

International Symposium for Young Researchers in Translation, Interpreting,
Intercultural Studies and East Asian Studies

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Making immersive environments accessible for deaf and hard-of- hearing users

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Contents

- Context
- Immersive technologies
- Applications to media
- Challenges of implementing SDH in immersive media
- Focus group results

Context

- ImAc (Immersive Accessibility)
- Focus: subtitles and SDH
- New media, new subtitles
- User-centred methodology

State-of-the-art

Full domes

3D displays

Virtual reality

360° videos

Mixed and augmented reality

**Research focus
on 360° videos**



Application to audiovisual media

- **Who is using 360° videos?** EBU report
- **Duration of clips** 5-10 min
- **Which type of contents?**
 - Non-fiction
 - Documentaries (New York Time, BBC, NatGeo)
 - Travel (New York Time, BBC)
 - **Immersive journalism (New York Time, BBC) – War, refugees, natural disasters, etc.**
 - Music
 - Fiction
 - Horror
 - Advertising
 - Short series (Jaunt VR, Future Lighthouse) – Ministerio del Tiempo

SDH – General

Features:

- positioning
- number of characters and lines per subtitle
- subtitle editing
- font type and size
- boxes
- borders and shadows
- justification and spacing
- paralinguistic information
- subtitle speed
- character identification

**Loads of
reception
studies are
needed**

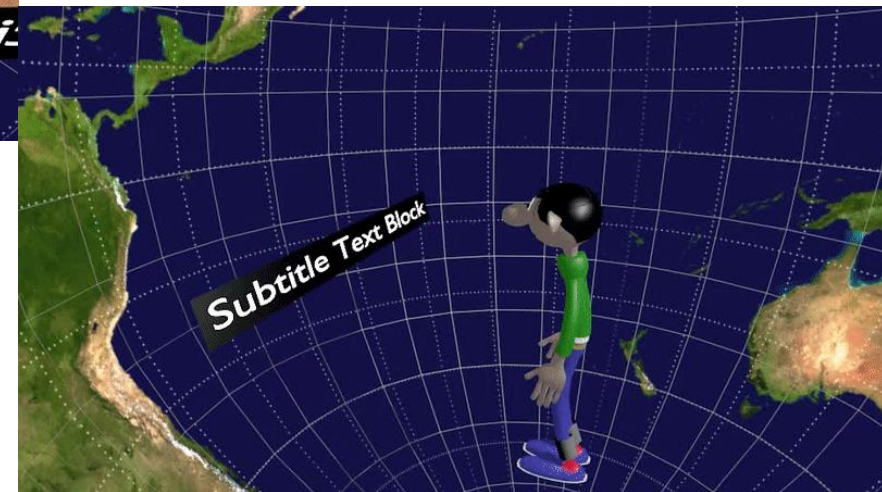
**But first...
Usability!**

SDH – Main challenges

1) Positioning (field of view: safe area?) > Usability!

BBC Reception Study (Brown, 2017):

- a) Evenly spaced
- b) Follow head immediately
- c) Follow head with lag
- d) Appear in front, then fixed



