

# 360° Video Playout for HbbTV

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

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**1**

# **“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



4K / UHD

180° / 12.288 pixels

360° / 24.576 pixels



# Calculated 4K FOV Frame

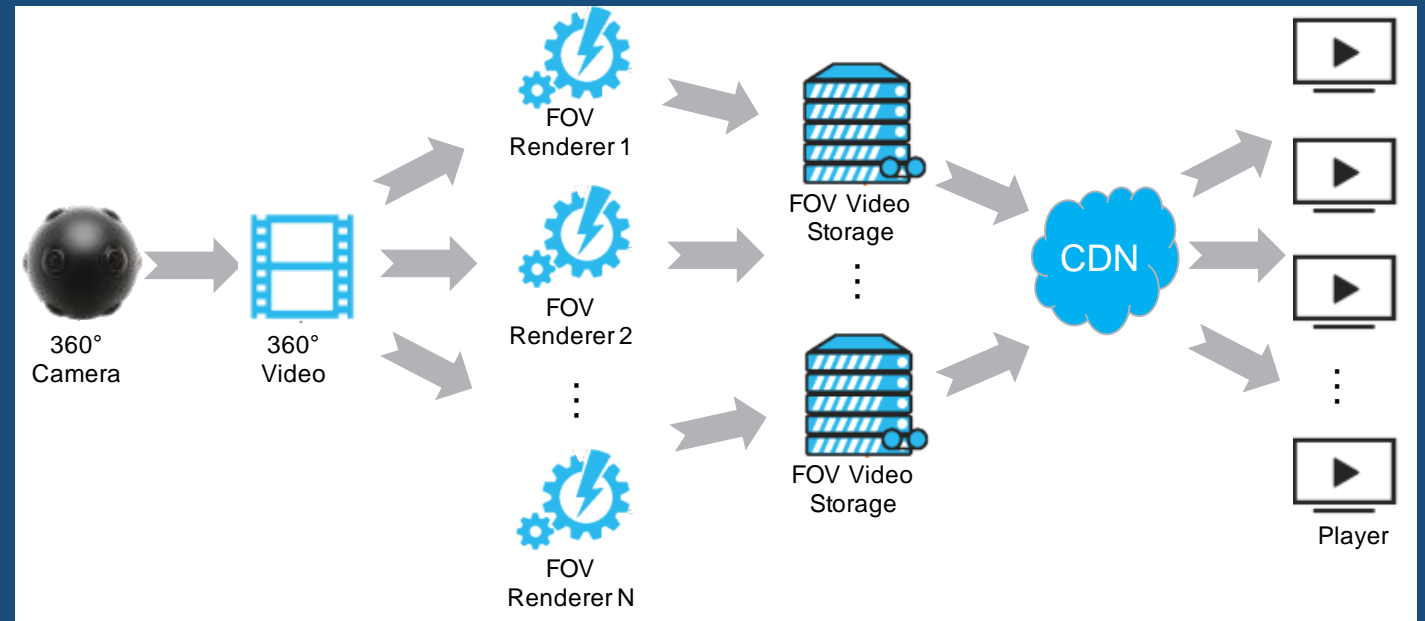


~35° / 2160 Pixel

60° / 3840 Pixel

# 360° Video Playback for HbbTV

- Prerendering of FOV videos for different combinations of camera angles
- No need to perform 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](http://www.fokus.fraunhofer.de/go/360)







