

# RHYTHM

## Real-time HYbrid Test for Harmonic Music

### INTRODUCTION

Building on the success of the HYMNE project, RHYTHM explores how immersive technologies can enhance hybrid music performances. The project investigates the impact of visual fidelity and interactivity on fan engagement using real-time volumetric streaming, adaptive formats, and spatial audio within live concert settings.



Fig. 1: Holosys Live volumetric video (≈10s delay)

### OBJECTIVE

To develop and evaluate a scalable, real-time hybrid concert model that:

- Enables artist-audience interaction through live volumetric streaming
- Compares fidelity and latency trade-offs in immersive experiences
- Extends insights from HYMNE for broader application across venues and formats

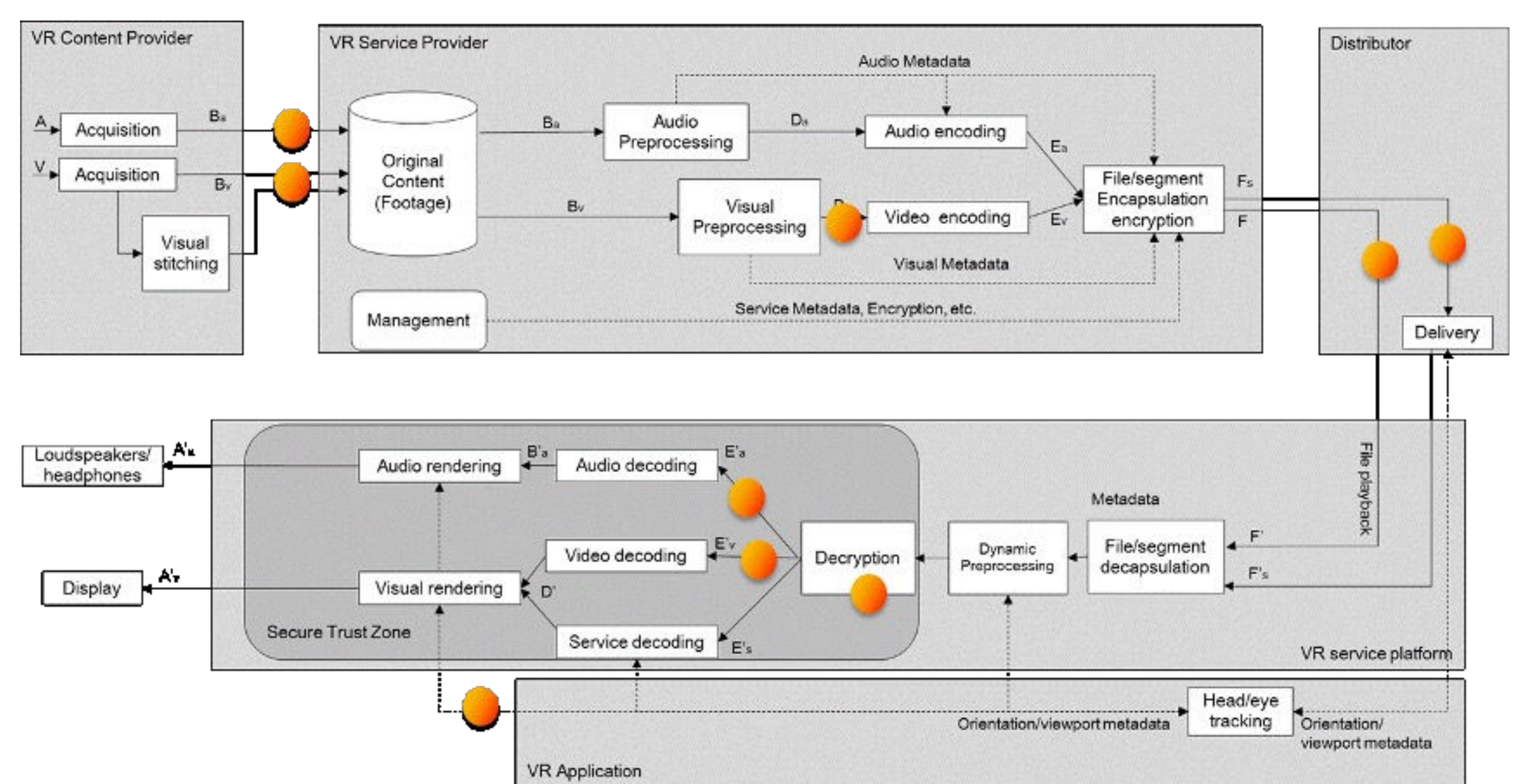


Fig. 2: Technical architecture live volumetric video.

### METHODOLOGY

- Redesign of WITT's 'Insomnia' performance using SPIRIT's point-cloud and mesh-based streaming tools.
- Engagement assessment using ITC-SOPI and SPIRIT QoE tools.
- Use of testbeds in Bristol and the volumetric capture studio in Eindhoven to simulate multi-user scalability and latency thresholds.
- Comparative streaming format trials: pre-recorded, mesh, point-cloud
- Live showcase with public audience feedback (planned)

### FUTURE GOALS

- Demonstrate sub-50 ms latency with SPIRIT point-cloud streaming
- Validate hybrid concert scalability with over 20 concurrent users
- Publish results on the role of interactivity in audience engagement
- Define guidelines for low-cost, accessible immersive performances
- Explore broader application in gaming, education, and healthcare

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