Subtitles in VR and 360°

Mario Montagud

Peter tho Pesch
Scenery 360-degree videos
Equirectangular
many services

and more…
What is the best way to present subtitles?
Nun schnell ins Bett und schlaft recht schön.
360°

additional degree of freedom

video detached from field of view
We've documented every birth and death in Amboseli.

Source: https://sites.arte.tv/360/en
Main challenges

Comfort

Readability

Speaker identification
1) Evenly spaced
2) Follow head immediately
3) Follow head with lag
4) Appear in front, then fixed

Source: https://www.bbc.co.uk/rd/blog/2017-10-subtitles-360-video-virtual-reality-vr
Barrier free award (by Dager System)
Is this the best there is in games?

HEPZefa
Welcome home, Bayek. Siwa has missed you!

Source: https://www.gamegrin.com/reviews/assassins-creed-origins-review/
Link: https://dagersystem.com/announcing-dagers-barrier-breaker-award/
No problem, man. By the way, you should be locking you up a few years back, but I couldn’t find shit. Do they have Internet in America?
Positive:
Subtitles more comfortable (less motion sickness, better „presence“
Better speaker identification

Negative
Forced to look at speaker ➔ In some cases, viewers didn‘t look around that much.

Dynamic vs. Always centered ➔ No clearly preferred method
Two approaches

video as base       field of view as base
Presentation of subtitles
Possibilities

Rendering Reference?

Flat 2D / Perspective / 3D depth?

Subtitles anchored to the main action

Guiding Mechanisms: Arrows, Compass / Radar, Side Text...

Forced Perspective (i.e. Automatic Guiding)
*guitar music*

*guitar music*
„Den Roten Teppich betritt jetzt Tilda Swinton...“

Tilda Swinton spricht Oracle im Animationsfilm „Isle of Dogs“. 
Explore how Accessibility Services can be integrated with Immersive Media

Enable truly Inclusive, Immersive and Personalized Multi-Screen Experiences

End-to-End Workflow: From Production/Edition to Consumption

User-Centered Design

2 pilots focused on Subtitling: Spanish (CCMA), German (RBB)
Pre-pilot tests demos

P1: Immersive & Accessible Opera (with ImmersiaTV): https://goo.gl/xpqVPF
CFoV (Safe Area!) in HMD?

Comfortable Field of View (CFOV)

Graphic safe area (90% of the active video) according to EBU R95 for 16:9 TV

Tilda Swinton spricht Oracle im Animationsfilm „Isle of Dogs“.
Thank you for your attention!

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