# Improving Interoperability Task Force: Update

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Why was the group created?

- HbbTV recognised that it could do better at gathering feedback on issues facing the market when adopting the standard.

- Task force has two objectives:

    1. _Review HbbTV's approach to gathering feedback_, come up with some solutions and make recommendations back to the Steering Group, to address this long term

    2. _To address key interoperability issues_ by collating, classifying and triage of current issues, and therefore to make recommendations to the other groups in HbbTV

- Issues affect all parts of the ecosystem, but

    – some are addressable by HbbTV Association directly:

        - E.g. specification clarification, gaps in test coverage, tools

    – some things HbbTV Association can influence, but not control:

        - E.g. what a platform chooses to specify support for optional features, the speed of new capability roll out on a population of devices, how an app might be written

    – some things HbbTV Association can't address:

        - E.g. an issue with a specific device/app, favoring one implementation over another (operates under various legal restrictions/Articles of Association)

Interoperability issues can be caused by many factors:
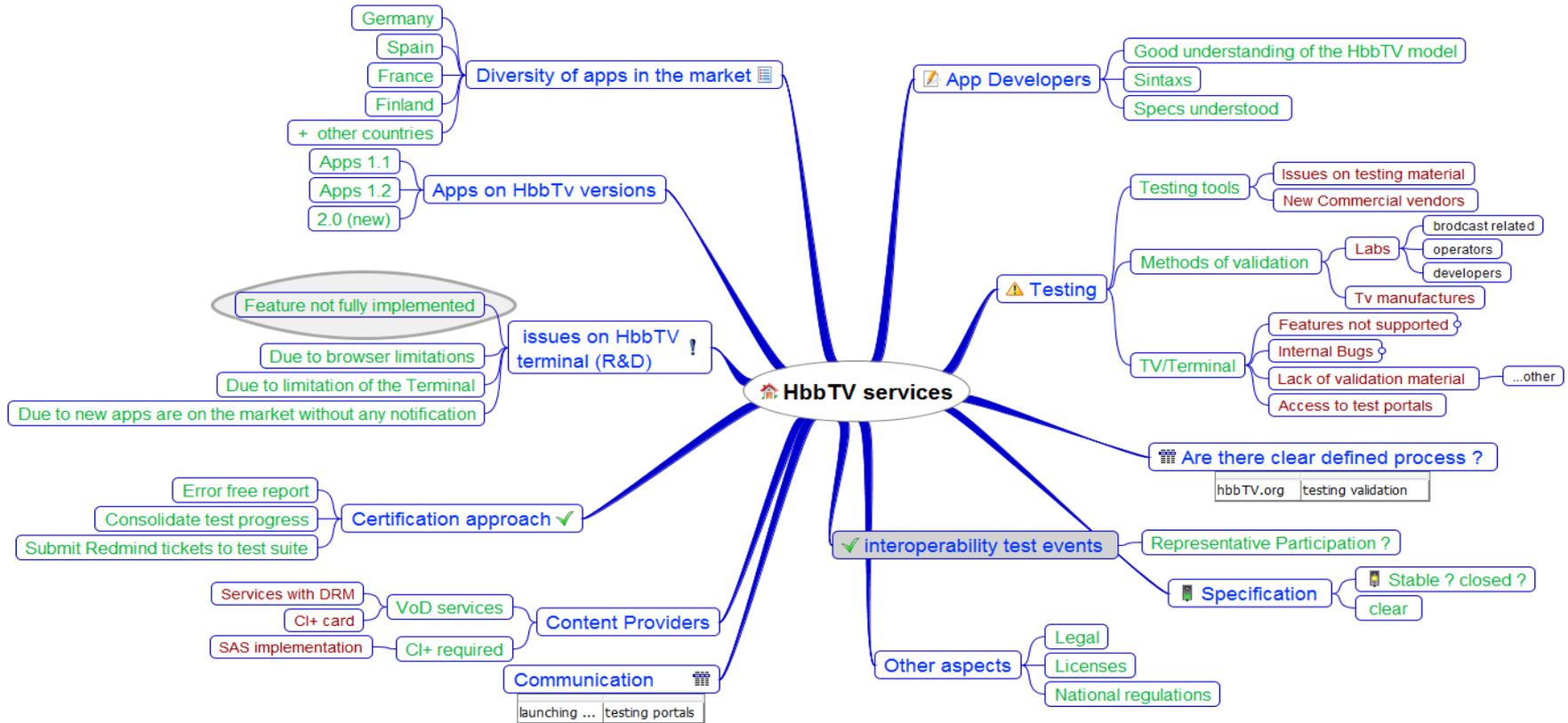
What have we done?