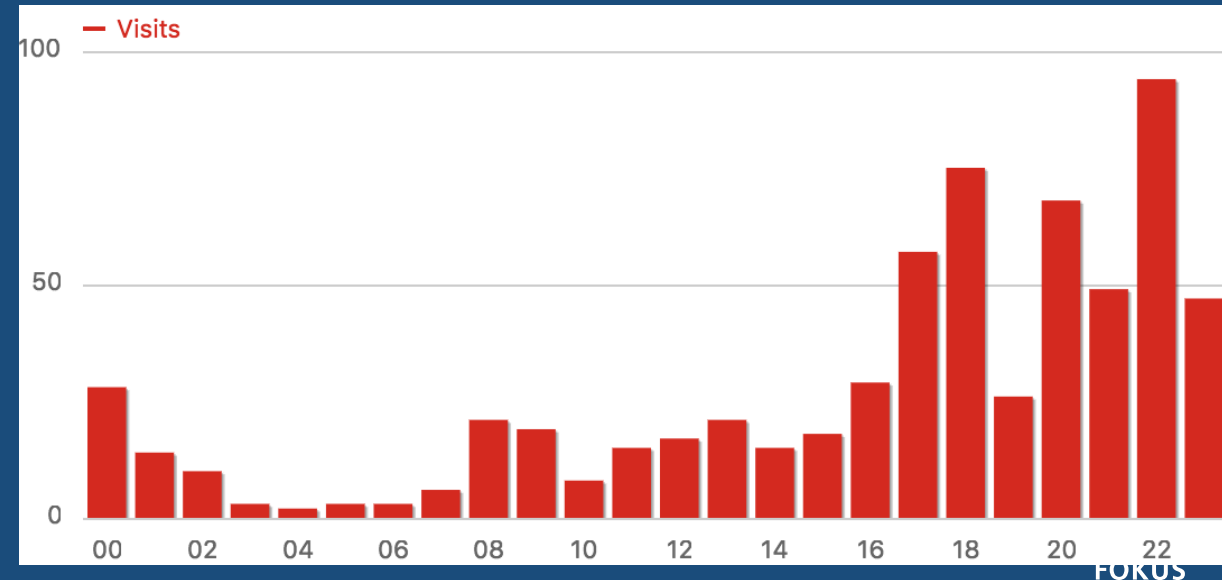
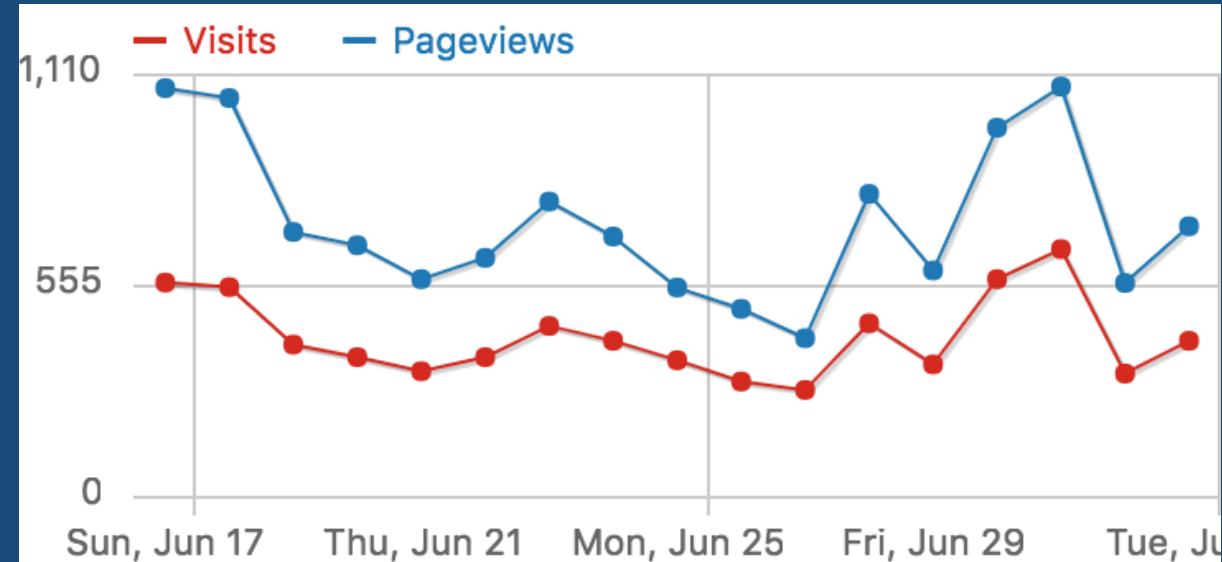
**2**

# **FIFA World Cup 2018 - HbbTV 360° Video Portal – ERT/Greece**



# HbbTV 360° Video Portal for FIFA World Cup 2018 – 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



**3**

## **“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](http://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

