All things considered, the 21st century will be known for speed dialing through formal learning to connect directly with experience. As MIT Lab fellow, Michael Schrage observed, adults typically need to "persuade themselves" through their own experience to learn. Thus, the time lag between theoretical knowledge and practical application of it has been consistently shrinking since the latter half of the 20th century. More and more attention is being paid now to the management of learning, as well as modeling of learning outcomes rather than pure facts, content or theory. The economics of failure from making uninformed and untested decisions have accelerated the need for proper risk management practices in all aspects of business. Practice in real time has become the default risk management approach to organization change. Add to the mix the built-in interaction, collaboration and competition, and you get the perfect formula for a business simulation.

In this issue of Perspectives, we invited Dan Parisi, executive vice president of BTS, a global consultancy specializing in customized simulations for public and private sector companies and government organizations, to make a case for the role of simulations in corporate learning. Dan makes his case by citing compelling reasons why simulations increase organization agility and accelerate organization learning. "Within minutes of being placed in a simulation, participants are immersed in experiential learning environment that helps them derive immediate, applicable meaning..."

All respondents to Dan Parisi's business case for the primacy of simulations as organization's principal learning tools support his position. Philip McLullough, a former vice president of industry training and accreditation for the Institute of Nuclear Power Operations (INPO), refers to the lessons from accident management at Fukushima Daiichi nuclear power plant following the earthquake and the tsunami of March 2011. Cindy Brinkley, senior VP of talent development at AT&T, shows how simulations play a critical role in leading change at AT&T.

One common question that our respondents raise and help answer is why, given the evidence, aren't simulations used more widely. The main reason for that, as Carol Morrison, senior research analyst at i4cp, reminds us, is that simulations can be time intensive to create and more expensive to develop. Ted Nielsen, co-president, Application Platform, adds that unless highly customized to the organization's needs, simulations may not be the most effective behavior changing events. Case in mind is the off-the-shelf simulations as taught in business schools and other academic settings that do not address specific issues.

We believe that this discussion can contribute to the ongoing renewal of approaches to learning and change in corporate and government organizations. As always, your feedback and comments to *People & Strategy* and to our authors are most welcome.

Why Business Simulations Work and How They Are Building More Agile Organizations

By Dan Parisi, BTS

How Peak Performers Develop Hindsight in Advance

Before taking action, real-world peak performers like pilots, military personnel and disaster response teams use simulations to develop the skills to respond to high-impact challenges. Management decisions, too, can have significant consequences for their direct reports, customers and company shareowners. And while "on the job training" initiatives are often treated as acceptable alternatives, most managers don't want employees making high-risk decisions for the first time on their watch. So why don't more organizations take advantage of simulations to give their own managers and leaders the same performance advantages other peak performers receive? The case for using simulations to practice and develop peak performance is well-established and clear. What we're exploring here is *why* simulations and scenarios work so well. And how can we use this understanding to design solutions that develop, engage and manage our people optimally?

The Power of Practice

A May 2010 study conducted by Mercer found that HR managers cited leadership, succession, training and development as their top talent-management concerns. This explains, in part, why many HR departments and talent managers are embracing business simulations to help employees develop better leadership, business acumen and decision making skills.[1] The simulations provide an opportunity to practice new methods, processes and technologies without risk[2], and immerse participants in the new behaviors required for business success.

Business simulations help:

- Impact audiences in a more engaging, dynamic and effective way than traditional methods like reading or lecturing.

- Build alignment commitment, and execution capability around corporate strategies, business models and initiatives.

- Provide a realistic approximation of the business environment and create interactions that allow participants to experience their role in delivering results.

- Allow for the practice of key behaviors and skills that impact business results.

Within minutes of being placed in a simulation, participants are immersed in an experiential learning environment that helps them derive immediate, applicable meaning for their real-world jobs and companies.[3] In the simulation, a business year is compressed into a day or less: Participants can thus experience, in a matter of hours, high-priority issues that would ordinarily occur over the course of several months. The teamwork element of the program allows them to benefit from the wisdom of the crowd in real time as they consider and discuss probable solutions. Immediate debrief sessions ensure that feedback is provided in a timely manner and that the feedback sticks.

