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Research Report 1849

Global Teams: Enhancing the Performance of Multinational Staffs Through Collaborative Online Training

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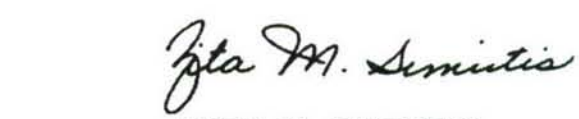

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14. ABSTRACT *(Maximum 200 words)*:

This research report describes the research, development, and evaluation of a web-based, scenario-based training tool, designed to support the development of expertise in coordination and decision making for multinational forces in coalition operations. The tool allows discussion and collaborative problem solving between at least two coalition partners, with the support of a facilitator. The project team used the operational experience of officers from English-speaking nations (U.S., U.K., Canada, and Australia to identify the cognitive challenges inherent in coalition operations and to drive the development of context-rich scenarios. Evaluation of the training highlighted six critical factors which impact the effectiveness of the training. 1. Clarify the learning objectives in advance. 2. Emphasize the problem solving and coordination aspects of the exercise. 3. Capitalize on the opportunity for interaction by allowing partners to interact over discussion and problem solving. 4. Set the training at the appropriate level. 5. Use an experienced facilitator to direct the training. 6. Tie tool functionality to the learning strategy. Overall, the training was shown to improve participants' awareness of, and ability to respond to, the key themes of coalition coordination. The tool provides an easy-to-implement and cost-efficient means for coalition partners to train in a distributed environment.

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We would also like to thank the Commander of the Joint Readiness Training Center (JRTC) Operations Group, Colonel (P) Rounds, for providing us with officers with coalition experience to test our training materials and provide us with feedback. Their willingness to participate and provide us with comments and suggestions led to more accurate and useful training materials.

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GLOBAL TEAMS: ENHANCING THE PERFORMANCE OF MULTINATIONAL STAFFS THROUGH COLLABORATIVE ONLINE TRAINING

EXECUTIVE SUMMARY

Research Requirement:

Developing and delivering high-quality training for the variety of contingencies that may arise in the contemporary operating environment is vital to preparing a stronger Future Force. Currently there is a need for more research to identify the key challenges in the operational environment and for the development of focused and relevant training that can support improved decision making and coordination. To prepare for the challenges of coalition operations, cost-effective training is needed to build trust and improve decision making and coordination among coalition partners. There were two primary objectives for this research effort. The first was to develop high quality training to build expertise in coalition coordination and decision making by supporting participants' awareness of the key challenges of coalition coordination and how they can be overcome in mission specific circumstances. The second major objective was to explore the feasibility of online collaboration platforms as a training medium for coalition operations.

Procedure:

We used the considerable operational experience of English-speaking (American, British, Canadian, Australian) coalition officers to identify the key cognitive challenges inherent in coalition operations. The key challenges were used to drive the development of context-rich scenarios and to guide development of a training program. To facilitate the training, we developed a collaborative web-based distributed training tool that would allow at least two coalition partners, in addition to a facilitator, to practice working together as a coalition staff using a scenario-based training program.

Findings:

The evaluation objective was to explore the feasibility of online collaboration platforms as a training medium for coalition operations. As a result of the evaluation, six critical factors were identified, which impact the effectiveness of the training. 1. Clarify the learning objectives in advance; 2. Emphasize the problem solving and coordination aspects of the exercise; 3. Capitalize on the opportunity for interaction by allowing partners to interact over discussion and problem solving; 4. Set the training at the appropriate level; 5. Use an experienced facilitator to direct the training; 6. Tie tool functionality to the learning strategy.

Utilization and Dissemination of Findings:

Overall, the training was shown to improve participants' awareness of, and ability to respond to, the key themes of coalition coordination. Briefings were provided to the Joint Readiness Training Center (JRTC) Operations Group, September 7, 2005, and to the Joint Services Command and Staff College (JSCSC), March 1, 2005. The developed method and tool provide

an easy-to-implement and efficient means for coalition partners to train in a distributed environment, on short notice, prior to deploying to the operating environment.

GLOBAL TEAMS: ENHANCING THE PERFORMANCE OF MULTINATIONAL STAFFS THROUGH COLLABORATIVE ONLINE TRAINING

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GLOBAL TEAMS: ENHANCING THE PERFORMANCE OF MULTINATIONAL STAFFS THROUGH COLLABORATIVE ONLINE TRAINING

Introduction

Coalition operations have emerged as a key feature of military operations in the post-Cold War era. While the U.S. Army has participated in coalition operations throughout its existence, it is now the standard mode across the spectrum of military interventions. "Virtually all U.S. military operations since 1989 have been conducted as part of a multinational operation" (Bensahel, 2003, p. 112). A coalition operation usually entails an ad hoc arrangement between two or more nations acting together in order to pursue a common objective American-British-Canadian-Australian ([ABCA], 2001). They are formed where a commonality of interests exists between nations, be it political, economic, or military, allowing those nations the benefit of mutual aid in promoting their national interest and securing against real or perceived threats. They are usually created for specific purposes and for a limited duration. To date, the English speaking coalition nations, the focus of this report, have served together in ad hoc coalitions on several occasions to pursue common objectives (ABCA, 2001).

Coalition operations are very different from unilateral operations. They engender a number of organizational, operational, political, and cultural challenges which are unique to the operational environment. Organizationally, coalitions can be very complex. They often include various branches of the U.S. military and foreign militaries, as well as nonmilitary organizations such as non-governmental organizations (NGOs) and private voluntary organizations (PVOs), each bringing their own unique core competencies and political legitimacy. This blending of capabilities makes possible certain operations that a single nation could not, or would not conduct unilaterally. However, coalitions also engender significant coordination challenges. For example, consensus can be difficult to achieve because national interest may compete with standard practice as outlined in doctrine (Joint Chiefs of Staff, 2000).

Operationally, coalitions cross the entire range of military operations from combat to humanitarian to stability and support operations (SASO). The precise role of armies in these operations varies according to each political and military situation. In some situations military operations are subordinate to political and diplomatic efforts. In such circumstances, coalitions have to be very creative to find ways to deliver appropriate and effective levels of military leverage that support political-diplomatic initiatives within the prescribed limitations (Peters, Johnson, Bensahel, Liston & Williams, 2001). In other situations, some coalition partners may participate in the humanitarian and peacekeeping phases of an operation, but not in combat, should that occur. Moreover, because of their limited purpose and life span, coalitions do not afford the same political resolve and commonality of aim as other types of military operations. Within this realm, sovereignty issues are often the most difficult issues for coalition forces to deal with. Often, the commander of a coalition force is a commander in title only; mission accomplishment is achieved through coordination, communication, and consensus rather than by traditional command concepts (i.e., giving an order) (Joint Chiefs of Staff, 2000).

Political and sovereignty issues make planning and coordination of coalition operations particularly difficult. Commanders and planners must learn the capabilities of partner nations or

organizations and must design plans in such a way as to allow all units to contribute (ABCA, 2001). In many cases, the coalition leadership will have to be innovative to find effective roles for all participants (Peters et al., 2001). Army doctrine emphasizes the importance of including NGO and PVO representatives at the earliest possible phase of mission planning. The sensitivity and understanding gained by including these organizations early in the planning process can contribute to more effective working relationships once the mission begins (Joint Chiefs of Staff, 2000).

Coalition doctrine also recognizes the role of intangible factors in multinational collaboration. In particular, developing effective partnerships, confidence, rapport and respect are considered to be the cornerstones of successful coalition operations. In fact, after World War II, General Dwight D. Eisenhower said that "mutual confidence" is the "one basic thing that will make allied commands work" (Joint Chiefs of Staff, 2000, p. I-9).

Good rapport between coalition members results in successful teamwork and overall unity of effort (Joint Chiefs of Staff, 2000). The first concern when establishing rapport is an understanding of the characteristics, personalities, capabilities, ambitions, and cultural habits of the various coalition partners. Rapport is more easily established when nations combining forces share similar cultural backgrounds. Respect for the partners' culture, religion, customs, and values combined with understanding and consideration of their ideas will solidify the partnership. Without such genuine respect of others, rapport and mutual confidence cannot exist; lack of respect may lead to friction, jeopardizing mission accomplishment. While these factors cannot guarantee success for the coalition, ignoring them can usually guarantee failure of the coalition in accomplishing its mission (Joint Chiefs of Staff, 2000).

Commanders must possess the knowledge and experience that is critical for effective decision making and teamwork in these types of operations. The key challenge for commanders appears to be coordinating with coalition partners, international and civilian organizations, and the host nation government and local citizens. The literature describes this as a problem of "interoperability." To date, a clear understanding of how to improve interoperability in these operations has not yet been established (ABCA, 2001; Ryan, 2000). For example, what is the nature of effective coordination among such diverse players? What are the organizational arrangements by which coalition operations solve problems? Who needs to interface with whom, by what means do they do it, and what are the critical timeframes for particular kinds of communications among particular players? How should commanders approach decision making in peace operations with limited resources and restrictions on unity of command? What opportunities must commanders create for themselves in the face of seemingly impossible conditions? These and other critical questions about the judgments, decisions, creativity, organizational arrangements, and control faced by coalition commanders need to be identified and answered from the perspective of the commander.

Multinational exercises are thought to be extremely important for ensuring interoperability with potential coalition partners and for working out command issues. Moreover, researchers believe that NATO should improve its capability for exercises so that it can routinely integrate coalition-building and maintenance activities with military action (Peters et al., 2001).

Identification of Training Need

Developing and delivering high-quality training for the variety of contingencies that may arise in the contemporary operating environment is vital to preparing a strong Future Force. Indeed the U.S. Army planning documents for the Future Combat System of Systems specifically call out the requirement to "develop, through training and experience, the thinking, confident, versatile, adaptive, and seasoned leaders at the tactical level required for the digitized, rapidly deployable objective force" (U.S. Army Training and Doctrine Command, 2001, p. 6-29). In order to achieve this objective there is a recognized need for more research to identify the key challenges in this operational environment, and for the development of focused and relevant training that can support improved decision making and coordination.

