

## Training Staff in the Joint Event Life Cycle: A Blended Learning Approach

Ms. Emilie A. Reitz	Dr. Sae Schatz	Ms. Amber L. Alston	Dr. David Fautua
General Dynamics – Information Technology	MESH Solutions, LLC™ (a DSCI® Company)	MESH Solutions, LLC™ (a DSCI® Company)	Joint Staff
Suffolk, VA	Orlando, FL	Orlando, FL	J7, Joint Training
emilie.a.reitz.ctr@mail.mil	sschatz@mesh.dsci.com	aalston@mesh.dsci.com	david.t.fautua.civ@mail.mil

### ABSTRACT

Joint staff exercises are fast paced and challenging, with a wide range of training objectives that must be accomplished on a compact schedule. In other words, these exercises represent the “run” phase of joint staff training. However, newly arrived staffers and Individual Augmentees (i.e., temporary individual placements) are frequently tapped to perform pivotal functions during these events—even though they may still be learning basic skills or lack experience at the joint (versus Service) level. Ultimately, this training gap creates time and cost drains in the joint event life cycle.

To address this issue, Joint Staff J7, Joint Training is investigating ways to incorporate targeted, team-focused training into the joint event life cycle prior to the large-scale exercise. This initiative builds upon the positive outcomes of the Continuum of eLearning system first introduced in 2012 (Schatz, Fautua et al., 2012). The Continuum of eLearning system trains under-practiced skill sets to personnel in preparation for joint staff events. It delivers this training via online and—as of this year—distributed virtual environments, and it includes mechanisms for blending the distributed training into the existing live-training exercise components.

The virtual, team-focused training addition to the Continuum of eLearning is based upon the existing Small Group Scenario Trainer (SGST) capability. The SGST incorporates storytelling scenarios, real-time remediation, advanced sequencing, and avatars to support team training and critical thinking. While the SGST has been used effectively as a standalone trainer, we look to broaden its usage as part of this systemic solution for virtual joint staff training. This paper describes the initial insights gained from prior research efforts, best practices for effective team training, the challenges and handoffs associated with staff training in the virtual environment, and our approach for future development and testing of this blended online, virtual, and live joint training implementation.

### ABOUT THE AUTHORS

**Emilie A. Reitz** is a research analyst with General Dynamics Information Technologies. In addition to working on the CoL, she also serves as one of the lead researchers for human factors in Bold Quest and acted as a research assistant for the Border Hunter initiative. Emilie holds a Master’s Degree in international studies.

**Sae Schatz, Ph.D.**, is the Chief Scientist of MESH Solutions, LLC. Her work focuses on education and training for the Defense community, particularly the skills associated with “cognitive readiness.” In addition to her research, Dr. Schatz teaches and mentors University of Central Florida (UCF) Modeling & Simulation graduate students.

**Amber L. Alston** is a human systems scientist with MESH Solutions LLC. Her work focuses on applying human centered design and engineering principles to the creation of highly useful and usable technologies such as virtual learning systems. Amber holds Master’s Degrees in Communication Theory and Modeling & Simulation.

**David T. Fautua, Ph.D.**, is Chief, Individual Training & Learning, Joint Training, J7 Joint Staff. He formerly served as US Joint Forces Command Academic Chair, held an appointment as visiting associate professor at the Joint Forces Staff College, and was special assistant to two NATO Supreme Allied Commanders. Most recently, he served as the principal investigator for the NTSA-award winning Border Hunter research project.

## Training Staff in the Joint Event Life Cycle: A Blended Learning Approach

### Ms. Emilie A. Reitz

General Dynamics –  
Information Technology  
Suffolk, VA  
emilie.a.reitz.ctr@mail.mil

### Dr. Sae Schatz

MESH Solutions, LLC™  
(a DSCI® Company)  
Orlando, FL  
sschatz@mesh.dsci.com

### Ms. Amber L. Alston

MESH Solutions, LLC™  
(a DSCI® Company)  
Orlando, FL  
aalston@mesh.dsci.com

### Dr. David Fautua

Joint Staff  
J7, Joint Training  
Suffolk, VA  
david.t.fautua.civ@mail.mil

## INTRODUCTION

Joint staff exercises are fast paced and challenging, with a wide range of training objectives that must be accomplished on a compact schedule. Frequently, these events involve hundreds of participants from dozens of coalition countries (see Figure 1). Joint and multinational staffs execute 24-hour operations, coordinate across several distributed locations, and must address hundreds of challenging scenario events. In other words, these exercises represent the “run” phase of joint staff training.

