IBC Accelerator Programme 2026

IFeL: Immersive Festival Live-Remote Presence at Scale

Imagine the Future

Headline Sponsor:

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SPEAKER SLIDE
- provided by IBC

PART ONE:

THE
WARM UP ACTS

The Industry Challenge

- **Lack of audience engagement:** livestream pipeline is broadcast-first-2D, passive remote experiences - low presence and agency.
- **Lack of interactive 3D options**: social VR isn't always integrated with festival production and typically **wraps hacked 2D video + standard audio**; standalone virtual parties don't recreate live dynamics.
- **Lack of reusable blueprint**: an augmented, scalable **end-to-end hybrid workflow under real constraints**: latency, bandwidth, resourcing, reliability, rights/privacy - with better ROI.



Proposed POC Objectives

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UHD IMMERSIVE LIVE

Prototype a deployable **UHD immersive workflow**, that is multi-user and multi-perspective 180/360 video + viewpoint-aware spatial audio.

END-TO-END PIPELINE

Prove an E2E pipeline: **Capture → Switching → Encode/Package → Distribution** with adaptive quality profiles.

ACCESSIBILITY BY DESIGN

Enable **seamless switching** between stage and audience perspectives without breaking immersion for the remote user to improve accessibility.

SPATIAL AUDIO SYNC

Deliver **viewpoint-aware audio** with stable A/V sync (Multi-Channel/Binaural/Stereo/Mono; scene + object-based capture).

TWO-WAY PRESENCE

Implement **'two-way presence'** feedback: between physical and the virtual audience, via AR and magic mirror screen presence and/or curated remote engagement.

REUSABLE BLUEPRINT

Produce a repeatable **reference workflow + runbook** for the industry to explore accessibility-by-design principles.

The Backstage Crew

Champions

BBC

EBU

itv

Montreux Jazz Festival Media Ventures

SMPTE

Third Orchestra

xplor

Academia

King's College London

Reality Hack

Ollscoil na Gaillimhe University of Galway

University of Southampton

Participants

BEAM Immersive

Magic Beans

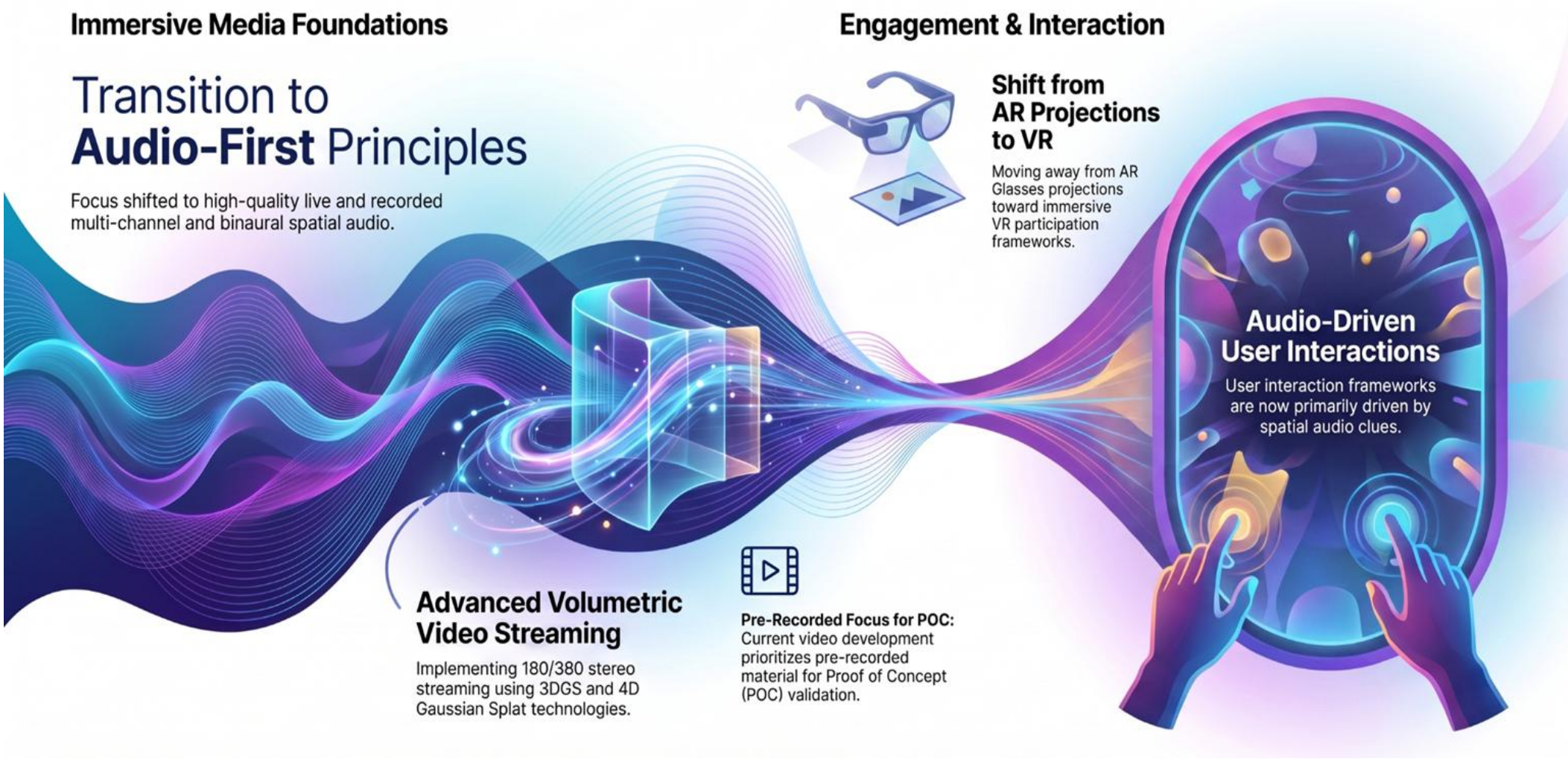
REPRO

SHURE

Surround Sync

The POC Vision 2.0 - Foundations

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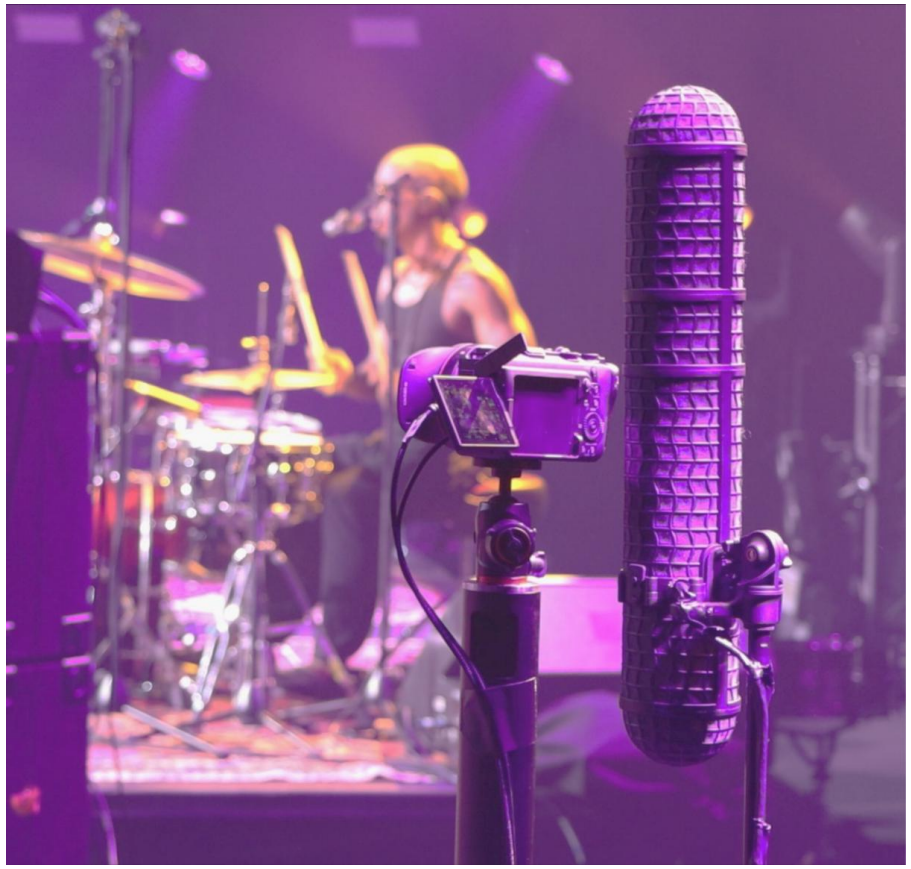


Audio POC

Spatial audio:
Viewpoint-aware multi-channel and binaural spatial sound.

