

25 January 2018

Ex Parte

Marlene H. Dortch
Secretary, Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

*Re: In the Matter of Inquiry Concerning Deployment of Advanced Telecommunications
Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 17-199*

Dear Ms. Dortch:

On 23 January 2018, Michael Warnecke of the Entertainment Software Association (ESA) and I had separate meetings to discuss this proceeding with Amy Bender, Wireline Legal Advisor to Commissioner O’Rielly; Jamie Susskind, Chief of Staff to Commissioner Carr; Travis Litman, Chief of Staff and Senior Legal Advisor for Wireline and Public Safety to Commissioner Ronsenworcel; and Claude Aiken, Wireline Legal Advisor, and April Jones, Policy Analyst and Special Assistant, for Commissioner Clyburn.

In each of the meetings, we explained that the video game industry has become an important component of the American economy, employing over 200,000 people across the country and generating 36 billion dollars in revenue in 2017. We also explained that the industry, and the 125,000,000 Americans who play video games, rely on high-speed broadband connections to originate and receive high-quality voice, data, and graphics. We also discussed the increasing role of video games to advance education, health care, and the workforce, as described in the attached materials.

Turning to this proceeding, we said that having seen the recently released fact sheet,¹ ESA supported the Chairman’s intention to leave in place the current fixed speed benchmark of 25/3 Mbps for Advanced Telecommunications Capability (ATC). We did note, however, that this benchmark would need to be raised over time. We also said that ESA supported the view, set forth in the fact sheet, that mobile is not yet a full substitute for fixed services. While mobile broadband is evolving rapidly, it does not yet provide the fast, reliable, and low-latency connections required to support ATC applications, such as multiplayer games and cloud game play services.

Finally, we urged the Commission to expressly state in its report that low latency is an important element of ATC and that going forward it would explore the appropriate ATC benchmark for latency. We also explained ESA’s view that the Commission should eventually set a latency

¹ Fact Sheet, Draft 2018 Broadband Deployment Report (Jan. 18, 2018), available at https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0118/DOC-348770A2.pdf.

Ms. Marlene H. Dortch

25 January 2018

Page 2 of 2

benchmark of 75 milliseconds or less, since such latency is necessary for real-time interactive online applications, such as video games. We noted that latency of 75 ms, or even less, is the target for some of today's most popular online games, and that even lower latency was needed for some cloud and virtual reality applications. We also urged the Commission explicitly to reject the suggestion that latency is not an important consideration, as it has done in the context of the upcoming Connect America Fund (CAF) auction and the allocation of universal service funds.

Please let me know if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Stephaine Weiner".

Stephaine Weiner

Counsel to Entertainment Software Association

Enclosures

cc: Amy Bender
Jamie Susskind
Travis Litman
Claude Aiken
April Jones

VIDEO GAMES: GROWING AMERICAN JOBS AND INNOVATION

The US video game industry today continues to grow across the country, providing high-skilled, well-paying jobs to thousands of Americans. The industry has far more reach and economic impact in your state than you realize.



