

HORIZON EUROPE RIA

VIVID-XR

Visual & Perceptual Core for Virtual Worlds

LEAD SCIENTIST

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Target: HORIZON-CL4-2027-04-HUMAN-01

Focus: Energy-efficient, Human-centric XR Hardware



Physically-Grounded Realism

Enabling long-term wearable comfort for Virtual Worlds.



Solve Visual Fatigue

Hardware-level depth cues to eliminate Vergence-Accommodation Conflict (VAC).



Mimic Human Perception

Creating a 'Perceptual Grounding' system for realistic, life-like immersion.



Human-Centric Design

Focus on extreme miniaturization and sustained user reliability for wearables.

OPTICAL CORE



"Building the hardware bridge between physical reality and high-fidelity virtual worlds."

NEXT-GEN HARDWARE VISION

Proposed Contribution: Visual Hardware

Innovative, energy-efficient, and wearable XR (TRL 3 → 5)



Innovative Optics

Adaptive varifocal lenses and physical depth cue components.



Gaze-Aware Driving

Foveated display control to minimize power consumption.



Extreme Miniaturization

Optimized hardware for mobile, untethered HMD systems.



LEAD DEVELOPMENT

KHU Core Contribution

Leading development of **low-power visual hardware** and system integration for high-efficiency wearable XR devices.

TRL 5 TARGET

KHU: Specialized Infrastructure

Dept. of Information Display, Kyung Hee University



Convergence Display System Lab

Focusing on perceptually-grounded HMD and vision science.



Optics & Driving Electronics

Adaptive lens control and gaze-aware power efficiency.



Full-Cycle Research

From panel design to circuit and human factor validation.



Core Technical Strength

World-class expertise in foveated technologies and visual comfort optimization for next-generation XR

Research Focus 2026

The Path to TRL 5: Components & Validation

Integrated Roadmap for Virtual Worlds Hardware



PHASE 01 TRL 3: Design

Modeling energy-efficient varifocal components and foveated algorithms.

PHASE 02 TRL 4: Prototype

Integration of optical systems with intelligent driving electronics.

GOAL TRL 5: Validation

Demonstrating hardware reliability in industrial and societal pilots.



PROPOSED WP LEAD / CO-LEAD

KHU Lead WP: Perceptually Grounded, Low-Power Visual Hardware

PARTNERSHIP PROPOSAL

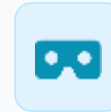
Let's Build the Core Together

Seeking EU Partners for HORIZON-CL4-2027-04-HUMAN-01



EU Coordinator

Experienced in Horizon Europe Cluster 4 RIA consortium management and reporting.



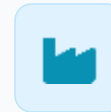
System Integrators

XR headset OEMs and hardware design firms targeting next-gen visual performance.



Tech Partners

Experts in Photonics, Microdisplays, Haptics, and low-latency Sensor fusion.



Deployment & Pilots

Industrial pilot owners, SSH experts, and Standardisation bodies (ISO/IEC).

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"Let's define the visual core of Europe's next Virtual Worlds."