The benefit of HbbTV OpApp for operators and vertical models

The open standard for a unified TV experience across different platforms

Changing viewing behaviour is a challenge for TV Operators

We have seen in the past years that consumer viewing behaviour is changing. For example, on-demand watching via new online services such as Youtube and Netflix is rising, and some customers are less willing to pay for "traditional" TV subscriptions. In the light of this changing viewing behaviour, TV Operators, in both horizontal and vertical markets, will continue to be relevant provided they will allow consumers easy and seamless access to any content on any device with a consistent user experience.

While the aforementioned new online services are increasingly offered via the Smart TV and streaming devices, for TV Operators the deployment of such services remains a huge challenge. They mostly rely on 'ad-hoc' set-top-box (STB) and software solutions to deliver their TV services to the big screen. To ease this situation the HbbTV Association has developed the Operator Applications ("OpApps") specification. HbbTV OpApps offer TV operators the opportunity to deliver their TV services on a wider variety of devices and even directly to the TV set.

Addressing the opportunity with HbbTV Operator Applications

An HbbTV Operator Application (OpApp) grants TV Operators control over the user experience on devices such as STBs and Smart TVs. As such, consumers have the benefits of a unified and seamless experience over several device classes, where it used to be available only on the bespoke TV Operator STBs.

Being an open international standard, HbbTV OpApps are interoperable across different ecosystems and devices. Furthermore, they are supported by HbbTV's test regime and coexist with regular HbbTV apps. HbbTV OpApps applications are suitable for any distribution form, including IPTV, Cable, Satellite and Terrestrial.

In this white paper we focus on how HbbTV Operator Applications can help operators with their challenges. We will focus on two main opportunities. The first is to deliver TV Operator services to a new breadth of connected TV devices via an attractive and operator-controlled app. This will give TV Operators options to reduce their deployment related capital expenditures and it will enable service-related TV operator support on consumer owned devices. This will also empower consumers with a choice of different devices possessing the same user experience. The second opportunity is to empower TV Operators to enable the same user experience and to deploy services with the same level of functionalities over operator owned and consumer owned devices.

How HbbTV OpApps work

An HbbTV Operator application (or OpApp) is an interactive application that provides access to live channels and on-demand functionality from a TV Operator. It is able to manage (parts of) the user interface normally controlled at the TV or STB level.

The primary usage of an HbbTV OpApp application is to control and ensure the same user experience on consumer owned devices (for example a smart TV) as on an operator owned set-top box. But the HbbTV OpApp specification also describes an OpApp variant to be used on operator owned devices (for example on STBs). These two variants are called Privileged and Operator-specific respectively.

Variant in the HbbTV OpApp specification	Targeted devices	Main behaviour
Privileged OpApp	Consumer owned devices Retail STB & connected TVs	Behaves as an operator-controlled environment temporarily taking control over the device
Operator-specific OpApp	Operator owned devices (mostly STB)	Behaves as device UI

Before focusing on some of the key technical aspects of HbbTV OpApp specification, it is important to note that the HbbTV OpApp specification assumes that operators and terminal manufacturers agree on some aspects of the implementation in a bilateral agreement. This agreement addresses topics that are typically not covered in a technical specification, but that are more commonly found in a commercial agreement or that are very specific to certain products. An overview is to be found in Annex D of the HbbTV OpApp specification [2].

Input source and keys

To facilitate users' access to content, the HbbTV OpApp has the capability to behave as a TV input source, right next to common input sources such as HDMI, SCART or antenna.

OpApps are capable to take control of the remote-control keys available to regular HbbTV applications, as well as the use of the P+/P- keys that are essential for a good linear TV user experience. Subject to the bilateral agreement, OpApps can take control of some additional keys such as the "guide" and "menu" keys. These or other remote-control keys can for instance be defined to land the user straight into the HbbTV OpApp, thus increasing additional entry points for the TV Operator's service.

Discovery and installation

An easy discovery of the HbbTV OpApp application by the user is important to seamlessly encourage users to access the TV Operators branded TV user experience. The HbbTV OpApp specification describes several ways to facilitate discovery of an OpApp, either via a pre-installed application, via a broadcast signalled application launching or via DNS/IP.

