

VIRTUAL REALITY: NOT JUST FOR FUN

MOST OF US ARE FAMILIAR WITH THE FUN FACTOR VIRTUAL OR AUGMENTED REALITY BRINGS TO ENTERTAINMENT; BUT, HOW DO THESE ALTERNATIVE REALITIES WORK FOR INDUSTRY? **JASON HILL**, EXECUTIVE PARTNER AT REPLY, EXPLAINS

Virtual reality (VR) is a natural evolution of the media, which over the years have become very close to the consumer – from cinema, to television, even the smartphone, to a point that users can ‘physically’ enter the content. VR provides a far more visceral experience than other media, however, where user engagement is so strong that it’s difficult to differentiate it from the real world, since movement and exploration are allowed, creating a complete immersion within the realm. On the other hand, with augmented reality (AR), the real world becomes physical support for the virtual content added on top of it.

The rapid adoption of these technologies is further supported by market analysis from several firms. In 2017, the consumer market of VR is valued at \$4.8bn, making it a growing market for hardware and software. The analysis firm Superdata expects the revenues from XR software development to surpass those of hardware in 2020 with a global value of \$20bn.

The numbers are also growing fast for the enterprise market. Companies are increasingly interested in using these technologies in their business processes, not just for marketing purposes. Nasdaq GlobeNewswire valued this market at \$600m in 2016, projecting growth to \$9bn in 2021.

“VR facilitates active hands-on learning, proven far more effective than conventional tools

Industry Support

The benefits are obvious for the consumer, but how do enterprises benefit from VR, AR and mixed reality?

Decades of experimental use and the more recent progress of digital technology have made it possible to create a favourable environment for widespread use of virtual and augmented reality technologies in the professional sectors. Today these technologies represent a new asset in support of decision-making processes, product design, design review processes, staff training and on-site maintenance.

The use of virtual and augmented reality in the enterprise environment can bring considerable advantages to a company, not only in terms of time and cost optimisation, but also in improvements of employee working conditions.

Here are five main fields in which VR can bring considerable advantages:

1. Training And Security

VR allows companies to train people for complex and dangerous procedures in an effective way. Industrial machinery and automated production systems are becoming increasingly more sophisticated and complex, requiring suitable preparation. This typically consists of specialist training courses (in many cases conducted on

actual systems), in a wide range of situations that can't easily be reproduced. All this significantly drives up the costs.

By using VR, however, a person can be immersed in a simulated environment and given the required preparation and training through specific operational scenarios – anywhere and in complete safety. Advanced communication technologies also enable remote team work, allowing several users to collaborate on tasks in the virtual world.

VR facilitates active hands-on learning, proven far more effective than conventional tools. In addition, being analytical in nature, the VR system helps identify defects and correct operational processes.

2. Complex Products Presentation

It's not always possible to present a prototype in an effective way, especially for complex machinery. VR allows a simple and effective presentation of products, both prototypes and finished ones, through 'viewers'. The internal mechanism of the machine is recreated in a virtual environment, so the producer can show how it works down to the smallest details, dismantling and reassembling different pieces at the customer's request. This function is also valuable for trade fairs, where often machinery can enter a pavilion but for safety reasons can't be turned on.

3. Design Review

Design review is one of the milestones in product development, where the requirements of a project are evaluated to verify the outcomes of previous activities, and identify issues, before committing to further work. The moment of design review, a time when all stakeholders evaluate and comment on a project, is crucial, since it generally enables the next stages of design and production.

VR technologies allow the product to be viewed during design, to real scale and based on natural interaction, even before a prototype is created. This optimises the follow-up stages and anticipates future problems, such as ergonomics, interferences and accessibility, reducing the impact on product development costs. In addition, collaborative VR tools simultaneously immerse all stakeholders in the same environment to evaluate the project together.



