



WHITE PAPER

Simulation-Based Learning

The Rise of the PlayStation Professionals

ANDERS GRONSTEDT, PHD

© 2018 by The eLearning Guild. All rights reserved.

The eLearning Guild
120 Stony Point Rd., Suite 125
Santa Rosa, CA 95401
www.elearningguild.com
+1.707.566.8990

Writer: Anders Gronstedt
Copy Editors: Jillian Johnson
Publication Designer: Bill Webster

You may download, display, print, and reproduce this material in unaltered form only (retaining this notice) for your personal, non-commercial use or use within your organization. All other rights are reserved.

This is a FREE digital white paper. Other than the authors and sponsors of this whitepaper, no one is authorized to charge a fee for it or to use it to collect data.

Attribution notice for information from this publication must be given and must credit the title and individual author in any citation. Readers should be aware that Internet websites offered as citations or sources for further information may have disappeared or been changed between the date this white paper was written and the date it is read.

Contents

<i>Cloud Defense</i>	2
Hewlett Packard Enterprise Sales Simulations	3
3-D Immersive Hotel Simulation	4
Business Simulation	4
Virtual and Augmented Reality Simulations	5
Implications for the Learning Industry	7
About the Author	8



REALITIES360

The Enhanced Realities ConferenceSM

June 26 – 28 • San Jose, CA



Featuring Special Keynote

Dawn of the New Everything

Jaron Lanier, the Silicon Valley visionary who gave us virtual reality



The Core Trio

The 2018 Realities360 program has over 70 unique sessions, so you can tailor your experience to target the specific subjects that will enable you to do better work.

SIMULATIONS

There are experiences outside of AR and VR that expand the alternate-realities conversation. Simulations combine these new tools and technologies with content to create a completely new form of learning.

VIRTUAL REALITY

Although VR has existed for decades, technology has finally emerged that makes it truly accessible. VR allows us to put learners in a truly immersive environment, creating entirely new opportunities for training and learning.

AUGMENTED REALITY

AR adds computer-generated content as a contextual overlay to the real world. This technology, often powered by devices we already carry, has enormous applications for training and development.

Register by MARCH 23 and SAVE \$200!

<http://elgd.co/wp-sims>

“I could go 10 hours at a stretch” playing soccer video games, said Swedish soccer star Zlatan Ibrahimović, claiming that he would “often spot solutions in the games that I then parlayed into real life.” The soccer great has been hailed as the first “PlayStation footballer.” His moves on the field seem to belong on a digital screen, because that is in part how he learned them.

Meanwhile, race car driver Lucas Ordóñez entered the profession by winning a PlayStation 3 driving competition organized by Nissan in 2008. The Japanese car manufacturer has organized the *Gran Turismo* driving simulation contest for the last 10 years to recruit new real-world race car talents.

Soccer and race car games are not the only simulations authentic enough to train professionals. There are flight simulators that count toward a pilot’s official flight-time record. And back on earth, *Minecraft* is being successfully used in schools to teach everything from computer science programming to chemistry, physics, and architecture. A 16-year-old created a scientific graphing calculator in *Minecraft*; the Chartered Institute of Building offers construction lessons in *Minecraft* and organizes an annual *Minecraft* building competition to win the talent war for the construction industry.

There are several games designed to teach programming skills. *CodeCombat* even incorporates actual JavaScript into the gameplay, and with enough practice you can become a level 50 Zuckerberg. Video games can also teach you to play instruments, or to dance and exercise. *Rock Band 3*’s pro controller will teach you actual chord structure to play the guitar. Dance Central can teach you to master professionally choreographed dance moves with feedback through the Xbox Kinect motion sensor. Who said gaming was sedentary? *Wii Fit U* has simulations for everything from tennis to yoga breathing exercises. Floyd Mayweather just unveiled a VR-based boxing and fitness simulation. Jumping around in your HTC Vive headset while holding the hand controllers, you have to face trash talk by the Floyd avatar if your jabs and uppercuts don’t hit him correctly. The exploding popularity of over 1,000 fitness apps on mobile phones and watches promotes well-being by encouraging practice as well; studies have found that people who use fitness apps are much more active compared to non-users.

