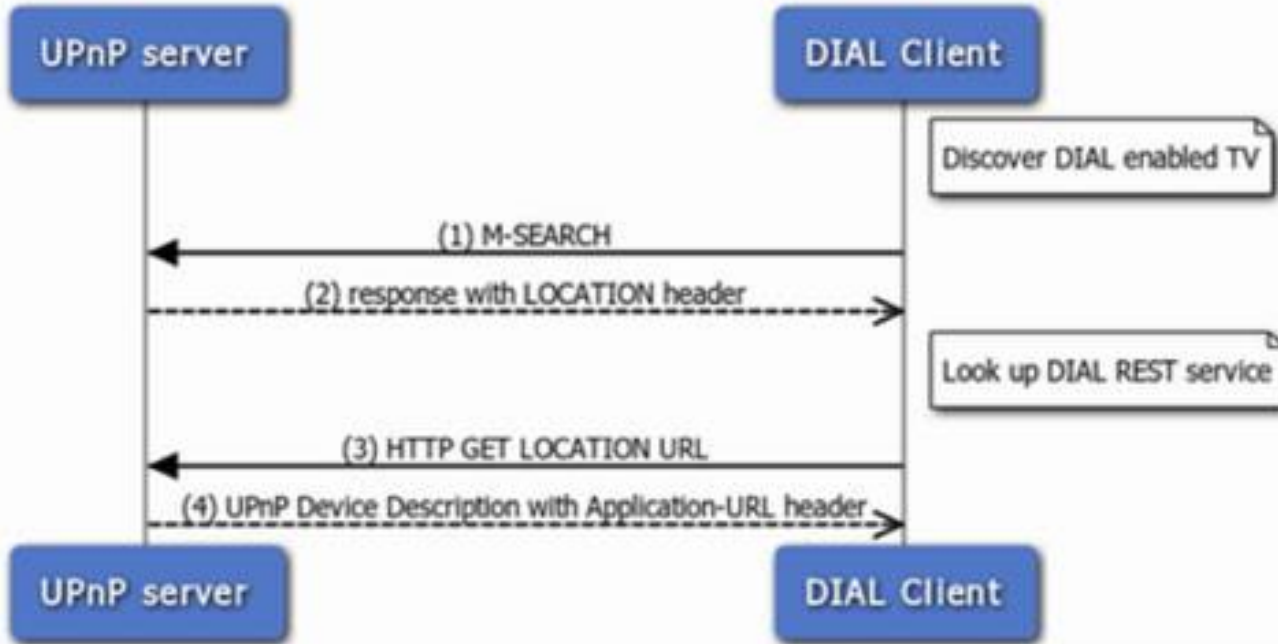
Discovery & app2app communication across devices

DIAL



HbbTV
2.0.1

DIAL Discovery



72%

are more likely to watch a TV show after engaging with its social media page or second screen app.



39%

used their tablets or smartphone while watching TV once a day.

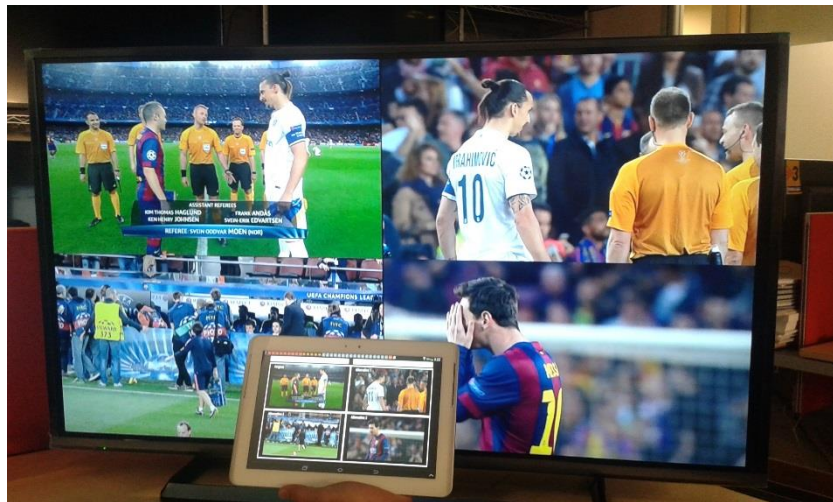


51%

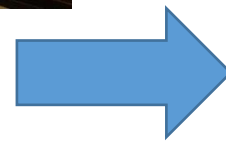
use social networks to connect with others watching the same show.

Frame accurate synchronisation

Frame accurate sync of mediastreams



Sync mob+TV:
-Spoken/big subtitles
-Sign language



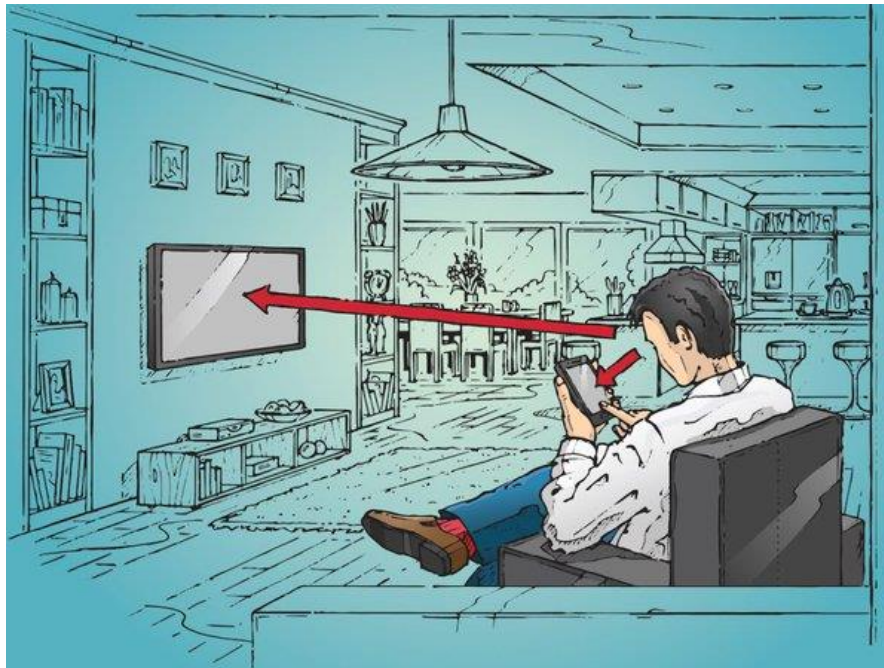
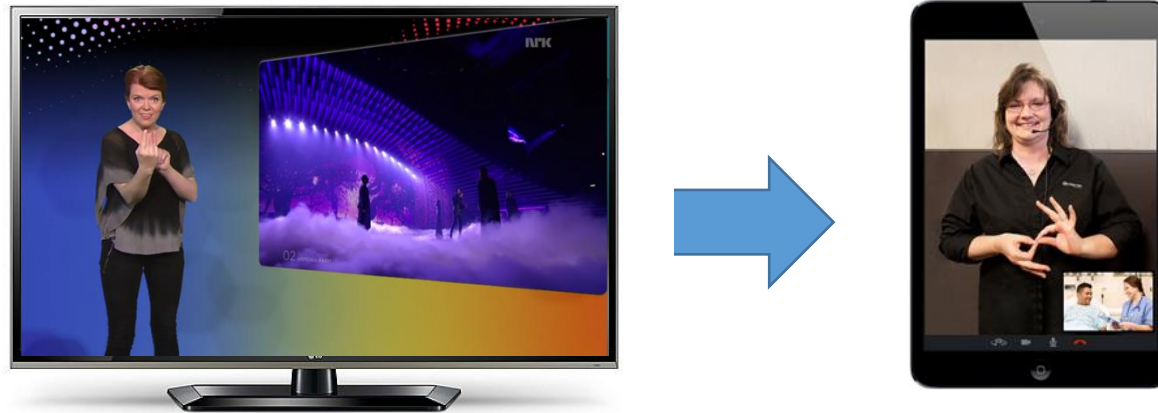
Spoken subtitles on mobile rather than on shared TV



- Individually adapted for the visually impaired
- Not disturbing the shared experience on TV
- Could also be used for enhancing dialogue

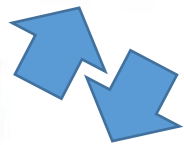


Sign language on mobile in sync with TV



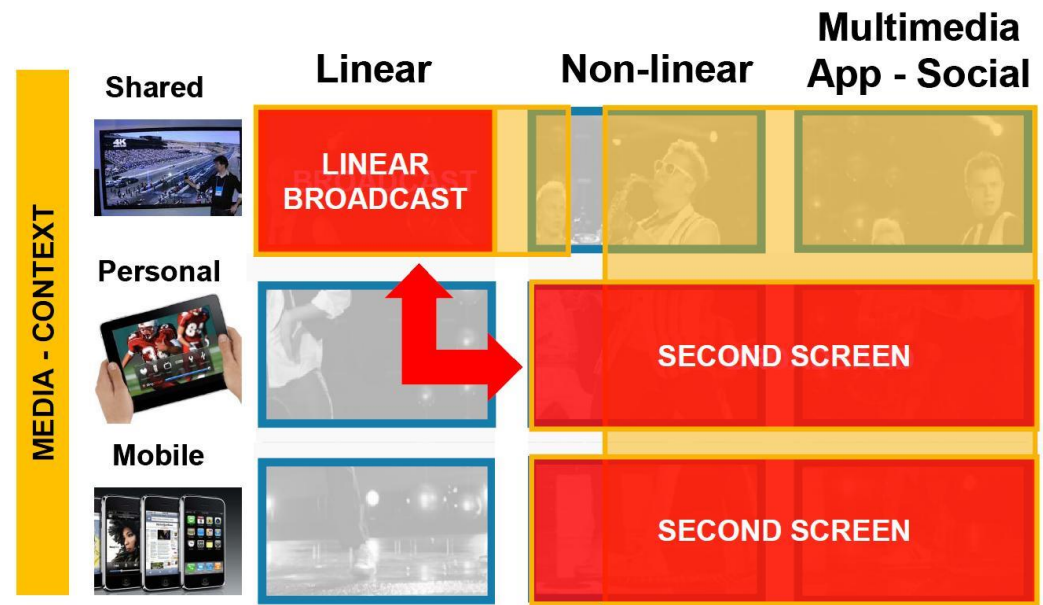
- Mandatory support for only one decoder does not result in a separate TV channel
- The interpreter on second screen can be individually adapted
- Not disturbing the shared experience on TV
- Could be an issue with sign language app drawing attention away from TV screen
- Issue with one decoder on TV could also be solved with a precomposed stream including the interpreter.
The stream does not require capacity from the TV network and could easily be made available with HbbTV.

