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## Hybrid and Internet Television

### A discussion paper prepared by the World Broadcasting Unions

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This paper summarizes broadcasters' views of "hybrid" (Internet plus broadcast) television. It classifies opportunities and concerns under four major headings and, where appropriate, suggests steps to minimize potential harm and reduce viewer confusion that may otherwise occur.

Different terms are used for such systems, and they include the general acronym 'HBB', or 'Hybrid Broadcast Broadband'.

Broadcasters intend this paper to serve as an invitation to device and set makers, application developers, and others to work together with us to constructively pursue the opportunities while simultaneously seeking solutions to remove concerns.

We recognize that the most likely future scenario is where different HBB platforms are developed and implemented in different regions (or countries). A single world-wide standard system is unlikely to meet all the commercial and editorial goals of different platform operators and service / content providers.

Standardization and commonality for elements of the systems, where achievable, is a key aim. However, this must not limit the opportunities for novel functionality, content and user experience, or indeed the speed of getting such innovations to market. System specifications should allow for maximum flexibility, future development at acceptable cost, and evolution of services and applications carried by stable HBB platform(s). We want to be able to offer users the opportunities to personalize their 'viewing' experience for themselves, to meet their preferences.

We have no doubt 'stakeholder' cooperation will yield multiple benefits: a more satisfying viewer experience regardless of delivery mode; standards enabling new forms of broadcast content and device features; protection of the most vulnerable; and, improved protection of services and content.

#### Introduction

Broadcasters welcome Internet-enabled televisions - they expand program choice, simplify access to Internet content, and, with appropriate standards, enable broadcasters to provide new forms of enhanced content.

They also represent fundamental challenges to the traditional viewing experience (e.g., "overlay" and "pop-up" content), raise questions about the regulatory treatment of broadcasting versus Internet content (e.g., protection of minors,

provision of closed captioning/subtitling, content obligations and rights, etc.), and they have the potential to extend copyright infringement from the PC to the TV.

Broadcasters believe it is necessary to begin a cross-industry discussion now – so we may work in a cooperative environment to achieve a common set of guidelines for Internet televisions.

Few may realize that discussions have already started on some national levels. For example, two Japanese organizations (ARIB and DPA) have already taken initiatives. These organizations brought together manufacturers, broadcasters, and telecommunications operators to craft rules and guidelines addressing some of the issues below. Similarly in Germany, UK, France, and Italy, these issues are being discussed in cross-industry forums (such as the Deutsche TV-Plattform, the DTG, the French HD Forum, and the DGTVi). Our goal is to adopt a similar process. To that end, we provide our perspectives on four major areas in this paper, and we welcome the reaction of manufacturers and other stakeholders.

### **Issue 1: Content Enhancement Standards**

Broadcasters realize that someone viewing a television broadcast may wish to link to Internet content associated with the broadcast content. Sports statistics or replay highlights during a sporting event would be examples of this.

As a central proposal, broadcasters request an open standard for the signaling between broadcast and broadband. Open technical standards are needed to facilitate delivery and viewing of such content – which broadcasters call "channel-bound" as the content is "bound" (linked) to a specific broadcast channel.

Standards are also needed to enable broadcasters to deliver content for individual consumption via the Internet to any potential consumer and, where desired, to substitute more-appropriate Internet material for broadcast material (via streaming).

Finally, Internet-connected TVs offer real new opportunities in the combination of broadcast and Internet elements. Thus, there exists the opportunity for standards that might enable "cooperative" or "collaborative" content – personalized content resulting from Internet connectivity.

In summary, appropriate standards will enable broadcasters to provide consumers with a viewing experience that can be personalized. These standards will enable device makers to expand the capabilities (and attractiveness) of future products that are connected to broadcasts, and offer more than the browser services offered by Internet TV.

### **Issue 2: How can we ensure respect for broadcasting regulations and safeguard the safety of the HBB viewing environment?**

Televisions have traditionally been one-way, single-task devices and television services have been regulated as such by national governments around the globe. Regulations range from those intended to protect the public (e.g., identification of broadcasters/content providers, emergency alerts, separation of editorial content and advertising), to those intended to protect minors (e.g. labeling/ sign-posting, restricted access to illicit or unsuitable content), to regulations designed to extend the reach of television (closed captioning/subtitling, accessibility services for people with a visual or hearing disability).