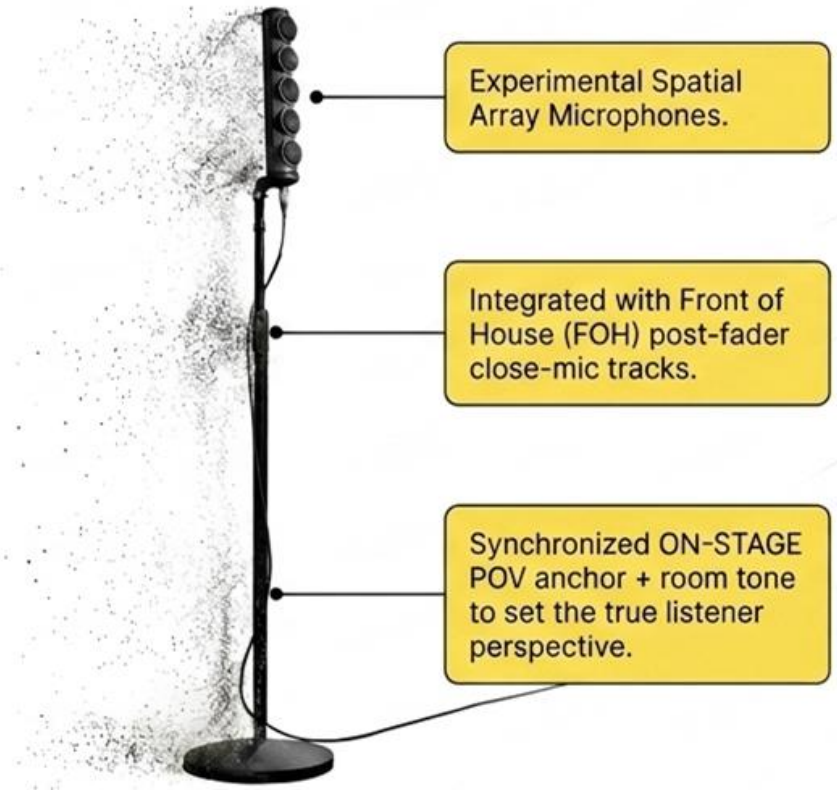
Consumption Accessibility:
Immersive audio through multiple mediums including surround sound, binaural soundbar, and free-roam immersive environment mixed-reality experience.

Evolution of Audio Capture and Output:
Experimental spatial array microphones with front of house audio, pipelines, next gen spatial sound system.



Zoom in: Viewpoint Aware Spatial Audio

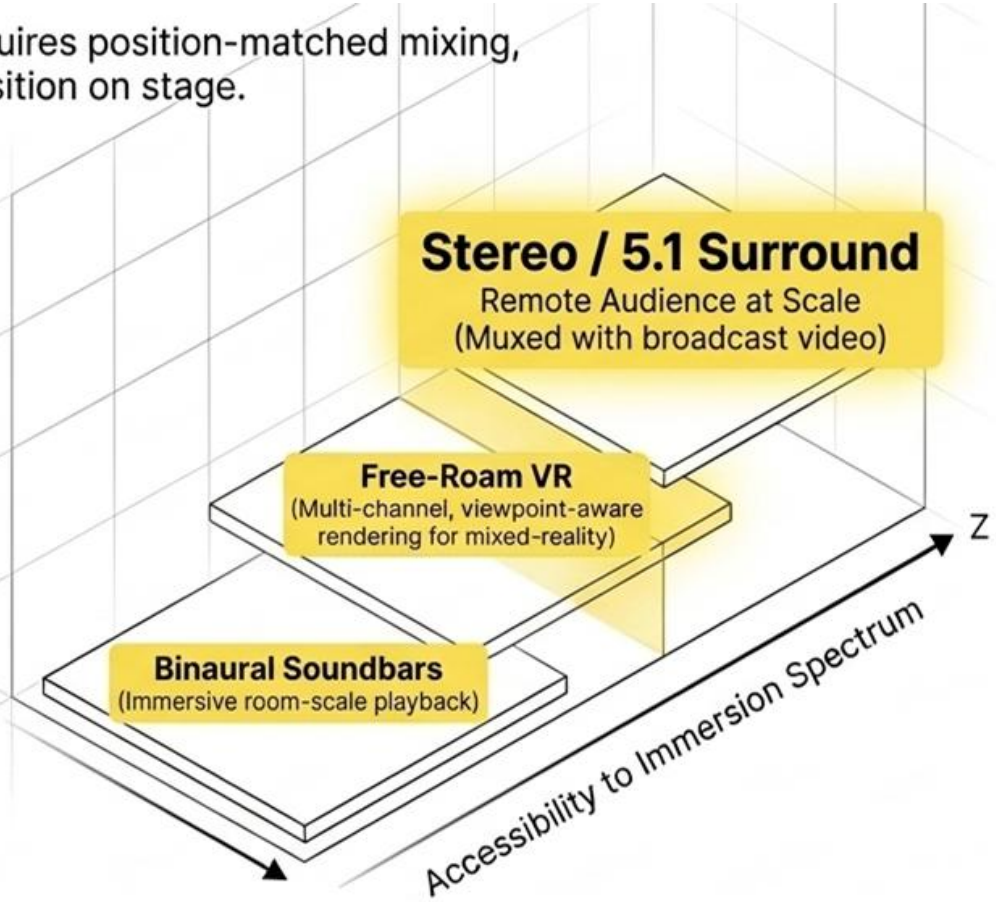
Transitioning to Audio-First Principles. True spatial reality requires position-matched mixing, aligning each direct source to the performer's real physical position on stage.



Experimental Spatial Array Microphones.

Integrated with Front of House (FOH) post-fader close-mic tracks.

Synchronized ON-STAGE POV anchor + room tone to set the true listener perspective.



Video POC: Capture & Live Streaming

- **Capture Goals:**
  - High Fidelity re-usable 180 stereo capture
  - High Fidelity re-usable 360 capture
  - High Fidelity 3D Gaussian Splat
  - High Fidelity 4D Gaussian Splat

- **Live Streaming Goals:**
  - High Fidelity 180 and 360 stream to support audience immersion
  - An essential component for audience feedback loop in VR (dancing + performance alteration through gestures)