Second screen as remote?



Two-way response

The opportunity is in the mix of broadcast and broadband

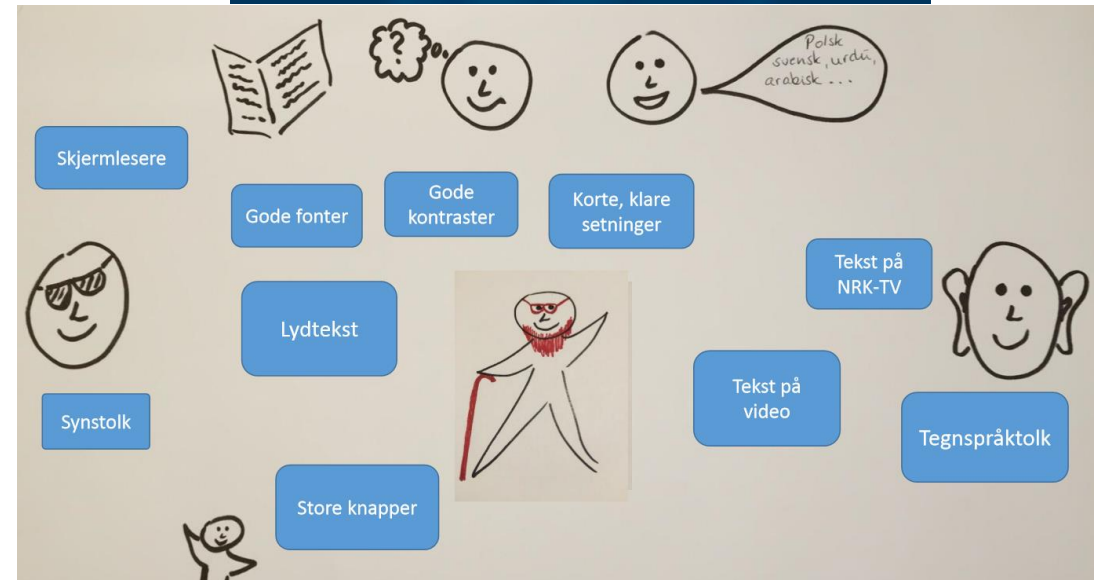




Significant numbers given a population of 5M

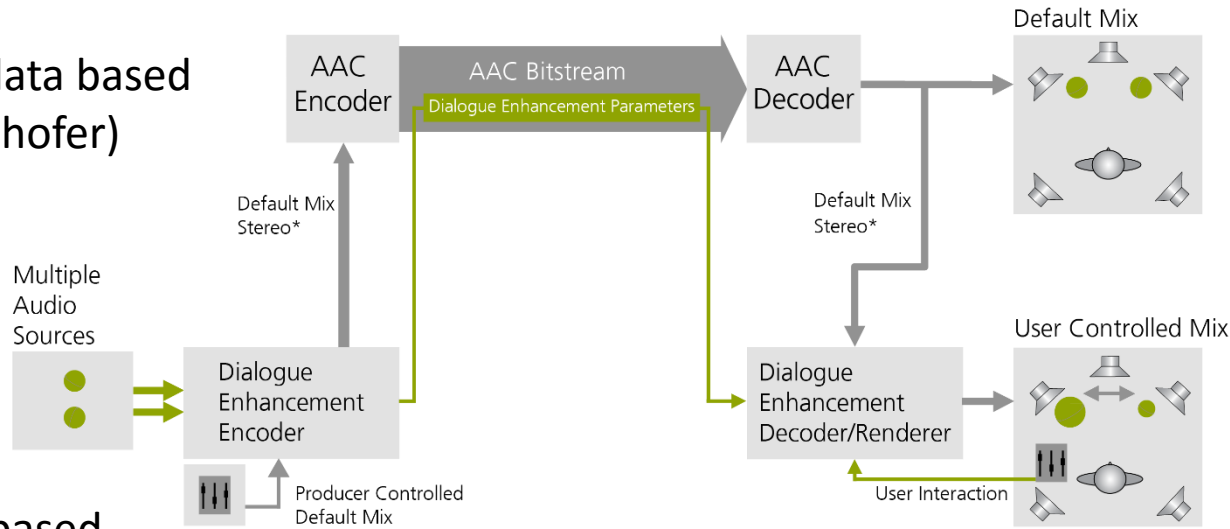


Hearing-impaired	700k
Sign language users	15k
Visually-impaired	180k
Reading-difficulties	200k
Elderly (> 67 years)	750k
Immigrants	700k



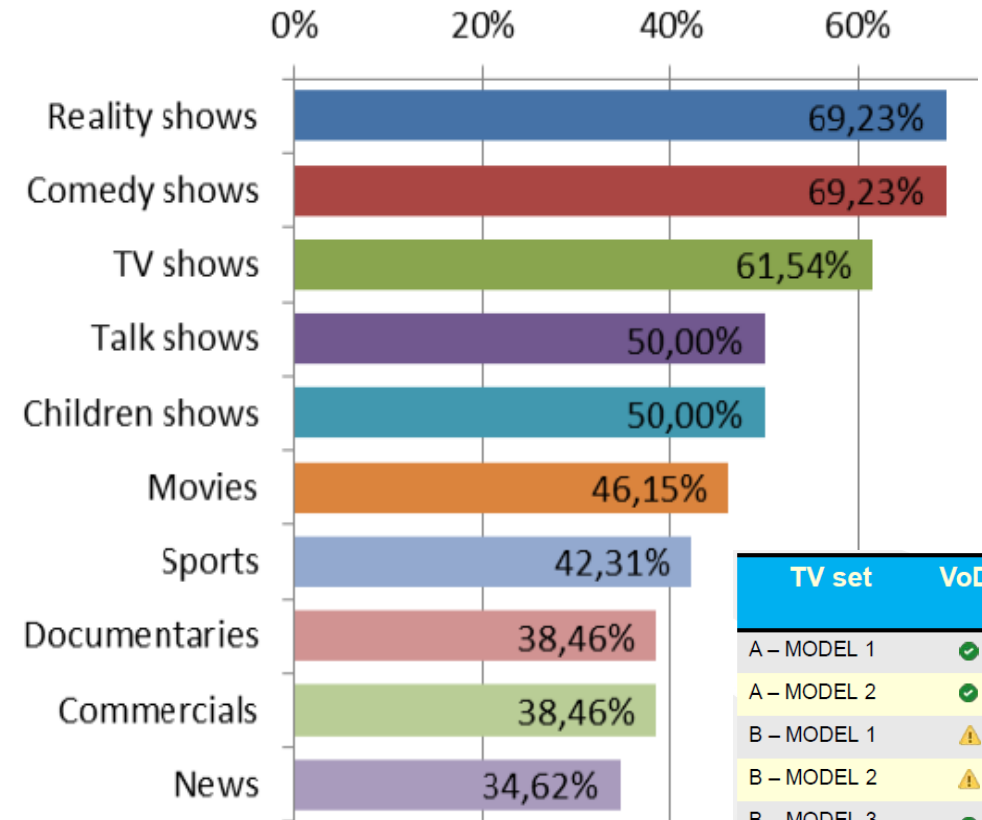
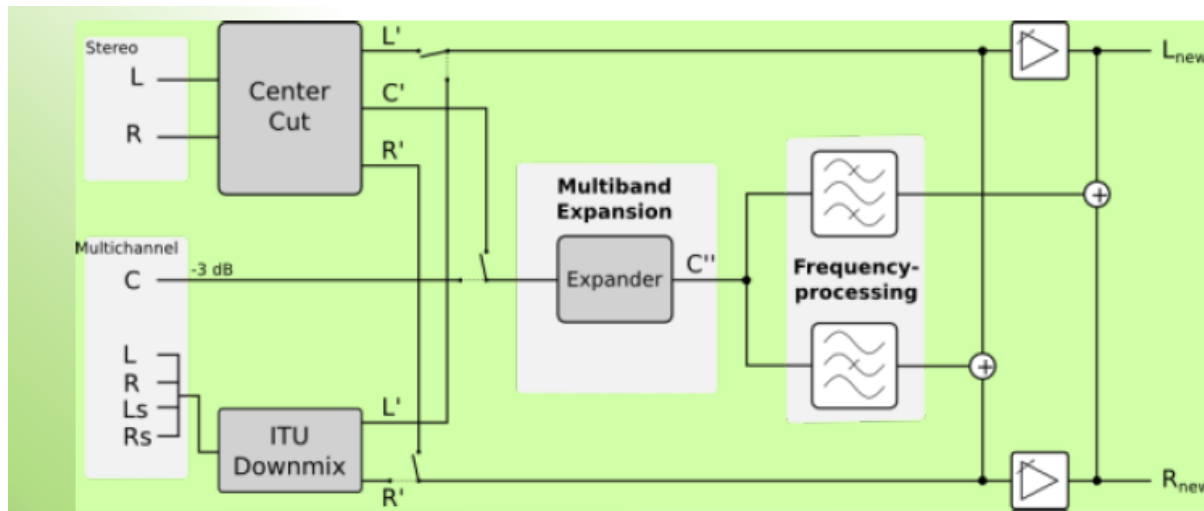
Dialogue Enhancement → a general request

Metadata based (Fraunhofer)



Filter based (IRT/RBB/CCMD)

-- > Better dialogue separation with 5.1 source



EBU-broadthinking 2016:
All usergroups throughout Europe request better intelligibility for TV programs.

