ImAc:
Immersive accessibility

Chris Hughes
Salford University, UK

Winter Workshop
23rd November 2020

Partners

Funded by

ImAc Project

- **European Project**, funded by **H2020** program:
  - http://www.imac-project.eu/

- How to **efficiently integrate accessibility** within immersive media
  - Omnidirectional Audio and Video, VR
  - Services: (audio) **subtitling**, **audio description**, **sign language**
  - Assistive technologies (guiding mechanisms, augmentation, voice recognition, AI…)
  - Media Processing Techniques

- **Personalized** Services, based on needs / preferences
- Compliance with current technologies and **standards**

ImAc Project

- **User-Centric** Methodology:
  1) requirements gathering
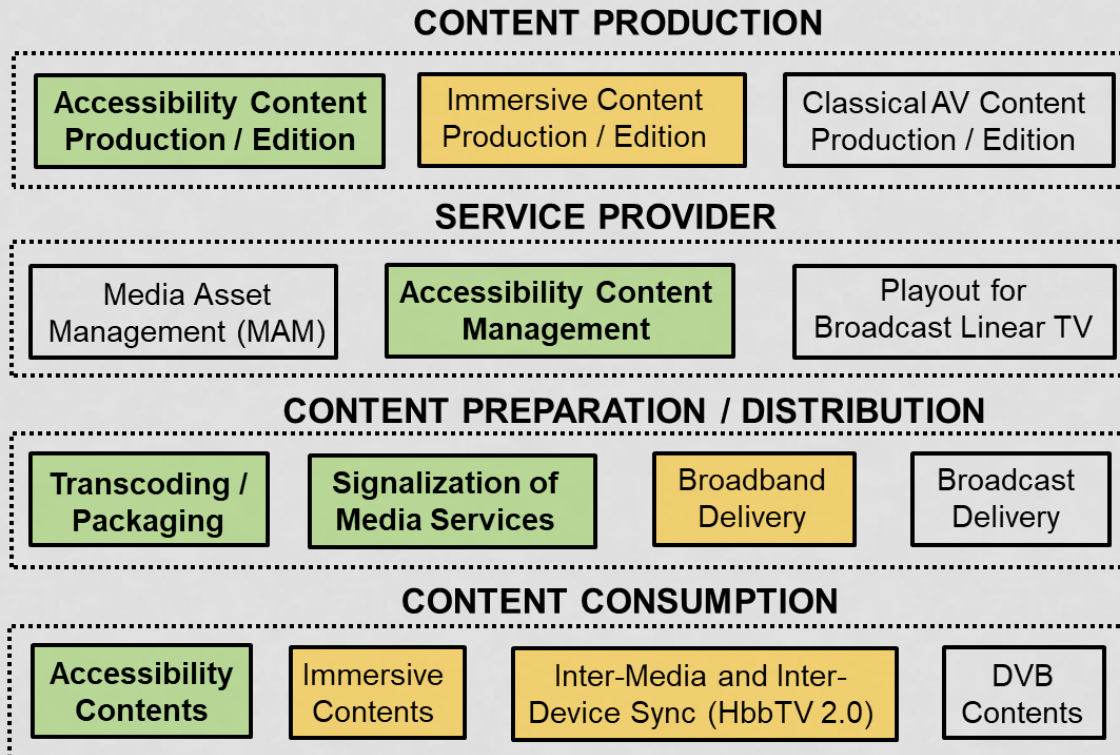 2) development and integration
  3) validation and dissemination
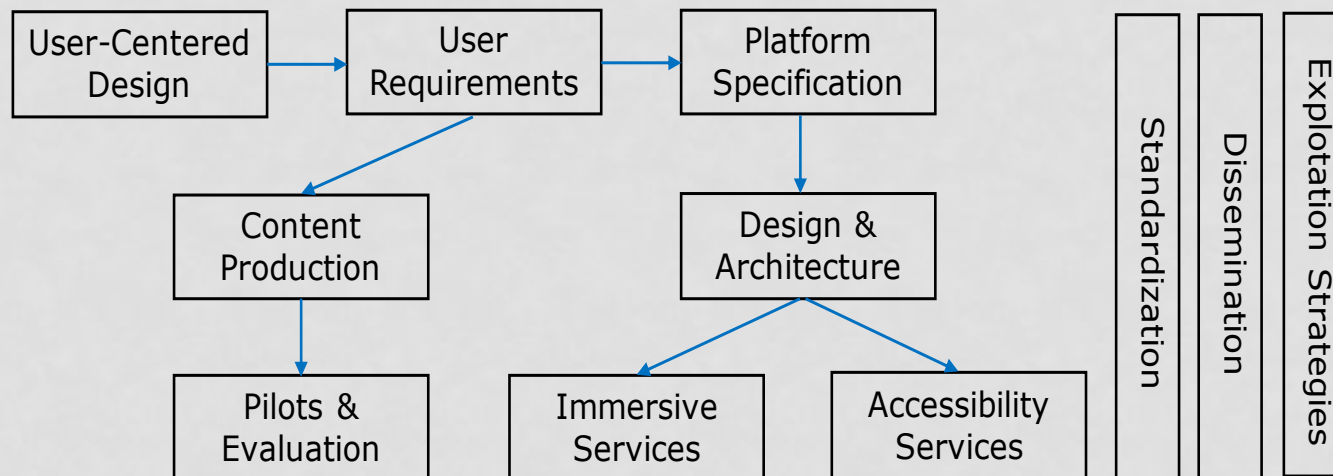
Aims