VR brings benefits in industrial and medical applications and training

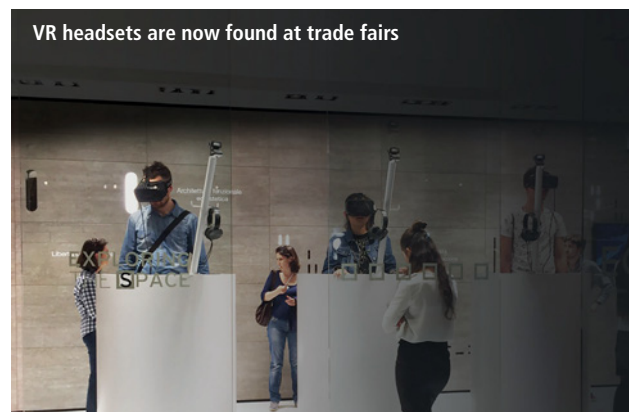


VR's benefits in everyday applications

4. In-Field Assistance

Technical assistance in the field is a critical factor for carrying out operations involving installation, maintenance, fine-tuning or repair of machines and systems in an industrial environment. In fact, these operations often require companies to send highly qualified staff to support local technicians, resulting in considerable waste of resources in terms of time and cost.

Thanks to the latest AR technologies these processes can be radically streamlined; using specific mobile devices or holographic viewers allows users in the field to superimpose digital information, such as infographics, images, videos, 3D models, diagrams, manuals and operating parameters, onto the real context. This means that, upon arriving in the area requiring intervention, technicians can autonomously and in real time consult in an augmented-reality environment all the basic technical information needed to perform the planned activities. In addition, instruments such as HoloLens allow quick and effective communication with headquarters: if the complexity of the operation requires intervention of a specialist, the local technician can request support through a remote assistance session in augmented reality. Here, an Internet-connected user can follow the operator in the field first-hand and guide them



VR headsets are now found at trade fairs

vocally and with information given in AR. All operations can also be documented and archived through videos and images captured in real time during these intervention sessions.

Thanks to new methods of AR-enabled support in the field, technical assistance can be streamlined, with benefits including reduced intervention time, logistics and travel costs.

5. Customer Engagement

These media facilitate and enhance customer engagement, thanks to a new kind of experience that improves the human senses. Virtual and augmented reality can be used for marketing and educational purposes, analysing which content engages the customer most to reach the business goals. These instruments are valuable in this field because they take the client to a completely new virtual world.

Example

Reply collaborated with a leading company in energy and automation technologies to apply VR in training. The firm wanted to improve its training for employees dealing with repair and maintenance of electrical machinery. The training needed to be independent of actual equipment and in a safe environment to teach the employees how to handle potentially dangerous equipment.

Reply developed an e-learning platform, dedicated to the training of personnel operating the machinery. It consisted of two interactive modules: one online and based on the interactive Unity 3D engine technology, and the other featuring a virtual environment thanks to the HTC Vive VR headset. In both modules trainees could experience the exact maintenance operations used on actual systems. With the interactive 3D simulation, users gained an accurate and

effective understanding of the tasks in complete safety.

Potentially dangerous tasks are fully simulated in the virtual environment, made possible through web-based VR software developed by Reply, in which all information is analytically collected to examine the person's potential qualifications for the role. The VR system leaves a numerical trail of everything implemented in the training session, providing benefits in terms of training and research and development. The software detects the difficulties experienced by multiple individuals, providing a report that shows the relevant department the changes needed to improve the tool's usability. ●

REPLY'S WAY

Every modern technology takes time to become habitual, and VR is in its ramp-up phase. Reply believes in this technology and has worked and invested in it since 2011. It developed tools, laboratories, dedicated infrastructure and expertise in the virtual and augmented reality realm, with the goal of developing innovative services, capable of offering high added value with sustainable costs/benefits for the companies involved.

Today, Reply's offer of VR services ranges from digital entertainment to professional applications; in fact, it uses the entire range of currently-available VR and AR technologies to develop projects designed to support enterprise core processes. Transverse apps have been produced over the last five years on several hardware visualisation platforms, from large-format, immersive systems such as the multi-wall CAVE (Cave Automatic Virtual Environment), to portable stereoscopic and holographic projection systems, 3D TVs, tablets and smartphones, up to the latest immersive visors.

