

HbbTV: how Pay-TV operators can take benefit of open standards?

White Paper



EXECUTIVE SUMMARY

Netflix subscribers now make up approximately 20 percent of all U.S. television households¹. By shifting from DVD-by-mail home video rental service to subscription based online video streaming business, Netflix has revolutionized the way U.S. consumers watch television and movies in just over one decade. Their low cost subscription plans already enable consumers to have instant access to thousands of hours of movies and TV programs through a TV set, a game console or a Blu-ray Disc player, connected to the Internet. Whereas Netflix is still extending its reach in the U.S., the company has already announced plans to expand operations in Latin America and in Europe.

All around the world, the advent of new over-the-top players is threatening the positions of incumbent pay-TV operators. To be able to market their competitive offerings, companies like Netflix, Hulu or Amazon take benefits of existing network infrastructures and existing installed base of connected devices to scale down their investments.

Despite the emergence of these new entrants, traditional TV is not necessarily condemned to decline. Uniquely positioned between content producers and consumers, pay-TV operators have a unique opportunity to combine their strengths with the new potential offered by the generalization of residential broadband connectivity, to enrich their offers with online streaming video services and Internet-enhanced interactivity.

However, the most successful operators will surely be the ones that will focus on their core business, which is aggregating the best contents and packaging them in the most appealing offers, and take benefits of open standards to scale down their costs and reduce their time-to-market, instead of spending time and money in porting third party services on a proprietary closed platform.

¹ source: Netflix Corporate Figures at end of June 2011

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HYBRID BROADCAST/OTT TV: WHEN TELEVISION MEETS THE WEB

Whereas television is about to complete its migration to the digital era, a new revolution is already going on with the arrival of Internet contents directly into the TV.

With an average penetration rate of 56 percent of European households and more than 60 percent in U.S., Canada and Japan², home broadband connectivity has now become a commodity in most of the developed countries.

Like other businesses, the television market is still impacted by the generalization of residential broadband access. Since a couple of years the competition has started between stakeholders to control the access to online TV contents:

TV manufacturers

For TV manufacturers, Internet connectivity has been identified as the opportunity to develop new business models, able to slow down revenues erosion on a market which has become highly competitive. Major TV manufacturers, like Samsung, Philips, LG and Sony, have already launched affiliation programs allowing Internet content providers to be hosted on their TV portals.



Figure 1 – Philips Net TV and Samsung Apps portals

Game console manufacturers

Consumer electronics manufacturers involved in the video game industry want to leverage on their installed base of connected game consoles to deliver music and video contents. Video game consoles such as Microsoft Xbox or Sony PS3 have already evolved to become entertainment content hubs.

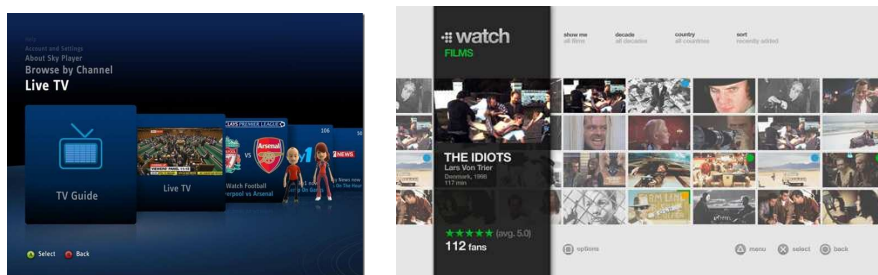


Figure 2 – Xbox Sky Player and Sony's MUBI online streaming service on PS3

² source: OECD broadband statistics

Channel broadcasters

For incumbent channel broadcasters, connected TVs offers the opportunity to protect their positions against Google and other Internet companies on the advertising market, and to reinvent their business models by extending viewer's experience beyond traditional TV consumption with Catchup-TV and interactivity.



Figure 3 – myTF1, TF1's Catchup-TV service on a Samsung Connected TV set

THE CHALLENGE FOR INCUMBENT BROADCAST PAY-TV OPERATORS

Traditional broadcast pay-TV operators can not simply ignore these market changes. They must examine their business models and determine how to adapt to this new context: the time people were just sitting home watching live broadcast TV is over.

In the age of hyper connectivity, characterized by the omnipresence of smartphones, tablets and other connected devices, consumers want to decide when the program starts, to have tailored recommendations, to share their television viewing experiences with friends and interact with TV shows.

“ 60% of U.S. TV viewers were using the Internet on PC while watching TV in 2010.