When U.S. service members arrive at a joint exercise, they should be confident, well-versed, and practiced in their joint functional duties. However, newly arrived staffers and Individual Augmentees (i.e., temporary individual placements) are frequently tapped to perform pivotal functions during these events—even though they may still be learning basic skills or lack experience at the joint (versus Service) level. Even for a member of a command’s permanent staff, the ability to prepare for involvement in an exercise will be hampered by the requirements of daily workload and real world operations. Staff members may find themselves assigned to support an area of the command that they are unfamiliar with, with few resources to prepare themselves for executing potentially different processes with an unknown group of fellow staff members. Consider this fictional scenario of a typical Individual Augmentee assigned to attend a joint exercise:

Lieutenant Commander (LCDR) Michael Jones, a supply officer and therefore a member of the J4 functional area, receives notification one month in advance that he will participate in an upcoming joint exercise. LCDR Jones knows the general tasks he will need to carry out during the exercise, but he has only previously performed those functions in real-world operations. The schedule for boards, bureaus, centers, cells and working groups looks daunting. Joint processes can differ significantly from a Service’s processes; he will need to brush-up on it, as well as the additional knowledge and skills required of a joint staffer.

To prepare for the exercise, LCDR Jones can read through the numerous, lengthy joint doctrinal publications, but that material may be difficult for him to internalize and apply. Reading about his tasks will not adequately prepare him to perform them in a *team*-based environment—with teammates he has never met who come from different Services, cultures, and backgrounds. Regardless of these challenges, LCDR Jones tries to make time to review the joint publications, but his regular duties consume most of his time. He struggles to prioritize which topics to review, and even after reading some of the joint documents, he remains unsure of how the joint processes *really* work in the complex, collaborative joint environment. After all, isn’t all supply work joint in the end?

One month later, LCDR Jones arrives at the event. He was fortunate enough to arrive early enough to attend the “academics,” a one-day didactic seminar where the observer/trainers explain many of the key doctrinal principles that are applicable to the exercise. With all of the new processes and joint jargon presented, LCDR Jones struggles to follow along during the academics, and with so many people in the lecture hall, he cannot ask for clarification. A few days later in the exercise, LCDR Jones struggles to keep



**Figure 1.** U.S. and Colombian military personnel work alongside one another inside during PANAMAX 2012. Photo by MSG Kevin Doheny.

pace with the scenario's fast tempo. He has to keep asking other members of his functional area how to perform basic processes. By the end of the week-long event, LCDR Jones feels confident in lower-level procedural tasks, but while he practiced those basics during the exercise, he missed the opportunity to focus on higher-level learning objectives. LCDR Jones does not attend the after-action review at the end of the exercise, as his orders are ending and he needs to return to his normal work. There is a general sense of praise for the hard work everyone put into the exercise, but he wonders how he, personally, performed. Is he ready for real joint staff operations, or does he need to review other topics (and if so, *what*)?

In 2011, Joint Staff J7, Joint Training, initiated the Continuum of eLearning (CoL) project in order to address training challenges in the joint event life cycle, such as those outlined in the above use case. The CoL accomplishes this through a combination of targeted online courses, distributed scenario-based training, and blended learning processes. In 2012, Joint Training implemented the first version of the CoL, which includes individual courses delivered via Joint Knowledge Online (JKO). In 2013, Joint Training personnel are expanding the online courses and launching the second version of the overall system. CoL V2.0 incorporates the "walk" phase of training, which includes targeted, team-focused simulations delivered via the Small Group Scenario Trainer (SGST). This year, the team is also formalizing the blended learning-training processes that help observer/trainers blend their live training with the online components.

