

# Integrating Cross-Cultural Decision Making Skills into Military Training

*W. Lewis Johnson and LeeEllen Friedland*  
Alelo Inc.

## ABSTRACT

Intercultural skills are increasingly recognized as critical to overseas military and humanitarian operations. As military operators engage in day-by-day and moment-by-moment decisions in the course of carrying out a mission, they need intercultural competence in order to make appropriate decisions and act on them in culturally appropriate ways. This paper describes an approach to intercultural skills training that focuses on the skills required by military operators in overseas operations. The overall capability is called Operational Language and Culture Training System (OLCTS) (pronounced “OLaCTS”). OLCTS provides anywhere, anytime language and culture training on a range of different training devices and platforms, including desktop, web-based, and hand-held. Immersive serious games provide an integrated learning environment in which trainees must make decisions about mission goals and logistics as well as cross-cultural and interpersonal interactions with socially intelligent virtual agents. The OLCTS capability is being rapidly transitioned into regular use by military service members in the United States as well as in allied countries.

**Keywords:** cross-cultural decision making, intercultural communication, small unit training, immersive serious games

## INTRODUCTION

Intercultural skills are increasingly recognized as critical to overseas military and humanitarian operations. For example, the US Defense Regional and Cultural Capabilities Assessment Working Group has identified the ability to integrate cultural knowledge and skills into mission execution as a critical cross-cultural

competency for general purpose forces (McDonald, et al., 2008). As military operators engage in day-by-day and moment-by-moment decisions in the course of carrying out a mission, they need intercultural competence in order to make appropriate decisions and act on them in culturally appropriate ways.

This paper describes an approach to intercultural skills training that focuses on the skills required by military operators in overseas operations. The overall capability is called Operational Language and Culture Training System (OLCTS) (pronounced “OLaCTS”). OLCTS provides anywhere, anytime language and culture training on a range of different training devices and platforms, including desktop, web-based, and hand-held. It prepares trainees for the application of intercultural skills to simulated operational scenarios for civil affairs, humanitarian relief, and security cooperation missions. It provides training for the situations that trainees are likely to encounter as part of these missions, so that they can learn to take appropriate action in those situations. Immersive serious games provide an integrated learning environment in which trainees must make decisions about mission goals and logistics as well as cross-cultural and interpersonal interactions with “socially intelligent virtual agents” (Johnson & Valente, 2009). The OLCTS capability is being rapidly transitioned into regular use by military service members in the United States as well as in allied countries.

The paper is organized as follows. First it gives an overview of each of the components of the OLCTS training framework. This is followed by an example of how the US Marine Corps envisions employing OLCTS tools in cross-cultural skills training. The paper then outlines the methodology and technical approach used in OLCTS to develop and deliver training materials across the OLCTS training suite. The paper then summarizes current work in the Human Social Culture Behavior Modeling (HSCB) program to extend the capabilities of OLCTS and improve its ability to deliver high quality cross-cultural skills training.

## **THE OLCTS TRAINING FRAMEWORK**

OLCTS includes immersive serious games in which trainees can learn cultural knowledge and skills, and then practice them in immersive simulations of intercultural exchanges. Figures 1 and 2 illustrate the different training platforms that are supported in the OLCTS training suite. These examples are taken from the OLCTS course for Dari language and Afghan culture. The image on the left of Figure 1 is from one of the interactive lessons in the course, where trainees acquire basic knowledge and intercultural skills. The image on the right shows an immersive scenario in which the trainee’s—or player’s—character (on the left) is engaging in meeting with the elders in the village to discuss a reconstruction process. The non-player characters in the game are implemented using artificial intelligence and spoken dialog technologies, so that trainees can engage in conversations with the game characters and practice the intercultural skills they will

[Type text]

need as part of their missions.

