

## Estudo de Caso 1: Tecnologias Imersivas

### *How Virtual Reality, Augmented Reality and Mixed Reality are Making a Positive Impact on Enterprise*

Difference between virtual, augmented, and mixed reality technologies:

- **Virtual reality (VR)** immerses users in a fully artificial digital environment.
- **Augmented reality (AR)** overlays virtual objects on the real-world environment.
- **Mixed reality (MR)** not just overlays but anchors virtual objects to the real world.

Corporations such as Walmart, Renault Trucks, and BAE Systems are employing immersive technologies to drive efficiencies, and these companies are seeing a strong return on investment. According to a report from the Capgemini Research Institute, 82% of companies currently implementing XR say the benefits are either meeting or exceeding their expectations. **Extended reality (XR)** is a term referring to all real-and-virtual combined environments and human-machine interactions generated by computer technology and wearables. This is laying a positive foundation for the widespread business adoption of XR.

#### **Training**

VR-based training programs can reduce training time by 40% and improve employee performance by 70%, compared to traditional training. Therefore, it's no surprise that it is one of the most common uses of XR within enterprise.

STRIVR, a US-based startup developing VR apps, told that VR can “completely eliminate some of the hidden costs of employee training.” These costs include employee time, travel, facilities, materials, and equipment. Another plus for VR training: costly, difficult, or otherwise-impossible scenarios and simulations become within reach.

Walmart has deployed thousands of Oculus Go devices across its workforce for training. Walmart is using VR to train associates in three main areas: new technology, soft skills like empathy and customer service. Participants in Walmart's early VR training program reported a 30% higher training satisfaction, versus other training materials and methods. 70% of employees who trained in VR outperformed groups trained with other materials and techniques.

Intel, a leader in manufacturing for technology, has to deliver regulatory training on electrical safety. The company partnered with SkillReal to create VR training scenarios. The scenarios place users in a manufacturing plant, where they have to complete specific tasks. The VR program also tracks analytics such as how long it takes trainees to complete tasks and which objects they interact with. Intel estimates a 300% ROI potential on the VR course and 94% of trainees surveyed asked that more VR courses be made available, demonstrating the demand for this type of training.

Microsoft is developing MR training solutions for companies such as Airbus and JAL. The two airlines are using the HoloLens to train their teams of engineers and cabin crews.

Like any other industry, restaurants may use augmented reality to train employees efficiently and effectively. AR-driven training programs enable employees to merge theory and applications. Using AR-enabled devices, employees can view their training material and put it into action. This makes the learning curve both smoother and shorter.

The restaurant industry is increasingly using augmented reality to complement and elevate gastronomic experiences. Aside from empowering foreign travelers to order with confidence, AR applications are also reshaping different aspects of the restaurant industry. From the ordering process and employee training to entertainment, AR is changing the world of food for the better.

Fast-casual burger chain Bareburger is one example. They partnered with a tech startup called QReal, previously known as Kabaq, to revamp their menu and create an experience unlike any other. QReal revamped Bareburger's menu by creating a Snapchat filter that showed customers an immersive virtual experience of their dishes. Diners only have to scan a QR code using Snapchat to see the virtual menu. From there, guests can rotate the augmented menu item and have a good understanding of what the dish looks like.

## Operations

The unique properties of VR, AR, and MR are generating productivity benefits across a range of industries. Below are just some examples of how immersive technology is being used to streamline workflows, improve efficiency and safety, and help manage the complexity of tasks.

French manufacturer Renault Trucks, in collaboration with technology partner Immersion, has been using a HoloLens at its Lyon-based facility to improve quality control processes with its engine assembly operations. Quality control operators wear a HoloLens in which all the digitalized engine parts are integrated. Via the glasses and mixed reality interface, operators see decision-making instructions that will guide them through the most complex control operations. An engineer leading the project said, "At the moment, operators working on control points are still using paper instructions." It's easy to see how the introduction of MR will greatly improve the process.

BAE Systems, a multinational defense, security, and aerospace company, has been using HoloLens in its processes to make electric propulsion devices. BAE and PTC, a global software company, used its ThingWorx Studio to create a guided step-by-step training solution for HoloLens to teach workers how to assemble a green energy bus battery. Using these tools, BAE can now create these guides for first-line workers in just a few hours - at a tenth of the cost.

During a Google Glass pilot, Boeing helped its wire harness workers decrease the assembly time by 25 percent and it significantly reduced error rates. Every Boeing plane contains thousands of wires that connect its different electrical systems. Workers construct large portions of this wiring - "wire harnesses" - at a time. This task demands intense concentration. For years, workers used PDF-based assembly instructions on laptops to locate the right wires and connect them in the right sequence. This meant attention was constantly being shifted between the harness being wired and a computer screen. With the introduction of MR and hands-free interactive 3D wiring, error rates have been reduced to nearly zero and the task is completed much faster.

Trimble, a construction technology company, aims to correct the amount of time and money lost in the construction process. The Trimble XR10 is a customized hard hat with a HoloLens 2 built in. It enables workers in safety-controlled environments to access model data directly on site and will change the way construction professionals design, build and operate.

These use cases show that XR can positively impact businesses, improve operations and ultimately cut costs. Some 46% of companies believe the technology will become mainstream in their organization within the next three years, while a further 38% think it will become mainstream in their organization in the next three to five years. The major barriers to this adoption will be a shortage of in-house expertise and insufficient back-end infrastructures.

<https://www.forbes.com/sites/solrogers/2019/05/09/how-vr-ar-and-mr-are-making-a-positive-impact-on-enterprise/#171b80775253>

<https://arpost.co/2019/08/01/augmented-reality-transforming-restaurant-industry/>

<https://www.forbes.com/sites/theyec/2019/01/03/how-businesses-today-are-implementing-virtual-and-augmented-reality/#19cb745a38e5>

**Nomes Equipe:** \_\_\_\_\_

**Questões (responder, discutir e entregar no final da aula)**

- (1) Imagine que você oferece consultoria para implantações de sistemas de informação. O seu cliente é dono de uma rede de restaurantes. O cliente gostaria de inovar o seu negócio, promovendo experiências baseadas em tecnologias imersivas às pessoas que frequentam os restaurantes. Considerando que o seu cliente tem como público-alvo pessoas na faixa etária acima dos 60 anos, quais soluções baseadas em tecnologias discutidas no case você ofereceria ao cliente? Justifique
- (2) Imagine que você é funcionário de uma empresa de TI e foi selecionado para receber o treinamento de primeiros socorros. Você gostaria de receber o treinamento por meio de ambientes imersivos? Por que?
- (3) Como essas tecnologias imersivas agregam valor aos negócios? Identifique um outro problema em que essas tecnologias seriam úteis e que valor gerariam ao negócio.