

Europe launches VICTOR-XR to make virtual worlds safer, smarter and connected to reality

New Horizon Europe project brings together 16 organisations to transform manufacturing, human-robot collaboration and rehabilitation through next-generation Extended Reality

Milan (IT), 20 October 2026 – Virtual worlds are rapidly moving beyond gaming and entertainment into factories, hospitals and training environments. Yet one **major challenge** remains: **ensuring that** what happens in a **virtual environment** accurately **reflects** what is happening in **the real world**. To address this challenge, the European research initiative **VICTOR-XR**, launched under Horizon Europe’s Cluster 4 – Digital, Industry and Space, within the HORIZON-CL4-2025-03-HUMAN-14 topic, brings together 16 partners from seven countries to develop a new generation of intelligent, human-centric Extended Reality (XR) technologies.



Over the next three years, VICTOR-XR will create technologies that continuously synchronise physical environments with their virtual counterparts using **Digital Twins, multimodal sensing, and AI-powered cognitive assistants**. By combining **vision, speech, gaze tracking, biosignals** and **haptic feedback**, the project aims to deliver immersive experiences that are more realistic, more responsive and ultimately more trustworthy. At the heart of the project is a new concept known as **Virtual-Physical Consistency**, a framework designed to ensure that **virtual worlds remain** accurately **aligned with real-world processes, people** and **environments in real time**. The technology will enable systems to **identify discrepancies, understand user actions** and **provide intelligent assistance** through adaptive **XR interfaces** and **AI co-pilots**.



Three real-world challenges, three real-world pilots

Rather than developing technology in isolation, VICTOR-XR will validate its innovations in three large-scale pilot environments where accuracy, safety and human performance are critical.

Milano (IT), 1,2 October 2026
VICTOR-XR 2nd in-person consortium meeting

Reinventing manufacturing through digital-first validation

In the automotive sector, VICTOR-XR will help engineers and operators interact with digital twins of products and production processes before physical prototypes exist. By identifying potential assembly and design issues earlier, manufacturers can reduce errors, shorten validation cycles and improve productivity while creating new immersive training opportunities for workers.

Making human-robot collaboration safer and more intuitive

In advanced manufacturing environments, workers increasingly collaborate with robots. VICTOR-XR will create XR interfaces that visualise robot intentions, monitor operator actions, and deliver adaptive guidance in real time. The goal is to improve productivity while increasing safety, trust and ergonomics within collaborative workspaces.

Bringing personalised rehabilitation closer to patients

In healthcare, the project will support rehabilitation programmes for people with chronic musculoskeletal conditions. Through immersive XR experiences, digital twins and empathetic AI co-pilots, patients will receive personalised guidance and feedback, while clinicians gain new tools to monitor progress and adapt therapies remotely.

Human-centred technology by design

As AI and virtual worlds become increasingly integrated into everyday life, VICTOR-XR places ethics, transparency and inclusion at the centre of its approach. Privacy, accessibility, explainability and compliance with European regulatory frameworks will be embedded across all developments, ensuring that technological innovation remains aligned with European values. The project also aims to support Europe's strategic ambitions in Virtual Worlds and Industry 5.0 by contributing to standards development, promoting interoperability and creating new XR-based learning and training pathways that can accelerate adoption across sectors. "Virtual worlds can only become truly useful when they remain connected to reality. Through VICTOR-XR, we are building technologies that help people, machines and digital systems work together more effectively, safely and intelligently." By combining artificial intelligence, digital twins, and immersive technologies, VICTOR-XR aims to show how virtual worlds can create measurable benefits for industry, healthcare professionals, and citizens alike, paving the way for a more human-centric digital future for Europe.

Discover more:
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