

EUVIC

TECHNOLOGY GROUP

How VR transforms learning

Learning new skills and onboarding new people has never been more important. Is VR part of the solution?

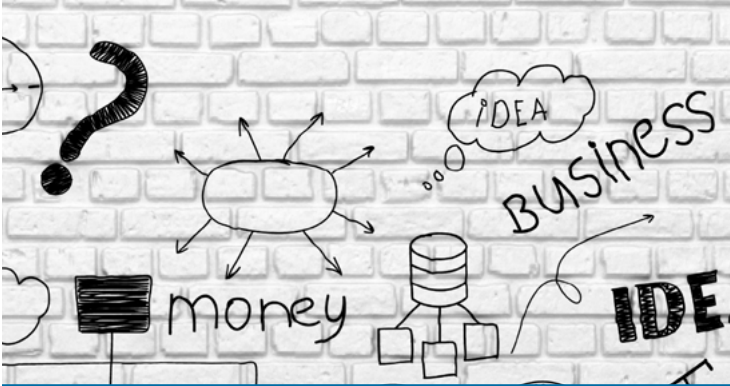




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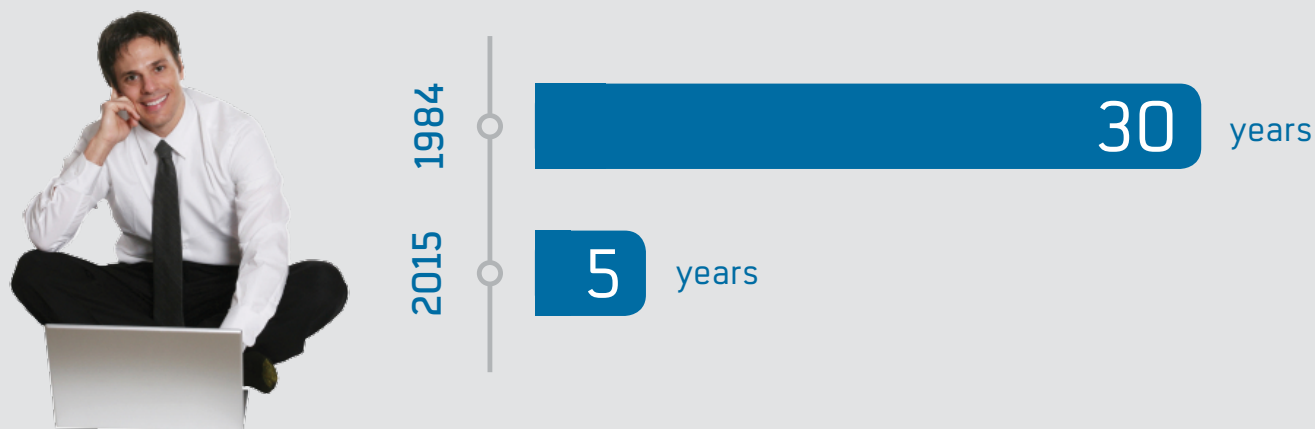
Why learning is more important than ever



There is a good chance, that in five years from now your workplace will cease to exist or change drastically. According to Singularity University research, the “half-life” of a job skill decreased from 30 years in 1984 to 5 years in 2014. For employees, this means that in order to be professionally successful, they have to undergo continuous training. And employers wishing to have a competent team, have to heavily increase investment in training.

In the United States, according to the US Bureau of Labor Statistics, the average time in a single job at the beginning of 2018 was 4.2 years and decreasing steadily. What’s more, 35% of the skills that workers need, regardless of the industry, will have changed by 2020 - as we can read in the article at the World Economic Forum site. According to the report by WEF, one in four adults reported a mismatch between the skills they have and the skills they need for their current job.

THE "HALF-LIFE" OF A JOB SKILL:



The discrepancy between the expectations of employees and the actual tasks to be performed is the main reason for the high turnover of employees, according to a survey carried out by Korn Ferry, a consulting company. Nearly all (90 percent) of executives polled in the survey say that retention of new hires is an issue in their organization. The majority of executives also say that between 10 and 25 percent of new hires leave within the first 6 months. Nearly all the respondents (98 percent) say onboarding programs are a key factor in their retention efforts.