84%

of congressional districts have at least one video game company



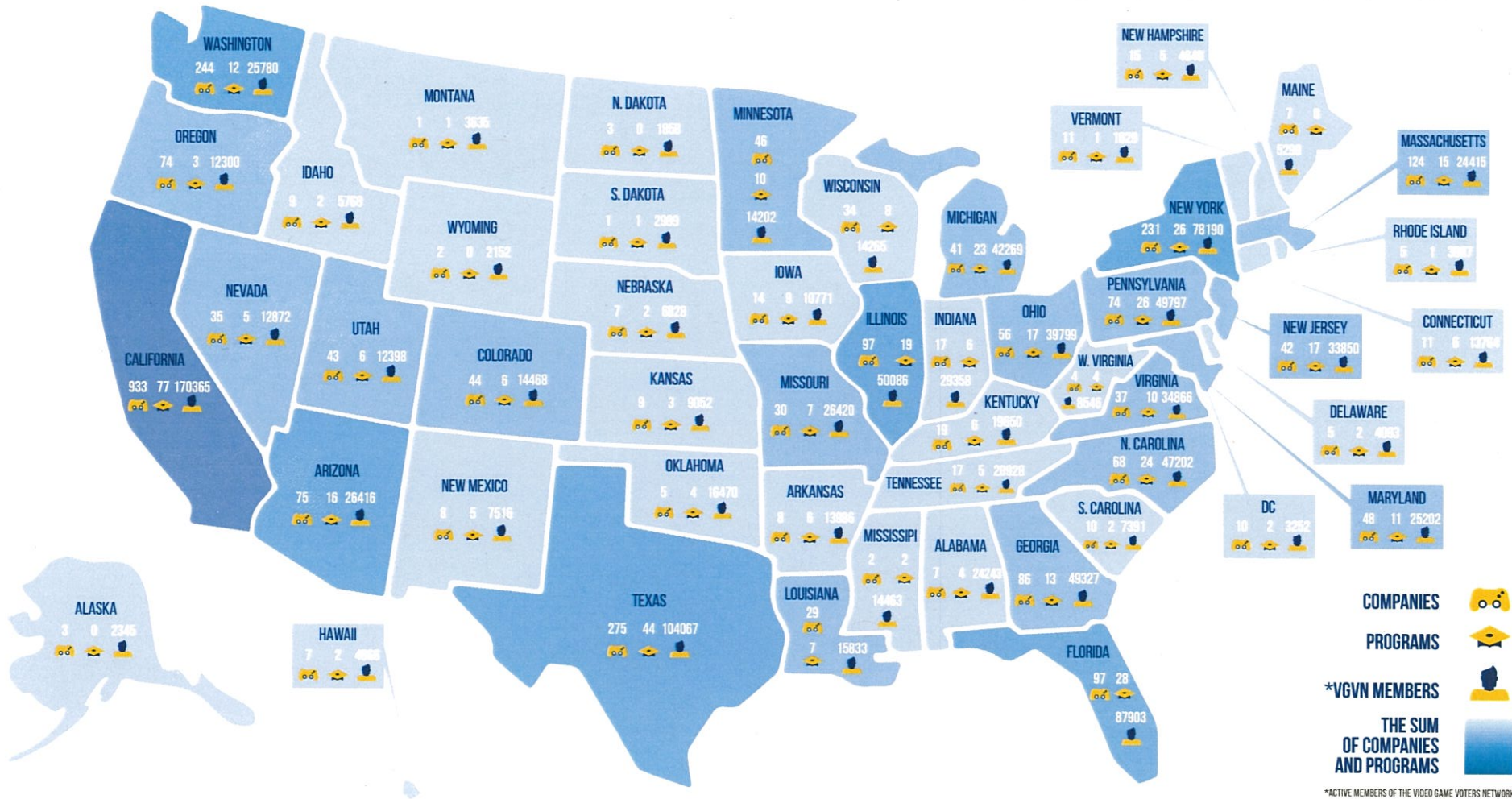
3,090

video game companies across the country



521

universities and colleges that offer full game programs



COMPANIES



PROGRAMS



*VGVM MEMBERS



THE SUM
OF COMPANIES
AND PROGRAMS



*ACTIVE MEMBERS OF THE VIDEO GAME VOTERS NETWORK



© 2017 The Entertainment Software Association

Visit a live version of this map:
AREWEINYOURSTATE.ORG



THE VIDEO GAME INDUSTRY: GROWING AMERICAN JOBS AND INNOVATION

The U.S. video game industry is having a powerful economic impact, driving innovation and business creation across the country.

Here's a look at the industry's strength and reach.

A NATION OF GAMERS



125M

Americans play video games



The industry added
\$11.7 BILLION

to the U.S. economy.