On mature markets, where fixed broadband penetration is high, we can already observe the emergence of new video content consumption habits:

- more than 450 million Internet users still visit YouTube each month
- nearly 60% of U.S. TV viewers were using the Internet while watching TV in 2010³.

While most of the incumbent pay-TV operators had based their strategy on acquiring exclusive broadcasting rights on premium contents – such as major sport events and

³ source: Nielsen Three Screen Report, Q1 2011

blockbuster movies – to attract consumers, it is now clear that the pay-TV paradigm has obviously evolved.

The first wave of changes arrived a few years ago, with the emergence of IPTV service providers and VOD. Due to the connected aspect of IPTV, telcos have put from the start on-demand consumption in the heart of their differentiation strategy. Meanwhile, the second wave arrived when they understood then that they should also compete on user experience.



Figure 4 - ZON's IRIS user interface

Therefore, controlling content is no more sufficient to protect operator's customer base from massive churn. There is clearly no doubt that consumers are now expecting more from their TV experience; Pay-TV operators, henceforth have to continuously enrich their service with additional features. For traditional broadcast pay-TV operators it has become clearly critical to accelerate their transition to Hybrid broadcast/OTT television to be able to stay ahead of telcos and OTT competitors.

HBBTV: AN OPEN STANDARD FOR HYBRID BROADCAST/OTT TELEVISION

The fragmentation of hybrid television technologies has been identified by stakeholders as a major threat for the emergence of Internet-enhanced services. To ensure the success of the marriage of television with internet, service providers need to be able to address the widest range of devices. The emergence of standards may allow economies of scale required to ensure the profitability of such services and enable services providers to focus on content rather than technologies.

Two different approaches are tested by industry players: closed, proprietary platforms vs. open and interoperable technologies.

- The closed approach is pushed by vertically integrated firms – including some CAS/DRM providers – who have interest in keeping their customers tied to their technologies to be able to generate maintenance and assistance revenues.
- On the contrary, the open standard approach tries to restore freedom of choice to content providers by reusing the ingredients which have determined the mass-market success of the world-wide-web: HTML and JavaScript technologies.

Several initiatives have been launched to solve the problem of having a standard and open environment for connected television services. This includes Hybrid-MHP proposed by DVB and the YouView/Canvas project in UK. However, the HbbTV initiative, which is supported by

more and more companies, seems to be the standard which will emerge in Europe and probably in the rest of the world.

Rather than writing a new specification from a blank page, HbbTV founder members have chosen to reuse existing proven and mature technologies by grouping them under one single umbrella. The specifications which have been approved in July 2010 by ETSI, have already been implemented into a wide range of TV set models, and are also under implementation by major set-top-box manufacturers.

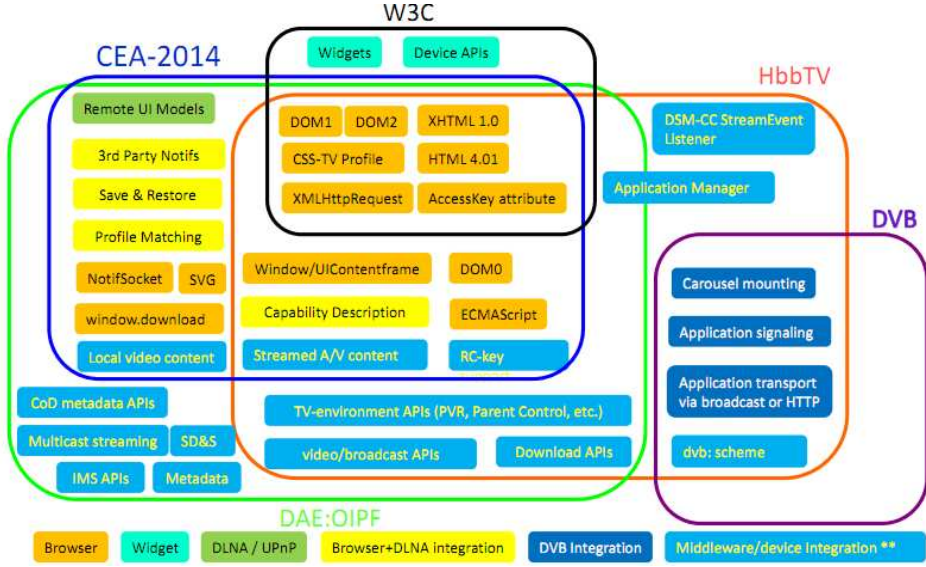


Figure 5 – HbbTV standard overview

The HbbTV standard has been designed to allow TV broadcasters to deliver interactive applications through their broadcast delivery network while allowing service providers to take benefit of broadband connectivity to enrich the experience with online content and streamed video when the reception device is connected.

