WHITE PAPER

WHY MOBILE AR IS THE NEXT BIG THING FOR INSPECTION AND SAFETY TRAINING

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SENAR

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“TELL ME AND
I FORGET.
TEACH ME AND
I REMEMBER.
INVOLVE ME AND
I LEARN.

BENJAMIN FRANKLIN

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WHY MOBILE AR IS

THE NEXT BIG THING FOR INSPECTION AND SAFETY TRAINING

Now that Augmented Reality experiences can be accessed by anyone with a mobile device, AR is more popular than ever. With the launch of ARKit (iOS) and ARCore (Android) in 2017, over one billion iOS and Android phones and tablets are now AR compatible. As a result, we are starting to see AR in a wider variety of business use cases, including training. AR succeeds where traditional tools fall short in simulating real-life scenarios, specifically ones that are too dangerous, too expensive, or impossible to reproduce.

With AR available on mobile devices, immersive technologies and game-based learning can now be deployed widely to support and expand curricula - enhancing learning outcomes in ways that were previously not possible, affordable, or scalable.

Virtual training Skid in AR.

Virtual forklift test drive and safety inspection in AR.

WHAT IS MOBILE AR

(MOBILE AUGMENTED REALITY)

Mobile Augmented Reality (AR) differs from VR as it enables users to see digital elements superimposed onto real-world objects and backdrops, right from their mobile device. With Mobile AR, users can interact with virtual elements as if they were real. It is even possible to physically feel the presence of digital objects, as you can literally move around them.

This ability to "fool" your brain is due to 3 key features:

HD 3D GRAPHICS

3D graphics are displayed with light and shadow effects at an impressive 60 frames per second. Object details are so accurate they look real. Even the audio is spatialized and becomes louder as the user gets closer to the source of the sounds.

MOTION TRACKING

The user's movements are tracked with the device's camera and sensors within an area of up to 5,500 sq. ft. Images displayed on-screen are rendered in real time according to the user's position and give the illusion of the digital object being anchored in the real world.

LIFE-SIZE

Objects are rendered in real size and superimposed over reality. There is no limit to the size of digital objects.

Humans are better able to remember information when it is presented visually and within the context of the space around us. This is where AR comes into play. AR enriches the connection between vision, space, and user curiosity, and ultimately enhances memories and feelings associated with the experience.

MOBILE AR INCREASES

WORKER SAFETY AND PERFORMANCE

BOOST ENGAGEMENT AND FOCUS

With AR, trainees become actors in dynamic life-size scenarios that are the closest possible replication of what they would experience in reality. Because it's immersive, fun and takes place in the real world, it increases user engagement and enhances focus. This works particularly well with younger generations accustomed to quick feedback - this sense of interaction and reward is often missing in traditional training.

When used in a classroom, AR becomes a social experience where every trainee can compete and help each other achieve their mission. Suddenly, words like, "wow", "amazing", "neat", "unbelievable!" start to pop up. Instructors and students are impacted by the satisfaction and emotional response immediately.

INCREASE KNOWLEDGE RETENTION BY ACTIVATING SPATIAL MEMORY

The human brain recalls more information when it's spatialized. That's why participants in memory championships use the "Method of Loci", which utilizes spatial memory to store a large amount of information.

Immersive training activates this spatial memory, while the user directly visualizes, manipulates, and interacts with complex structures. Research shows that this increases the retention rate drastically, as things are remembered in context. According to Dr. Narendra Kini, CEO at Miami Children's Health System, the retention level a year after an immersive training session can be as much as 80 percent, compared to 20 percent retention after a week with traditional training.

