
THE HBBTV CERTIFICATION PROCESS

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ABSTRACT

The HbbTV Association was formed in 2009 to define an HTML based specification to enable broadcasters to associate applications with their content, allowing consumers to access additional information and other A/V content. It has been widely adopted by broadcasters and manufacturers around the world. HbbTV has defined a certification process whereby TVs can use the HbbTV logo as long as the TV can prove compliance by using the HbbTV test suite.

One consequence of following a strict regime of testing is that the source specification must be robustly written in such a way that it is testable (by manufacturers and third party test houses), implementable (by manufacturers) and usable (by application authors). These requirements are not just on the HbbTV specification but also on these specifications referenced by it, such as certain W3C recommendations. It is therefore important for HbbTV that W3C takes this into account when drafting new recommendations.

WHO OR WHAT IS HBBTV?

The HbbTV Association (www.hbbtv.org) is a pan-European initiative founded in 2009 aimed at providing an alternative to proprietary technologies and delivering an open platform based on HTML for broadcasters to deliver value-added on-demand services to the consumer. Its members, which include broadcasters, manufacturers and technology providers, have developed the HbbTV specification to create a global standard for hybrid entertainment services, published through ETSI as TS 102 796. The latest version (1.2.1) of this specification, incorporating MPEG DASH, was approved by ETSI in November 2012. HbbTV is now working on a new version, referred to as v2, which, among other new features, intends to update the specification from HTML4 to HTML5. Media synchronisation and interaction with companion screen devices are also key new features being developed.

The current specification draws heavily from OIPF (www.oipf.tv) which is itself based on CEA-2014, including XHTML, CSS2.1 and DOM2, with JavaScript extensions for tuner control, video streaming, content downloading, DRM interaction, scheduled recording, parental ratings and metadata queries. The DVB specifications are also referenced for application signaling and media formats.

HbbTV has a registered logo, which can be used by companies under a trademark license agreement, as well as a test suite, which can be used by manufacturers to verify compliance with the specification. The material in the test suite is a mixture of creative commons material and material licensed from third parties. Because of this, the test suite is only available to those companies who sign the Test Suite License Agreement.

¹ The co-author is chair of the HbbTV Certification Group but this paper is submitted on behalf of Samsung.

HbbTV is currently being used in Germany, France, Spain, Austria, Switzerland, Poland, Czech Republic, Belgium, Netherlands, the Nordic countries, Hungary, and Slovakia. There is also interest or deployment plans from Australia, Russia, Turkey, South Africa, Namibia, Malaysia, Vietnam, Thailand, Singapore and Indonesia. ATSC are also interested in HbbTV for their version 3 specification.

WHAT IS CERTIFICATION AND WHY HAVE IT?

There are fundamental differences in the product lifecycle between TVs and other high tech consumer equipment such as PCs. There are also major differences in consumer expectation regarding the product performance between these sectors.

Most PCs that are sold by manufacturers have the capability to be expanded or modified by the consumer. More memory might be fitted or the operating system upgraded. The consumer will of course install applications on the PC. There is no expectation by the consumer that every application will work perfectly on every PC in every configuration: to put it another way, the consumer is not surprised when things don't work. Likewise, they are not too surprised when they use their browser to visit a web site and something doesn't display quite correctly or a link is broken. They do not expect the PC manufacturer to fix these problems, or even for the software application author to fix it either, although there may sometimes be driver updates available from the manufacturer or third party provider.

Consumers have very different expectations about their TVs. They expect them to work. They expect broadcast applications (delivered as HbbTV applications) to be displayed correctly and to function as anticipated. They do not expect them to crash or reboot. TV manufacturers generally do not provide software updates to add new functionality; they do so generally only to fix bugs reported by their customers. This means that it is very important for the TV, when shipped, to work 100% as expected whatever future broadcast applications may throw at it.

Broadcasters also wish to ensure that the application which they are broadcasting will be handled in exactly the same way on every TV, regardless of the manufacturer, the software architecture or the underlying hardware. This is in practice very difficult for them since HbbTV does not have any tools with which to test applications.

For manufacturers, the HbbTV test suite is only independent way by which they can verify that their HbbTV implementation is correct. The way that they can show to consumers that the TV is compliant with the HbbTV specification is by using the HbbTV logo on the product (or possibly its packaging) to give the consumer some confidence that everything will work correctly.

Manufacturers are only allowed to do this if they can demonstrate that their TV has successfully run all of the tests in the test suite. They must sign the Logo License Agreement which binds them to work with broadcasters to resolve any issues that may be discovered and to update the TV software if the TV is found not to be compliant with the test suite any longer (perhaps by a software update aimed as fixing a different issue). This is called the certification process. It provides a quality mark that can be used in the marketplace to provide confidence to both retailers and consumers that the TV has been properly tested.

Other bodies are also looking to use the HbbTV test suite as a requirement for the use of their logos. These bodies may either require manufacturers to sign up to the HbbTV Logo License Agreement or directly reference the test suite from their own logo license agreement. This increases the commercial

pressure on manufacturers to comply with the specifications and pass the test suite. This pressure can become very acute if there is a test failure which causes the production line to be put on hold.

WHAT PROBLEMS ARE FORESEEN?

The HbbTV specification references many W3C recommendations, hence there is a requirement on TVs to implement them. The philosophy of any compliance test suite is to test every part of the specification which is mandatory for a device to implement and that the device must pass 100% of the tests. This means that by default it is expected that every TV will implement every part of every referenced W3C recommendation.

The problem here is that most TV manufacturers base their HbbTV browser on webkit and it is known that webkit, along with other browsers, does not implement every W3C recommendation fully. The reason for this is down to what can be achieved using a reasonable amount of effort coupled with what functionality applications are trying to use. It would be unreasonable for the HbbTV test suite to check every feature and every corner case when it is known that these have not been implemented and are not being used by applications. In theory, the specification should list all of the exclusions such that the TV can be compliant with the HbbTV specification even if it does not implement the full W3C recommendation. However this would be very lengthy, time consuming, error prone and possibly contentious.

A better solution would be if W3C can write their recommendations to include only the functionality that will be used by applications and explicitly exclude corner cases that are not realistic. This would of course force more work on W3C and its members coupled with perfect foresight.

Another problem area is in the lack of tests for many of the existing W3C recommendations. It is acknowledged that W3C is now making great efforts to ensure that all new recommendations do have an associated set of tests and HbbTV hopes to find a way of using that resource as part of its own certification process. It is important to ensure that the tests cover as much of the specified functionality as possible while striking a balance with what is reasonable.

CONCLUSION

The HbbTV specification has been adopted in many countries and has been embraced by many broadcasters. Hardly a week goes by without a news item in the trade press about HbbTV. It is a specification that cannot be ignored.

That success has been built on the foundations laid by W3C. Closer alignment between HbbTV and the “wider internet” is a constant pressure within HbbTV. To ensure that this is achievable, it would be very helpful if W3C can consider the following requirements for every recommendation that it writes:

- Is it testable?
- Is it implementable?
- Will it be implemented?
- Will it be used by application authors?
- Will tests be provided for it?

If there is a positive answer to all of the above, the results will be more compliant devices in the market, not just TVs but every device that has a browser inside it.