Metaverse sees first applications to reimagine reality
Innovators, stakeholders, and practitioners are looking at the first fields of application of Metaverse technology, ranging from making education more accessible to supporting medical professionals in their work.

During Meta's 'Immersive Education Symposium' in Brussels on 30 November, speakers discussed virtual reality (VR) and extended reality (XR) and how they could be incorporated into future classrooms.

Several use cases and innovative solutions emerged when applying immersive technologies in various sectors. For example, in education, students could see historical sites and events, making it more memorable, and more accessible to those who could not make a real-life field trip.

Such technologies could help medical professionals, too. For example, surgeons could see the human body and what they will see on the operating table in 3D. It could also help doctors collaborate on a patient’s case and be able to see more than CT or MRI results.
Extended reality may be new frontier of education

By Julia Tar | Euractiv.com

Extended reality (XR) and virtual reality (VR) could make education practices more accessible for students, by conducting research and modelling virtual classrooms.

Meta’s Immersive Education Symposium took place in Brussels on 30 November, with speakers discussing virtual reality (VR) and extended reality (XR) and how they could be incorporated into future classrooms.

VR is a simulated experience that immerses the user in a virtual world, while XR is an umbrella term that includes VR, augmented reality, and mixed reality.

Vanessa Penelope, Executive Director of France Immersive Learning, which federates immersive learning players, said learners can focus on what they need to learn and observe when immersed in the VR scene.

She also said participants can collaborate and practise, for example, English language skills but noted that many teachers do not understand the potential VR has to help them in their work.

Earlier this year, France Immersive Learning published its practical guide to help address this and support people in understanding how immersive learning works, the conditions and equipment required to deliver it and to identify the steps that allow it to launch a project.

Extended reality and accessibility

Neil McDonnell, a philosophy and XR technology professor at the University of Glasgow, recognised some practical concerns, such as the cost of buying enough headsets for the entire classroom or ensuring a stable internet connection.

At the same time, he focused on what happens when the conditions are met and what a lesson integrating XR would look like. The example given was an imaginary lesson, a field trip to an Iron Age archaeological site.

“The teacher was able to do things we couldn’t possibly have done otherwise. We can set a treasure hunt to try and find some fragments in the site”, he said, adding that real fragments obviously should not be taken from the site.

Those who, for some reason, would not have been able to make a real field trip can participate in the virtual one, he said.

Moreover, “the 3D objects similar to the fragments” could be rotated “in the middle of the room to fit each student’s perspective”. But such technologies can also be helpful for those who may be visually impaired with the help of AI-driven audio descriptions.

Such a lesson, McDonell also said, means “the teacher has to expand the ambitions of what can be taught and how it can be taught.”

Ásta Olga Magnúsdóttir, co-founder of Astrid, an Iceland-based organisation focused on education about climate change, emphasised the importance of considering certain questions when developing new technologies.

Those include “How does it fit into the curriculum? Or does it fit into the classroom?”, she said, adding that this is “impossible to do without the teachers”.

Despite the already mentioned benefits of accessibility, Markku Turunen, professor of interactive technology at Tampere University, who worked on Finland’s recently published national metaverse strategy, said that “education as a whole and especially higher educational institutions” should be addressed more regarding XR.

He emphasised the importance of increasing accessibility without making new technologies as well as the need for more diversity, saying that multiple technologies are not where they are supposed to be in this sense, “so we are on the bad side of the spectrum, but I hope to see the focus on the other end in the future, he said.

Meta and education

Nick Clegg, president of Global Affairs at Meta and former MEP at the European Parliament, as well as former deputy prime minister in the UK, told the event that “there is almost nothing that you can care about in life that doesn’t in some way go back to education”.

He recalled his first meeting in the metaverse “when it was quite a clunky, glitchy experience”. Yet, he thought, “Wow, if you can learn things in this way […] you’re just going to remember stuff so much better”.

“I’m almost 57, so I come from the kind of pencil-and-paper generation of learning. It was all textbooks and blackboard, but the idea that you could learn about Ancient Rome by actually walking through it rather than just staring at a diagram – it just seems so obvious to me that that is going to be more inspiring, more engaging, and more memorable.”
How extended and virtual reality can improve medicine and surgeries

By Julia Tar | Euractiv.com

Extended reality has the potential to revolutionise the visualisation and planning of surgeries, medical experts already working with such tools told Euractiv in an interview.

Extended reality is an umbrella term that includes virtual reality (VR), augmented reality and mixed reality, referring to simulated experiences that immerse a user in a virtually-enhanced world. Among other uses such as entertainment, it can also be used to help medical professionals visualise the human body.

"In the medical field, but especially in surgery or other interventional procedures, good spatial perception is essential," Philipp Feodorovici, Resident in Thoracic Surgery at the University Hospital in Bonn (UKB) and CTO at Bonn Surgical Technology, Center (BOOSTER), which provides, among other things, surgical planning in augmented and virtual reality, said that "everything is 3D [...] and the computer screen is flat. So, it's just impossible to show 3D material on a computer screen. You can do it but it's still a two-dimensional image. So, you always miss one dimension."

"Especially in anatomy, when it comes to the human body, it just makes a difference to understand how deep the problem is. This is something that is missing in this game and spatial computing, AR, and VR solve this problem," he added.

