Virtual worlds (metaverses)

The EU has started reflecting on its vision for emerging virtual worlds (metaverses) and providing funding opportunities to develop these worlds. The aim is to ensure that people are protected in virtual worlds and that EU businesses, in particular SMEs, are not driven out of competition.

Introduction

Boosted by technological advances, virtual worlds (also referred to as metaverses) are becoming more prominent globally as well as in the EU. These worlds (which are in different stages of maturity) offer real-time, immersive and persistent environments that blend physical and virtual elements in various areas like manufacturing, medicine, education, entertainment, commerce, and the public and military sectors. Virtual worlds have the potential to change the way we work, shop, learn, engage and entertain on the internet.

There is no uniform definition of 'virtual worlds' or 'metaverse(s)'. Both terms are still in use (in the singular and the plural), often interchangeably, although the European Commission seems to use the term 'virtual worlds' more often. In an earlier briefing, the European Parliamentary Research Service described a metaverse as 'an immersive and constant virtual 3D world where people interact by means of an avatar to carry out a wide range of activities'. In July 2023, the Centre on Regulation in Europe (CERRE) provided an overview of existing definitions and suggested their own definition of a virtual world: 'an immersive, synchronous, persistent and unified 3D user experience that might enable mass content creation'. A 2023 study published by the European Commission’s Joint Research Centre considered that 'next generation virtual worlds' are 'experiences that incorporate varying degrees of virtual and real information, which users can access with different levels of immersiveness and interaction'.

Supporting technologies

Virtual worlds are supported by various extended reality (XR) technologies, such as virtual reality (VR), augmented reality (AR), mixed reality (MR) and augmented virtuality (AV). XR is an umbrella term that covers all kinds of technologies that alter reality by adding digital elements to the real world. While in the VR environment the person is fully immersed (with a dedicated headset) in the 3D virtual environment, in the AR environment the person still sees the outside world (AR simply adds virtual content to a real world). MR also augments the real world for users, but the virtual world becomes so realistic that users cannot distinguish virtual content from physical objects, while AV adds items of the real world to the virtual world. Sometimes the boundaries between these technologies are not clear, and the same headset can use multiple technologies.

Virtual worlds are also supported by other technologies such as the Internet of Things (IoT), 5G, blockchain and artificial intelligence (AI). These technologies facilitate various actions in virtual worlds. For example, blockchain technology allows users to buy and sell virtual assets without going through a centralised platform. IoT helps to transfer information between the real and virtual world through objects, and AI helps to analyse user interactions and data, and create personalised experiences. The EU is currently working on a first-ever attempt to enact a horizontal regulation for AI and recently adopted a regulation on markets in crypto-assets. Other horizontal regulations such as the General Data Protection Regulation, Digital Services Act and Digital Markets Act (which will also apply to virtual worlds) aim to protect users and ensure that EU SMEs are not driven out of the market.

Applications

Virtual worlds can change the way we connect, perceive and experience the world, opening up numerous opportunities but also bringing a number of challenges. They can be used in almost all areas, such as:

- **education**: virtual worlds enable users to visit places and times (such as Ancient Greece, or other planets) that are otherwise impossible to visit;
Virtual worlds (metaverses)

- **manufacturing**: companies can test prototypes of production lines or entire factories using a digital twin to detect potential errors and minimise costs;
- **healthcare**: virtual worlds can help doctors to diagnose more accurately and more quickly and to improve performance during and when preparing for surgery. Patients can benefit from immersive experiences to alleviate pain and anxiety, or to consult doctors on the other side of the world;
- **public sector**: virtual worlds can be used, for example, for consultations with citizens, city planning, visualisation of future development projects or training of employees;
- **art and design**: when visiting virtual worlds of museums, galleries and archives, users can almost experience how it is to be in an actual museum. Virtual 3D buildings enable architects to gain a realistic impression of their structure, furniture and decorations;
- **entertainment**: users of virtual worlds can attend various virtual events (such as concerts, movies, parties, and sports events);
- **online shopping**: customers can explore virtual stores and try on virtual clothes, while brands can host virtual events and advertise their products in virtual worlds;
- **tourism**: virtual worlds enable travellers to plan their trip by exploring virtual representations of destinations and hotels.

What is the EU doing?

**European Commission**

The European Commission has started to reflect on its vision of virtual worlds and how the EU could support the EU VR/AR sector. As announced in its 2020 communication on ‘Europe’s Media in the Digital Decade: An Action Plan to Support Recovery and Transformation’, the Commission has launched a European Virtual and Augmented Reality (VR/AR) Industrial Coalition. This coalition brings together the VR/AR industry and policymakers to inform policymaking, encourage investment, facilitate dialogue and identify key challenges and opportunities. It has organised a series of workshops and drafted a strategic paper as well as a roadmap outlining the next steps for the VR/AR sector.

The Commission is also offering funding opportunities under programmes such as Horizon Europe and Digital Europe. For example, in April 2023 the Commission published a call for proposals for EU action grants, which covered topics such as developing the CitiVerse (a virtual world for citizens); in May 2023, the Commission organised an info day on ‘Developing CitiVerse’. Furthermore, the Commission has launched the VR Media Lab through Horizon Europe, which supports immersive VR/AR media products.

In July 2023, the Commission is expected to publish an initiative on virtual worlds, which would describe the Commission’s vision for virtual worlds, address opportunities and societal challenges, and announce upcoming implementation measures. It will be based on various consultations that the Commission has carried out recently.

**European Parliament**

The Parliament has also begun considering the implications of virtual worlds. The Committee on Legal Affairs (JURI) and the Committee on the Internal Market and Consumer Protection (IMCO) are preparing own-initiative reports on virtual worlds. The JURI report (rapporteurs Axel Voss, EPP, Germany, and Iban García del Blanco, S&D, Spain) will focus more on civil, company, commercial and intellectual property law issues, and the IMCO report (rapporteur: Pablo Arias Echeverría, EPP, Spain) on internal market issues. On 24 April 2023, JURI held a hearing on regulatory challenges of the metaverse. As mentioned in a recent study requested by the JURI committee, the Parliament has also been exploring how to apply various XR technologies to its own work.

**Advisory committees**

On 26 April 2023, the European Economic and Social Committee adopted an opinion regarding an initiative on virtual worlds, such as the metaverse. This opinion highlights the importance of continually analysing ‘whether the legislation currently in force is sufficient to regulate virtual worlds’ and collaborating with various stakeholders to ensure that society benefits from these worlds.