Research Objectives

There were two primary objectives for this research effort. The first was to develop high quality training to build expertise in coalition coordination and decision making by supporting participants' awareness of the key challenges of coalition coordination and how they can be overcome in mission specific circumstances. The second major objective was to explore the feasibility of online collaboration platforms as a training medium for coalition operations. The training will involve the development of low-fidelity scenario-based exercises. Multiple, distributed participants will be required to make a decision or complete a task based on a cognitively authentic scenario-based challenge.

Developing Training for Multinational Coalition Operations Teams

This effort involved developing training requirements for multinational command and staff teams at the brigade and multinational division level, designing and implementing scenario-based training, and evaluating the distributed multinational training for feasibility and effectiveness. Scenarios are based on real-world situations to provide participants access to the expertise required to address such challenges. Our goal was not to develop cultural training, per se, but to address the differences in how English-speaking nations[1] set goals and work to achieve them, as well as to highlight the differential strengths they bring to coalition operations.

Scenario-based training has many advantages over factual, classroom training. It allows the students to assess situations, identify relevant facts, strategies, and procedures, generate possible solutions, make decisions, and receive natural and instructional feedback. Whereas classroom-based training is about gathering information, scenario-based training is about doing—making decisions, planning, and applying the knowledge and information for making decisions in an operational scenario. This training provides an opportunity to develop a more detailed mental model of how aspects of a particular domain actually work by working through the issues and interplay of factors through realistic problem scenarios. It is recognized that the Army uses tactical decision exercises and scenario-based training in the classroom on a consistent basis, however, the training approach presented here has the added benefit of allowing real time problem analysis, coordination and problem solving with multinational partners.

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[1] This research was supported by the Technical Cooperation Program (http://www.dtic.mil/ttcp/).

Our research methodology is based on a combination of two training programs, both of which are grounded in the principles of Recognition Primed Decision (RPD) making and expertise development (Klein, 1989). The Think Like A Commandeer (TLAC) training program is based on an understanding of how expertise is developed and embodies the concept of deliberate practice of thinking skills (Ross & Lussier, 1999). It aims to develop the learner along a path towards expertise by both helping him elaborate his mental models and by making the results of the recognitional decision making routines explicit so that they can be refined. A central component of the TLAC program is the use of context-rich training vignettes. The goal of TLAC is to teach officers "how to think" instead of "what to think" (Shadrick & Lussier, 2002).

The other training program informing our training methodology is the Decision Skills Training Program. This training program is based on an understanding of how expertise develops and functions in dynamic settings. The first task is to "unpack" the knowledge base of experts in a field so that the knowledge is available to training developers. Cognitive task analysis methods, primarily the Critical Decision Method (Crandall & Getchell-Reiter, 1993; Hoffman, Crandall, & Shadbolt, 1998), are used to leverage the critical events (stories) from experts, and by so doing expose their domain expertise. Second, stories (vignettes) are carefully constructed to include realistic cues in the context. The incidents collected from experts are not used intact. Instead, elements are emphasized and tailored to sharpen the focus of desired features. All of the vignettes present a dilemma with some level of uncertainty and a requirement that forces the student to make a decision. Each participant has a limited amount of time to consider how he or she would react, which adds time pressure to the exercise. Facilitation ensures that the participants do not just have an experience, but that they focus on the cognitive aspects of that experience—that they consider the depth of their understanding and the likely consequences of their decisions.

The training programs described above are somewhat different in execution, but they both support the development of mental models, the acquisition of knowledge in context, and the practice of cognitive activities with coaching. Both take the learner further along the path to "expert intuition." Moreover, at the heart of both of these training methodologies is a carefully crafted story. What is to be learned and practiced has been made explicit and incorporated by the training developers. Stories represent a powerful means of transferring expertise and allowing the learner to activate that expertise in new situations. The central challenge is that of creating training scenarios that represent authentic and believable situations and represent accurately the task work, teamwork, and communication tasks that are needed to enable the trainee to practice the needed tasks and skills.

Requirements Analysis and Training Development

This effort was completed in four phases: Phase 1: Data Collection to Identify Training Requirements; Phase 2: Training Requirements Analysis and Scenario Development; Phase 3: Developing the Learning Strategy and Training Method; and Phase 4: Training Evaluation.

Phase 1: Data Collection to Identify Training Requirements

The data collection phase had two aspects to it: domain analysis and Critical Decision Method (CDM) interviews. Each is briefly described below.

Domain Analysis

The purpose of the domain analysis process was to support a better understanding of the mission and tasks that are involved in multinational operations, particularly those that are cognitively challenging or in need of training. A secondary aim was to solicit the subject matter experts' (SME) suggestions about fruitful avenues for scenario development. The SMEs were a British officer and a Canadian officer stationed at Fort Knox. Both were Foreign Liaison Officers and had extensive experience with coalition operations. The third SME was a U.S. Lieutenant Colonel (LTC), (Active Duty Reservist) with 25 years of military coalition experience.

Critical Decision Method Interviews

Critical Decision Method (CDM) interviews (Hoffman, Crandall, & Shadbolt, 1998; Militello & Hutton, 1998; Schraagen, Chipman, & Shalin, 2000) were conducted to identify the decision requirements in coalition operations in the contemporary operating environment. Critical Decision Method interviews were conducted with a total of 16 SMEs. Of those, seven interviews were conducted with SMEs who were Majors at the Command and General Staff College (CGSC), Fort Leavenworth, (six were U.S. Army officers, one was a Canadian Army officer). The remaining nine CDM interviews were conducted at Joint Services Command Staff College (JSCSC) in England with UK Army, Air Force, and Navy officers. Officers ranks (or equivalents) were: Brigadier General (BG) (2), Colonel (COL) (2), Lieutenant Colonel (LTC) (2), and Major (MAJ) (3).

The CDM interviews were organized around an initial, unstructured account of a specific incident experienced by the interviewee. In this case, participants were asked to recall an incident that involved collaboration with a coalition partner that they found to be particularly challenging. Once the participant identified a relevant incident, he or she recounted the episode in its entirety, with no interruptions from the interviewer. The initial incident account provided the focus and structure for the remainder of the interview. Once the report of the incident was completed, the CDM interviewer led the participant back over his or her incident account several times, using probes designed to focus attention on particular aspects of the incident and solicit information about them. The probes were designed to progressively deepen understanding of the interviewee's account. The information obtained via these methods is concrete and specific, reflects the point of view of the decision maker, and is grounded in actual incidents. This method has been demonstrated to yield information richer in variety, specificity, and quantity than is typically available in experts' unstructured verbal reports. Detailed descriptions of CDM and the work surrounding it can be found in Klein and Hoffman (1993) and Klein, Calderwood, and MacGregor (1989).

Phase 2: Training Requirements Analysis and Scenario Development

This phase involved analysis of the interview data and the identification of High Level Focus Areas (HLFAs) and their associated Awareness Points (APs). A description of how these were determined is outlined in the next section. Training scenarios were subsequently developed which addressed the HLFAs identified in the CDM interviews.

Training Requirements Analysis

Interviews were coded in a thematic analysis according to the grounded theory approach (Glaser & Strauss, 1967). A process of classification and coding, then reclassification and re-coding, led to the development of a classification system consisting of four themes or HLFAs and 27 underlying APs. We call the themes HLFAs because they guide the focus of the training objectives and scenario content. The HLFAs are the areas in which the coalition forces differ in operation. Coalition officers must develop understanding in how these issues can impact operations. Coalition officers without such an understanding may have less successful collaborations. This is evidenced by the experiences recounted by our interview participants. The four HLFAs are: organizational structure, work-style, stance, and level of integration.

Organizational structure refers to the formal and informal structures that govern the organization of the force. This includes the degree of autonomy allowed to junior officers and their ability to influence decision making higher up the organizational hierarchy. Awareness points associated with this HLFA include formal chain of command, force structure, informal chain of command, and mission command. The HLFAs and APs are summarized in Table 1.

Work-style refers to the culture and climate with each national force. It includes issues such as work tempo, task focus, and the preferred medium for transmitting information. It also includes factors which relate to the skill sets of the force (i.e., how adaptable and how flexible they are). Awareness points associated with this HLFA include: task structure, generalist versus specialist, task versus relationship, tempo, planning process, flexibility/adaptability, and exchange of information.

Stance refers to attitudes toward force protection within a particular force. Related to this are attitudes toward the role of the military "in country," the overriding objective of foreign missions, attitudes toward host nations and coalition partners, the problem solving approach typically adopted by a nation, and how fixed or flexible it is in using alternative methods to solve problems. Awareness points associated with this HLFA include: force protection, politics, rules of engagement (ROE), leverage points, problem solving, and manage presence.

Level of integration refers to the level of awareness between coalition partners; how well they understand each other's roles, functions, capabilities, responsibilities, approach and stance and how willing they are to collaborate to solve problems. Awareness Points associated with this HLFA include: understanding your coalition partner(s), understanding the host nation's culture, understanding "coalition," giving direction, information exchange, resources, ROE, priorities, trust, understanding NGOs, roles and functions, capabilities, commander's intent, Title 10, and integration.

Table 1

High Level Focus Areas and Awareness Points

HLFA	Description	Awareness Point	Description
ORGANIZATIONAL STRUCTURE	This theme relates to the formal and informal structures that govern the organization of the force.	Formal chain of command	• The formal chain of command as defined in the organizational chart.
		Force Structure	• The hierarchy within the command structure (i.e., one versus two units down).
		Informal chain of command	• The level of decision making power allowed to junior ranks, degree of autonomy in one's job, degree of micromanagement. • Ability/willingness to speak up to senior officers, access to senior officers, ability to influence decision making.
		Mission Command	• The extent to which the command is staff led versus command led.
WORK-STYLE	The culture and climate within each national force.	Task Structure	• Functional (stove-piped) versus resource driven.
		Generalist versus Specialist	• Ability to multitask or diversify in response to changing situations.
		Task versus Relationship	• Priority placed on task versus relationship.
		Tempo	• Work pace and work hours.
		Planning Process	• The extent to which the planning process is done on a timeline or project basis.
		Flexibility/Adaptability	• The inclination to stay within the stated process versus openness to new processes.
		Exchange of Information	• Formalized style (i.e., PowerPoint versus informal style).