This paper briefly summarizes the previous CoL research, and it describes the current, ongoing design, development, and testing effort. The paper also discusses best practices for effective team training (which are incorporated into CoL V2.0 design), the challenges and handoffs associated with staff training in the virtual environment, and future development and testing plans for this blended online, virtual, and live joint training implementation.

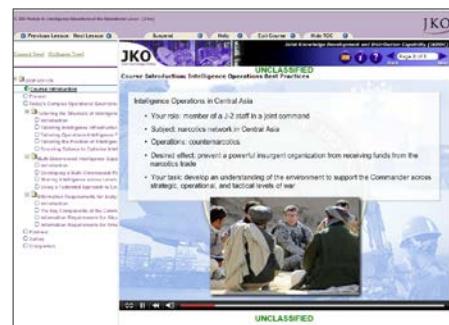
## CONTINUUM OF eLEARNING: BACKGROUND AND PREVIOUS RESEARCH

The CoL program can be considered both an instructional system capability (i.e., the actual courses and training materials) and a systematic process for developing online courses. These courses are then blended with small-group and collective-training events, ensuring that instructional best practices from across military and civilian education are integrated throughout the process. More precisely, the CoL includes: (1) self-paced, e-learning courses; (2) small-group online simulation; (3) strategies for blending learning/training; (4) strategies for enhancing development; and (5) strategies for enhancing execution.

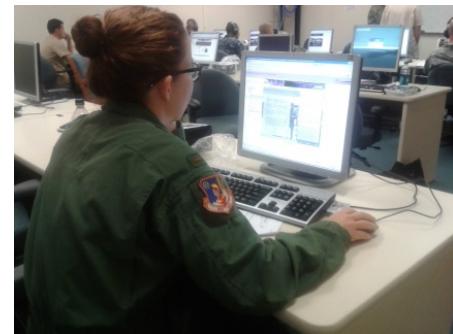
### CoL V1.0 Development and Testing

The first iteration of the CoL system was implemented in 2012. The eight 100-level courses address core doctrine, and are kept up to date as new joint pubs are released; the eleven 200-level courses focus on current best practices, sourced from across the Combatant Commands (see Figure 2). Additional courses are uniquely tailored content designed to support specific Combatant Command and Joint Task Force exercises. This first iteration of the CoL also incorporated the following instructional best practices, in order to bolster student learning:

- Emphasis on higher-order learning
- Use of pre-tests for adaptation (e.g., opt out of known material)
- Active alignment between given courses and live scenario
- Inclusion of higher-order assessments (e.g., concept maps)
- Inclusion of online formative and summative assessments
- Use of mastery learning strategies
- Use of historical vignettes to demonstrate the doctrine
- Inclusion of higher-levels of interactivity to aid engagement



**Figure 2.** Screen capture of a 200-level CoL course. Courseware by Joint Knowledge Online.



**Figure 3.** CoL V1.0 experimental participants complete CoL courses prior to PANAMAX 2012.

A beta test of the CoL V1.0 system was conducted during PANAMAX 2012, a U.S. Southern Command multinational training exercise. Data collection occurred from May to August 2012 in Mayport and Doral, Florida, as well as Suffolk, VA. Approximately 200 US personnel participated. Half of the experimental participants completed three online CoL courses prior to the event (see Figure 3), while the other half served as a control group. (For a summary of the experimental design, see Schatz et al.'s 2012 I/ITSEC paper.)

Through this study, the research team documented the learning effectiveness of the CoL courses as well as their usability, motivational effects, operational relevance, and ability to engender a "joint mindset." Results showed that the CoL participants had significantly more positive reactions to the online courses as compared to their own previous experiences with online courseware. The experimental group also demonstrated significantly higher learning outcomes (post-exercise) than the control group. Finally and perhaps most notably, at the end of the exercise, when asked whether they had felt prepared coming into the event, only 17.50% of the control group responded affirmatively while 81.79% of the experimental group reported feeling well-prepared. However, only reinforcing an individual's declarative knowledge does not necessarily prepare trainees for execution of more complicated tasks built on that declarative knowledge, or perform team-work in that area. A gap still exists between individual information and the collective training exercise.