Issue with multi-audio --->

	TV set	VoD	Liv e
A – MODEL 1	✓	✗	
A – MODEL 2	✓	✗	
B – MODEL 1	⚠	⚠	
B – MODEL 2	⚠	⚠	
B – MODEL 3	✓	⚠	
C – MODEL 1	✗	✗	
D – MODEL 1	⚠	⚠	
D – MODEL 2	⚠	⚠	
D – MODEL 3	✗	✗	
F – MODEL 1	✗	✗	

✓ Works Ok
 ⚠ Black/freeze and jump on audio switching
 ✗ Audio switching not supported

Multiple subs. Multiple audio & video tracks

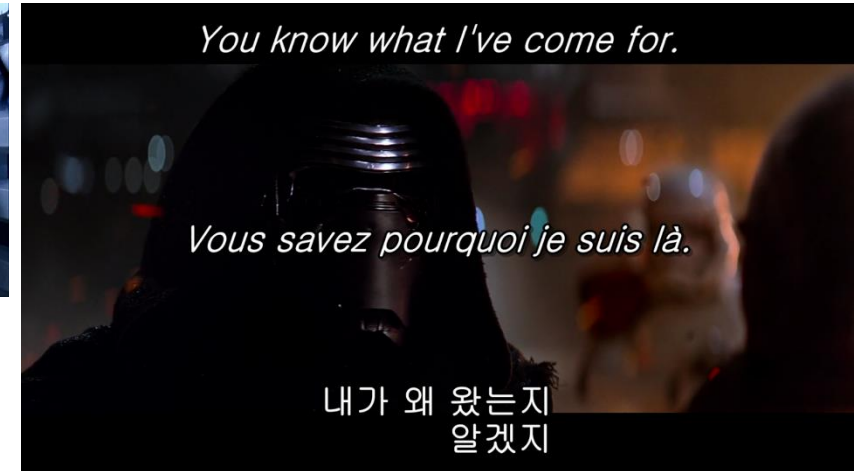
Sign language
(PiP or in sync
on 2. screen)



Subtitle for
hearing-
impaired



Subtitles for multiple languages



AD

Audio
Description

“Two dolphins are jumping
out of the ocean.”



Enhanced dialogue



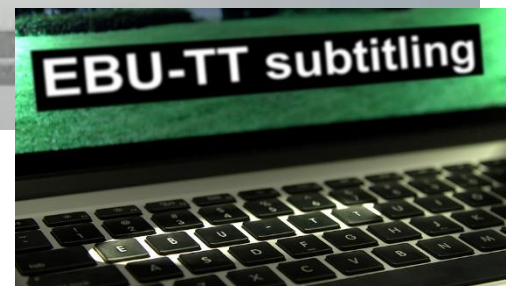
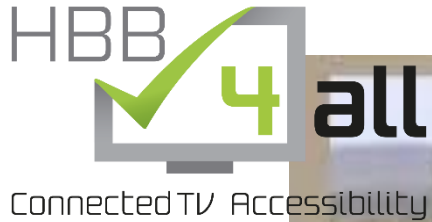
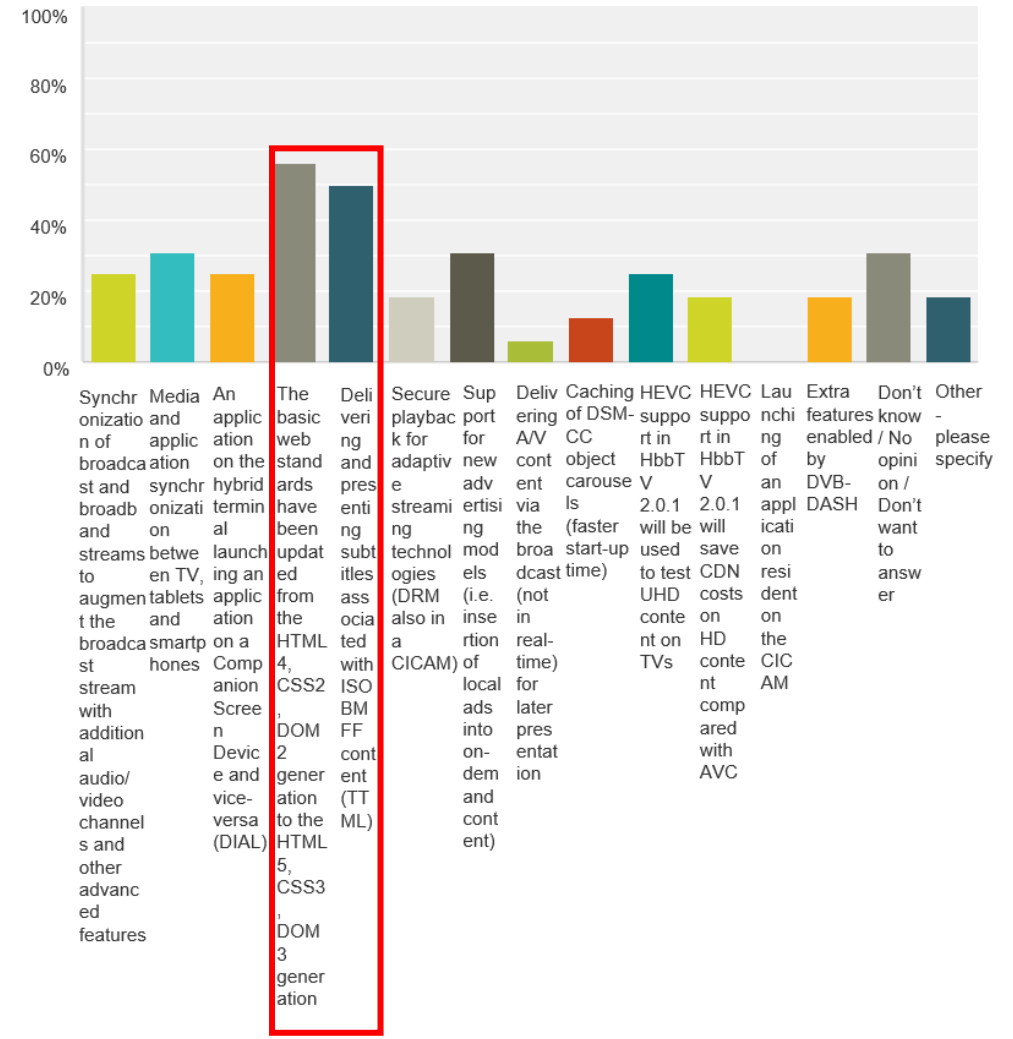
Audio tracks for multiple languages

Subtitles in different fontsizes / backgrounds



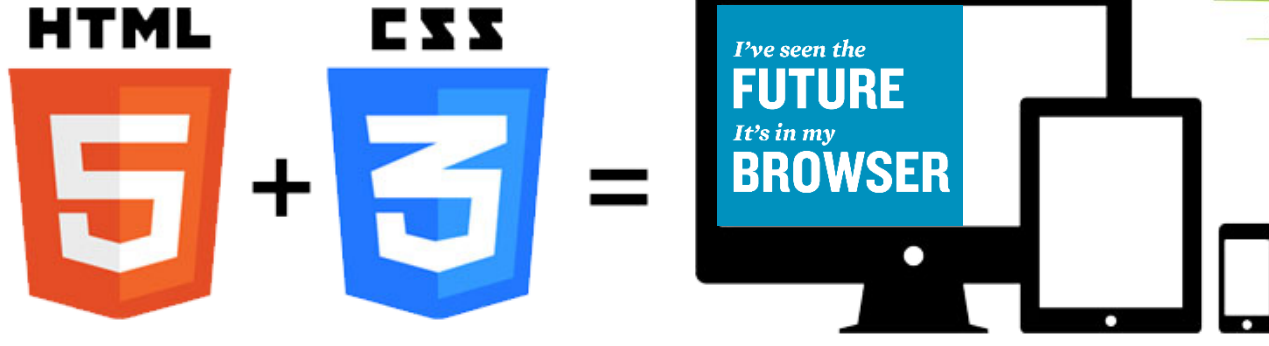
HbbTV 2.0.1 survey

Regardless of NorDig IRD spec referencing HbbTV 2.0.1, what features do you make use of today or plan to implement? If you're representing a manufacturer, please select all features that you will implement support for in 2017 / 2018.

