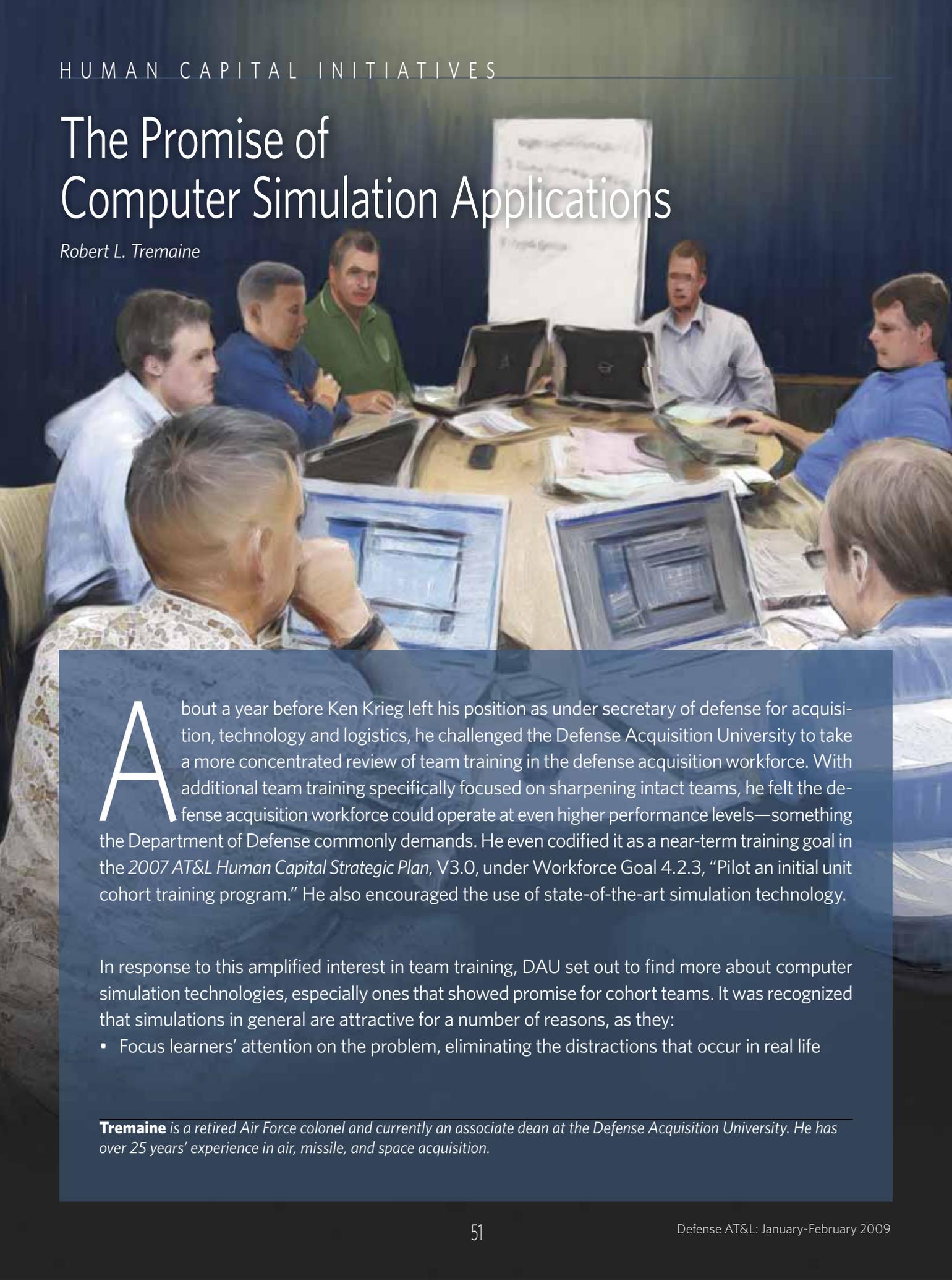


The Promise of Computer Simulation Applications

Robert L. Tremaine



About a year before Ken Krieg left his position as under secretary of defense for acquisition, technology and logistics, he challenged the Defense Acquisition University to take a more concentrated review of team training in the defense acquisition workforce. With additional team training specifically focused on sharpening intact teams, he felt the defense acquisition workforce could operate at even higher performance levels—something the Department of Defense commonly demands. He even codified it as a near-term training goal in the 2007 AT&L *Human Capital Strategic Plan, V3.0*, under Workforce Goal 4.2.3, “Pilot an initial unit cohort training program.” He also encouraged the use of state-of-the-art simulation technology.