Not Just Training

The idea of simulations is a familiar one for digital natives, and even video-game playing is gaining credibility as a social good; author Jane McGonigal goes so far as to say, in the "Harvard Business Review," that, "The enterprise counterpart of what is now niche entertainment (alternate reality games) could become the new operating system for real-world business."[4] While this author does not seek to prove her thesis, we submit that acceptance of business simulations will only increase. As more and more Millennials—employees who have grown up online, using real-time simulation games such as Second Life and Farmville—enter the workforce, forward-thinking HR professionals will see that business simulations have a broad range of applications:

- Rapid familiarization of new hires with a company's products and customers—the future of work will see far more mobile workforces; agile organizations will need to accelerate the time-to-competency of their teams.

- Deep alignment building—today's most successful companies create a strong culture for their employees. In the future, companies will impart this culture throughout their entire ecosystem, to everyone who performs work on their behalf.[5]

- Development of execution skills and capabilities—business acumen decision making, leadership, and an understanding of how your function affects the top and bottom lines will be a critical part of every successful employee's know-how.

HR professionals and company executives are making simulations the primary driver of business insight and behavior change across business processes or corporate initiatives. The simulations allow users to immediately transfer the insight and knowledge they gain to on-the-job performance situations. The result is an effective, aligned organization that is able to quickly execute on plans, grow revenue and share price, and adapt to change in an on-demand market.[6]

The learning that takes place during a simulation helps participants increase competencies rather than simply build skills. Once employees finish a simulation, teams can compare results against one another. Results that may have looked good by themselves can begin to pale when put in a market context. Armed with this feedback, participants are able to see how their decisions play out, look at other teams' results, and see the effect a different choice might create.

As "Fortune" magazine columnist and MIT Media Lab fellow Michael Schrage has noted, successful adults typically need to "persuade themselves" through their own experience. Simulations do just that.

Dan Parisi, executive vice president, BTS, is a BTS global partner and managing director of BTS San Francisco. Throughout his 16-year career at BTS, Parisi has pioneered the application of customized business simulations for leading Fortune 500 clients such as Cisco, HP, NetApp, Texas Instruments, Toyota, Walmart and others. He has personally facilitated the development of more than 7,500 executives and managers using computer-based business simulations and other experiential learning techniques. Parisi received his MBA in finance from NYU and currently lives in San Francisco.

1 Whicker, Marcia Lynn and Sigelman, Lee (1991). *Computer simulation applications, an introduction*. Sage Publications: London

2 Senge, P. M. and Lannon, C. (1997). Managerial Microworlds. *Technology Review*, Vol. 93, Issue 5, 62-68

3 Kolb, David (1984). *Experiential learning: Experience the source of learning and development*. Prentice-Hall, Inc, Englewood Cliffs.

4 McGonigal, Jane, "Making Alternate Reality the New Business Reality" Harvard Business Review, February 2008, p. 2

5 Erickson, Tamara J. (2008). "Redesigning Your Organization for the Future of Work", p. 7.

6 Bolt, James F. (2004). *The Future of Executive Development*. Executive Development Associates, Inc.

A truly customized simulation blasts away irrelevant elements and focuses on core issues, immersing participants in culture, strategy and externalities that affect the business.

High Stake Simulations Require High Customization

Tod Nielsen, co-president, application platform, VMware

Dan Parisi presents a strong argument for the use of simulations today and increasingly for use in the future. As he states, the concept of "practice" in context gives participants a powerful way to transfer new insight, skills and thinking immediately to their day-to-day actions, applying them to their performance.

If I can provide one caution, though, it is the importance of deep customization for simulations used for the purposes of alignment and whenever simulations are being leveraged at the senior management level. This requires careful research and corroboration by the designers and top management on such elements as the company culture, environment, competitors and goals of the simulation. Without this credibility, the endeavor is at risk: Participants may discount the experience and a wedge is driven between their learning and their ability to apply the skills on the job.

Top leaders in particular cannot help but be skeptical when told a simulation will be a key event to change a culture or align an organization. Many have already had experience with business simulations: Ninety-eight percent of U.S. business schools have students participate in off-the-shelf simulations to teach everything from Business Policy to Marketing to Operations. Yet few business graduates count those simulations as significant behavior-changing events.[7]

A truly customized simulation blasts away irrelevant elements and focuses on core issues, immersing participants in culture, strategy and externalities that affect the business. This takes an enormous amount of expertise and deliberation—for every hour of simulation, there are dozens of hours of preparation—but, in the end, participants have measurable changes in behavior and even new business ideas. These results leapfrog the outcomes from off-the-shelf, lightly customized versions for the same population.