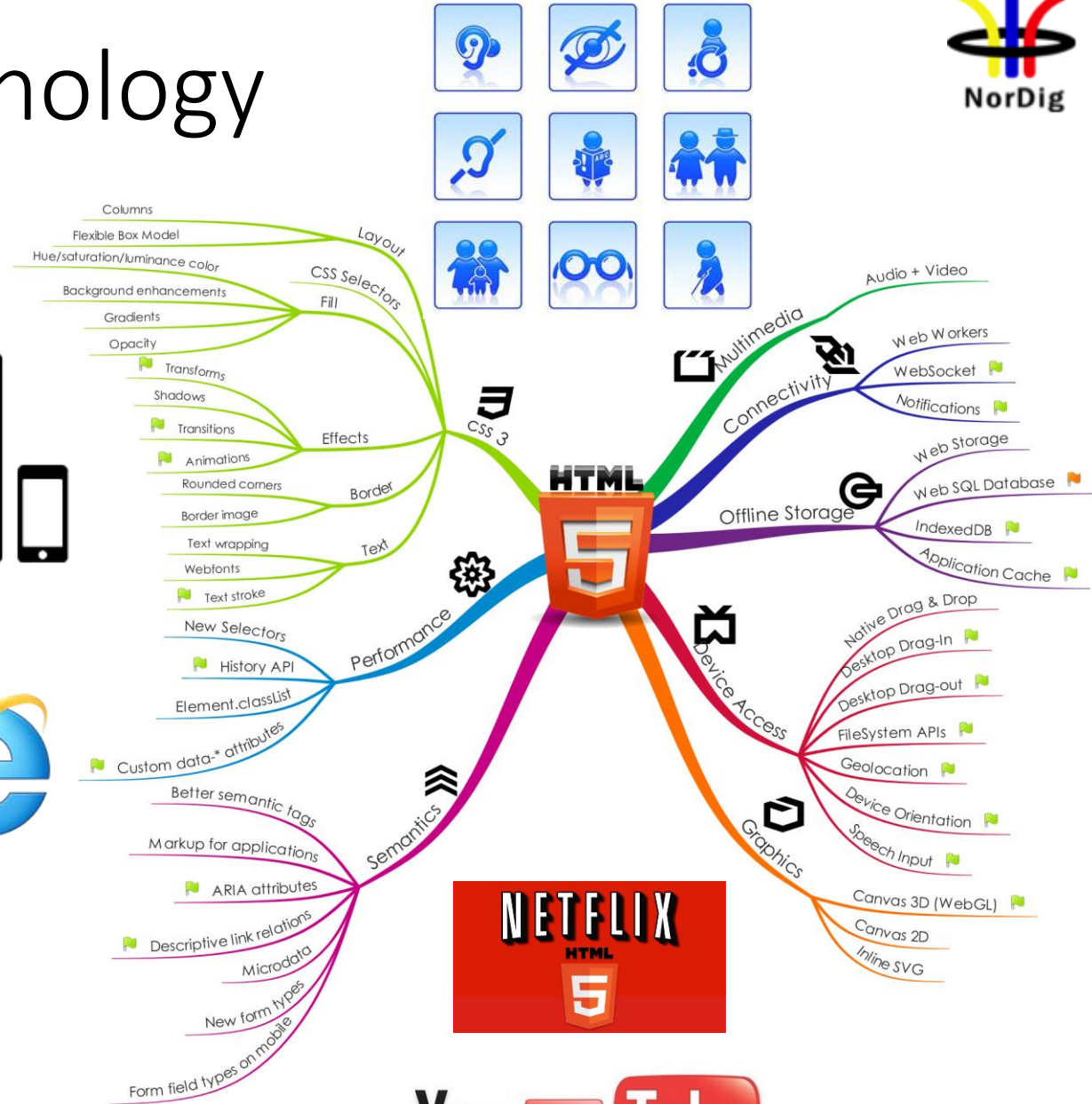




New web technology



Responsive Design



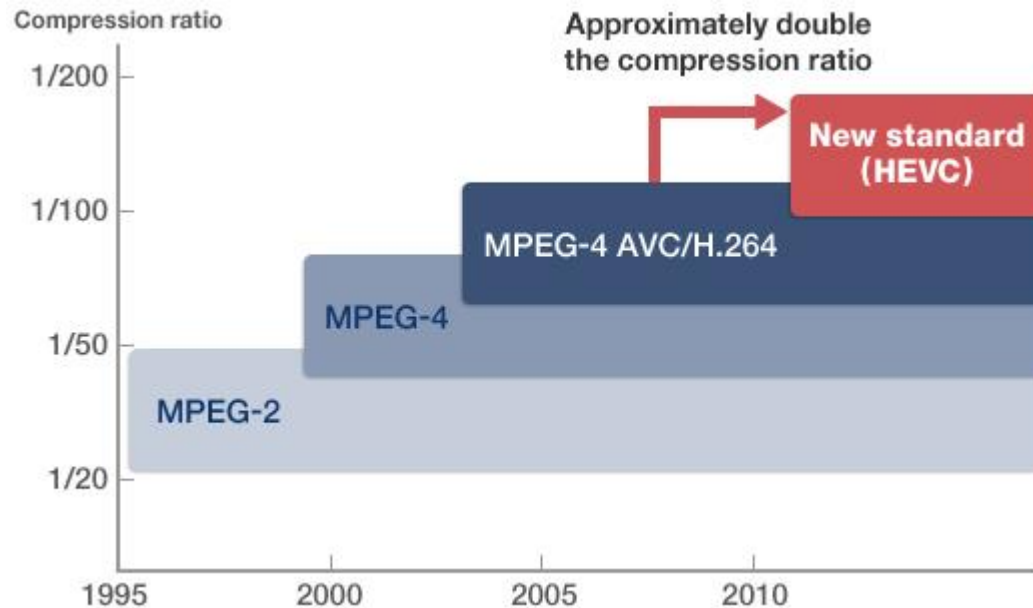
Standardized delivery of UHD content on OTT

-> HEVC is mandatory if supported in broadcast part



H.264

HEVC



Freeview Play

DigitalUK



HbbTV 2.0.1 survey

12. Companion Screen

The device SHALL support the launching of applications via DIAL [DIAL] directly. Launching of specific players registered in the DIAL registry is defined in player specific guidelines.

Companion screen devices **SHOULD** be supported by the device using the mechanisms defined in Section 14 and Section 8.2.6 of [ETSI_102_796], specifically but not limited to:

- Application-to-Application Communication (see Section 14.5 of [ETSI_102_796])
- Launching an HbbTV application from a Companion Screen (see Section 14.6 of [ETSI_102_796])
- Discovering devices and their service endpoints (see Section 14.7 of [ETSI_102_796])

12.1 Inter-device Synchronisation

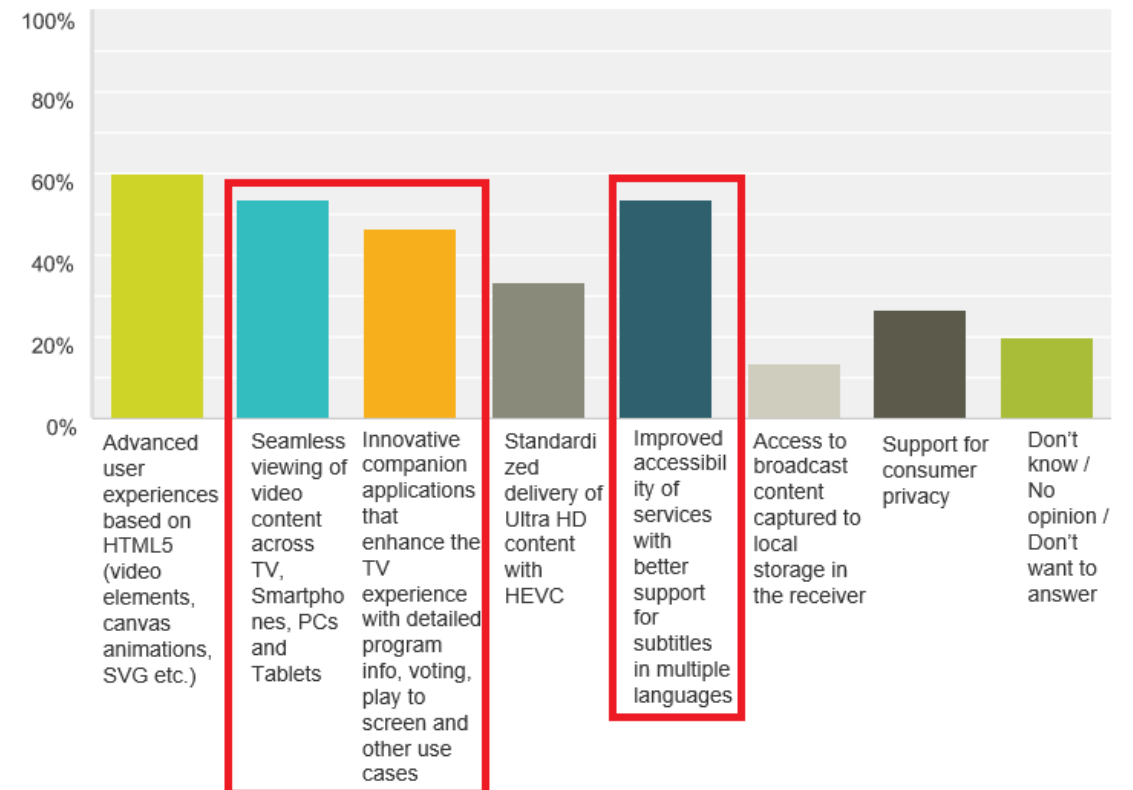
The device **SHOULD** implement the inter-device synchronisation feature described in Section 10.2.9 of [ETSI_102_796].

Where inter-device synchronisation is implemented, note that:

- The minimum size of a buffer for media synchronisation (Section 13.4 of [ETSI_102_796]) is zero bytes.

Master functionality is required (see Section 10.2.9.2 of [ETSI_102_796]), but slave functionality (see Section 10.2.9.3 of [ETSI_102_796]) is optional.

