Status of HbbTV interoperability in France

December the 9th, 2015

Objectives of the study

- Since 2005, the HD Forum has coordinated the stakeholders of the French TV market for the adoption of new TV technologies and standards, and has facilitated the evolution of the French TV ecosystem.

- In 2012, the HD Forum has initiated the TNT 2.0 specification along with a set of tests to help develop added-value services together with a framework for interoperability.

- Three years later, in 2015, the HD Forum has appointed Farncombe, now part of Cartesian, to :
  - Undertake a detailed assessment of the interoperability within the French HbbTV ecosystem;
  - Examine the results in comparison with other HbbTV markets;
  - Analyze the causes for the existing interoperability issues;
  - Propose some recommendations to improve the overall HbbTV interoperability in France.

- The outcomes of this study are :
  - A long-form report (60 pages) in French
  - A short-form report (20 pages) in English. The HD Forum is looking at the option to give access to that version to HbbTV members.

Interviewed companies

> **Farncombe has conducted 34 interviews with a wide range of players involved in the HbbTV ecosystem in Europe and in Australia.**

Application developers	Broadcasters & Operators	Technology providers	Manufacturers	Institutions & Associations
.dot screen	ARD①	Arkena	LG	AFNUM
MIT-xperts	arte	eurofins — Digital Testing	SAMSUNG	CSA — CONSEIL SUPÉRIEUR DE L'AUDIOVISUEL
sofiadigital	fransat	httv — high tech tv	SONY	digitaluk
WIZTIVI	M6	Intertrust	TP VISION	freeview plus
tdf	NRJ12 / orange	KEEPIXO by ALLEGRO DVT	VESTEL	GfK
	RTL	Microsoft		HbbTV
	TF1	OPERA software		IRT
		tdf		tdt HÍBRIDA

Approach

- Identification of companies to be interviewed.

- Creation of a questionnaire with specific questions per type of stakeholders.

- Execution of all interviews. Special attention was paid to:
  - The stakeholders' approach regarding interoperability,
  - The perception of the stakeholders about interoperability,
  - The gathering of interoperability facts,
  - The evaluation of the acceptability of possible solutions by the interviewees.

- Analysis of all information gathered during interviews,

- Drafting of report, including a list of possible solutions to improve the HbbTV interoperability in France.

Following this study, the HD Forum will further investigate the opportunity to implement these proposals.

HbbTV initiatives for compliance and interoperability

Since the early days of the standard, the HbbTV association has committed to provide the means to favour the receivers compliance and the overall interoperability.

test suite

logo policies

work shop

Other initiatives for compliance and interoperability

Individual actions in favour of compliance and interoperability are developed and promoted towards the HbbTV community

HD FORUM

TNT 2.0 tests developed by the HD Forum have contributed to extend DASH and DRM testing.

tdt HÍBRIDA

TDT Hibrida has provided a set of tests on the application life cycle and audio formats.

IRT

The IRT offers a portal for HbbTV developers (Wiki).

eurofins IRT

Both the IRT and Eurofins Digital Testing offer HbbTV code validators.