\$30.4 BILLION

spent by U.S. consumers on
the game industry in 2016

A GROWING GLOBAL INDUSTRY



\$101 BILLION

spent internationally on
the game industry in 2016



220,000

people are employed by the
U.S. video game industry

65,878

people are employed in software
in the video game industry

\$97,000

average compensation for video
game industry employees



According to HEVGA,

30%

of students
in video game development
programs are women

BUILDING THE NEXT GENERATION WORKFORCE

484 COLLEGE AND UNIVERSITIES
WITH FULL GAMES PROGRAMS

103
ASSOCIATE

195
BACHELOR

31
MASTER

CREATING HIGH-SKILLED 21ST CENTURY JOBS

THERE ARE **3,053**
VIDEO GAME COMPANIES
IN THE U.S. ACROSS
3,118 LOCATIONS



ALL
50



states are home to
video game companies

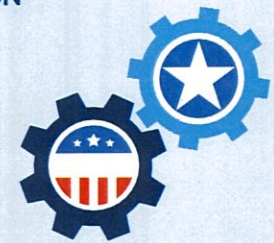
GENERATING AMERICAN SMALL BUSINESS ENTREPRENEURSHIP AND INNOVATION

99.7%

of video game companies
qualify as small businesses

94.5%

of US video game companies
were domestically founded



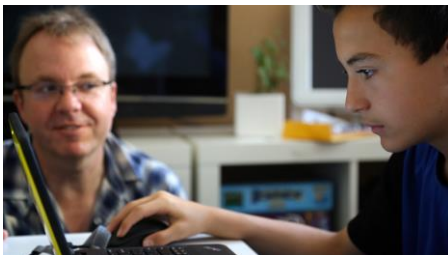


GAMES: IMPROVING EDUCATION

Educators recognize the impact of entertainment software and utilize games as a teaching device in a growing number of classrooms and business settings. More than just play, entertainment software helps impart knowledge, teach life skills, and reinforce positive habits in students of all ages.

COGNITIVE RESEARCH

In addition to being a great way to keep students engaged, researchers found that video games have potential as next-generation learning tools. Games use new technologies to incorporate principles crucial to human cognitive learning. According to **a recent study conducted by researchers at the University of Michigan**, puzzle video games that exercise children's working memories can enhance their abstract reasoning and problem-solving skills, which can have a direct impact on future educational and occupational success. Another **study conducted by scientists at the University of Texas at Austin** found that playing video games can increase a player's cognitive flexibility, which impacts a person's ability to switch between tasks and use multiple concepts



and ideas to resolve issues.

Additionally, **SRI International and the Bill & Melinda Gates Foundation found** that game-based classroom tools can boost cognitive learning among average-performing students by 12 percent.

The federal government has encouraged similar research. For example, the Department of Education provided initial funding for the nonprofit National Center for Research in Advanced Information and Digital Technologies. The center offers grants to academic institutions, nonprofit organizations, or corporations who propose to research and develop new educational technologies, including simulations, computer and video games, virtual worlds, and avatars that serve as tutors.

64 Million

The number of children between 2 and 17 years old who are currently gamers, according to The NPD Group.

IN THE CLASSROOM

Teachers are taking steps today to incorporate video games into learning. From national organizations to individual classrooms, the education community is actively pursuing new methods for developing young minds.

ESA partners with Electronic Arts, Institute of Play, the MacArthur Foundation, and the Bill & Melinda Gates Foundation to support the **Games, Learning and Assessment Lab** (GlassLab), an



unprecedented effort to explore games' potential to serve as learning and assessment tools. In addition to developing its own educational games, GlassLab is examining popular game titles to identify elements that increase student comprehension and enhance classroom performance. In March 2013, the lab launched SimCityEDU, an online community and resource hub for educators to create and share learning tools and assessments that use SimCity to encourage students to think critically about the challenges

facing modern cities. GlassLab has since released SimCityEDU: Pollution Challenge!, which focuses on environmental issues, and Mars Generation One: Argubot Academy, which tests students' mastery of the elements of argumentation, including claims, evidence, and reasoning.

The Smithsonian Institution released *Hidden Expedition: Smithsonian Hope Diamond* to engage youth in history, science, and culture. Designed for elementary and middle school students, the game takes players on a worldwide adventure to find the Hope Diamond, one of the world's largest blue diamonds and among the most popular exhibits at the National Museum of Natural History in Washington, DC. Students search through accurate representations of Smithsonian buildings, discover lost and hidden symbols, and learn about the Hope Diamond's 400-year history.

Middle school and ninth-grade teachers use the online, game-based learning platform iCivics to help teach civics lessons. Former U.S. Supreme Court Justice Sandra Day O'Connor collaborated with Georgetown University Law School and Arizona State University to develop the platform. First launched in 2009, iCivics now features 21 games about constitutional law and the branches of U.S. government, each of which also comes with suggested lesson plans tailored to meet state-specific learning standards. Recently, iCivics released *Argument Wars*, which allows players to test their persuasive abilities by arguing a real Supreme Court case, including monumental cases such as *Brown v. Board of Education* and *Miranda v. Arizona*.



MINECRAFTEDU

New York City school teacher Joel Levin created *MinecraftEdu*, an educational version of the extremely popular sand-box game *Minecraft*, to deliver highly-immersive and challenging learning experiences in the classroom. The game is customizable and enables teachers across academic subjects to develop diverse, topic-relevant worlds for their students. It also helps students build new skills such as video production, programming, and design.

Video games also engage students in current events, offering players a chance to respond to the world's toughest challenges

8.07

The Increase in students' math test score numbers after playing *DimensionM* over an 18-week period, compared to an increase of 3.74 points for the control group, according to a study conducted by the University of Central Florida.



while helping them understand complex historical concepts. *Democracy 3*, a strategy game about running an indebted country, immerses players in the global financial crisis and the debate over Eurozone government debt. Banking scandals, credit downgrades, street protests, and other in-game situations ripped from the headlines offer players a chance to learn more about Europe's political and financial environment.