The customized simulations should model your organization's business challenges and anticipate its future evolution. This allows top leaders to not just see the new strategy but to practice making it a reality.

> **Tod Nielsen** is co-president, application platform with VMware. Nielsen joined VMware in January 2009. Prior to VMware, he served as president and chief executive officer of Borland Software since November 2005. Prior to Borland, he held several key executive management positions at leading software companies including Microsoft, BEA and Oracle. Nielsen brings more than 20 years of leadership experience in enterprise software and application development to VMware.

7 Faria, A. J., Nulsen, Ray (1996) "Business Simulation Games: Current Usage Levels: A Ten Year Update," Developments in Business Simulation & Experiential Exercises, Vol. 23, pp. 22-28

Organizational Inflection Points: The Strategic Application of Simulations at AT&T to Power Organizational Change

Cindy Brinkley, senior vice president of talent development and chief diversity officer, AT&T

Like many organizations, AT&T has undergone a significant transformation over the past decade. Through a series of mergers and acquisitions, the company evolved into the largest global provider of communication services, and an employer of more than 266,000 people around the world.

Over this period, the transitions and assimilations in leadership, culture, technology and business models have been complex. While a wide array of learning methodologies have been employed in the face of this change, at critical junctures AT&T turned to highly customized business simulations to ensure alignment around changes to organizational structure and business strategy.

Use of simulations during times of merger integration activity was found to be particularly effective, especially when cascaded top down to ensure that business strategy was being quickly understood and executed. In two instances over the past decade, AT&T and its legacy companies have realized significant measurable results through simulation.

In the case of the Cingular/AT&T Wireless merger, more than 6,000 senior leaders participated in simulations within weeks after the deal closed. This was critical, given the integration of two different cultures that had competed with one another. Getting leaders to unify behind the new company "as one" was accelerated, and simulation was key.

In addition and more recently, as AT&T set its course on "One AT&T," following the BellSouth merger and a change in leadership,

Chairman & CEO Randall Stephenson approved the use of a simulation-anchored learning event to once again drive a new vision. In this case, the simulation enabled thousands of leaders across the company to better understand what this new vision meant for them, their organizations and the future of the company.

Enabling these leaders to actually make simulated management decisions across the broader, more complex landscape of the new company, and doing it with cultural considerations top of mind has been instrumental in driving change quickly through this complex organization.

Simulations play a critical role in leading change at AT&T—and like other elements of a blended learning platform, they have a proper time, place and purpose.

As senior vice president-talent development and chief diversity officer at AT&T, **Cindy Brinkley** is responsible for identifying and developing future leaders, companywide training, employee engagement and diversity management. Brinkley joined the company in 1986, and has held several positions throughout her 24 years with AT&T—primarily in state and federal government relations. Brinkley was named president, SBC-Arkansas, in 1999, and in 2002 was recognized as the state's Business Leader of the Year. A native of Milan, Missouri, Brinkley holds a bachelor's degree in journalism from the University of Missouri-Columbia, and a bachelor's of science degree in political science from Truman State University.

The Society for Industrial and Organizational Psychology advocates careful construction of simulations, including use of "thorough and accurate job information," design that ensures all participants have equal opportunities and are rated on the same bases, and incorporation of standardized rating scales.

Simulations: Valuable, but Not Universal

Carol Morrison, senior research analyst, i4cp

Simulations offer a realistic, innovative and engaging option for workplace learning. But calling them "the primary driver of business insight and behavior change" may be optimistic, because their use remains somewhat limited. The Institute for Corporate Productivity (i4cp)—the fastest growing and largest corporate network and research organization focused on high-performance workplaces—and ASTD have partnered in multiple studies on the latest trends in organizational learning. When business and training leaders from organizations across a variety of industries and company sizes were surveyed about learning design, more than a third confirmed their use of online simulations. Offline versions—simulations that take place in a live environment—show more extensive adoption. Nearly half of study participants say they use offline simulations in their learning effort.[8] Far fewer—from two to five percent—are using virtual worlds and augmented realities for work-related learning.[9]

Simulations can be time-intensive to create, which may explain why they aren't more widely used. One estimate puts development time at 750 hours per single hour of an actual learning program.[10] Time-intensive usually means more-expensive-to-develop, thus cost could play a role in limiting use, too. Further, validity and effectiveness of simulations hinge on proper design. The Society for Industrial and Organizational Psychology advocates careful construction of simulations, including use of "thorough and accurate job information," design that ensures all participants have equal opportunities and are rated on the same bases, and incorporation of standardized rating scales.[11]

Although they require significant thought and effort on the back end, simulations appear to be well worth it. Because i4cp looks for the traits and strategies that set high-performing organizations apart, its research examines market performance (based on revenue growth, market share, profitability and customer satisfaction).

