

# ACCESSIBLE 360° IMMERSIVE VIDEO STORYTELLING

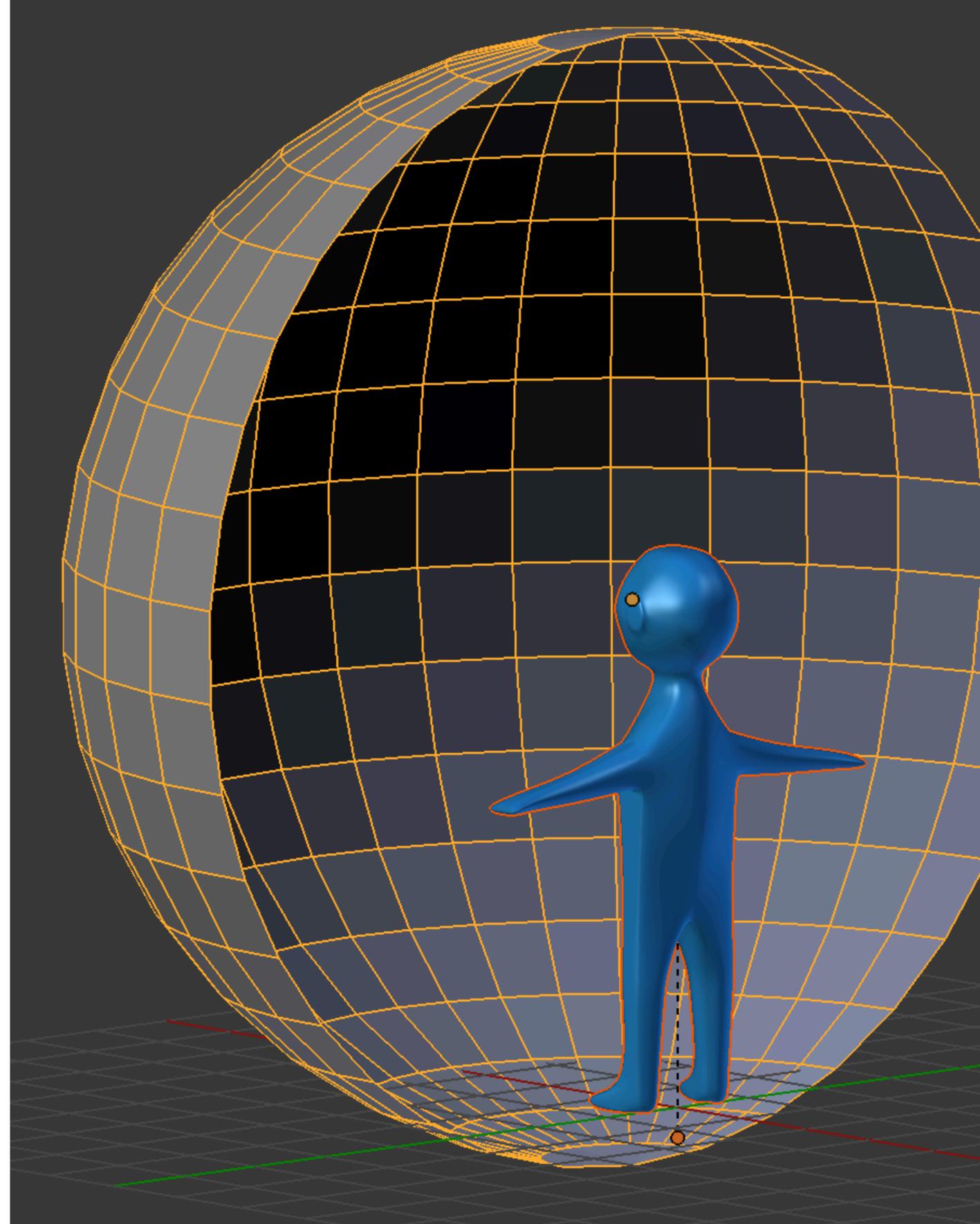
*A prototype*

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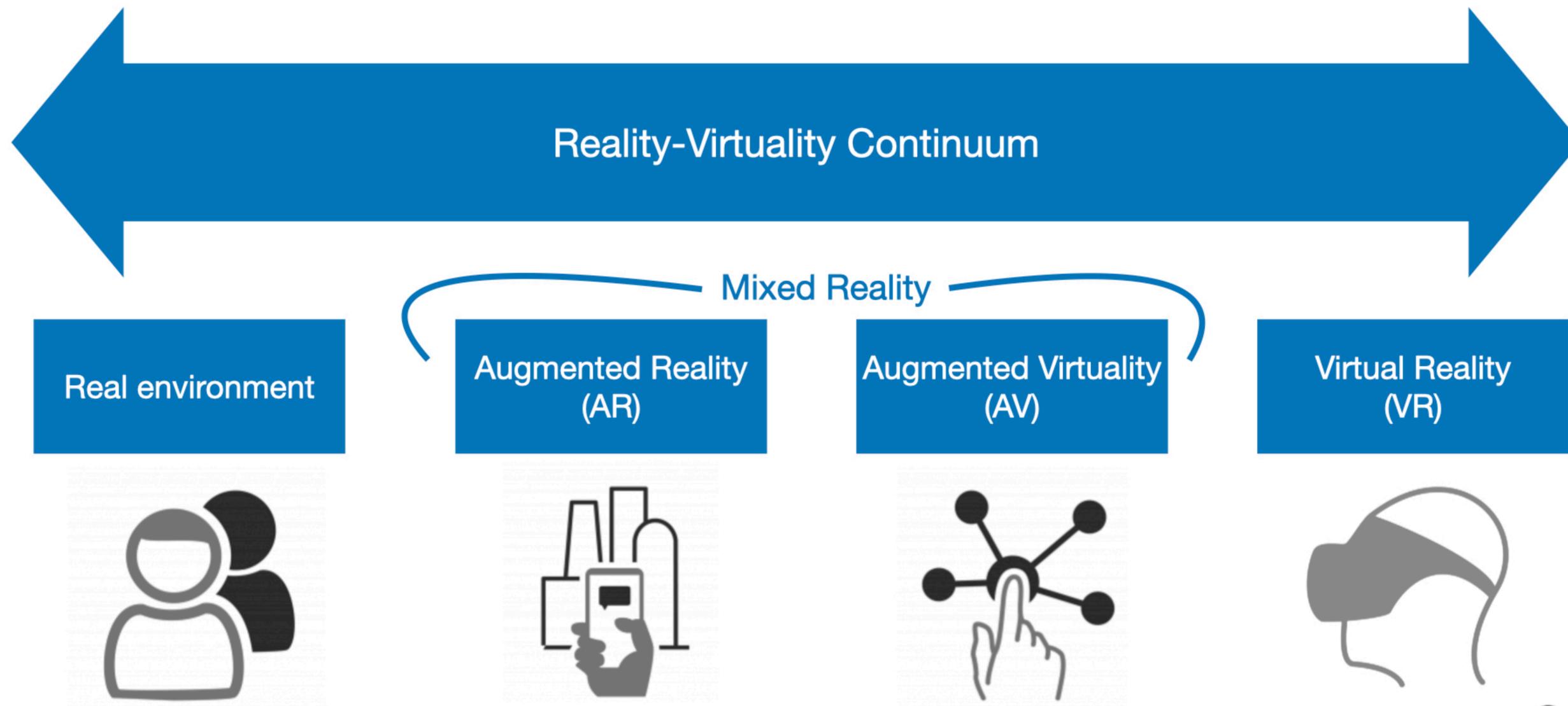


# IN THIS PRESENTATION

1. WHAT IS XR (EXTENDED REALITY)?
2. CONVENTIONAL VS NEW MEDIA ENVIRONMENTS
3. CONVENTIONAL VS INTERACTIVE STORYTELLING
4. IMPLEMENTING ACCESSIBILITY IN NEW MEDIA ENVIRONMENTS
5. CREATING ACCESSIBLE CONTENT: FADER
6. GETTING DOWN TO WORK!
7. CONCLUSIONS

