



# **Super accessibility: Immersive Media for All**

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# This session

- 1. Therapy
- 2. What we want to achieve
- 3. What we have done
- 4. What we would like to do
- 5. Q&A



# 1. Therapy

- I am: Marta Brescia, Andrew Duchowski, Chris Hughes, Krzys Krejtz
- User centric research
- HW is new
- Content is new
- Generation of content to be tested
- Accessibility for prosumers



## 2. What we want to achieve





## 2. What we have done

- A framework to simulate subtitle authoring and live player

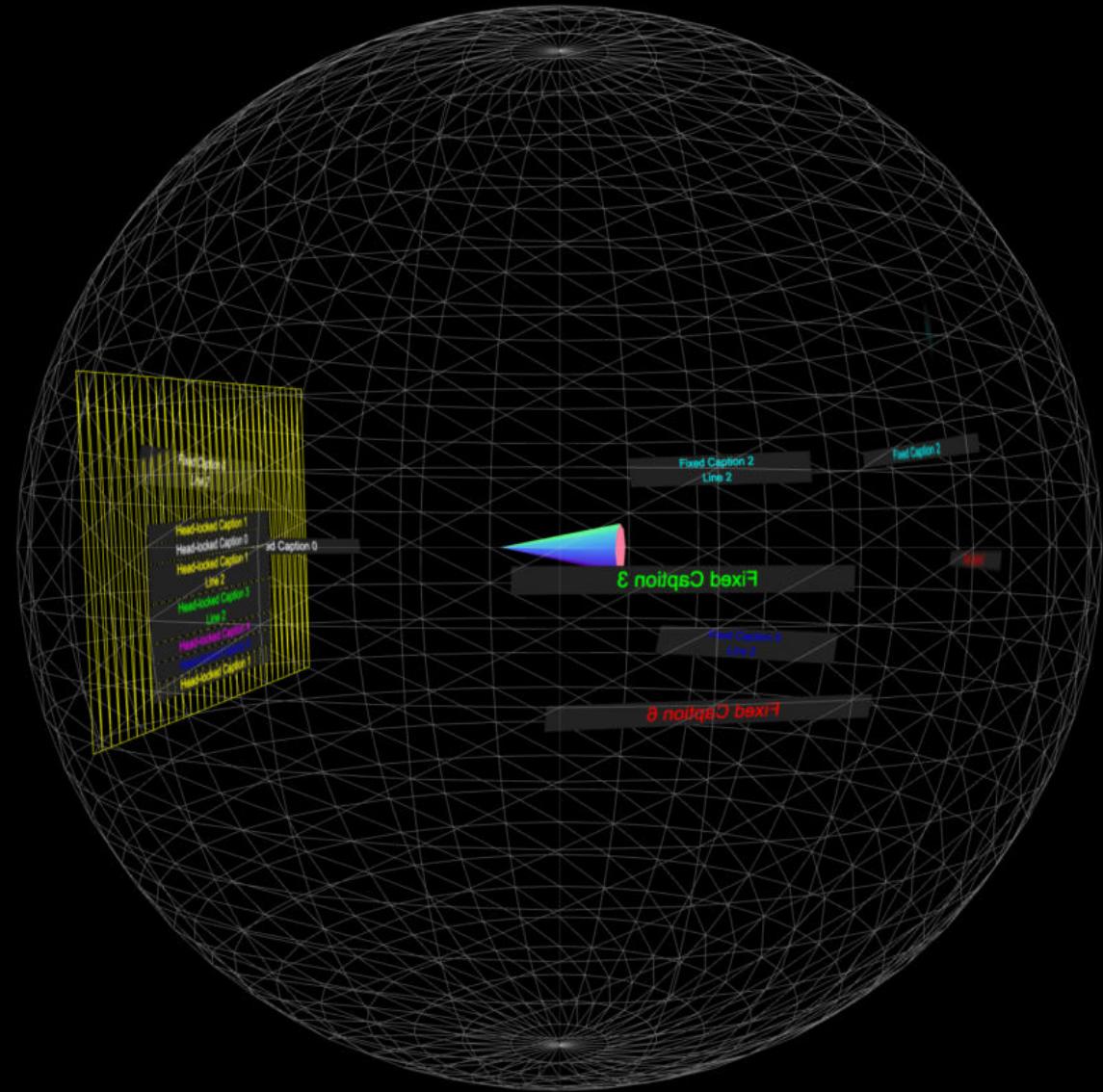


# OBJECT BASED SUBTITLES

## Particle Objects

- Emitter
- Manager

[https://www.chxr.org/immersive\\_subs2\\_5/](https://www.chxr.org/immersive_subs2_5/)