In response to this amplified interest in team training, DAU set out to find more about computer simulation technologies, especially ones that showed promise for cohort teams. It was recognized that simulations in general are attractive for a number of reasons, as they:

- Focus learners’ attention on the problem, eliminating the distractions that occur in real life

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- Permit controlled manipulation of a situation with predictable results; learners discover and test hypotheses
- Allow learners to escape the consequences of poor decisions made by learners in the field—no permanent battle scars
- Ensure standardization of a situation (particularly valuable for evaluative studies and after-action reviews)
- Can be used to measure affective as well as cognitive learning, cut the learning curve, improve the retention of soft skills, and speed up training by mimicking real processes and situations
- Make learning more enjoyable.

DAU developed an initial course of action characterized by a four-phased approach—Phase 1: Investigation and Selection of Simulation; Phase 2: Pilot Demonstration; Phase 3: Assessment; and Phase 4: Implementation.

Successful implementation of any simulation option depended on finding a suitable candidate that met certain criteria—bounded by an application designed for usefulness and trouble-free employment, which was a key expectation for this effort.

Phase 1: Investigation and Selection of Simulation Options

Simulation is not new to training at DAU. In the September-October 2004 issue of *Defense AT&L*, Owen Gadeken reported in his article “Through the Looking Glass: A New Way to Learn Program Management” on the favorable experience with Looking Glass, Inc.©, a non-computer-based behavioral simulation from the Center for Creative Leadership that is already in use in DAU’s PMT 401 course. Looking Glass focuses on introspection and retrospection. It gives leaders and managers a chance to look within. Gadeken suggested it could also be equally useful for intact teams who require the same self-examination.

To date, there still aren’t any off-the-shelf non-computer-based or computer-based simulations specifically designed for defense acquisition cohort team applications. Instead, most still concentrate on the outer technical and functional edges, otherwise known as the soft skills (e.g., leadership, strategic planning, communication, change management, organizational development, relationship building, etc.). But is that what matters most to cohort teams, or are there also processes that need further inspection?

For additional assistance, DAU looked to one of its strategic partners, the University of Central Florida (UCF) Institute for Simulation and Training, to shore additional capability. In the meantime, DAU established the following set of criteria that seemed achievable in the overall evaluation of a useful and trouble-free candidate simulation:

- Consistent with the learning tenets of DAU’s Performance Learning Model to provide a diverse array of learning assets at the point of need

- Useful and suitable for the extended defense acquisition workforce community
- Straightforward and non-complex for students to operate
- Undemanding to facilitate
- Affordable and consistent with the costs of other computer applications used by DAU
- No more than one day in length
- Showing certain tangible return on investment in both the near and far term
- Not requiring unique and costly information technology infrastructure or invoking additional IT dependencies
- Potential applicability in DAWIA [Defense Acquisition Workforce Improvement Act] courseware
- Potential applicability in performance support.

Aside from the criteria, there was one showstopper, however, and it was preset: None of the candidate applications could involve developmental needs. Finding a non-developmental solution seemed to be a good point of departure. The marketplace is full of commercial off-the-shelf solutions. However, this development restriction caused a minor glitch in the selection process because none of the cohort simulations were specifically designed with the defense acquisition workforce in mind. On the other hand, if all the candidate computer simulations available required some level of development, could they be adapted for use by the defense acquisition workforce in some way? Fortunately, after initial screening, the DAU-UCF team found two simulation candidates that showed considerable promise: Executive Challenge™, developed by Enspire Learning; and ExperienceChange by ExperiencePoint, Inc.

To learn more about the two prospective simulations and their alignment with the goals of the under secretary of defense for acquisition, technology and logistics and with previously established criteria, the team consulted with both companies and explored the simulation mechanics of each. After several discussions and a more thorough inspection, both computer simulations did indeed appear to imitate realistic challenges that many intact teams face every day—especially the critical soft skills that give horsepower to the functional and technical demands required by acquisition professionals. How these simulations cultivated the soft skills was especially appealing.

