



## HBBTV 2.0 COMPANION SCREENS FRAMEWORK

### Contact

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### What is it about?

The HbbTV 2.0 specification, published in 2015 by the Hybrid Broadcast Broadband TV (HbbTV) Association, introduces a number of new features that support companion screens and improve the synchronization of broadcast and broadband content. The HbbTV 2.0 CS and Media Synchronization Framework by Fraunhofer FOKUS implements these features. It offers a set of modules and libraries that can be easily integrated in existing TV platforms or broadcaster's services to make them more attractive for end-users.

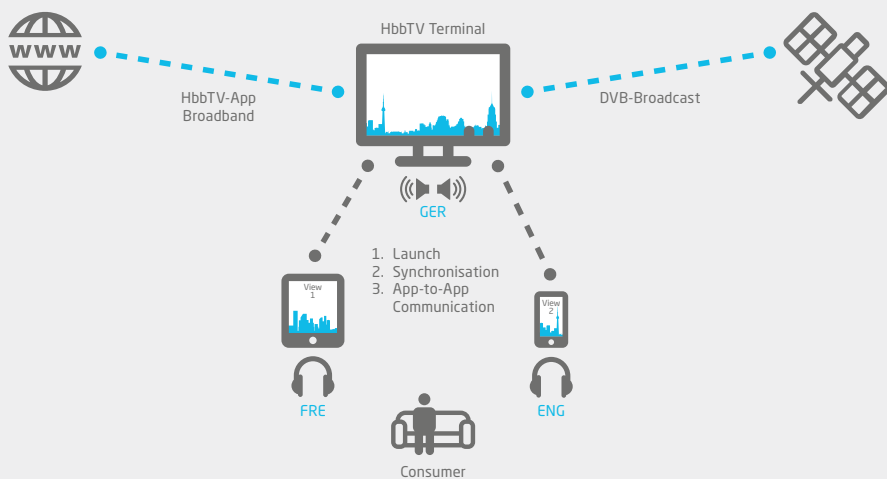
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### Why use Companion Screens and Media Synchronization Framework?

The HbbTV 2.0 CS and Media Synchronization Framework personalizes the TV experience and makes existing services more attractive for end-users:

**Show additional Content on Companion Screens:** The end-user can launch the broadcaster's companion application on his smartphone or tablet just in one interaction with the HbbTV application. With Network Service Discovery in HbbTV 2.0, HbbTV Terminals discover companion devices in the same network automatically. HbbTV and CS applications can exchange data locally without the need to connect to an external server.

**Cast Media to Broadcaster's HbbTV Application:** Casting media from mobile devices to big screens like TVs is one of most supported features in many multiscreen solutions like Google Cast and Apple's Airplay. HbbTV 2.0 also offers the APIs needed to implement this feature. The broadcaster's mobile application can discover HbbTV terminals in the same network, launch the HbbTV application remotely and instruct it to play a video selected in the companion application.



*Synchronization of broadcast video on TV with personalized audio tracks on companion screens*

**Personalized Audio Tracks on Companion Devices:** With the Media Synchronization feature introduced in HbbTV 2.0, it is possible to synchronize multiple media streams on TV and companion devices. This allows end-users to play a video (muted) on TV and to select the audio track with the preferred language in the companion application.

**Multiple Camera Perspectives:** In addition to audio tracks, the HbbTV 2.0 Media Sync API allows to synchronize video streams on TV and companion screens. In its companion application the broadcaster can offer additional camera perspectives, so e.g. in a Formula 1 race the end-user can select the cockpit camera of his favorite driver.

## Components and Features

The FOKUS HbbTV 2.0 CS and Media Synchronization Framework offers components for device manufactures and broadcasters that support the following features:

- **Discovery of HbbTV Terminals and Companion Screens:** allows an HbbTV application to list available companion screens and a companion application to discover HbbTV terminals in the same network using SSDP.
- **Launching an HbbTV application from a CS application:** allows a CS application to launch an HbbTV application on the TV using DIAL protocol.
- **Launching a CS application from an HbbTV application:** allows an HbbTV application to launch a CS application on companion screens. The FOKUS framework offers a CS Launcher for multiple mobile platforms and supports Push Notification via Google's GCM or Apple's APN.
- **Application to Application Communication:** allows an HbbTV and CS applications to exchange data via an App2App Communication Server that supports WebSockets.
- **Multi-Stream Synchronization:** allows an HbbTV application to synchronize multiple media streams. It supports Broadcast-Broadband and Broadband-Broadband synchronization.
- **Inter-Device Synchronization:** allows to synchronize Broadcast or Broadband streams on TV with broadband content on companion screens.

The FOKUS Framework provides also libraries and server components that enable companion screens and media synchronization on older HbbTV 1.x terminals using the same APIs specified in HbbTV 2.0.

## At a glance

The FOKUS HbbTV 2.0 CS and Media Synchronization Framework personalizes the TV experience by enabling media stream synchronization between HbbTV terminals and companion screens. It follows the HbbTV 2.0 specification to improve the synchronization of broadband and broadcast content. Parts of the Framework are available as open source on GitHub. Visit our solution page for more details: [www.fokus.fraunhofer.de/go/hbbtv](http://www.fokus.fraunhofer.de/go/hbbtv)

## Key technologies and Standards

- HbbTV 2.0 HbbTVCSManager API
- HbbTV 2.0 MediaSynchronizer API
- HTML5, WebSocket
- SSDP, DIAL, DVB-CSS
- Node.js, Android, iOS, Cordova