- **Requirements** to enable truly inclusive + accesible media services?
- How current (immersive) technologies and systems can be augmented in order to **seamlessly integrate** and support accessibility services?
- How to **simultaneously manage** (all?) accessibility services?
- What **personalization** features should be provided in order to meet particular users' needs and/or preferences?
- What kind of **assistive technologies** should be adopted?
- Which **presentation modes** for accessibility contents are better suited in the envisioned scenarios?
- What are the **comfortable viewing fields** for accessibility contents, especially when using HMDs?
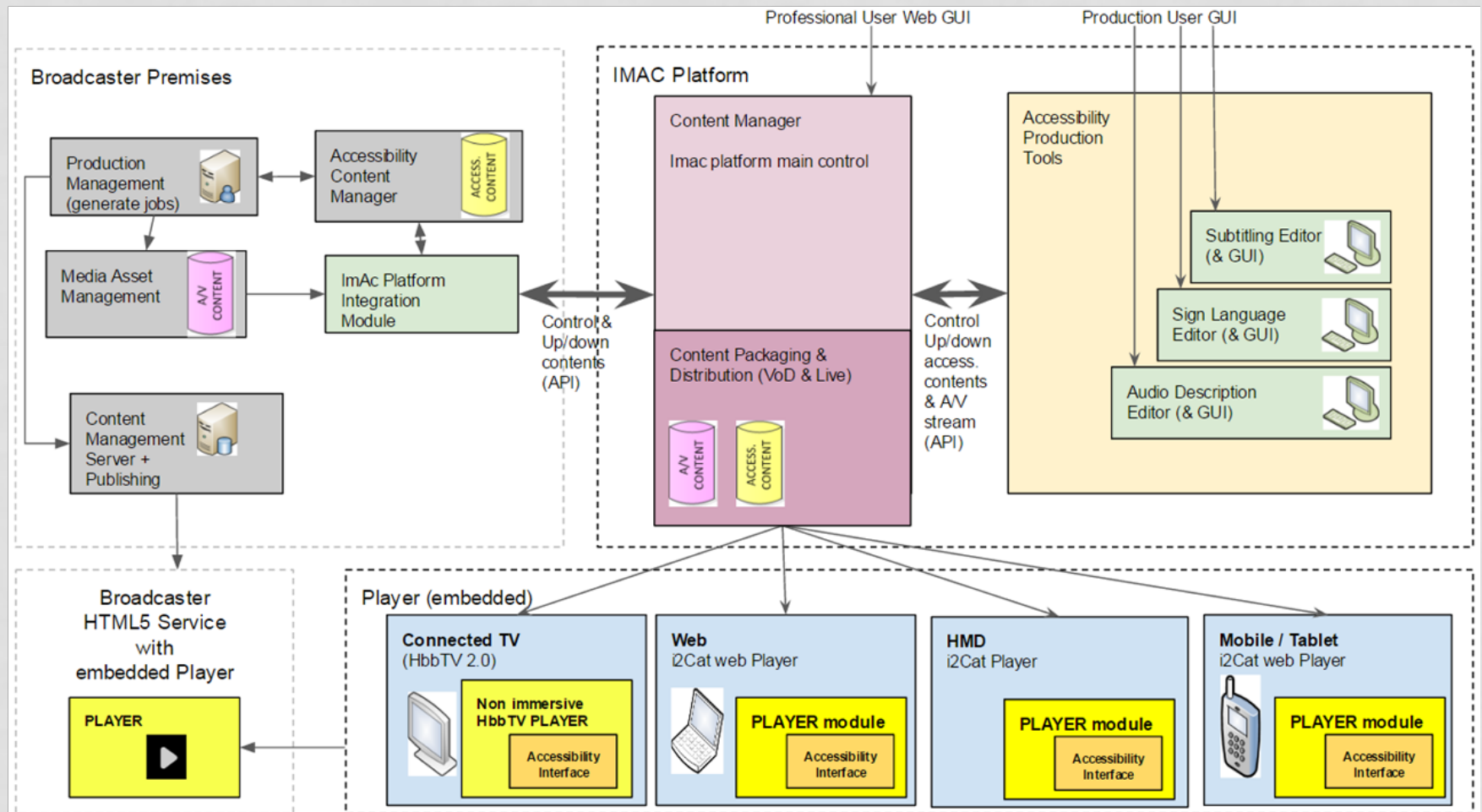- **User Interface** and **Interaction Features**?