What should be the main reason to reference HbbTV 2.0.1 in NorDig? Please mark all that apply:



DIGITALEUROPE

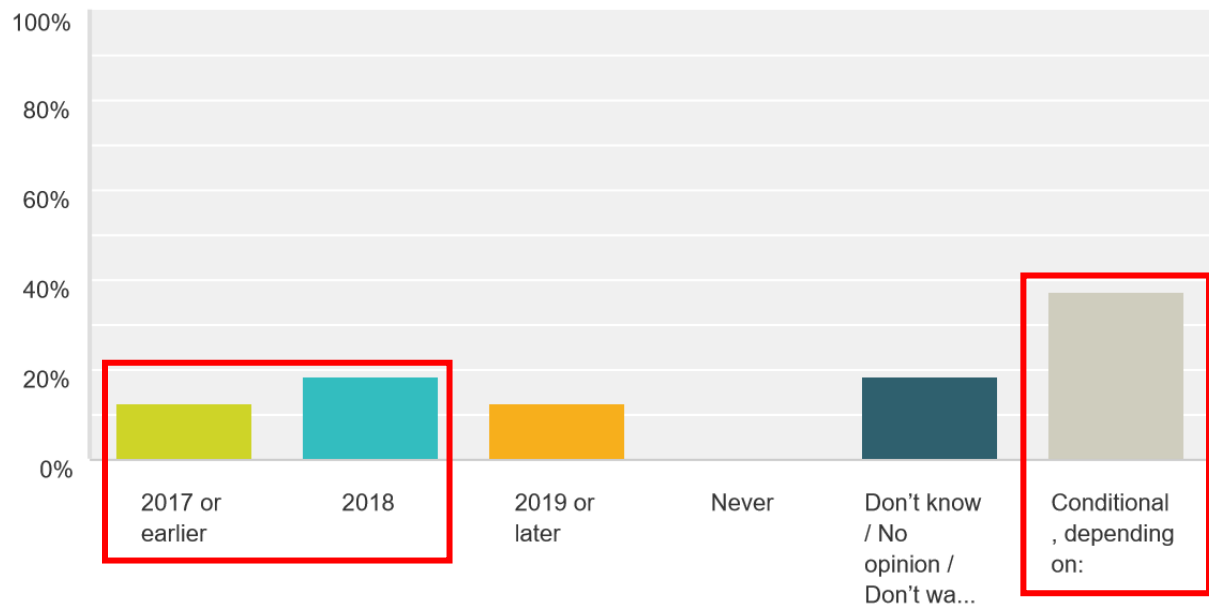
..strongly encourage local and national organisations not to act in isolation from the rest of the European context and to refrain from any unnecessary specification of local variations.

DIGITALEUROPE advocates instead where necessary the use of “local best practices” or “guidelines” rather than prescriptive exceptions.



When will you support/use 2.0.1?

HbbTV 2.0.1 Survey



Operator:

HbbTV would be more interesting for us on the IDTVs if the CI+ 1.4 specification was mandatory and not optional as it is today.

Broadcaster

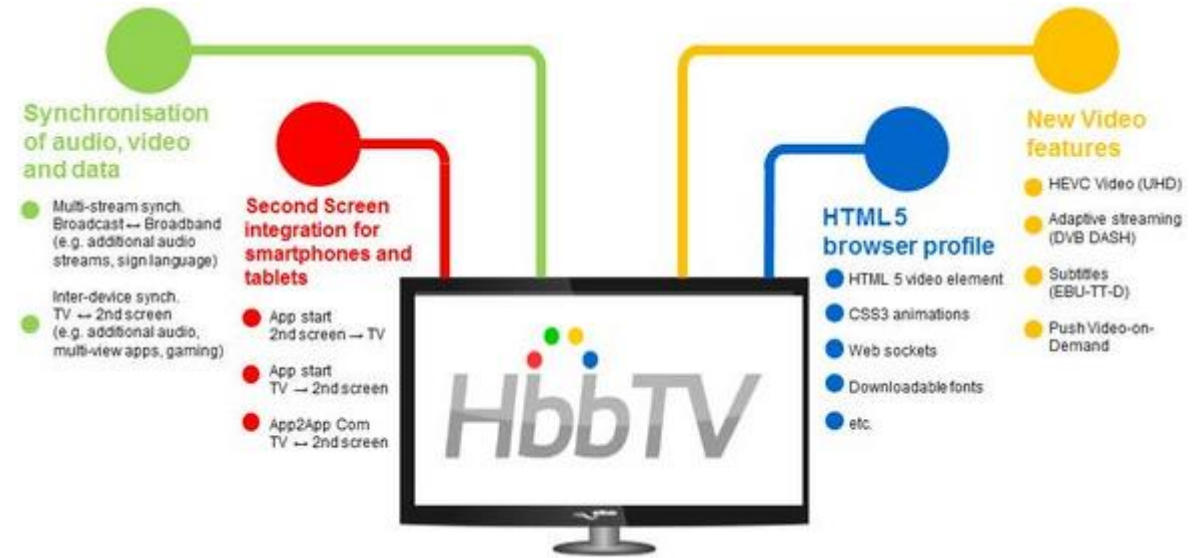
Avoid making people buying new TV sets feel cheated when their quite new device isn't supported by the services. Depending on time scale from manufacturers.

Manufacturer:

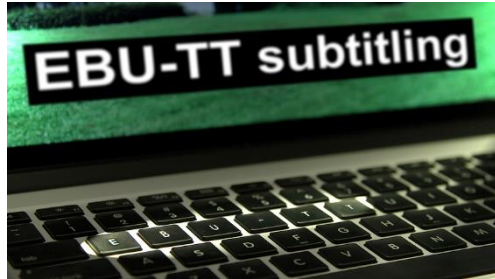
Support mandatory features of HbbTV2.0 from 2016. Request operators and broadcasters to share their actual HbbTV2.0 service plan and would request to have live HbbTV application which are testable & readily available to implement and integrate into our devices.

Transition to HbbTV 2.0.1

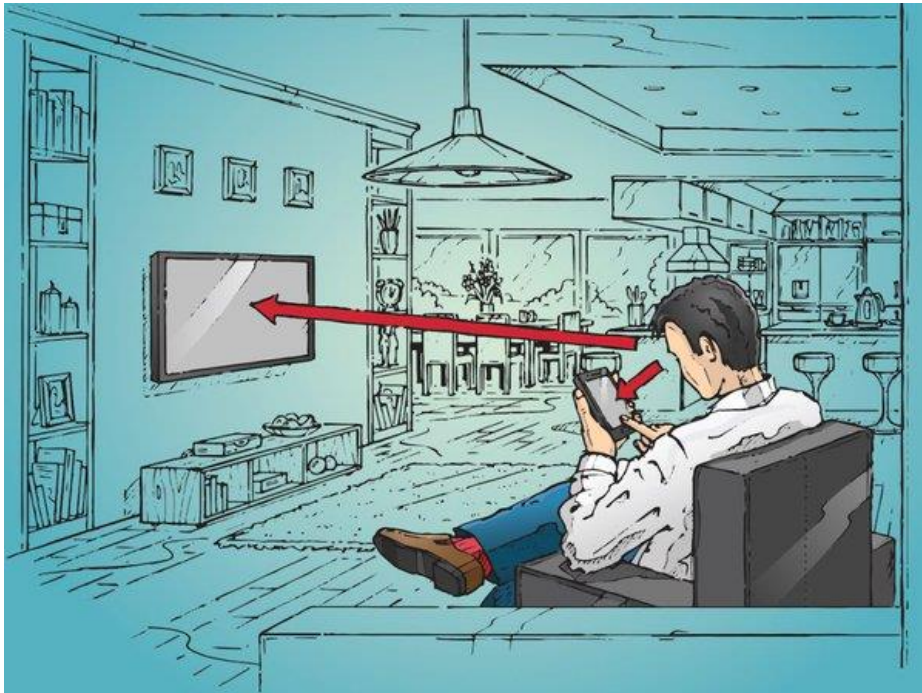
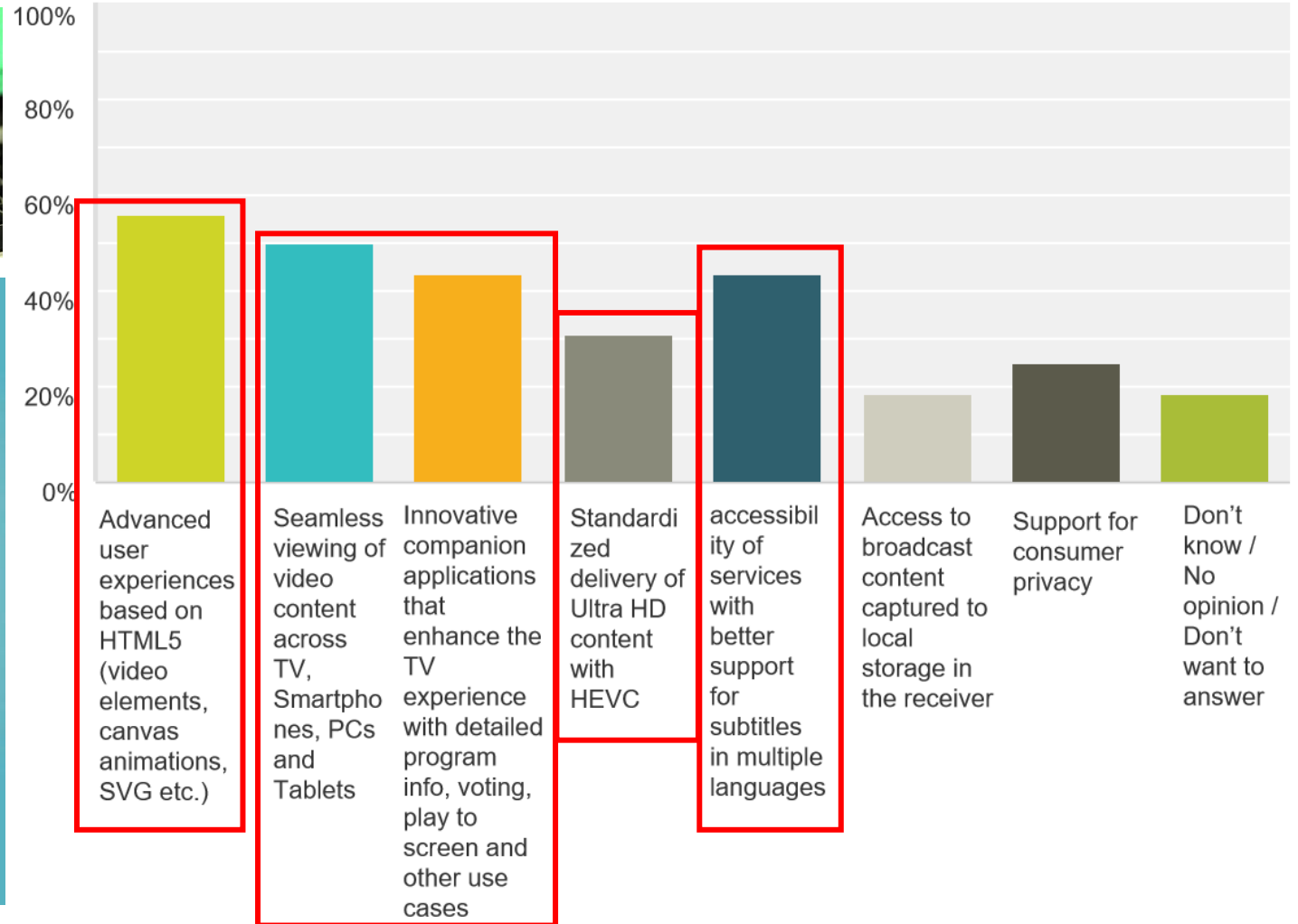
HbbTV 2.0.1 Survey