Other developers use games to educate kids about past human rights struggles. Educational game publisher EverFi's *306 – African-American History* engages students in the long history of the civil rights movement, from the Underground Railroad to *Brown v. Board of Education* and the freedom rides. In addition, the National Civil Rights Museum offers a number of games and tools to teach young people about civil rights history. One game, *Before the Boycott: Riding the Bus*, follows a school newspaper reporter assigned to ride the Montgomery, Alabama bus system in 1955, exposing players to instances of racial discrimination along the way.

The White House has encouraged these trends through the *Educate to Innovate* campaign. The campaign seeks to improve science, technology, engineering, and math (STEM) education for children by enlisting various private companies and nonprofit groups, including ESA, to encourage students, particularly those in middle and high school, to pursue these subject areas. Since 2011, ESA has worked in cooperation with several organizations to harness students' passion for computer and video games by offering the National STEM



Video Game Challenge, a game design competition.

In some instances, games provide a framework for a school's overall curriculum. Quest to Learn, a public school with New York City and Chicago campuses, uses a teaching model that draws direct inspiration from video games to create challenging learning experiences. Games also play a direct role in many classrooms, with teachers requiring students to design their own video games or play them as part of their coursework.

An increasing number of teachers and school administrators also recognize the educational value of video game design courses, which provide their students with instruction in traditional academic subjects as well as career preparation. Now, state education officials are beginning to standardize and approve game design curriculum for statewide use. The Texas State Board of Education approved standards for a high school Game Programming and Design course, and the North Carolina State Board of Education approved introductory and advanced Game Art and Design courses for high school students. Both sets of standards went into effect during the 2012-13 school year.

PROFESSIONAL SKILLS AND PUBLIC EDUCATION

Computer and video games' impact inside the classroom has inspired educational and training efforts outside the classroom. Businesses use games to train employees and games are becoming a key fixture in public education campaigns.

70

The percentage of teachers that said video games increased students' motivation and engagement levels, according to a national survey of 500 teachers who use digital games in the classroom.



Fortune 500 companies are using games to test applicants and train their employees. One entertainment software company, Games2Train, has developed employee training games for American Express, Bank of America, IBM, JP Morgan Chase, Nokia, and Pfizer.

The U.S. Department of Homeland Security's Science and Technology Directorate (DHS S&T) partnered with the U.S. Army to develop the Enhanced Dynamic Geo-Social Environment (EDGE). The EDGE system enables first responders to practice disaster mitigation without endangering civilians or themselves by training in a virtual environment.

In addition, surgeons and doctors use video games to improve hand-eye coordination and precise movements. Researchers from Sapienza University of Rome found that surgeons who operate using tiny cameras and instruments improved their performance after playing video games on the Nintendo Wii. In addition, surgeons at Florida Hospital Celebration Health who played video games for more than three hours per week made 37 percent fewer errors, were 27 percent faster, and scored 26 percent better overall than surgeons who never played video games.

Video games and their technologies also serve as tools to educate the public. Developers incorporate political issues into games to engage the public in the key policy debates taking place on Capitol Hill and around the country. In March 2013, developer Muzzy Lane Software, in cooperation with McGraw



Hill Education, released *Government In Action*. The game allows players to serve as a Member of Congress, challenging players to build up political capital, awareness, approval, and influence to pass legislation and ultimately get reelected.

Additionally, the federal government partnered with the American College of Emergency Physicians to release *Disaster Hero*, a free online game that teaches families the skills needed to prepare for, survive, and recover from a natural disaster by testing the player's emergency preparedness.

DEGREE PROGRAMS

The educational benefits of video games are extending into higher education. Ludology, the study of video games from a humanistic perspective, now qualifies students to pursue careers in computer and video game design and programming. Moreover, nearly 400 U.S. colleges and universities offer computer and video game-related programs or degrees. These programs continue to expand and evolve. The University of Texas at Austin, for example, recently partnered with legendary game designer Warren Spector to create the Denius-Sams Gaming Academy, the first video game program in the United States led and taught by video game industry executives. The program focuses on developing students' creative and business leadership skills, and is an important part of a continued effort by universities, private companies, and local government to expand Austin's booming tech and game development industries.



