



Competition in Virtual Worlds and Generative AI

Calls for contributions

Digital markets have become one of the main areas of attention for competition law enforcers, as well as for regulatory authorities and legislators, in recent years, as European citizens increasingly build their daily lives around digital products and services.

The concept of “metaverse” or “Virtual Worlds” has come to the fore as a term to describe the next stage in this digital transformation. A “Virtual World” seems to be widely regarded as a simulated, immersive environment – in its ultimate form amounting to a persistent, always-on world that operates in real time and is accessible everywhere. In these Virtual Worlds, people would also be represented in digital form, often referred to as an “avatar”. However, there are many different views on the future shape of Virtual Worlds, including whether there will be a single Virtual World platform or, rather, a collection of multiple Virtual Worlds.

On 11 July 2023 the Commission published a [Communication on Virtual Worlds and Web 4.0](#), setting out a vision, strategy and proposed actions to lay the foundations for the long-term transition towards Web 4.0 and the development of Virtual Worlds.

The concept of generative artificial intelligence (“Generative AI”) has equally attracted considerable public interest. A generative AI system is an AI system that is able to produce new content, such as texts, images or other media.

The EU’s approach to artificial intelligence centers on excellence and trust, aiming to boost research and industrial capacity while ensuring safety and fundamental rights. In April 2021, the Commission presented its AI package, including [its Communication on fostering a European approach to AI](#), a [review of the Coordinated Plan on AI](#) and its [proposal for a regulation laying down harmonised rules on AI \(AI Act\)](#). On 9 December 2023, the European Parliament and the Council achieved a political agreement on the AI Act.

While Virtual Worlds and generative AI systems are still taking shape, it has become clear that the potential impacts of this new phase of digital transformation could be wide-ranging with new technologies, business models and markets.

It has become clear in the past that digital markets can be fast moving and innovative, but they may also present certain characteristics (network effects, lack of multi-homing, “tipping”), which can result in entrenched market positions and potential harmful competition behaviour that is difficult to address afterwards.

Therefore, it appears opportune for the Commission as a competition law enforcer to engage in a forward-looking analysis of technology and market trends to identify potential competition issues that may arise in these fields.

The Communication and accompanying staff working document on Virtual Worlds and Web 4.0 already identify the main characteristics of Virtual Worlds platforms, enabling technologies, and services based on Virtual Worlds.

The purpose of these calls for contributions is to gather specific information and views in relation to competition aspects from regulatory experts, academia, industry and consumer organisations. The Commission may organise a workshop with relevant stakeholders to discuss these issues further building on the responses to the consultation.

Contributors are invited to submit their input either on the topic of Virtual Worlds or generative AI systems, or both, with a clear focus on competition. As input to the debate, please consider the two lists below, which contain questions separately for Virtual Worlds and Generative AI. These questions are for orientation only, and you are free to choose on what aspects of the chosen topic(s) you may wish to focus.

In case your contribution exceeds 20 pages, please add an executive summary. Please send your respective contributions to COMP-VIRTUAL-WORLDS@ec.europa.eu and COMP-GENERATIVE-AI@ec.europa.eu by 11 March 2024 in pdf format.

In your cover e-mail, please provide the registered name and address of the undertaking on behalf of which you are replying to the call(s) for contribution. Please also indicate the name, position, e-mail address and telephone number of a contact person. If you or your company wishes to remain anonymous, please also indicate this clearly in your cover e-mail.

If your contribution contains confidential information (including personal data you do not wish to publish), please also submit a non-confidential version. In case of a request for anonymity, please also remove the relevant information from the non-confidential version. Please make sure that the confidential or non-confidential nature of a document you submit is evident from the file name itself.

Please note that the Commission plans to publish all relevant contributions received on the Commission's website(s). By submitting a non-confidential version or by submitting only a single version which is not clearly marked as confidential, you authorise the Commission to publish your contribution. The Commission does not assume liability for publishing confidential information or personal data which was not properly removed from your contribution.

Virtual Worlds

- 1) What entry barriers or obstacles to growth do you observe or expect to materialise in Virtual World markets? Do they differ based on the maturity of the various markets?
- 2) What are the main drivers of competition for Virtual World platforms, enabling technologies of Virtual Worlds and/or services based on Virtual Worlds (e.g. access to data, own hardware or infrastructure, IP rights, control over connectivity, vertical integration, platform and payment fees)? Do you expect that to change and, if so, how?
- 3) What are the current key players for Virtual World platforms, enabling technologies of Virtual Worlds and/or services based on Virtual Worlds, which you consider or expect to have significant influence on the competitive dynamics of these markets?
- 4) Do you expect existing market power to be translated into market power in Virtual World markets?
- 5) Do you expect potential new entrants in any Virtual World platforms, enabling technologies of Virtual Worlds and/or services based on Virtual Worlds in the next five to ten years and if yes, what products and services do you expect to be launched?
- 6) Do you expect the technology incorporated into Virtual World platforms, enabling technologies of Virtual Worlds and services based on Virtual Worlds to be based mostly on open standards and/or protocols agreed through standard-setting organisations, industry associations or groups of companies, or rather the use of proprietary technology?
- 7) Which data monetisation models do you expect to be most relevant for the development of Virtual World markets in the next five to ten years?
- 8) What potential competition issues are most likely to emerge in Virtual World markets?
- 9) Do you expect the emergence of new business models and technologies to trigger the need to adapt certain EU legal antitrust concepts?
- 10) Do you expect the emergence of new business models and technologies to trigger the need to adapt EU antitrust investigation tools and practices?

Please send your contributions to COMP-VIRTUAL-WORLDS@ec.europa.eu by 11 March 2024

Generative AI

- 1) What are the main components (i.e., inputs) necessary to build, train, deploy and distribute generative AI systems? Please explain the importance of these components
- 2) What are the main barriers to entry and expansion for the provision, distribution or integration of generative AI systems and/or components, including AI models? Please indicate to which components they relate.
- 3) What are the main drivers of competition (i.e., the elements that make a company a successful player) for the provision, distribution or integration of generative AI systems and/or components, including AI models?
- 4) Which competition issues will likely emerge for the provision, distribution or integration of generative AI systems and/or components, including AI models? Please indicate to which components they relate.
- 5) How will generative AI systems and/or components, including AI models likely be monetised, and which components will likely capture most of this monetization?
- 6) Do open-source generative AI systems and/or components, including AI models compete effectively with proprietary AI generative systems and/or components? Please elaborate on your answer.
- 7) What is the role of data and what are its relevant characteristics for the provision of generative AI systems and/or components, including AI models?
- 8) What is the role of interoperability in the provision of generative AI systems and/or components, including AI models? Is the lack of interoperability between components a risk to effective competition?
- 9) Do the vertically integrated companies, which provide several components along the value chain of generative AI systems (including user facing applications and plug-ins), enjoy an advantage compared to other companies? Please elaborate on your answer.
- 10) What is the rationale of the investments and/or acquisitions of large companies in small providers of generative AI systems and/or components, including AI models? How will they affect competition?
- 11) Do you expect the emergence of generative AI systems and/or components, including AI models to trigger the need to adapt EU legal antitrust concepts?
- 12) Do you expect the emergence of generative AI systems to trigger the need to adapt EU antitrust investigation tools and practices?

Please send your contributions to COMP-GENERATIVE-AI@ec.europa.eu by 11 March 2024