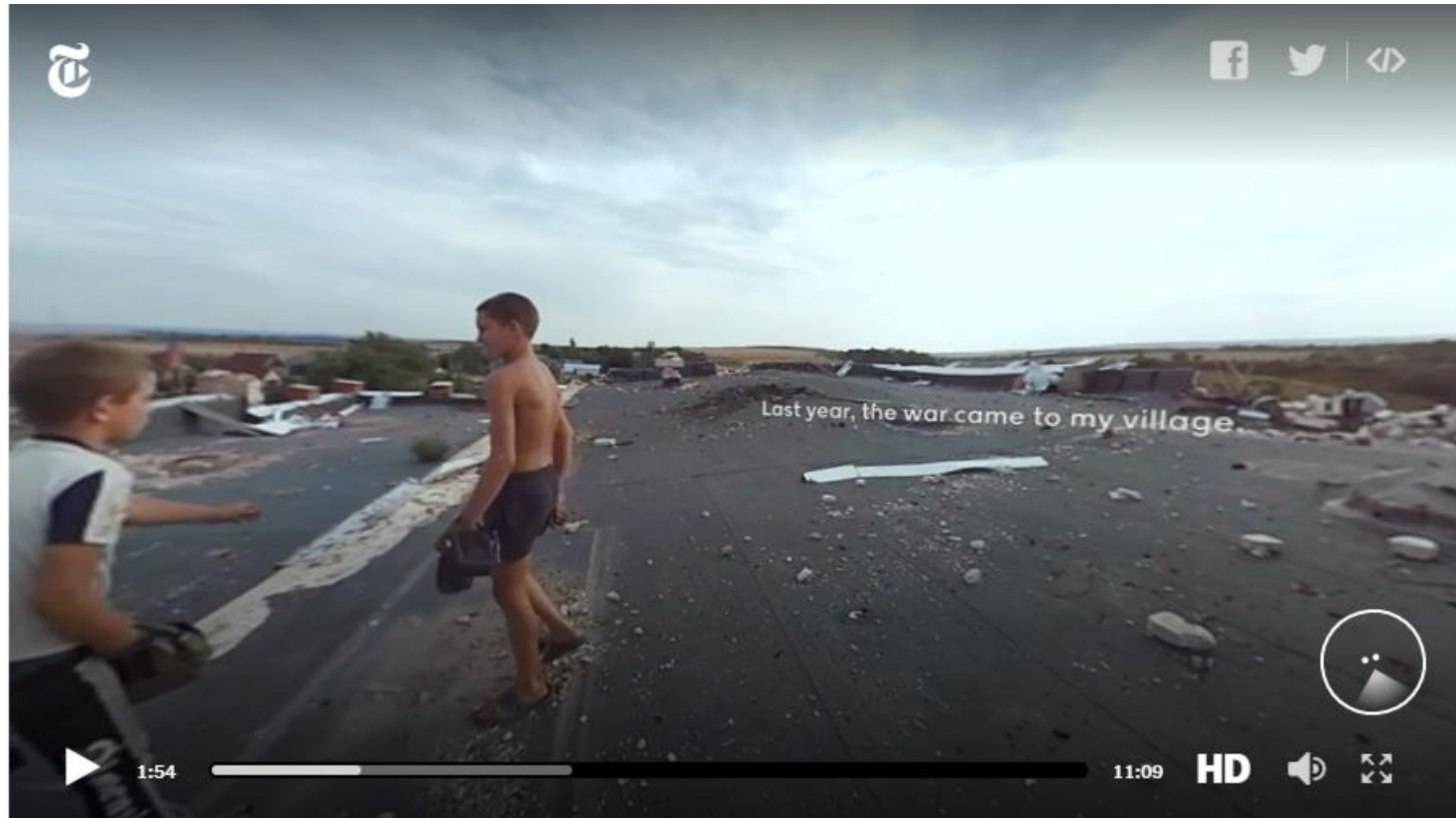
Evenly spaced

The New York Times, The Displaced, 2017.



Evenly spaced

The New York Times, The Displaced, 2017.




Evenly spaced

The New York Times, The Displaced, 2017.



Follow head immediately

Televisión Española, El Ministerio del Tiempo,
El tiempo en tus manos, 2017.



And I know you're a fan of the
Countess of Vilches



So, is your mission clear?