INSTA 360 - X5 & RS ONE pro 1-inch



CANON R5 DSLR with Dual Fisheye lens



BLACKMAGIC URSA Cine Immersive

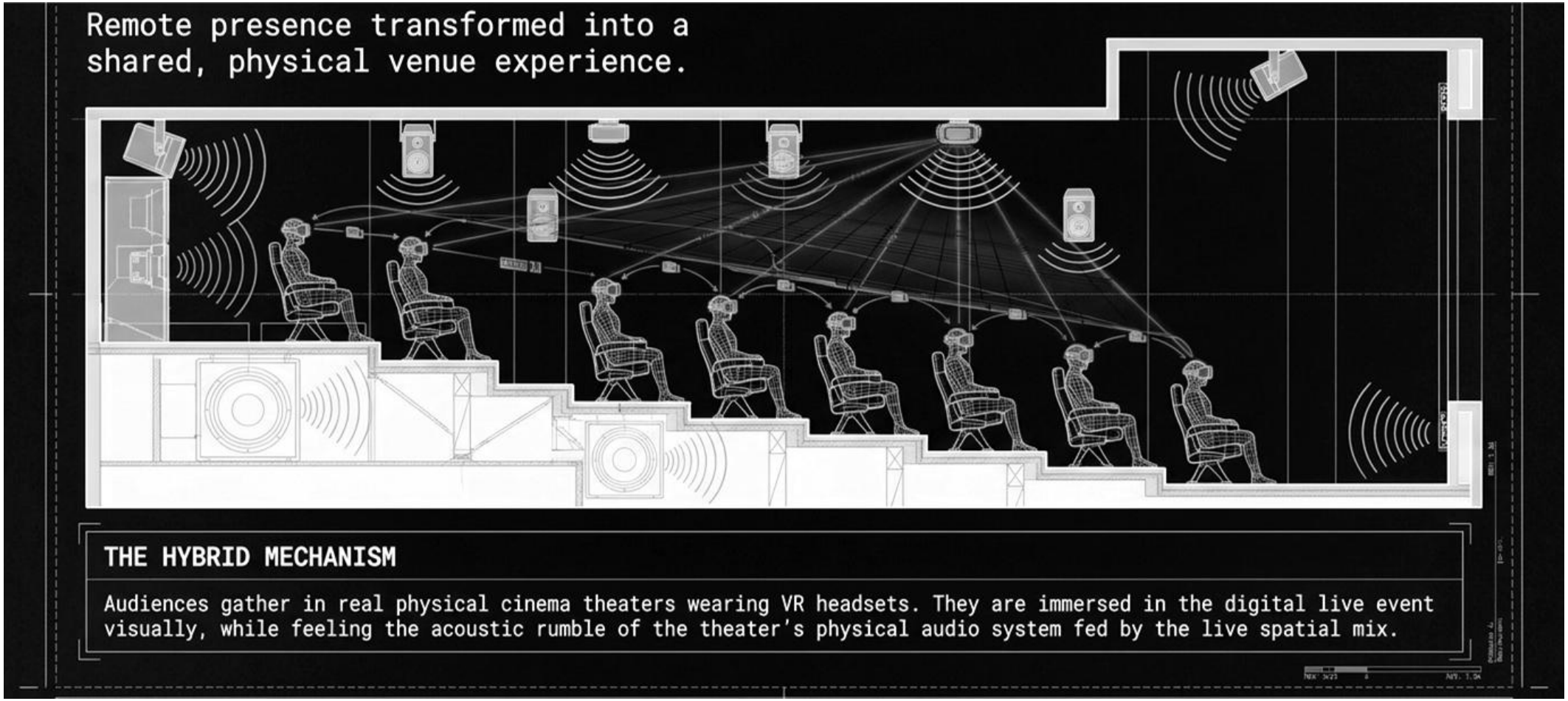


4DC.ai 6K HDR Spatial Camera



Video POC: Remote Audience at Scale

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Interactivity POC: Immersion & Presence

- A **REMOTE immersive experience:** feeling of being there without being there (e.g., Accessibility perspective).
- An **INTERACTIVE** experience: movement & gesture, interacting together, influencing performers.

Immersion (Remote Experience)



The feeling of being there without being there.

Live 180-stereo and 360 video streams allow remote audiences to access the venue from anywhere, providing a deep sense of place (e.g., from an Accessibility perspective).

Presence (Interactive & Shared)



Movement & Gesture and interacting together.

Remote and in-person audiences share the space, with remote participants influencing performers – e.g., conducting an orchestra with an avatar or triggering physical instruments.

PART TWO:

THE HEADLINERS *(POC CASE STUDIES)*

Early POC Tech Trials



AWE USA (Augmented World Expo)

Multi 180 stereo and 360 artist performance capture testing. Evaluation of artist interaction with immersive capture equipment.



King’s College London

Multi-channel and Binaural Audio Streaming Testing, Spatial Sound Reproduction testing, live to remote viewers in different countries

Early POC Tech Trials - Highlights

The POC Line-Up

Montreux Jazz Festival
MEDIA VENTURES

King's College London

Third Orchestra

the Voice of Holland

POC CASE STUDY 1:
Montreux Jazz Festival - Live with Vulfpeck

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POC CASE STUDY 1: Objectives

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Live Spatial Mix and Transport to Two Remote Locations: London, England & Perth, Australia

AUDIO - Immersive Audio Capture

- Experimental Spatial Array Microphones
- Live Front of House Audio Tracks

VIDEO - Immersive Video Capture

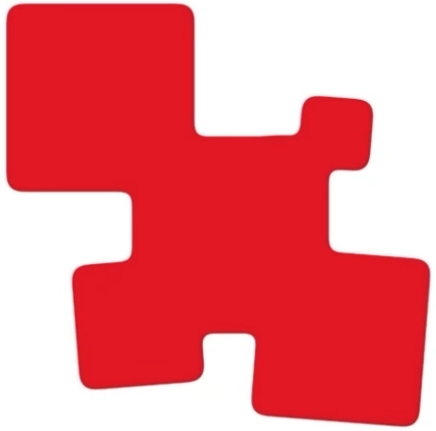
- Multiple camera positions, camera types
- Extra video to Surround Sync – Locations
- Live encode and distribution
- LOCAL connectivity from the Venue Network
- VR headset review with Room scale Audio Soundbar experience

INTERACTIVITY - Remote audience in London & Sydney

POC CASE STUDY 1: On Location / On Site

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Montreux Jazz Festival
MEDIA VENTURES

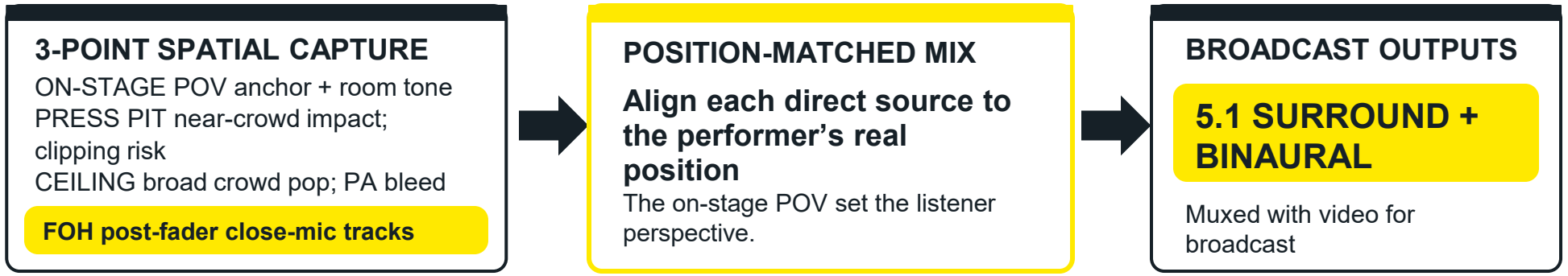


POC CASE STUDY 1: Remote Test



POC CASE STUDY 1: Results

Spatial audio works best as immersive “context”



01 **ALIGN THE VIRTUAL STAGE**

Misaligned close-mic and ambient sources can create two apparent copies of one player.

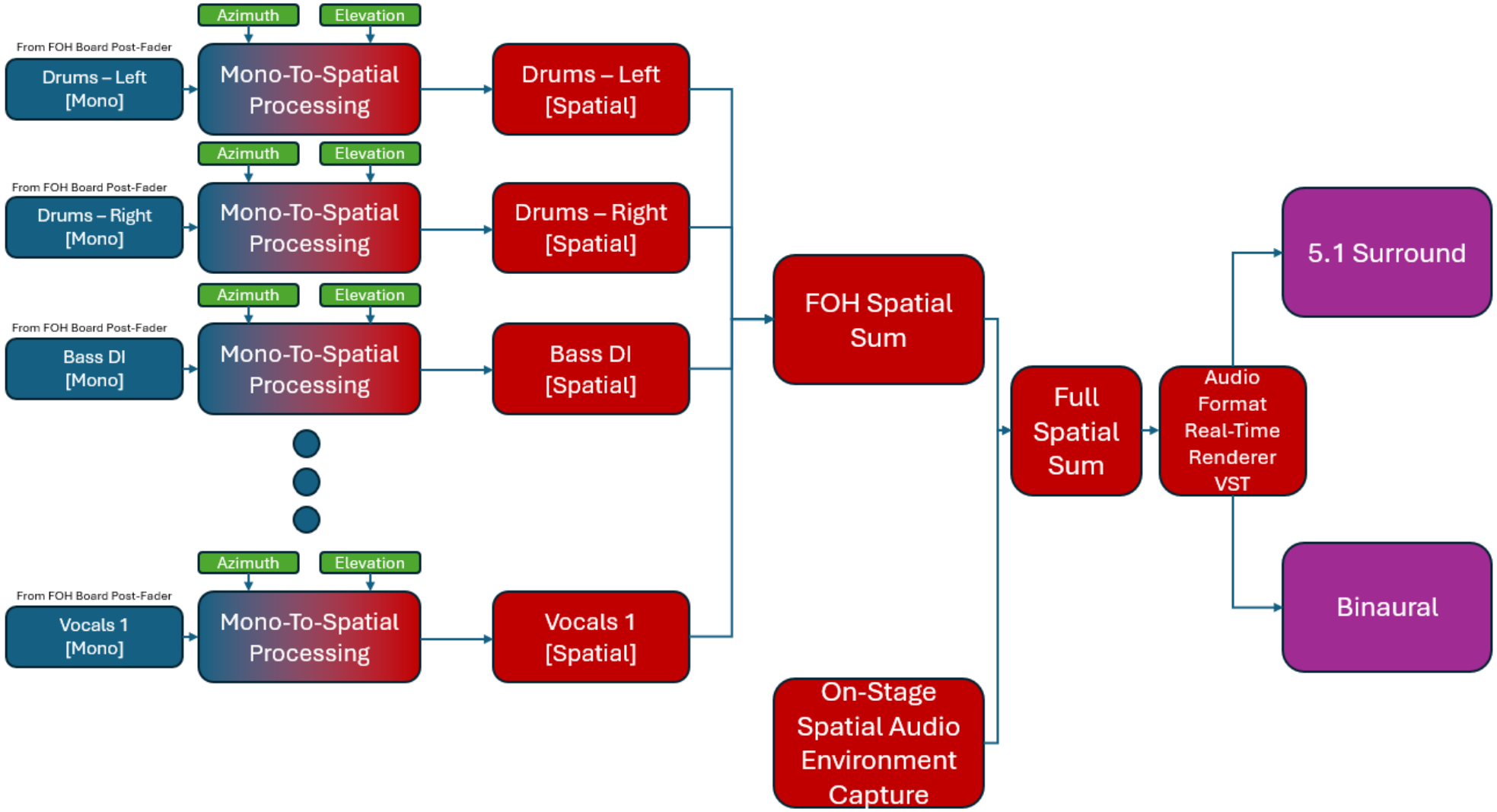
02 **IMMERSIVE CAPTURE CAN CAPTURE EVERYTHING**

Press-pit crowd pops are very intimate; ceiling capture was broad and exciting but included line-array bleed.