Feodorovici also mentioned that "there is a significant demand" for cadavers and physical models for anatomical education, in which case "you gather this three-dimensional understanding." However, "this is quite expensive and only available to a limited extent for the universities."

Technology can "compensate for this on a digital scale and make this kind of education available location-independent with maximum quality," he said.

Surgical planning

"Traditionally, surgeons plan procedures based on 2D images from CT scans, MRI scans, and X-rays," von Waldkirch said.

This is sometimes followed by creating 3D models when the case is complex and discussions with other professionals. Finally, surgeons "devise a surgical strategy based on their experience, the available 2D images, and any physical models", he continued.

With visualisation technologies, the process still starts with "acquiring high-quality images from CT scans, MRI scans, etc."

However, this is followed by creating 3D images with which doctors can interact.

"This allows them to examine the anatomy from different angles, zoom in on areas of interest, and understand the spatial interrelationships between structures," he said.

Von Waldkirch said that this could even mean possibilities for remote surgical planning by creating collaborative virtual rooms.

Robots and surgeries

Feodorovici thinks that it is important that surgeons understand the location of a tumour, for example, and how it is linked to other relevant anatomical structures because they will have to remove it without damaging anything else. Technology can help in visualising this. Moreover, many times, 2D images do not include "the human factor."

Technology can also help "robotic-assisted surgeries" because they can be planned more precisely. Feodorovici emphasised that "it is important to understand that robotic surgery doesn't mean that there is no human behind it."

But they can be "highly personalised," which is "particularly beneficial in complex cases where a one-size-fits-all approach is inadequate," von Waldkirch said.

In the future, "the ultimate goal is to have an autonomous robotic system which doesn't need any user input, and the surgeon will have the task of supervising the operation," Feodorovici said.

Data collection

Both Feodorovici and von Waldkirch emphasised that most VR technologies need data acquired for treatments anyway, namely from CT and MRI. Medicalholodeck also primarily relies on this.

"There needs to be substantial research done which proves the validity of new technologies because the ultimate responsibility always lies in the hands of the attending physician," he said.

Von Waldkirch thinks it's important to acknowledge the limitations and that "these technologies are tools to aid, not replace, the expertise of medical professionals." Among other aspects he mentioned the importance of safety protocols, addressing data and privacy concerns, as well as providing training.

Feodorovici also mentioned that, in the future, developing standards for the use of technology would be important.

Von Waldkirch added: "Future developments could include more detailed and realistic simulations, incorporating a wider range of physiological and anatomical details."
Europe’s path to immersive learnings passes through digital commons

By Luca Bertuzzi | Euractiv.com

Without a collective approach to immersive learning, Europe risks being dwarfed by international competitors in an area revolutionising how people acquire education and skills. The continent’s first association is building commons to prevent this.

France Immersive Learning is the only association in France and Europe dedicated to promoting and using immersive technology in education and lifelong training, a strategic area as the skills gap and talent shortage have kept increasing in the past years. Established in 2018, the association now has around 200 members clustered around three categories: organisations that offer immersive solutions, organisations that have needs like universities or primary schools and private or public investors from the national or regional levels.

“What’s special about this association is that it’s building a community of these three types of organisations that need to work together to accelerate the use of immersive technology in the field of lifelong learning: those with solutions, those with needs, and those with funding prescribers”, Nicolas Dupain, president and founder of France Immersive Learning, told Euractiv.

The association’s partners include the government agency Cap Digital, tech giant Meta and Agefiph, an organisation dedicated to supporting people with disabilities to enter the job market.

For Dupain, in France, there have been several public tenders from educational and cultural institutions, universities, and lifelong learning organisations for two years. However, many commit the mistake of going directly to the technology without asking themselves how to best integrate it into their organisation.

“Virtual Reality is not a new technology, what is new is its large-scale deployment, and thus the development of uses and content. To move forward, organisations need two things: cultural assimilation of immersive technologies and techno-pedagogical experts. You can’t think up a strategy for integrating immersive learning over time if you don’t know what you’re talking about. There is still a considerable need for acculturation in order to understand these technologies and derive the hoped-for benefits in reality”, he explained.

Use cases include the formation of people via training in the metaverse, which, since they happen virtually, can occur at a much higher scale than in-person sessions. These professionals’ uses range from chemistry production to art workshops.

However, for Dupain, one of the main problems in France and Europe is that there is no transfer of the ability developed in single projects. In other words, as there is no collective learning and objective, the results of projects get lost in many cases.

“Public bodies that fund immersive learning projects should change their approach. For many years, they have been content to check that the money was spent legally, rather than focusing on the actual results of the project and ensuring its visibility and transferability to other organisations, particularly public ones. Creating extended reality digital commons is a major challenge”, he explained.

“Without a collective approach to immersive learning, we run the risk of reproducing the situations of dependence we are experiencing today”, Dupain added.

That is why France Immersive Learning is trying to produce commons, publicly accessible resources. One of these is a dense but accessible guide for immersive learning, gathering the collective knowledge of this community to equip those who want to use this technology across Europe with the right tools to understand and deploy it.

Another limitation is that nobody knows which organisations are doing what. Thus, the association is building a permanent observatory of immersive technologies to provide a one-stop-shop with all the available resources in this area.