An answer to the increasing need for fast and efficient training and onboarding new employees

is virtual reality. The advantage of training in virtual reality over traditional training methods is that it allows to gain real-world competences without using real-world resources. This type of training reduces the need of physical training by even 50 percent. Whether you train bus drivers,



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police officers or builders, you save your business equipment and thus - money. Companies such as Walmart already use VR to improve competencies of their management. By the end of this year the store chain plans to distribute over 17,000 Oculus Go headsets among its workers to train, among others, customer service.

Training in virtual reality allows to practice all dangerous events that may potentially occur in the working environment without incurring material damage and putting employees at risk. It can also recreate a specific situation from the past so that you can try to find out what caused the error. Contrary to traditional training, VR training allows the participation of all employees at the same time. Companies gain better control over the training process and can learn from it.

Through this publication we want to encourage you to think about how virtual reality can help your company with the ever increasing demand for training and more efficient staff onboarding. Instead of citing arguments, we would like to share the process other companies have gone through to start a VR - project. We hope that they will serve as an inspiration encouraging also your company to enter the world of virtual reality.

The growth of VR

VR technology is becoming an important component of the business strategy for companies operating in various market sectors. According to the research company Altimeter the value of the AR and VR markets will be growing linearly - from \$18 billion in 2018 to \$215 billion in 2021. That's a staggering increase!

Although the term "virtual reality" dates back to the late 1980s, the technology itself needed another 30 years to showcase its scope of applications. VR - 100% digitally generated environment, shouldn't be mistaken with augmented reality (AR). This term describes the environment in which the digital layer is superimposed on what is real. A flagship example of AR application is the "Pokemon Go" game.

It is no coincidence, because until recently, both VR and AR-based solutions were associated with consumer goods, predominantly entertainment.

Lately, however, VR has found itself useful in business applications and many industries are noticing the potential of this technology in B2B relations.

According to International Data Corporation (IDC), the largest source of VR/AR revenues in 2017 is consumers. However, in the near future other segments such as process manufacturing, government agencies, retail, construction, transportation, and professional services will outperform the consumer segment. IDC expects that the industry cases attracting the largest investment will be retail, showcasing (\$442 million), on-site assembly and safety (\$362 million), and process manufacturing training (\$309 million). By the end of the forecast period, the largest industry use cases will be industrial maintenance (\$5.2 billion), public infrastructure maintenance (\$3.6 billion), and retail showcasing (\$3.2 billion).



The value of the AR and VR markets will be growing linearly - from \$18 billion in 2018 to \$215 billion in 2021



LET'S TAKE A LOOK AT

The 5 industries where VR is already changing the business operations

1 The food market - retail chains.

The American store chain Walmart is an example of a traditional company operating in a traditional industry, which is undergoing rapid digital transformation. Over the last few years it has strongly developed the e-commerce segment and, recently, it has successfully implemented VR technology. The company has just announced that by the end of the year it will have distributed over 17,000 Oculus Go VR headsets among its employees to train, among others, its customer service. Previously they used VR in the academy, where managers and executives are trained and, for example, in 2017 Walmart used VR to better prepare for the Black Friday sale. Simulations and training sessions helped improve service

and optimize sales. Nearly 200 training centres for employees also provide guidance on how to react in other unusual situations that may occur in stores, as well as how to ensure better placement of products on the shelves.

2 Aviation industry.

The largest passenger aircraft manufacturers have been using virtual reality solutions for a long time. Airbus carried out its first VR project as early as in 2004 at its Hamburg centre. Today the company uses virtual and augmented reality in many ways. Heads-up displays support pilots during certain flight phases. Company's engineers use VR to see, interact with and adjust 3D digital models, before the parts are actually made.



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Since 2011, Airbus engineers and operators have used a hand-held device that displays a 3D model on top of the real aircraft, providing insight into size and positioning. And, at the beginning of this year, Airbus released an iOS app that allows the passengers to connect with the A380, including a sneak peek at the cockpit.