Reason for NorDig to reference 2.0.1

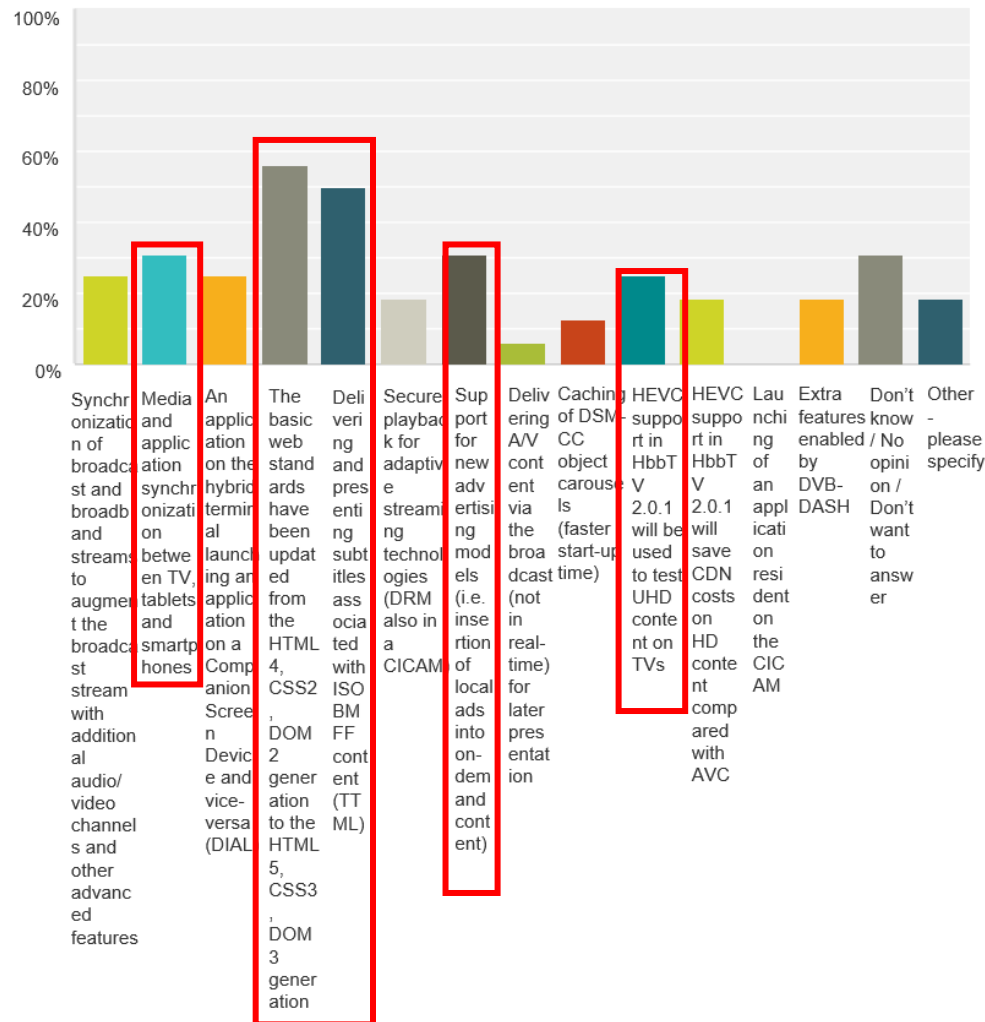


HbbTV 2.0.1 Survey



Needed features in HbbTV 2.0.1

HbbTV 2.0.1 Survey



Broadcaster:

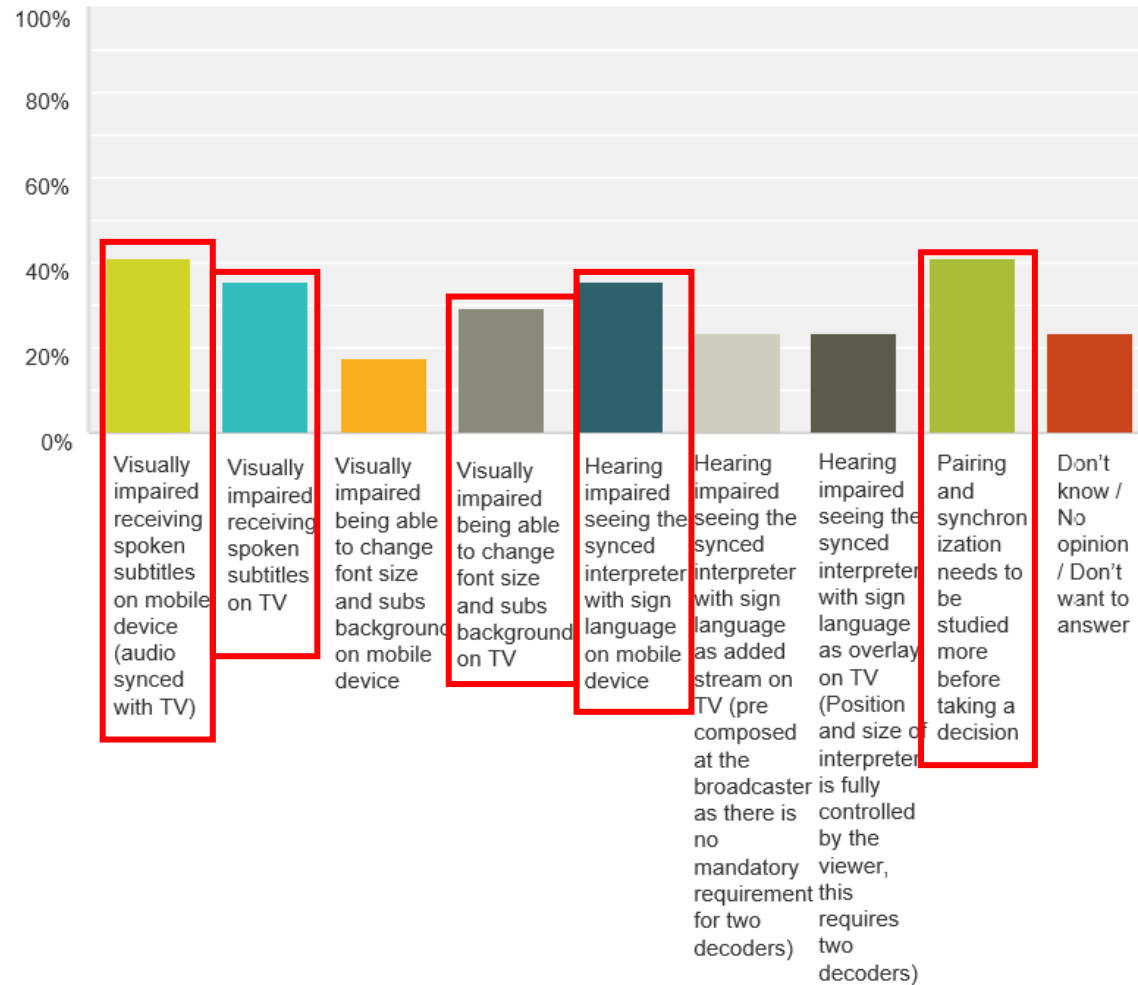
Difficult to say which features will be used. Hopefully manufacturers will support all features HbbTV 2.0.1. Supporting the spec only partially could end up limiting possibilities in launching new innovative apps especially if different manufacturers will implement different subsets of spec. In general, currently ad related functionalities (especially ad replacement) seem most interesting. And accessibility is always interesting to public broadcasters.