End-to-End Platform

- **Modules Overview:**

CONTENT PRODUCTION

Accessibility Content Production / Edition	Immersive Content Production / Edition	Classical AV Content Production / Edition

SERVICE PROVIDER

Media Asset Management (MAM)	Accessibility Content Management	Playout for Broadcast Linear TV

CONTENT PREPARATION / DISTRIBUTION

Transcoding / Packaging	Signalization of Media Services	Broadband Delivery	Broadcast Delivery

CONTENT CONSUMPTION

Accessibility Contents	Immersive Contents	Inter-Media and Inter-Device Sync (HbbTV 2.0)	DVB Contents

ImAc

End-to-End Platform

- **Components Overview:**

End-to-End Platform

- **ImAc Production /Editing Tools:**
  - Editors for Subtitling, Audio Description and Sign Language in 360° videos
  - Metadata Models + Signaling
- Accessibility Content Manager (ACM)

INFO

USERNAME: test

FILE ID: 704
FILE CREATION DATE: 2019-08-07 13:21:13

ASSET ID: 778
ASSET TITLE: USAL Test: ImAc at Media4All
VIDEO SIZE: 1.81 GB
VIDEO DURATION: 00:08:25:12

SETTINGS

GENERAL SETTINGS

REGIONS

R1 R2 R3 +

CHARACTERS

+

SHORTCUTS

SET SHORTCUT

Set default shortcuts

VIDEO

00:08:25:12 GO

Waveform generation in progress

SUBTITLE LIST

1 00:00:00:00 — Well I Don't know! Some
   00:00:03:23   people sit still and let

2 00:00:03:23 — life happen to them
   00:00:06:04   rather than getting involved.

3 00:00:06:04 — Generally if you don't
   00:00:10:16   have the option to get

4 00:00:10:17 — involved then that can take
   00:00:13:15   away some of that immersion.

3 00:00:10:16 Generally if you don't have the option to get

R1 R2 R3

Voice Over

4 / 4

00:00:10:17 involved then that can take
00:00:13:15 away some of that immersion.