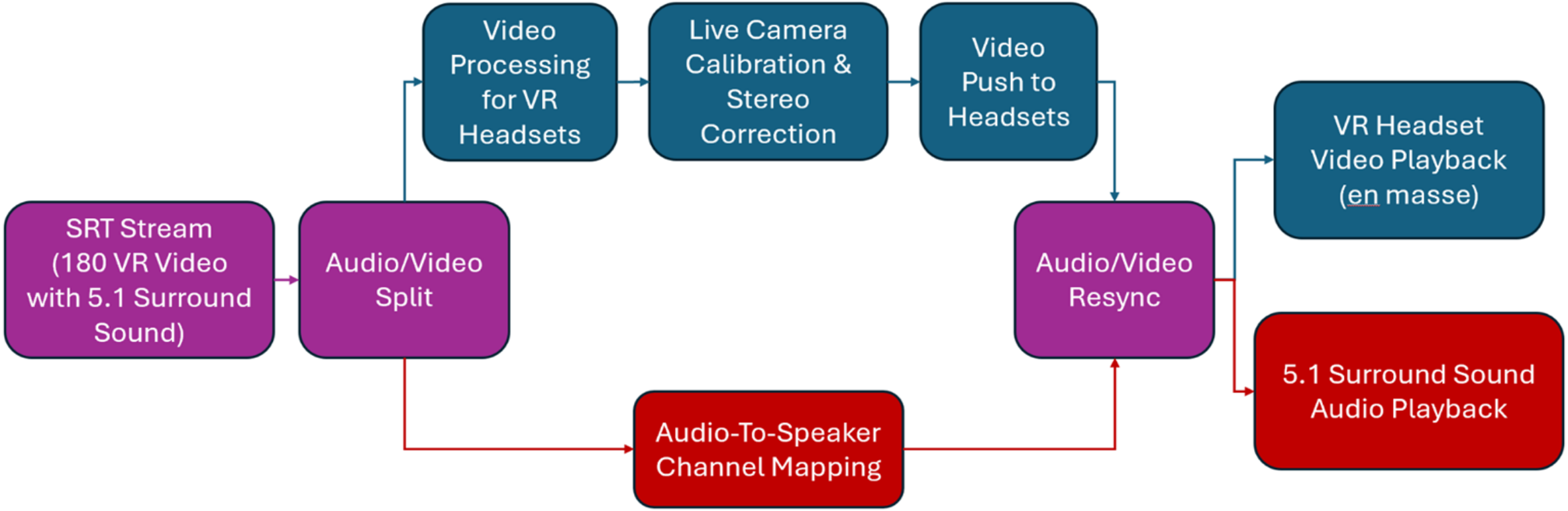
03 **THE FINE LINE BETWEEN REALISM AND EXPECTED PRODUCTION QUALITY**

Most media and playback are NOT realistic; there is still a level of production quality.
Mixing immersive capture with production capture is imperative.

POC CASE STUDY 1: Audio Capture



POC CASE STUDY 1: Playback



POC CASE STUDY 1: Topline learnings

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Successful audio production

- Live capture success
- Positionally dynamic spatial mix
- Distribution of immersive audio in multiple audio formats
- Mixed with 180 video broadcast

Multiple remote participants

- VR headset for visuals
- Roomscale immersive playback for sound.

Issues to consider

- Low light at live events is challenging to compress video
- Quality of headset can limit immersive experience

POC CASE STUDY 1: What's Next?

- Multiple camera positions and transitions controlled live
- Multiple POV Audio Mixes & switching on video POV cuts/transitions
- High speed data transfer capability
- Both for moving video data on-site and for final broadcast transmission
- Avatar two-way presence via AR glasses



POC CASE STUDY 2: The Third Orchestra

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KING'S College LONDON

THE 3RD ORCHESTRA

the harmony of difference

POC CASE STUDY 2: Objectives

Audio - Immersive Audio Capture

- Experimental Spatial Array Microphones
- Live close-mic audio + Shure DCA 901 Array audio
- Audio Six-Degrees-Of-Freedom (6DOF) - free roaming, location-based experience (LBE)

Video - Immersive Video Capture

- Multiple camera positions, Insta360 (x2), Canon R5 (dual-lense), Blackmagic URSA Cine Immersive
- Live encode and distribution

Interactive - Spatial Experience Design

- User Engagement through synchronous movement
- Users impacting the performance through non-verbal cues

POC CASE STUDY 2: Behind the Scenes



POC CASE STUDY 2: The Third Orchestra

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KING'S College LONDON

THE 3RD ORCHESTRA

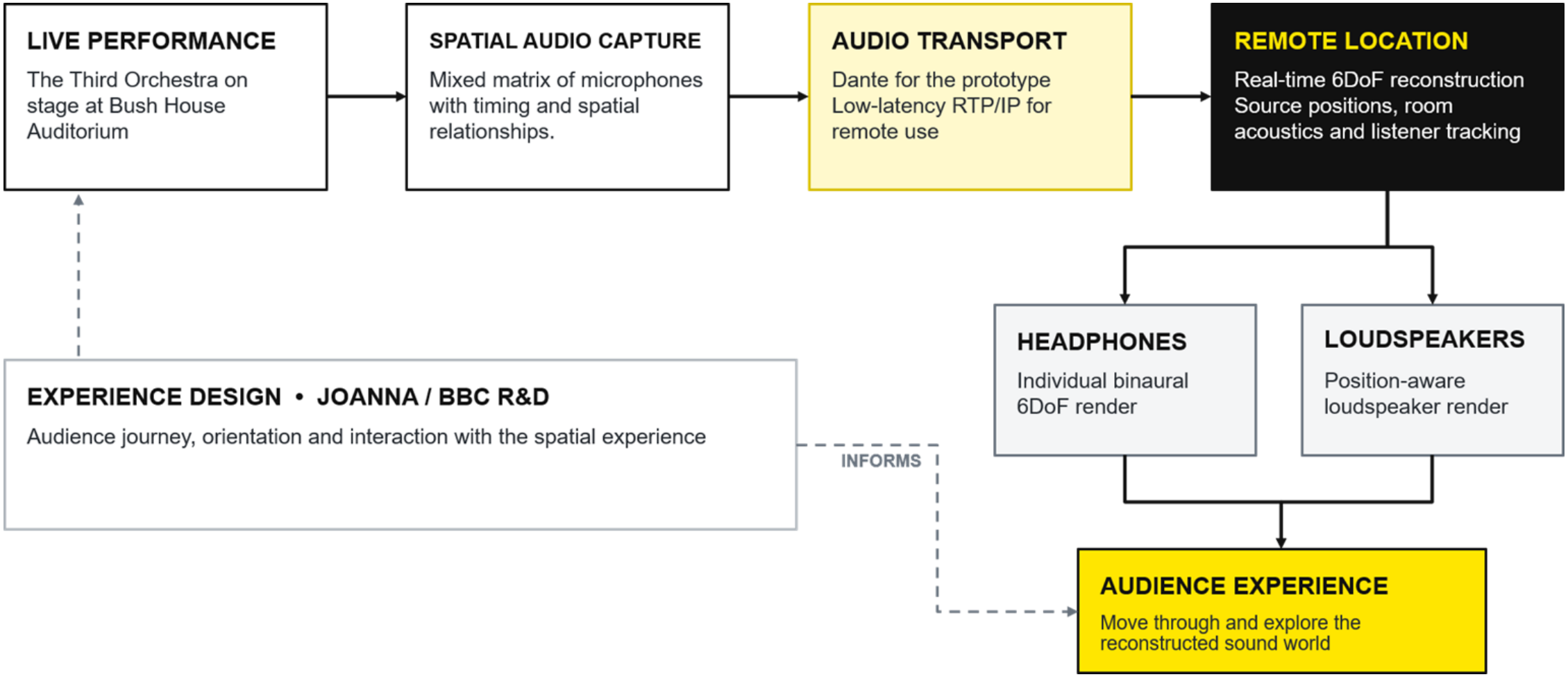
the harmony of difference

POC CASE STUDY 2: 6DOF Audio



POC CASE STUDY 2: 6DOF Architecture

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POC CASE STUDY 2: Results

Audio:

- Live 6DOF Roaming Experience streamed to remote audience and sound reconstructed in real time

Video:

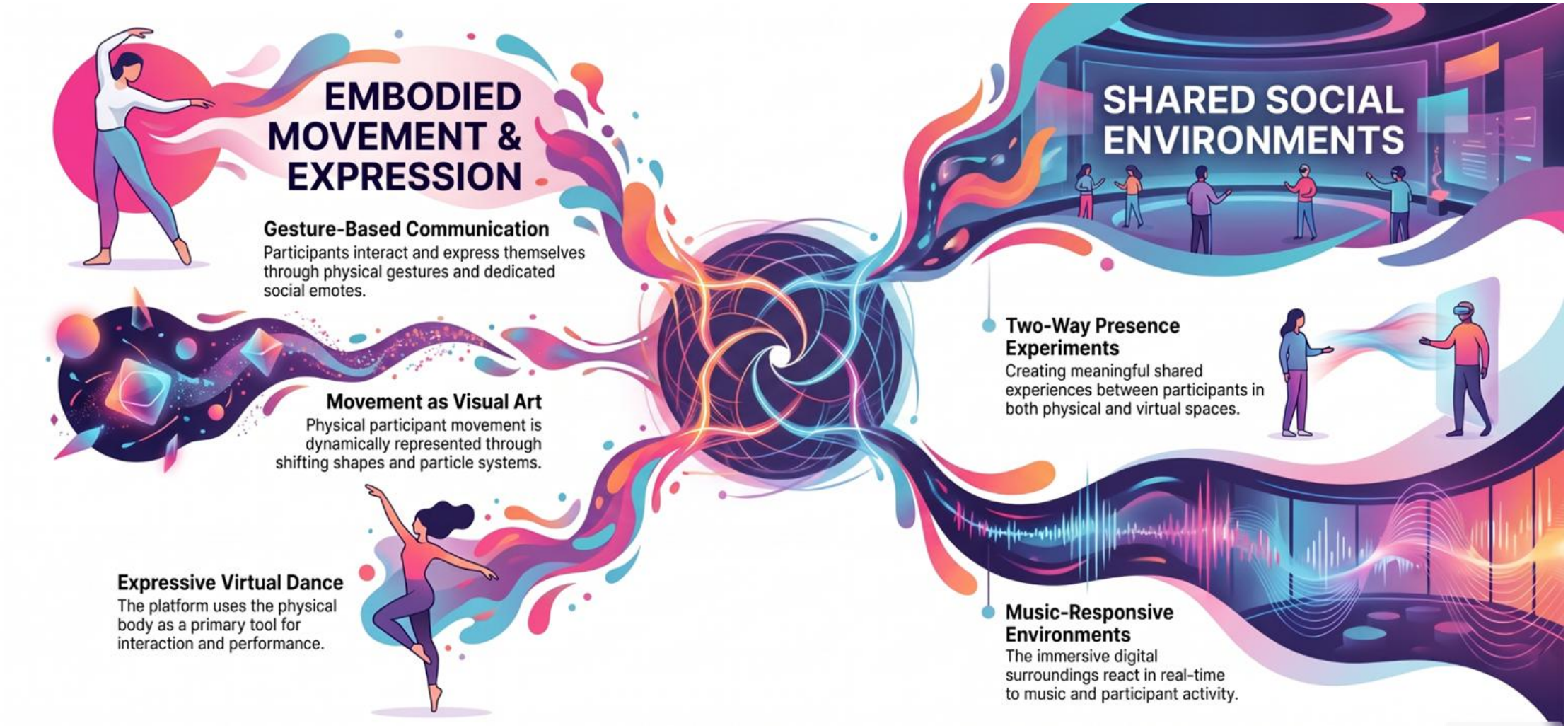
- Live 180 stereo and 360 streamed to remote audience in VR venue
- (NB - 360 cameras do not currently integrate with spatial audio systems)

Interactive:

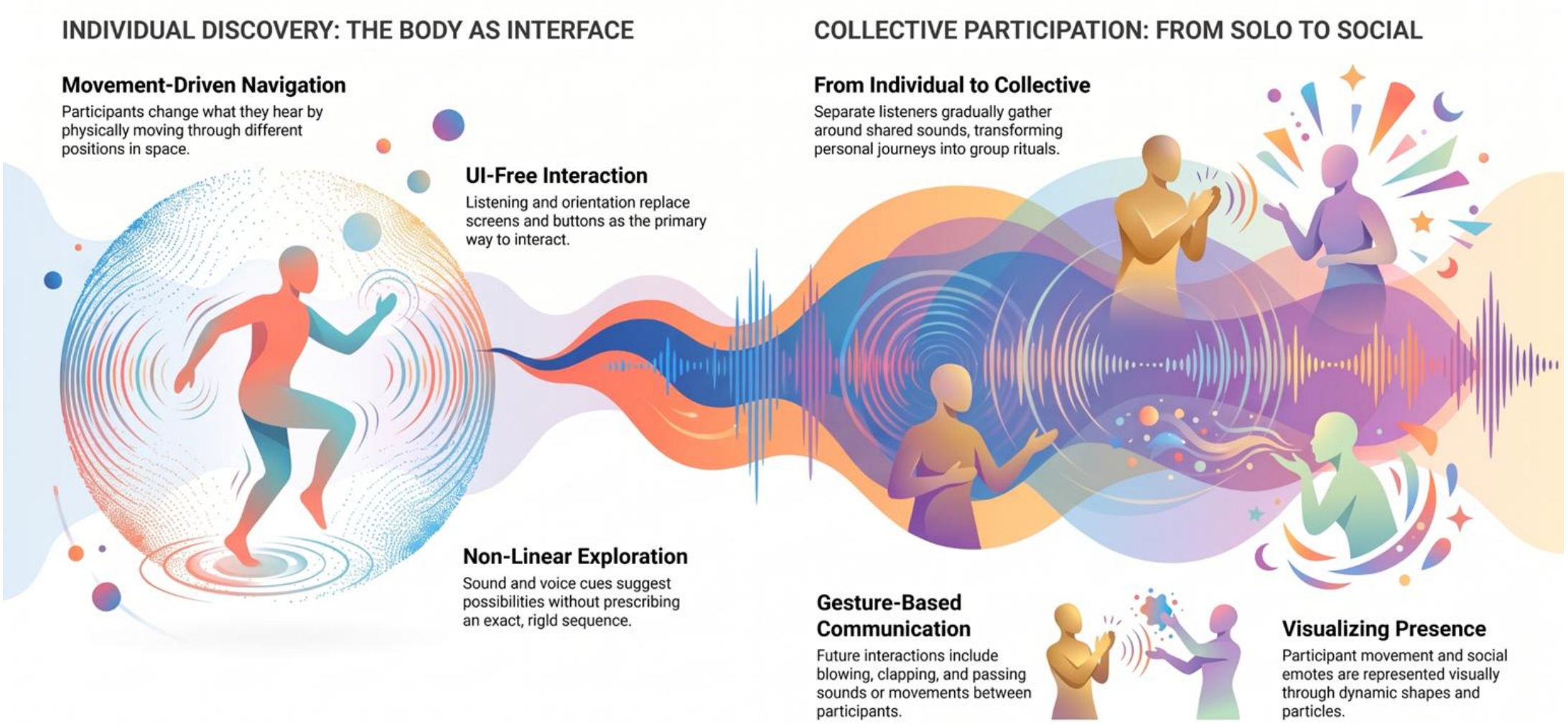
- Embodied and social participation in a space - connecting artists with fans, and fans with each other. Moving from viewing to using the body, sound and space as part of the interaction. Movement changes the experience; sound and voice guide exploration; participants become aware of and interact with others.

POC CASE STUDY 2: Results Pt.2

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POC CASE STUDY 2: What's Next?



POC CASE STUDY 3: The Voice of Holland

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POC CASE STUDY 3: Objectives

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Video -

4D Asset capture - experimental 4D Gaussian Splat capture of the studio and (our own) artist performance to study the impact of live real world conditions
AND the use of the asset for an immersive 3D interactive world.

