



**U.S. Army Research Institute
for the Behavioral and Social Sciences**

Research Report 1933

**Training Methods to Build Human Terrain
Mapping Skills**

Laura A. Zimmerman and Jeff M. Sestokas
Applied Research Associates, Inc. Klein Associates Division

James A. Bell and David R. Manning
Dynamics Research Corporation

William R. Sanders
U.S. Army Research Institute

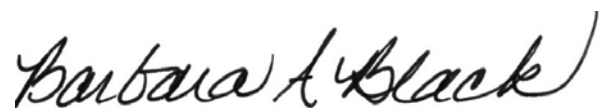
October 2010


Approved for public release; distribution is unlimited

**U.S. Army Research Institute
for the Behavioral and Social Sciences**

**Department of the Army
Deputy Chief of Staff, G1**

Authorized and approved for distribution:


BARBARA A. BLACK, Ph.D.
Research Program Manager
Training and Leader Development
Division


MICHELLE SAMs, Ph.D.
Director

Research accomplished under contract
for the Department of the Army

Applied Research Associates, Inc. Klein Associates Division

Technical Review by

Scott A. Beal, U.S. Army Research Institute
M. Glenn Cobb, U.S. Army Research Institute

NOTICES

DISTRIBUTION: Primary distribution of this Research Report has been made by ARI. Please address correspondence concerning distribution of reports to: U.S. Army Research Institute for the Behavioral and Social Sciences, Attn: DAPE-ARI-ZXM, 2511 Jefferson Davis Highway, Arlington, Virginia 22202-3926.

FINAL DISPOSITION: This Research Report may be destroyed when it is no longer needed. Please do not return it to the U.S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The findings in this Research Report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

REPORT DOCUMENTATION PAGE					
1. REPORT DATE (dd-mm-yy) October 2010		2. REPORT TYPE Final		3. DATES COVERED (from. . . to) September 2008 – September 2009	
4. TITLE AND SUBTITLE Training Methods to Build Human Terrain Mapping Skills				5a. CONTRACT OR GRANT NUMBER W74V8H-04-D-0048/0023	
				5b. PROGRAM ELEMENT NUMBER 622785	
6. AUTHOR(S) Laura A. Zimmerman, Jeff M. Sestokas (Applied Research Associates, Inc. Klein Associates Division), James A. Bell, David R. Manning (Dynamics Research Corporation), and William R. Sanders (U.S. Army Research Institute)				5c. PROJECT NUMBER A790	
				5d. TASK NUMBER 331	
				5e. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Applied Research Associates, Inc. Klein Associates Division 1750 N Commerce Blvd, Fairborn, OH Dynamics Research Corporation 955 N. Wilson Rd., Suite E Radcliff, KY 40160 U.S. Army Research Institute for the Behavioral and Social Sciences 121 Morande Street ATTN: DAPE-ARI-IK Fort Knox, KY 40121-4141				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Research Institute for the Behavioral & Social Sciences ATTN: DAPE-ARI-IK 2511 Jefferson Davis Highway Arlington, VA 22202-3926				10. MONITOR ACRONYM ARI	
				11. MONITOR REPORT NUMBER Research Report 1933	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.					
13. SUPPLEMENTARY NOTES Contracting Officer's Representative and Subject Matter POC: William Sanders					
14. ABSTRACT (<i>Maximum 200 words</i>): A key to success in counterinsurgency operations involves finding ways to identify the insurgents within the population. Success will likely require that Soldiers develop the cultural and information gathering skills necessary to develop a detailed knowledge of the "human terrain" in their area of operations. This report documents research conducted to develop Human Terrain Mapping (HTM) skills for Soldiers, where HTM is an overarching concept that refers to methods and tools used to systematically collect and catalog social and ethnographic information. Given the rapidly changing nature of current conflicts, the research effort sought to gather HTM training requirements and tactics, techniques, and procedures (TTP) from members of an intact unit that had worked together performing the HTM functions in a recent deployment. Sixteen Soldiers from a recently deployed brigade were interviewed to identify the TTP they used to accomplish HTM tasks. Based on the interview findings a training product was developed that demonstrates methods and tools for building an understanding of the HTM process, specific information elicitation techniques, and Soldier observation skills.					
15. SUBJECT TERMS human terrain, counterinsurgency, innovative training, cognitive skills, Soldier competencies, human performance					
SECURITY CLASSIFICATION OF			19. LIMITATION OF ABSTRACT	20. NUMBER OF PAGES	21. RESPONSIBLE PERSON
16. REPORT Unclassified	17. ABSTRACT Unclassified	18. THIS PAGE Unclassified	Unlimited	51	Ellen Kinzer Technical Publications Specialist 703-602-8049

Research Report 1933

Training Methods to Build Human Terrain Mapping Skills

Laura A. Zimmerman and Jeff M. Sestokas

Applied Research Associates, Inc. Klein Associates Division

James A. Bell and David R. Manning

Dynamics Research Corporation

William R. Sanders

U.S. Army Research Institute

**U.S. Army Research Institute for the Behavioral and Social Sciences
2511 Jefferson Davis Highway, Arlington, Virginia 22202-3926**

October 2010

**Army Project Number
622785A790**

**Personnel, Performance
and Training Technology**

Approved for public release; distribution is unlimited.

ACKNOWLEDGEMENTS

We would like to thank LTC Jack Marr and LTC John Cushing from the 3rd Brigade Combat Team, 3rd Infantry Division, for their interviews and time which led to a better understanding of Human Terrain Mapping.