3 Retail sales.

The world's largest companies use VR technology to improve their sales networks, delivery system and service quality. For example, in 2016, Ikea launched its Virtual Reality Kitchen Experience in Australia to help customers discover kitchen features and imagine how they would feel in their own home. Audi, in cooperation with technological partners, has developed a simulation of various versions of its own cars, which

can be tested using VR in a situation where, for example, a given model version is not available in a showroom. This solution provides a very good simulation of both the driving experience as well as allows the customer to see the car from a different perspective than that of a driver. On top of that, it allows you to "X-ray" the interior and see what the "frame" of the vehicle looks like.

4 Education and expert training.

Many commercial training and educational projects use VR solutions. It is not about making their offer more attractive, but about bringing better quality and efficiency (nothing teaches as effectively as practical training). This is much more than listening to a lecture. In December 2017, the University of Virginia presented a virtual classroom project using VR technology, and many start-ups developing VR technology are running projects to make life easier for trainers and lecturers (e.g. to practice speaking in public).

5 Development of internal processes through improvement of employees' skills.

It is much better to learn in neutral and safe conditions than from one's own mistakes - especially when an employee's mistake may cost a lot

of money. VR gives you the opportunity to test extreme conditions without the risk of incurring costs. It can also recreate a specific situation from the past so that you can try to find out what caused the error. In the US the police are practising in this way, and in other countries –train drivers, tram drivers and public transport drivers.

Employee training is a common area for many industries and therefore a gate for virtual reality to practically any sector. As life-length of the particular skills is decreasing, people need to re-learn constantly. It makes even more important to onboard new employees quickly and in efficient way. Let's take a closer look at how Arriva did it.



"In Sweden, we are currently implementing a project for Arriva, thanks to which bus drivers can improve their skills and the company is able to achieve a number of real benefits and financial savings."

explains Håkan Edvardsson,
project leader.



Case study: Virtual training and onboarding of bus drivers

Arriva is an important player in the Swedish public transport services market. Until now, in order to train and improve drivers' skills, the company has depended on physical buses and physical instructors for their practical training. Training sessions were necessary but generated high costs due to the exclusion of vehicles from commercial operations. Furthermore, if a bus was damaged during the training session, the carrier had to bear a sky-high cost as the insurance doesn't cover this type of training.

What was the problem

Within the training unit, several drivers had one vehicle at their disposal. They practiced one by one: one trained whilst the others waited in the

bus for their turn and only watched the manoeuvres of their colleague. Drivers learned from mistakes. Vehicle damage – which is the inherent risk element of this training model – occurred and meant material losses for Arriva.

Driver training and onboarding of new drivers took place either in an isolated environment (e.g. a manoeuvring area) or in real road traffic, but under the watchful eye of a trainer. For obvious reasons, risky situations, such as collisions in traffic, were not practiced. Training sessions required the use of real vehicles, which – for the duration of the training – were excluded from actual commercial use.



Such courses did not provide the opportunity to practice dangerous situations or reconstruct events ex post in order to analyse them and eliminate similar incidents in the future. As a result, Arriva was faced with the challenge of finding an alternative solution that would save time and resources, lower the costs of damages and penalties (that, in case of an accident caused by a bus driver, the company had to pay to the Public Transport Association), and allow to improve drivers' skills in a more efficient way.

What was the solution

Evic suggested developing and implementing a training application based on VR tools and a Learning Management System for keeping track of all the courses and the students. The use of virtual reality allowed Arriva to continue regular commercial operations and the company's buses driven by professionals were less likely to be damaged.

All-day-long virtual training takes place at the depot. The solution enables execution of three

types of tasks: learning, practicing and examination. Depending on the driver's stage and his needs, it is possible to implement a path of learning, practicing and evaluating the acquired skills. Virtual reality allows students to recreate all the actions that the driver has to perform, such as control of the steering wheel or pedal operation.

Training participants do not have to wait for their turn behind the wheel but can use this time to train, as a result of which the onboarding time was seriously decreased. They can also interact with each other and participate in simulated situations difficult from the point of view of e.g. vehicle manoeuvring (articulated buses). The solution enables training on different types of buses. Drivers learn how to handle the ticketing machine, bus PC, how to drive along different routes and in different weather conditions. They also have the opportunity to practice reactions in extreme situations, based on actual events from the past, without the risk of incurring losses for the company. The system evaluates automatically if they drive safely, economically or comfortably.