# WHAT DO WE TALK ABOUT WHEN WE TALK ABOUT XR?

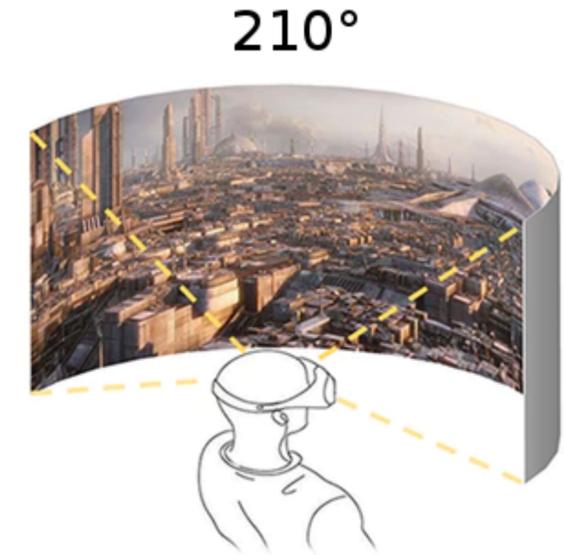
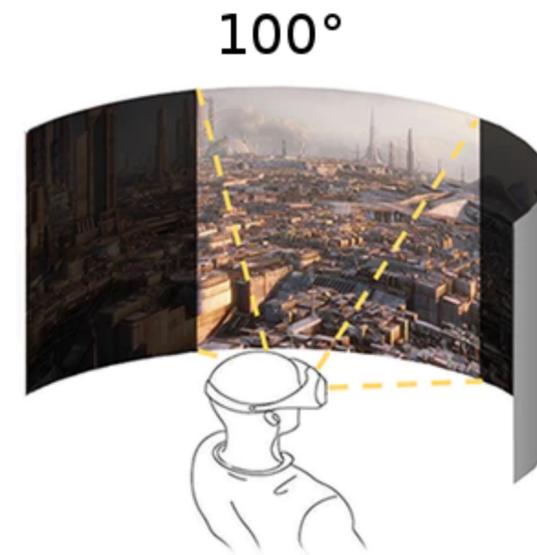
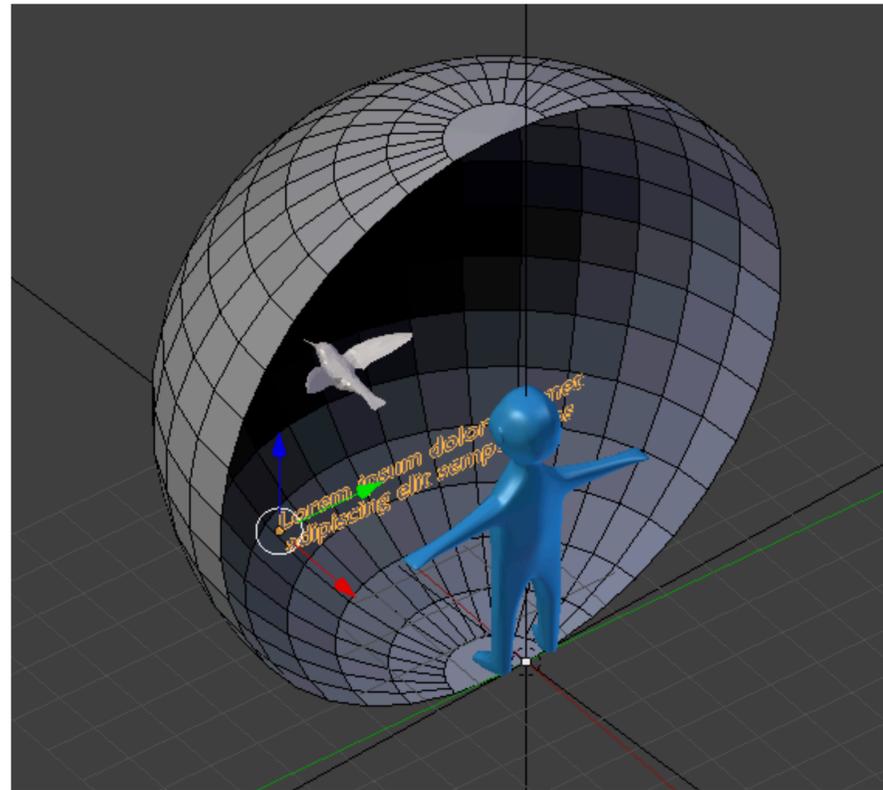
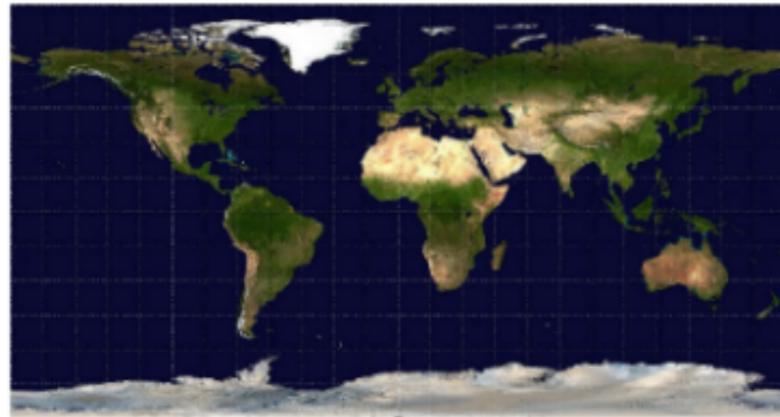
# THE REALITY-VIRTUALITY CONTINUUM