We would particularly like to thank the Commander, COL Reginald Allen and Regimental S2, CPT(P) Stephen Sams, from the 3rd Armored Cavalry Squadron, for providing Soldiers from their unit to evaluate training materials and provide feedback.

TRAINING METHODS TO BUILD HUMAN TERRAIN MAPPING SKILLS

EXECUTIVE SUMMARY

Research Requirement:

The key to success in counterinsurgency operations involves finding ways to separate the insurgents from the population. Achieving success will likely require that Soldiers develop the cultural awareness and information gathering skills necessary to develop a detailed knowledge of the “human terrain” in their area of operations (AO) (Marr, Cushing, Garner, & Thompson, 2008). The goal of the research was to identify the tactics, techniques, and procedures (TTP) used by experienced Soldiers to accomplish Human Terrain Mapping (HTM) tasks. The TTP would then be incorporated into a preliminary set of training methods and tools that could be employed by company-size units with existing resources to support Soldier HTM skills development. Here, HTM is an overarching concept that refers to methods and tools used to systematically collect and catalog social and ethnographic information so that units can create and share an accurate picture of their AO.

Procedure:

The research effort sought to gather HTM training requirements and TTP from members of an intact unit that had worked together performing the HTM functions in a recent deployment. While not reflecting the needs of all units in all theaters, the data provided by a single unit could provide one approach that had worked in combat to meet the HTM challenges. A literature review was first conducted to identify gaps in HTM knowledge and training. Several key HTM tasks were identified to serve as the subject matter for the research. Sixteen members of 3rd Brigade, 3rd Infantry Division, Fort Benning, GA, participated in the research. Leaders of the unit had recently published articles describing HTM requirements and TTPs suggesting that they had subject matter expertise in this area (Marr, Cushing, Garner, & Thompson, 2008). Interview guides were developed using cognitive task analysis methodologies with a focus on the critical decisions and tasks present when Soldiers collect and assess HTM information (Crandall, Klein, & Hoffman, 2006). Soldiers experienced in the conduct of HTM activities were interviewed to identify specific incidents of HTM information gathering, the techniques they used to gather and assess information, and the training issues relevant to learning and implementing HTM skills. From the information obtained, a preliminary set of training methods and tools were developed to address the HTM training needs. A second set of Soldiers conducted a hands-on review of the exemplar training materials and provided feedback that was integrated into a revised product.

Findings:

The research findings provide evidence that Soldiers have a diverse, but incomplete understanding of the HTM process and objectives. Soldiers’ understanding of HTM was generally limited to the roles and functions they had performed during deployment. This suggests that providing at least a cursory understanding of the complete HTM cyclic process

used to gather, assess, and act on human terrain information would increase the Soldiers' motivation and ability to engage in HTM tasks. The HTM TTP that Soldiers currently learn are practical, targeted techniques for operating within the contemporary operational environment. From experience, Soldiers learn techniques for uncovering information, observing key activities, spotting anomalies, and verifying facts. Specifically, Soldier comments suggested that training methods and tools were needed to build an initial set of HTM TTP-related skills prior to engaging in live exercises, which supports a crawl-walk-run approach to HTM learning. To support this initial HTM training requirement, exemplar training materials were developed. The training materials took the form of a modular computer/web-based and web-deliverable course of instruction with three training modules:

- Module 1: Tactical Applications of Human Terrain Mapping. The module provides an introduction to HTM concepts, a description of the Company Intelligence Support Team (CoIST) and how HTM supports it, and a description of communication techniques to employ that take cultural considerations into account.
- Module 2: Information Elicitation. The module presents techniques that can be employed during in-field questioning and the interview process to include body language, tone of voice, and how best to phrase questions.
- Module 3: Observation Techniques. The module presents a written program of instruction that provides practical exercises for patrol members to develop observation skills. The exercises were designed to be conducted in a garrison environment.

Utilization and Dissemination of Findings:

The results of this research were presented in a briefing to the Commanding General, Joint Readiness Training Center (JRTC) at Fort Polk, LA, on 21 September 2009. The findings are limited in that they reflect the experiences of a single unit employed in one theater of operations. The research identified the TTP used by Soldiers during a deployment to accomplish HTM tasks which were incorporated into a preliminary set of exemplar training methods and tools that can be employed by company-size units with existing resources. The research findings are being used to guide ongoing work by the U.S. Army Research Institute for the Behavioral and Social Sciences with the support of JRTC to develop innovative methods and tools for CoIST sustainment training.

TRAINING METHODS TO BUILD HUMAN TERRAIN MAPPING SKILLS

CONTENTS

	Page
Introduction.....	1
Requirement	1
Background	1
Research Objectives	2
Training Needs Identification	3
Method	3
Participants.....	3
Procedure	4
Results.....	6
Survey Results	6
Interview Results	7
Conclusions.....	13
Training Design and Development	13
Training Design	13
Learning Outcome Design Features.....	14
Learner Abilities Design Features	15
Instructional Method Design Features	15
Instructional Content Design Features	16
Knowledge Assessment Design Features	16
Training Development	17
Training Development Overview	17
Electronic Book	17
Interactive Presentation and Embedded Dynamic Content	17
Lesson Assessments.....	18
Formative Evaluation.....	20
Method	20
Participants.....	20
Procedures.....	20
Results.....	21
Training Content	21
Training Relevance	21
Training Update	23
Conclusions and Recommendations	23
References.....	27