These regulations did not anticipate or provide for the possibility of an information overlay from a non-broadcast source, particularly from a source not controlled by the originating television broadcaster. Consequently, if broadcasters are to maintain minimum content standards and respect important regulations, we must work with the other members of the media ecosystem (including device and set makers, providers of applications or portals, and other content providers) to assure responsibility for safeguarding broadcasting consumption, particularly regarding the protection of minors.

### **Issue 3: How can we preserve the viewing experience?**

Making considerable investments in programs and services, broadcasters have a vital interest in ensuring that the content they provide is displayed on screen in unaltered form, without unauthorized overlays. Safeguarding the quality of the broadcasting picture assures the broadcasters' services, reputation and credibility. Indeed, this holds true beyond broadcasting also for media content and media services delivered via the Internet.

Moreover, broadcasters need protection against the unauthorized exploitation of their services by third parties, e.g. where third parties might remove or add commercial communications or use broadcasters audiences for their own purposes. Such practices would clearly undermine the broadcasters' mission and commercial revenue.

The attractiveness for third parties could come also from the fact that different sources may be displayed simultaneously. However, it must be the viewers' decision whether or not to access third-party material and, as the case may be, to open new windows and to position and size such windows as they wish. Thus, no content or other material must be displayed on screen at the same time as the television picture (whether as an overlay or in a separate frame) without the informed consent (or individual request) of the individual user. Moreover, viewers should be able to continue to view primary content while opening new windows for other content from broadcasters. Broadcasters HBB content should only be displayed on the concerned broadcasters' channel.

At the same time, it should also be acceptable for the broadcaster to consent to the presentation of cooperative third-party content placed appropriately on-screen, given there is a specific agreement. For example, one may envision additional content in a band at the bottom of the image, made available by shrinking/scaling the television picture and any associated caption information. But service presentation areas (logos, etc.) should never be blocked or overlaid by other services from a different originator. This screen layout also ensures that broadcasters inform viewers of emergency warning information to protect their lives or properties, which is mandatory by regulations in some countries.

A cooperative effort by the industry is needed to agree on clear principles for content and service integrity, and for the display of third-party material.

It is worth noting the example in Japan. There, ARIB (the Association of Radio Industries and Businesses – a standards organization consisting of broadcasters, telecommunications operators, and manufacturers) published a recommended practice addressing ad skipping and avoiding third-party ad overlays. See page 2-114 of ARIB's technical report TR-B14 (Volume 2, Section 9.3): [http://www.arib.or.jp/english/html/overview/doc/8-TR-B14v2\\_8-1p3-1-E2.pdf](http://www.arib.or.jp/english/html/overview/doc/8-TR-B14v2_8-1p3-1-E2.pdf)

Additionally, Japan's Association for Promotion of Digital Broadcasting (DPA) created a guideline that explains desired and undesired displays on an Internet TV. The guideline was crafted after lengthy discussion between broadcasters and manufacturers, and is aimed at minimizing viewer confusion and identifying the source of on-screen content.

Although sensitivities over respect for content integrity may vary from one region to another, as do the legal and regulatory provisions, this should not be an obstacle to achieving minimum standards worldwide, whilst still maximizing opportunities for personalization by users and the innovative presentation of services and content streams.

### **Issue 4: How can we reduce risks from viruses, malware, and piracy?**

Internet TVs are by definition network (or interconnected) devices - able to communicate with other devices on the network (Web sites, PCs, and other Internet TVs) - and capable of obtaining and sharing content. Left to evolve along traditional technological lines, broadcasters fear they will follow the Internet

PCs' development pattern and bring its unwanted elements - creating new targets for those wishing to profit from viruses, malware, and copyright infringement.

The system should provide a safe execution environment of applications to shield applications from each other, in particular to avoid that one application can hijack content from another.