(Table Continues)

HLFA	Description	Awareness Point	Description
STANCE	Each nation's views towards protecting its own forces, its views towards its role in other countries, its overriding objective in foreign missions, and its approach to host nations and coalition partners. Its approach to problem solving and how fixed or flexible it is in using alternative methods to solve problems.	Force Protection	• Emphasis on force protection versus other goals.
		Politics	• Political awareness and concern with political issues.
		ROE	• How rules of engagement are interpreted. • How rules of engagement apply to the mission. • Views and assumptions about others' rules of engagement.
		Leverage Points	• Are all potential resources and courses of action considered and used?
		Problem Solving	• Approach to problem solving (e.g., force versus civil affairs versus reconstruction versus information operations).
		Manage Presence	• Willingness to use alternatives to military force (i.e., Civil affairs/Force protection/Reconstruction/Info Ops).
LEVEL OF INTEGRATION	How willing are coalition partners to solve problems collaboratively? How well do they understand each other's roles functions, capabilities, responsibilities, approach and stance of partners?	Understanding your coalition partner(s)	• Motivation. • Objectives. • Reason for participating in mission. • Agenda and point of view.
		Understanding the host nation's culture	• Motivation. • Objectives. • Agenda and point of view.
		Understanding "coalition"	• How does each military unit conceive of the definition of "coalition" (e.g., "partnership," "U.S. led," "no combat, only peace keeping," etc.)?

(Table Continues)

HLFA	Description	Awareness Point	Description
LEVEL OF INTEGRATION continued		Giving Direction	• Asking versus ordering.
		Information Exchange	• Coordination/Establishing processes. • Ability to share information and intelligence. • Utilizing all of the available informational and intelligence resources.
		Resources	• Integrating resources to accomplish the mission.
		ROE	• Understanding partners' ROE and implications for mission.
		Priorities	• Understanding the priorities of your coalition partners to determine whether or not certain things will get done.
		Trust	• Trusting relationships versus consent and evade behaviors.
		Understanding NGOs	• Motivations. • Goals. • Agendas of NGOs and how they may conflict with one another (e.g., not all NGOs are the same).
		Roles and Functions	• Definitive or messy roles and functions.
		Capabilities	• Maximizing available capabilities such that each partner is contributing maximally to the operation. • Knowledge of partners' capabilities and implications for mission success.
		Commander's Intent	• Understanding the intent of other coalition commanders.
		Title 10	• Awareness of own and others' responsibilities.
		Integration	• Willingness to share resources and information. • Willingness to fully engage a plan produced by partner.

Scenario Development

The project team developed three scenarios. The scenarios were based on the lived experiences of coalition forces recounted during the CDM interviews. Each scenario involves three individual, yet connected vignettes that build on each other to form evolving coalition operational challenges. Vignettes require the participants to interact and address situations from the contemporary operational environment. Each vignette addresses one or more of the HLFAs so that issues that impact coalition operations can be worked through by participants, in context, with the support of a facilitator. The vignettes are designed to force students to engage in a problem solving task. The student will be required to explore his/her own (or a partner's) assumptions, approach, goals, mission, objectives, structure, stance, and work-style, and to examine the impacts of these on task and mission accomplishment.

The scenarios are summarized below. Full versions of the scenarios are available in the accompanying compact disc (CD) attachment entitled Global Teams Scenarios and Facilitation Guides. They are also available online at http://www.361interactive.com/globalteams/index.html.

Scenario 1: Quelling the Violence. This scenario is set in Iraq around the time of the elections. The coalition includes United Kingdom (UK), United States (U.S.) Australia, and New Zealand forces, as well as several other allied nations. The theme of this group of three exercises is about dealing with requests for assistance from other coalition partners and how the coalition works together to calm an insurgency. The players take the role of staff officers at Combined Joint Task Force Headquarters (CJTF HQ) in Multi-National Division South East (MND SE). As the country-wide elections approach, there is great political pressure on all coalition partners to ensure that the insurgent attacks are suppressed so that Iraqi citizens can go to the polls. The High Level Focus Areas (themes) being targeted in this scenario include: planning tempo, information exchange, integrating resources and capabilities, understanding host nation culture, understanding your coalition partner's motivation, objectives, agenda and point of view, how ROE apply to the mission, political motivation for participating in the mission and ramifications of actions, identifying things in the environment to leverage to your advantage, different nations' approach to solving a problem and understanding your coalition partners' priorities. In Situation 1, the U.S. has asked the coalition partners to support ongoing peace enforcement operations. Players are required to list their concerns and list their information requirements. In Situation 2, coalition forces have been conducting counter-insurgency and peace enforcement operations. Players are required to list their concerns, what they plan to do, and how developments may change the way coalition operations are run in the future. Situation 3 involves a hostage taking situation. Players are required to list their concerns and state how they will respond.

Scenario 2: Security for the Refugee Camp. This scenario is about the establishment of a refugee camp and the requirement for collaboration between forces for maintaining camp security. Coalition partners and NGOs are working together to set up refugee camps and deal with supporting the movement of large numbers of displaced persons. The players are members of a multinational coalition force engaged in combat and counter-insurgency operations. The coalition includes the UK, the U.S., Australia, Poland, and New Zealand, as well as several other allied nations. The High Level Focus Areas being targeted in this scenario include: understand

the planning process of your coalition partners, identify capabilities and limitations of your coalition partners, determine how to integrate assets and resources to accomplish the mission, determine roles and functions, and identify and understand potentially different perspectives on security. In Situation 1, the UK forces determine that they do not have sufficient resources to set up and secure a refugee camp without additional reinforcement from their coalition partners. Players are required to decide what security requirements are necessary for the refugee camp by describing their three top priorities for securing the camp and describing how they would want to allocate U.S. and UK security assets. In Situation 2, there is some unrest in the camp. Players are required to identify possible courses of action, identify considerations to take into account, and identify what roles various coalition members should take. In Situation 3, a convoy comes within a close distance to the group of hostile Iraqis. Players are required to decide what advice/order they would give to the convoy and determine their top three concerns about the situation.

Scenario 3: Reconstruction and Compliance. This scenario is set in Afghanistan. Coalition forces include the U.S., the UK, Canada, Australia, New Zealand, and Germany. Reconstruction is the priority of this coalition effort. Players take the role of members of the Coalition HQ staff, part of the Coalition Joint Civil Military Operations Task Force (CJCMOTF) team. The team is responsible for monitoring and coordinating the activities of Provincial Reconstruction Teams (PRTs), as well as International Organizations and NGOs. High Level Focus Areas broached by this vignette include: identifying capabilities and limitations of your coalition partners; understanding your coalition partners' motivation, objectives, reason for participating in mission; adaptability of skill sets; organizational structure; information exchange; integrating resources to accomplish the mission; understanding the intent of other coalition commanders; approach to problem solving; awareness and implications of actions, understanding NGO's motivations, goals and agendas; force protection; and ROE. In Situation 1, a large amount of money is available for distribution across the country for reconstruction. Players must describe ways to promote greater coordination between the PRTs, and identify failures in coordination which have taken place. In Situation 2, the World Health Organization, the Red Cross, and coalition partners are coordinating a medical distribution site. Players are required to identify critical issues in collaborations with NGOs and determine why the U.S. military and NGO coalition partners' goals may conflict. In Situation 3, players are members of the HQ Operational Plans Group, responsible for developing a plan to manage security throughout the country so that the overall mission of security and nation building can be realized. Players must coordinate the activities of coalition partners and identify the priorities and appropriate posture of security forces.

Phase 3: Developing the Learning Strategy and Training Method

In this report, we use the term training method to refer to the training platform or tool itself; that is, the method or mechanism for delivering training. In this case, the training method is the use of a low-fidelity, synchronous, web-based, distributed training tool. The learning strategy refers to how the training content is structured and facilitated, the expectations and goals we have for learning, and the rationale for those factors.

Learning Strategy and Facilitation Guides

The learning strategy employed in this project is designed to support participants' mental model development regarding coalition challenges and how the challenges can be resolved to greater effectiveness in mission-specific circumstances. As noted above, the themes we found consistently in the experiences of our interviewee participants provide the challenges (as well as opportunities for success) for officers in coalition operation. These themes were incorporated into the scenarios. To build mental models about how coalitions can collaborate, the officers must accumulate experiences or surrogate experiences working through cognitive challenges. Surrogate experiences, facilitated to help the officers reflect on their assumptions and performance, is the basis of the learning strategy. Barriers to coordination effectiveness in the coalition environment (other than the ubiquitous discussions of technology interoperability) include areas of expertise and capability and differences in assumptions about goals and how to achieve them. As awareness and understanding are developed, mental models of collaboration will develop. The mental models will include expectations for different situations and different allied forces, the nature of goals, and action plans and cues that indicate whether collaboration is proceeding successfully or not. Thus the basis for the initial learning strategy was 1) to build expertise in the decisions that need to be made in coalition operations through practice in working through challenges in the context of scenarios, and 2) to build mental models that support that expertise by having participants recognize the importance and meaning of aspects of staff collaboration within specific theme areas—our HLFAs.

Facilitation of the training session is key to the learning strategy. Successful facilitation strategies include: 1) engaging in deliberate practice, so that each opportunity for practice has a goal and evaluation criteria; 2) obtaining feedback that is accurate and diagnostic; 3) building mental models; 4) developing metacognitive skills; and 5) becoming more mindful of opportunities for learning (Pliske, McCloskey, & Klein, 2001). Elaboration and comparison of each person's decision making process brings out the assumptions, cues and factors, challenges, and strategies of everyone for comparison. These elements generally comprise the mental model and situational understanding of the training participants, and the process allows each person to develop more insight into situations, thus developing their own mental models.