CONTENTS (Continued)

	Page
Appendix A List of Acronyms.....	A-1
Appendix B Human Terrain Mapping Training Needs Discussion.....	B-1
Appendix C Human Terrain Mapping (HTM) Training Needs Discussion Background Information	C-1
Appendix D HTM Analysis High-Level Categories	D-1
Appendix E Storyboard Example	E-1

List of Tables

Table 1 Soldiers' Rank, Duty Position, and Years of Military Service.....	3
Table 2 Human Terrain Mapping Tasks Identified in the Literature Review.....	4
Table 3 Nine High-Level Information Categories	7
Table 4 Five-Stage Design Approach.....	14
Table 5 Three-Module HTM Training Program Outline	15
Table 6 Soldiers' Ratings of Their Skill Improvement Based on the Learning Objectives	21
Table 7 Soldiers' Ratings of the Training Program Relevance	21

List of Figures

Figure 1 HTM Online interactive presentation interface features.	18
Figure 2 Assessment features.....	19
Figure 3 Knowledge Check after-action review features	20

TRAINING METHODS TO BUILD HUMAN TERRAIN MAPPING SKILLS

Introduction

Requirement

Human Terrain Mapping (HTM) is an overarching concept that refers to methods and tools used to systematically collect and catalog social and ethnographic information so that units can create and share a map of the human terrain in their area of operations (AO) (Marr, Cushing, Garner, & Thompson, 2008). In practice, HTM is a combat multiplier that allows for an increase in the collection of intelligence information. The idea that “every Soldier is a sensor” requires Soldiers to have a more comprehensive understanding of the communities and environments where they operate. Every Soldier has the opportunity to collect information by observing and interacting with the population and to develop a special level of situational awareness through exposure to the events occurring in their AO. By understanding the big picture, any Soldier can communicate information operations messages and assist in strengthening relationships with the local populace. The intent of the present research was to analyze best practices for HTM employed by experienced Soldiers, develop innovative methods and tools for training HTM tasks, and produce a HTM training program as a proof of principle for the identified HTM best practices.

Background

Recently the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) reported that small unit leaders (company level officers and non-commissioned officers [NCO]) face a growing challenge to rapidly develop and implement pre-deployment training to incorporate lessons learned and current tactics, techniques, and procedures (TTP) (Sanders & Schaefer, 2009). One training requirement identified was HTM, which refers to proactive methods used to systematically collect and catalog social and ethnographic information for a unit’s area of operations. To gather HTM information a company size, units must plan and execute a deliberate process of decentralized patrols to answer specific questions about the population (tribal boundaries, location of sheiks, and local leaders). The research noted that company level units will often have limited time, resources, and personnel available to develop and conduct pre-deployment training and concluded that better training methods and tools are needed to rapidly develop, modify, and access training.

As one approach to gathering human terrain information the Army has begun employing Human Terrain Teams (HTT) composed of civilian cultural experts and military personnel to assist brigade staffs in understanding the cultural terrain of the brigade AO (Pryor, 2008). The HTT are typically embedded in each forward-deployed brigade or regimental staff. The HTT provides the commander with experienced officers, NCOs, and civilian social scientists trained and skilled in cultural data research and analysis (Kipp, Grau, Prinslow, & Smith, 2006). The HTT approach represents a top-down infusion of cultural understanding to identify local family ties, customs, and the economic power structure.

In a parallel bottom-up approach, Marr, Cushing, Garner, and Thompson (2008) describe efforts to teach Soldiers to gather and develop information that will help their units create a

Human Terrain Map of their AO. Marr et al., stress that Soldier interaction with the local population helps build relationships that are essential to the working effectively in the contemporary operational environment: “It’s all about the people, building a trusted network.” The strength of this approach is that the unit develops an organic capability to gather and assess information critical to the success of their mission. Army units such as the Third Infantry Division (3rd ID) gather this information so that they have a better understanding and respect for local customs and social norms, are better able to work through local leaders to build public support, and to thereby distinguish insurgents within the population. The HTM approach developed by the 3rd ID has been briefly described (Marr et al., 2008). However, no systematic approach to training the HTM skills described in this article has been laid out or documented. Examples of the information collected and integrated to create a Human Terrain Map include:

- Graphically defining each tribal area.
- Location and contact information for leaders.
- Identification of the population’s battle rhythm or pattern of life (sleep/shop/traffic).
- Employment/unemployment levels.
- Anti-coalition presence and/or activities.
- Access to essential services (fuel, water, electricity).

The U.S. Marine Corps (USMC) has also recognized and responded to the need to understand cultural aspects of the operational environment. The Marine Corps described the need for an intelligence cell at company level to organize and direct collection assets, filter and analyze raw data, recommend a course of action to the commander, and disseminate intelligence to the other small unit leaders (USMC, 2004). The USMC publication “Operational Culture for the Warfighter: Principles and Applications” further delineates cultural information factors that units must attend to in their AO. The publication identifies five operational culture dimensions that leaders need to understand: 1) physical environment, 2) economic environment, 3) social structure, 4) political structure, and 5) beliefs and symbols (Salmoni & Holmes-Eber, 2008).