Executive Challenge

Executive Challenge focuses on a computer manufacturing start-up company facing some tough decisions. Each player assumes a different position in the company and directly contributes to its success or failure. Everyone is actively involved in the process. Teamwork, collaboration, and consensus building—things cohort teams face every day—are crucial to the success of this simulation. The simulation itself is divided into three phases: Research and Development, Manufacturing, and Sales and Marketing. Each player has a



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different piece of the puzzle. It's up to individuals to decide what to share with the team. They must collectively decide how to allocate workforce resources and move the company forward. Tough decisions lie ahead. They have to strike a balance between training and production (e.g., planning for the future vs. immediate efficiency). They have to assign work based on certain skill sets while weighing workforce morale. Not surprisingly, obstacles arise, including those of an ethical nature. The team makes very real sacrifices to achieve success. Looking out for the team's reputation in the short run might cause problems later. A situation could escalate beyond recovery—too much damage to overcome. The team is constantly tested. They can't afford to sit still.

After an early faculty pilot and based on feedback from the participants, Enspire Learning adapted the simulation to more closely mimic the acquisition phases and emphasized requirements, research and development/production, and operations and support. The resulting transformation better reflected the acquisition dynamic, making Executive Challenge an even more effective simulation in the remaining pilots.

ExperienceChange

ExperienceChange focuses on GlobalTech, a hypothetical company fraught with realistic challenges. With limited time and resources, the team must "identify the issues, create a change plan, and implement this plan in the face of company-wide resistance" <www.experiencepoint.com/

>. This simulation gives cohort teams the tools they may need to implement change through careful application of change management best practices. ExperienceChange also gives teams a greater understanding of how to build stakeholder buy-in. Together, the cohort team members attempt to lead a company to success (eventually thinking about their own organizations) by cultivating competencies associated with change management in four prescribed steps: reviewing change best practices, practicing using the model and associated techniques in a simulated case, reflecting on key strengths and opportunities to improve, and applying the change theory with decision support tools when back on the job.

Unlike Executive Challenge, the cohort team actually interviews company leaders and managers who possess assorted and sometimes confrontational perspectives about their company, GlobalTech. After the interviews, the team must ultimately choose from a variety of interventions and try to change the minds of company employees who are resistant to change. Each intervention has associated time (in days or weeks) and cost attributes. As in the real world, the team has fixed budgets and limited timelines. In short, there are more interventions at the team's disposal than they can afford. If the team members make correct decisions at the right time, they see a company "buy-in meter" that goes positive, and GlobalTech just might survive the market upheaval. If they make a series of incorrect decisions, the company buy-in meter goes negative, and the company's survival is at risk. Each team member has to critically think and weigh alternatives under time pressure, build consensus with their colleagues, and act decisively in the face of very real consequences—just like the real world.

Phase 2: Pilot Demonstration

Between November 2007 and August 2008, the DAU-UCF team conducted a total of six pilots to confirm the usefulness and effectiveness of these two computer simulation products across a very diverse group of volunteer organizations in the defense acquisition workforce. Executive Challenge was pilot-tested by DAU faculty at Fort Belvoir, Va.; the Defense Contract Management Agency at Sunnyvale, Calif.; and the Program Executive Office Land Systems, Joint Light Tactical Vehicle, at Fort Belvoir, Va. ExperienceChange was pilot-tested by the U.S. Special Operation Command, Hurlbert Air Force Base, Fla.; the Navy Criminal Investigative Service, Fort Belvoir, Va.; and the Strategic Change Management Center, Quantico Marine Corps Base, Va.