BUILD MUSCLE MEMORY BY PRACTICING MORE AND LEARNING THROUGH MISTAKES

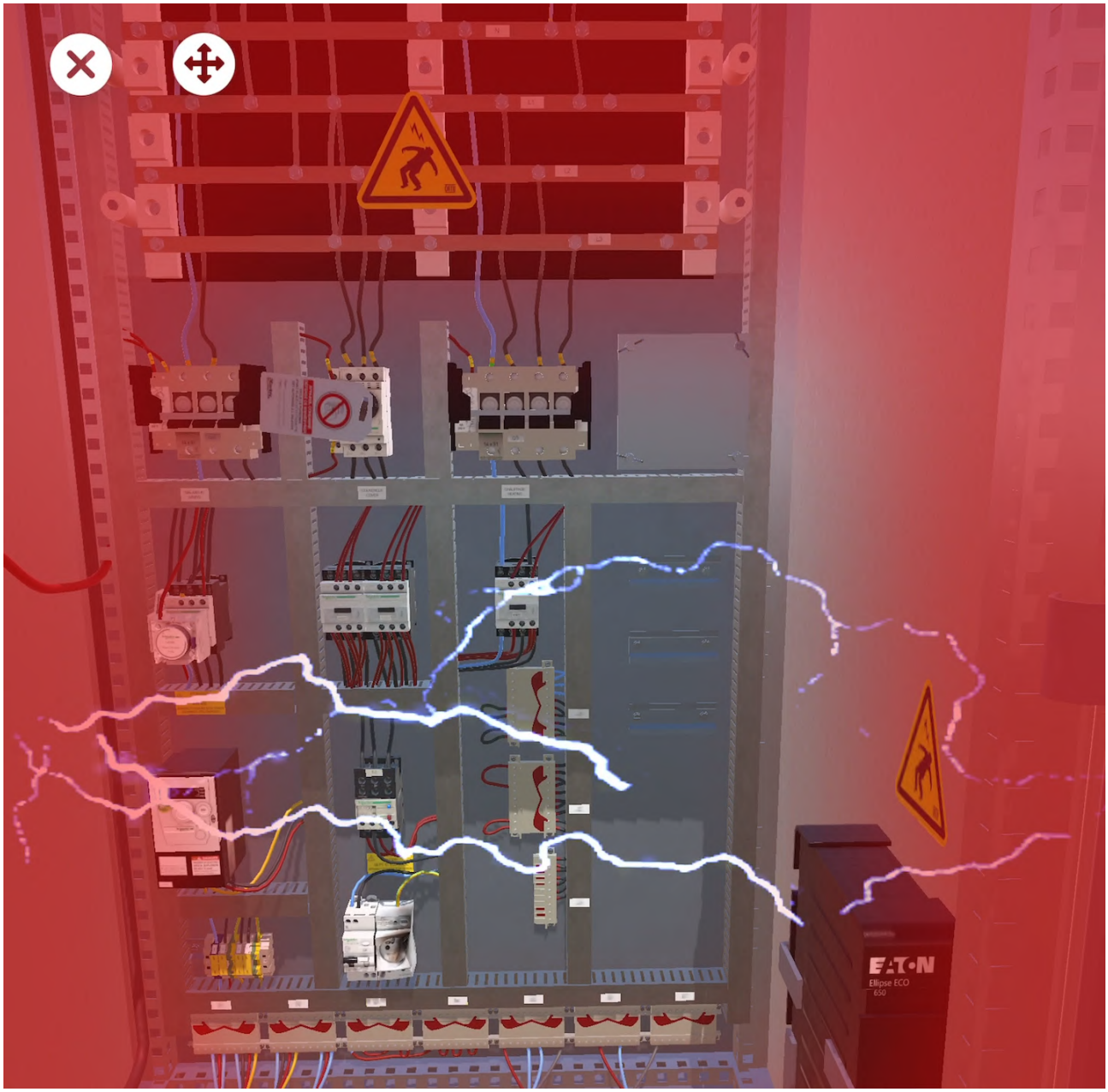
Studies have also demonstrated that subjects using immersive technologies are better able to transfer information from short to long-term memory. Because immersive technologies let you practice and fail multiple times in a safe and accurate environment, trainees build their muscle memory and acquire skills that eventually become natural to them.

By practicing first by themselves in AR, trainees can build awareness and get to the required level more quickly before practicing in a real environment. They can then fully optimize their time on things that couldn't be replicated in a virtual environment (such as precise hand gestures, the sense of weight, smells etc.). Research from Iowa State University in welding simulations showed a 41.6% increase in certifications and a 23% decrease in overall training time.

Virtual training Skid with exploded view in AR.

BE PREPARED FOR HAZARDOUS SITUATIONS

Wouldn't it be ideal if students could benefit from the experience of their peers in critical or rare situations that sometimes take years to acquire? Like detecting flaws in equipment that only experts can see, or learning what to do when stuck in a confined space with few options to choose from? AR simulations allow learners to not only recreate and practice routine situations, but also to access experiences which would be out of reach in real life due to difficulty, expense, danger, or sheer impossibility. Students are immersed into "what if" scenarios where they can experience the consequences of wrong decisions for themselves and build natural reflexes.



Electric shock in AR.

INSTANT DEPLOYMENT

TO THOUSANDS OF USERS

No matter how transformative a new technology is, it is only effective when used in a manner that is coherent with your strategy, organisation and goals. To be successful, it must be engaging for educators and students, while also being cost effective and easy to use.

INTEGRATES SMOOTHLY INTO ANY ORGANIZATION

The biggest challenge with new projects is often the friction involved in getting to a point where the new process is fully integrated. Fortunately, mobile AR is easy to integrate into your existing IT structure and training curriculum. It leverages your existing assets and investments (hardware, training materials, e-learning platform) and makes your training more engaging by adding life-size 3D models and interactive scenarios that would otherwise be impossible to carry out or recreate in real life.

IMMEDIATE USER ADOPTION

Using an AR simulator is as simple as watching a video on a smartphone. Mobile AR comes naturally to users and can be used instantly, remotely or in the classroom on standard tablets and phones, unlike VR headsets. VR headsets may be uncomfortable for those who wear glasses, and between 40% and 70% of users report experiencing motion sickness according to Thomas Stoffregen, a kinesiologist at the University of Minnesota.