- We created a questionnaire, we sent it directly to contacts we had collated, we asked:
  - about support for HbbTV and DVB DASH, particularly OnDemand vs Live?
  - for 3 most common interop issues experienced?
  - if issues had held back services?
  - what is difficult to implement and why?
  - what is difficult update and why?
- We wanted to reach a wide range of HbbTV implementers, operators, broadcasters, manufacturers and technology companies.
- Members and non members included.
- Circulated at HbbTV Interoperability Workshops and on the website.

What else have we done?

- We also obtained some interoperability workshop reports directly, e.g from Spain - thank you ☺

- We created an analysis document to categorise the results – using FMEA approach:
  - to categorise the area in which the issues occur,
  - to record the impact of the issue
  - to record the frequency of the issue

    impact x frequency = risk
  - to record actions, owners and status

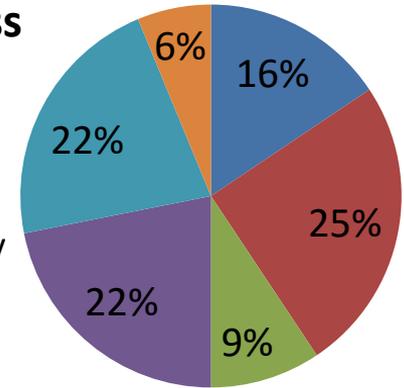| 2016 activities:	Q1	Q2	Q3	Q4
Define approach				
Collect input through questionnaire				
Analysis of response				
Action plan (Recommended actions)				

What response did it have?
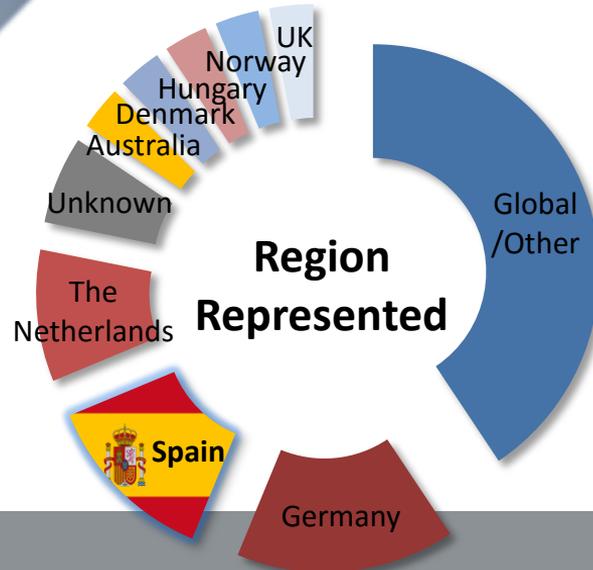
Total Response
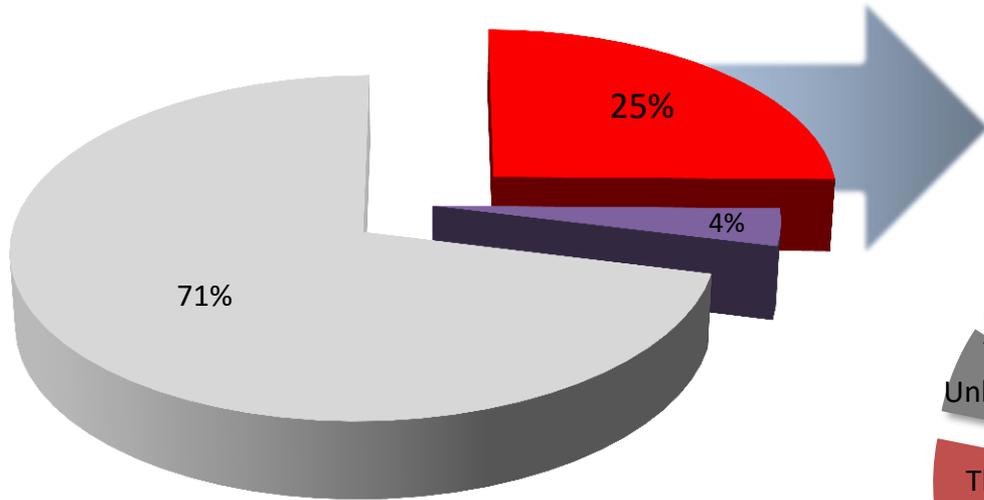
- Responded with answers (28)
- Responded but couldn't provide answers (4)
- No response (79)