It is clear students, educators, and lawmakers understand video games can provide a lucrative career path for young graduates with starting salaries significantly higher than other industries. In fact, the video game industry's average compensation per employee is \$90,000.





GAMES: IMPROVING HEALTH

The health of the American people is serious business. In a relatively short time, entertainment software has become a valuable partner in that cause. Computer and video games now serve as tools in the fight to preserve well-being, heal the injured, and train the professionals who respond to medical emergencies.

PHYSICAL FITNESS

One study released by the University of Kansas Medical Center in 2013 underscored how video games can help achieve physical wellness. The study showed that players who participated in the weight loss training through *Second Life* lost a comparable amount of weight to people in the more traditional, clinic-based program. When comparing the results gathered from patients using a virtual weight-maintenance program to data from other studies on face-to-face maintenance programs, the researchers found that the virtual program was more effective. A March 2014 study from the UnitedHealth Group echoed these findings. Researchers found that giving children active video games to play while they follow a weight management program boosts their moderate and vigorous activity levels. The kids who played active video games also lost more weight than children who only followed the weight management program.

To help keep children fit, many schools are leveraging active video games to

promote increased physical activity. In California, for example, the Fresno Unified School District used a grant from the California Endowment to purchase a special classroom version of *DanceDanceRevolution*, a game that requires players to vigorously dance across four arrow-shaped floor pads following a game-generated pattern set to music. The *DanceDanceRevolution Classroom Edition*, a joint initiative from Konami and UnitedHealthcare, allows up to 48 students to simultaneously participate in a dance session by using a mat outfitted with a "smart card reader" that tracks an



37 Percent

Percent of fewer errors that surgeons who played video games at least three hours a week made in simulations of laparoscopic surgery compared to non-players according to a report published in the *Archives of Surgery*.

individual student's progress. Additionally, the Idaho Digital Learning Academy incorporated Nintendo's Wii Fit into its physical education classes. Students receive instructions online and can do their classes from home. Each Nintendo Wii workout also comes with a homework assignment, such as identifying the different parts of the cardiovascular system.

Students are not the only ones using video games to stay fit. Senior citizens and personal trainers also embrace active games. Retirement communities across the country, such as Grace Presbyterian Village in Dallas, use the Nintendo Wii at their facilities to help seniors stay active. Video games also improve elderly players' overall wellness. Researchers from North Carolina State University found that senior citizens who played once a week or more reported higher levels of well-being, positive mood, social functioning, and better self-reported health than non-gamers. In addition, the National Senior League sponsors a National Wii Bowl each spring and fall, and recently named the top 40 Senior Wii Bowling teams in the world. In 2013, these championships included more than 290 teams from 33 states.

Video games can also make exercise at the gym more appealing. The makers of the genre-defining *Guitar Hero* recently launched GoGi, a game platform that uses Bluetooth technology to connect to cardio gym equipment. Players wear a sensor on their bodies that tracks their movements and displays their actions on screen. Famous athletes and celebrity personal trainers are also working with game companies to develop their own rigorous game workouts. *Tony Horton's P90X* and *Shaun T's Insanity*, as well as workouts from well-known trainers like Tracy Anderson and Jillian Michaels, are available for Microsoft's Xbox One. Making use of muscle mapping, balance calculations, and limb orientation detection, these games offer players immediate feedback to help improve their



techniques, prevent overextensions, and more. The American Heart Association (AHA) also recognizes the benefits of the Nintendo Wii as a fun tool people can use to stay in shape. AHA teamed up with Nintendo to promote the system, and the organization's logo now appears on packaging for products like *Wii Fit Plus* and *Wii Sports Resort*.

In April 2012, ESA partnered with the President's Council on Fitness, Sports & Nutrition to launch the Active Play Presidential Active Lifestyle Award Challenge in April. Through this innovative partnership, Americans can now earn their Presidential Active Lifestyle Award, or PALA+, through active video game play. The PALA+ program requires children to be physically active for 60 minutes each day and adults to be active 30 minutes a day, five days a week for six out of eight weeks.

MEDICAL RESEARCH

Recently, video games have played a pivotal role in medical research. The growth of crowdsourcing games offers researchers a new, innovative way to garner help from game players around the world.

