



The benefits of HbbTV OpApp for operators and vertical models

The open standard for a unified TV experience across different platforms

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Changing viewing behaviour is a challenge for TV Operators

We have seen in the past years that consumer viewing behaviour is changing. On-demand watching via new online services such as YouTube and Netflix is rising, and some viewers 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, continue to be relevant content providers as long as they 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, the deployment of such services on a wide variety of devices remains a huge challenge for TV Operators. Operators normally rely on custom Set-Top Boxes with complex proprietary middleware to deliver their services to the big screen.

To ease this situation the HbbTV Association has developed the Operator Applications (OpApps) specification.

With HbbTV Operator Applications, TV Operators can deliver a more uniform user experience over multiple devices such as STBs and Smart TVs from different manufacturers. 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.

Addressing the opportunity with HbbTV Operator Applications

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

In this white paper we focus on how HbbTV Operator Applications can help operators with their business needs. We will focus on two main opportunities. The first is to deliver TV Operator services to a new generation 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 a TV operator branded experience on consumer owned devices. The second opportunity is to empower TV Operators to enable the same user experience over operator owned and consumer owned devices and to deploy services with the same level of functionalities. Both opportunities will empower consumers with a choice of different devices possessing the same user experience.

How HbbTV OpApps work

An HbbTV Operator application 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 by being a “virtual STB” on a smart TV) as on an operator owned set-top box.



The HbbTV OpApp specification also describes a more powerful OpApp variant designed to be used on operator owned devices (for example on STBs).

These two variants are referred to as Privileged and Operator-specific respectively.

| <i>HbbTV OpApp variant</i> | <i>Targeted devices</i> | <i>Main behaviour</i> |
|--------------------------------|--|---|
| Privileged OpApp | Consumer owned devices Retail STB & connected TVs | Behaves as an operator-controlled environment partly taking control over the device |
| Operator-specific OpApp | Operator owned devices (mostly STB) | Behaves as a full device UI |

Before continuing with 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 of recommended topics in such an agreement 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, or antenna. Where switching to a different input usually means grabbing another remote control, with the HbbTV OpApp users can stick to the remote control from the TV set.

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

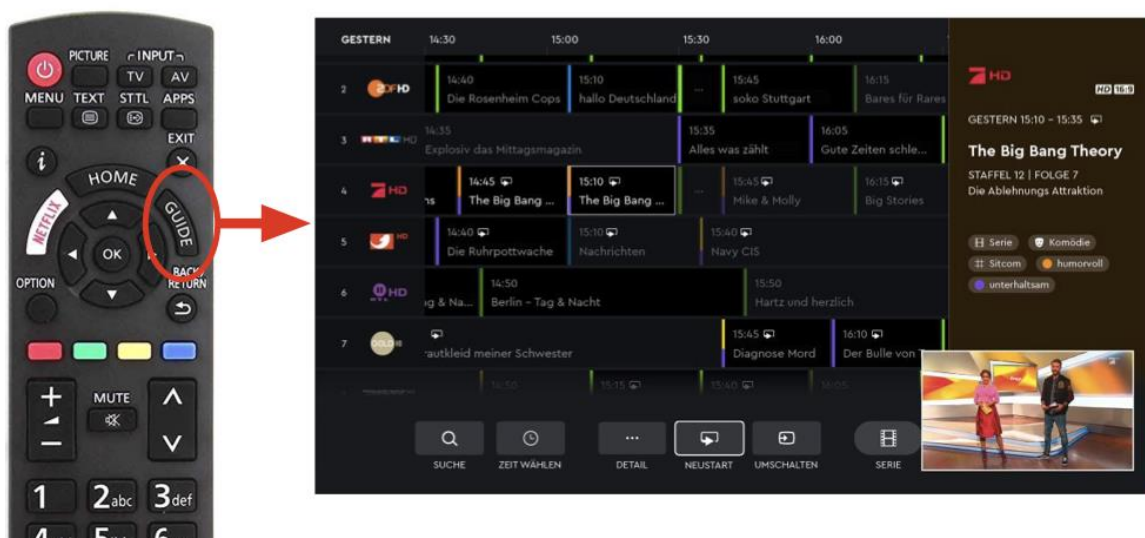


Image source: HD+, Germany



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. As an example, a user turning on a new TV will be presented the available OpApps as part of the install flow upon selecting the country of residence and after scanning available channels or after Internet setup discovers a local IPTV OpApp.

Parental Control and Conditional Access messaging

OpApps can manage parental controls and conditional access messages. There are complex regulatory requirements on Operators that differ from market to market, requiring manufacturers to implement these requirements. When these are implemented by the HbbTV OpApp this allows for better customer messaging in line with what the market requires.