# LIVE PLAYER

Rewind

Seek back

Play

Pause

Stop

Seek Forward

Next Caption

Previous Caption

Clear Captions

Save Options

Up

Down

Left

Right



VR NOT SUPPORTED

Player

Playback Rate1.00x

Auto MoveMouse

Animation1

Render ModeWireframe + Video

Caption ModeFixed, position in scene

Guide ModeImAc Arrow

World Rotation0

Lock to Horizon

Show Target

Auto Play on VR

Responsive Captions

Enabled

Size5

Timecode

Enabled

FormatSecs

PositionMid/Centre

StyleBlack/White/30px

Caption Renderer

Caption RenderFixed Background


captionJustifyCentre

Curve0

fixedOffsetX0

fixedOffsetY0.25

Close Controls



# EXPERIMENT DESIGN

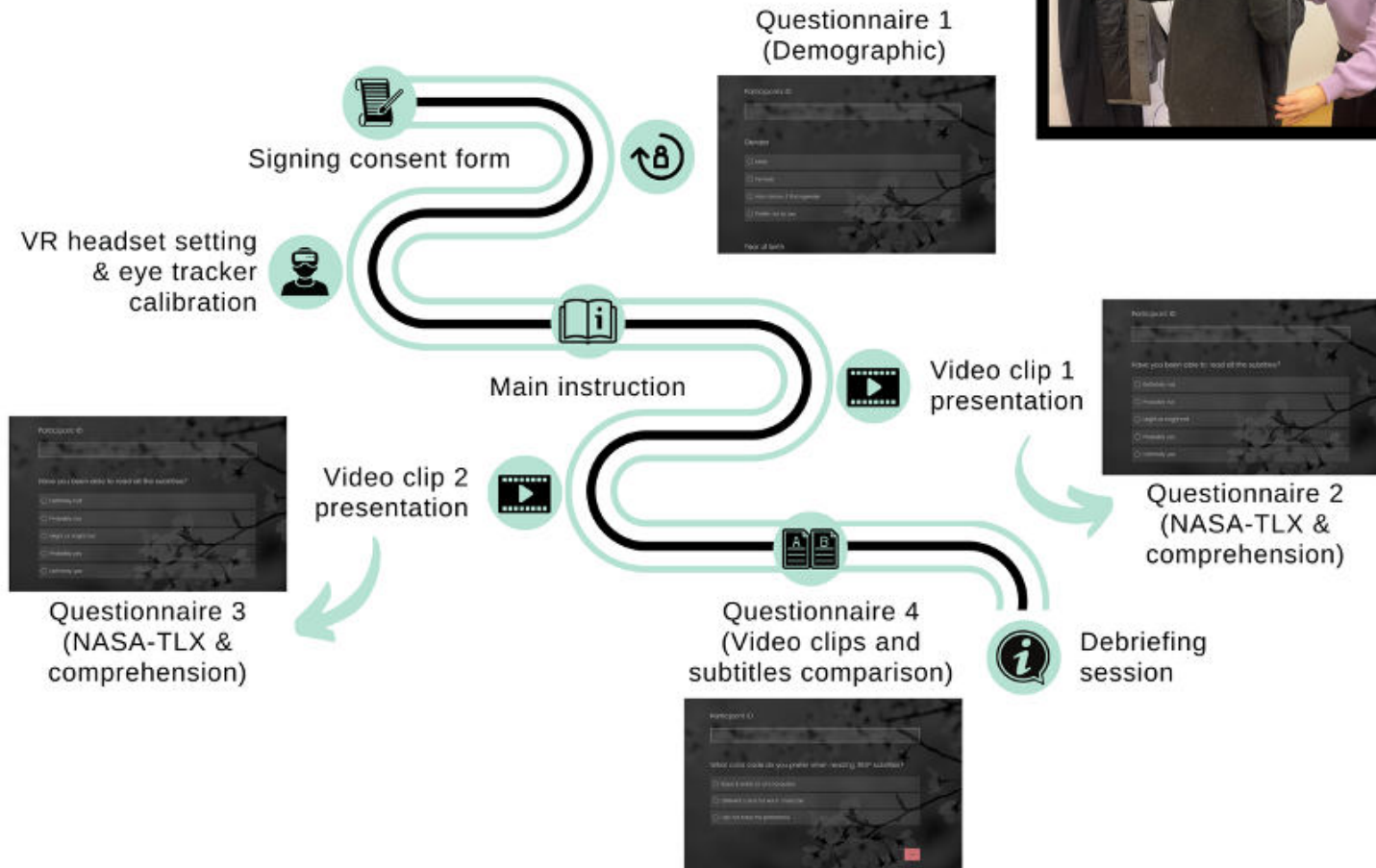
2x2 experimental design

## Subtitle position

Head-locked  
Fixed

## Subtitle colour

B&W for all speakers  
Unique colour for each speaker





# WATCHING MOVIES WITH SUBTITLES

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2D



VR

# HEAD-LOCKED SUBTITLES EYE TRACKED

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# SUBTITLES EYE TRACKED

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HEAD-LOCKED



FIXED



# COMFORT & READABILITY



Image quality falls off  
towards the edges

Photo through lens of the Oculus Go

(Only exemplary, does not represent real image quality)