WHY DOES VIACCESS SUPPORT THE HBBTV INITIATIVE?

For pay-TV operators, continuously enriching their TV experience involves an endless increase of their costs. Open standards like HbbTV help pay-TV operators and TV channels to control their costs.

HbbTV is not the first initiative aimed to propose an open standard to develop interactivity on set-top-boxes. However, with HbbTV channel broadcasters and pay-TV operators benefit from a rich toolbox to develop a huge range of use-cases including EPGs, widget portals, interactive ads or video on demand services.

The following sections explore the main reasons that make us believe that HbbTV is the best option for pay-TV operators:

A web ecosystem

HbbTV, by leveraging on technologies at the origin of the success of the web, allows stakeholders to take advantage of Internet's ecosystem. The decision of HbbTV founding members to select HTML for the presentation engine, enables content publishers to avoid having to develop new technical skills, and to capitalize on web-agencies' experience to outsource the technical development of their interactive services.

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  <link rel="stylesheet" type="text/css" href="css/global.css" media="all"/>
  <script type="text/javascript" src="/common/js/hbbtvlib.js"> </script>
  <script type="text/javascript" src="/common/js/keycodes.js"> </script>
  <script type="text/javascript" src="js/navigation.js"> </script>
  <script type="text/javascript" src="js/brtext_vorschau.js"> </script>
  <script type="text/javascript" src="js/brtext.js"> </script>
</head>

