# EBU
OPERATING EUROVISION AND EURORADIO

# BROADTHINKING 2013
## WHERE BROADCAST MEETS BROADBAND

## DEMONSTRATIONS

### A. USER-ADAPTIVE VIDEO STREAMING

**InterDigital Communications, Inc.**

www.interdigital.com

An adaptive streaming system, optimizing video delivery based on analysis of user behaviour and viewing conditions, including user distance to the display, display density, contrast, and ambient illuminance.

Such adaptation results in significant bandwidth reductions with no perceptible impact on video quality.

### B. HbbTV 1.5 DASH TEST

**Digital TV Labs**

www.digitaltv-labs.com

The demonstration shows a test harness and TV containing a DASH client. The test cases are designed to validate the TV's conformance to the HbbTV standard, including its DASH support according to the HbbTV 1.5 profile.

There are over a hundred DASH test cases, exploring different DASH formats as well as the behaviour of the receiver under bandwidth limited conditions. There are a further 50 DRM test cases that validate the integration of HbbTV with Marlin and PlayReady, including DRM protected DASH content.

The test harness meets the test specification requirements of both HbbTV and OIPF, so can form the basis for any receiver testing regime that is validating HbbTV receivers - e.g. those in France (TNT2) and Spain.

### C. MPEG-DASH PLAYERS

**Qualcomm Inc.**

www.qualcomm.com

**BuyDRM**

buydrm.com

**castLabs**

www.castlabs.com

Both Qualcomm and BuyDRM will show their DASH players in action. The players are connected via wifi to a bandwith throttler from Packetstorm. In this setup you can see clearly how the DASH players adapt in a changing environment and switch between streams with a different bitrate. The Packetstorm equipment can also visualize how those two players compete for bandwith in the wireless setup.

BuyDRM demonstrates the most current achievements of MPEG-DASH client side implementation for mobile devices. BuyDRM's KeyOS Mobile Player is capable of playing back most of the current Test Vectors. It also supports playback of commonly encrypted content (CENC) with PlayReady DRM. Qualcomm is also showing their latest player and device.

Android player SDK that integrates our multi-format streaming client. We support DASH-264 in combination with DTS or (Fraunhofer) AAC 5.1 and 7.1 audio-tracks, and we can demonstrate seamless manual audio representation switching on a mobile device, as well as HDMI output on a TV.

### D. STREAMING VOD TO TV WITH HbbTV V1.5

**Panasonic**

panasonic.net

**Dolby**

www.dolby.com

Panasonic and Dolby will show a demo on the first TV series to enter the European market with HbbTV v1.5 features. The demo shows a VoD scenario where compelling H.264 HD video content with Dolby Digital Plus surround sound will be streamed encrypted and secured with PlayReady DRM using the "HbbTV ISOBMFF Live" streaming profile.

This shows that soon compelling video streaming services can be realized using the features of the latest version of the HbbTV standard.

## E. ADVANCED USE CASES FOR MPEG-DASH: MULTI-SCREEN, LIVE AND AD-INSERTION

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| **Fraunhofer FOKUS**<br><br>www.fokus.fraunhofer.de | Fraunhofer FOKUS solutions Famium and DASH Transcoder form a platform for the consumption and delivery of protected and unprotected adaptive bit-rate content. In this demonstration these components are used to present use cases that go beyond just playback. The DASH client Famium is based on the DASH-IF reference client and has been enhanced with multi-screen and synchronization capabilities.<br><br>A second screen use case shows how different content parts of one MPD can be distributed to multiple devices. Famium is also able to play a live stream that is fetched form a camera and transcoded to DASH by the DASH Transcoder. A third use case deals with the topic of advert insertion in two alternative ways. On the one hand, for on-demand content, adverts are specified in the same MPD as the content. On the other hand, the adverts can be triggered dynamically which works for on-demand as well as live content.<br><br>Furthermore, the advert content can be personalized. |

## F. MULTISCREEN HbbTV 1.5 CLOUD SERVICES.

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| **NAGRA**<br><br>www.nagra.com<br><br>**Harmonic Inc.**<br><br>www.harmonic.com | HbbTV 1.5 / MPEG DASH cloud service operated by NAGRA & abertis telecom during Broadthinking 2013. The demo would consist of accessing a generic service hosted in the cloud with a connected TV also with extension of companion devices like IPAD. Android tablets, PC<br><br>It addresses security and multi-DRM issues, key integration points and evolving standardization, including how MPEG-DASH and interoperability standards can help address multi-DRM challenges. |

## G. HBBTV SERVICES OVER FRENCH TNT (DTT) NETWORK AND APPLICATION PORTAL

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| **HTTV**<br>www.httv.fr | Try the HbbTV services that are live now in Germany, France and Spain and experience the interactive user interfaces yourself. The setup shows the Televes Spanish made HbbTV DTT receiver using httvLink, httv's innovative open middleware solution for Connected TV receivers.<br><br>The demonstration combines HbbTV services carried through the French DTT (TNT) broadcast channels as well as a general Application portal that gives the user direct access to a mix of HbbTV and HTML5 services. |

## H. HEVC

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| | Harmonic will show interoperability of HD HEVC implemented on a Nexus 10 tablet. Harmonic encoded streams will be locally played back for 720p25 and 72p50 with an embedded player (courtesy of SQUID systems).<br><br>This will show the quality improvement brought by 720p50 over 720p25 as well as the technology mapping on a already shipped consumer grade tablet. |

## I. DASH INTEROPERABILITY DEMO

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| **PacketStorm**<br><br>www.packetstorm.com | For this demo two selected test vector streams (Thomson Video Networks and Sony) that are hosted by Akamai and delever the video via a PacketStorm network emulator. The environment consists out of a series of interoperability test sthat stress the different DASH clients who access the streams via Wifi. |