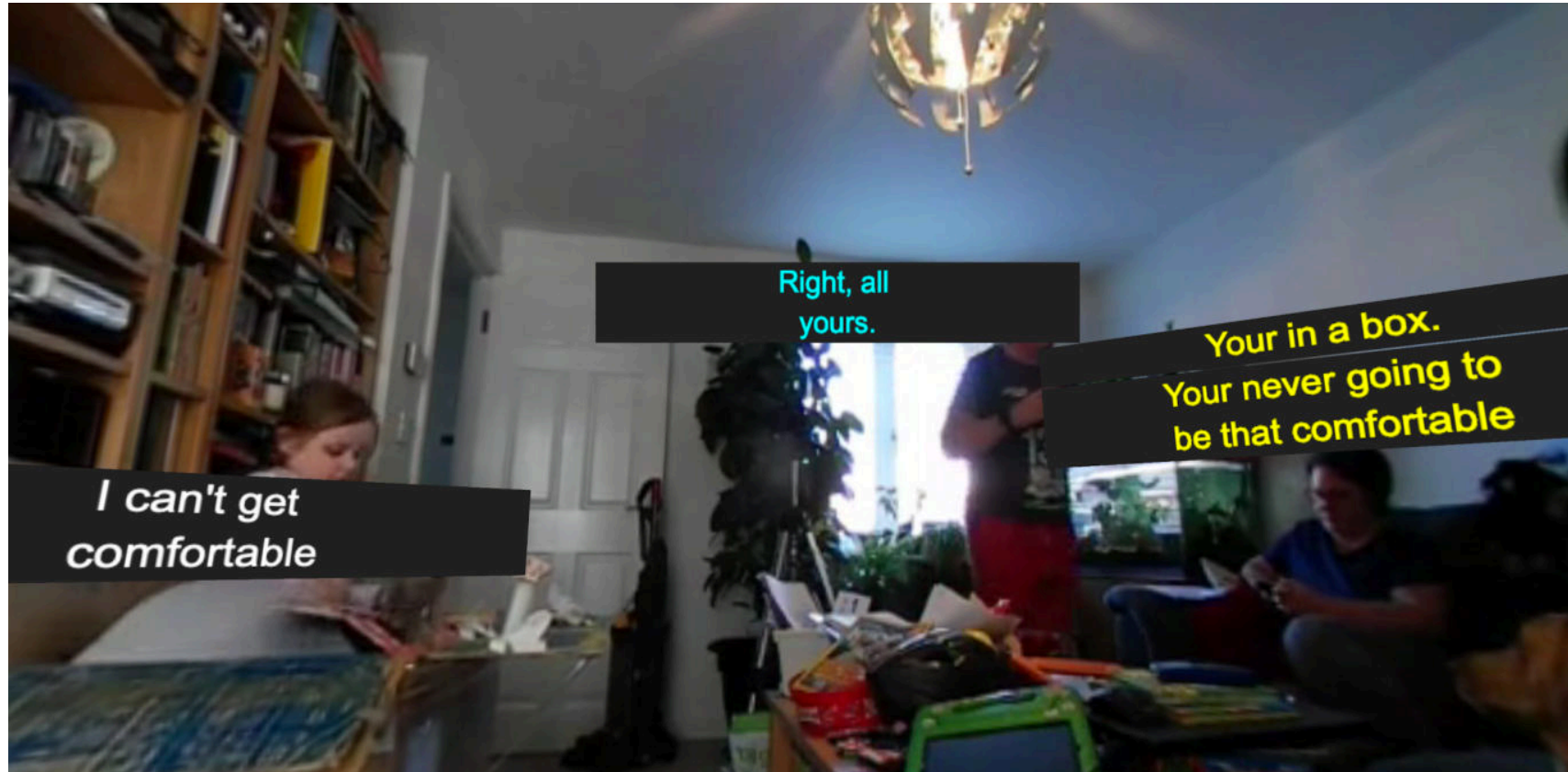


# SPEAKER IDENTIFICATION



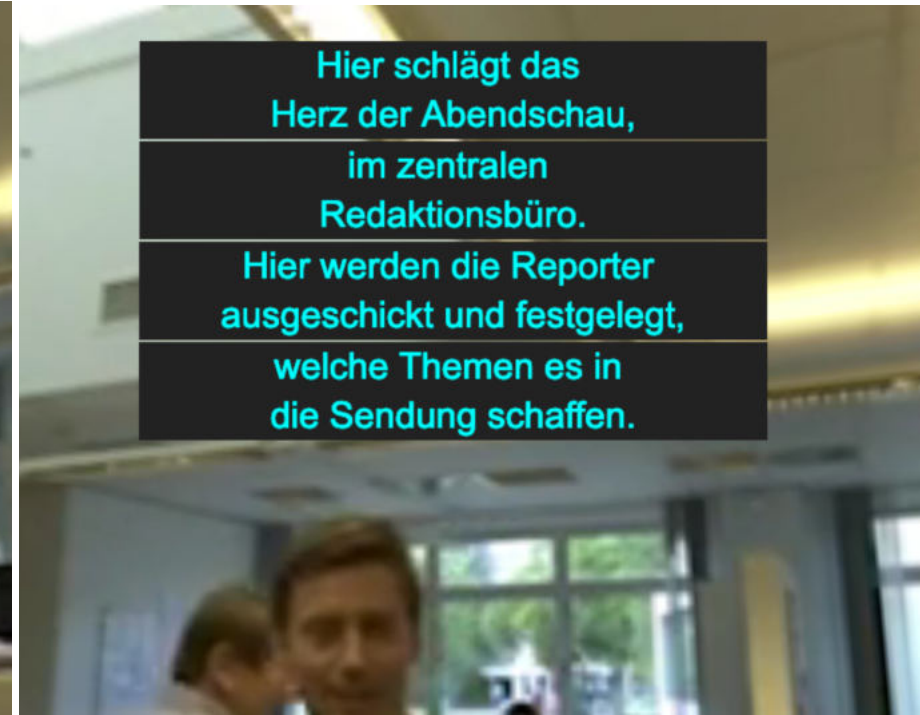
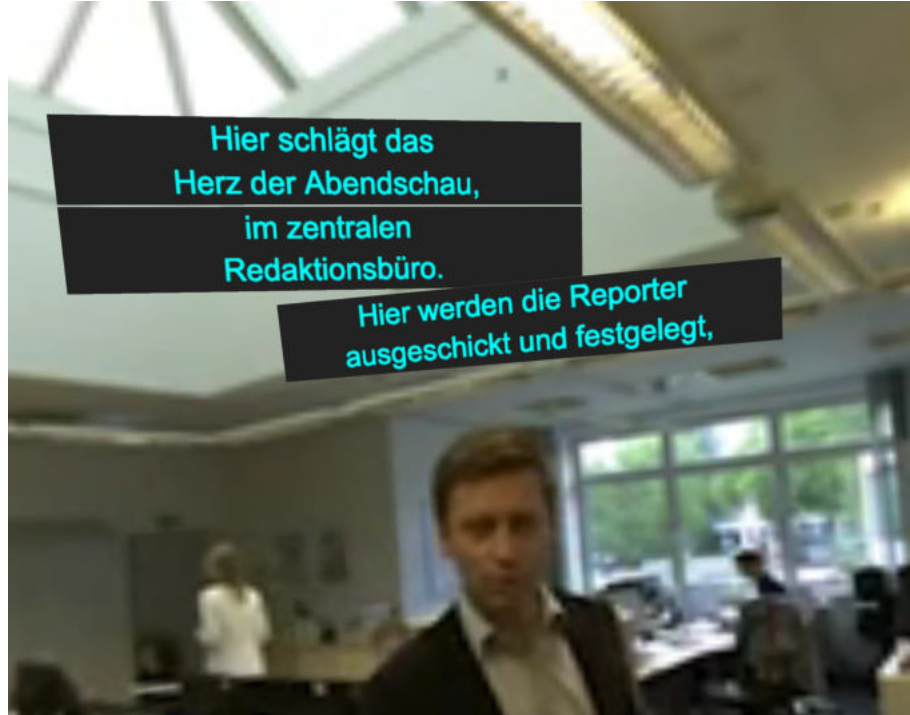


# CAPTIONS FIXED TO SPEAKER



<https://www.chxr.org/360/>