The role of the facilitator is an important topic in education today. Many different types of content are now delivered through web-based learning. Many of these training courses require facilitation because they involve concepts that cannot easily be represented and processed by the student without facilitation. Collaborative learning is also a growing area of research and development. To many educators and researchers, the use of technology is secondary to the development of learning goals, content, and process. Rather, learning needs to be facilitated for meaningful responses and insights to occur regardless of the technology (Berge, 1995). However, the training method or platform can support or hinder the processes as well as match or impede the needs of the learning audience. As we developed our learning strategy we attempted to synchronize the facilitation process, the content, and the technology supporting the facilitation process.

A facilitation guide supports each of the three scenarios. Each guide includes: the teaching points targeted in the scenario, the requirements set for the students, and a process for

supporting the facilitator in leading the discussion. Potential student questions are also included, some with answers provided by SMEs. The facilitator must choose what questions to take, and when to say "that information is not available." The guides for each scenario are integrated into the web-based tool to access online before and during training. The facilitation guides are not meant to fully train an instructor/facilitator in the art of facilitation; rather, experienced facilitators are needed to capitalize on the training. (Full versions of the facilitation guides are available in the accompanying CD attachment entitled Global Teams Scenarios and Facilitation Guides. They are also available online at http://www.361interactive.com/globalteams/index.html).

Training Method-The Global Teams Collaborative Training Tool

The Global Teams tool is a collaborative, synchronous training tool developed to support representatives of military and non-military organizations of different countries in enhancing mutual understanding and communication skills. The tool allows facilitators to upload and conduct training vignettes with players distributed across the world, and can support up to 25 concurrent users. Features such as shared drawing spaces, shared and private chat and response areas, and optional streaming audio support provide a truly interactive environment where facilitators can lead players through an engaging, interactive learning experience.

The functionality of the tool and the interface design support the learning strategy, not any particular HLFA or AP. The tool was designed to be flexible and support a range of training options that depend on the strategy of facilitated, surrogate experiences. The tool does allow the users to address the HLFAs for each scenario, and supports both collaboration and facilitation, key elements of the strategy. How well the tool supports the HLFAs and APs is highly dependent on the ability of the facilitator. Descriptions of the functionalities and interface are presented below. Of those functionalities, the ability to manipulate graphics on the map allows for collaboration by the players as well as the ability of the facilitator to highlight information. The shared whitespace allows synchronous sketching of such things as initial concepts of operation or even assumptions about the area of operations. Private response forms provide the ability for the facilitator to gain an understanding of the different points of view and assumptions of the player participants prior to bringing them together to share those views. As the desired outcome is for players to develop their mental models around the HLFAs, this feature was designed to allow opportunities for the facilitator to assess changes over time in responses in both formative evaluations in real time and summative evaluations after training. The Split-Screen allows the facilitator to bring individually developed points of view together for all participants to compare to further support insight into how collaborations may be approached or even impeded. The chat features allow users to hold group discussions, and for researchers and facilitators to exchange views in real time as well as to direct the sessions.

The training method is purposely designed to be low tech to allow access to the range of potential users who may have low levels of technology to support their training. The simple technology design attempts to minimize technology problems for a variety of users accessing the web-based tool. In addition, a goal for the tool was to support future researchers in their ability to easily add scenarios for continued or other research purposes.

The training platform is an ideal solution for the audience that is geographically separated. The simplicity of the method allows ad hoc teams to form easily, and without much preparation, to conduct training (if the facilitator is conversant in the learning strategy and the scenario forming the focus of the training). All the tools needed are present online and relieve the training audience from acquiring, loading software, carrying training products with them, and being in any certain location to train.

The research team established the desired functionality for a training platform that would support web-based, synchronously facilitated training sessions, including some functions that were desired but not necessarily required in this effort, such as voice over internet protocol. The requirements at this point were based on existing training products, tools available for web-based collaboration in a low technology format, and the need to support scenario-based training. We continued development of the basic design through iterative sessions. The primary supported functionalities are presented in Appendix A.

Training Interface

Figure 1 presents a screen capture of the Global Teams main page, to which all logged-in users will be directed after selecting a vignette from the library. A majority of this screen is common to all users. However, only registered facilitators have full access to the facilitator chat area and the facilitator guidance. Also, only facilitators can view each team's response forms at any time. The functional areas of the main page are as follows:

Shared Workspace Area. The largest area of the main page contains the shared workspace. Here, users can view and mark up the maps and graphics associated with a selected vignette. By default, the vignette's background graphic is displayed initially. However, users can alternatively navigate to any of the vignette's graphics (background, Situation 1, Situation 2, Situation 3), a shared whiteboard area, or the shared space text area at any time by clicking on the tabs on the top of the workspace. The currently selected graphic/workspace is designated by the tab color changing from black to red. Along the left side of the shared workspace is the workspace toolbar. Using these individual toolbar buttons, users can superimpose textboxes, free text, arrows, and a range of shapes onto the graphic for all other users to see. Users can also draw straight or freeform lines, can customize the colors of their additions, and can selectively move/delete individual items or clear the entire workspace. The toolbar can be hidden and re-shown by clicking the small blue arrow. The background graphic is displayed initially. However, users can alternatively navigate to any of the vignette's graphics (at the bottom of the bar). The shared space text area presents a dual text region where users can input and/or compare multiple answers simultaneously as a group.

Username Login/Control Area. At the top right corner of the main screen, users can change their onscreen names by entering them in the textbox and clicking the Login button. This feature is especially useful if multiple parties are logged in as facilitators. Each facilitator can elect a unique name and that name will be associated with their cursors, audio messaging, and group chats.

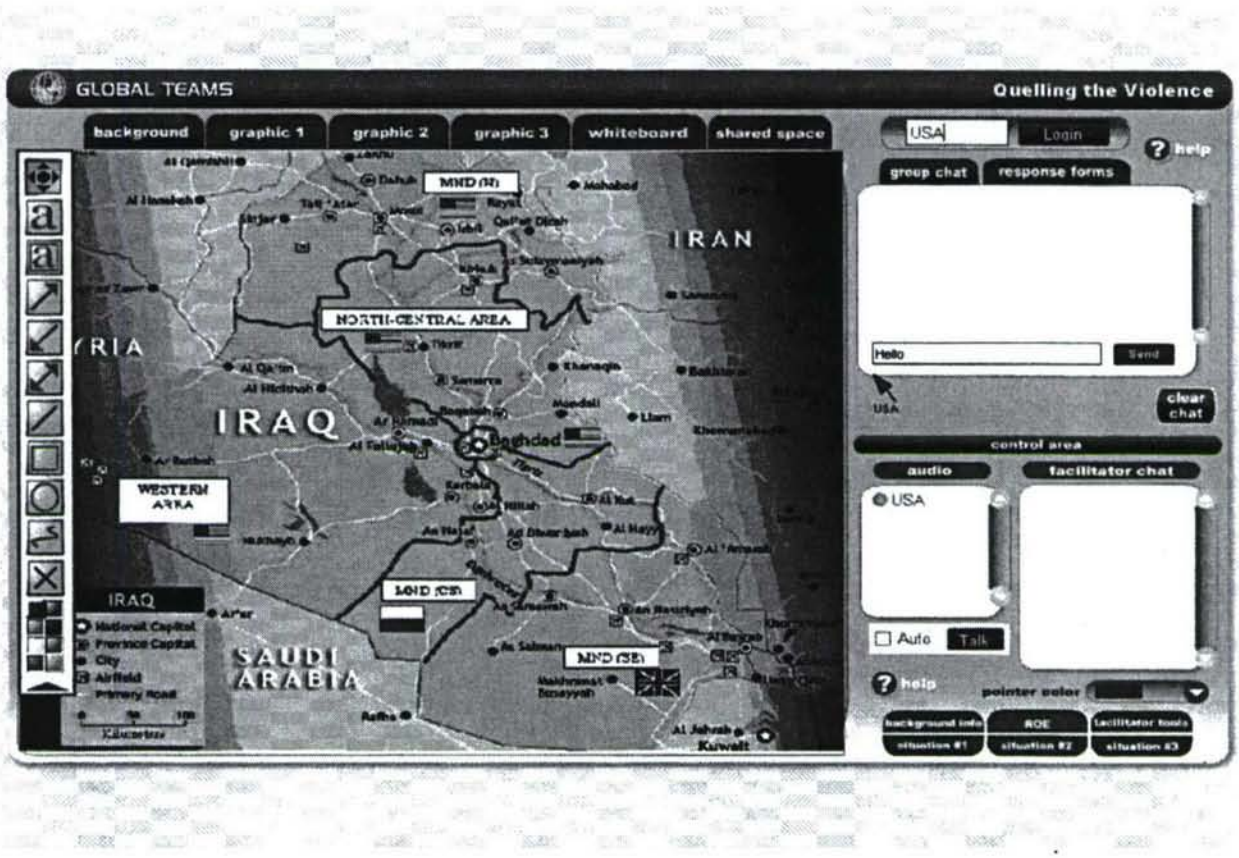

Figure 1. Global Teams main page.

Group Chat/Response Form Area. Directly below the login area is the group chat/response form area. By default, when the user arrives at this main page, the group chat functionality is enabled. Here, all users can freely communicate via instant text chatting. Text is entered by an individual user, and, upon clicking the Send button, the user's text is displayed for all other users to instantly view. That user's text is uniquely identified by both username and color (if that user has selected a unique color+see control area. To access the group chat, the user can click on the group chat tab at any time. To clear the chat window, a user can click on the clear chat button beneath the chat window. The second tab displays individual player response forms. When a registered player clicks on the response form tab, the group chat will be replaced onscreen by a text-based response form. Here, the player can enter responses to questions presented by the facilitator. While the other players cannot view this information, registered facilitators can view it at any time. When a facilitator clicks on the response form tab, the USA response form appears by default. In addition, five buttons (representing the countries of USA, UK, Canada, and Australia, and a generic non-government organization) appear below the form. These buttons are only visible to facilitators. By clicking on these buttons, the facilitator can observe the progress of each individual player in answering the questions. A help button in this area generates a new popup window with guidance in using these features as well as the name changing feature.