00:00:02:23 -7 205.48

FoV Angle
-3.8/323.1

Speaker's Location
0.0 0.0

Saved Angle
0/0

ACTIONS

SAVE   AUTO SAVE

FORCED PREVIEW MODE   FREE PREVIEW MODE
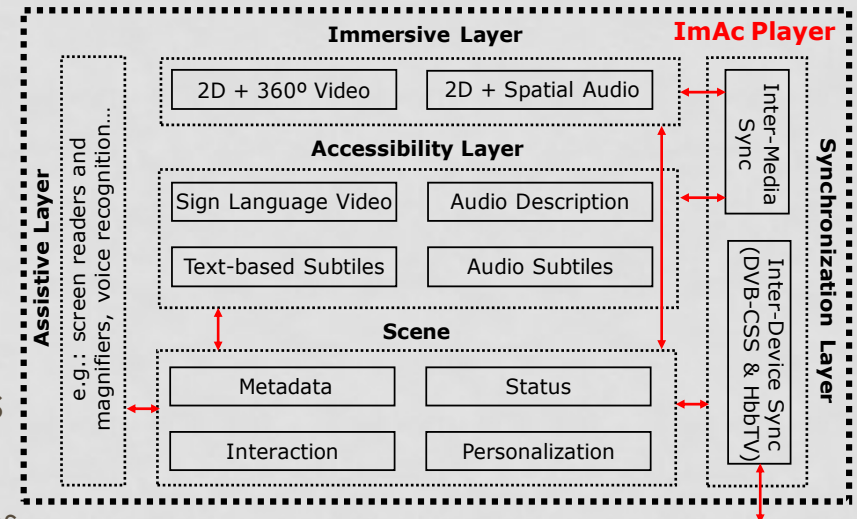
CHECK TCS   TC SHIFT
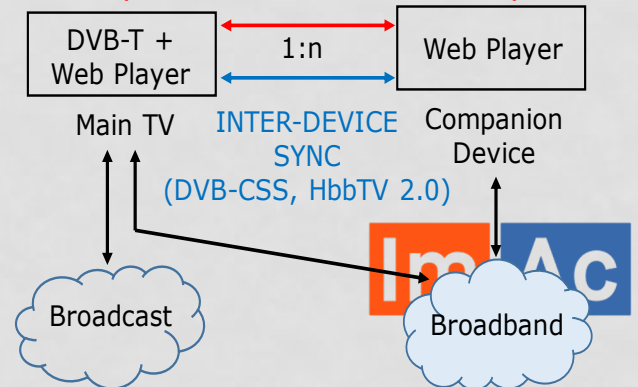
Find   Replace