It must be understood that HTM is not a staff exercise or a simple database of information. Platoon-level combat patrols gather essential HTM information, planned and organized with specific objectives and purposes. Successful HTM requires that small unit leaders understand how to gather information by integrating available assets such as fire support, civil affairs, and psychological operations teams. Every Soldier needs to be trained to deliver Information Operations (IO) themes and messages, and to communicate with the local population. Typically, HTM includes the consolidation of information in an HTM database.

Research Objectives

Training for HTM skills should begin early in the pre-deployment training phase and then continue consistently throughout pre-deployment and deployment. The purpose of this effort was to identify the tactics, techniques, and procedures (TTP) used by experienced Soldiers to accomplish HTM tasks and to generate from these TTP the training methods and tools that support Soldier HTM skills development. Several objectives were met. The goal was to identify HTM skill requirements at battalion, company, platoon, and squad levels and develop an HTM training program that addresses the most urgent HTM training need. The objectives were to:

- Analyze best practices and TTP employed by Soldiers at battalion, company, and platoon level to gather and integrate HTM social and cultural information.
- Develop training methods and tools based on this analysis to support unit training for deploying units.
- Produce an HTM training product as a proof of principle for the identified HTM TTP and best practices.

Training Needs Identification

Method

Participants

Given the rapidly changing nature of current conflicts the research effort began with the goal of gathering information from Soldiers in a single unit that had just returned from a deployment. Gathering HTM TTP from different units would have likely generated an inconsistent set of TTP given that the units had been assigned at different times to different places for different purposes. The 3rd BDE, 3rd ID, had published articles on the topic of HTM TTP, and early coordination with their leaders allowed ARI access to their personnel. Sixteen members of the U.S. Army's 3rd Infantry Division at Fort Benning, GA, participated in interview sessions containing one to four people per session. Table 1 presents Soldiers' ranks, duty position, and years of service. All Soldiers were male with an average age of 28 (range 24-42).

Table 1

Soldiers' Rank, Duty Position, and Years of Military Service

Rank	Duty Position	Years of Service
CPT	Intelligence Section (S2) Officer	10.0
CPT	Battalion Maintenance Officer	3.5
CPT	Company Commander	14.0
CPT	Plans Officer	6.0
CPT	Platoon Leader	3.5
1LT	Executive Officer	4.0
1LT	Executive Officer	2.5
1LT	Executive Officer	2.5
1LT	Battalion Intelligence Officer	3.0
1LT	Platoon Leader	2.0
1LT	Platoon Leader	2.5
CW2	Battalion Intelligence Section Technology	16.0
SFC	Operations Sergeant	13.5
SSG	Platoon Sergeant	18.0
SGT	Operations Sergeant	5.5
SPC	Intelligence Analyst	3.0

Procedure

A literature review was conducted to identify gaps in HTM knowledge and training. Pertinent literature included published academic articles, research reports, news articles, website articles, handbooks, field manuals, and published briefings. From the literature review, HTM requirements were identified for discussion in the interview sessions (Table 2).

Table 2

Human Terrain Mapping Tasks Identified in the Literature Review

Human Terrain Mapping (HTM) Tasks
<ol style="list-style-type: none">1. Information Operation Themes:<ol style="list-style-type: none">(a) Know the IO themes.(b) Conduct a running estimate of the human terrain in the AO.(c) Know what the unit Information Requirements and Priority Information Requirements are. Focus observations and information gathering on these.2. Population Engagement Techniques: Gather information directly through conversation/interaction with the population or indirectly (second or third hand) using the same means:<ol style="list-style-type: none">(a) Conduct combat patrols (HTM-specific requirements).(b) Conduct patrol debriefs.(c) Collect biometric data.(d) Employ tactical questioning/engage population in conversation:(e) Collect, evaluate and update census data through population engagement.(f) Build rapport with subjects in conversation/tactical questioning.(g) Learn and employ the host nation/local population's language.(h) Employ translators/interpreters.(i) Employ negotiations/conflict resolution techniques.(j) Conduct "Cordon and Knock" Operations.(k) Employ informants.3. Observation Techniques:<ol style="list-style-type: none">(a) Conduct Tactical Site Exploitation.(b) Conduct Patrols.4. Gather information broadly:<ol style="list-style-type: none">(a) Attain and sustain cultural awareness.(b) Tailor cultural awareness to the unit's AO.5. Integrate Available Resources:<ol style="list-style-type: none">(a) Employ civil affairs (CA) teams, psychological operations (PSYOP) teams.(b) Employ human terrain teams.(c) Employ human intelligence (HUMINT) collectors.(d) Employ cultural advisors.(e) Work with host nation military or police and technology (i.e., Raven).6. Build the Human Terrain Map:<ol style="list-style-type: none">(a) Prepare a civil-military estimate.(b) Evaluate census data.(c) Catalog information and establish an HTM database (e.g., People Tracker).