Control Area. The bottom, right corner of the main page contains the control area. Several functionalities are located here. The box beneath the audio label displays all currently

logged-in users by username. It also serves a second, optional purpose. By pressing the talk button, users with microphones can speak to the other distributed users (if they have functional speakers). The user can either press and hold down the talk button to speak, ensuring privacy when they don't want conversations overheard, or they can click the auto box, and the tool will detect when the user is speaking automatically. Lights to the left of each username in the box flash green when that particular user is speaking.

The facilitator chat box to the right of the audio box is a private area, only accessible/visible to registered facilitators, where such users can conduct administrative chats that would otherwise distract players.

The pointer color selector beneath the facilitator chat box allows any user to selectively customize his or her cursor and group chat color. This feature supports the distinction of distributed users.

The buttons at the bottom of the control area generate new windows that access Word-formatted text documents. These documents provide the relevant rules of engagement, background and situational information associated with the selected vignette. By clicking on a button, the user's browser will open a new window for the text-based information, allowing the user to simultaneously view the main page/graphics and supporting text. The facilitator tool button is only visible to registered facilitators, and provides supporting documentation for conducting vignettes. A help button, visible to all users, generates a separate popup window with additional guidance on using the control area.

Phase 4: Training Evaluation

Training evaluation took place in two parts: a preliminary evaluation and a main evaluation. The purpose of the preliminary evaluation was to test the functionality of the training tool and the usability of the training strategy. The main evaluation was designed to test the effectiveness of the collaborative distributed web-based training methodology for supporting Soldiers' understanding of coalition operational challenges. Four levels of evaluation were used to accomplish this goal. The measures are described below.

Training evaluation was based on Kirkpatrick's (1976) hierarchy for training evaluation. The hierarchy consists of four different levels of evaluation: reactions, learning, behavior, and organization. These levels represent a sequence of methods to evaluate a training program. Each level builds on the previous one, but also provides more valuable information.

Level 1: Reactions: Survey and Discussion

Reactions are concerned with how the participants react to the training. It is important to note that positive reaction does not ensure learning, although a negative reaction almost certainly reduces the likelihood that learning has taken place (Kirkpatrick, 1998). To learn about participants' reactions to the training, we developed: 1) a short survey to be filled out by each participant at the end of each training day (See Appendix B for Reactions Survey) and 2) a set of discussion questions to guide the elicitation of the participants' reactions (See Appendix C for

Discussion Questions). This discussion took place in an open forum (or a focus group) at the end of the training session. The idea was to initiate a discussion about participants' perceptions of the usefulness, value, and relevance of the training.

Level 2: Learning: Situation Awareness (SA) Exercise

Learning is the second level in the hierarchy, and refers to "the principles, facts, and skills which were understood and absorbed by the participants" (Kirkpatrick, 1976, p. 11). This level is concerned with whether the participants have acquired knowledge, or have modified their attitudes or beliefs as a result of attending the training course. It is important to measure learning, as no change in behavior can be expected if no new knowledge or change in attitudes has occurred. In this case, learning refers to whether participants have more knowledge about coalition operations after the training. In order to test the learning, three SA Exercise questions (Pliske, Militello, Phillips, & Battaglia, 2001) were embedded into the training tool. These three questions were asked after each of the three vignettes was presented.

Level 3: Behavior: Behavioral Markers

An evaluation at the behavior level is the assessment of whether knowledge learned in training actually transfers to behaviors on the job or a similar simulated environment. For each of our scenarios, three separate observations were made, one for each vignette. Observations were made using a behavioral marker system. Behavioral markers are descriptions of observable, non-technical behaviors that contribute to superior or substandard performance within a work environment. They describe specific, observable behaviors—not attitudes or personality traits—with clear definition (enactment of skills or knowledge is shown in behavior). Each behavior should have a demonstrated causal relationship to performance outcome. One of the main purposes of behavioral marker systems is to enable performance measurement for training evaluation. According to standard practice, observers made notes while observing, noting examples of positive and negative behaviors based on the dimensions highlighted in the system. At the end of the session the raters rated the team on each dimension.

The behavioral marker system we used is adapted from the NOTECHS system (Avermaete & Kruijsen, 1998). NOTECHS was developed by EC DGTREN (European Community Directorate for Transport and the Environment) and the Civil Aviation Authorities of France, Netherlands, Germany, and UK. The system was developed as a method for instructors to assess pilots' non-technical skills during training. The system consists of a framework of desirable behaviors in a hierarchy of categories and elements. In the system we used, there are five primary categories and 18 elements as shown in Table 2. The categorical set was based on theoretical models identified from the teamworking literature (Cannon-Bowers & Salas, 1997; Zsambok, Klein, Kyne, & Klinger, 1993). Evaluators are required to indicate whether a particular element of behavior was observed during training and then make a judgment about the team's performance on each category.

Table 2

Framework of Desirable Behaviors

Category	Description	Element	Example
Team identity	The extent to which members conceive of the team as an interdependent unit and then operate from that perspective. When members have weak team identity they tend to operate as individuals instead of as members of a team.	**Defining roles and functions**	• Are the team members actively assigning roles and responsibilities? • Are they updating roles and responsibilities as the situation changes?
		Engaging	• Is the team capitalizing on team member participation? • Has any member of the team disengaged? Signs that may indicate a team member has disengaged: • Not paying attention during discussions. • Performing a different task during the discussion. • Not following up on questions or concerns.
		Compensating	• Have members of the team stepped outside their assigned roles or functions in order to help the team achieve its goals?
		Avoiding micro-management	• Are people, tasks, or information being managed at the wrong level of detail?
Team self monitoring	Ability of the team to observe and monitor itself.	**Time management/ workload management**	• Are the team members managing workload correctly? • Are they aware of the time limitation on tasks and planning work accordingly?
		Adjusting	• Is the team recognizing and adjusting for problems?

(Table Continues)

Category	Description	Element	Example
Cooperation	The sense of 'team' within the team and their willingness to support and help each other.	**Teambuilding and maintaining**	• Is there an atmosphere for open communication and participation? • Is there input and feedback from everyone on the team?
		Consideration of others	• Do the team members take notice of the suggestions of all members even if they do not agree?
		Support of others	• Do team members help each other in demanding situations?
		Conflict solving	• Do the team members concentrate on what is right rather than who is right?
Team conceptual level	A high team conceptual level is achieved through the maintaining of common ground, and a shared understanding of goals, objectives, and situation assessment.	**Envisioning goals and processes**	• Have the team members clearly communicated their goals? • Have they clearly communicated the plan? • Have team members asked for further clarification?
		Forecasting: time horizons and range of factors	• Have the team members demonstrated the ability to focus decision making within an appropriate span of time? • Have the team members demonstrated the ability to focus on a relevant breadth of concepts and information? • Have the team members demonstrated the ability to project the results of their actions into the future?
		Detecting gaps and ambiguities	• Have the team members been able to easily recognize when they are missing certain information and when assumptions are inaccurate? • Have they had difficulty in determining that information is missing? • Have they tended to ignore ambiguity?

(Table Continues)

Category	Description	Element	Example
Team conceptual level continued		**Achieving situation assessment: diverging and converging**	• Has the team sought alternate explanations and assessments from team members? • Has the team reached a shared understanding of the situation? • Has the team employed mental simulation and perspective taking?
Team Decision Making	The extent to which decision making is a sequential and deliberative process. In high performing teams diagnosis precedes option generation, risk assessment, and finally review.	**Problem definition and diagnosis**	• Has the team actively gathered information and identified problems? • Have they actively reviewed causal factors?
		Option generation	• Has the team stated an alternative Course of Action (CoA)? • Have they asked members for options?
		Risk assessment and option selection	• Has the team considered the risks of alternative CoAs? • Have they talked about possible risks for CoA? • Has the team confirmed the CoA with all members?
		Outcome review	• Has the team checked the outcome against the plan?

The system also includes an elements score form on which the observer notes whether the behavior was observed or not and a score form on which the observer rates how well the team performs overall on that category. The evaluators first indicated whether a particular element of behavior was observed. Then, following the end of the exercise, the evaluator made a judgment about the team's performance on each of the five dimensions (See Appendix D for elements and categories score forms).

Level 4: Organization

This is the highest level of evaluation in Kirkpatrick's (1976) hierarchy. The ultimate aim of any training program is to produce tangible evidence at an organizational level. The problems with evaluating training at this level are that it can be difficult to establish discernible indicators and to be able to attribute these to the effects of a single training course. For obvious reasons, it is too early to try to measure organizational level change directly following the training exercise. However, we hope to be able to infer whether there is likely to be organizational level change from a comparison of the behavioral analysis across the three vignettes in each scenario. If we see consistent change in the right direction across the three

vignettes, over three scenarios, we will be able to infer with some level of certainty that participants are accommodating different points of view as a result of this training. However, within the limits of this project it was not possible to develop any specific measure of Organizational level change.

Results of the Training Evaluation

Preliminary Evaluation

Two assessment methods were used in the preliminary evaluation. First the reactions survey was used to determine how participants reacted to the training. Second, the post training discussion was used to get participants' feedback on the training and the tool. The outcome of this assessment process was used to guide our development process. Preliminary evaluations took place at the Joint Readiness Training Center (JRTC) at Fort Polk, Louisiana. Three U.S. Army JRTC Observer/Controllers (O/Cs) took part in the preliminary evaluation. There were two Captains (CPT) and one LTC who acted as the U.S. training participants. Two of the three participants had previous coalition operational experience in Iraq. An SME (retired Army officer) with coalition experience played the roles of the Australian, Canadian, and UK contingent. The purpose of the preliminary evaluation was not to test the learning taking place, but rather to test the functionality of the training tool and the usability of the training strategy. Thus, preliminary evaluation data were limited to the Reactions Survey and Discussion Questions - as discussed in the training evaluation plan.