Manufacturer:

TVs will support HbbTV 2.0.1 mandate features, extra requirements needs to be clear on Nordigs specs

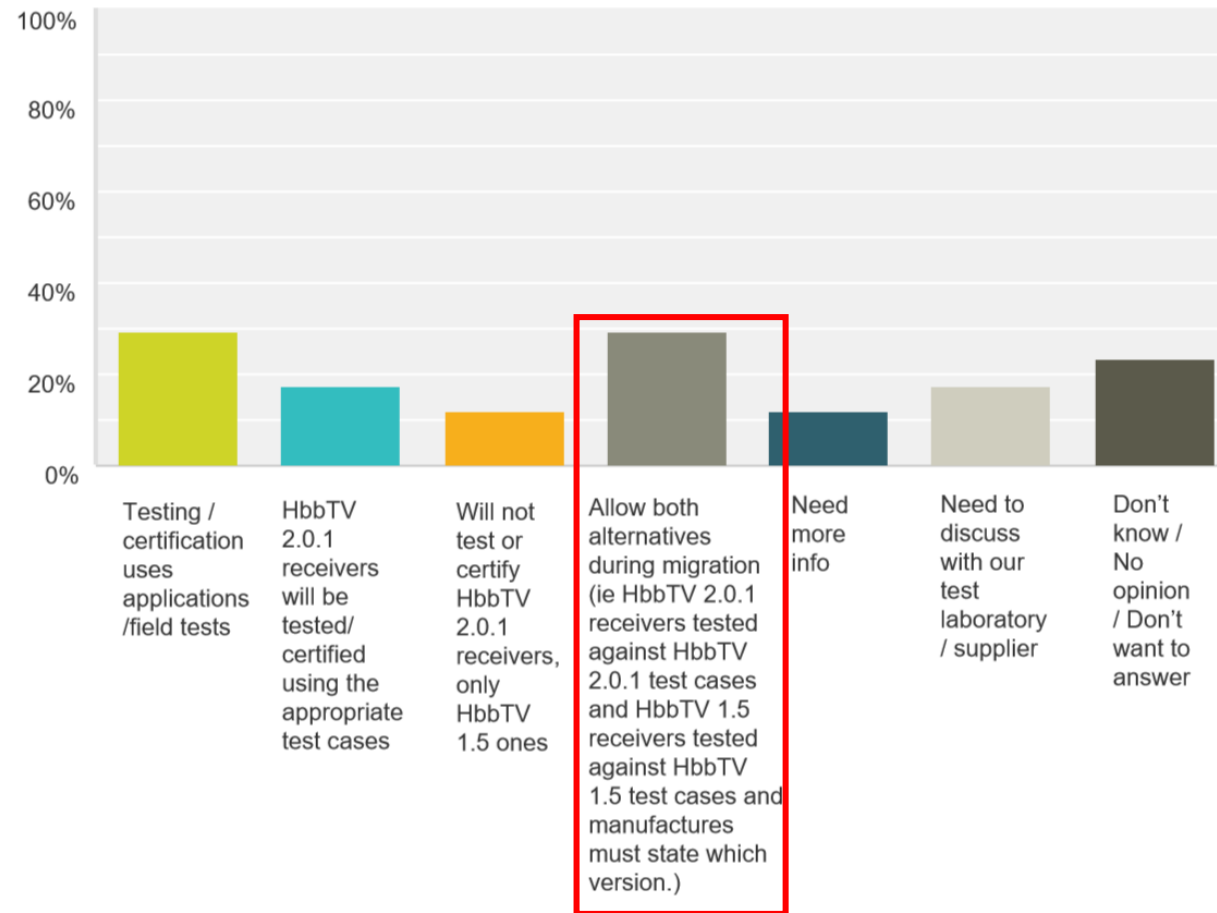
Usecases requiring 2.0.1 features

HbbTV 2.0.1 Survey



HbbTV receiver testing and certification

HbbTV 2.0.1 Survey



Using Digital UKs test suite

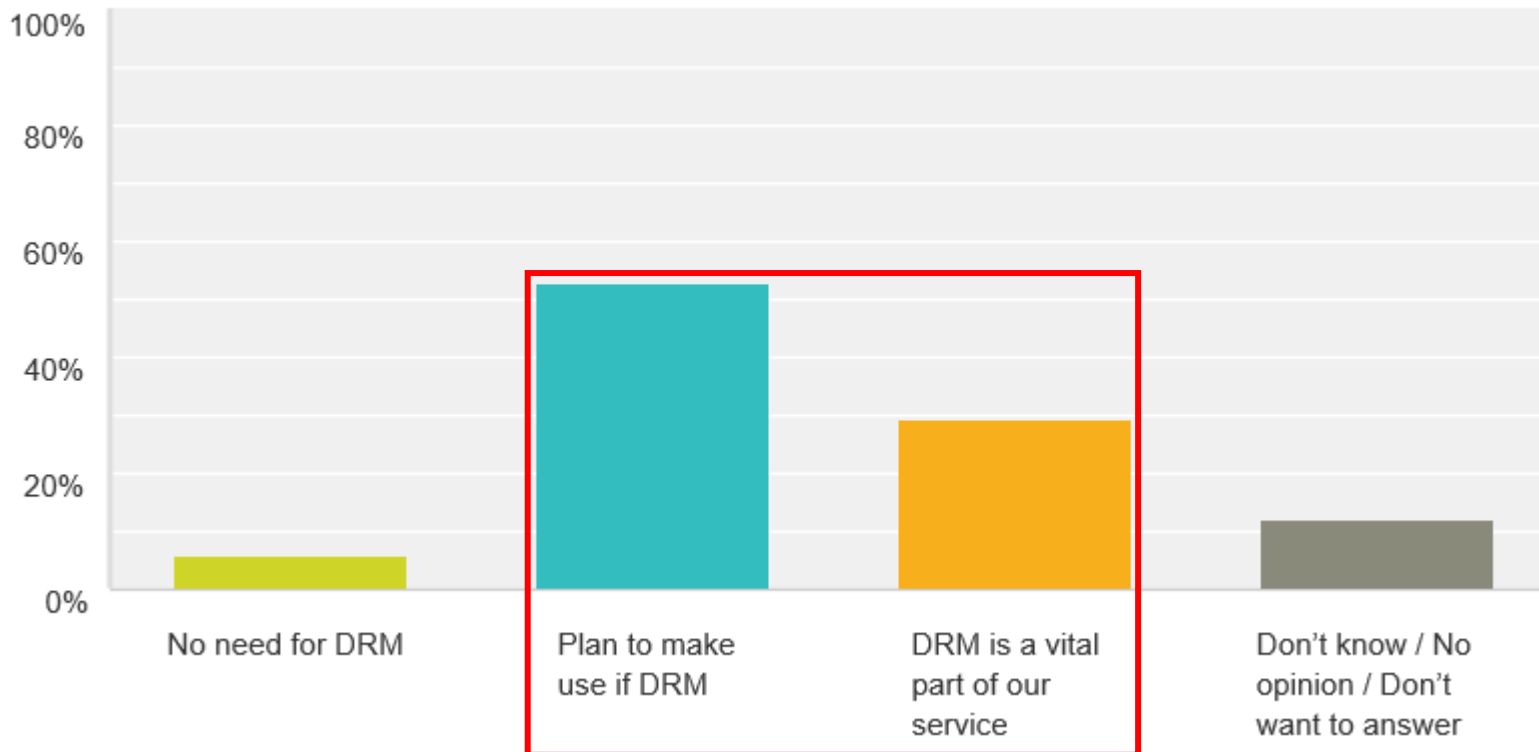
HbbTV2.0 or 2.0.1 Test suite is not released yet. 2017 device will be tested/certified HbbTV1.5 and HbbTV2.0 test suite of Freeview Play

Here we would like to have the test plan in advance for certification

The method of testing HbbTV 2.0.1 needs wider discussion. Current 1.5 model will rely on manufacturer self-tests (HbbTV, Nordig) plus additional Finnish test cases with actual live applications. Same model could be used for 2.0.1 as well.

DRM

HbbTV 2.0.1 Survey



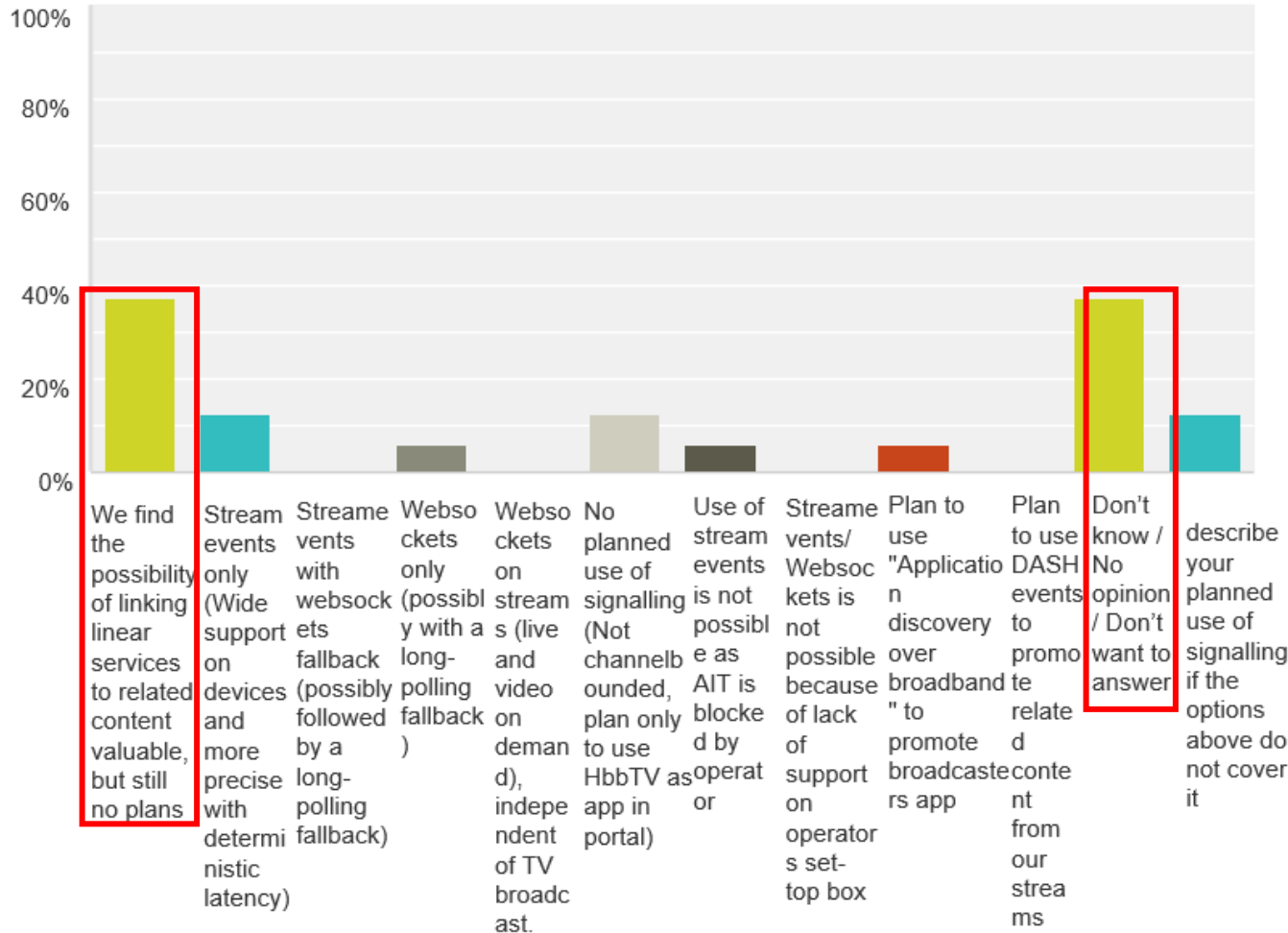
We might have a plan to support most of DRM required in the specification. However, a single DRM technology, especially “PlayReady”, should be preferred as a mandatory to have flexibility in operation of product line-up for manufacturers.

