

OPENVERSE – OPEN and co-created virtual worlds for Europe

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Abstract

Europe is advocating for the development of open, inclusive, and ethical virtual worlds that emphasise the technological sovereignty of the EU industry. This vision aims to deliver benefits such as enhanced accessibility, increased freedom and control, reduced entry barriers, and a more equitable distribution of resources. It places a premium on interoperability, privacy, security, and data ownership to promote innovation, creativity, and social benefits. The EU-funded OPENVERSE project is dedicated to creating a knowledge base on the European virtual worlds. It will establish a community of stakeholders, test user co-creation and extended reality (XR), explore challenges, and generate standards, technology roadmaps, and recommendations. These outputs are intended to guide the future establishment of the Open virtual worlds concept in Europe and globally.

Keywords

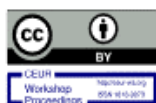
Human-centric virtual worlds, open virtual worlds, co-created virtual worlds, technology foresight, research and policy roadmap, standardization, technology watch, market place, ethics, IPR and governance model

1. Mission and vision

The Virtual worlds concept, as for itself, is not new, as it has been used for half a century in science fiction, nearly 30 years in video games, and more than 15 years ago in its first full-fledged instantiation, Second Life. However, the level of performance and technological maturity of its building blocks have reached a threshold that allows revisiting and deploying its innovative promise with renewed expectations. How about social media then? Virtual worlds themselves build on a capacity of facilitated interaction as provided by social computing, and in particular social media networks and collaborative software, as well as the technologies developed in the gaming industry. Although the notion of extended reality (or XR) captures most of these instantiations, no single concept seems completely adequate to fully describe the totality of their functionalities and forms of digital treatment. In addition to technologies, several supportive capacities are necessary to reach the needed level of performance to make XR developments effective: fast and low latency communication protocols, heavy-duty real-time calculation power, image processing, light-beam and morphological rendering, avatars, holograms, 3D scanning, Artificial Intelligence, IoT devices, drones, and geolocation services, just to mention a few. The development of such technologies has however been far from linear (remember the Google glass difficulties!) and despite important investments from dominant players, the only success stories have come from developments serving the needs of industries like videogames, automotive, smart surgery, sports, and of course, as pioneers for many innovations, the military. Recently, new combinations emerge to open up real-life functional services, like the use of non-fungible tokens (NFT) for Virtual worlds. Most of the XR technologies are mature today, only with the major exception of avatars and Virtual worlds, for which a 10- or 15-year time horizon can be predicted before they reach TRL 8-9. As a general comment, the challenge today is not what we are technologically capable of putting up, but what kind of concrete problems we are capable of handling better than ever before and how:

1. Higher accessibility, greater freedom, and equitable resource distribution: Virtual worlds accessible to everyone, regardless of financial means or expertise. Open standards and free technology make participation easier, giving users more control and influence over development. Proprietary platforms are costly and create barriers, whereas open, democratic virtual worlds ensure fair resource distribution and user-centric evolution.
2. Interoperability, privacy, and data ownership: Open virtual worlds allow seamless movement between spaces and collaborative development, enhancing innovation. They offer greater transparency, security, and user control over data, preventing corporate monopolization and data exploitation.
3. Innovation, creativity, and social benefits: Open virtual worlds foster collaboration, encouraging innovation and creativity. Freely available technology prevents market dominance by major players, creating a dynamic ecosystem. These worlds promote social interaction, education, creativity, and civic engagement, breaking cultural barriers and building informed communities.

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Key objectives

The overarching aim of OPENVERSE is to contribute to laying the foundations of such a European Virtual worlds by establishing a knowledge base on it, setting up and animating a community of stakeholders, testing a methodology that combines user co-creation and XR in real-world cases of industrial and societal relevance, and producing a research portfolio as well as a technology and policy roadmap and recommendations to guide the future establishment of the Open Virtual worlds concept in Europe and worldwide.

Specific objectives include:

- Perform an ex-ante and ex-post analysis of the feasibility and sustainability of the European Virtual worlds, accompanied by a series of measures for outreach and impact generation.
- Analyse the ethical, legal, and socio-economic conditions and requirements of a European Open and Human-centric Virtual worlds concept, including: a) a foundational overview of current Virtual worlds trends and their emerging potentials, b) the identification of suitable IPR and governance models based on free and open source principles, and c) the delivery of both an original demonstration case on Virtual worlds enabled robotics as well as an exploratory study on the potential issues related to the user perspective within existing and upcoming Virtual worlds environments.
- Create and provide useful, real-world use cases for the Virtual worlds, concentrating on sector-specific applications that show stakeholder benefits and value in a measurable way. This entails recognizing and solving specific issues, demands, and possibilities that exist within diverse industry sectors and developing specialized. Virtual worlds solutions that can be easily incorporated into current workflows and procedures. This use case-focused approach will also generate reflections on the skill gaps to be overcome to boost the Virtual worlds uptake.
- Enable and facilitate exchange, dialogue and mutual learning within the community of stakeholders, engaging individuals, groups and organisations from the worlds of industry, informal and non-formal education, research, innovation, creativity, business, as well as policymakers and more widely citizens, in coordinated relevant project processes including the implementation of cross-fertilisation, knowledge transfer and capacity building initiatives.
- Promote interdisciplinary cooperation of specialists from various sectors, including robotics, computer science, education, psychology, sociology, and design, in order to comprehensively address the opportunities and difficulties posed by the Virtual worlds. This will foster the exchange of information, resources, and best practices while preserving an open environment.
- Collaborate with other initiatives to consider Virtual worlds as part of their roadmaps, align with each other, generate and discuss requirements, and facilitate alignment and implementation actions.
- Perform technological analyses and forecasts and contribute to standards, by establishing a technology watch of the Virtual worlds related technologies and the technological forecast for the Open and Human Centric Virtual worlds in EU, setting out recommendations on how to best contribute to industry standards, as well as developing real life use cases with Virtual worlds community of developers.
- Support the constituency of an open human centric Virtual worlds' innovation portfolio for technology mapping and cross fertilisation, including the establishment of a technology watch, a project marketplace and analysis of best practices.
- Synthesise the results of all above work, in order to develop and deliver the OPENVERSE Roadmap for an open and co-created Virtual worlds, proposing concrete strategies and recommendations for future research and policy actions in relevant EU research and policy domains as well as guidelines for all key stakeholders in formats directly usable.

3. Key results

Specific exploitable assets of the project will be:

- 1) Handbook of cocreation methodologies complete with the mixed reality repository of use cases;
- 2) The OPENVERSE Observatory, containing the OPENVERSE watch and taxonomy, the OPENVERSE Marketplace of opportunities, a repository of policies and projects, and co-creation use cases;
- 3) The OPENVERSE roadmap to be available in the observatory as an interactive web tool;
- 4) Results and methodology from Technology Foresight and research on IPR and Governance Models, Ethical and legal requirements elicitation;
- 5) Results and methodology from the demonstration case on Virtual worlds-Enabled Robotics;
- 6) Results and methodology from the on exploratory study existing Virtual worlds environments;
- 7) Input to the redefinition of industry standards. Along the same line, the consortium will devise a path to the sustainability of the initiative designed to keep all the services, products and tools alive after the end of the funding cycle, easy to find and reusable for the actors involved in the development of the Virtual worlds. Concretely, the consortium will explore the possibility of establishing a think tank collecting the legacy of the project.