Preliminary Evaluation Reactions Survey Results

Participants were asked to rate on a scale of 1 (none at all) to 5 (a great deal) their answers to four questions about the training they had just been through. In all cases, the number of participants was three. Mean ratings are provided here as the consistency across participants' responses was high.

- How much value is there to training with coalition partners in general? Mean rating = 4.6
- How much value was there in training with coalition partners in this exercise? Mean rating = 2
- How would you rate the quality of the content presented in this exercise? Mean rating = 2.33
- How frequently should a staff member participate in similar training (On a scale of 1 (never) to 5 (once a month)? Mean rating = 2.6

Participants were also asked to list three things that made the training effective. All three participants stated that interaction with partners, working together to solve a problem, and the conversation with partnering nations were the factors that made the training effective. When asked to list the three things that would make the training more effective, the following are the responses in order of the number of times they were mentioned.

- Greater use of graphic tools.
- More detailed maps, more detailed information in the scenarios.

- More incorporation of doctrine.
- The ability to interact to solve problems.

A final question asked participants to provide any additional comments they would like to make about the training. Comments included: 1) The need for greater clarity about the objectives of the exercise before the training; and 2) the need to set the dilemmas at a level appropriate to the rank and role of the participants and the role they are being asked to play in the scenario. For example, battalion (BN) and brigade (BDE) operational level Multi-National Division (MND) staffs deal with tactical issues while CJTF staffs deal with strategic, political, and long term issues.

Preliminary Evaluation Discussion Results

Participants provided feedback on four main issues: the tool itself, the scenarios, the participant requirements, and the facilitation. A summary of the points they raised is presented below.

The three participants felt that that there was a lack of connection between the graphic and the text; they would have liked more opportunity to put the graphic to use in solving the problem. In fact, the requirements (or challenges set for participants) were seen as not specific enough to require the use of the map. A related issue is the lack of a cause and effect dilemma with which participants could grapple. There was also consensus on the difficulties involved in using the chat function as a main means of communication. The "chat" became disjointed and difficult to follow; it was generally agreed that using the speaker phone was more useful than the chat function.

The participants saw the scenarios as realistic and accurate, but needing to be pitched at the appropriate level (i.e., at the tactical level for BN and BDE level staffs, and at the strategic level for CJTF level staffs [these would be theater level issues]). They felt the scenarios should provide more information about capabilities, and the process should include giving different information to each team. Finally, the facilitation should provide the opportunity for more coordination during problem solving, and learning objectives should be given up front.

In response to the issues raised by participants through the pre-evaluation reaction survey and discussion session, modifications were made to the scenarios, the participant questions and the facilitation guides. For example, participant questions were modified to allow for greater interactions and discussion over problem diagnosis as well as problem solving. The factual details in the scenarios were changed to make them more level appropriate, and potential participant questions and answers were modified to reflect the changes.

Main Evaluation

A total of 18 participants took part in the main evaluation (nine from the U.S. Army, three from the Canadian Army, three from the UK Army, and three from the Australian Army). Of the 18 participants, the ranks included five CPTs, four LTCs, two commanders (CMDRs), and seven MAJs. Fourteen participants had previous experience working with coalition partners.

In total, nine had coalition experience in Iraq, six had coalition experience in Bosnia, two had experience working with coalition partners in Germany, and one in East Timor. Four participants had no experience working with coalition partners. Most of the participants held positions related to training, development, and operational analysis including: doctrine writer; exercise planner; operational training developer; distributed learning director; leadership training planner; deputy director of training and development; program manager for training, doctrine and combat development; course tutors.

Evaluation took place over three days. On each day three U.S. players and three players from either Australia, Canada, or the UK played through one scenario consisting of three vignettes. The teams were connected via telephone and through the web-based training tool. An observer accompanied each team. The observer provided participants with hard copies of the vignettes and distributed the survey at the end of the sessions. A remote facilitator experienced in military coalition operation facilitated the training sessions. Three training developers and one tool developer remotely observed the training and facilitated the survey and discussion sessions.

Level 1: Reactions: Survey and Discussion

Level 1 refers to how participants reacted to the training. While negative and positive reactions are not necessarily indicators of learning, the reactions were used to guide our development process.

Survey Results. Participants rated on a scale of 1 (none at all) to 5 (a great deal) the following questions about the training they had just been through. In all cases, the number of participants was 18.

- How much value is there to training with coalition partners in general? Mean rating = 4.9
- How much value was there in training with coalition partners in this exercise? Mean rating = 4
- How would you rate the quality of the content presented in this exercise? Mean rating = 3.3
- How frequently should a staff member participate in similar training? On a scale of 1 (never) to 5 (once a month) Mean rating = 3.7

When asked to list three things that made the training effective, three main factors were identified as key to the effectiveness of the training (responses are listed in order of frequency of mention by participants):

- Conversation with partnering nations.
- Realistic scenarios.
- Experienced facilitator.

All of the respondents agreed that conversation between the partners was the most effective aspect of the training. This provided them with the opportunity to exchange views, discuss doctrinal differences, and generate greater awareness of similarities and differences in operational activities. The fact that this discussion was facilitated by an experienced facilitator,

and that it was in connection with relevant operational issues was also acknowledged by a majority as being highly effective. It was acknowledged that the experienced facilitator provided probing questions and extra information that facilitated a broadening of perspective. A majority of respondents said that the scenarios were realistic, authentic, and factually accurate.

Respondents were also asked to list three things that would make the training more effective. Below are the responses listed in the order of frequency that they were mentioned by participants. Six factors were identified:

- Better use of graphics and graphic tools.
- Greater interactivity.
- Read-ahead materials.
- More time to consider the problems.
- Tailor the exercises to the target audience and pitch requirements at the correct level.
- Greater closeness to Military Decision-Making Process (MDMP) and military doctrine.

There was general consensus regarding the need for greater interactivity between the requirements set for participants and the graphic. In total five participants would have preferred having a requirement to use the graphic to answer the questions. In total nine participants would have liked the opportunity for even more interaction with partnering teams. Rather than simply sharing and discussing their responses to problems, they would have liked more opportunities to solve problems together. It was generally agreed that participants should be provided with read-ahead materials that outline the purpose of the exercise and provide background to the conditions of the scenarios and that participants should be given more time to consider the problems and come up with solutions.

A total of seven participants commented that scenarios, roles and requirements should be pitched at the correct level for the participants, and moreover that the requirements should be matched to the participant's role within the scenario. A somewhat related issue is the desire for the scenarios and requirements to match the MDMP and military doctrine more closely.

Finally, participants were asked to provide any additional comments they would like to make about the training. The comments were focused around four main issues:

- The need for greater clarity about the objectives of the exercise.
- The need to set the dilemmas at a level appropriate to the rank and role of the participants and the role they are being asked to play in the scenario.
- The need for a greater level of interactivity with partners in problem solving.
- Usefulness of the training.

Discussion Results. Participants provided feedback on six main issues:

- The training tool.
- The scenarios.
- Participant requirements.
- The facilitation process.

- The relevance of the training.
- Overall reactions.

Regarding the tool, it was generally felt that there was limited interaction with it and particularly with the graphics presented. A majority of participants would have liked more opportunity to engage in problem solving processes that involved greater interactivity with the tool and the graphics. A majority of participants felt that the requirements supported the learning process. However a minority stated that they would have liked more time to consider the problems presented, that requirements could have been more specific, and that they should have had more interaction with partners in the problem solving process.

The scenarios were generally perceived to be authentic and relevant; however, two participants preferred that they be closer to military doctrine. In total, three command and control (C2) anomalies were highlighted which were corrected in the final version of the scenarios. Two participants recommended the use of actual incidents in the scenarios. It was widely agreed that the experienced facilitator added value to the process by introducing other perspectives and broadening those perspectives. There was general agreement regarding the relevance of the training for Soldiers preparing for deployment to a coalition operational environment. However, there was a mix of beliefs about whether previous coalition experience was necessary or desirable for participation in the training. About half of the participants felt that this training is only appropriate for those with previous coalition experience, and that it is not suitable as baseline training. Conversely, half of the participants felt that anyone on a BDE or BN staff would benefit from this training.

Overall, the training provided a good opportunity to problem solve and exchange ideas with coalition partners. A majority of participants stated that the exercise helped them to understand not only the partner's point of view, but also how the partner might view their actions.

Level 2: Learning: Situation Awareness (SA) Exercise

The SA Exercise was used to assess whether learning was taking place as a result of the training. The first SA Exercise was completed before any discussion of collaborative problem solving took place between participants. The second and third SA Exercises took place after participants engaged in discussions and collaborative problem solving activities. Below are participants' responses from the SA Exercise from Situation 1 (collated across all three scenarios).

Responses from SA calibration exercise for Situation 1

1. Q What are your top three concerns and why?
   A Tactical, infrastructure, task constraints, resources, personnel, gaining control of situation, budget, priorities, reconnaissance, intelligence, situation report (SITREP), threat, timing, location.
2. Q What are your assumptions about this situation?

A Capabilities, supplies, insurgent actions, security level, risk level, current state command and control, posture.

3. Q What are your requests for information from the other team?
   A Capabilities, only logistical support, resources, none, enemy/insurgent activity, mission and tasks, command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) compatibility, adjacent commands.

Below are participants' responses from the SA Exercise from Situation 2 and 3 (collated across all three scenarios).