MIT-xperts

MIT-xperts provides sample HbbTV applications.
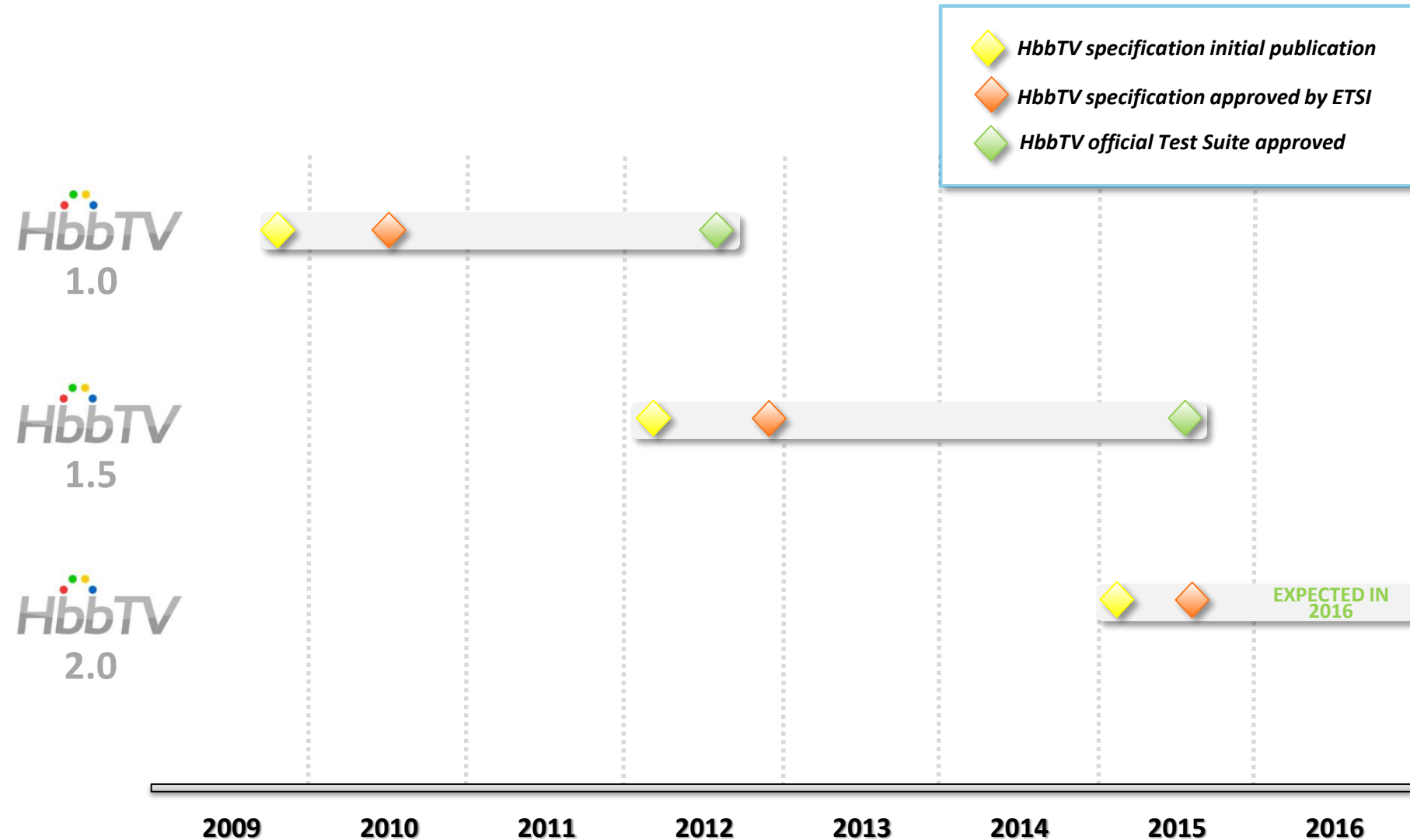
Atos

Atos has developed a plugin for Firefox that allows to display an HbbTV application (FireHbbTV)

ARD IRT

IRT and ARD are currently developing an application framework to improve the quality and lead time of HbbTV application development.

Challenges for HbbTV interoperability

Challenges for HbbTV interoperability

- The official Test Suite for HbbTV 1.0 and 1.5 has been approved more than 2 years after the release of the specifications.

- The earliest HbbTV-compliant terminals have been deployed before services were actually available.

- As for any new technology or standard, application developers have to embark on a learning curve.

- Most products do not bear the HbbTV logo. Thus, they are not constrained to successfully pass the full official Test Suite.

- By definition, interoperability remains in an unstable equilibrium as applications change over time, new applications are deployed and HbbTV devices are also updated. This requires a sustained effort from all stakeholders.