Moreover, the LMS-system not only helps educate drivers but also elevate the bus driver profession and provides drivers with a benchmark to assess their progress themselves.



The VR solution has accelerated the learning process that may take place anywhere and anytime now. The quality of training has increased.

The LMS-system provides the possibility to:

- Collect training history
- Collect real driving statistics
- Track progress of the training sessions
- Involve drivers in motivating gamification
- Create meaningful and usable reports (BI for instructors and management)
- Keep track of certifications and planned retraining
- Automatically schedule trainings for drivers

Why was it important

Automation of the whole process saved a lot of resources, such as instructors, buses, fuel and paper that was used to prepare educational materials for the students. Scheduling of retraining sessions based on drivers' performance ensures Arriva passengers comfortable and safe journey.

Virtual training sessions such as those for Arriva bus drivers are already provided for firefighters and police officers. Imagine however, what would happen, if they were available for a wide range of professions. A relevant example is provided by an application by Euvic, written for one of the construction companies. Because construction, architecture and interior design are further industries taken by storm by virtual reality.

According to the survey conducted by The Chaos Group at the end of 2017, increased reliance on technology has been the biggest change in architecture and architectural visualization in the past three years. This was the conclusion of 70% of 5,769 architecture and architectural visualization professionals from over 70 countries.

Let's take a closer look at how virtual reality can change the work of architects and the experience of their clients.

Here are five examples of VR and AR applications in architecture and construction

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“Architecture is about visualization. The possibility of showing your projects in three dimensions, offering an almost real-life experience, opens not only new sales channels, but also new fields of expertise for architects.”

says Tomasz Wyrobek, Product Owner at Euvic.

1 Visualization of designed spaces for customers.

Interior designers or garden architects usually present their work on a flat computer monitor. However, it is enough to transfer the already created project to the application, so that the recipient can see the future house or garden in three dimensions. For example Ikea already uses VR to show customers visualisations of their kitchens. Also Euvic created an application that allows you to enter your future room and furnish it. Such solutions bring customers' imaginations to life. Thanks to them customers make decisions faster and change their mind less often.

2 Simulating the needs of the elderly and the disabled in order to design a safe space for them.

Virtual reality allows you to literally slip into the skin of another person, for example an elderly person with visual impairment. The architect, who has the opportunity to see what the world of the elderly person looks like, will try to ensure proper contrast between the wall and the floor and the lighting of the designed rooms. In this way VR not only supports sales of apartments, but also meets the needs of recipients in a socially responsible way.



3 Visualizations of interior design, wall colours.

For paint manufacturer Tikkurila, Euvic programmers have written an application that allows to see what the selected paint colour looks like after covering a large area. The application also allows you to make the existing objects bigger or smaller, remove them, add new ones, as well as check what the visualisation looks like during the day and at night. In this way clients can check, how the colour they liked will match their apartment design. The tone they can see in the virtual

reality is exactly the same as the real one. Therefore there is no risk that a customer will leave with the paint, that he won't eventually like, which often happens when you can see the colour only on a small sampler. The application can be used by the customers visiting the brand's showrooms equipped with VR glasses.

4 Creating virtual walks around offices or apartments for sale.

This is a great tool for developers to showcase their offer, for example at the construction fairs. Wearing VR glasses, the customer can literally take a walk around his new apartment. With the application created by Euvic, the developers marketing departments can create such a virtual walk on their own, without hiring a programmer and a photographer. You will just need a photo camera or a smartphone to take 360-degree pictures of the space you would like to invite people to. Then you enter the app and decide, what the apartment or office should look like, where the doors are, which room should the guest enter as first and where the doors should lead. When you change something in the real world as for instance the colour of the walls, it is enough to replace one picture, without having to create the whole virtual walk from scratch.

5 Training for people working at heights.

One of the construction companies asked Euvic specialists to create an application simulating work at heights. Training participants were asked to lift an angle grinder, which was lying on the edge of the roof of the building. When they leaned beyond the safe distance, they fell. Those who were not attached with virtual snap hooks also fell onto the floor in the real world. Because the experience of virtual falling is really terrifying, there is a huge chance, that workers who experienced it will remember to always attach themselves. Such a simulation is much more effective than a long lecture about the importance of security rules, which often accompanies traditional trainings.