# STACKING (COLLISIONS)



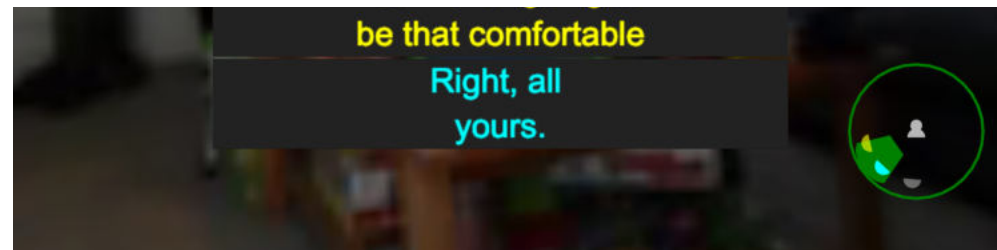
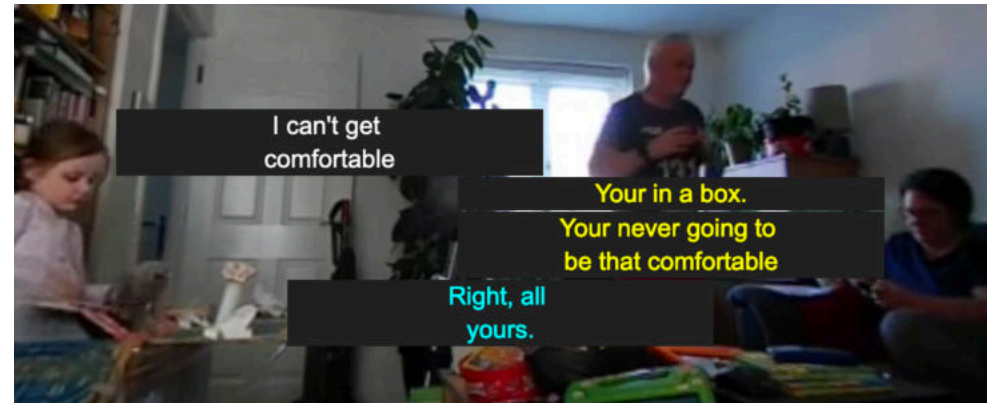
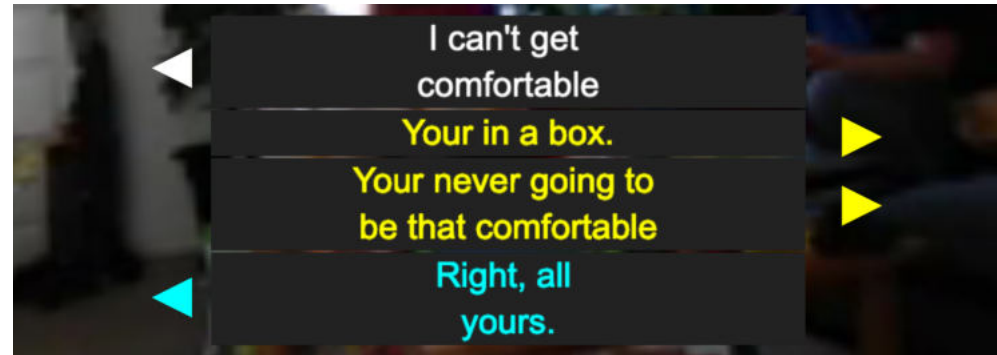
<https://www.chxr.org/360/>