Adapted from "A taxonomy of mixed reality visual displays", by P. Milgram, and F. Kishino, 1994,  
IEICE TRANSACTIONS on Information and Systems, 77(12), pp. 1321-1329.

# 360° VIDEO

TIME... AND SPACE!



# COMFORT & READABILITY



Image quality falls off  
towards the edges

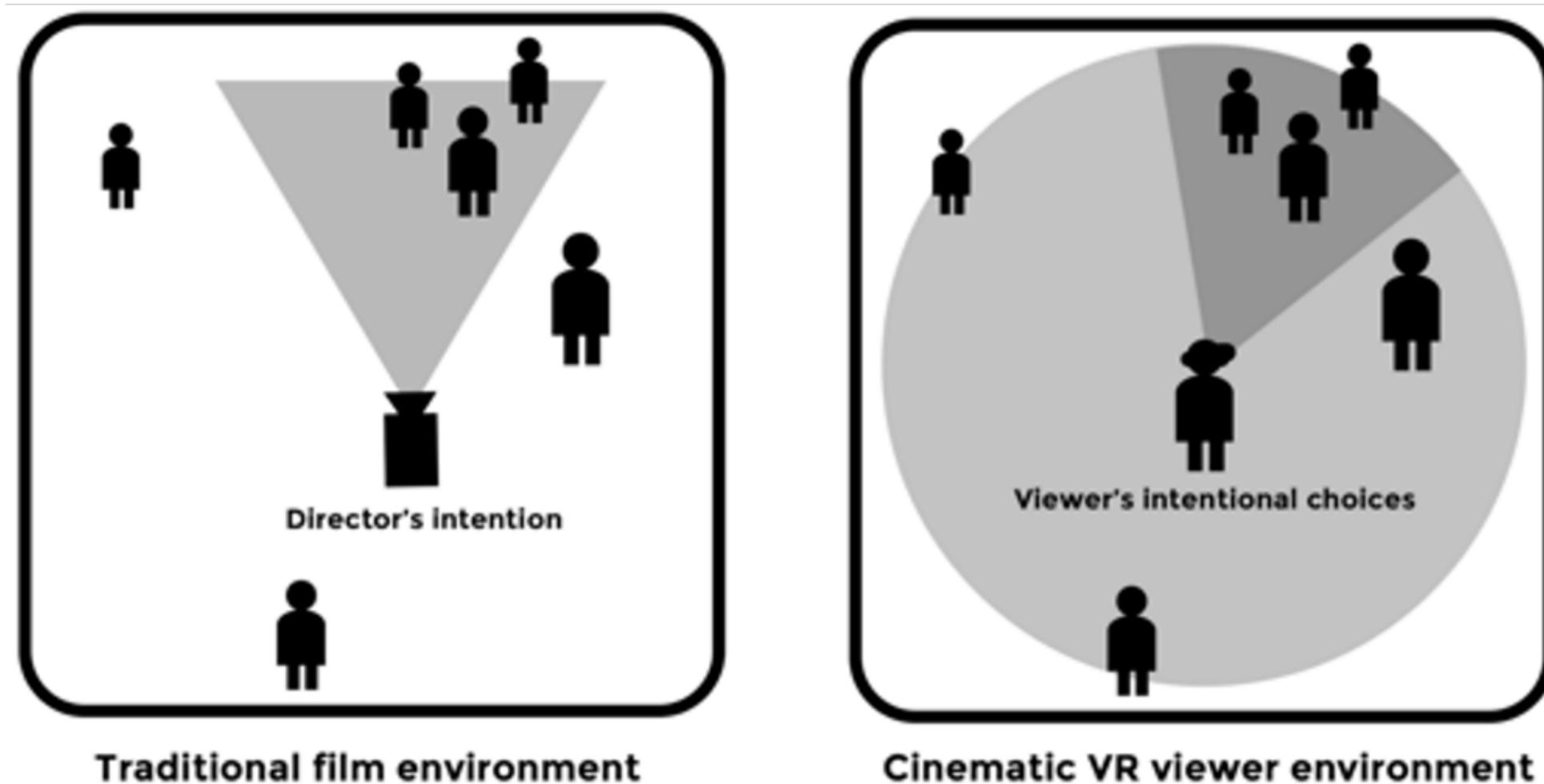
(Only exemplary, does not  
represent real image  
quality)