To meet the needs of advanced distributed learning (ADL), we have developed a Web-based delivery platform, called Wele, that is used to offer similar training over the Web. The basic version of Wele uses 2½ D animations instead of 3D animations, implemented in Flash, and menu-based interaction with animated characters. We also make available browser plug-ins and provide speech recognition and immersive 3D capability, to provide a highly immersive training experience similar to that of the PC games.

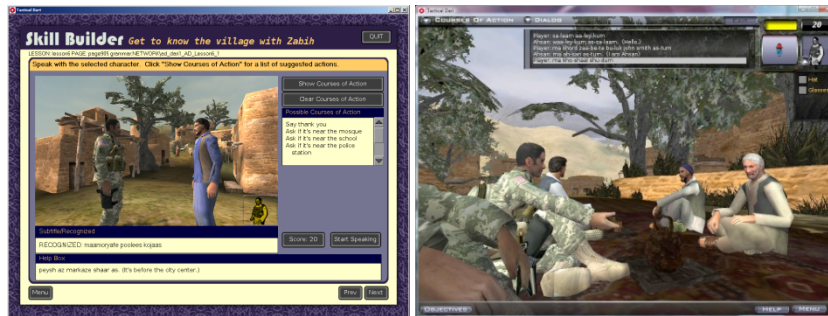


FIGURE 1. OLCTS PC-based training system

Although studies have shown that these PC-based immersive games can be very effective as intercultural skills training tools (MCCLL, 2008), they require trainees to dedicate training time in front of the computer, separate from their other training activities. Figure 2 shows additional training platforms that overcome these limitations. The left image shows an implementation of the interactive language and culture lessons on an Apple iPod Touch. Trainees can use this training device pretty much whenever and wherever they like, both prior to deployment and while in country. It does not yet have the speech recognition and 3D immersive capabilities of the PC-based trainers, but the added convenience and accessibility help to compensate for that. The screenshot on the right in Figure 2 is from our intercultural interaction plug-in for the VBS2 multiplayer simulation environment, which enables trainees to practice their intercultural skills as part of simulation-based training and mission rehearsal exercises.



FIGURE 2. OLCTS handheld and multiplayer training platforms.

## APPLICATIONS OF THE OLCTS TRAINING SUITE

The following example shows how one military service intends to use the OLCTS framework in training. It illustrates the need for anywhere, anytime language and culture training, and the most suitable conditions for that training to meet specific needs. This implementation calls for training that has the following characteristics: it should (1) prepare military service members to make decisions and take action in a mission context; (2) provide training and/or mission rehearsal opportunities that represent the specific types of situations that service members are likely to encounter in the field; and (3) be consistent across the range of training platforms that service members will employ.

### TRAINING FOR US MARINE SMALL UNIT OPERATIONS IN AFGHANISTAN

US Marine Corps (USMC) small units in Afghanistan face a broad range of potential encounters with host nationals while performing non-kinetic missions. They must respond to changing circumstances as well as create and exploit opportunities to advance mission goals in environments where the lack of a shared language or cultural understanding can compound the challenges.

The complexity of the training need is illustrated by a “sea story” developed by the USMC Program Manager for Training Systems. In this sea story, which sketches out training needs in a platoon preparing to deploy to Afghanistan, a 2Lt is going to conduct a humanitarian assistance mission in an Afghan village that requires that he build rapport with local leaders and facilitate the work of NGOs in the area. In order to accomplish these tasks, the 2Lt would optimally require training in cross-cultural competence knowledge, skills, and personal characteristics (McDonald, et al., 2008); targeted cultural or regional knowledge, including etiquette and culturally appropriate practices; and, minimally, basic language skills, such as those required to greet people and show respect. Whether working with an interpreter or

[Type text]

not, the 2Lt will need to make decisions and take action based on his assessment of explicit and implicit factors, including new and highly complex systems of beliefs and values among relevant Afghan communities.