Interactive -

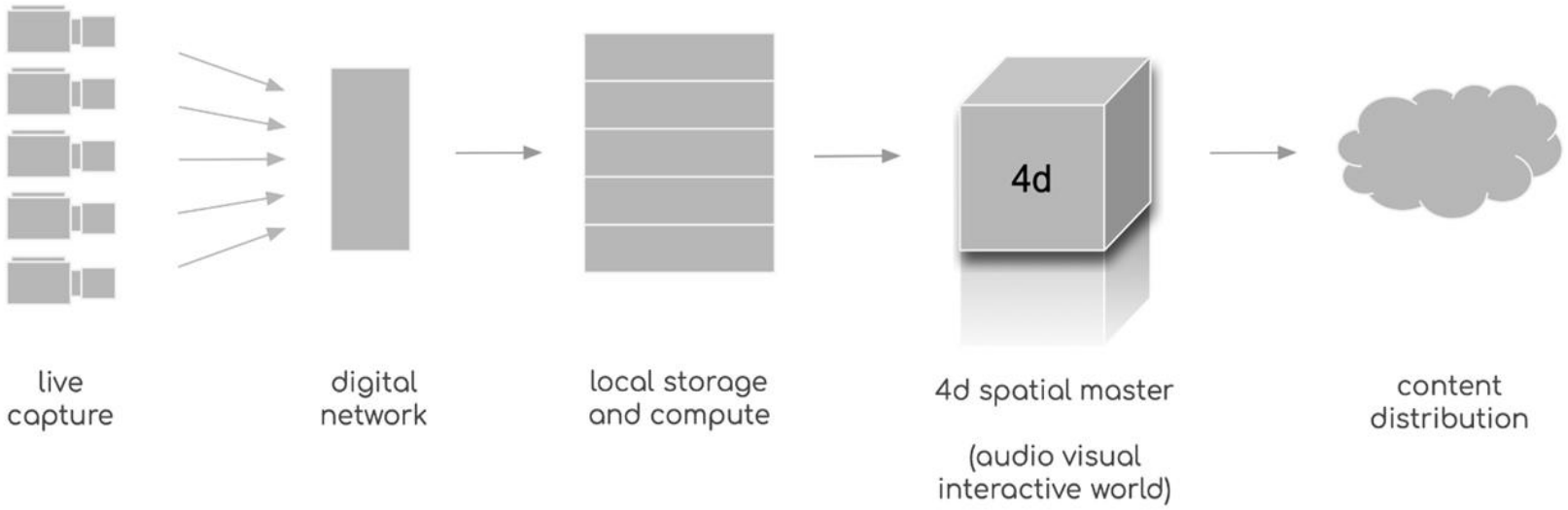
Audience Interactivity Experiments - 180 degree stereoscopic and 360 degree live streaming into a 3D world.

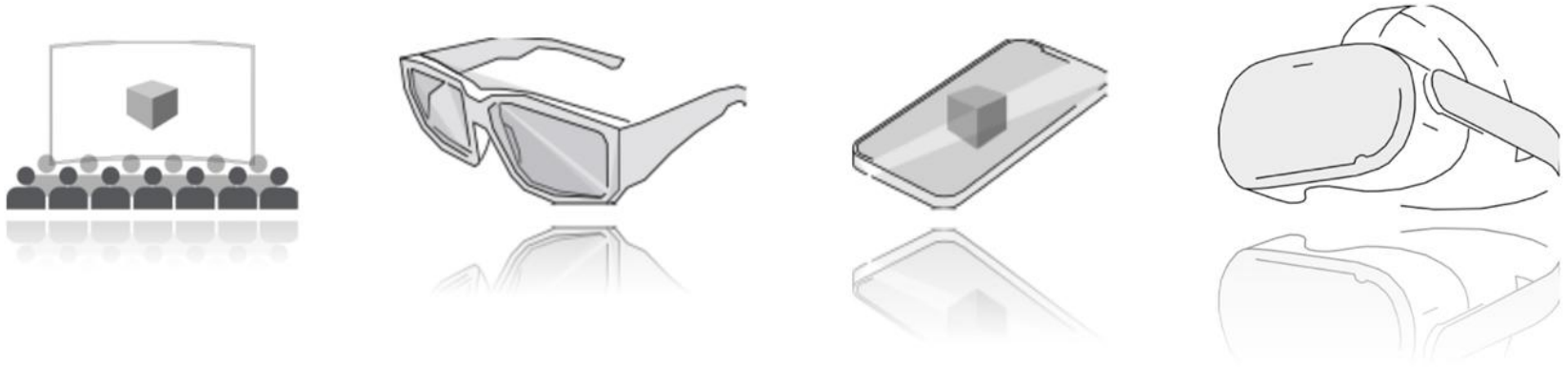
Audio - ”pressed pause”

POC CASE STUDY 3: Highlights



POC CASE STUDY 3: Architecture- 4D Capture





POC CASE STUDY 3: Objectives



"We choose to value the beauty, authenticity and jeopardy of the live human performance."

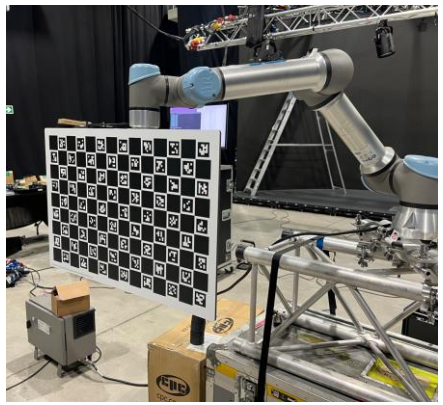
Lee Brooks
CEO Production Park

Production Park

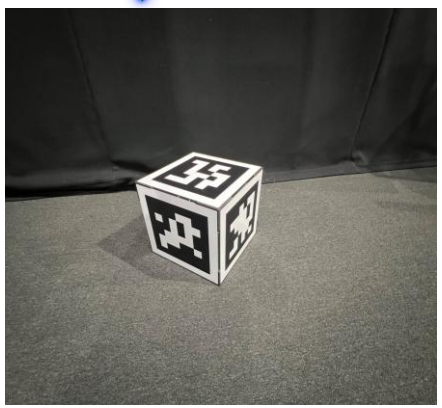
POC CASE STUDY 3: Architecture- 4D Capture

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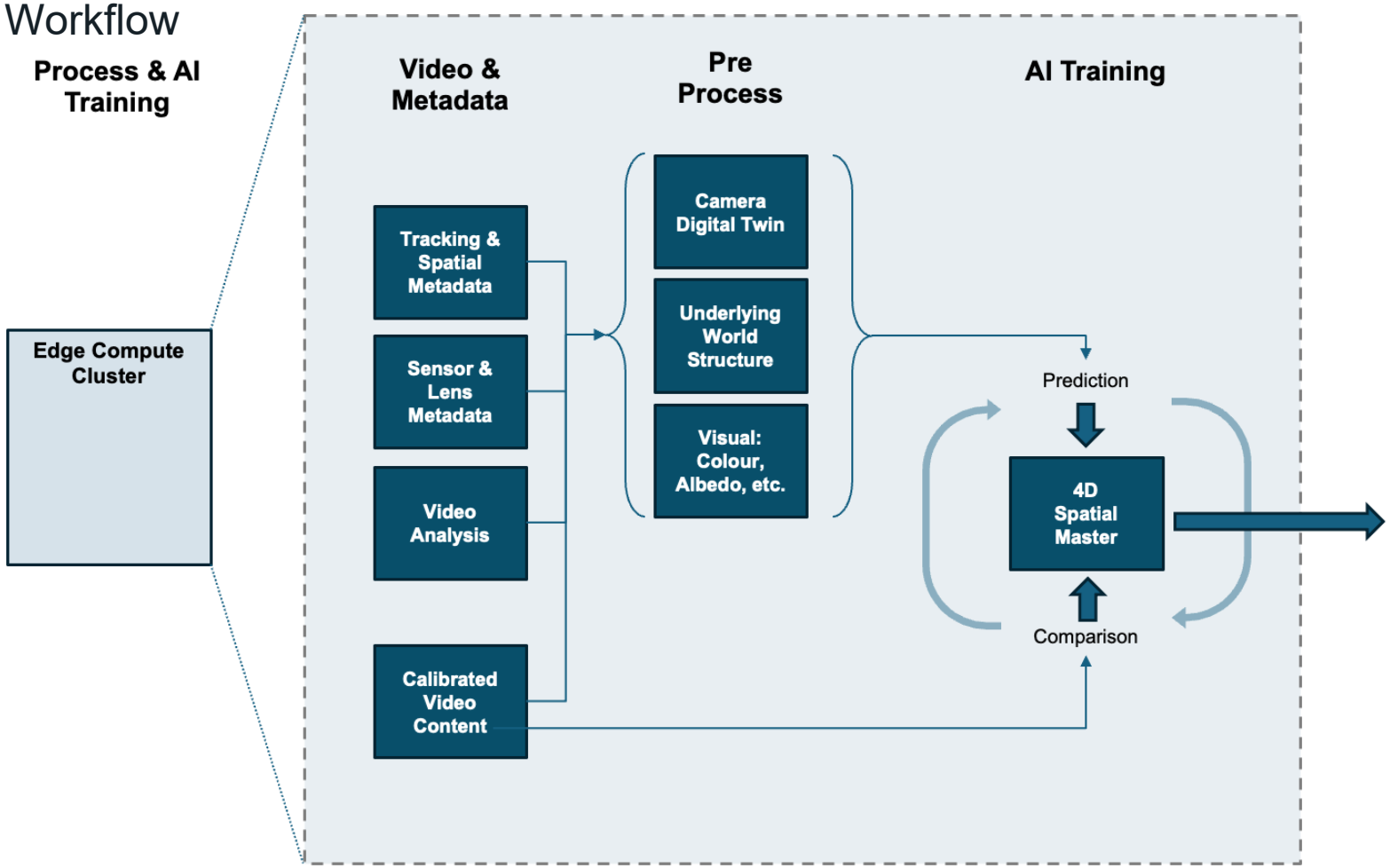