*Photo through lens of the Oculus Go*

# CONVENTIONAL VS NEW MEDIA ENVIRONMENTS

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## FIELD OF VIEW



Traditional film environment in comparison to a XR environment (Ko et al., 2018)

# CONVENTIONAL VS NEW MEDIA ENVIRONMENTS

## AREAS OF INTEREST



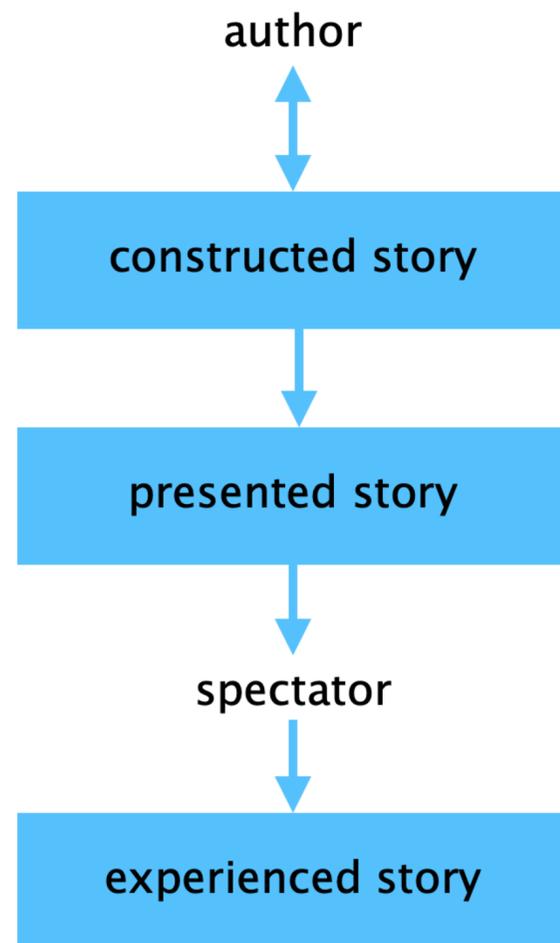
Enhancing subtitles (BBC, 2015)