End-to-End Platform

- **ImAc Player:**
  - Media Layers
    - Traditional Media
    - Immersive / Omnidirectional Media
    - Accessibility Services
  - User Interface + Interaction Features
    - Traditional + Low-Sighted Menu
    - Universal Accessible (Text-based) Icons
    - Personalization Features
  - Assistive Technologies
    - Voice Recognition + Control
    - Magnification
    - Media Processing Techniques
  - Integration with current standards / techs
    - Web-based tech and formats (DASH, IMSC)
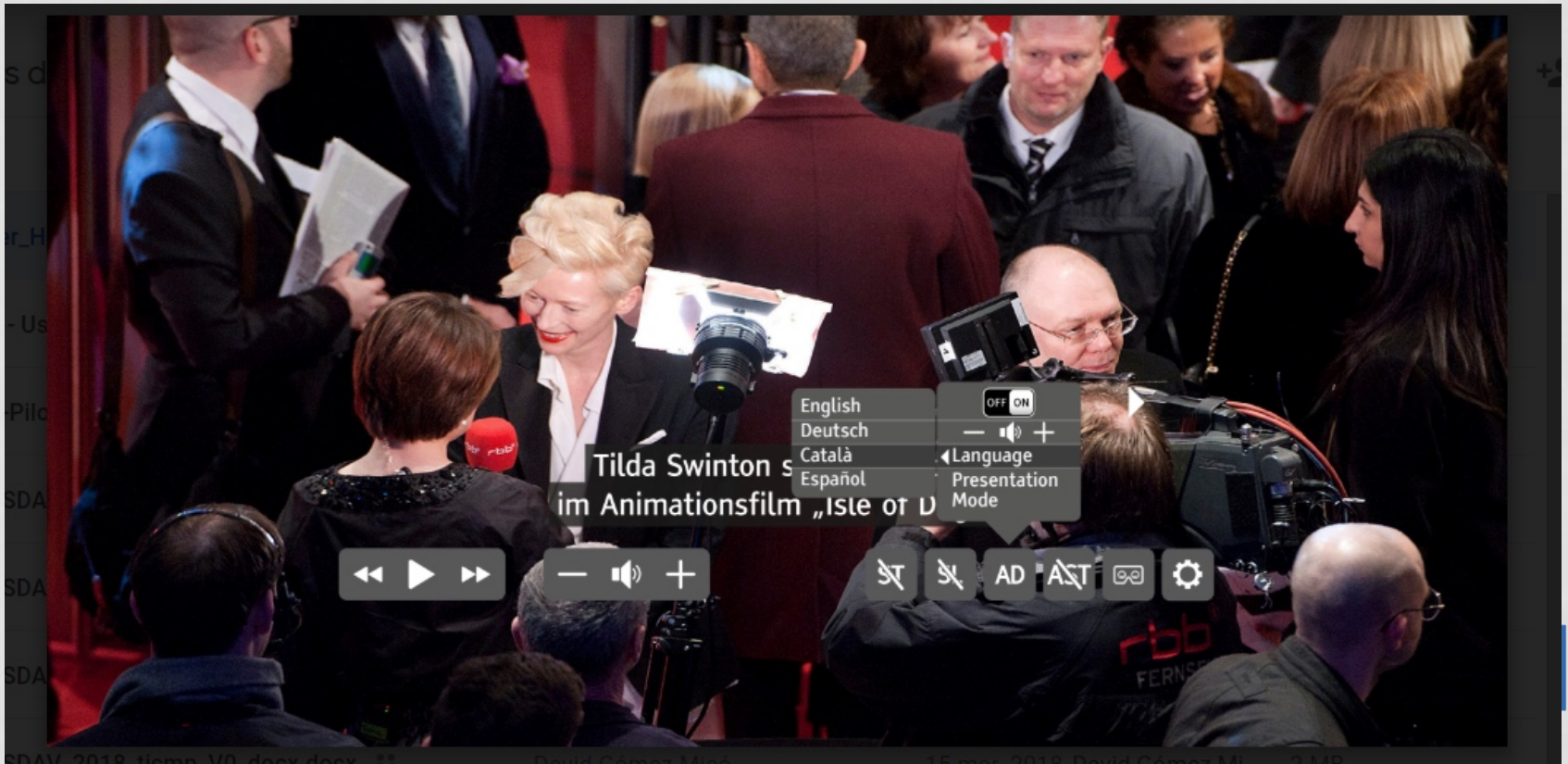   - HbbTV 2.0.1 (Multi-Screen Scenario)

ImAc Player

Immersive Layer
- 2D + 360º Video
- 2D + Spatial Audio

Accessibility Layer
- Sign Language Video
- Audio Description
- Text-based Subtiles
- Audio Subtitles

Scene
- Metadata
- Status
- Interaction
- Personalization

Assistive Layer — e.g.: screen readers and magnifiers, voice recognition...

Synchronization Layer
- Inter-Media Sync
- Inter-Device Sync (DVB-CSS & HbbTV)

DISCOVERY & ASSOCIATION & APP LAUNCHING
(Ad-hoc + HbbTV 2.0 Solutions)