Crane and pipes accident in AR.

WHAT MAKES AR COST EFFECTIVE

LOW TCO (TOTAL COST OF OWNERSHIP)

Whether used remotely on a personal smartphone/tablet or in the classroom, mobile AR does not require new, costly hardware or resources.

No assistance or onboarding time is needed. Trainees can practice securely and autonomously on their devices, and only interact with instructors as needed. In the classroom, one instructor can easily manage 15 trainees without extra help.

In contrast, few employees own or master VR headsets and even in the classroom this technology doesn't allow the instructor to handle more than 3 students at a time, leading to an increase in training time and/or the need for more human resources to manage several students simultaneously.

REDUCE TRAVEL COSTS AND TIME OUTSIDE THE OFFICE

AR extends the classroom's borders as it gives instructors and students the super power to teleport any kind of object or environment to any location.

Because no physical setup or real installations are needed, staff can be trained directly at their own work location, which saves time and money by minimizing travel expenses and time outside the office.

ANALYTICS

Student performance report on the Senar platform.

MONITORING PROGRESS

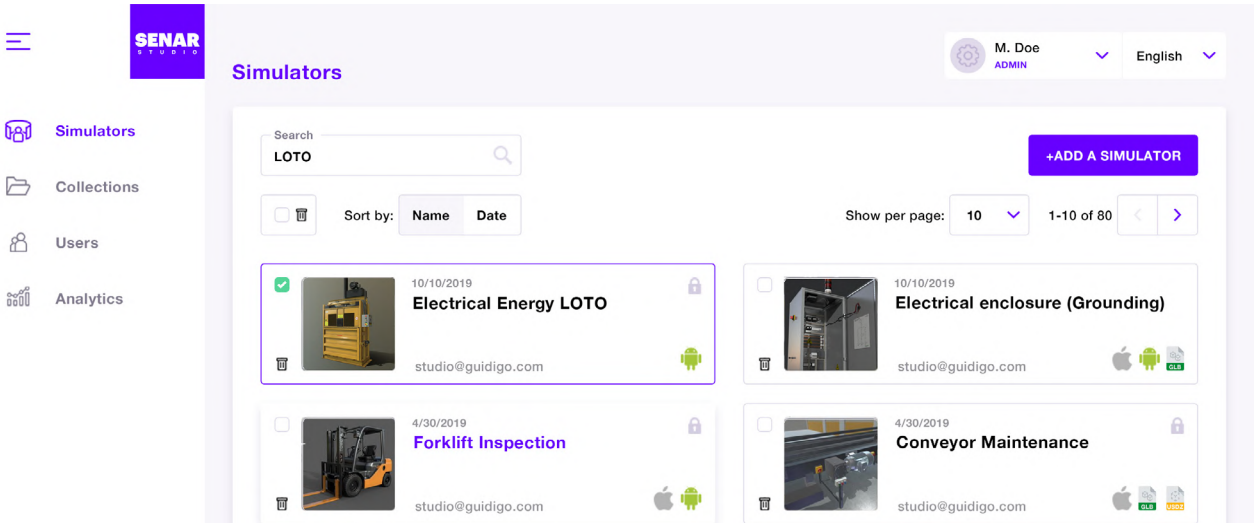
Data captured by AR provides a lot of insight into what students are doing inside the simulators and how they are progressing: number of tries, failures, success rate, duration, etc.
Predefined or custom web dashboards also provide clear insight into identifying profiles and patterns within a group of individuals. This is particularly helpful when assessing a workforce and making sure the training programs in place are efficient enough to achieve the required levels of performance.

2 HOW SENAR CAN HELP

At Senar we have created the first end-to-end AR training platform to quickly create and distribute simulators.

We can provide companies with a one-stop shop approach, managing the project entirely: creation of scenarios, 3D modeling, animations, etc.

We can also train your internal teams to build custom simulators based on their existing 3D assets.



GIVE SENAR A TRY!

Watch some of our AR simulators in video
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https://go.senar.io/android

CLOSING

THE POWER OF IMMERSIVE LEARNING

Mobile AR is bridging the gap between theory and practice, thereby making powerful new modes of learning possible.

Digitally immersive experiences can be delivered to students wherever they may be. Practical limitations such as expense, logistics, capacity, and risk are no longer an issue.

Replicating the impact of a real-world experience allows learners who experience 'being in someone else's shoes' to have a better understanding and engagement with the subject. Not only does this increase knowledge retention, it also enables the user to successfully adapt and apply what is learned to a variety of real-life situations.

Let's not forget, however, that to truly unleash the transformative power of immersive training, mobile AR depends on strong narratives and a clear connection to real-world outcomes, just as with any other training tool.

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