# CONVENTIONAL VS INTERACTIVE STORYTELLING

# CONVENTIONAL VS INTERACTIVE STORYTELLING

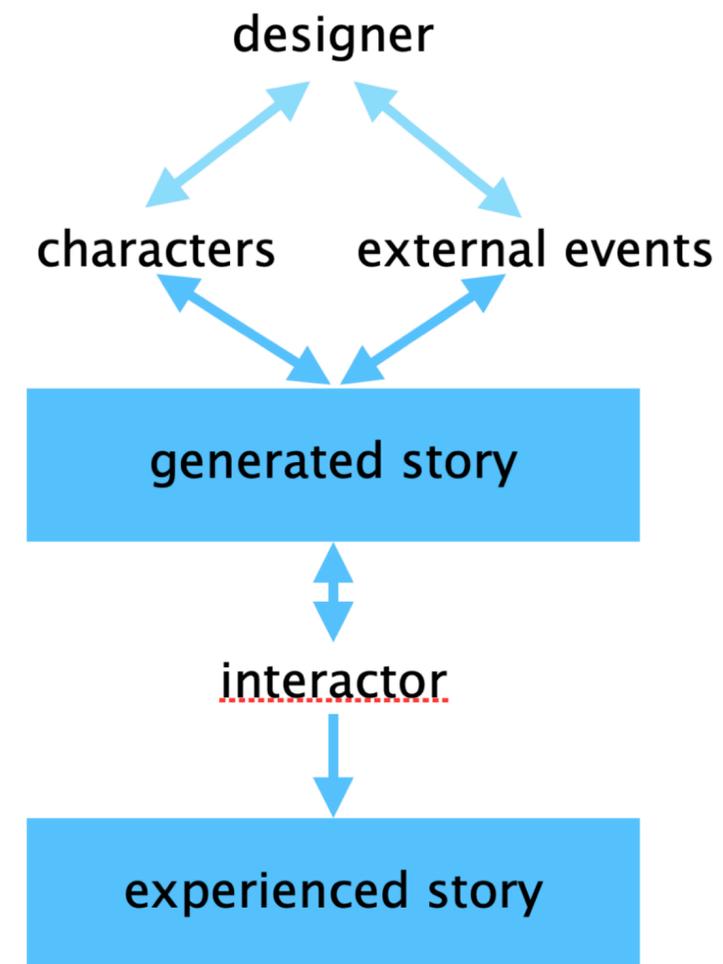
## CONVENTIONAL STORYTELLING

The interaction receives the information as a separate entity from the story setting