An HTM Training Needs Discussion guide (Appendix B) was created using cognitive task analysis (CTA) methodologies with a focus on the critical decisions and tasks present while collecting and assessing HTM information (Crandall, Klein, & Hoffman, 2006). Soldiers were interviewed using the guide to identify specific incidents of HTM information gathering, the techniques they use to gather and assess information, and the training issues relevant to learning and implementing HTM skills. This CTA method stresses that “When the tasks that people are doing are complex, it is not enough to simply observe people’s actions and behaviors – what they do. It is also important to find out how they think and what they know, how they organize and structure information, and what they seek to understand better (Crandall, Klein, & Hoffman, 2006).” One of the most powerful knowledge elicitation methods available to CTA practitioners is to probe actual incidents. This is reflected in the interview questions presented in the HTM Training Needs Discussion guide. Particularly with a complex task like HTM, incident-based CTA is a powerful technique for revealing the details, challenges, subtle cues, and strategies used to reach decisions. A related CTA method referred to as the Critical Decision Method was employed, where the interviewers would use the interview guide to elicit information about cognitive functions such as decision-making and planning and sense-making within a specific challenging HTM incident. Again, the emphasis on real challenging HTM incidents is clearly reflected in the HTM Training Needs Discussion guide. When conducting a CTS, an important role for the interviewer is to help the interviewee tell detailed stories about real events by using “deepening” probe questions. Probe questions are used to identify the information that the decision-maker had available, whether there was an applicable standard operating procedure available, what options were available, and what key information let the individual know what the right thing was to do.

The interviews were conducted to identify the critical HTM tasks, TTP, best practices, and gaps in training. From the information obtained, training content and methods (e.g., scenarios) were identified that could be developed to enhance HTM training. In addition, Soldiers were asked to describe:

- Their experiences collecting HTM information.
- How they assess incoming information and create actionable intelligence.
- What they do to understand local community customs and social norms.
- The biggest challenges they face when learning HTM skills.
- The training scenarios they would like to create to address HTM training challenges.

The objective for the interviews was to gather information about HTM from ground troops through battalion level staff in order to obtain a complete understanding of how HTM information is gathered, analyzed, and used in military operations. All interviews were recorded using digital voice recorders for later data analysis. Additional demographic and HTM experience information was gathered from Soldiers using the HTM Training Needs Discussion Background Information survey containing short-answer questions about Soldiers’ HTM experiences (Appendix C). Soldiers completed the survey after their interview session.

The members of the research team interpreted the material collected in the interviews. The research team included a PhD psychologist with extensive experience developing observation skills and engagement skills training for police organizations, and extensive

experience in using the interview techniques with military audiences. The interview team also included a training development specialist with extensive experience using the interview techniques with a military audience. Two retired Army lieutenant colonels who served in the Middle East, previously conducted structured interviews with military personnel in ARI research efforts, and developed engagement skills training materials, also served on the interview team and contributed to the interpretation of Soldier responses.

Results

Survey Results

Eleven Soldiers provided survey responses. The survey data provided insights into Soldiers' previous experiences and current HTM activities. Seven Soldiers reported being engaged in HTM tasks every day, while two Soldiers reported engaging in HTM tasks at least once a week. The remaining two Soldiers worked in areas that did not require active engagement in HTM tasks. Typical HTM tasks identified from survey responses included:

- Talk with local nationals daily.
- Develop relationships with local nationals.
- Attend social functions and community meetings.
- Gather local census information.
- Engage local leaders.
- Set up Sons of Iraq programs.
- Conduct medical operations.
- Organize sports clinics.
- Gather information from patrol debriefs.

Soldiers listed the HTM tasks they typically performed. Most Soldiers emphasized the importance of talking with local nationals and developing relationships within their AO. One participant stated, "Our most reliable intelligence came from relationships developed during HTM." Soldiers also stressed the importance of HTM information to defeating the enemy. Soldiers stated that HTM aided in their tactical operations by giving them a heightened understanding of how best to accomplish missions in different locations. Knowing which areas were friendly, hostile, or prone to anti-American actions determined how they would interact with local nationals and how they would organize their patrol.

The skills Soldiers identified as most important to HTM activities included the ability to talk to people, build trust, and engage in negotiation. Soldiers provided many training suggestions that largely focused on scenario-based training. They stressed the importance of cultural training and practice interacting with other cultures. Many Soldiers stated the need for more realistic exercises that involve role-players and evaluators who are Iraqi and Afghan nationals.

Interview Results

The interviews were analyzed by listening to the recordings and writing detailed notes on all interview sessions. The data revealed nine high-level categories of information (summarized in Table 3; and more fully detailed in Appendix D). These categories provide information about Soldiers' current understanding of HTM TTP, current training and technology, training needs, and recent examples of HTM experiences.

Table 3

Nine High-Level Information Categories

Category	Description
1. Soldiers' Understanding of HTM	Insight into Soldiers' mental models of HTM and the HTM process.
2. Identified Training Needs	Training needs identified during the interviews.
3. HTM Process in the Field	HTM processes, tactics, and procedures practiced in the field before, during, and after mission operations.
4. HTM Examples	Examples of HTM related incidents.
5. TTP Recommendations	TTP suggestions made during the interviews.
6. HTM Information Gathering Tools and Resources	Known tools and techniques to gather HTM information.
7. Important HTM Information	Cues and factors that indicate potentially useful HTM information.
8. Courses of Action Based on HTM Information Gathered	Actions taken based on the HTM information collected.
9. Previous HTM Training	HTM training interviewees received in the past.

1. Soldiers' Understanding of HTM. While Soldiers were able to provide explanations about how they collect HTM information, their concept of the HTM purpose and the HTM process were vague. Most Soldiers were familiar with their specific HTM tasks but did not have a clear picture of how others analyze and use the information they collect within the context of the big picture. A potentially beneficial procedural change might be to provide feedback to ground-troops that links the information they collect to operations that were successful, in part, because of the information they provided. Some Soldiers stated they had received feedback, which helped them understand how the information they provide contributes to the larger mission and to realize that even seemingly unimportant information may be the vital piece of intelligence that disrupts the enemy's mission.