These new-generation simulations are modeled on the way we really learn: experientially. No one learns skills from lectures or eLearning classes. We learn from practice. Educational theorists as far back as Aristotle have pointed out that we cannot learn what we haven’t experienced.

The pixelated experience of a computer simulation can provide realistic experience and a digital sandbox for rehearsals. The US Army was an early adopter of this new-generation

simulation approach: The *America's Army* game has been a critical part of both recruitment and basic training for the US Army for more than 15 years. The game has more than 13 million registered players and 260 million hours of playing time. Dozens of government training and simulation applications using the *America's Army* platform have been developed to train and educate US Army soldiers.

Gaming guru Jane McGonigal points out in her book *Reality Is Broken* that the average 21-year-old has played over 10,000 hours of video games, which is as much time as they would have spent in school between fifth and twelfth grade with perfect attendance. While it's hard to dispute the popularity of games, it's becoming equally difficult to dispute their instructional value. Traci Sitzmann's meta-analysis of 65 studies and 6,476 trainees found computer-based simulation games to be more effective than traditional approaches by any measure, including 20 percent more effective in learners' ability to complete training-related tasks.

The new simulation-based learning approaches are now making inroads into the corporate world. They provide hands-on training through tailored virtual scenarios that prepare employees for the actual work they'll encounter on the job. Like any good game, the simulations challenge players to level up through increasingly complex real-world tasks and get feedback and recognition along the way—which is just good constructivist learning theory at work. Let's take a look at how simulations are teaching cybersecurity, leadership, sales, and technical skills to a new generation of PlayStation professionals.

Cloud Defense

How do you get more than 3,000 employees to practice and master a new set of security concepts? That was the challenge facing Intuit, which had to change its corporate culture to make cybersecurity everyone's responsibility. Intuit commissioned Gronstedt Group to develop a game-based simulation to help employees learn and practice cybersecurity.

In *Cloud Defense*, modeled after tower-defense games, players learn and practice Amazon Web Services (AWS) security protocols by defending their app against a hacker attack. For each level, a new challenge and "tower" is introduced and the degree of difficulty increases. The goals are to allow good traffic to freely flow through the web infrastructure while protecting the database from attacks. The simulation makes the learning memorable by visualizing the learning concepts: Players drag and drop cybersecurity concepts illustrated as ports, walls, and moats. Players learn by building a web architecture and applying the cybersecurity concepts, just like in real life.

Carefully designed level progression is an important mechanic of the game. In the tutorial level, the player only needs to place a web tier, an application, and a database. Each new level introduces a new cybersecurity concept; players have to complete a level successfully before they level up. This progression of levels is designed to keep players “in the flow” by increasing the challenge without frustrating them. The capstone level introduces a boss-level challenge in which the player can finally beat the hacker attack.

Players learn about such security concepts as access control lists and bastion hosts. The game calculates a score and provides rewards and feedback, while a leaderboard provides scoring information across the player population. The approach thrives on the sense of engagement, immersion, problem-solving, control, and feeling of accomplishment that games offer.

Between each level, a video cutscene features a CNN-style news report about the crime syndicate threatening the fictitious financial company, and a mentor character appears to give instructions and set up the next level of the game. This sense of storytelling is an important part of good simulation design that we’ll look at closely next.

Hewlett Packard Enterprise Sales Simulations

Hewlett Packard Enterprise faced the challenge of transforming its global sales force of 10,000 reps to a new sales approach. Executive sales conversation had to focus on customer business drivers and linking them to the appropriate HPE solution set to solve the business issue.

Gronstedt Group developed a four-part simulation series, *Mission Possible*, which provides a virtual opportunity for the sales reps to practice executive selling. Learners assist an on-screen Hewlett Packard Enterprise sales rep in conducting discovery meetings, mapping transformation areas and use cases to business outcomes, practicing the POV presentation, discussing a solution, and identifying next steps.