## CONTINUUM OF eLEARNING: NEW ADDITIONS

As mentioned above, the next iterative development of the CoL builds upon V1.0. Specifically, CoL V2.0 includes expanded content, folding in improvements requested by the training audience in the PANAMAX beta test, as well as incorporating additional 100- and 200-level courses. It also includes enhanced blending processes, with more detailed performance metrics and visualizations of the outcome data designed to give commanders and training personnel additional insights into the staff's aggregate cognitive readiness. Finally, the V2.0 incorporates a distributed training simulation. This team-focused training uses a web-based staff simulator, based upon the existing Small Group Scenario Trainer (SGST) and implemented on JKO. The blended learning processes document and facilitate specific steps that instructional designers and observer/trainers can take to ensure that the online and live training components fully integrate with one another.

### (1) Distributed Team-Based Simulation

Several major studies focused on the U.S. military, as well as other high stress/high impact jobs, have demonstrated that training teamwork competencies, in addition to taskwork skills, creates significantly better teams and enhanced overall performance (e.g., Salas, Cooke & Rosen, 2008.) Simulation-based team training is a particularly powerful training tool as it allows team members to dynamically engage in the cognitive, behavior, and social teamwork processes while receiving feedback based on actual performance (Gorman, Cooke, & Winner, 2007). Additionally, in the training literature, there is growing evidence that virtual environment-based training may more effectively prepare teams for live execution of a task (Roman & Brown, 2009; De Leo, Sechrist, Radici, & Mastaglio, 2010).

To obtain these benefits, the CoL V2.0 includes and extends the existing SGST, currently available via JKO (see Figure 4). The existing SGST capability is more limited than the ultimate vision for CoL virtual staff training; however, it possesses several instructional benefits. It currently incorporates storytelling scenarios, real-time remediation, advanced sequencing, learning content navigation, and the use of avatars that support team training, critical thinking, and learning. In its current state, the SGST successfully supports staff training. We hypothesize that its impacts will grow as designers incorporate explicit teamwork training, integrate the SGST into the full blended learning continuum, and tailor training to fit the unique objectives of each staff exercise.



Figure 4. Screen capture of the SGST on Joint Knowledge Online.

Figure 5 shows the progression of training in the updated SGST. Learning experiences in it generally follow this structure, which is detailed below.



**Figure 5.** Progression of training in the CoL V2.0 version of the SGST

**1. Introductory vignette.** Similar to the individual online courses, each team-training episode begins with a multimedia presentation that reinforces the lessons learned in the corresponding self-paced course. This serves to gain students' attention, reinforce the previously learned material, and prime students' performance for the upcoming training scenario. These opening vignettes do not include narrative-specific information; instead, they emphasize general principles related to the training objectives. This allows reuse; that is, the same opening vignette can support different training scenarios, so long as each scenario includes the same high-level training goals (e.g., joint planning for disaster relief and joint planning for counter-drug operations).

**2. Introduction from Commander.** After the opening vignette reinforces the training content, a second multimedia vignette presents narrative information that frames the training scenario. In this vignette, a "commander" presents the content in a format similar to a mission briefing. When feasible, this commander may be a digital version of one of the training audience's actual senior leaders; in other cases, the multimedia commander may be a fictional character. In either case, the commander presents the "road to crisis" (i.e., the events that preceded the current scenario), as well as his/her expected mission outcomes and general guidance (i.e., the instructional goals and "rules" for the scenario).

**3. Scenario.** Once students have watched the introductions, they can begin the training scenario. During the scenario, participants interact with desktop computers similar to the ones on which they would perform their normal staff operations. Each participant has access to realistic planning interfaces and files, and simulated injects (e.g., messages or news stories) introduce new information into the scenario as it unfolds. In addition to practicing and receiving feedback on their typical staff duties, the training audience receives prompts and feedback about their communication and collaboration performance. Best practices for team training, drawn from existing literature, are shown in Table 1. The new teamwork components in the SGST are based upon these principles.