<body class="vollbild">

<div style="visibility: hidden; width: 0; height: 0; position: absolute;">
  <object type="application/oipfApplicationManager" id="oipfAppMan"> </object>
  <object type="application/oipfConfiguration" id="oipfConfig"> </object>
</div>
```

Figure 6 – example code of an HbbTV application

The Freedom of Choice

Most of the set-top-box vendors have already announced that they will support HbbTV in the future. For OEMs, implementing HbbTV will not be neither expensive nor a difficult work. HTML and JavaScript are now some mature technologies and several opensource browsers such as WebKit can be integrated by set-top-box manufacturers to reduce their costs. Indeed, OEMs are still moving from proprietary embedded operating systems to Linux, allowing them to take advantage of the large base of free software components and developing tools to implement their middleware stack.

From pay-TV operator's perspective, the wide adoption of this standard by industry stakeholders is a guarantee that they can benefit from competition between providers to scale down the price of their set-top-boxes.

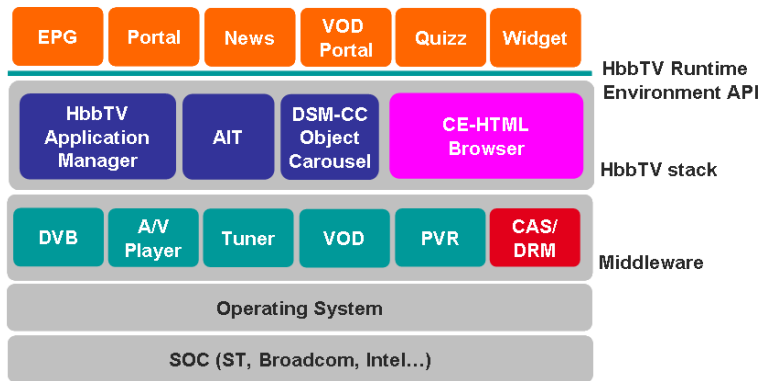


Figure 7 – typical HbbTV set-top-box components

A standard already approved by Free-To-Air TV broadcasters

Some people claim that HbbTV is just trying to re-create DVB-MHP using HTML instead of Java and remind us that MHP has been a major fail in the past. This assumption is not completely false however the context has significantly changed since the launch of MHP by DVB.

“ 44 percent of survey respondents think they will increase their TV consumption with a Connected TV” GroupeM France, Feb. 2011

Catchup-TV has already been identified as the killer application of connected television. Providing an opportunity for them to increase their advertising revenues through video pre-rolls or banners on their portals, TV channel broadcasters have a strong interest to make HbbTV a success.

In France and Germany, TV channels have already selected this standard for next-generation television for free-to-air DTT broadcasting; HbbTV is also about to be adapted by Spain, Austria and countries from northern Europe.



Figure 8 – HbbTV-compliant interactive services from ProSieben HD (Germany) and NRJ12 (France)

For Free-To-Air TV channels broadcasters, HbbTV is the answer to get full control on their interactive services and avoid having to deal with all the TV set manufacturers. Furthermore, the standard offers them the opportunity to generate economies of scales by mutualizing their software developments to address retail TV sets and pay-TV operator's set-top-boxes.

A standard addressing both TV sets and set-top-boxes

The penetration of Connected TV sets compliant with both HbbTV and CI+ standards offers new opportunities for operators including reducing subscriber acquisition costs and answering customer's demand for less consumer electronic devices in their living rooms.



By combining the security capabilities provided by CI+ modules, with the interactivity capabilities provided by HbbTV, pay-TV operators can deliver the same flavor on Connected TVs than on hybrid set-top-boxes.

HOW CAN VIACCESS HELP PAY-TV OPERATORS DEPLOYING HBBTV?

To help pay-TV operators to successfully deploy HbbTV and answer consumers demand for over-the-top online video streaming services, enhanced EPG directly on connected devices or operator's controlled set-top-boxes, Viaccess and its subsidiary, Orca Interactive, have upgraded their respective products and packaged them to build Viaccess' HbbTV solution for broadcast/OTT pay-TV operators.

Explore the new opportunities offered by internet to deliver additional content

Thanks to Viaccess' content protection technologies, pay-TV operators can benefit from a proven solution to protect premium video contents delivered from multiple signal sources:

- The broadcast delivery network to deliver traditional linear TV channels.
- Internet to deliver VOD content based on adaptive streaming or progressive download technologies.

More than a simple content protection solution, Viaccess offers a unique 360° security covering: legal protection through investigations and prosecution of pirate networks where possible, education of police and court authorities, contact with customs, lobbying at EU

level, transparent communication with customers, continuous network monitoring of the risks and actions upon piracy cases.

Combined with Orca's COMPASS and RiGHTv, operators can benefit from an end-to-end solution including Service Delivery Platform to manage and deliver video on demand content and HbbTV based interactive services and a groundbreaking content discovery solution providing personalized programming recommendations with social networking features. The resulting social TV solution allows viewers to share personalized content recommendations with friends and family over the Web and to the TV.

Extend pay-TV operators reach by addressing set-top-boxes and Connected TVs

Viaccess content protection technologies are ready for next-generation CI+ Connected TV sets. Combined with a Viaccess CI+ module, HbbTV-compliant TV sets will allow pay-TV operators to replicate the TV viewing experience they developed for operator's controlled set-top-boxes, directly on retail TV sets, without sacrificing revenue streams security.

Thereby, pay-TV operators answer consumer's expectations for reducing their power consumption and for simplifying their TV installation with one single remote control and fewer cables.

Protect operator's set-top-box assets against internet malicious threats

Social changes that are driving consumers demand for internet-enhanced TV already have direct impacts on the design of next-generation set-top-boxes. Their internet connectivity exposes set-top-boxes potential vulnerabilities and security breaches to hacker's attacks.

Furthermore, to answer increasing complexity of their products, set-top-box manufacturers have initiated a major transition by moving from closed proprietary operating systems to Linux. Linux allows CE device manufacturers to take advantage of the large base of free software libraries and developing tools to reduce complexity required to implement features such as recording, time-shifting, on-demand services and content redistribution. However, unlike traditional real-time operating systems, Linux source code analysis allow hackers to exploit them to launch piracy attacks.

To help pay-TV operators to securely deploy HbbTV and achieve security challenges induced by network-connected set-top boxes, Viaccess has extended its Trusted Set-Top-Box design and security requirements to protect its CAS/DRM technologies from malicious attacks. With Viaccess Trusted Set-Top-Box 2.0 certified devices, pay-TV operators can protect their set-top-box assets and their premium contents from piracy.

About Viaccess

Viaccess is a leader in solutions to protect and enhance the value of content services. Viaccess provides world class solutions for content protection, delivering conditional access and DRM-based systems for all types of content, for all networks including broadcast, broadband, fixed and mobile networks and for all categories of devices. Its subsidiary, Orca Interactive, is a leading innovative provider of IPTV middleware and applications including groundbreaking content discovery and recommendation solutions that power next-generation interactive TV. Viaccess has more than 20 years of broadcast and broadband experience and is positioned to help content service providers to monetize the content consumption revolution. Viaccess solutions are deployed worldwide in 35 countries and on more than 80 digital platforms. Viaccess S.A. is a France Telecom Group company.

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