Cancer Research UK created *Play to Cure: Genes in Space*, a game that enables gamers to contribute to vital research by coding vast amounts of data about cancer genes. Players navigate a spaceship through valleys and mountains, tracing a



4 to 6.7

Number of calories kids burn per minute playing exergames like *Wii boxing*, *Cyber Tracer*, *Light Space*, *Sport Wall* and *Xavix*. Compare that to the 4.4-calorie burn kids would get walking on a treadmill at 3 mph.



course that helps scientists identify genetic mutations that often predict the development of cancer. Additionally, researchers from UCLA created an online game, *BioGames*, in which players must distinguish malaria-infected red blood cells from healthy blood cells by viewing digital images from microscopes. Researchers found that “non-expert” players were able to diagnose malaria-infected red blood cells with a level of accuracy that was within 1.25 percent of the diagnostic decisions made by a trained medical professional.

Other games are helping doctors expand treatment knowledge to clinicians and players without a rigorous medical education. A web-based game, *Septtris*, is modeled after the popular computer game, *Tetris*. Developed by medical professionals at Stanford University and funded by the Pentagon’s Defense Advanced Research Projects Agency, the game challenges players to keep a patient alive and find a cure for sepsis by observing the patient’s vital signs.

MEDICAL TREATMENT

Medical professionals also use games to address health concerns. With the help of the ESA Foundation, HopeLab – a nonprofit group that aims to improve the quality of life for kids with chronic illness – built on the success of its motivational cancer-education game, *Re-Mission*, with *Re-Mission 2*. *Re-Mission 2* is a series of web-based games that help teach young cancer patients about their treatment regimens. In *Re-Mission 2*, players navigate

the human body to fight cancer. Using treatments such as chemotherapy, antibiotics, and the body’s natural defense mechanisms, players destroy individual cancer cells. The game was developed with the help of 120 young cancer patients from across the country to ensure that in addition to being motivational, the game is also fun. Like its predecessor, *Re-Mission 2* alters children’s perceptions of chemotherapy and inspires them to stick with their treatments.

Today’s multi-touch game technology gives researchers the ability to develop low-cost applications with the potential to treat sufferers of autism, cerebral palsy, and other developmental disabilities more efficiently, and in some cases more effectively, than traditional methods. At the Children’s Hospital of Philadelphia’s Center for Autism Research, researchers teamed up with programmers to create a series of games that help autistic children recognize facial features. In addition, game developer Red Hill Studios is working with the University of California, San Francisco to develop a series of games to help Parkinson’s patients. Using the Microsoft Kinect, the games require players to complete a series of motions and gestures proven to improve the gait and balance of those with the disease.

Students at Champlain College in Vermont have developed games to help people with cystic fibrosis. Patients with the disease develop thick mucus in their respiratory system, which they must cough up to prevent it from clogging their airways. The games engage players in traditional breathing exercises that help clear airways in a fun and interactive way. One game challenges players to drive a race car, fill up with gas and wash the car, while another game tasks patients with blowing slime off of animals they discover in order to earn treasures. Researchers found that patients’ ability to take a deep breath improved significantly after playing such games.

Recent research has also shown that video games can help adults struggling with addiction. Duke University professor Zach Rosenthal applied video games to exposure therapy, creating a game in



24

Percent reduction in nicotine cravings among patients who played the video game *Tetris*, according to a Plymouth University study.

which drug addicts navigate a virtual world filled with real-life temptations under a therapist's guidance. The exercise is designed to help patients build tolerance to previously uncontrollable cravings. Additionally, a May 2014 study found that playing the classic video game *Tetris* reduces the strength, frequency and vividness of naturally occurring cravings, including nicotine cravings, by up to 24 percent.

REHABILITATION

Video games have emerged as a unique rehabilitation tool that helps patients to develop better attitudes and recover from injuries ranging from the irritating to the life-threatening.



Rehabtics, a physical therapy start-up founded by a Johns Hopkins Ph.D. student and entrepreneur, is developing a software program called ArmSPOT that would allow patients to complete physical rehabilitation workouts in the comfort of their own living room. The system aims to make patients more engaged in their rehab and improve their outcomes by turning workouts into a game. The program will collect and later send data about patients' workouts to their doctors, allowing

physicians to better track progress and give patients the extra push to follow through on their doctors' orders. Cadets at the Air Force Academy are developing a program that uses the Xbox One to help stroke victims track their movements. Using the Kinect, patients move their bodies to mimic a stick figure on the screen. The system records the activity and assesses whether patients performed the movement correctly.

Leading hospitals across the country, such as the new Pain Medicine Care Complex at the Children's National Medical Center in Washington, DC, are using video games to help patients manage chronic and often debilitating pain disorders. A Kinect sensor tracks patients' movements as they play one of four of galaxy-themed video games created specifically for the complex. The game transmits technical data and interactive activities to their doctors, who then use the data to objectively identify and monitor pain and then determine how to evaluate techniques used to treat it. Doctors believe that they can use the data to develop more accurate and applicable pain treatments for adults, including for other chronic conditions like autism, cancer, and diabetes.