**4. Post-test.** Finally, students individually complete a post-scenario assessment, which includes questions similar to those found on the summative online exam in the preceding individual courses. This post-test not only reinforces the training objectives from the self-paced courses and small-group scenario, but it also helps observer/trainers track personnel's learning progression over time.

**Table 1.** High-level summary of best practices for team training

<b>Team Performance Best Practices</b>		
Researchers have conducted significant research on team performance over the last 20 years in military and other high-impact settings. Research shows that highly effective teams require several categories of competencies to be successful (Cannon-Bowers & Salas, 1998). These include knowledge of cue/strategy associations, knowledge of teammate characteristics, shared task models, knowledge of team interaction patterns, task sequencing; skills in adaptability, shared situational awareness, mutual performance monitoring, communication, decision making, interpersonal skills, team leadership, assertiveness, conflict resolution; and attitudes of collective efficacy, shared vision, team cohesion, mutual trust, collective orientation, importance of teamwork. The academic literature suggests several best practices for increasing the performance of teams; we have grouped this information into the following three training phases: pre-practice; during-practice; and post-practice.		
<b>Pre-Practice.</b> Before a scenario-based learning activity begins, participants should be motivated, but not have inflated expectations of the scenario (Cannon-Bowers et al., 1995). Preparation for the scenario should include delivery of a common introduction in order to create shared mental models among the team (Cooke et al., 2003), and training in explicit communication and associated strategies should occur. These will improve the ability of team members to overcome these obstacles to team coordination (Salas, Cooke, & Rosen, 2008).	<b>During-Practice.</b> During the active training scenario, the training should emphasize team coordination and interactions that support task completion (Stout et al., 1994). Where possible, teams should engage in cross-training (Cooke et al., 2003), and time pressure should be used to create sense of urgency, causing individuals to rely more heavily on established response patterns and allow instructors to better diagnose underlying team issues (Zaccaro et al., 1995).	<b>Post-Practice.</b> After a scenario, an after action review (AAR) provides an opportunity for participants to receive feedback. While there is an separate body of literature focused on how to give an effective AAR, some relevant points include (Cannon-Bowers & Salas, 1998): avoid person-oriented comments and instead focus on actions and outcomes; provide specific, timely, actionable, and reflective comments; include active team discussions; emphasize specific taskwork and teamwork processes.

## (2) Enhanced Blending Processes

The second major enhancement to the CoL this year involves blended learning. During PANAMAX 12, the individual augmentees to the command and other participants received basic doctrinal knowledge on processes and roles to assist their performance in support of the exercise, but there was no intentional blending of online courses and live training. In other words, although each component addressed shared learning objectives, they did so in separate stovepipes. Joint Staff, J7 Joint Training has taken several steps to enhance integration across the online, live, and (new) distributed team-training components.

First, Joint Training personnel have developed *Blended Learning–Training Packages* (BLTPs). Like traditional Training Support Packages (TSPs), BLTPs contain the materials needed to train a common set of tasks; however, unlike TSPs, each BLTP includes linked activities for online learning, small-group scenarios, and collective training activities. All content in a BLTP aligns with the training and educational themes of the joint training exercise it is supporting. For instance, an effectively aligned SGST scenario would explicitly build on the content, challenges and training objectives specified in a related online CoL course, while also integrating tasks from the Mission Essential Task List (METL) from the associated collective training exercise. With this alignment, members of the training audience have already been exposed repeatedly to key items of information and practices that are directly applicable to their actions during the exercise scenario.