# RESPONSIVE (CUSTOMIZATION)



<https://www.chxr.org/360/>

# GUIDING MECHANISMS





# Requirement 1: accessible headset



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# Requirement 2: Accessible EPG (electronic programme guide)



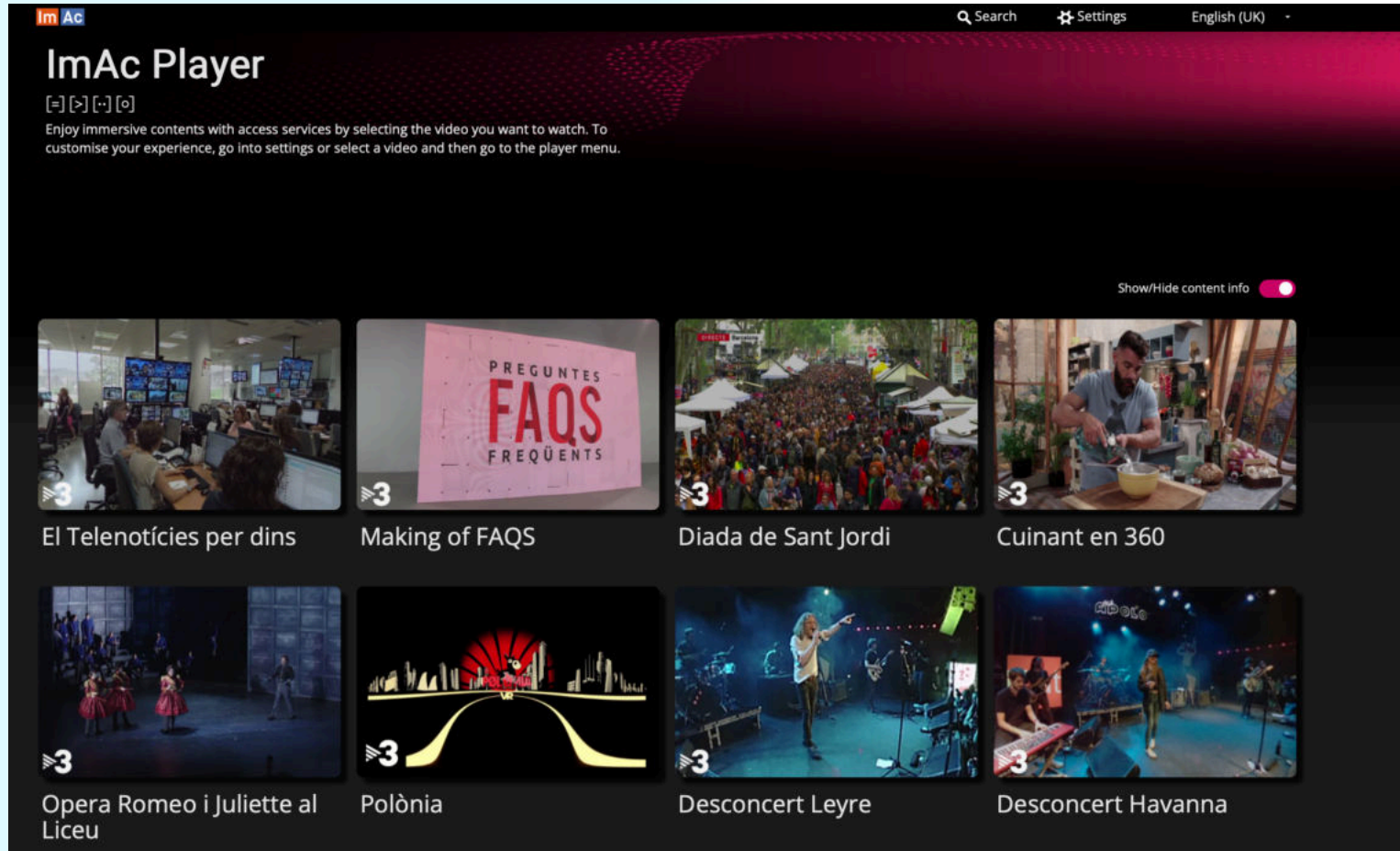
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# Requirement 3 Accessible media player