## INTERACTIVE STORYTELLING

The interaction becomes an active part of the story world



# IMPLEMENTING ACCESSIBILITY IN NEW MEDIA ENVIRONMENTS

# CONTENT ACCESSIBILITY



Subtitles for the  
Deaf and Hard of  
Hearing



Spoken subtitles /  
Audio subtitles



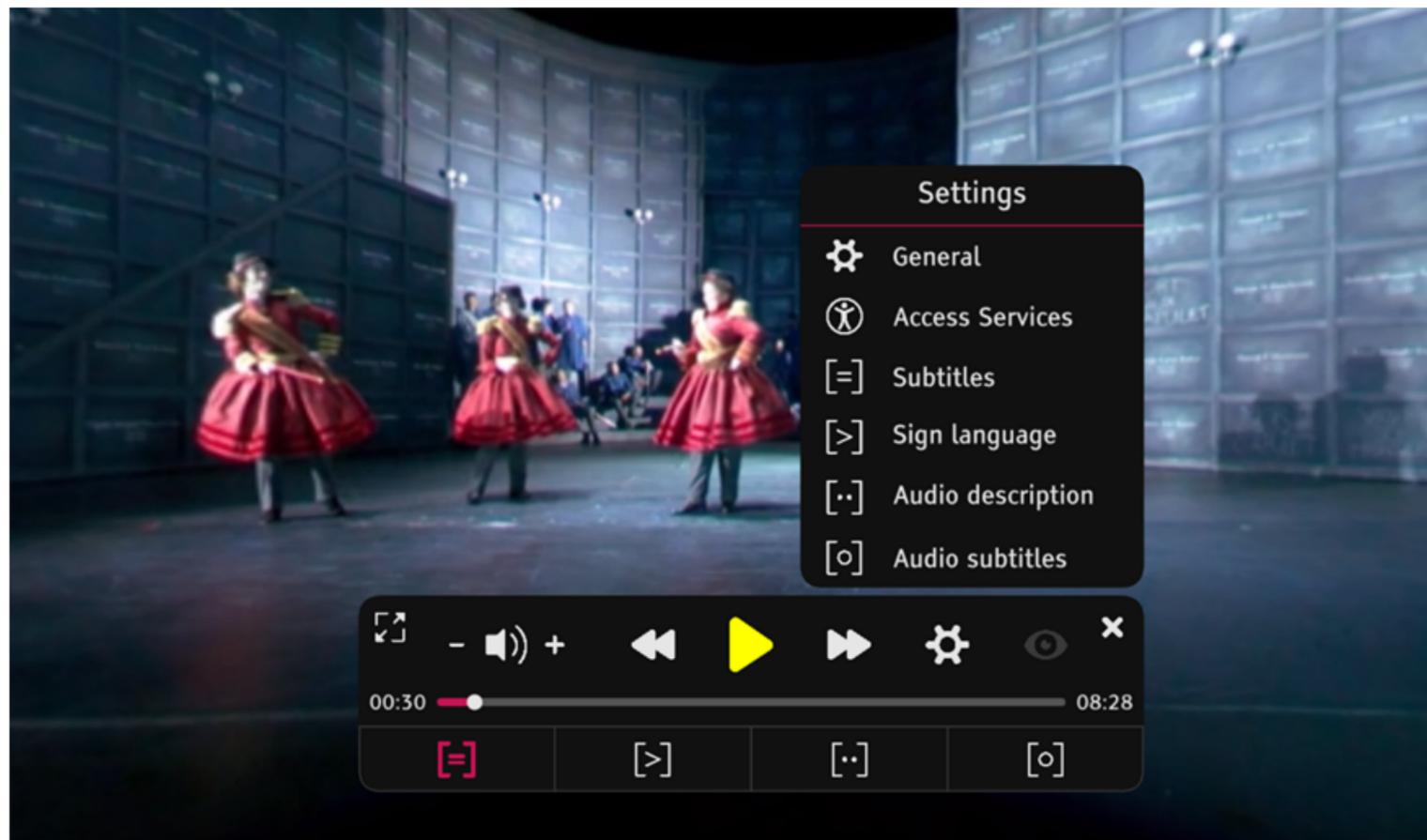
Audio description



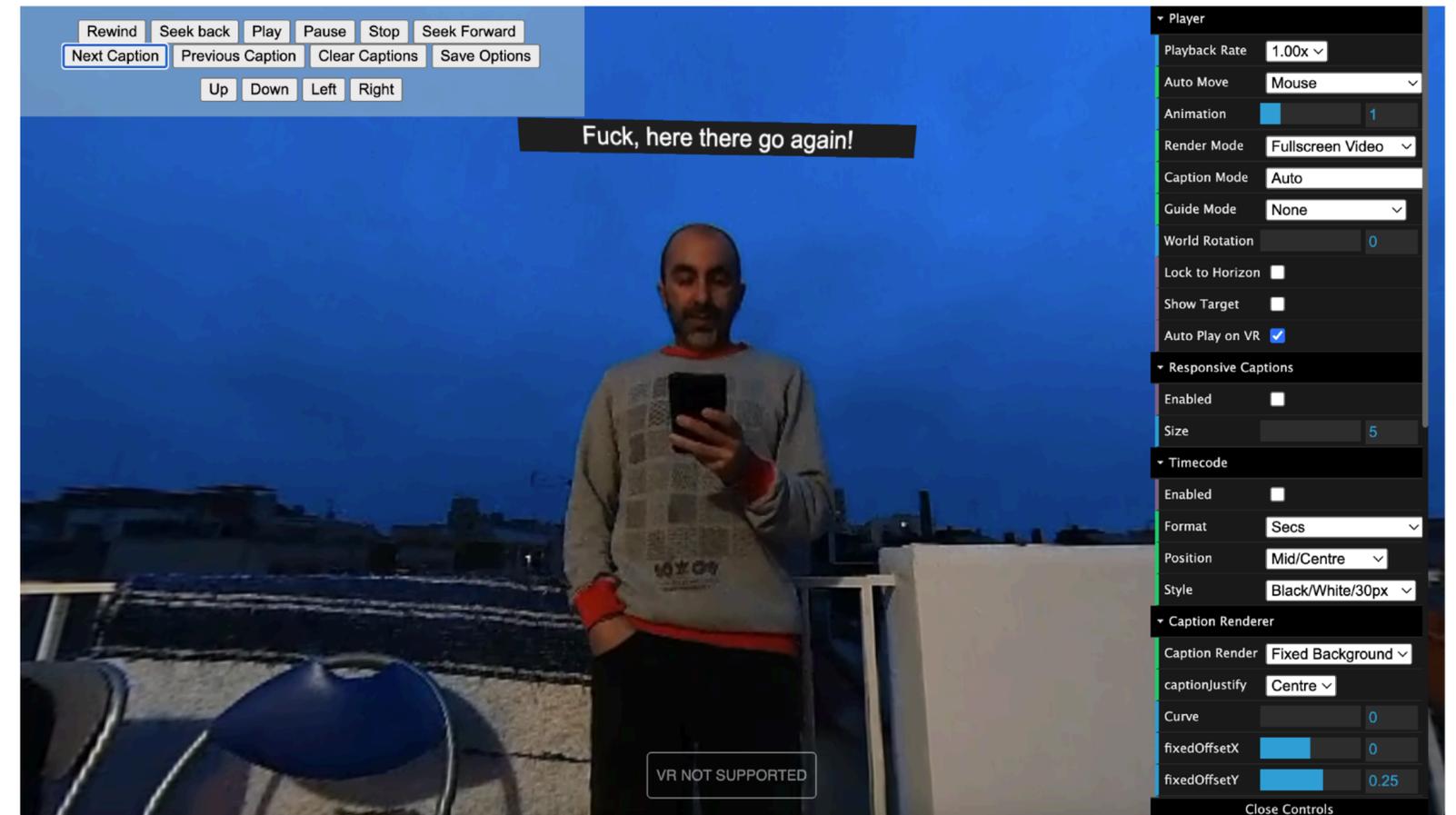
Sign language

And many more: Easy-to-read, web accessibility...

# ACCESSIBLE PLAYER



I Mac player settings



Fully customizable player

# USER INTERFACE ACCESSIBILITY

 <p>Responsive design</p>	 <p>Adapted to VR environments</p>	 <p>Voice interaction</p>	 <p>Open menu: looking down, consecutive clicks, or voice control</p>
 <p>Enlargement features</p>	 <p>Preview feature</p>	 <p>Universal icons for Accessibility</p>	

# DEVICE ACCESSIBILITY



# CREATING ACCESSIBLE CONTENT: FADER



# VR AUTHORING TOOL FOR ALL

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User driven  
+  
Immersive  
+  
Accessible



Media authoring for non-experts in  
programming



I want to design a VR experience, not a game, and I am not a programmer but a teacher / cultural expert!

# SO WHAT?

90% of XR application are done with:



	High Quality Experiences	Easy	Comments
Graphic Engines Unity, Unreal	✓	✗	<ul style="list-style-type: none"><li>➤ Suitable for programmers</li><li>➤ C# and C++ coding</li><li>➤ High-end PCs</li></ul>
WebGL editors Cospaces, Tinkercad, etc	✗	✓	<ul style="list-style-type: none"><li>➤ Suitable for schools</li><li>➤ Scratch MIT coding</li><li>➤ Low-end PCs</li></ul>
?	✓	✓	?

# HOW TO IMPROVE THIS SITUATION?

1. Make Web editors that can configure Unity projects
  - A. Web interfaces
  - B. Templates for basic applications: Museum, chemistry lab, wind-energy lab
  - C. Unity Server
2. Make web format more appealing
  - A. Provide multiplying capabilities
  - B. Incorporate AI libraries for fast computing on the educator PC