Next, to further facilitate blending and give observer/trainers more insights into personnel's individual and collective readiness levels, analysts process the data from the JKO online courses and SGST simulations. The observer/trainers (along with the participating command) use this information during the exercise cycle. Specifically, the data are integrated into a "data dashboard," which observer/trainers (and the command) receive in advance of the collective exercise. This gives stakeholders a snapshot of the training audience's readiness in particular functional areas, which they use to better identify noted areas of weakness, opportunities for building higher levels of knowledge in areas of

strength, or additional training topics that would support key groups during the exercise. For the sake of illustration, consider the example below:

Two levels of an intelligence course are assigned to participants attending an upcoming collective exercise. Members of non-intelligence functional areas must complete the 100-level course, while members of intelligence functional areas must complete both the 100- and the 200- levels. Ideally, personnel from the intelligence functional area will quickly test-out of the 100-level course and exhibit considerable understanding of the 200-level material, as judged by their online formative and summative assessments. After the training audience completes the online course, but before they engage in the live training, the observer/trainer handling this functional area receives detailed metrics on their online performance, including rates of testing out of the courses by rank, service, prior professional Military Education, and other significant demographics. The data dashboard also calls out the enabling learning objectives that the different groups struggled with. This allows the intelligence observer/trainers, during the pre-exercise academics session, to focus their plenary brief. For instance, if necessary, they could emphasize those topic areas which the general audience struggled with most as well as tailor the functional area-specific training session on more nuanced topics, past the 200-level content on which the intelligence personnel performed well.

Early in 2013, USSOUTHCOM provided a non-formalized opportunity to test this blended learning process. Well over half of the training audience participated in the assigned training, completing a mixture of 100- and 200-level online courses, which were assigned based on rank and functional areas. Training audience performance scores and completion data were collected and analyzed. The resulting data were described by rank grouping, services, and functional areas. This information was then provided to the exercise observer/trainers and corresponding command in an aggregated manner. Anecdotal feedback from participants and trainers involved was that the draft dashboard had accurately highlighted areas of weakness which were later displayed during exercise execution. A more formal assessment of the data dashboard is planned for later this year; this is described in more detail below.

## **RESEARCH AND TESTING**

The CoL system is being designed, developed, and tested through an iterative process. As mentioned above, Joint Training researchers evaluated CoL V1.0 at the 2012 PANAMAX exercise. This year, we will quantitatively test the V2.0 improvements with joint staff officers associated with United States Africa Command (AFRICOM). This evaluation, scheduled for September 2013, will examine the effectiveness of the SGST virtual team-training capability, as well as specific elements of the blended learning-training package. Assessments will analyze the effectiveness of these capabilities, as well as the stakeholders' perceptions of the operational relevance and usability of the system.

### **Stakeholder Requirements and Recommendations**

Initial knowledge elicitation with Joint Training stakeholders began in April 2013. A two-person team conducted semi-structured interviews with 22 military personnel and government-civilians at the Joint Staff in Suffolk, VA (see participant list in Table 2).

Each 30-60 minute interview began by briefing stakeholders on the purpose of the interviews. Following this, the interviewee described his/her involvement with Joint Training. Depending upon each the interviewee's preference and the flow of the conversation, the interviewers either asked predetermined questions or they allowed the interviewer to speak freely about his/her opinions, observations, and recommendations regarding blended learning in a joint training environment.

**Table 2.** April 2013 Interview Participants

Stakeholder Category	Number
JKO Support Personnel	1
JKO Leadership	3
SGST Support Personnel	1
Future Joint Force Development	2
Observer/Trainers	9
Desk Officer and/or Exercise Planner	5
Joint Capabilities Analysis Division Leadership	1
<b>TOTAL:</b>	<b>22</b>

During each interview, two researchers took notes, separately, via laptop computers. After all interviews were conducted, the researchers reviewed all of the notes and encoded them using the Descriptive Coding method with associated sub-codes (Saldaña, 2013). The primary topic codes included: (1) issues/concerns, (2) recommendations, (3) topics the interviewee expressed support for, and (4) topics the interviewee expressed confusion about. The sub-codes under each topic varied, based upon each interviewee's comments. In total, 53 different topics were encoded collectively under the four major headings. Topics on which five or more interviewees commented are shown in Table 3 below. (If five interviewees commented on a topic, it means that over 20% of the interview population remarked on it, which we deemed a reasonable threshold for inclusion in this paper.)