Soldiers returning from combat in Iraq are playing *Virtual Iraq*, a commercial video game that University of Southern California researchers modified to help veterans cope with the debilitating post-traumatic stress disorder (PTSD). The game takes exposure therapy to a new level, allowing veterans to experience the sights, sounds, and smells necessary to emotionally process traumatic memories.

MEDICAL TRAINING

Video games also train medical personnel for the life-or-death decisions they have to make quickly. Employees at the Office of Naval Research (ONR) use BreakAway's *Pulse!!* virtual clinical training software that teaches players time management and quick-thinking skills. *Pulse!!* guides nursing and medical students through simulated patient interaction as realistic sights and sounds unfold in the background.

57

Percent decrease in depressive symptoms among those who played casual video games, according to researchers at East Carolina University.



UNIVERSITY of MARYLAND
MEDICAL CENTER

The University of Maryland Medical Center's Advanced Simulation, Training, Research, and Innovation Center (MASTRI) also utilizes video game technology. In one program, surgical residents face an emergency scenario

and must perform the necessary procedure on a simulated patient through virtual reality computer programs. The program also uses the same motion-sensing technology used to capture an athlete's movement in developing sports video games to help train surgeons to use proper technique.

Dozens of hospitals, medical schools and health foundations have virtual clinics on Second Life where they can stage different training drills. In one drill developed by the University of California San Diego, emergency room nurses must create a triage system to handle their avatar-patients, assessing the health condition of each patient and determining how to isolate the most contagious. In other programs, such as those created by start-up firm MUVE Market LLC, Second Life simulates the patients' symptoms and their response to treatment, including rashes and burns, or exhibiting odd behavior, such as dementia.



entertainment®
software
association

www.theESA.com

© 2014 Entertainment Software Association



GAMES: IMPROVING THE WORKPLACE

As the generation that grew up with video games enters the workplace, computer and video games increasingly play a role in business operations. A growing number of major companies, from automobile manufacturers to beverage producers, use video games to recruit and train employees, and increase sales among their tech-savvy customers.

RECRUITING

In recent years, organizations across all sectors have discovered that computer and video games are effective tools for raising awareness and generating excitement among young job candidates and current employees.



In 2011, Marriott International launched its own Facebook game to help recruit new employees for its expanding global network of hotel locations. The game, My Marriott Hotel places players in a hotel kitchen, and challenges them to shop for ingredients, purchase cookware, hire and train chefs, and complete food orders. The game also features a “Do It For Real” link that connects players to the career page of Marriott’s website. According to Francesca Martinez, Marriott VP of Human Resources, players from 120 different countries are running their own virtual kitchens at any given time, and more than one third of players visited the company’s career site.

The use of video games as a recruiting tool has led to the creation of new companies to serve this growing demand. Tech start-up Knack.it Corp is leveraging video games to change the way employers assess potential talent. Knack developed a series of games to augment the traditional interview process, offering employers much greater insight into candidates’ potential, behaviors, values, and qualities. Knack’s most popular game, Wasabi Waiter, challenges players to run a virtual restaurant by distributing menus, cleaning dishes, and delivering food, while also responding to patrons’ facial expressions to provide the best customer service. Wasabi Waiter collects multiple pieces of data every millisecond to determine whether players are empathetic, risk

\$7.2 billion

Expected global market for in-game advertising by 2016, according to DFC Intelligence.



averse, cool-headed, perceptive, quick thinking, agreeable, introverted or extroverted, or one of several other attributes. Potential employees benefit too by demonstrating hidden talents that would not come across in a standard face-to-face interview.

In addition, the China division of global consulting agency Deloitte Touche Tohmatsu created a virtual tour of its Beijing, Shanghai, and Hong Kong offices to attract talent and build its company brand. Players can visit working areas, training centers, and conference rooms that resemble those in the individual offices. The game offers potential hires valuable insight into the daily routine of Deloitte employees, and players are even encouraged to “chat” with current Deloitte professionals to get a better sense of the company culture and goals. Since its launch in 2010, more than 48,000 of those who virtually toured the China offices followed up on the company’s career page.