With forethought, these problems can be minimized. Device and set makers already design systems which operate in a different way to the PC environment. Additionally, manufacturers may employ hardware, software, and network designs suited in particular for an environment unaccustomed to dealing with viruses, malware, and malicious code, similar e.g. to smart-phones.

Taking preventative steps now minimizes viewer disruption and manufacturers' support costs, and does not limit the device from supporting popular applications. Thus, broadcasters look forward to working closely with device and set makers to better protect viewers from unnecessary worry and confusion.

Broadcasters acknowledge that no technical systems for protecting devices, personal information, or copyrights are, or will be, perfect and attack proof. Nonetheless, protective steps can be taken to minimize threats, and thereby promote a safer content-rich online experience for all.

An HBB standard should not prevent the development of a content protection system chosen in collaboration with manufacturers.

## **Conclusion**

Broadcasters look forward to cooperating with device and set makers and other stakeholders to create easy-to-use content-rich services suitable for viewing in a safe viewing environment - an environment that safeguards the most vulnerable in our societies while minimizing harm from viruses, malware, and copyright infringements.

Broadcasters offer to work with manufacturers and other stakeholders to update these suggestions as necessitated by new device features, changes in users' online activities, and availability of new technology.

## **ANNEX**

### **Suggestions for possible steps and measures to achieve the general objectives**

#### **Preliminary note**

The implementation of Internet connected TV services can follow different approaches. Those different approaches include one in which the connected device separates the function of Internet and broadcast services; another approach sees connected services linked with broadcast applications using open technical infrastructure; and a third has a consumer proposition integrating broadcast/Internet services and devices. Accordingly, the responsibilities of the different stakeholders may vary. These differences have to be taken into account in applying the following principles in the respective environment.

#### **Issue 1: Standards for Enhanced Content**

Hybrid broadcasting systems will need to be able to synchronize the display of broadband content with that of the television program being broadcast in some circumstances. To make this possible, signals will need to be broadcast which can "trigger" the retrieval of the broadband element. It would be beneficial to have a single standardized way of broadcasting the synchronization signal, which is in use throughout the world.

Depending upon the technology path followed, there is also a need for standards related to:

- Content identification (to allow unambiguous identification of the content by these Internet-enabled receivers), but with secure means not to pass on usage data to the outside.
- Unique identification of the content owner to be displayed making the source of origin visible for the consumer.
- Receiver's (client) computational environment (graphical and other client resource support, including APIs) to enable multiple receiver models and/or hardware/software platforms to run the same application.

#### **Issue 2: Broadcasting regulations**

All broadcasting regulations in force, as applicable, must be respected and followed in full.

Broadcasters, set or device makers, application or portal providers and other stakeholders must work together to protect the safety of the broadcasting environment, particularly regarding the protection of minors.

- They should respect national regulation and self-regulation on the protection of minors. In particular, they should facilitate parental control and make their best endeavors to provide protection based on the time of viewing or to provide advanced notice/labeling, thus permitting viewers to make informed choices about the suitability of content.
- Applications must respect regulations in various countries that prohibit blocking of captioning or accessibility services, labeling/sign-posting, emergency alerts and other information of value as determined by national regulatory bodies.

### Issue 3: Preserving the viewing experience

- Device makers and other stakeholders should respect the concept of "content integrity" - that is, broadcasters' linear and non-linear programs and services should be displayed on hybrid devices without alterations and without disrupting the viewing experience.
- At the same time, viewers should be enabled to continue to view primary content while opening new windows for other content (multi-screen function). The windows must not overlap with broadcast content windows unless the viewer chooses that it does so, and the origin of third-party content must be made clearly visible. Such content which is independent from television and radio broadcasts may be aggregated in independent portals.

For example, viewers could thus access non-programme related content provided by third parties, e.g., stock quotes, on a part of the screen which has either been freed up by gracefully shrinking the primary television picture, or if the content is authorized by the broadcaster, and if the viewer so selects, retaining full screen video with other content displayed as overlays.