DVB-T + Web Player — 1:n — Web Player

Main TV — INTER-DEVICE SYNC (DVB-CSS, HbbTV 2.0) — Companion Device
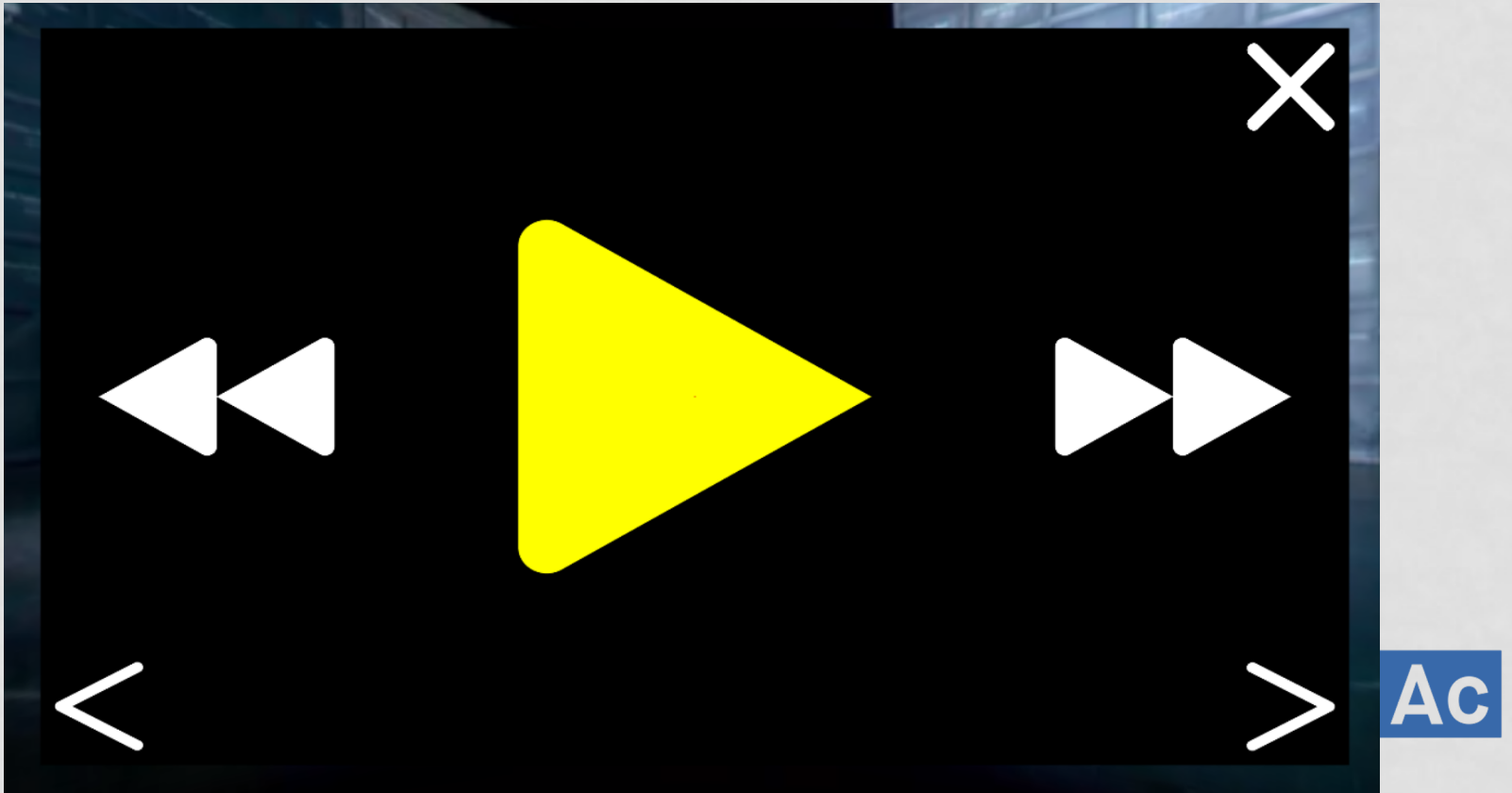
Broadcast — Broadband

End-to-End Platform
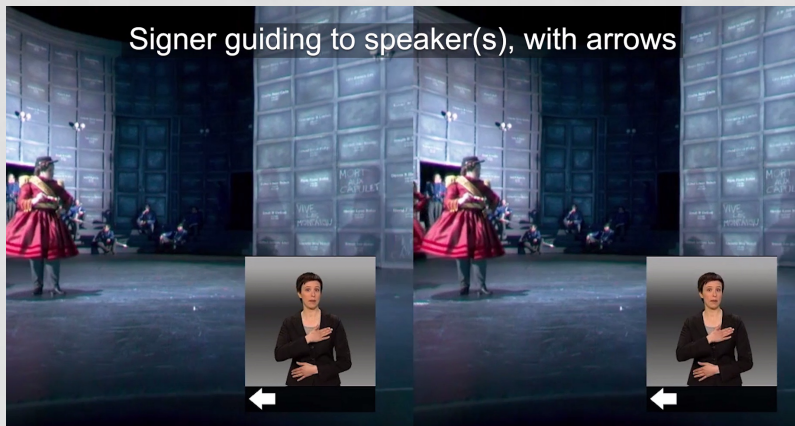
- **ImAc Player – Traditional UI**