Companies also use video games to appeal to potential job candidates and boost morale among current employees. Some offices are abandoning ordinary break rooms and creating game zones where employees can relax and relieve stress. Host Hotels & Resorts, based in Bethesda, MD, offers employees a game room complete with a big-screen TV and a video game console, as well as pool and foosball tables. Other companies use games to encourage healthy lifestyle choices among their employees. Humana, Inc. developed an Innovation Center that aims to motivate both customers and employees to make healthy decisions through the use of games and other technologies, including social game FamScape, which seeks to increase players’ physical activity.

TRAINING

Video games offer public and private sector organizations an effective way to train employees that can be less expensive and provide more engaging learning experiences than traditional trainings.

These training techniques deliver valuable results. According to research conducted by Dr. Traci Sitzmann, a professor at the University of Colorado Denver Business School, employees who used video games during their training had a nine percent higher retention rate, an 11 percent higher factual knowledge level and a 14 percent higher skill-based knowledge level. Dr. Sitzmann encourages employers to provide employees with unlimited access to these training games, because playing a game multiple times further enhances their learning.

Government agencies and private organizations are leveraging video games and game technology to educate employees about growing security threats to online data and how to efficiently and effectively protect against cyber-attacks. The U.S. Navy developed CyberCIERGE, a computer game that challenges players to manage the budget, productivity, and security of an entire online network. Players must use resources such as firewalls, link encryptors, and access control mechanisms to defend their networks.

Additionally, Capital BlueCross has adopted a new video game training program for its employees. The game, developed by Axonify, challenges employees to increase efficiencies and avoid making in-house mistakes that happen during insurance application enrollments. With the help of the game, Capital BlueCross was able to reduce enrollment errors by 66 percent.

14

The percent higher skill-based knowledge level exhibited by employees who used video games as part of their training program, according to Dr. Traci Sitzmann.

Even professional athletes and Olympians use video games as a training tool, crediting the quality of sports simulations in games such as FIFA Soccer and Madden NFL with helping them improve their



physical and mental skills, or helping them maintain their skills while recovering from injuries. For the past five seasons, Team USA's youth development players have used IntelliGym, a program resembling the 1980's classic video game Asteroids that exercises players' minds and prepares them for the psychological challenges of competition. Originally designed as a cognitive training

program for Israeli pilots, IntelliGym requires players to move a triangle through a chaotic hockey rink past fast-moving obstacles and opponents.

The public sector is also embracing this trend. For example, researchers from North Carolina State University, Arizona State University, and Indiana University, have developed a simulation that allows crime scene investigators to look at a crime scene from multiple angles. Thanks to a \$1.4 million grant from the National Science Foundation's Cyber-Enabled Discovery and Innovation program, IC-CRIME delivers a 3D reconstruction of a crime scene by using a laser scanner and a high-definition camera to capture real-world crime scenes. Most importantly, the simulation allows investigators – represented by avatars – from different parts of the country to share data with each other long after the real-world crime scene has been cleaned up.

The U.S. Department of Homeland Security's Customs and Border Protection (CBP) worked with researchers at Sandia National Laboratories to develop a touch-screen, game-based simulation to train personnel and help agency leaders make key policy decisions. The Borders High-Level Model provides a virtual environment where users can play through different border incident scenarios by controlling CBP agents while managing budgetary and time constraints.

MARKETING

As the video game playing population expands and diversifies, marketers are increasingly using in-game advertisements and "advergames" to reach potential customers. The market for such advertising is expected to expand enormously in the years ahead. According to the Advertising and Video Games report by research firm DFC Intelligence, the in-game advertising market will reach \$7.2 billion globally by 2016, nearly 10 times bigger than the market's \$75 million level identified by Nielsen Media Research in 2006.



Anheuser-Busch, Inc. and Adidas Ltd., set the tone for computer and video game advertisements in Bally Midway's *Tapper* and Moby Game's *FIFA's International Soccer* in the 1980s and 1990s. Today, a number of industries and companies are building on this foundation. Ford Motor Company launched a "Start More Than a Car. Get More Than a Test Drive." program in 2011 that incorporates interactive game-like elements into a test drive of the 2012 Ford Focus. Potential customers navigate a test track outfitted with electronic markers, and receive scores based on

the accuracy of their driving. Drivers also hear the sounds of a crowd cheering when they precisely hit a target. Even presidential campaigns rely on video games to reach key demographics and swing state voters. During the 2012 presidential campaign, the Obama campaign had teamed up with Electronic Arts to run ads on numerous EA video games, including *Madden*, *Battleship: The Tactical Combat Game*, and *Tetris*, in hotly-contested states leading up to Election Day.

1983

The year Anheuser-Busch, Inc. first included advertising in Bally Midway's game *Tapper*.