**Table 3.** Most frequent topics offered by stakeholders during the interviews\*

Topic Category: Issues and concerns	Number
• Assessing training effectiveness	5
• Ensuring high return-on-investment for the SGST	5
• Ensuring sufficient future resourcing (especially time) and institutionalization of the CoL system	7
• Socialization of the blended learning/training concept	16
Topic Category: Recommendations	Number
• Ways to extend or tailor the blended learning/training, to get it to the right people	5
• Ways to align the SGST with its corresponding live exercise	6
• Early Joint Exercise Life Cycle (JELC) integration for blended learning planning	7
• Briefing the data from the e-learning outcomes to observer/trainers	5
• Socializing the blended learning approach with training audience senior leaders (to gain buy-in)	12
• Socializing the blended learning approach with training audience the J7 personnel (to gain buy-in)	7
• Suggestions on who should create/review e-learning content	6
Topic Category: Expressed Support For	Number
• Blended learning/training concept for use in Joint Training, in general	23
• Giving data from the e-learning outcomes to observer/trainers ("data dashboard")	6
• SGST training concept, in general	13
Topic Category: Expressed Confusion About	Number
• SGST, in general	6

\* Note: Not all topics were discussed by each interviewee. Hence, items with fewer numbers do not necessarily imply that the other interviewees hold opposing opinions.

As the table shows, all interviewees expressed strong support for the blended learning concept, in general, including insertion of the online team-trainer and use of the data dashboard. (The interviewers specifically asked stakeholders about their opinions on joint blended learning, which explains why this topic received an overwhelming response.) However, many stakeholders expressed the need to better socialize the new blended learning methods, both internally within the Joint Staff, J7 Joint Training Division, as well as with stakeholders from the training audience.

The interviewees also offered commentary about how to best support integration of the online courses and distributed team training (i.e., SGST) with the live exercises. Many interviewees discussed the need to clarify the return on investment for the team training portion; while interviewees generally expressed support for the SGST training, they also wanted to ensure its development costs did not exceed its training benefits. Interviewees also offered suggestions on how to create, verify, and maintain the online content, and ways to ensure that the online content (particularly the SGST) aligns appropriately with its corresponding live exercise.

Finally, a number of interviewees cautioned that the blended learning "team" (i.e., the individuals who design and execute the blended learning with each exercise, not necessarily the researcher associated with the CoL) needed to

work closely with the standard Deployable Training Team (i.e., the team who executes the live exercises), so that the online components receive sufficient attention and resourcing. This includes incorporation of the blended learning team with Joint Exercise Life Cycle (JELC) events (such as initial planning conferences) early and often, in order to ensure seamless integration between the online and live exercise components.

A more detailed technical report of these interviews was developed for the Joint Training personnel. It includes specific requirements and recommendations for blended learning processes, which are informing V2.0 CoL development. Once verified through the planned September 2013 testing, we anticipate that the interview-based recommendations (along with the empirical testing results) will be released for distribution.

## **CONCLUSION**

As our joint forces transition from two wars to the potential for multiple contingency operations, we must be able to quickly provide them with responsive and immediately relevant training. This training must be consistently available, continually updated, and easily accessible in a distributed staff environment. Also, to remain impactful, the training system must extend beyond “check-the-box” learning, helping to integrate new knowledge and additional critical thinking into training exercises.

In the beginning of this paper, we outlined a scenario about the fictional LCDR Michael Jones. If future iterations of the CoL function as previous research suggests, then the following narrative may become the new trend for staff training:

LCDR Jones receives notification about an upcoming joint exercise. As part of the exercise, LCDR Jones has been automatically assigned a series of online courses. To access them, LCDR Jones simply sits down at his normal workstation and logs into his email. He clicks on the new link he has received, which takes him into JKO where five courses already populate his courseware dashboard. These courses are tailored to LCDR Jones’ functional area, his officer echelon, or the upcoming exercise itself. The courses not only refresh LCDR Jones’ memory on joint planning and operations, but they encourage him to think about the purposes and best practices of joint operations on a deeper level. The courses also include short scenarios that help explain the real-world application of the subject matter, as well as link the learning content to the exercise’s “road to crisis”.