Each “mission” is introduced with a video by a “commander.” The four-part series’ game elements include points, high-score lists, badges, levels, cutscenes, and storytelling. The stories are told through live-action video, produced by a professional crew of filmmakers and actors. The program was translated into four languages for a global rollout.

The advantages of live-action video include the sense of realism, the power of storytelling, and subtleties of facial expression and body language in executive conversation. One drawback is the lack of flexibility; changing even a single word can be next to impossible. A computer-generated scene gives learning organizations that flexibility, along with almost infinite interactivity, as we’ll examine next.

3-D immersive Hotel Simulation

The American Hotel and Lodging Educational Institute commissioned an innovative simulation for students of hotel management. The *Guest Experience* sim puts learners in a 3-D, high-fidelity, virtual hotel. Players explore the hotel environment with the goal of maintaining hotel brand and security standards. As they move through the hotel, they are presented with issues such as wet floors, blocked fire exits, noncompliance with ADA regulations, property damage, and signs of child trafficking. A guest experience score shows how well the players are improving guest satisfaction and safety. The game also uses a timer to raise the stress level and motivate action.

Hospitality skills are built and reinforced as the player progresses through increasingly difficult levels, providing a feeling of mastery and accomplishment. Leveling up keeps players focused and engaged. The game goes beyond task-oriented challenges to develop an anticipation of customer needs and emotional connections with guests. Social media (including Facebook and TripAdvisor comments) is integrated into the game, providing clues to solve the guest experience challenges.

A simulation in a computer-generated environment like this gives instructional designers complete control of the simulation, and they can more easily change and modify it. A 3-D immersive simulation is particularly powerful in teaching spatial skills, whether it's moving around in a hotel or in a scaled-up model of a body or a scaled-down model of a city. However, unless you have a multimillion-dollar training budget, the characters are never going to be completely real—they will not convey subtle discomfort when a sales rep asks an inappropriate question, for example. That's where live-action video excels.

Business Simulation

When the learning objectives involve teamwork and leadership, a multiplayer sim can be the answer. *LeadershipX* is a business-strategy simulation developed by John Gillis and team in partnership with Gronstedt Group. It simulates the dynamics of a real-world business. Teams duke it out over several fiscal years in a battle for market domination.

Business processes that take months and years to unfold in real life are compressed to hours. Each participant plays a unique role on the executive team (e.g., CFO, operations, marketing, HR). Dashboards in the sim allow players to request budgets, allocate resources, view reports, and receive updates about new opportunities or changing market conditions. Players make individual decisions about their departments and collaborate with their executive teams on

strategy. Debriefings are conducted by expert faculty who challenge participants to reflect on and apply lessons about leadership, innovation, globalization, ethics, and business acumen. At the end of the program, participants walk away with a personalized feedback report.

Playing a business simulation on individual tablets facilitates face-to-face communication on the teams. However, these glowing rectangular screens might soon be a quaint memory, as we're entering the world of virtual and augmented reality.

Virtual and Augmented Reality Simulations

The virtual reality experience provides the sensory experience of touch, vision, and sound to make the brain suspend disbelief and feel a complete sense of presence—you feel you're going to another place. Learners can drive a forklift with a physical steering wheel, physically walk around a plant, or simulate an electric shock with the vibration of the hand controller. It is learning in the context where the skill will be applied. VR technology effectively hacks a number of our senses, creating a sense of presence for comparatively little money. These simulations can be used for training in areas where real-life practice is restricted due to issues such as cost or safety, and learners can practice job performance or emergency scenarios over and over.

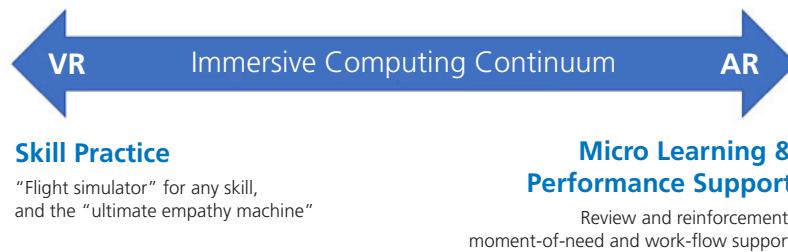
VR has also been hailed as "the ultimate empathy machine." Managers can step into the body of an associate and experience a coaching conversation from their perspective. Study upon study has validated the "Proteus effect," in which an individual's behavior in a virtual world is changed by the appearance of their avatar. Diversity and inclusion training and sexual harassment training can be taken to new levels.