2. Identified Training Needs. To determine the type of training to create, the analysis focused on the training needs identified in Soldier interviews. The analysis identified live exercises, HTM concept-level training, technology and equipment training, and communication and information elicitation training as high-level categories of training for investigation. Each of the high-level categories of HTM training appear below with a summary analysis of the data and the supporting information provided by the Soldiers.

Live Exercise Training. The data suggest that live scenario-based training should incorporate realistic cues and events that allow troops to conduct HTM operations as they would when deployed. When discussing their experiences during previous live exercises, Soldiers indicated that the role-players they encountered did not reflect the actions and attitudes of the local nationals they encounter during deployment. Thus, it is important to write scenario scripts that accurately reflect the attitudes and actions of local populations. By creating scenarios that embed the physical and cognitive complexities present in the real world, troops will gain useful HTM experience prior to deployment. Soldiers discussed the importance of exercise length, suggesting that exercises should last two or three days at minimum. This presents a challenge both logistically and economically. To exercise troops through the entire HTM process, it may be more viable to present an in-class scenario of lower fidelity that the class can discuss throughout the course. Live exercises can then focus on portions of the HTM process, allowing for shorter, but higher-fidelity training sessions. Soldiers suggested:

- Provide realistic simulated exercises.
- Include live exercises in the real-world – have Soldiers go out and conduct interviews with U.S. civilians.
- Incorporate scenarios that exercise interview techniques, asking effective questions.
- Put people in groups where they don't know each other and tell them to accomplish something.
- Give talks in front of class and practice public speaking.
- Provide scenarios to practice gaining trust, establishing relationships, following intelligence, and taking action.
- Scenarios should NOT have short time limits – they should last days.

HTM Concepts Training. Soldiers requested information about a variety of HTM topics. They requested better definitions of key terms and more complete explanations of how HTM operations are conducted. The information interviewees requested suggest that they only have a vague understanding of many aspects of HTM. Because HTM is a broad and somewhat nebulous concept, we recommend developing course content directed toward Soldiers using language, analogies, and examples that will solidify HTM concepts for them. This type of training content lends itself to classroom delivery and small group training at company-level units. Paper-and-pencil exercises should be provided that allow Soldiers to think through HTM related problems and procedures, build strategies, decide on actions, and engage in group discussions. This will allow Soldiers to mentally engage in HTM processes, problem solve, adapt to unusual or unexpected circumstances, and predict possible consequences of actions. The training should take place prior to lengthier scenario-based exercises and live exercises, providing a crawl-walk-run approach to HTM learning. Soldiers suggested that HTM classroom or lecture training should provide:

- Explanations of the types of HTM information to gather.
- Solid definitions of HTM terms.
- Subject matter expert (SME)-guided lectures with focus on specific examples and actual experiences.
- Critical thinking exercises – identify recon objectives, areas of interest, ideas for collecting intelligence.

- Explanations of HTM that motivate Soldiers give them a purpose for collecting HTM.
- A general class on HTM-related technology capabilities and/or terms.
- Training on how to conduct sensitive-site exploration.
- Cultural training that addresses cultural norms, religion, customs, and courtesy.
- A discussion of the competing requirements to balance force protection and trust-building activities.

Technology and Equipment Training. The technology used during HTM operations varies across units at all levels. Soldiers reported a lack of training on the tools they encounter in the field. It was beyond the scope of the present research to develop standardized training methods and tools necessary to train troops on a variety of equipment. However, such training could include lecture-based instruction, hands-on training, and/or scenario-based exercises that incorporate the technology. Soldiers suggested that training should be developed for:

- Command Post of the Future (CPOF) displays so Soldiers can make sense of HTM data.
- Biometric Automated Toolset (BAT) and Handheld Interagency Identity Detection Equipment (HIIDE) used to collect and store biometrics data for persons encountered during tactical operations.
- Creation and use of a central database.

Communication and Information Elicitation Training. Talking to strangers is not a natural talent for many people. The majority of Soldiers assigned to patrol activities will likely be young, inexperienced in reading people, and will lack skills in communicating effectively across a broad range of situations. Soldiers requested training in interpersonal skills, such as building rapport, creating trust and reciprocal relationships, interviewing and questioning techniques, using and reading culturally appropriate non-verbal behavior, and judging the veracity and reliability of information. We recommend the development of an interview course that is both lecture based and exercise based. The course should provide students with practice eliciting information so they can build confidence in their information elicitation skills and in their ability to approach and talk to strangers. Soldiers suggested that training be developed to support:

- Communicating and displaying HTM information.
- Interviewing techniques.
- Understanding body language.
- Collecting information (like intelligence personnel).
- Developing rapport and building trust.
- Personal (social) skills.
- Building confidence in making friends, and talking to strangers.
- Language – a few key phrases.
- Language training with Arabic teacher (not computer-based).

3. *HTM Process in the Field.* Soldiers discussed building relationships as a primary HTM process. These relationships allowed Soldiers to collect valuable information that they could pass up to the Intelligence Section personnel. Soldiers emphasized the need to access this

information in the context of the big picture and to think critically about desired outcomes, potential targets, and second-order effects when gathering information. Soldiers described how they sought to gather information based on current information requirements. To gather this information, Soldiers recommended using observations, direct contact with the locals, indirect information gathering from community meetings, and HTM tools to gather information (discussed in Category 6). They emphasized the importance of gathering information from multiple sources rather than relying on one report to insure that the information is accurate, reliable, and not provided for an ulterior motive. One participant stated:

“If someone says, “There is a cache over here” then we would say “bring it to me” and the guy would back up. Someone else would bring a cache and we’d pay them. A rookie mistake would be if someone says where a cache is and then we follow the guy around town. They’ll lead you through town, sometimes intentionally run you around, maybe they think there is something there and they’ll eventually find it and we’ll give them the money. It’s better to let them bring it to you.”

