

eSimHQ

EXPERT SIMULATIONS HQ

## SPACE SAVING SOLUTION?

Virtual Reality and Augmented reality devices are being marketed as a solutions for Simulation environments looking to solve real estate issues. The days of needing an entire floor of a building or multiple floors to build a Simulation Center including Surgical Suites, Patient Rooms, L&D, Skills Labs, and Nursing Stations could be over.

### When is VR/AR a solution ?

Not all systems are created equal. Not all spaces could benefit from VR and AR designs. So, how do you know if your center could benefit from such systems? Ask yourself a few questions: What's the need, do you have space concerns, have you examined all solutions, does your learning facility have a VR and AR policy?

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## Exploring VR and AR Solutions In Simulation Design.

Virtual and Augmented Reality solutions are being used to solve several Simulation Center design challenges. Real estate needs, budget concerns, access to impacted simulation classes, and offering a unique teaching opportunity by allowing a student to peer into the layers of anatomy in a learning environment.

First, let's define Virtual Reality and Augmented Reality. Augmented Reality adds to your already existing world. Also referred to as "AR," users wear a headset and see the environment "as-is." Depending on the program's tasks, the user would then see the virtual image(s). The user will then be able to manipulate the object (functionality will depend on the ability of the program).

Virtual Reality, or VR, is the term used when the entire reality seen in the headset is not real. VR is used to immerse the learner in an interactive environment. In VR, the term immersion is used to describe the level of fidelity the system is capable of producing, not necessarily the sense of presence the user feels during the scenario. This distinction is critical to understand because the term immersion can be misleading and could suggest that the user is fully present in the situation. However, many factors contribute to the feeling of presence a learner will have.

When designing for a VR or AR space, the designer needs to understand the goals of the educator. User input is critical to a design that is functional and accomplishes the learning goals of the educator. VR and AR are not suitable for all environments. Yes, a VR system might save square footage, allow many students to work on the same patient, provide an immersed environment where a student can feel present in the scenario, and be less costly. The decision to design a VR/AR environment should be based on a set of guidelines and questions developed by an experienced designer and brought to the user/educator group. So, when is VR/AR a good design option and what items should be considered and brought to the table.

Questions to think about:

1. Why?
  - a. Budget concerns
  - b. Space concerns
  - c. Experiential learning

So after we determine our "why," we delve into the critical information needed for designing a simulation space with VR/AR technology.

## Do I need a specialty designer?

The answer is almost always, yes. Specialty designers are experienced in Simulation design pitfalls. They have the experience of talking with learners, educators, architects, construction teams, IT departments and installers. Specialty designers know the right questions to ask to determine the best technology.

Independent designers do not represent any particular brand or manufacturer. What they do have is an impressive wealth of current technology, experience in the field, and understand what manufacturers work well together, and more importantly the ones that don't.

### How much space is needed?

VR systems usually require more space than AR. Depending on the manufacturer of the VR system, you will need to allow enough space for multi-player scenarios or single player scenarios. HTC Vive requires a maximum area of 16ft 4in for a two-base station system. Oculus Rift is not so easily defined as each program may need different room sizes. For multi-player medical scenarios, usually, 7ft x 5ft is recommended. Systems can be expanded beyond these sizes to accommodate larger groups. Additional, costly, hardware is needed.



### Do you need a specialty designer?

This is one of the most common questions I get asked. Specialty designers help in many ways. They are experienced in Simulation design pitfalls, talking with learners, educators, architects, construction teams, IT departments and installers. Specialty designers know the right questions to ask to vet the best technology. Just because someone can buy a thing does not mean they should. A client of mine wanted to add VR to an existing system. They had hired a security company to install the AV system for their simulation center. A small university and they had invested a lot in the simulation center's AV system. Unfortunately, the AV was not able to stay working beyond a few camera changes without freezing. The Universities solution was to add VR as a replacement for the non-friendly current AV system. Thankfully we were able to analyze the current AV system and bring it back on-line for them while training their local Sim-Tech on troubleshooting techniques.

It was an easy fix for an experienced engineer. We were able to save the university the AV system asset and talk about the VR needs. In this case, adding a VR system would have been an additional unexpected cost, they lacked the space needed, and no curriculum was in place to effectively add this teaching tool. Having the ability to budget for the space required, raise additional funds, and develop the curriculum needed for an AR system was the best option. That's right, AR. AR allows them to add more students by establishing an AR skills lab station. So working with a specialty designer saved them money on a system that wouldn't have met their needs, been costly, and didn't solve the issue of the original system not working correctly. Working with an independent specialty designer allows you to see what technology will work best to address your needs. Independent designers do not represent any particular brand or manufacturer. What they do have is an impressive wealth of technical knowledge, experience in the field, and understand what manufacturers work well together and more importantly the ones that don't.

## Do I need a specialty designer? How much space is required?

### How much space is needed?

All VR /AR systems have their own set of space requirements. So, after a decision has been made to explore the VR/AR options, designers will work with the system manufacturer. For the VR/AR system, you will need to consider how many users need to be in the same space and using the system simultaneously. What components are critical to the functionality of the system, and finally will the room need to serve more than one purpose? Most VR systems have expandable footprints that allow us to utilize larger spaces with additional hardware.

Both AR and VR are also capable of being utilized while seated. For seated scenarios, space becomes less of an issue. However, floor plan must be considered if you plan to record these sessions. Recording situations require mics that are respective of the sound pickup. If you plan to record VR or AR scenarios, placement of the equipment and type of mic needed is critical to reducing picking up the audio from other scenarios.



## EYE ON IT

Haptics, providing the ability to feel touch and pressure. Now smell. We are moving into a fully 4 dimensional field. Having the ability to feel resistance when practicing surgery or practicing in the skills lab has been crucial for our clients.

We have many systems to choose from these days. Most consumer manufacturers are offering business solutions to cover additional support requests and warranty options. HTC Vive Pro offers many simulation programs designed for training. A few programs we explored were, VirtualSpaces by Optera and SimforHealth. Both are exciting programs and designed for student interaction. VirtualSpaces and SimforHeath offer instructors the ability to customize its training program. Spaces can be customized and tailored to

Oculus also offers many simulation programs. Some VR software engineers work with both HTC and Oculus. Here is where your designer can help. Specialty design engineers have access to these units and can offer you the ability to test.

Also, we have manufacturers designing AR/VR systems specific to medical simulation. Many manufacturers have added VR, such as CAE. These systems offer much more than just a VR experience. They provide users a customized experience based on years of being in the healthcare

An important consideration when deciding between manufacturers is comfortability. These headsets have become lighter in weight, and much more user-friendly however many individuals are susceptible to motion sickness and can become disoriented. A plan should be in place to accommodate students who are unable to use VR.

VR/AR systems require computers with robust graphics and processing capabilities. Each manufacturer will have its own set of necessary gear to run the system. Depending on the system you are using, WiFi may also be required. IT departments will be a critical component for these systems.



## Upcoming Events

- **eSimHQ will attend IMSH 2019**

We look forward to testing new solutions, meeting new friends, and learning more about what is needed in our industry. See you all in San Antonio.

- **GoFundMe**

eSimHQ is now seeking pediatric simulation facilities in need of a simulation facility or a re-design and technology upgrade. We will set up a GoFundMe page and help promote the page to raise funds. Ask us for details!

- **Simulation Design Clinic**

We will be hosting a simulation design clinic in February. Learn the basics for creating a functional simulation design. Details will be announced on our website and email.

- **February eSim Times.**

We are currently working on our next issue of Sim Times. Our February issue will be about exploring portable simulation systems.

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