In addition, the 2LT will need to bring similar training to bear in working with different sorts of organizations, including NGOs, which can bring into the mix such factors as organizational, international, or regional cultures; work processes and networks that cross traditional social boundaries, and well-established views about the relative merits of US military participation in civil affairs or humanitarian missions. While it might be tempting for trainees to assume that their counterparts in other organizations share the same goals, US military personnel can practice how to discover and assess other perspectives, and interact in appropriate ways for a given mission in a specific context, in the OLCTS immersive training environment.

The sea story unfolds further as it focuses on the platoon and the different mission-related roles that will be played by squad members and squad leaders. While everyone completes pre-deployment training, the curriculum is tailored to the level, needs, and roles appropriate for different trainees. So squads train for junior-level roles in their mission scenarios and squad leaders do the NCO-level language and culture training. Finally, the sea story follows the Platoon Sergeant who creates new mission scenarios for training that incorporate location-specific cultural and human terrain information from the base culture and language center. This enables the platoon to become more familiar with the characteristics of their deployment location, pursue additional language and culture training targeted to their mission roles, and practice their new knowledge and skills in the immersive game environment that gives them feedback on their progress as they gain greater intercultural competence.

## **OLCTS DEVELOPMENT METHODOLOGY**

As the above example illustrates, language and culture training content in OLCTS courses needs to be closely aligned with the operational needs of military service members, so that they can effectively apply their language and cultural skills in military decision making. Alelo develops course content using a Situated Culture Methodology that focuses training content on operational requirements in cultural context, and results in course content that is best suited for anywhere, anytime delivery.

## **SITUATED CULTURE METHODOLOGY**

All OLCTS courses are designed with the same major goal: to teach effective interpersonal and intercultural communication via practical and task-based knowledge. OLCTS courses are developed using a dynamic methodology for identifying and teaching situated culture, that is, the cultural knowledge needed to successfully perform tasks or higher-level projects in a foreign country or unfamiliar sociocultural setting.

Trainees learn the cross-cultural competence required to successfully interact and communicate with people from different linguistic and cultural contexts – to quickly perceive the differences in a new cultural context, and to respond in a culturally appropriate way. Trainees learn to be more aware of cultural differences and cultural relativity, that is, they learn metacultural awareness. This improved metacultural awareness then becomes a tool kit that learners take with them to an international context and use to learn culturally appropriate and effective ways of speaking and behaving. The Situated Culture Methodology identifies the relevant contextual and sociocultural factors that interact with, and play a role in, a given situation at a given moment.

The methodology is broken down into three major areas of focus: context, sociocultural factors, and curriculum. The research and development process can be iterative, that is, research on sociocultural factors may feed back into work on context, which may then help determine the path of more work on sociocultural factors. All the research then feeds into curricula, which are meant to support trainees in reaching performance objectives and cross-cultural competence.

Micro-social factors are generally the most important factors for Alelo content development, because they play a role in face-to-face interactions, which are at the core of Alelo learning. Key among them is conversational culture, which encompasses the many parameters that come together to make a “normal” conversation, and ways of expressing politeness, distance or closeness, formality or informality.

Four types of subject matter experts, or SMEs are consulted in the course of cultural research and content development. Task SMEs, often provided by the client, are familiar with the client’s project or mission, and possibly the specific geographic region as well. Culture SMEs are native to the region the project is focused on and preferably have some level of expertise in analyzing and explaining culture. Language SMEs have native or native-language competence in the language that is being taught as part of the project. Finally, academic SMEs provide high-level research perspective and advice to the project. Information from these SMEs is used to develop all major parts of OLCTS courses. Anthropologists and content developers also work on determining and documenting the sociocultural factors that will be relevant for trainees. These sociocultural factors come from all levels of social organization: macro-social, micro-social, and individual. Together they form the “cultural lens” through

[Type text]

which trainees and the local citizens with whom they will interact view and interpret the world.