Security and Privacy

HbbTV OpApps are digitally signed and encrypted by their distributors. This guarantees the integrity and authenticity of apps, as well as allowing control over which applications are allowed on a given device. It should prevent malicious or virus-infected OpApps getting installed.

Respecting the privacy of end-users has been incorporated by design in the HbbTV OpApp specification. The use of OpApps is always a choice of the users, and OpApps on consumer owned Devices can always be uninstalled.

Main benefits

HbbTV OpApps will present operators with more control over the user experience. Because it is a standardised solution, it works seamlessly on all devices that support the HbbTV OpApp specification. In the use case of a virtual STB, it will provide users access with app-as-a-source behaviour: The OpApp can be accessed via the input source menu and turning the TV on will bring the user right back into the OpApp. Last but not least, it will allow operators to deliver a uniform user experience across TVs and set-top boxes.

For TV manufacturers, it brings the potential to develop new business opportunities with TV Operators. Furthermore, HbbTV OpApps are a way to deal with a fragmented TV landscape, as the open standard solution paves the ground to streamline specification discussions with TV Operators in different markets.

OpApps will allow new business models in the various use cases, such as:

- Bring services to consumer owned devices with a single app,
- Easier deployment of TV services throughout the home (multiroom TV),
- Remove the barrier for users to try a TV Operator service and as such minimize the user acquisition cost for TV Operators alike.

Within the HbbTV environment, OpApps coexist with regular HbbTV apps, bringing new possibilities and encouraging wider adoption of HbbTV 2 services and APIs.

HbbTV OpApp is an open standard [2], building on existing open standards such as HbbTV2, OIPF-DAE, DNS, HTTPS, X.509 and HTML5 [6]. For operators and manufacturers this means that HbbTV OpApp will be straightforward to deploy from head-end to terminal. As such it allows harmonization of the user experience across different devices/platforms using the same application software. For consumers this means greater freedom of choice, as they can enjoy content via OpApps on a wider variety of devices and brands.

OpApps Today & Tomorrow

HbbTV has published the OpApp specification as a publicly available ETSI standard [2]. HbbTV has ordered a test suite for devices with more than 300 tests already delivered and being reviewed. In 2019, HbbTV aims to make complete certification tests available as part of the HbbTV test suite.

Several operators have already demonstrated proof-of-concept OpApps. Others are about to launch their first commercial deployment in close collaboration with TV and STB manufacturers and solution providers that are implementing the HbbTV OpApp Specification in their software stacks.

Now that the HbbTV OpApp standard has been published, operators and vendors alike are looking to exploit the aforementioned benefits of using OpApps. Following are some of the use cases already investigated by them.

Use case IPTV operator: KPN

KPN conducted a first proof-of-concept (PoC) in the Netherlands to verify the technical feasibility of an HbbTV OpApp. The PoC showed that it was possible to quickly develop an "app-as-a-source" virtual STB. It provided the users with a similar experience as the set-top-box and showed that KPN was able to deliver TV services via the same channel as the new online services mentioned before. For KPN this PoC provided evidence that HbbTV OpApps are a solid foundation for STB-less TV services. The PoC also underlined that cooperation between TV manufacturers and operators remains essential [3], both from customer experience point of view as well as technical verification.

Use case Satellite operators: Tivusat

Tivusat in Italy aims to enlarge its subscriber base whilst keeping operational complexity under control in the light of the migration from MHP to HbbTV 2.0.1 in Italy [5]. Recognising the great value of HbbTV OpApp, they will deploy an service on their new HbbTV OpApp STBs still in 2018.

Conclusion

Changing viewing behaviour is a challenge for TV Operators. The HbbTV Association has developed the Operator Applications ("OpApps") specification to address this challenge and bring new opportunities for the industry. The key technical aspects and the benefits have been explained in this paper. The use cases, some of which demonstrated at IBC2018, together with the ongoing review of existing proprietary solutions, indicate that the HbbTV OpApp standard is gaining traction in the industry.

For more information about HbbTV please visit the website http://hbbtv.org/ or contact info@hbbtv.org.

References

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