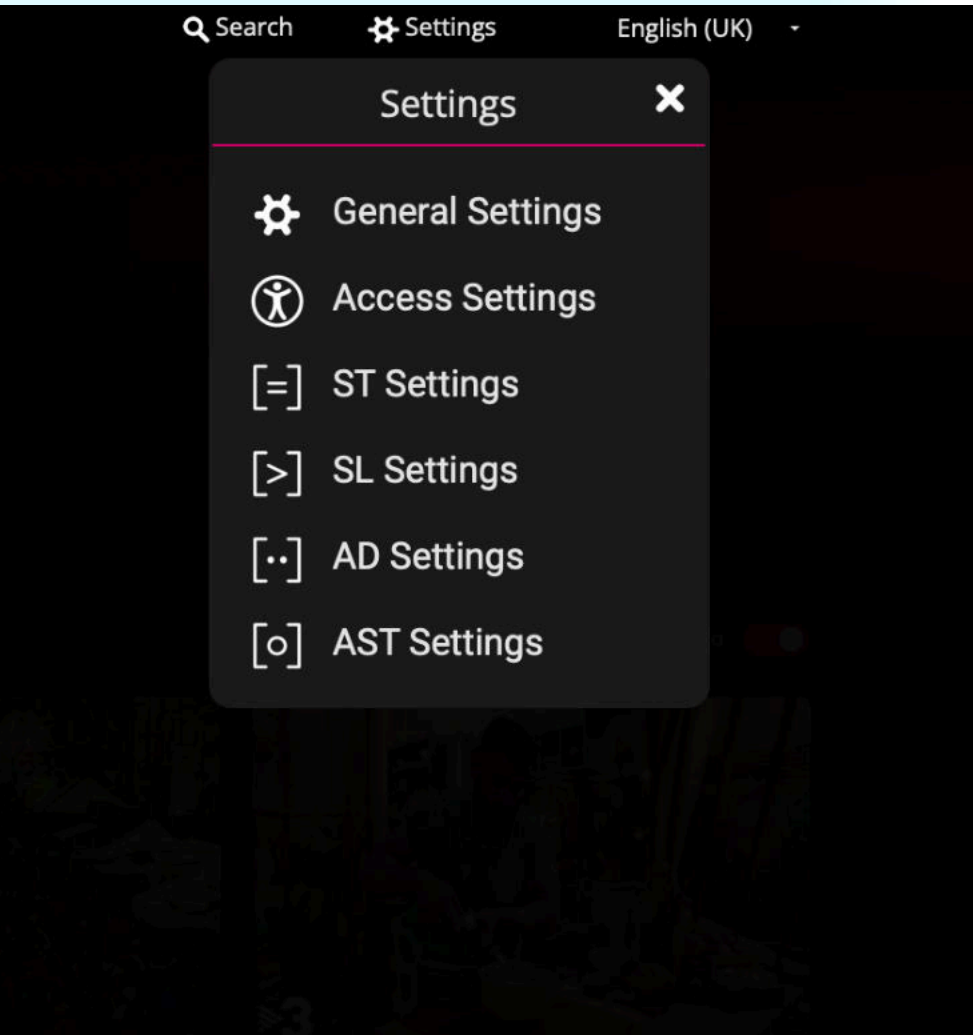


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<https://media.i2cat.net/imac/player/>

# Requirement 4 Accessible services





## General Settings



Traditional

Enhanced  
Accessibility

Modern and user-friendly menu for playback control and personalization of the consumption experience.