End-to-End Platform

- **ImAc Player – Low-Sighted UI**

End-to-End Platform

- **ImAc Player**
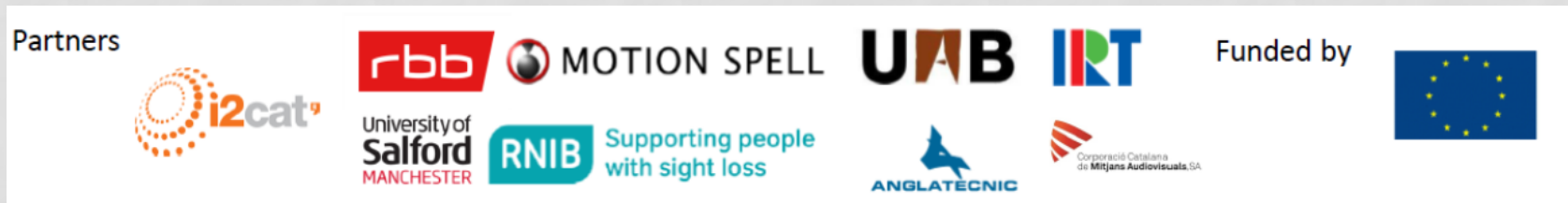
UNIVERSAL ACCESSIBLE ICONS

Subtitles guiding to speaker(s), with arrows

¡Mirad cómo se defiende el muchacho
contra un hombre!

¡Mirad cómo se defiende el muchacho
contra un hombre!

Signer guiding to speaker(s), with arrows

[=] SUBTITLES

[o] SPOKEN SUBTITLES

[··] AUDIO DESCRIPTION

[<] SIGN LANGUAGE
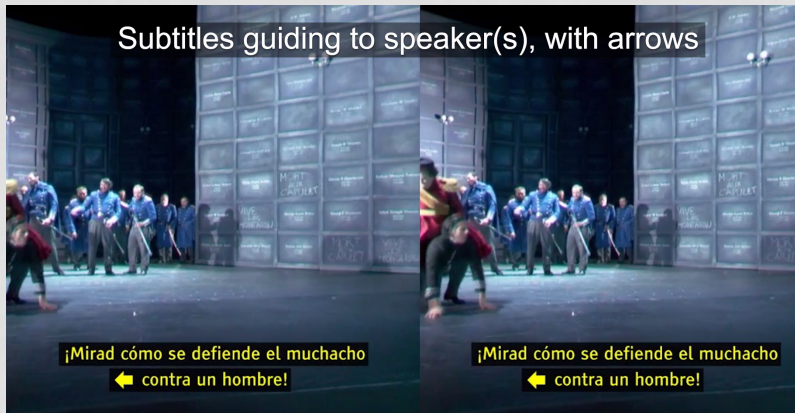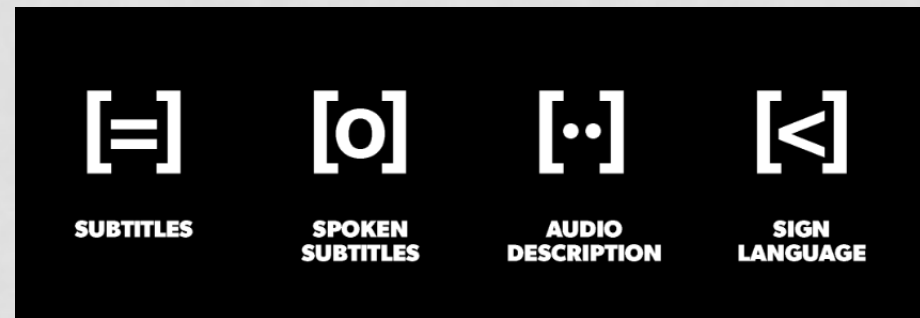
Chris Hughes
c.j.hughes@salford.ac.uk