# THE EDITOR INTERFACE



A screenshot of the Fader editor interface. The central area shows a 360-degree panoramic view of a cobblestone street in a city, with a red "BACK" button overlaid on the bottom. The interface is dark-themed with various controls and panels. At the top left, there's a "Fader" logo and a project name "Example\_1". A top right panel contains "Add Media", "Preview", and "Share" buttons. On the left, there's a navigation menu with "Environment" and "Contact" options. On the right, there are sliders for "Rotation" (Vertical: 1.5, Horizontal: 0, Tilt: 0) and "Position" (Vertical: 210). Below these are icons for "360", "Image2D", "Audio", and "TextCard". At the bottom, there's a "Your scenes: 1" section with a scene thumbnail and a play button. A bottom right panel shows metadata for the selected image: "Name: Riga9.jpg", "Resolution: 5472x2736", "Duration: 13 s", and "Allow jump to" checked.

**GETTING DOWN TO WORK...**

# WHO IS WORKING ON IT?

H2020 EUROPEAN PROJECTS



**Opera** co-creation  
for a social  
transformation



**MediaVerse**

Benvinguts  
a  
Som | Fundació



Clica  
per començar  
el tour 360°



# Global Accessibility Awareness Day 2021

# CONCLUSIONS AND FURTHER STEPS

# UNDER RESOURCED ACCESSIBILITY SERVICES

- Whats about **easy-to-understand** language?

(Including different varieties ranging from Easy Language to Plain Language?)

- What about **web accessibility**?

(Ensuring users can perceive, understand, navigate, interact with and contribute to online content?)

# WHAT IS NEXT?

1. The integration of accessibility services within immersive environments is a work in progress

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**XR Accessibility User Requirements**

W3C Working Group Note 25 August 2021



2. Towards **fully personalized** media experiences
3. Need to promote the **Universal Design** and **Born accessible** concepts

# QUESTIONS? COMMENTS? THOUGHTS?

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