8   ASTD & Institute for Corporate Productivity. (2010). *Instructional systems design today and in the future.* Published by ASTD.

9   Institute for Corporate Productivity. (2011). Social media and the transformation of learning. Retrieved from www.i4cp.com

10 Chapman, B., et al. (2006). *Online simulations 2006: A knowledgebase of 100+ simulation development tools and services.* Retrieved from www.brandonhall.com.

11 Society for Industrial and Organizational Psychology. (2009). Work samples and simulations. Retrieved from www.siop.org

Simulations play a critical role in leading change at AT&T ... they have a proper time, place and purpose.

In the United States, each nuclear plant has a control room simulator that replicates plant responses to operational conditions. ... Manipulation of every control and/or piece of equipment responds with full fidelity to what a reactor operator would experience in the actual control room.

Analysis confirms that use of simulations correlates to market performance. Interestingly, online simulations have a higher correlation than do live, offline versions[12].

So in the end, the news about simulations is good. When simulations are in use, the organization employing them is likely to be a high performer. And the fact that they aren't yet used universally for workplace learning can offer companies valuable opportunities for leveraging simulations to achieve competitive learning advantages.

Carol L. Morrison is a senior research analyst for the Institute for Corporate Productivity (i4cp). She has a Bachelor of Science in sociology/social work and a Bachelor of Science in business administration/marketing. Her career experience spans public, private and nonprofit sectors. She has established and directed a municipal government information department and headed employee communications for national and multinational corporations. She is the author of research reports on subjects ranging from productivity to employee engagement. Contact information: (727) 345-2226 or carol.morrison@i4cp.com.

12 ASTD & Institute for Corporate Productivity. (2010). *Instructional systems design today and in the future*. Published by ASTD

Simulation Enriches a Strong Nuclear Safety Culture

Philip McCullough, EdD, retired vice president, industry training and accreditation, Institute of Nuclear Power Operations

This statement is made many times by nuclear plant operators validating the importance of simulation: "Everything worked in the plant in real time just like it did on the simulator." The nuclear power industry, like other high-risk industries, depends heavily on simulation for learning. Nuclear workers need to experience it on the simulator before they experience it on the real plant. This promotes a culture that makes nuclear safety the overriding priority and fosters a continuous learning environment.

Safety analysis and operational experience consistently indicate that human error can be the greatest contributor to the risk of a severe accident in a nuclear power plant. The use of full-scope simulators in the training and qualification of operators is an essential element to reduce human error. The reactor operators spend a large fraction of their time training and retraining on the simulator performing numerous exercises. This simulation instills more than just technical competence. Reactor operators improve their skills in areas such as leadership, communication, command and control, decision making and teamwork.

In the United States, each nuclear plant has a control room simulator that replicates plant responses to operational conditions. Manipulation of every control and/or piece of equipment responds with full fidelity to what a reactor operator would experience in the actual control room. Training is done on everything from routine plant monitoring to the most challenging accident mitigation scenarios.

There is much to be learned in accident management from what occurred at the Fukushima Daiichi nuclear power plants following the earthquake and tsunami in Japan in March 2011. Many of those lessons learned will be incorporated into training and simulation. These insights will strengthen nuclear safety culture around the world.

Simulation for learning clearly extends beyond the control room and is being developed for managers, supervisors and workers throughout the nuclear plant. With many experienced workers hitting retirement age the nuclear power industry is addressing issues associated with an aging workforce. While this is happening the replacement workforce is coming from an influx of Generation Y workers. The effective use of simulation will enhance the knowledge transfer to the next generation of workers keeping the focus on nuclear safety.

Philip McCullough is president of McCullough Consulting, LLC. His areas of expertise include safety culture, operational excellence, strategy, learning and governance. McCullough retired as vice president of Industry Training and Accreditation for the Institute of Nuclear Power Operations (INPO) in February 2011 after nearly 30 years in the nuclear power industry. He also served as the executive director of the National Academy for Nuclear Training. He helped advance the training and development of nuclear workers, managers and executives around the world.