

GIGAEurope Response to Call for Evidence on Virtual Worlds

May 2023

GIGAEurope welcomes the opportunity to partake in this valuable reflective exercise on the Commission's upcoming initiative on virtual worlds (metaverses). We fully support the objectives behind this initiative, namely to foster open, interoperable, trustworthy, secure and privacy-preserving virtual worlds that are respectful of EU legislation. We further commend the holistic approach to this exercise. An ecosystem-level perspective is needed to properly comprehend the scale of investments and the enabling conditions needed to support thriving virtual worlds in Europe.

While there is no universally accepted definition of the terms 'virtual worlds' or 'metaverses', this contribution follows the typical understanding, namely that of three-dimensional (3D) digital domains where virtual and physical worlds can meet through use of virtual/augmented reality (VR/AR) technology. In addition to collaborating in a 3D digital world, people can experience events, conduct business, and interact with one another almost as they would in a physical environment.¹

According to a recent Commission report, the market for extended reality (XR) in Europe, which forms around one-third of the global XR market, is on a promising trajectory and expected to grow from €7.95bn in 2021 to €88.87bn by 2030, translating into an impressive projected increase of 1,017%.² Some analysts predict that, by 2026, 25% of people will spend at least one hour a day in the metaverse for work, shopping, education, social and/or entertainment purposes.³ The environment of business model innovation could thus shift dramatically based on the deployment of virtual worlds or metaverses.⁴

Transitioning to immersive digital spaces promises to precipitate a wide range of innovative applications presenting opportunities for all kinds of economic sectors and aspects of human life, ranging from creative arts and gaming to marketing, manufacturing, education and health. Online and in-person experiences can merge to the point where customers can remain in the comfort of their homes, but still have the opportunity to test drive vehicles and visit stores as they would in person. With the aid of immersive technologies, organisations can create corporate digital twins that replicate assets, teams and processes resulting in more efficient and sustainable factories, buildings, and cities.⁵

Even the cultural side of our global society could grow through these opportunities. Museums and art galleries have already begun implementing a metaverse form of exhibition into their content - allowing these to become even more immersive and impactful. Libraries, archives, and schools will be able to benefit from this new way of accessing culture and education, with pupils almost literally

¹ European Commission (2022), The Virtual and Augmented Reality Industrial Coalition Strategic Paper, available [here](#).

² European Commission (2023), Extended Reality: Opportunities, Success Stories and Challenges in Health and Education, available [here](#).

³ Gartner (2022), Metaverse Hype to Transition into New Business Models that Extend Digital Business, available [here](#).

⁴ See footnote 1 above.

⁵ Deloitte (2022), What's all the Buzz about the Metaverse?, available [here](#). Allied Market Research predicts the global digital twin market to reach \$125.7 billion by 2030. Gartner offers a similar projection, expecting the digital twin market to grow to \$183 billion by 2031. MIT Technology Review Insights/Siemens (2023), The Emergent Industrial Metaverse, available [here](#).

stepping back into ancient civilisations.⁶ Today's medical students and staff could also perfect complex and highly-skilled procedures under life-like simulations.⁷

However, realising the true potential of virtual world technologies relies critically on the role of connectivity and its providers. GIGAEurope's members are actively deploying the Gigabit networks of the future. With our core focus on resilient, secure and high-performing connectivity, GIGAEurope fully supports the EU's 2030 Digital Decade targets and is committed to contributing actively to discussions on a future-oriented and enabling policy framework to meet European citizens' accelerating demand for content and applications.⁸

The focus in policy and regulation until now has been predominantly on the development of best effort internet throughput, whilst the applications of the future require networks to deliver on other dimensions (e.g. low latency and jitter, guaranteed security and availability) in addition to high throughput. According to some estimates, even a modest use of the metaverse could drive a 20-fold increase in current data usage.⁹ Technological innovations, such as cloud applications, smart homes and cities, immersive gaming, autonomous cars, remote surgery, digital twins and other VR/AR applications rely on near-real-time responsiveness. For such performance-sensitive applications to become a reality, investment-heavy fixed Gigabit and advanced 5G infrastructure must be installed at pace and scale. Furthermore, as latency requirements get lower, it becomes more important to bring interconnection services (edge computing) as close to the end users as possible. Analysts predict that, for both the consumer and enterprise segments, the metaverse will drive demand for cloud and edge computing to a disproportionately higher level than what current digital transformations are generating.¹⁰ Barriers to the rollout of Gigabit, 5G and edge computing infrastructure could thus compromise the realisation of ultra-low latency applications in Europe.

Engaging with complex interrelationships and interdependencies across technologies, infrastructure and users will be key to making virtual worlds a reality in practice. A number of different players — at the levels of content and experience, services, hardware and infrastructure — will have to work together to bring it to reality. Device manufacturers will need to collaborate with content providers and ISPs in order to bring new applications to end-users. For instance, the use of head-mounted displays imposes extremely high resolution needs, beyond even 4K. This requires innovation across the entire hardware and software stack, in addition to improvements in the connectivity network throughput. The inability to have guaranteed performance parameters for an application could lead to some applications not being able to come into existence. European connectivity providers lagging behind their global competitors, due to market fragmentation and regulatory imbalances, presents genuine risks of failure or non-participation in future virtual worlds markets.

Connectivity providers will need to re-dimension their businesses to support the performance-sensitive and bandwidth-hungry applications and technologies promised by this digital transformation.¹¹ While analysts expect the primary layer of participation by connectivity providers to remain on the infrastructure side, they also point to the potential for virtual worlds to prompt new partnerships with other ecosystem participants that rely heavily on high-quality infrastructure to enable their performance-sensitive services.¹² In addition, operators will be under enormous pressure to address potential security vulnerabilities stemming from an expanded attack surface, due to the

⁶ See footnote 1 above.

⁷ See footnote 2 above.

⁸ GIGAEurope (2022), GIGAEurope welcomes adoption of the 'Path to the Digital Decade' Policy Programme, available [here](#).

⁹ Credit Suisse (2022), Metaverse: A Guide to the Next-Gen Internet, available [here](#).

¹⁰ ABI Research (2022), 6 Technology Pillars Powering the Metaverse, available [here](#).

¹¹ BCG (2022), What Five Trends Mean for Telcos, available [here](#). As noted by BCG, "telco networks will need to be upgraded for a software-defined, cloud-heavy, so-called hyperplexed world".

¹² Arthur D. Little (2022), The Metaverse: What's in it for telcos?, available [here](#).

proliferation of devices, IoT intensification, transition to remote working environments, cloud-based digitalisation of business operations, as well as increasingly interconnected supply chains.¹³

GIGAEurope therefore calls for policymakers to adopt a ‘whole-ecosystem mindset’ to support future digital transformations and to ensure balanced regulatory conditions across the entire value chain.¹⁴ As key enablers of the digital transition, it is crucial for connectivity providers to have flexibility to explore new modes of offering services and new commercial partnerships to help support future heavy investments in network infrastructure and to create future possibilities of income and innovation. In this regard, GIGAEurope welcomes the recent set of Gigabit initiatives announced by the Commission in February and will play its part by contributing to this dialogue with valuable industry insights on how the EU can deliver on its digital leadership ambitions.¹⁵

¹³ Gartner (2022), 7 Top Security and Risk Trends in 2022, available [here](#).

¹⁴ GIGAEurope (2022), GIGAEurope underlines focus needed on internet ecosystem to deliver on Europe’s virtual worlds aims, available [here](#).

¹⁵ European Commission (2023), Commission presents new initiatives, laying the ground for the transformation of the connectivity sector in the EU, available [here](#).