## **TECHNOLOGIES FOR CROSS-PLATFORM CONTENT DEVELOPMENT AND DELIVERY**

OLCTS training content needs to be delivered and maintained on a range of different platforms. In the case of multi-platform delivery methods such as the Marine Corps training approach, this is required so that the content available on one training platform is consistent with that available on other platforms. This becomes especially challenging as training content is adapted for changing needs. The emphasis in OLCTS on mission-oriented training guarantees that training content will need to adapt over time as missions change. Additionally, OLCTS must support different combinations of training platforms and variations in technical feature sets. This variability is needed not just to support the range of needs and priorities across multinational coalition forces, but also the differences in training delivery strategies among military services and commands. For example, handheld delivery is currently a priority for the US Marine Corps, but is not yet a priority for the US Army. The features available in the Web-based components of OLCTS varies depending upon whether or not the military command receiving the training is willing to approve browser plug-ins with advanced technologies such as automated speech recognition. This has implications for the way content is authored as well as the way it is delivered.

The variety of training platforms used in OLCTS has made it necessary for us to develop authoring tools that make it possible to author content independent of the target platform (Johnson et al., 2008). The authoring tool portal, named Hilo, specifies the content of each lesson element and learning activity, independent of the screen dimensions and computing power of the device. Instead of adopting a What You See is What You Get (WYSIWYG) approach to content authoring, Hilo specifies the semantic components of each lesson element, their properties, and the relationships between them. For example, authoring a language lesson “page” in Hilo involves specifying the foreign language utterances to be covered, their translations, explanatory notes, and selecting appropriate voiceover recordings. This information is encoded in XML and stored in a content repository, and then used to generate presentations for the target device. The number of presentations, and the interactive features that they support, depend upon the capabilities of the device. For example, material that is presented in a single page in a Web browser is presented in series of pages on the iPod. If the target device has speech recognition capability enabled, activities tend to make heavy use of it, whereas if no speech recognition capability is available alternative interaction strategies that do not rely on speech recognition must be employed instead.

Although we do our best to generate equivalent realizations of content on all delivery platforms from the same content specifications, in practice it is simply not possible in all cases. In such cases authors have the option of authoring an alternative content element to use instead, or omit it from the platform. For example, scenario vignettes that utilize real-time 3D animation on PCs may appear as pre-rendered machinima instead. The author specifies for each content element the conditions under which it may be used. The same conditional rendering approach is employed to support customized courses for different user groups. This makes it possible to customize courses for different coalition partner countries or different military services.

## **FURTHER DEVELOPMENTS OF OLCTS UNDER THE HSCB PROGRAM**

Under the auspices of the Human Social Culture Behavior (HSCB) program, Alelo has been undertaking research to develop improved models of sociocultural behavior and utilizing them to produce improved, more flexible training. The fruits of this research will be transitioned into future versions of the OLCTS training suite.

### **CULTURECOM**

The CultureCom project is developing formal models of the cultural influences underlying dialog and utilizing them to increase the flexibility and realism of the behavior of non-player characters in training simulations. The work is being conducted in collaboration with Dr. Michael Agar of Ethnoworks and Prof. Jerry Hobbs of the University of Southern California. Cultural and linguistic anthropologists are developing validated sociocultural data sets for Afghanistan and other cultures of interest, consisting of annotated dialogs of cross-cultural interactions. Experts in artificial intelligence then use these data to develop logical models of sociocultural behavior based upon a formal ontology of microsocial concepts underlying interpersonal communication. The resulting models are validated against the original sociocultural data. We are adapting the agent behavior engines in VRP to use these models to drive agent behavior. The validated “swap-in” cultural models result in non-player characters whose behavior is culturally realistic and can be flexibly adjusted to varying levels of training and assessment difficulty.