The DAU-UCF team sought the help of those organizations. Each of the computer simulations required one full day to complete. Executive Challenge required one computer without Internet access per player; ExperienceChange required one computer with Internet access per team. The training day started with a limited introduction to the simulation, followed by the associated theory, simulation mechanics, some initial training (e.g., a dry run), and a facilitated discussion

Figure 1. ExperienceChange Results

	Organization		
	U.S. Special Operations Command	Naval Criminal Investigative Service	Strategic Change Management Center
	Sample Size: 18	Sample Size: 13	Sample Size: 19
Return on Investment			
This training was a worthwhile investment in my career development.	6.43	5.54	6.47
This training was a worthwhile investment for my employer.	6.57	5.54	6.47
I am comfortable in identifying forces for and against change within my team or organization.	6.00	5.62	6.16
I am able to use a best practices model to plan for change in my job.	5.93	5.31	6.11
I can implement change confidently after participating in this training.	5.79	5.62	5.89
This training will help me deal with surprises that accompany change in my job.	6.00	6.23	6.37
This training is important for cohort groups in general.	6.08	6.23	6.53
Learning Effectiveness			
Rate your increase in skill level of knowledge of this content before versus after the training. (0% is no increase and 100% is a very significant increase.)	6.01 (60%)	6.15 (65%)	6.21 (75%)
	Likert Scale (Low)1.....7 (High)		

after the formal portion of the simulation ended—where most of the deep learning occurs for these types of tools.

As the simulation got under way, participants were pumped-up with adrenalin. Questions flew, viewpoints were expressed, and debates ensued. It became clear that the success of both simulation experiences depended on constant and effective communication. Other factors—among them leadership, planning, organization, cooperation, technical agility, and even patience—were paramount in order to combat the prevailing uncertainties and clear the path for best decisions. Each simulation stretched the teams’ abilities and limitations. Insights emerged. Since most of the participants were part of existing cohort teams, professional relationships were already in place. It eased some of the “storming, forming, norming, and performing” hurdles associated with new teams. [The reference is to Dr. Bruce Tuckman’s 1965 team development model.] Nonetheless, healthy tension frequently surfaced (as planned) in response to the provocative and animated scenarios embedded in the simulations—all similar to what transpires on the job according to many of the volunteer participants. When the simulations ended, the cohort teams had truly been tested across a wide range of performance challenges. Ultimately, they seemed to feel good about the simulation they completed and the learning they experienced, and they appeared eager to exercise what they learned.

Phase 3: Assessment

After this limited pilot initiative, can these two simulation tools (and the growing family of similar computer applications finding their way to the marketplace) help raise the performance levels of cohort teams? The answer is “yes.” Even though six pilot

runs doesn’t constitute a huge sample size, they did allow the DAU-UCF team to collect sufficient data to indicate the promise and potential dividends afforded by computer simulations like Executive Challenge and ExperienceChange. The value and importance of practicing the soft skills (sometimes known as the glue that holds together functional and technical experts operating in cohort teams) quickly became evident in the DAU-UCF pilot demonstrations. Without them, there could be no success. The computer simulations also confirmed the necessity of these common skills to acquisition workforce members, whether they deal with products, services, or more tactical hurdles like milestone reviews, program assessments, or inspections of some kind. The soft skills we sometimes take for granted actually give cohort teams the collaborative elasticity, confidence, and decision momentum they require not just in simulations like these, but more important, in the real world.

DAU collected data by means of two separate surveys. Each was customized to the simulation type and administered at the end of each simulation day (Figures 1 and 2). The 84 pilot participants responded anonymously. The results were closely correlated. The feedback was both informative and quite favorable in most of the categories. Responses to “Return on Investment” and “Learning Effectiveness” questions were especially noteworthy, making these tools sound very useful. Many of the participants believed they could confidently apply their newly acquired competencies to their job right away.

Figure 2. Executive Challenge Results

	Organization	
	Defense Contract Management Agency	Joint Light Tactical Vehicle PEO Land Systems
	Sample Size: 18	Sample Size: 16
Return on Investment		
This training was a worthwhile investment in my career development.	5.94	5.75
This training was a worthwhile investment for my employer.	6.11	5.69
This forum provided me a mechanism for skills improvement.	6.35	5.75
I can implement a number of new skills confidently after participating in this training.	5.82	5.06
The new knowledge gained from the simulation has showed me the importance of close interaction and constant communication in cohort groups.	6.24	6.06
This simulation helped me better appreciate certain key fundamentals to decision making.	6.59	5.44
This training is useful for cohort groups in general.	6.53	5.88
Learning Effectiveness		
Rate your increase in skill level of knowledge of this content before versus after the training. (0% is no increase and 100% is a very significant increase.)	5.83 (58%)	5.88 (58%)
	Likert Scale (Low)1.....7 (High)	