Menu Type



Pointer Size



Voice Control



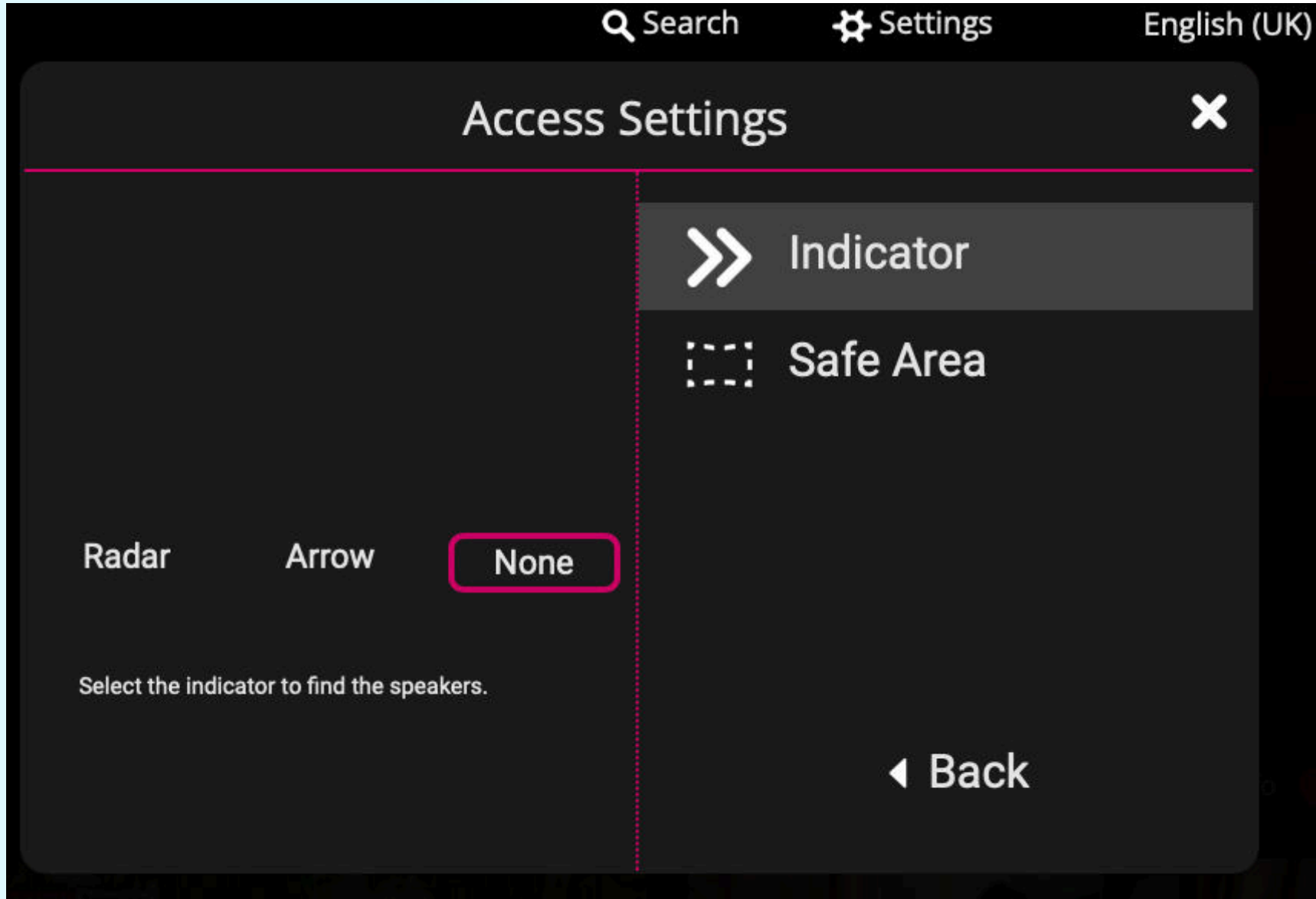
User Profile

◀ Back

## Requirement 5 Guiding mechanism



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## Access Settings



Small

Medium

Large

Choose the size of the preferred size of the safe area (i.e. comfortable Field of View) on which visual elements will be presented.



Indicator



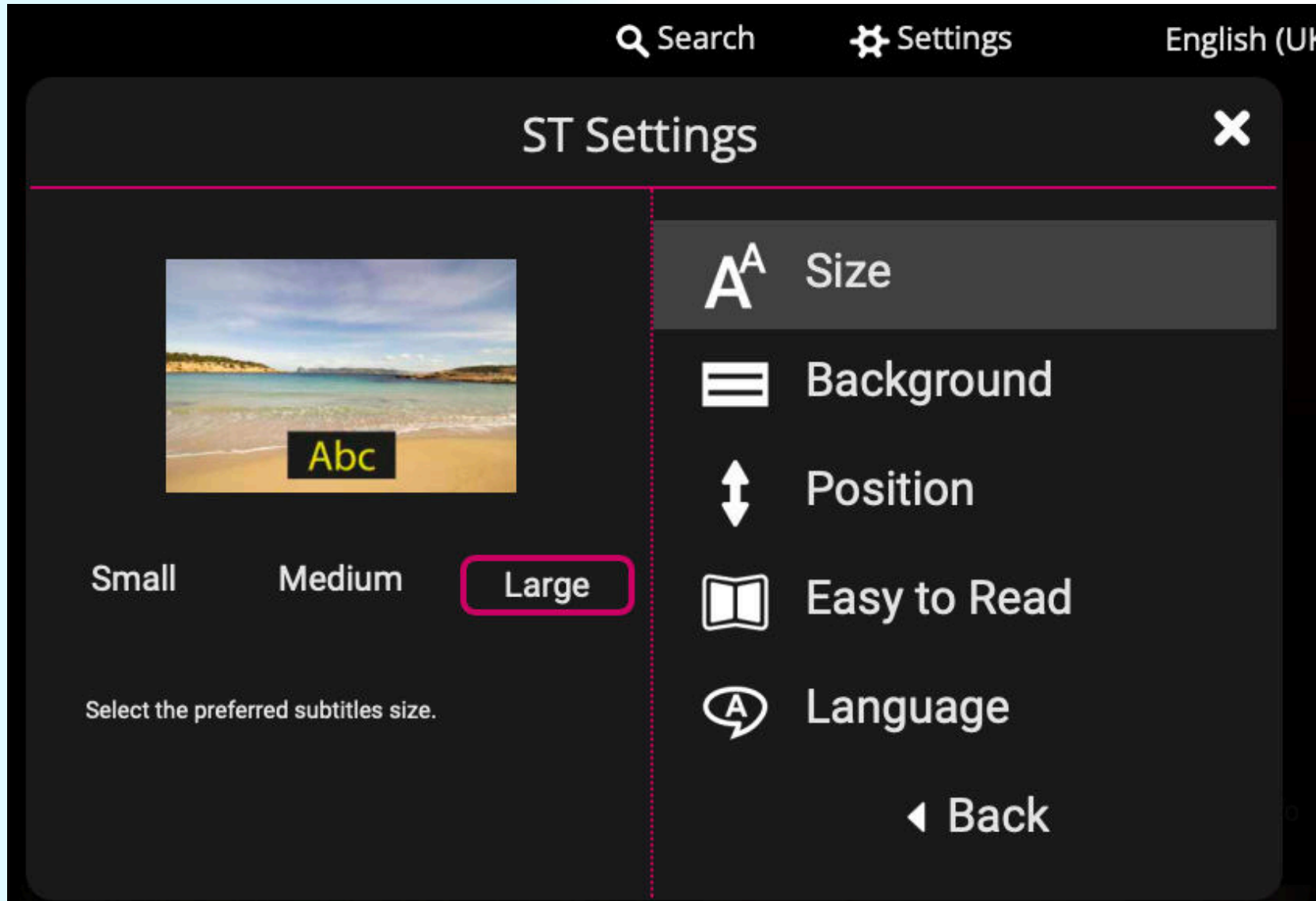
Safe Area

◀ Back

## Requirement 6 Accessible services



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# Requirement 6 Accessible services & Language