Support PlayReady 2.x (2.5?) or higher

Some AV content will require DRM. Currently PlayReady seems like the most common choice.

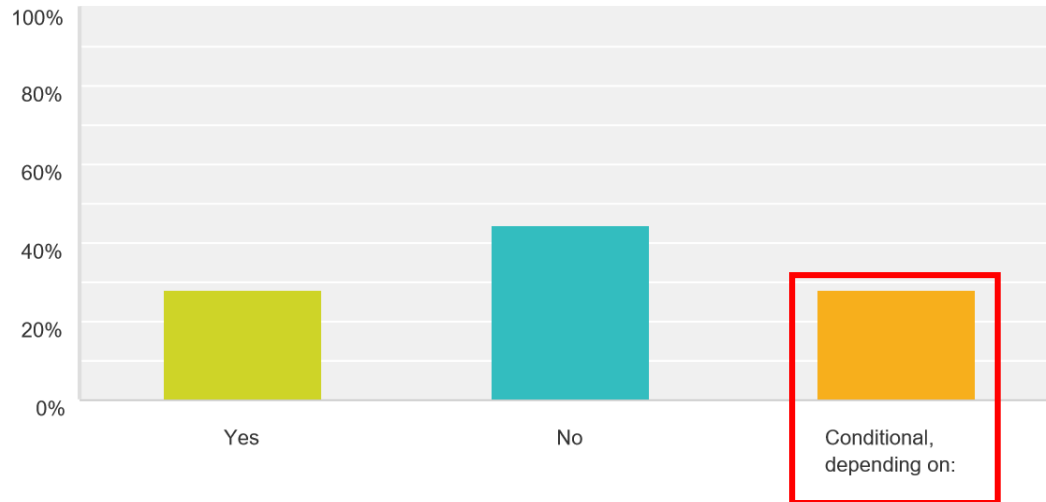
Linking from linear to related content

HbbTV 2.0.1 Survey



HbbTV operators application of value?

HbbTV 2.0.1 Survey



Operator:

The idea of having an operator branded experience is interesting but not if it requires an agreement between a manufacturer and the operator. Here again we believe that if the requirements in the CI+ 1.4 specification was mandatory and not optional, we would achieve the same purpose without relying on an agreement with the manufacturer.

If it helps the negotiations between broadcasters and cable operators. Difficult to fit to horizontal IRD market in Finland.

Manufacturer:

Depending on commercial agreements

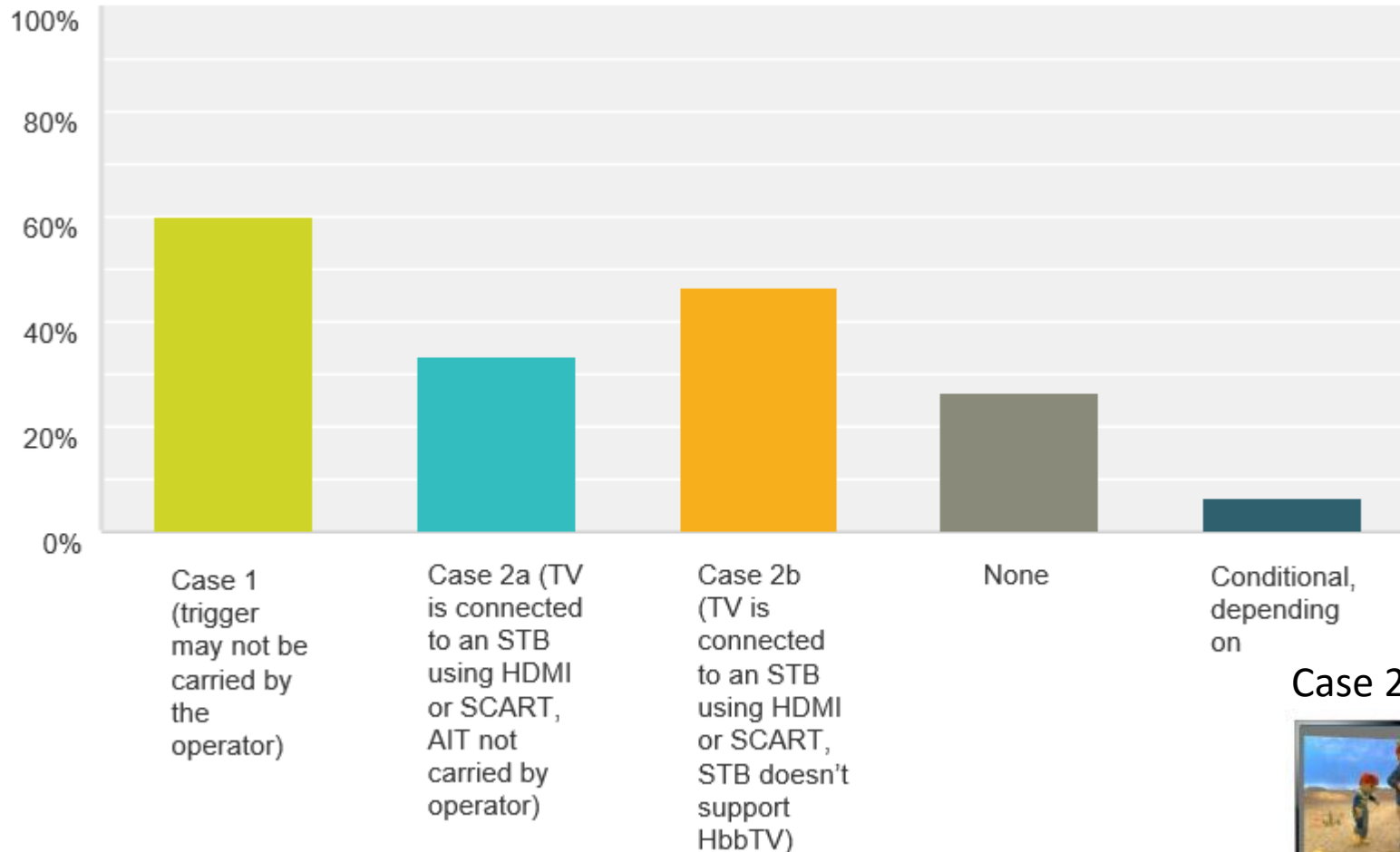


Operators UI

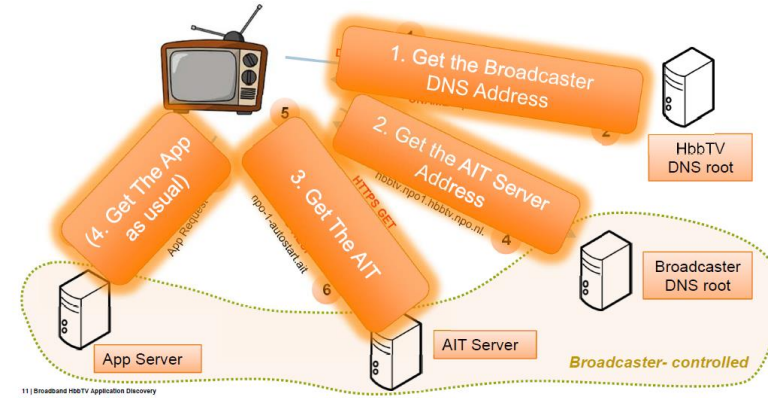


Application discovery over broadband?

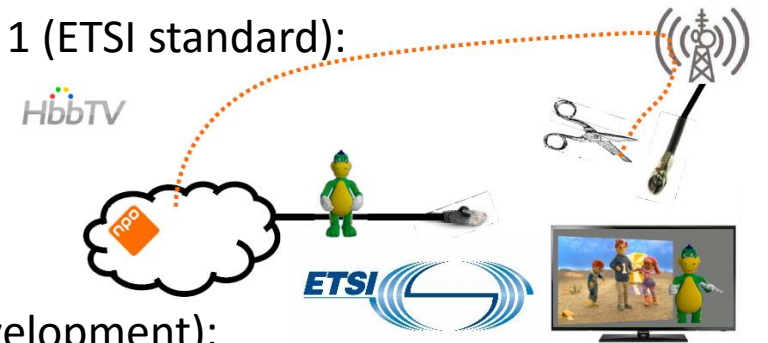
HbbTV 2.0.1 Survey



ADB:



Case 1 (ETSI standard):



Case 2 (in development):