Challenge of taking a data centre and camera lab onset.

POC CASE STUDY 3: Architecture- 4D Capture

AI Detail Workflow



POC CASE STUDY 3: Results - 4D Capture

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A. Robotic automated **calibration** for all sources.

B. Integrating **data-centre** tech into a **gig** environment.

C. Portable **engineer preview** system.

D. The camera Nanosync worked well.

E. Real world conditions challenges:

- ‘unexpected item in the bagging area’
- Vibration impacting continuous calibration.
- Lens flare from unexpected lighting sources.
- ‘Black’ auto segment errors
- Light beams in haze - lidar challenge

"When pursuing live cinematic quality, these are the differences between ‘like being there’ and ‘simply another experience’.”

POC CASE STUDY 3: What's next - 4D Capture

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- Integrate all sources, at the same time.
  - (format, location, intrinsics, sync, etc)
- Full real-time process for live broadcast
- Edge compute with dockerised AI training cluster to achieve horizontal scaling.
- Multi-zone capture.
- 4DC CDN streaming format standardisation.
  - This needs a cross party, open source, working group discussion.

POC CASE STUDY 3: The Voice of Holland

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POC CASE STUDY 3: Highlights - Interactivity

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POC CASE STUDY 3: Results - Interactivity

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A. Successful live transmission of 180 stereoscopic and 360 video to remote audiences.

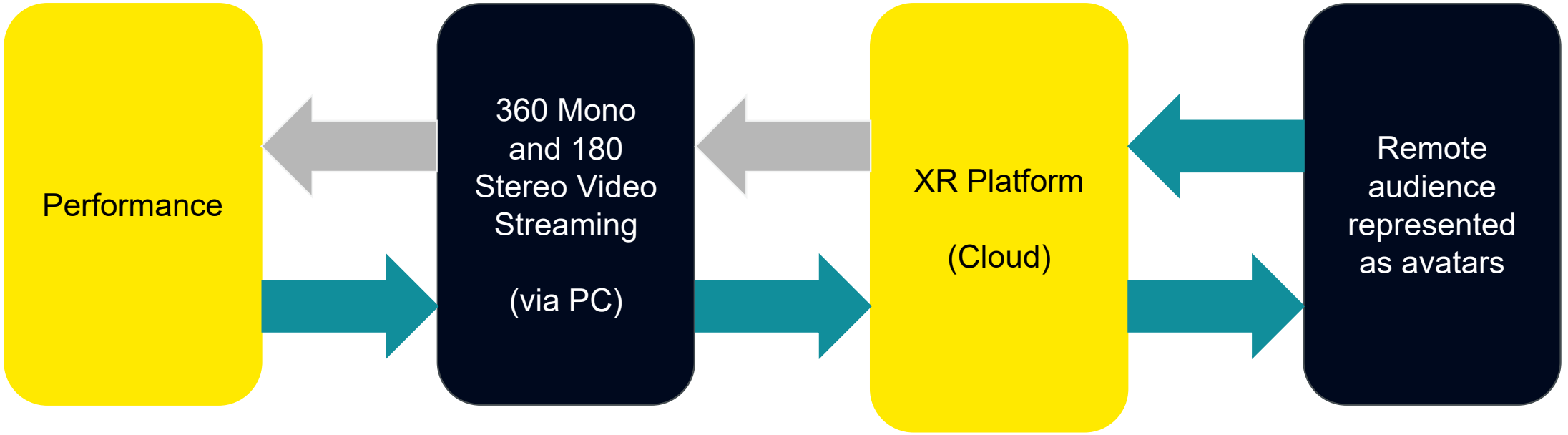
B. On-site audience in Hilversum engaged with remote dancers in London, Los Angeles, Boston and New York.

C. Live-streaming faced latency and bandwidth issues.

D. 360 and 180 stereoscopic perspective seamless switching is a challenge.

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POC CASE STUDY 3: Workflow - Interactivity



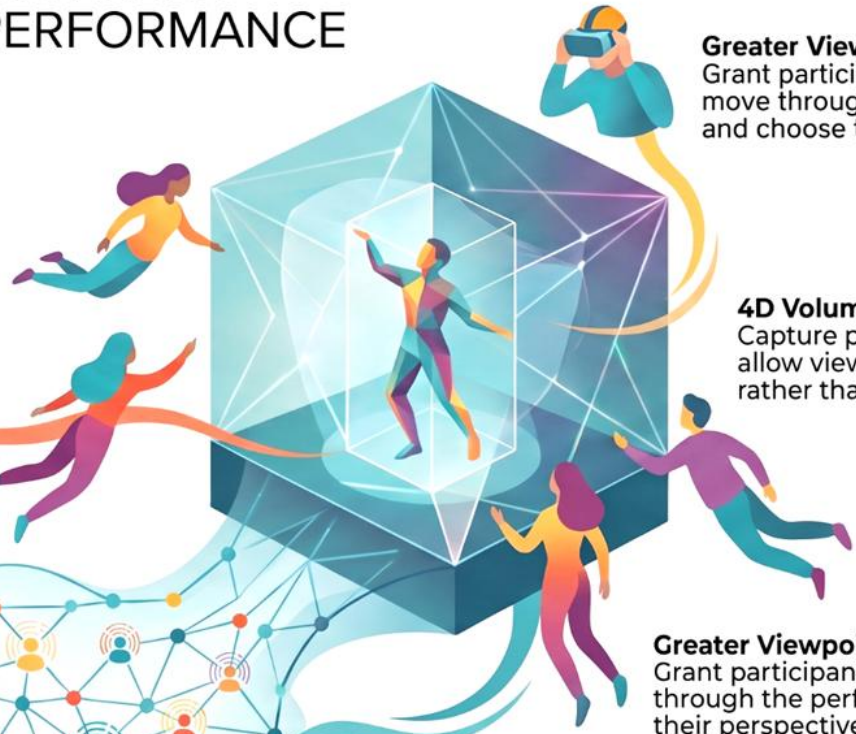
POC CASE STUDY 3: What's Next? - Interactivity

DIMENSIONS OF INTERACTIVITY:
THE FUTURE OF IMMERSIVE PERFORMANCE

SPATIAL & PERSPECTIVE AGENCY



Physical ↔ VR Presence:
Enable two-way presence between a live performer and participants in a virtual environment.



Greater Viewpoint Agency:
Grant participants freedom to move through the performance and choose their perspective.

4D Volumetric Performance:
Capture performers spatially to allow viewing from any angle rather than fixed viewpoints.

SOCIAL & PARTICIPATORY ENGAGEMENT

Voting & Collective Response:
Translate audience behaviors into immersive actions and visualize collective data within the experience.



Greater Viewpoint Agency:
Grant participants freedom to move through the performance and choose their perspective.