71%
25%
4%

Type of Business

- Operator
- Broadcaster
- Application Developer
- Manufacturer
- Component/Technology
- Unknown

16%
25%
9%
22%
22%
6%

Region Represented

UK
Norway
Hungary
Denmark
Australia
Unknown
The Netherlands
Spain
Germany
Global/Other

HbbTV Membership

100%
50%
0%

- Unknown
- Non-Member
- Member
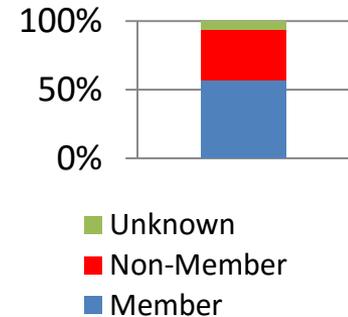
What have we found out?

MPEG-DASH

Issues	HbbTV Actions	Recommendations to Implementers:
Live profile support is not as good as On-demand	HbbTV consider commissioning wider diversity and deeper coverage of test materials for "live".	Attend HbbTV Interoperability testing events, consider local regional/platform events.

Please read the guidelines and follow the spec!

Compliance testing (e.g. using existing validation tools) of the output produced by suppliers |
Compatibility of streaming services with HbbTV/DVB-DASH profile)	HbbTV consider commissioning: a) DASH Compliance Validation tools. Needs to be viewed as a whole, not just mpd (self consistent). b) Example content - from a variety of encoder packager chains - to find 'recipes' for creation that are known to work (and testing on devices) c) Better guidelines - e.g. common gotchas	
Transitions between content e.g. in ad insertion scenario	HbbTV review the current coverage and testing approach for ad insertion	
General interoperability between content, encoder, packager and device combinations	HbbTV consider listing known working deployments, producing more guidelines.	

What have we found out?

Issues	HbbTV Actions	Recommendations to Implementers:
Application conformance/guidance - including Media, Key Handling by applications…	HbbTV consider producing more guidelines (e.g. developer guidelines from STVA extended for HbbTV) and further development of tooling: - application validation tooling (some exist today) - example/reference applications (some exist today) - emulators (some exist today)	Development and testing using existing tools. Get access to a zoo of devices.
Non-compliant devices/devices that claim to be "compliant" but don't support all features/errata?	Refer to HbbTV Specification group to consider this issue	Enforcement of Certification, using whitelisting and/or device certificates to control device access to platform/applications.
Device performance/robustness - no requirements in the spec, understanding how an app can be adjusted to suit device	Note: V2.0.1 does include some graphics and robustness requirements and tests. HbbTV re-consider the need for applications to understand the level of performance to expect (not just graphics).	Development and testing against real devices as early as possible - have realistic expectations. Get access to a zoo of devices.
CSS Navigation	Refer to Specification group to consider what to do about CSS Navigation.	

Other "most reported" issues

What else?

- DRM is difficult to implement, there is a lack of experience of DASH+DRM, and difficult to access documentation.

- Lack of tests for optional features (e.g. PVR)?

- Incorrect expectations? E.g. things that are not in the spec (or the applicable version of the spec, or optional) or not knowing what device profiles exist in the market?

- DSM-CC, Cookies, Zapping between IP (OTT) channels, Security can be problematic.

- Other specification related issues…

- Other testing coverage related issues…

What are we going to recommend?

Action	How?
HbbTV consider commissioning DASH compliance/validation tooling	IITF will make a recommendation to Steering Group, asking them to appoint a working group to take forward.
HbbTV consider commissioning more tests for Live streaming	Refer the issue to Specification and Testing Groups
Spec group to consider how an application should work out what a device really supports	Refer the issue to Specification Group
HbbTV should consider running mailing lists that reach outside its membership.	Refer the issue to Marketing Group

- These are just the top "do now" actions, more will follow…
- A fuller report will be produced by this task force in due course

How can you help?

- Please contribute your feedback on interop issues – we are still happy to receive this via questionnaire or direct to: info@hbbtv.org
  - please do not include identifying information about devices, models, brands and applications, we can't accept this.
- HbbTV is pleased to accept test material contributions, whitepapers, information about tools and guidelines to share with the HbbTV community.
- Join HbbTV, and contribute to the activities of its working groups!

- Finally, a big thank you to everyone that has contributed so far, and to my colleagues on the Improving Interoperability Task Force.

- Contact me: BobCampbell@eurofins.com