1. Q What are your top three concerns and why?
   A Threat assessment, engaging leaders, what additional assets will other team require, clarify responsibilities with partnering organization, what is the effect of own posture on climate, coalition cohesion, who is the lead agency, developing a joint plan, any competing priorities, who has primacy, consider complicating political/coalition factors.
2. Q What are your assumptions about this situation?
   A Climate, likely response to actions, likely Course of Action (CoA) of partners
3. Q What are your requests for information from the other team?
   A Considering ROE, coordinating with other nations Information Operations (IO) and public affairs, requests for information about CoA, question other team's priorities, question national caveats, requests for additional information, anticipate local reactions, anticipate partner reactions/implications, other actors/other involved parties.

The results of the first SA Exercise suggests that respondents are already taking partners' resources and capabilities into consideration in their planning and decision making. However, examination of the second and third SA Exercises suggests that participants are considering a broader range of issues and have greater awareness of partners' perspective in the second and third vignettes – after discussion and collaborative problem solving activities have taken place. For example, in the second and third vignettes participants raised the following issues that were not considered in the first vignette: estimating what assets partners may require, clarifying responsibilities with partnering organizations, coalition cohesion, coordinating with other nations, and anticipating partner reactions/implications. These findings suggest that the discussion sessions and collaborative problem solving process promoted a greater awareness of coalition issues and how to respond to them.

Level 3: Behavior: Behavioral Markers

Behavior, as defined here, refers to transfer of behaviors learned to the job or a simulated environment. While we were not assessing team behaviors in an environment separate from the training evaluation, we did examine teamwork performance during training and assessed the utility of a tool for assessing teamwork. Such a tool could be used to assess teamwork prior to and after training or across training scenarios. Evaluators at each site during the evaluation rated team behaviors using a behavioral marker system. The evaluators first indicated whether a particular element of behavior was observed. Then, following the end of the exercise, the

evaluator made a judgment about the team's performance on each of the five dimensions. The mean ratings given by six observers across each category, on a scale of 1 (very poor) to 5 (very good), are shown in Table 3. The ratings table suggests that teams performed adequately on all dimensions of teamwork assessed in this exercise. The mean ratings for team conceptual level were given the highest ratings, cooperation within teams was rated the lowest, however, no statistically significant difference was found to exist.

Table 3

Mean Observer Ratings for Five Behavioral Categories

Category	Mean ratings across three scenarios
Team identity	4.1
Team conceptual level	4.3
Team self monitoring	4.0
Decision-making	4.1
Cooperation	3.6

It should be noted that this is a within team rating of performance. The results do not show whether there was an improvement in teamwork between teams.

Level 4: Organization

The ultimate aim of the highest level of training evaluation is to produce a difference at the organizational level. No specific measure of organizational level change was developed for this project. The small numbers of participants and limited scope of this evaluation prohibited any such endeavor, therefore, it is difficult to assess whether organization level change occurred as a result of this training. However, the results of the SA calibration exercise show that participants are considering a broader range of issues and have greater awareness of partners' perspective following discussion and collaborative problem solving. Moreover, the results show consistent change in the right direction across the three vignettes for all three scenarios. These results show that organizational level change is possible with wider implementation of the training. However, specific measures to assess such a change would have to be developed.

Lessons Learned

The training effort was based on the theoretical foundation of previous training development in the area of advanced cognitive training for tactical thinking. The Commander TLAC program addresses tactical thinking skills, while much of the Decision Skills Training development has focused on tactical decision making. The TLAC is built on the notion of theme-based training. This was translated into the development of High Level Focus Areas in this project. Decision Skills Training provided a foundation of facilitation techniques for exploring and improving mental models of decision-making. This effort explored the application of these successful learning strategies, using a low technology, web-based, distributed, synchronous training method. A number of lessons learned from evaluation efforts set the stage

for the use and refinement of the Global Teams coalition training developed in this project both in terms of the learning strategy and the training method.

Technology

The technology supporting this training was purposely designed to be low tech so that participants with a low level of technology available would still be able to access the tool and participate in the training. Specifically, the tool was designed so that either a dial-up system or a DSL connection could be used to gain access. Nonetheless, significant problems were encountered with the technological side of this training. First, firewalls and blocks on streaming communications created considerable access problems for all participants, both national and international. A significant time investment was required to resolve these issues and involved the coordination of computing technicians from partnering nations. Even the telephone connection created some problems. International dialing codes and speaker phone problems created delays in the training, and there were significant costs for international telephone charges as well as potential problems for users to obtain permission to make the calls to support training. A functionality which has the ability to overcome this latter problem is the introduction of voice over internet protocol (VOIP) to the tool. We originally did not add this function to conform to our design criteria of "low technology." This functionality increases bandwidth issues with the technology and means that a DSL connection will be required to use the technology, but it also eliminates one communication channel problem. Moreover, participants appear to prefer high-tech functionality, particularly those that improve the real-time interaction with partners. For the future, the tool should have an upload function which would allow an administrator or facilitator to upload new or existing scenarios. Our goal is to allow researchers to add scenarios for research, and the administrative rights of allowing various facilitators to upload scenarios will be the purview of the eventual user audience, should that function be desired.

The Learning Strategy and the Training Audience

There is a need to clarify the intent of the training and the learning objectives ahead of the training exercise. Participants need to have a context for the training so that they can situate themselves to that learning environment. A few participants in the evaluation were uncomfortable that this training did not correspond well with the doctrinal training they have received over many years and the fact that this training did not follow the same format as the Military Decision Making Process (MDMP). If training were to be considered on a continuum of highly structured at one end to highly unstructured at the other end, the MDMP training process would sit at the highly structured end of the continuum whereas the Global Teams training would sit at the highly unstructured end. The aim of the Global Teams training is real time discovery and the development of understanding between participants. Each training session will uncover different aspects of the problem environment due to the different experiences and perspectives that participants bring to the training environment. Some of the discomfort felt by participants may be due to the fact that the training presented here did not conform to their previous experience of military training. This training forced the participants to consider problems without the guiding principles of doctrinal training, since doctrine is different across coalition nations. A minority of participants were uncomfortable with this level of flexibility in the training process. Discomfort was also caused by the fact that there may have

been a mismatch between participants' expectations for the training and the training they actually received. To this end, facilitators should clarify what the training is and what it is not. In particular, it should be emphasized that this training is not intended to be an extension of MDMP training, and it is not an exercise in detailed planning. Rather, the aim of the training is to introduce participants to coalition challenges, provide them with a safe environment to explore differences in culture, approach, stance, and style, and help them to de-center and take on another's point of view when engaging in collaborative problem solving.

Emphasis should be placed on the problem solving and coordination aspects of the exercise rather than on the accuracy of the facts or participants' experiences of how things operate in theater. Facilitation can focus the participants away from disagreement with the scenario and onto the issues of collaboration by emphasizing that this is a notional situation based in a realistic part of the world. Changes should be made if the facts interfere with judgments and decisions the participants are making, or if the facts do not reflect the nature of the actual types of decisions and situations confronted by experts in the field.

The evaluation process highlighted that the greatest benefit came from the interaction of partners over problem solving and discussion of courses of action or plans for action. It is clear that this learning strategy and training method should capitalize on the opportunity for interaction as much as possible by allowing partners to interact not only over discussion but also over problem solving tasks. This could involve allowing participants the opportunity to set their own learning agenda by allowing them to figure out how to coordinate most effectively or to figure out what information or resources they need from each other or how the problem should be solved or tackled. For example, one suggestion during the evaluation was to give teams from each country different information to bring to the problem (relevant to what they might actually know in the situation) to force collaboration.

Essentially, the more collaboration and interaction participants engage in, the better. The problem solving process would allow them not only to work together on solving the problem at hand, but also provide the opportunity for participants to collaborate over defining the problem and the role of each nation in resolving it. Deliberating courses of action and assumptions behind them follows the facilitation techniques of Decision Skills Training. Honing the challenges in the scenarios and getting the right mix of participants working together at the right level will allow researchers to better develop the facilitation techniques to increase interaction.

There was a definite reluctance on the part of participants to disagree and contradict partners' assumptions, plans, or goals. This may be due to the fact that military culture transcends national cultural differences. It may be due to the fact that English-speaking partners are more similar than different, or it may be due to a mutual respect for partners of each others' viewpoint. We identified a number of conflicting assumptions in our data collection, and we expect there is more difference among English-speaking partners than was shown in the evaluation. It is also likely that the participants in the evaluation were not equally matched in terms of experience. Some partners had more to offer to the training experience than others. Fruitful explorations of the concepts captured in the HLFA are not possible without some background experience in these areas. Alternately, providing more specific information in the scenarios to highlight areas of difference and create more of a dilemma would probably benefit

less-experienced participants (such as those who soon will be going into coalition operations for the first time). Nonetheless, it is important to get at the differences and to get participants to state their stance clearly, even if it disagrees with a partner's stance.

An important lesson for the evaluation process is the need for the training to be set at the appropriate level. In other words, the scenario itself, the requirements, participants' actual rank, and their assumed role in the scenario all should be in synch. If any of these elements are out of place, participants may be reluctant to make decisions at a level that is incongruous with their role or rank. Specifically, BN and BDE level staff operating at the Multi-National Division level should deal with tactical issues. Combined Joint Task Force staff should be tasked to deal with operational levels and strategic issues. While the tactical and operational levels of assessment and action are beginning to blend, and more complex decisions are being made at lower echelons than before, training participants still need to feel situated in their role and level of responsibility to support discussion and collaboration.

An experienced military or former military facilitator is a crucial component of this training methodology. Facilitators with a military background provide an element of authenticity to the training experience. They can answer questions and field participant questions better than non-military facilitators; they can add to the discussion and suggest alternative courses of action; and they can feed off participant questions to suggest alternative interpretations of events. For greater success, these facilitators need to work with a researcher or trainer to understand the intent of the facilitating for advanced cognitive training, or possess some background in this level of training already.

Online Facilitation of Collaborative Learning

In facilitating the problem solving process, it is important for the facilitator to encourage participants to think (out loud) about how they are thinking about the problem, as opposed to simply thinking about solutions. In particular, facilitators should expose participants' assumptions about the problem situation and how these may differ across nations. Bringing assumptions to light during the evaluation training sessions was perhaps the most effective part of facilitation in this project. The focus for continued development of facilitation is to get the participants into actual collaboration over problems while not letting the technical problems become the focus. The participants must continue to examine their assumptions as the collaboration is ongoing.