4. *HTM Examples.* Soldiers shared several examples that revealed the complexity of HTM tasks. Their statements highlighted the importance of detecting changes in the environment, noticing what is not there, and detecting anomalies. In the following example, there was a mismatch between Soldier observations and information from local leaders. Investigation of this contradiction revealed extremist activities in the area.

“We had seen fishing activity in a local river. Local leaders discussed river crossings and said there is no fishing in the area. That focused our collection efforts on the river to observe firsthand that activity and led to a whole planning cycle for river activity. We destroyed boats in the area, but did not have any complaints, which tells you they were used for illegal activity.”

The following example shows the positive effects of spotting anomalies. By noticing unusual activities and investigating, the Soldiers identified an ally who they could leverage to further their cause.

“Of all the Sons of Iraq leaders, there was one that had not requested or applied for any type of contracts. A lot of leaders were known to skim some of that money off the top. That let me know one of two things – one, he is getting paid from the organization he’s associated with and he doesn’t want to draw attention to himself or – his intentions are true and he’s really trying to remove the threat from the area. Based on the evidence, the commander felt that his intentions were true.”

Most information contributes to the big picture, but sometimes information uncovers enemy activities that lead to direct action by the ground unit, as in the following examples.

“A mayor was passing along troop information to bad guys – troops did a deception operation to direct him away from the mission...we gave indications that we’re going to conduct a raid in a certain village within the area, but with the intention to go somewhere else because we know he’s going to let everyone know in this area. We had an individual

who was responsible for conducting a lot of attacks in the area. We had multiple sources telling us he was directly involved. Through the human intelligence (HUMINT) sources and other intelligence sources (INT) in our area and other units' areas we were able to determine where he was at and we were able to conduct some operations outside our area to get the individual. He was responsible for several attacks and the loss of some of our troops. Even some local leaders were providing information about where he was. We were able to pinpoint the area where he was. The information was very specific."

Sometimes not having the big picture view can lead to unintended consequences, as in this example:

"...not having a complete picture of the network and taking the leader out too quickly without having enough information to determine who was going to fill his place. In hindsight, if we took longer to fill those gaps, if we had waited to take him out, we would have had more information to determine the second and third order effects. A different guy stepped up from the one we thought would. They brought someone in from a different AO and we had no idea who he was."

5. *Tactics, Techniques, and Procedures Recommendations.* Soldiers' recommended several tactics and procedures that are useful during HTM activities. These recommendations mostly matched what they wrote in their surveys. They also discussed the need for information dissemination through detailed debriefs to find out what people saw and how they reacted to it. It was important to ask Soldiers detailed questions to draw out information about the environment they observed, people they met, and conversations they had. Soldiers need to distribute information in a timely manner rather than hold on to it because it affects the big operational picture. Several Soldiers expressed the need for a database of centralized information that distributes information for easy verification.

6. *The HTM Information Gathering Tools and Resources.* Several Soldiers were familiar with the CPOF database-style tool which is a command-level information-sharing tool. They suggested developing a similar tool for personnel involved in HTM tasks. Other technology that Soldiers found useful for HTM tasks included the HIIDE device and digital cameras. While technology is useful, Soldiers indicated that their main information gathering resource was other people, such as:

- Civil affairs teams.
- Sons of Iraq.
- City councils.
- Tactical intelligence teams.
- Interpreters.
- Community meetings.
- Human intelligence (HUMINT), signals intelligence (SIGINT), psychological operations (PSYOP) teams.
- Medics going into the field that gather and share information.
- Informal interviews and debriefs.
- People delivering food and mail.

- Adjacent units.
- Forums for communication – weapons exchange programs and community meetings.

7. *Important HTM Information.* Soldiers listed cues and factors that are inputs to the HTM process. While they mentioned many physical cues such as blackened concrete, broken out windows, graffiti, roadwork, and unpaved roads, they focused more on cues stemming from humans. Several human cues that may provide valuable HTM information include:

- Villagers displaying increased wealth.
- Ethnicity of local population.
- Tribal relationships and links between villages.
- Key political and religious figures, community leaders – their areas of influence, their ideology, level of corruption, and how easily they are influenced.
- People serving as puppets for extremist organizations - their potential for a hidden agenda and manipulation.
- A person's associations – he may be the one you want or he may lead you to information or the person you want.
- The content of sermons, if messages change.
- Information on contractors – where from, who they are, did they finish the job, or was there an increase in kinetic activity.
- Neighbor feuds – people may report bogus information to get their enemy in trouble.
- Indicators of lying – the number of people who say “this guy” “that guy.” Take what they say and try to match it with what others say. Talk to the kids.

