360° Video Playout for HbbTV

HbbTV Symposium 2018 - Panel: “Growing through innovation: What is cooking in the HbbTV labs?”

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Agenda

1. “360° Video Playout for HbbTV” – Brief Overview

2. FIFA World Cup 2018 - HbbTV 360° Video Portal – ERT/Greece

3. “A Day with Miner Andy” 360° HbbTV Application – WDR/Germany

4. Interactive 360° Video on HbbTV – RBB/Germany
“360° Video Playout for HbbTV” – Brief Overview
360° Video on TV

• Most broadcasters already provide 360° Videos

• Different distribution channels: Native VR Apps on Mobile and HMDs, WebXR in the Browser, YouTube, Facebook, etc.

• TV is still missing → Use HbbTV to provide 360° video playback on TV without the need for additional Hardware.

• Challenges of 360° Video playback in HbbTV
  • Missing APIs to perform the geometrical transformation and render the Field of View (FOV)
  • Limited Processing Capabilities on TV devices
  • Higher Quality Content Required: FHD/4K FOV requires 8K/16K 360° video
  • Wasted bandwidth: only 10% of a 360° video is seen at a time
Example Source 24K Equirectangular Frame

- 360° / 24,576 pixels
- 180° / 12,288 pixels

4K / UHD
Calculated 4K FOV Frame

60° / 3840 Pixel

~35° / 2160 Pixel
360° Video Playout for HbbTV

- Prerendering of FOV videos for different combinations of camera angles
- No need to preform the geometrical transformation on the Client (TV). Only video playback is required (with buffer control)
- Reduce bandwidth by streaming only the visible FOV
- Use existing Video delivery infrastructures like CDNs
- Use well supported video codecs like H264
- Already used by different broadcasters
- For more details please visit www.fokus.fraunhofer.de/go/360
FIFA World Cup 2018 - HbbTV 360° Video Portal – ERT/Greece
More than 180 360° clips are available in the HbbTV FIFA portal on ERT channel.

Video durations 1-3min

There are 3 videos for each game:

- A 360° video for each team after the team bus arrives in the stadium
- A 360° video for both teams in the stadium tunnel

Got a lot of attraction in Greece even it is a new HbbTV Market

Most visits are in the halftime breaks of the games

More visits on the weekend than on week days

More visits in the first round (more games per day)
360° Video for ERT HbbTV

powered by
Fraunhofer FOKUS 360° Video Playout

@ Fraunhofer FOKUS 2018
“A Day with Miner Andy” 360° HbbTV Application – WDR/Germany
360° HbbTV Application: “Kumpel-Tag mit Andy”

- “Kumpel-Tag mit Andy” (DE) → “A Day with Miner Andy” (EN)

- Extensive VR application available at glueckauf.wdr.de for WebVR and VR glasses

- Including episode „Kumpel-Tag mit Andy“ as 360° Video → this 360° report was also made available and accessible through HbbTV

- Occasion: Theme days to close the last coal mines in North Rhine-Westphalia

- Cross-media reuse of these contents
360° HbbTV Application: “Kumpel-Tag mit Andy”

- Limit the range to new HbbTV devices with support of Media Source Extension (MSE) API through whitelisting

- Testing and customizing filtering

- Red-Button Teaser leads via the WDR Start bar to the landing page

- Landing page with Animated GIF explains 360° navigation

- 80% of video users navigated to different perspectives
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Hyper360 - Interactive 360° Video on HbbTV – RBB/Germany
Hyper360 - Interactive 360 @HbbTV

• First prototype of an interactive 360 video in the field of Immersive Journalism: Tour of RBB’s premises and studios

• Concept will be transferred into other pilot applications later: Cultural Heritage, Music Events, Infotainment

• Potential add-on to existing or upcoming HbbTV app
Hyper360 - Interactive 360 @HbbTV

• Navigation with Arrow Keys of Remote Control

• OK activates Audio (triangles) or Video Hotspots (rectangles)
Thank you

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