After completing the courseware while at his home station, LCDR Jones participates in an online team trainer with other members of his operational planning team. During the SGST, the staff members practice the processes they were taught in the online courses, and the system prompts the staff members to engage in more efficient teamwork. LCDR Jones has had little experience working with the other Services, and he finds this focus on cross-Service teamwork particularly useful. Plus, he has now met a few of the personnel who he will work with during the exercise.

One month later, LCDR Jones arrives at the event, early enough to attend academics. At that seminar, he gains a broader understanding of the joint doctrine described in his online courses; he realizes that he still has much to learn about joint operations, but at least he has the vocabulary and conceptual framework now to help acquire that knowledge. A few days later in the exercise, LCDR Jones executes his basic staff processes rapidly, but he wonders about some of the nuanced decisions. He questions one of the observer/trainers about the benefits and limitations of different courses of action, and he engages in a deep debate with one of his J-4 counterparts about a possible solution to some of the scenario events they have observed.

By the end of the week-long event, LCDR Jones feels good. He practiced his procedural tasks, critical thinking, and teamwork skills. Is LCDR Jones prepared for real joint staff operations? Yes, he feels confident; moreover, the data confirm that he is ready.

The Continuum of eLearning continues to evolve towards providing combatant commands and their components with the necessary individual content, team training, and blended learning they need to maintain their band of performance excellence. By grounding design in best practices for team and individual training, involving

stakeholders in the process development process, and iteratively testing incremental improvements in ecological settings, we make gains on improving the operational performance of our quickly forming joint forces.

## **ACKNOWLEDGEMENTS**

This work was supported in part by the U.S. Joint Staff (Contract #N00140-06-D-00600). The views and conclusions contained in this document are those of the authors and should not be interpreted as representing the official policies, either expressed or implied, of the US Joint Staff or the US Government. The US Government is authorized to reproduce and distribute reprints for Government purposes.

## **REFERENCES**

Cannon-Bowers, J. A., & Salas, E. (1998). Making Decisions Under Stress (Implications for Individual and Team Training). Washington, DC: American Psychological Association.

Cannon-Bowers, J., Salas, E., Tannenbaum, S., & Mathieu, J. (1995). Toward Theoretically Based Principles of Training Effectiveness: A Model and Initial Empirical Investigation. *Military Psychology* , 7 (3), 141-164.

Cooke, N., Kiekel, P., Salas, E., Stout, R., Bowers, C., & Cannon-Bowers, J. (2003). Measuring Team Knowledge: A Window to the Cognitive Underpinnings of Team Performance. *Group Dynamics: Theory, Research, and Practice* , 7 (3), 179-199.

De Leo, G., Sechrist, S., Radici, E., & Mastaglio, T.W. (2010). Games for Team Training. *Proceedings of the 2010 Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC)*.

Gorman, J., Cooke, N., & Winner, J. (2007). Measuring team situation awareness in decentralized command and control environments. *Ergonomics* , 49 (12-13), 1312-1325.

Roman, P. & Brown, D. (2009). Games – just how serious are they? *Proceedings of the 2009 Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC)*.

Salas, E., Cooke, N., & Rosen, M. (2008). On Teams, Teamwork, and Team Performance: Discoveries and Developments. *Human Factors: The Journal of the Human Factors and Ergonomics Society* , 50, 540-547.

Saldaña, J. (2012). *The coding manual for qualitative researchers*. Sage. ISBN 1446247376.

Schatz, S., Fautua, D., Reitz, E. and Killilea, J. (2012) Joint Continuum of eLearning: Implementing Engaging, Effective, and Meaningful Military E-Learning. In Proceedings of the Interservice/Industry Training, Simulation and Education Conference 2012. I/ITSEC, Orlando, FL.

Stout, R., Salas, E., & Carson, R. (1994). Individual task proficiency and team process behavior: What's important for team functioning? *Military Psychology* , 6 (3), 177-192.

Zaccaro, S., Gaultieri, J., & Minionis, D. (1995). Task Cohesion as a Facilitator of Team Decision Making Under Temporal Urgency. *Military Psychology* , 7 (2), 77-93.