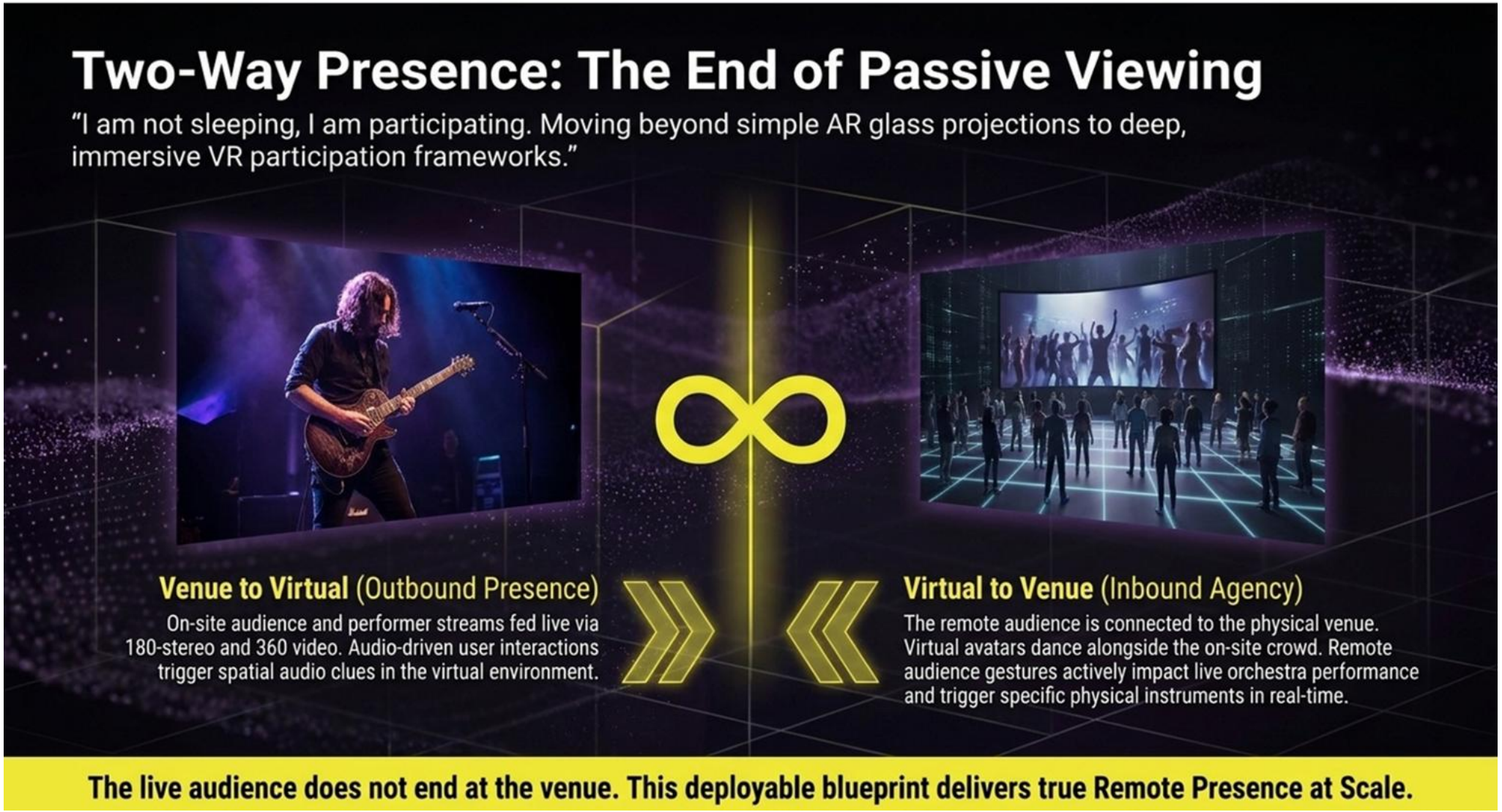
Interaction Shaped by the Event:
Develop interaction mechanics that emerge from specific program contexts and unique audience behaviors.

PART THREE:

THE ENCORE

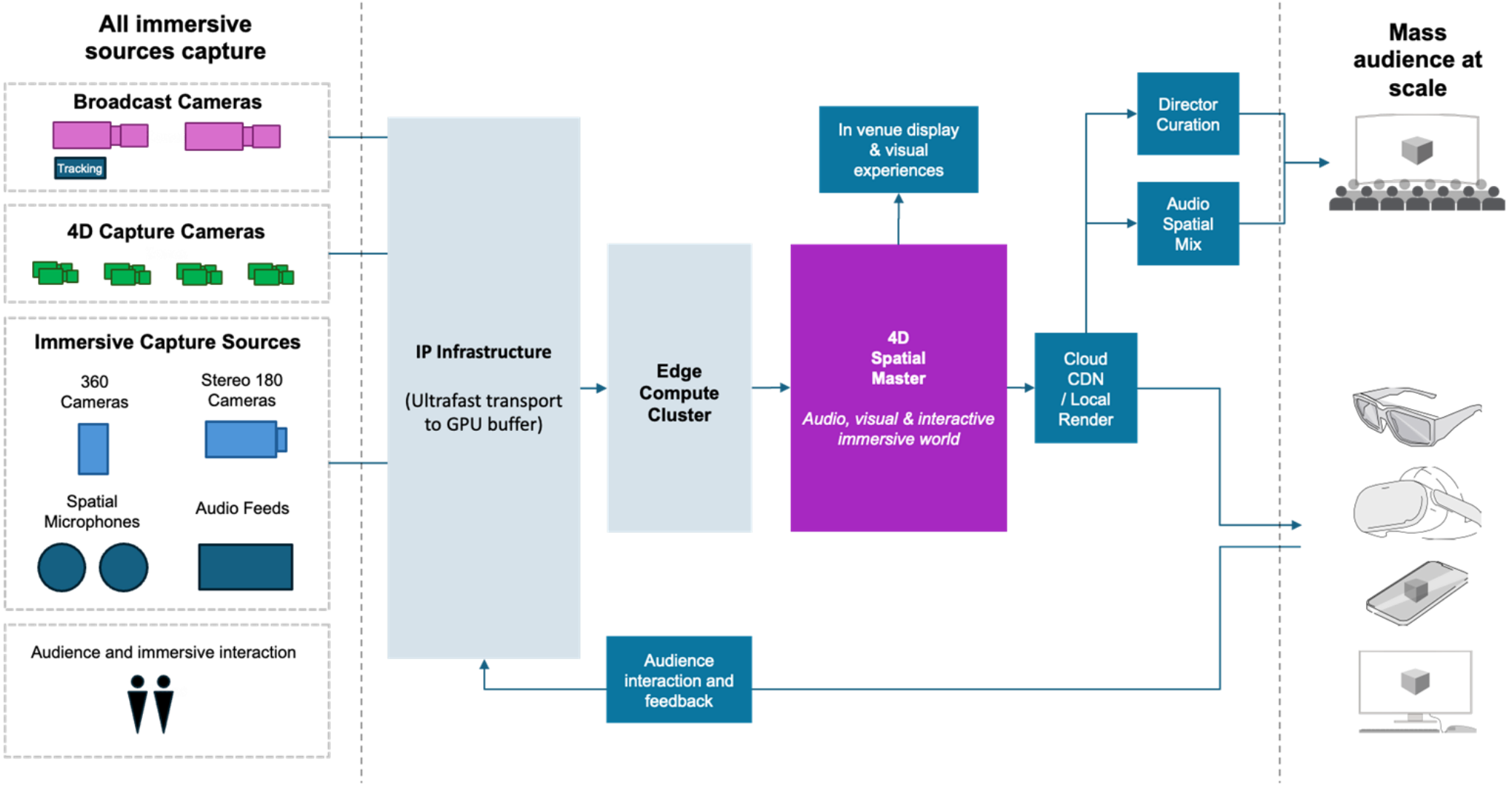
The Dream Immersive Festival

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The Dream Immersive Festival Live Blueprint

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Key Learnings: Audio, Video & Interactivity #IBCAccelerators2026

1. On-location/on-site constraints (eg: not in a controlled environment / or lab!)
2. The integration of all sources into a streamable spatial master is not there *yet!*
3. Data centres (edge compute) are needed **at** future venues
4. …as well as cloud connectivity: capture, processing, CDN, users (at every stage!)
5. Immersive can't be an 'add-on', it needs integration & streamlining for all departments..

In summary…

*"We're only **2-3 years away** from a full audio/visual/interactive **4D spatial master** being a reality, this needs **collaborative standards** to work."*

*"Edge compute' **data centres are coming** to our **live events** venues. Standardised **sync**, **bandwidth** and **latency** are needed for high profile live venues"*

*"We need to start **building interactivity** and **integration** into our events. 'lighting programming' & 'sound checks' exist. Now we need to **add an 'immersive check'**."*

Live Demos at our POD at The Accelerator Zone- Hall 14

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MONTREUX JAZZ FESTIVAL ● Montreux Live Experience - VR immersive Audio/Video ● Interactive 3D world
THE VOICE of HOLLAND ● Audience Interaction experience
THE THIRD ORCHESTRA ● 6DoF/spatial object audio presentation on the soundbar ● Audience interaction



IFeL: Immersive Festival Live - Remote Presence at Scale

THANK YOU AMSTERDAM!

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