FIJISHI

Immersive Telepresence & Holographic Communication.

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Case Study: Immersive Telepresence & Holographic Communication

Industry: Remote Collaboration, Entertainment, Education

The Challenge: Current telepresence solutions lack true immersion due to latency, limited bandwidth, and an inability to accurately render dynamic, real-time 3D environments. Achieving realistic holographic communication requires not just high throughput but also precise, instantaneous manipulation of the wireless medium to enable multi-directional light field transmission and interaction, a capability beyond today's networks.

The FiRIS Solution: A leading tech company developing next-generation immersive platforms partnered with a telecom provider deploying FiRIS to create a "holographic communication zone." FiRIS was used to dynamically sculpt the wireless environment in meeting rooms and entertainment venues.

- **Quantum-cognitive "Synapse" for Ubiquitous Environmental Awareness:**
    - **Sub-Nyquist Sensing & Quantum-Inspired Inference:** FiRIS rapidly and efficiently sensed the dynamic changes in the physical environment (e.g., people moving, objects in the room), gathering vast amounts of contextual data with minimal overhead.
    - **Quantum-Inspired Annealing for CSI Reconstruction:** This allowed FiRIS to reconstruct highly precise channel state information (CSI) in real-time, critical for directing holographic light fields and ensuring pixel-perfect rendering.
    - **Multi-Modal Data Fusion:** Combined visual data from holographic cameras, audio data, and network performance metrics to create a unified, deep contextual understanding of the immersive session.
    - **Anticipatory Propagation Modeling:** FiRIS predicted how light fields would propagate and interact with the environment, proactively optimizing the wireless medium to maintain holographic fidelity as users moved.
- **Self-architecting & Intent-driven “Omni-Symphony” orchestration:**
    - **Service-Centric Intent-Based Control:** The holographic application would "request" an "immersive light-field channel" with specific latency and bandwidth parameters, and FiRIS would autonomously configure the network and RIS elements to provide it.

Impact and Benefits:

- **True Immersive Telepresence:** Enabled lifelike holographic interactions, blurring the lines between physical and virtual presence.
- **Unprecedented QoE for Immersive Applications:** Eliminated motion sickness, lag, and visual artifacts commonly associated with current AR/VR.
- **New Revenue Streams:** Opened up new markets for holographic concerts, remote surgical training, collaborative design, and ultra-realistic remote education.
- **Reduced Bandwidth Overhead:** Intelligent sculpting and optimization meant less data needed to be transmitted for the same visual quality.

- **Competitive Advantage:** Positioned the telecom provider as a leader in enabling next-generation immersive experiences.

Key FiRIS Features Highlighted:

- Quantum-cognitive "Synapse" (Sub-Nyquist Sensing, Quantum-Inspired Inference, Quantum-Inspired Annealing for CSI Reconstruction, Multi-Modal Data Fusion, Anticipatory Propagation Modeling)
- Self-architecting & Intent-driven "Omni-Symphony" (Service-Centric Intent-Based Control).