Tool functionality must be tied into the learning strategy. In other words, the scenarios, the graphics that support them, the participant requirements and how they are answered, and the facilitation process must all be synchronized with the functionality of the tool. In this way the functionality actually supports and enhances the learning. The training method and learning strategy, as we are using the terms, are linked in online collaboration. Tools should support facilitators at different levels of expertise, guiding the processes as needed. While such tools are available more readily for operational collaboration (such as meeting support), a similar technology development is not seen in education. However, attention to the role and processes of online facilitation is found in the educational research community. Technology for online collaborative learners should support the roles and processes being developed in the educational

literature. Current research into the roles and responsibilities of the online facilitator can serve as a basis for describing the roles and responsibilities of the facilitator for the Global Teams tool (Berge, 1995; Hootstein, 2002). This literature serves as a basis to clarify the facilitator's role and need for technology support, but refinement for this particular level of cognitive learning and training audience will still be needed.

Conclusions

With the ever-increasing involvement in coalition operations, it is essential to begin looking at training and readiness. The training that currently exists is limited in scope, depth, and breadth, and tends to be mission-specific and region-specific. This report describes the research and development of a web-hosted, scenario-based training tool for coalition forces. The analysis of interviews with experienced coalition forces revealed a number of key focus areas and awareness points which were central to the training tool. Scenarios were developed to force participants to engage in problem solving in these areas, to discuss and grapple with them. The evaluations highlighted two key findings: first, that the scenario challenges need to support collaborative problem solving and second, that the training tool should support the collaborative process. One way to achieve the former is to provide participants with challenges that are as specific as possible so that participants are forced to coordinate and collaborate in solving them. A way to modify or enhance the existing process would be to give teams differing information and tasks so that they have to come together to achieve one larger task or challenge. For example, each team could be tasked with different information and area of responsibility towards a mission. The challenge should require them to come together to discuss and exchange recommendations based on prior knowledge and tasking.

The evaluations highlighted a number of factors which can impact the effectiveness of the training including: the importance of clarifying the intent of the training and the learning objectives in advance, the need to emphasize the problem solving and coordination aspects of the exercise rather than the accuracy of the facts, the merit in capitalizing on the opportunity for interaction as much as possible by allowing partners to interact not only over discussion but also over problem solving, the need for the training to be set at the appropriate level, the value of an experienced facilitator, and the significance of tying tool functionality to the learning strategy. Overall, the training was shown to improve participants' awareness of and ability to respond to the key themes of coalition coordination. The tool may provide an easy-to-implement and cost-efficient means for coalition partners to train in a distributed environment, on short notice, prior to deploying to the operating environment.

This research effort was designed to test the viability of the collaborative distributed training method as a means to train distributed teams in coalition problem solving and coordination. The products from this effort include a web-based training tool, three pre-developed scenarios and three accompanying facilitation guides. The tool incorporates both a database and server-based filing structure that contains the pre-developed scenarios. Library scenarios can consist of up to four total graphics, four situations (including a background), rules of engagement, and a facilitator's guide. This tool is available from the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) to parties interested in hosting such training.

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Appendix A

Global Teams Training Tool: Primary Supported Functionalities

Global Teams Training Tool: Primary Supported Functionalities

- Login Restriction
  At the introduction screen, access is restricted to only those users who have recognized Player IDs.
- Dynamic Player Notes Area
  At the introduction screen, a dynamic note area allows facilitators to leave initial guidance to players, such as timing of the next session and specifics on which vignette is to be conducted.
- Dynamic Library of Vignettes
  The tool incorporates both a database and server-based filing structure that contains three pre-developed vignettes. Library vignettes can consist of up to four total graphics, four situations (including a background), rules of engagement, and a facilitator's guide. The tool also stores vignette identifiers to support the recognition/selection of desired vignettes. After initially logging in, the tool presents summary information (title, descriptive summary, creation date, and author) for each vignette in the database, and allows the user to scroll through the summaries and select the vignette of interest.
- Customized Interface/Functionality Based on User Login
  Users who log in as facilitators have access to all player responses as they are entered, whereas players representing the countries and organizations can only view their own responses, unless the facilitator shares information. Further, the facilitators/observers have access to an onscreen chat area only visible to them. This feature supports administrative chats (e.g., how to proceed, observations of a session, when to take breaks, etc.) that would otherwise distract the players.
- Ability to Upload New Vignettes
  An innovative and essential feature of the tool is its ability to support the uploading of new vignettes. Users who are logged in as administrators have the option of uploading their own vignettes, including text, graphics, supporting summary, and facilitation information. This allows for an ever-growing body of vignettes that, once uploaded, can be conducted by any experienced facilitator.
- Collaborative, Synchronous Graphics Manipulation
  As the tool presents graphics associated with vignettes during a session, all users have the ability to superimpose images and text over the graphics. Users can choose to draw line segments, directional arrows, boxes, circles, and even freeform sketches for all other users see. Users can also enter freeform text and/or textboxes and customize the colors of any of their selections. The tool allows users to individually select, move, or delete individual drawing items, or clear the entire screen with the push of a button.
- Collaborative, Synchronous Whitespace
  In addition to the graphics drawing, the Global Teams tool provides a shared white space where players and facilitators can sketch their own maps. This supports more freeform play of a vignette, where a facilitator can create a new situation and have players respond.
- Private Response Forms
  Players have access, depending on their login, to specific response forms. These forms are not visible to other players and provide a semi-private area for a player/team to work out and record answers to vignette questions or requirements. Facilitators have access to all the response forms so they can: 1) assess progress online, 2) determine whether

individual players/teams require additional assistance or need to be redirected, 3) observe the response development process, and 4) evaluate relative responses as they are being formed.

- Split-Screen Shared Space
  The Shared Space area of the tool consists of two vertically aligned shared text spaces where the facilitator can present information that all players can simultaneously view. The split-screen feature allows facilitators to present responses from different players/teams to the same questions side-by-side (if desired), to support the comparing and contrasting of responses.
- Mouse/Chat Color and Name Identification
  Often in collaborative, online environments it is difficult to identify who is doing what onscreen. For this reason, the tool provides name identifiers and attaches them to each user's mouse icon. To do this, the player enters a screen name that he/she wishes to use, and then his/her pointer icon displays that name for other users to see. Further, individual players/facilitators can also customize their pointers by selecting their own color. These identifiers (color and name) distinguish individual users in the main chat area.
- Chat/Facilitator Chats
  The tool provides an area where any/all users can have group chats. The tool also provides an additional area, only accessible to facilitators, where this subgroup can conduct private chats. Again, this feature supports administrative chats (e.g., how to proceed, observations of a session, when to take breaks, etc.) that would otherwise distract the players.
- Optional Audio Conferencing
  Users have the option of utilizing the tool's streaming audio functionality. If desired, players and facilitators can have their conversations streamed over the internet, eliminating the need for a phone connection. Players using this feature can either have the tool automatically detect when they are talking or manually trigger the sending of audio (to reduce extraneous noise or to ensure privacy in offline discussions). Users can transfer between modes with ease. Onscreen display features are also presented to show which user is currently the active speaker.
- Player List
  The screen names of all users who are logged onto the tool are displayed in a player list box. This feature prevents anonymous observations and also provides verification that all necessary players are present for the vignette session.
- Customized Pop-up Help Screens
  To support novice users, the tool provides help files, customized to different functional areas within the tool. A help file is available to assist facilitators in uploading new vignettes, providing specific guidance in how to prepare the required graphic and MSWord files, and how to identify them through the tool's upload interface. Additional help files provide guidance in implementing the main interface functionalities.

Appendix B

Reactions Survey

Reactions Survey

1. Your current duty position:

2. Rank:

3. Briefly list any past experience working with coalitions and your job in those coalitions:

4. How much value is there to training with coalition partners in general?

None at all	Very little	Uncertain	Some	A great deal
1	2	3	4	5

5. How much value was there in training with coalition partners in this exercise?

None at all	Very little	Uncertain	Some	A great deal
1	2	3	4	5

6. How would you rate the quality of the content presented in this exercise?

Very poor	Poor	Satisfactory	Very good	Excellent
1	2	3	4	5

7. How frequently should a staff member participate in similar training?

Never	Once	Once a year	2-3 times a year	Once a month
1	2	3	4	5

8. List three things that made the training more effective and explain why.

a.

b.

c.

9. List three things that would make the training more effective and explain how.

a.

b.

c.

10. Any additional comments:

Appendix C

Discussion Questions

Discussion Questions

Reactions

- How useful did you find this training?
- Would you be willing to participate in a similar exercise six months from now?

Application

- How valuable was it to have a group from another country participating?
- What military positions would benefit most from this training?

Further development

- In your opinion, are the military details presented in the scenario and the related questions authentic? How could they be improved?

What did the facilitator do to support and reinforce learning during the exercise? How could facilitation be improved?

Appendix D

Behavioral Marker System – Score Forms

Behavioral Marker System (Elements Score Form)

Team identity	Y/N	**Team conceptual level**	Y/N
• Defining roles and functions • Engaging • Compensating • Avoiding micromanagement		• Envisioning goals and processes • Forecasting: time horizons and range of factors • Detecting gaps and ambiguities • Achieving situation assessment: diverging and converging	
Team self monitoring		**Team decision making**	
• Time management/workload management • Adjusting		• Problem definition and diagnosis • Option generation • Risk assessment and option selection • Outcome review	
Cooperation			
• Teambuilding and maintaining • Consideration of others • Support of others • Conflict solving			

Behavioral Marker System (Categories Score Form)

Categories	Very poor	Poor	Acceptable	Good	Very good	Not Observed	Comments
Team identity							
Team self monitoring							
Cooperation							
Team conceptual level							
Decision making							