Figure 3. **Summary Evaluation**

	Executive Challenge by Enspire Learning	ExperienceChange by ExperiencePoint
Performance Learning Model Breadth & Depth	Can address core training and specialized training	Can address core training and specialized training
Suitability for Defense Acquisition Workforce Personnel	Mid- to senior-level	Junior- to senior-level
Simulation Complexity	Requires 60-90 minute tutorial, including a practice round	Requires no appreciable tutorial
Difficulty Level for Facilitator	Requires 2-day training; application is intricate and demanding	Requires 1-day training, minor endeavor
Total Execution Costs	Affordable	Affordable
Length of Training	1-day	1-day
Expected Return on Investment (near- to far-term)	Promising based on feedback surveys	Promising based on feedback surveys
Unique Infrastructure/IT Dependencies	One computer per person, break-out rooms optional. No Internet access	One computer per team, break-out rooms for each team. Internet access
DAWIA Course Applicability	Multiple based on original curriculum mapping effort	Multiple based on original curriculum mapping effort
Performance Consulting Applicability	Targeted training, workshops, performance consulting, etc.	Targeted training, workshops, performance consulting, etc.

Good
 Fair
 Poor

Some participants arrived for the simulation day a little guarded and suspicious. Training doesn't necessarily stack high on everyone's priority list. One particular individual stood out. He was a lot more vocal and admitted upfront that he "really would rather be somewhere else today." At the end of the simulation, that same individual was equally vociferous about how much he enjoyed the simulation. He emphasized that he could exercise what he learned right away. The following sampling represents other comments captured by the survey:

- "Excellent simulation program ... highlighted the importance of trade-offs and communication."
- "Amazing to experience the communication that took place in our team. What seemed a daunting task proved attainable with our full communication."
- "All of us became teachers to each other."
- "Greatly influenced my outlook on teaming and communication."
- "Able to gain better insight into each job function and helped us assist one another when we stumbled."
- "This simulation was very worthwhile—outstanding!"

Figure 3 summarizes how each of the two simulations stacked-up against the evaluation criteria. Originally, the DAU-UCF team intended to narrow the selection to a preferred solution. After assessing all factors when the pilot ended, however, the team felt both simulations were distinctive enough to retain, since they addressed most of the same fundamental challenges facing cohort teams. Neither of the simulations failed any criteria. Even though Executive

Challenge is more complex and requires more instruction time and facilitation expertise, it wasn't enough to offset the potential dividends. It seemed just as effective as ExperienceChange once it got under way.

Phase 4: Implementation

Where do we go from here? Since both computer simulations are commercially available, they can be deployed with relative ease. Their success depends on competent and versed facilitators—a key variable to the execution equation. In all cases, the facilitators involved in the DAU-UCF pilot proved to be exceptional, all scoring very high marks in the instructor evaluation category on the survey.

Looking ahead at future possibilities, both computer simulations could be used as performance enablers for many DAWIA training classes that focus on achieving successful team outcomes, and/or practicing new enabling skills or sharpening old ones. In the area of DAU performance support, the simulations could also lend assistance outside the classroom to defense acquisition workforce members when faced with more institutional challenges that require corrective

action, intervention, or examination of the factors inhibiting key performance behaviors. Even though they are not defense acquisition-specific, those two tools could be extremely useful for defense organizations facing challenges in leadership, strategic planning, communication, change management, organizational development, and team building.

Adapting the computer simulations for specific defense acquisition needs might get easy in the near future, however. The two simulation product developers involved in the pilot are investigating existing authoring tool technology that would ultimately help them build more situation-specific scenarios. Consequently, it's just a matter of time before readily available computer simulations like those will truly mimic just about every aspect of an organization, making their value even more compelling.

As the saying goes, "practice makes perfect," and these two computer simulation applications already seem nicely suited for graduating the thinking and raising the performance level of cohort teams. They allow such teams the chance to practice, in a unique and engaging way, the vital enabling soft skills the defense acquisition workforce needs to meet daily challenges.

The author welcomes comments and questions and can be contacted at robert.tremaine@dau.mil. He thanks the many DAU-UCF team members who made the pilot program a reality.