Follow head immediately

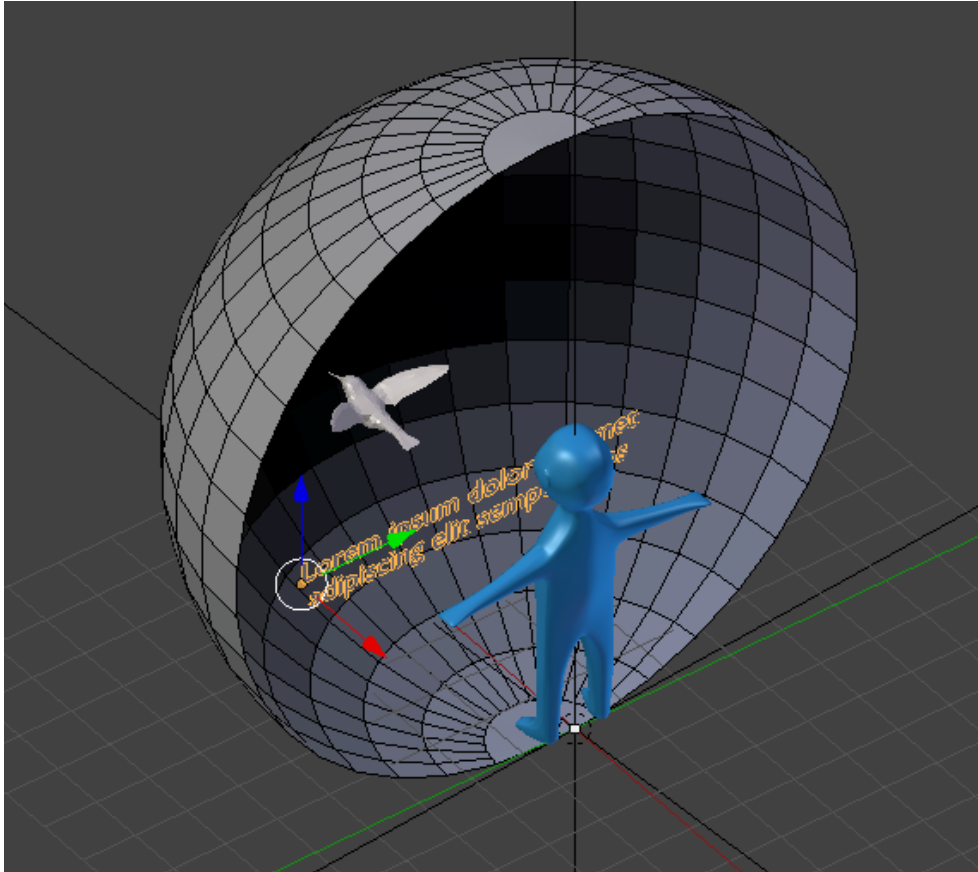
Bandai Namco Entertainment, Summer Lesson, 2016.



SIE London Studio, The London Heist, 2016.

SDH – Main challenges

2) Freedom of movement > Directions!



Focus group

- **Why?** User-centred methodology
- **Where?** Catalan Media Corporation (CCMA)
- **When?** 28th November, 2017
- **Who?** 14 participants
 - End users with disabilities (deaf and hard-of-hearing)
 - Professional users

Focus group - Results

- **Approved** subtitling rules (AENOR 2003)
- At the **bottom** and **always in front of you**
- A **compass or arrow** to indicate directions
- Possibility to use **icons** to represent sounds

Conclusions

- Challenging & technology dependant
- Usability as a key element for accessibility
- Reception studies are crucial
- User expectations → similar behaviour as in subtitling in 2D

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Disclaimer



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Abstract

Immersive media such as virtual reality or 360° contents are increasingly present in our society. However, immersive content is not always accessible to all, and research within the field of Audiovisual Translation and Media Accessibility is needed on how to cater for the needs of diverse users. In this paper, the speaker will briefly present a state-of-the-art on the immersive technologies (virtual reality and 360° videos) to be researched within this PhD study, as well as its current application to media. Then, an overview on subtitles for the deaf and hard-of-hearing in immersive environments will be given, including challenges and possible solutions. Finally, the results from a focus group developed in relation to the European project ImAc (Immersive Accessibility) will be presented. In this focus group, deaf and hard-of-hearing users were asked about their recommendations and expectations on how subtitling in 360° video content could be offered.