Architecture, retail chains, retail sales, aviation industry, education and - last but not least - employees training. All those segments already take advantage of what virtual reality has to offer. The development of this technology will only drive the demand, so it's a matter of time, when VR will enter new industries. To help you understand if VR will play a part in your segment as well, we have put together an easy to follow project plan based on our experience in executing VR projects.



1 Find your area



2 Pick a leader



3 Adopt a strategic approach



4 Improve communication



5 Choose a partner

5 steps to implementing VR in your business

1 Find your area.

VR technology offers virtually unlimited possibilities, but for many reasons, such as costs and effectiveness of implementation, it is necessary to approach the challenge strategically: choose the area in your industry where VR will work well, for example employee training or product enhancement.

The fundamental question that you have to ask yourself concerns the purpose of the implementation and the expected benefits. In the long term, VR might bring savings and optimize the processes covered by the project, e.g. by allowing the training of employees without using expensive products and tools. In the short term, however, it may mean considerable investment. Therefore, the decision about what area to invest in has to be preceded by careful calculations.

Consider how technological support will transform your business. Then choose the process to be implemented, complemented, altered or transferred to VR.

Think about the payment model for the service. For example, Euvic enables settlement in the form of monthly subscriptions. Thanks to this solution you do not bear the entire cost of creating a VR platform and you pay for the actual number of its users.

2 Pick a leader.

As any process of changes, VR implementation requires an efficient team and an enthusiastic manager. The leader will pass knowledge down the organization, support others and coordinate the whole project.

A VR project leader should have three characteristics:

- **be a business champion**, who will help the company understand the business value that is being created and who needs to establish partner-like relations with the chosen department for the implementation of the VR-project.
- **understand the business** and be able to predict the impact of VR implementation on business objectives and the way the company operates – both in the short and long term;
- **have leadership skills**. Michael Mankins, author of the famous book “Time, Talent, Energy” in an interview with Fast Company, recalls the example of Dell, an organization where sales teams with inspiring leaders have on average 6% better sales results than other teams. In Dell’s case, that’s a huge amount (an additional \$1 billion a year), but these benefits apply proportionally to every company, regardless of its size or market sector it operates in.

3 Adopt a strategic approach.

Entering a new stage of technological development by a company requires serious planning.

Plan what you want to achieve and in what time perspective. Think about how the team’s way of working will change during the implementation process and as a result of it. Already now think about how to allocate tasks and competences to make sure you are ready for a new workflow in the company.

4 Improve communication.

Any change normally encounters resistance from employees – every change is difficult! The leader’s role is of key importance here, as he is the one who should inspire and motivate his colleagues. Not only a dialogue within the organization, especially between the leader and the team, but also relations and communication between the organization and the end customer are important. It is particularly important that the recipient does not suffer from the implemented change, but on the contrary – he should be its conscious beneficiary. At an early stage of implementation (e.g. project piloting), as a part of the improvement of communication standards, it is necessary to provide substantive support and information to both of the parties. In other words: inform and explain why a VR project is important and what benefits you expect, also from the point of view of your interlocutor.



5 Choose a partner.

Make sure you partner up with an external expert. Find a partner that will enable you to innovate! In addition, you will find companies from which you will effectively outsource planning and implementation of a VR project. They have the know-how and experience that your company may lack and might give you a ready solution that will cost less than if you wanted to do the project on your own. It’s of key importance to customize the tool to the company’s needs and capabilities (also external factors – business surrounding).

At Euvic, we help our customers innovate by combining our customers' understanding of their business and business processes and our understanding of the latest technology. If you would like to take advantage of our experience in VR or in other subjects, or if you have any questions regarding the implementation of virtual reality, please contact us.

ABOUT US:

Euvic has over 15 years experience as a software-house and service provider and we are proud of our growth from only a handful of employees in 2004 to over 1700 in 2018. We provide innovative and effective solutions, building long-term relationships with our customers.



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