Study after study has already demonstrated the efficacy of virtual reality learning:

- [Training professional football quarterbacks](#) with STRIVR's VR platform improved their decision making by 30 percent and helped them make decisions about one second faster
- Fear of public speaking was reduced by almost 20 percent with VR
- Almost 90 percent of participants reduced their fear of heights with VR
- Lowe's found that customers have 36 percent better recall of how to complete a tiling project using VR compared to video
- Walmart, the world's largest employer, has [expanded its STRIVR VR training](#) to all of its 200 employee training centers in 2017, after testing it in 31 centers, and will train 140,000 employees annually in VR

- Equipment rental company United Rentals shortened a weeklong training program by half with VR

VR offers “embodied cognition,” which means learning with your mind and body. Research studies have confirmed the importance of activating “muscle memory.”



Virtual reality occupies one end of the immersive computing spectrum. At the other end is augmented reality. While VR immerses the user in a virtual world through a headset that largely shuts out the real world, AR inserts virtual objects and information into the real world, augmenting the user’s experience of it via the camera lens of a phone or a headset.

Imagine getting an app on your phone on the first day of work that helps you find your way around the office, store, or factory. Large arrows appear on the floor as viewed through your phone screen, leading you to the right place. The magic of AR layers computer-generated images like these on top of the real world. The same app can help people operate equipment: Aim the phone at a piece of equipment and get step-by-step instructions hovering over each equipment part, visually guiding the worker through the operation, repair, or service. The AR app can also feature “X-ray vision” to view what’s inside the equipment. This powerful emerging technology will be on two billion phones by the end of this year. Instead of treating the phone as a screen, it uses the phone as a lens—one that can, figuratively speaking, arm people with superpowers.

VR can take you to any place; AR can bring anything to you. VR offers a digital rehearsal space of such convincing verisimilitude that learners feel they are actually there; AR can

make the real world the canvas of any number of simulation-based learning activities. They both hold the promise of empowering students to play an active role, becoming the protagonists of their own learning and, in the process, dramatically boosting their performance. VR and AR are ushering in a new era of experiential and visceral learning that promises to upend training and human performance as we know it.











Implications for the Learning Industry

The writing is on the wall for the individual eLearning developer churning out online lectures. New-generation simulations are being developed by dedicated teams of 3-D developers, programmers, and simulation designers working in professional game engines like Unity. Some companies are trying to build these skills in-house; others partner with specialty services companies. Whether an organization decides to “build or buy,” instructional designers will not be able to compete with the technical development expertise of the six million and growing Unity developers. Instead, they have a unique opportunity to step up to a more strategic role where they can make the case to senior management, guide development, lead deployment, and gather actionable and predictive data that will guide future strategies.



Join The eLearning Guild
Today for FREE!

We know that learning professionals are constantly seeking best practices and cutting-edge techniques to help create better learning experiences for everyone. We want the Guild to be your first stop for eLearning information, networking, and community, and that's why membership in The eLearning Guild is FREE.

				
DemoFest Archive	Webinars	Select eBooks and white papers	Conference handouts and session videos	Learning Solutions
				
Supplier and product directories	Newsletters	TWIST Blog	Search for jobs and resumes on the Job Board	And more...

Join Now

www.eLearningGuild.com

+1.707.566.8990

About the Author



Anders Gronstedt is president of the Gronstedt Group and an author, public speaker, and entrepreneur. Anders, a PhD, is an advocate of using next-generation learning tools to advance real-world skills through virtual and augmented reality training, transmedia storytelling, and game- and simulation-based learning. The Gronstedt Group has been instrumental in helping global companies like Google, Walmart, KPMG, HP, DaVita, and Kimberly-Clark improve performance with innovative learning approaches.