If a user changes to a channel that displays the native message “Encrypted Channel”, this limits any onward journeys. An HbbTV OpApp provides the ability for the Operator to display a more meaningful message based on communication between the OpApp and the Conditional Access system. These messages can be reminders of subscriptions renewals or offers for trials of services or options to buy based on the channel that was originally blocked.

Security and Privacy

HbbTV OpApps are digitally signed and encrypted by their distributors. This safeguards the integrity and authenticity of apps, as well as allows for control over which applications are allowed on a given device. This procedure aims to prevent malicious or infected OpApps from getting installed. The HbbTV OpApp specification was designed with end-user privacy in mind from the very beginning, providing Operators to display terms and conditions and allow users to opt-in/opt-out of any marketing, analytics and services. Using OpApps is always a choice of the users, they are left free to install or uninstall OpApps whenever they desire.

Main benefits

HbbTV OpApps will present operators with **more control over the user experience** due to the fact that it is a standardised solution, and it works seamlessly on all devices that support the HbbTV OpApp specification.

In the use case of a **virtual STB**, it provides 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.

For broadcasters with regular HbbTV apps, the HbbTV OpApp specification offers the benefit of **simplified discovery**, putting their existing apps front and center in the default TV UI.

Last but not least, it allows 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, such as joint marketing campaigns. Furthermore, HbbTV OpApps give the possibility 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 allow new business models in the various use cases, such as:

- Bringing services to consumer-owned devices with a single app without the need of an operator STB
- Easier deployment of TV services throughout the home (multiroom TV) as additional STBs are not needed
- Removing the barrier for users to try a TV Operator service and as such minimize the user acquisition cost for TV Operators alike
- Increase visibility and accessibility of an operator app in the Smart TV environment with multiple apps

Within the HbbTV environment, OpApps can coexist with regular HbbTV apps, bringing new possibilities and encouraging wider adoption of HbbTV 2 services and APIs. Moreover, HbbTV provides a set of tests for the OpApp specification, which allows validating the conformance of devices to the spec.

HbbTV OpApp is an open standard [2], building on existing open standards such as HbbTV 2, OIPF-DAE, DNS, HTTPS, X.509 and HTML5 [6]. For operators and manufacturers this means that HbbTV OpApps are 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. The review process within HbbTV is underway and as a result of this, the first tests have been approved and executed in a test event. In 2020, HbbTV aims to make available the complete set of OpApp certification tests as part of the HbbTV test suite, with the first HbbTV OpApp tests already available for conformance verification.

In 2019 the first commercial OpApp was launched on a TV set, after several operators had already demonstrated proof-of-concept OpApps. Others are planning commercial deployment in close collaboration with TV and STB manufacturers and solution providers that are implementing the HbbTV OpApp Specification in their software stacks.

With the HbbTV OpApp standard becoming established in the market, 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: Tivùsat

Tivùsat 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 value of HbbTV OpApp, they developed a full HbbTV OpApp based Operator Application and deployed this service on their new HbbTV OpApp STBs in 2018.



Use case Satellite operator: HD+

In Germany, HD+ launched an HbbTV OpApp with Panasonic in 2019. This gave HD+ a chance to offer an improved user experience with features such as HD+ EPG with extended search, access to catch-up TV and start-over functionality (via OTT video streaming).

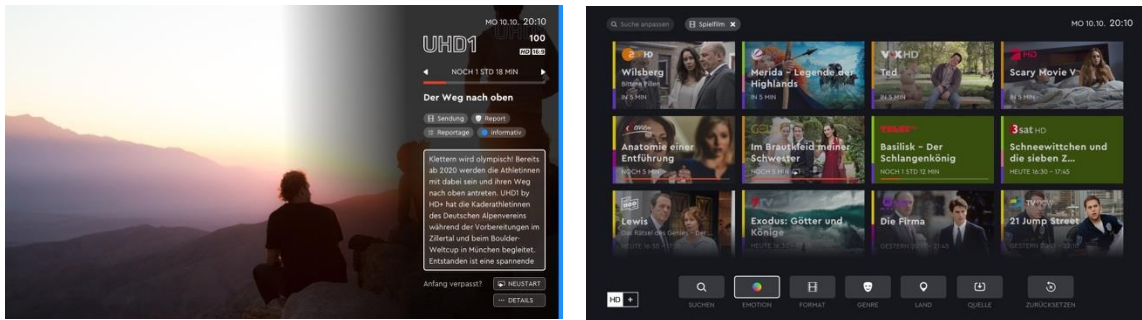


Image source: HD+, Germany



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 will be demonstrated at IBC2019, 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 <https://hbbtv.org/> or contact info@hbbtv.org.

References

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