Explored HbbTV ecosystems

	Germany	Australia	Spain	France	UK
Prime mean for TV reception	Satellite, Cable	DTT	DTT	DTT, IPTV	DTT, Satellite
Nb of households	39 M	9 M	17 M	28 M	28 M
Nb of HbbTV devices	16 M (Q2 2015)	NA	3 M (Q3 2014)	4.6 M (Q2 2015)	-
Estimated nb of active devices	12 M		1.5 M	< 1 M	-
HbbTV launch year	2010 (IFA)	2014	2013 2014 (TDT Hibrida)	2011 (Roland Garros)	Oct. 2015
Local specification & profile	HbbTV 1.0	FreeviewPlus : HbbTV 1.5 with Marlin or PlayReady	TDT Hibrida : HbbTV 1.5 with Marlin or PlayReady	TNT 2.0 : HbbTV 1.5 with Marlin or PlayReady	FreeviewPlay : HbbTV 2.0 with PlayReady
Actual use of DASH by services	No	Yes	No	Yes	No
Actual use of DRM by services	No	Yes (Marlin & PlayReady)	No (Marlin & PlayReady)	Yes	Yes
Number of channels carrying HbbTV services	> 70	6	~15	~15	BBC, Channel 4, Channel 5, itv
Certification	No	FreviewPlus	TDT Hibrida	No	FreeviewPlay
Certified terminals whitelisting via embedded certificate	-	Yes	Certificate delivered but not used	-	Yes
Local interoperability events	Yes	Yes	Yes	No	To be defined
Facilitators, industry or certification bodies	IRT, Deutsche TV-Plattform	Freeview	TDT Hibrida Cellnex Telecom	HD Forum	Digital UK
Status of interoperability perceived by market players	Good	Good	Good	Average	-

The French HbbTV landscape

- France as well as Germany have pioneered HbbTV services (example: the Roland Garros application by France Televisions in 2011).

- French broadcasters proposed innovative and ambitious services such as MyTF1 VOD, Start-Over on France Televisions (Salto) and LCP-Public Senat, Multicam application during sports events on France Televisions.

- Technology-wise, France has been the first country to use DASH and deploy DRM within HbbTV services.

However…

- France faces an important fragmentation of the TV reception modes (DTT, IPTV, Cable, Satellite) where only DTT and some satellite networks carry HbbTV services.

- The offer in catchup services is richer on operator boxes than on HbbTV services (for economic reasons).

- Limited coordinated communication towards the general public on HbbTV services, resulting in a lack of consumer awareness.

Main interoperability issues reported in France

Application execution & UI issues:

- CSS : often used in a non-compliant manner by applications, leading to different terminal behaviours.

- Cookies: before 2013, the support of cookies was not always correctly implemented within terminals.

Video-related issues:

- Video object :
  - Non-deterministic behaviour when instantiating the A/V player (in particular when codecs are changed).
  - Implementation of event notifications are not always fully compliant with the specification

- MPEG-DASH streaming :
  - Multi-language, especially on-the-fly language selection is not supported well
  - Subtitles (not specified by HbbTV 1.0 and 1.5)
  - Trick plays are not supported well
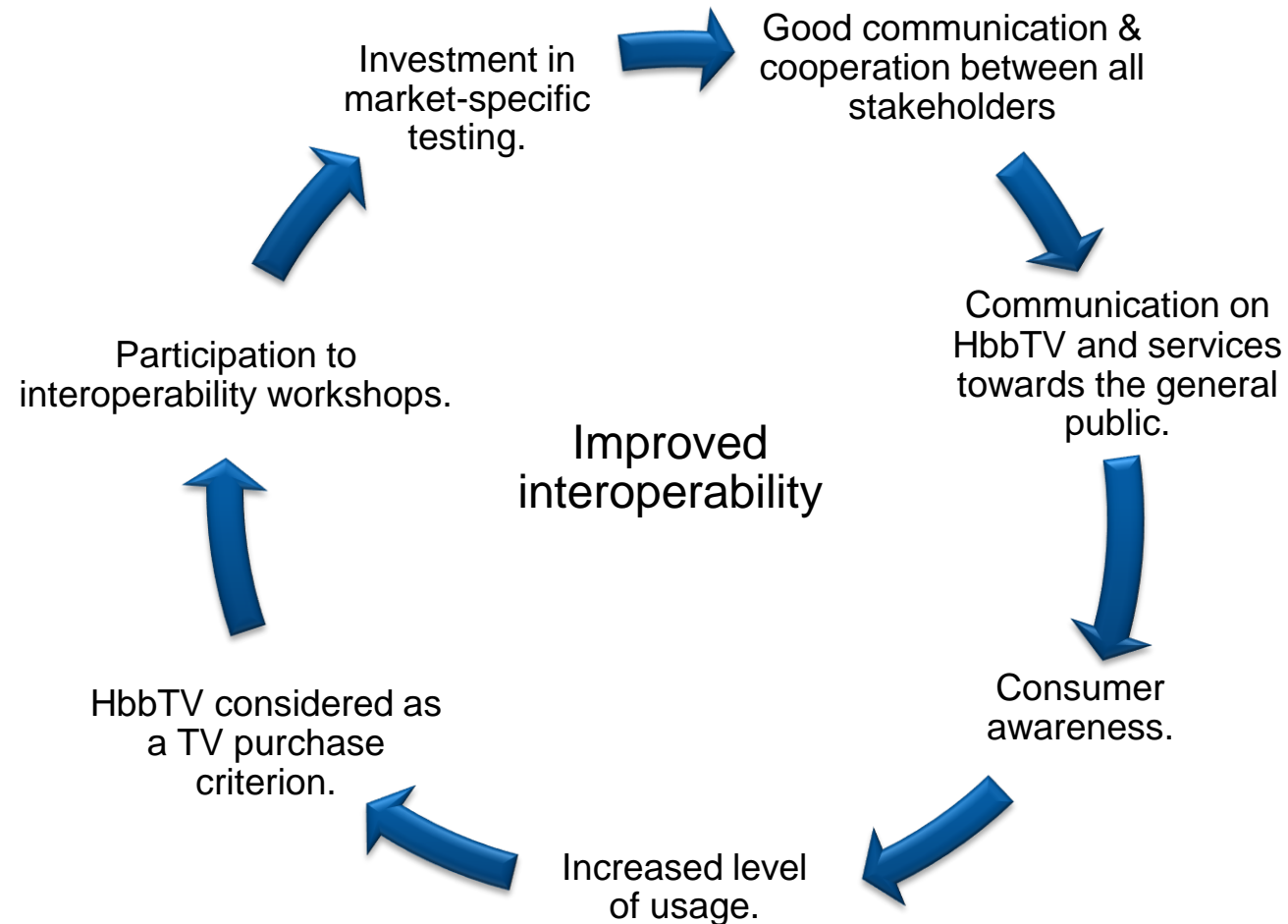
DRM-related issues:

- Some terminals don't support 16 bytes initialization vectors.

- An ambiguity of the endianness of the DRMSystemId has led to implementations which are incompatible with each other.

Analysis of causes

- Some developers, with good expertise in Web development, but less familiar with HbbTV specificities, first develop a Web application, and then modify it until it operates properly on the set of terminals used for validation. This leads to non-compliant applications, prone to later interoperability issues. This approach tends to rarefy.

- Applications are sometimes tested against an insufficient number of terminals.

- Upstream collaboration between broadcasters and manufacturers is sometimes too limited (France under-represented in interoperability workshops).

- Insufficient market-specific testing of terminals with deployed services.

- Lack of maturity of the whole industry regarding MPEG- DASH. The HbbTV DASH profile does not specify how to implement subtitles or trick plays.

- Difficulty to reconcile all DASH profiles. Generally, the HbbTV DASH profile is not supported by all DASH packagers. Service providers aim at minimizing the number of streams generated for all the targeted platforms, which is challenging for HbbTV devices.

- Access to DRM integration guidelines is sometimes too challenging.

Lessons learnt from other markets

Australian, Spanish and German examples tend to show a number of factors that lead to a virtuous circle of better interoperability.

Improved interoperability

- Investment in market-specific testing.
- Good communication & cooperation between all stakeholders
- Communication on HbbTV and services towards the general public.
- Consumer awareness.
- Increased level of usage.
- HbbTV considered as a TV purchase criterion.
- Participation to interoperability workshops.

Possible actions to improve interoperability in France

- The study concludes with a list of actions, that may be undertaken to improve interoperability.

- These possible actions are classified by categories of stakeholders. There are actions for:

  - Application developers,

  - Broadcasters,

  - Terminal manufacturers,

  - Dash Packager vendors,

  - DRM vendors,

  - A coordination entity (e.g. HD Forum).

- These actions have been listed extensively to feed the thoughts of the HD Forum, which will decide their interest for the French market and their possible implementation

What's next?

- In many countries, HbbTV is key in broadcaster' strategy.

- TV manufacturers are all investing in HbbTV that is fully part of their SmartTV product line.

- The French market will grow by 2 to 3 Million new HbbTV devices every year.

- HbbTV may soon enable the largest TV/OTT platform, provided that interoperability is properly managed.

It is up to the HD Forum to decide what to do next…

Thank You!

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