### **SOCIALSIM-MR**

The SocialSim-MR project has designed a novel hybrid virtual-constructive approach to simulation-based training. In collaboration with Prof. Barry Silverman

[Type text]

of the University of Pennsylvania, we have designed and prototyped a cultural training system that enables trainees to practice their cultural skills in a simulated village, where the trainees' actions can produce effects that unfold over time. SocialSim-MR integrates with the VRP system so that trainees can interact with the host nationals in the village, just as they would in a basic VRP system. The next time trainees enter the simulated village, however, they will find that things have changed, partly as a result of actions they have taken and partly as a result of actions taken by insurgents and other simulated actors in the village. SocialSim-MR is designed to be able to model realistic missions such as the Zebat mission described above, which can only be achieved through a series of interactions and encounters with the host nationals in the village.

### **C-CORE**

C-CORE is a framework for managing workflows in Cultural Content, Ontology, and Resource Engineering. C-CORE is an example of a Cultural Architecture Generator (CAG). It is a coherent suite of authoring tools for scenarios and computer-generated forces (CGFs) that results in highly authorable, culturally-aware communicative agents that are re-usable on a variety of serious game platforms, including the OLCTS platforms. The resulting CGFs will exhibit culturally appropriate behavior and track learner responses for After Action Review. To keep the scenarios up to date, C-CORE includes mechanisms for incorporating current sociocultural and human terrain data from a variety of sources, such as subject matter experts, HUMINT reports, and other media.

### **C-GAME**

C-GAME, developed in coordination with C-CORE, is developing a framework for scenario-based training in operational cultural competence and other sociocultural skills relevant to military mission contexts. It will comprise a toolset for developing training scenarios, and a run-time execution engine that can be integrated with a variety of game-based training environments. The scenario construction toolset will enable military users to develop their own sociocultural training scenarios through a combination of libraries of reusable sociocultural models and authoring tools. It will include mechanisms for incorporating current sociocultural and human terrain data into the scenarios, to keep them up to date. It will also provide a way for trainers to define trainee performance standards. The run-time execution engine will incorporate instrumentation to compare trainee performance to the training objectives, and provide automated after-action review and remediation capabilities. The proposed framework will be designed to be platform independent, and at the same time integrate as seamlessly as possible with the user interface of specific game platforms, to provide trainees and trainers with a coherent, easy-to-use training environment.

## CONCLUSION

OLCTS provides a flexible tool suite that is being used to integrate cross-cultural decision making skills into military training. The situated culture approach ensures that language and culture content is targeted to support critical mission goals and intercultural communication.

## ACKNOWLEDGMENTS

Parts of this work have been funded by many sponsors, including the USMC, ONR, DARPA, CTTSO, and AFRL. Opinions expressed are those of the authors do not reflect official policy of the US Government or the British Government.

## REFERENCES

- Johnson, W.L., Valente, A., & Heuts, R. (2008), "Multi-platform delivery of game-based learning content." Proceedings of SALT 2008.
- Johnson, W.L. & Valente, A. (2009), "Tactical Language and Culture Training Systems: Using AI to teach foreign languages and culture." *AI Magazine*, 30 (2), 72-83.
- MCCLL (2008). "Tactical Iraqi Language and Culture Training System", *Marine Corps Center for Lessons Learned Newsletter*, 4 (8), 4.
- McDonald, D. P., McGuire, G., Johnston, J., Selmeski, B., & Abbe (2008), "Developing and Managing Cross-Cultural Competence Within the Department Of Defense: Recommendations For Learning and Assessment." US Defense Regional and Cultural Capabilities Assessment Working Group.
- References (Font: Times New Roman, size 10)
- Courage, K.G., and Levin, M. (1968), *A freeway corridor surveillance information and control system*. Research Report No. 488-8, Texas Transportation Institute, College Station, Texas.
- Daubechies, I. (1992), *Ten Lectures on Wavelets*. Society for Industrial and Applied Mathematics, Philadelphia, Pennsylvania.
- Dennis, J.E., and Schnable, R.B. (1983), *Numerical Methods for Unconstrained Optimization and Nonlinear Equations*. Prentice Hall, New Jersey