- Industry-wide agreement and standards are needed to identify or signal "protected" areas – areas that may not be obscured by other content.
- It must be ensured technically that applications cannot trigger and execute operations which are not explicitly intended by the consumer and which would cause operations that can no longer be controlled by the consumer. Applications must not interfere with each other (the "sand-box" principle), and an application must not cause harm to other applications running.
- At any time it must be possible to return to the last-viewed broadcast channel by means of a specific return button or software button. The means of returning must be clearly communicated to the viewer.
- Internet TVs should incorporate a means of segregating programme-related applications from those provided by third parties if viewers are to access them easily. For example, pressing the remote once might call up a "widget" (browser) to display applications (multimedia content) associated with the broadcaster's linear content (so-called "channel-bound" content), while pressing it twice might display a wider universe.
- Such channel-bound content must be directly accessible by the consumer by pressing a button (red button) on the remote control. For teletext applications, pressing the teletext button is an alternative means of access.
- Inherent in this proposal is the assumption that channel-bound content is directly accessible by the receiver – in other words, the receiver does not need to access a third-party site to access channel-bound broadcast content.
- Third parties must not be able to remove, replace, alter or add commercial communications. No commercial communications must be inserted on the television picture (e.g. pop-up or in-video advertising), around the picture (e.g. advertising frames) or before the start of an on-demand program (e.g. pre-roll advertising), without the broadcaster's consent.

- No content overlays by third parties should be permitted without the broadcaster's consent and without specific action by the viewer. Broadcasters must retain the right to consent to the presentation of cooperative third-party content placed appropriately on-screen. For example, one may envisage additional content in a band at the bottom of the image, made available by shrinking/scaling the television picture and any associated caption information/subtitling.
- Device/set makers must enable attribution of content source to avoid confusion. As an example, a "Title Bar" - similar to that used in the PC world - should enable viewers to identify different sources of information easily. At the same time, it should allow broadcasters and other content providers to convey additional information (such as the name and contact details) easily, directly and permanently accessible to viewers, so as to fulfil minimum identification requirements under national regulations.
- Given the opportunity for multiple windows, should there be a "home" button – something similar to that found on Apple's iPad?

#### **Issue 4: Protection against viruses, malware, and piracy**

- Internet TVs should not facilitate the streaming of pirated content from unauthorized video-hosting sites or include peer-to-peer clients for illegal file-sharing of copyrighted content.
- As part of a set of measures to ensure interoperable services and devices, device makers in conjunction with other members of the value chain (application providers, broadcasters etc.) should create an application approval process, based on transparent, objective and appropriate technical criteria.

With due regard to freedom of expression and information, the application approval process must not be used to restrict users' access to lawful content or broadcasters' and other content providers' access to hybrid platforms and devices.

- The measures suggested herein are intended to serve the general objective that Internet TVs should not facilitate the streaming of pirated content from unauthorized video-hosting sites or include peer-to-peer clients for illegal file-sharing of copyrighted content.
- Applications designed to enable copyright infringement should not be approved.
- Broadcasters and other content providers and right owners should be able to challenge approved applications if it appears that, in practice, they are primarily designed to facilitate copyright infringement. Content owners and device makers should cooperate in developing reasonable procedures for promptly addressing conflicting claims with respect to applications and whether their use enables infringement or not.
- All stakeholders should work together to identify sites that are clearly dedicated to, and predominantly used for, the dissemination of infringing content or the facilitation of such dissemination. Upon determination that a site is so dedicated and used, the device/set maker should remove or block applications that link to such sites. If it is possible to identify specific links that connect to particular non-infringing content on such sites, the application or widget may allow those links while blocking all other links.

- Device makers are invited to discuss with broadcasters available options for content protection features to be included in devices, such as watermark detectors or outputs (HDMI/HDCP) that can be protected and are under the control of the content provider, on the understanding that it is ultimately for the broadcasters to decide which of the options, if any, they use for their programs.
- Any anti-piracy technology and other measures built into Internet TVs must respect users' freedom of information and the right to privacy, should not conflict with limitations and exceptions under copyright, and should take into account the special situation of unencrypted free-to-air broadcasting.