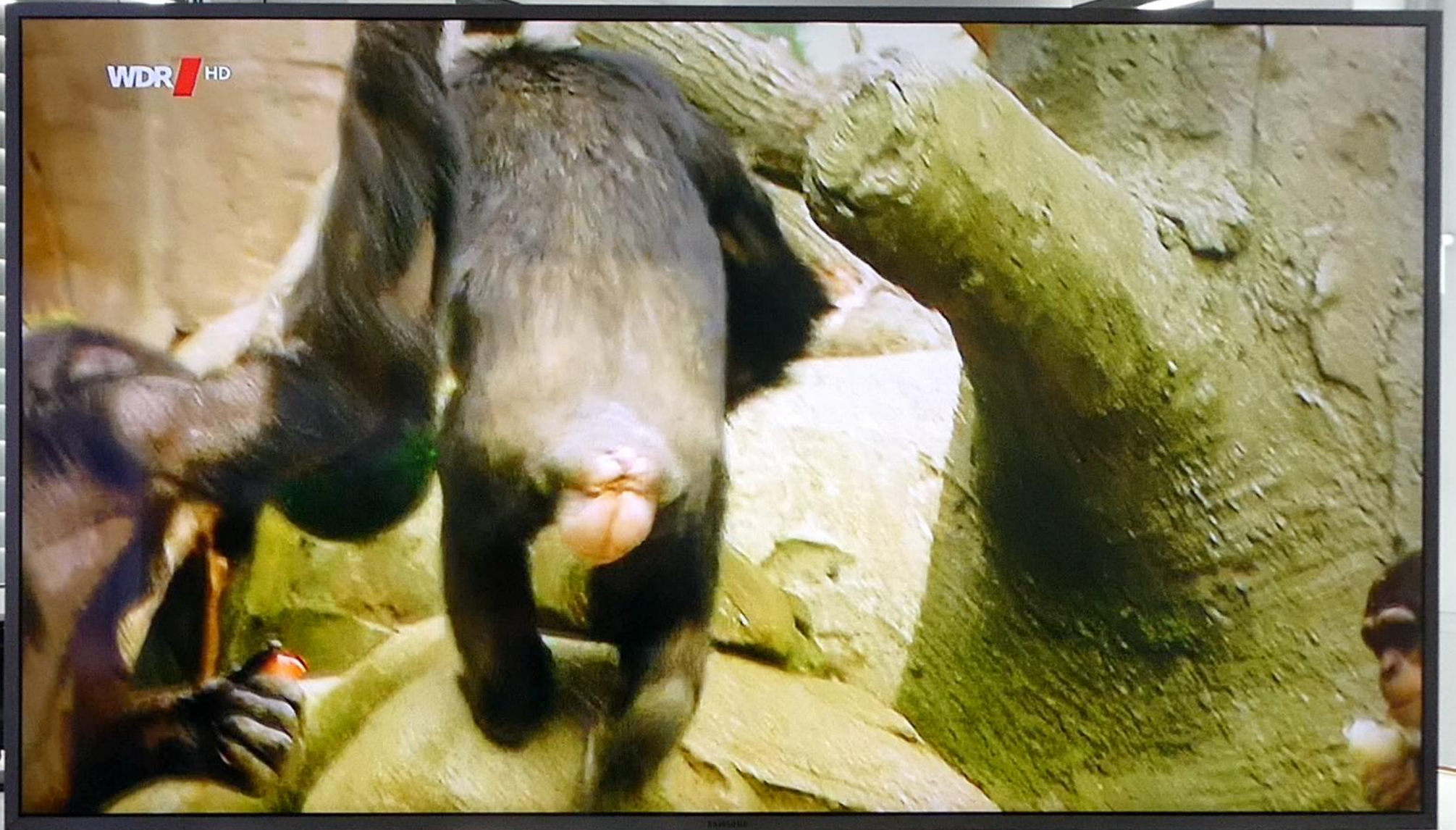


# 360° HbbTV Application: “Kumpel-Tag mit Andy”

- 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











**4**

## **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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