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Search Settings English (UK) ▾

### Search

Search contents by ID

Filter by accessibility service and language:

<input type="checkbox"/> [=] Subtitles	<input type="checkbox"/> English
<input type="checkbox"/> [>] Sign Language	<input type="checkbox"/> Español
<input type="checkbox"/> [..] Audio Subtitles	<input type="checkbox"/> Deutsch
<input type="checkbox"/> [o] Audio Description	<input type="checkbox"/> Català

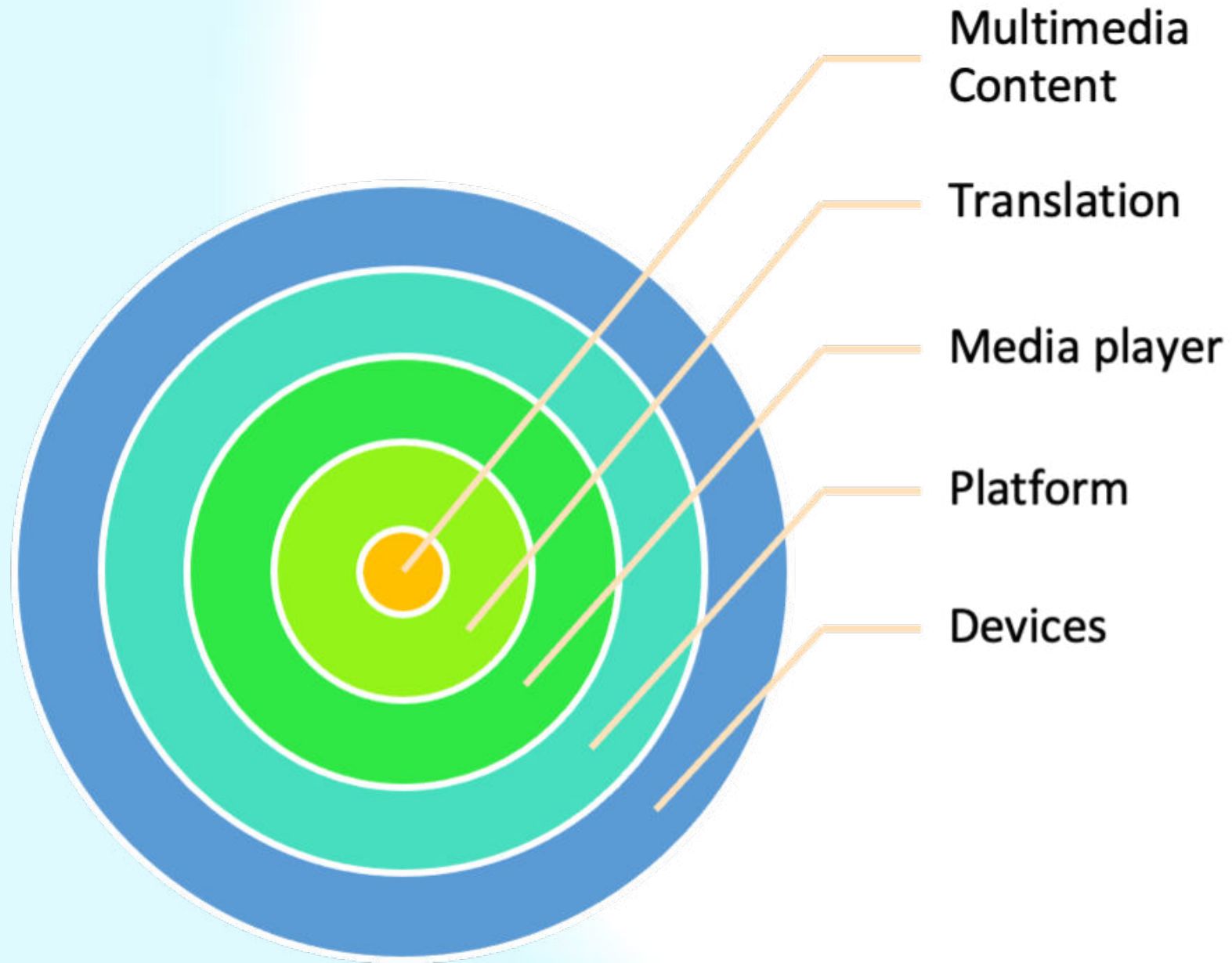
Go!

Show/Hide content info ☐

No Interoperability of all requirements no access



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# WHAT HAVE WE LEARNED?

User tests yield **limited results**

Unless you can put a working product in front of them

- Paper prototypes may cause confusion
- Often lead to users saying they prefer what they already have

In this area many technologies pose a **learning challenge**

- Difficult to ask a user to evaluate prototype when learning

Need to combine questionnaires and/or focus groups with new techniques like **eye tracking** to measure user behavior





# Thank you



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