8. *Courses of Action Based on HTM Information Gathered.* Courses of action focused on communicating information up the chain of command and on taking action to identify the enemy or stop enemy action. One participant stated, “We give the information to our commander and run it through the higher ups and they say whether they want us to act on it.” They also suggest comparing information with other platoons to get a more complete picture. To communicate information, Soldiers suggested uploading information to CPOF or creating debriefs with images to share with battalion staff and to identify trends. Once information about the enemy is verified, some courses of action include conducting deception operations, kinetic or non-kinetic strikes, identifying threat areas to quell any sparks of violence, and having local nationals exert peer pressure on the enemy.

9. *Previous HTM Training.* Most Soldiers stated that they had not received any training that focused specifically on HTM. Some had participated in BAT/HIIDE training. Most said they learned HTM from their company commanders or through informal interviews and debriefs. Those who had participated in scenarios that contained HTM tasks stated that these scenarios were not realistic – interpreters were not present for the interviews and the role-players often “just act like a jerk” rather than acting like someone who is unsure of Americans, which is more realistic. Most Soldiers expressed a need for more realistic live-scenario training to practice their HTM skills prior to deployment. Prior to live-scenario training, they need training on HTM techniques, how to talk to people, and cultural awareness.

Conclusions

The findings indicate that the Soldiers had a diverse but incomplete understanding of the HTM process. What they learned about HTM was specific to their roles and functions during deployment. This was not necessarily negative, but comments suggest that providing at least a cursory understanding of the entire HTM process, including how information is processed and used as it goes up and down the chain of command, would increase motivation to engage in HTM tasks and clarify the goals of HTM. The HTM tasks and procedures that Soldiers do learn are practical and targeted for the contemporary operational environment. From experience, Soldiers extend this basic knowledge by learning techniques for uncovering information, observing key activities, spotting anomalies, and verifying facts.

The analysis provided the guidance necessary to develop innovative training methods and tools that would support Soldier HTM skills development. Based on Soldier comments, the training should take place prior to lengthier scenario-based live exercises, providing a crawl-walk-run approach to HTM learning. With this in mind, three computer-based training modules were developed:

- Module 1: Tactical Applications of Human Terrain Mapping. The computer-based module provides an introduction to HTM concepts, a description of the Company Intelligence Support Team (CoIST) and how HTM supports it, and a description of communication techniques to employ that take cultural considerations into account.
- Module 2: Information Elicitation. The interactive computer-based module presents techniques that can be employed during in-field questioning and the interview process to include body language, tone of voice, and how best to phrase questions.
- Module 3: Observation Techniques. The module presents a written program of instruction that provides practical exercises for patrol members to develop observation skills that can be conducted in a garrison environment.

Training Design and Development

Training Design

One goal of the research was to identify a training development approach that can be responsive to rapidly changing unit needs. Part of the current Army training development challenge is that training needs and new TTP development occur faster than the traditional training development methods such as Army Instructional Systems Development approach can support. Much of unit training must be developed by company-level leaders for delivery with existing unit personnel and resources.

During the design phase of this project, the primary objective was to improve Soldiers HTM skills by providing instruction on the HTM process, cultural understanding issues, and information gathering skills necessary to develop a detailed knowledge of the human terrain in their AO while on patrol. To achieve this goal, a five-stage design approach was used that incorporates learning outcomes, learner abilities, instructional methods, instructional content, and assessment methods into training delivery (Table 4). An outline describing how these five

design stages could be implemented was developed in storyboards (Appendix D). Design requirements for the training content and framework were further derived from interview data.

Table 4

Five-Stage Design Approach

Design Phase	Description
Learning Outcomes	Define and organize the knowledge and skill components of each instructional module in a sequence from basic to complex units of learning.
Learner's Abilities	Account for the learner's prior knowledge and skill development.
Instructional Methods	Establish the approach for presenting the lesson content.
Instructional Content	Focuses on the HTM tasks a Soldier conducts while on patrol.
Assessment Methods	Provide knowledge checks of the lesson content. Assessment methods include true and false, multiple choice, multiple response, fill in the blank, drag and drop, and essay.

Learning Outcome Design Features

The first stage of the design process involved ensuring the instructional efficiency and proper organization of the training by breaking down the content into three instructional modules (Table 5). Module 1 examined the HTM process in three lesson topics that included an overview of the HTM process and its tactical application, the role of CoIST, and the general cultural considerations associated with conducting HTM. Module 2 focused on providing the basic information elicitation techniques used by Soldiers to gain reliable intelligence. This module was broken down into five lesson topics that consisted of the interview process, building rapport and establishing trust, questioning techniques, reading non-verbal behavior, and collecting and communicating HTM data. Module 3 provides practical exercises for patrol members to develop observation skills that can be conducted in a garrison environment. Terminal Learning Objectives were identified for each instructional modules that defined the major intended learner outcomes.

Table 5

Three-Module HTM Training Program Outline

Module 1:	Tactical applications of human terrain mapping.
Chapter 1.	Tactical applications of human terrain mapping.
Chapter 2.	The Company Intelligence Support Team.
Chapter 3.	Cultural considerations.
Module 2:	Information elicitation.
Chapter 1.	Interview process.
Chapter 2.	Building rapport and establishing trust.
Chapter 3.	Questioning techniques.
Chapter 4.	Reading non-verbal behavior.
Chapter 5.	Collecting and communicating HTM data.
Module 3:	Observation techniques.
Lesson Plan.	Observation techniques – conducted in conjunction with garrison physical training.

Learner Abilities Design Features

In the second and third stage, the content was tailored to be learner-centered, self-paced instruction. Lessons in Module 2 were designed to be self-paced with self-reflection activities such as knowledge checks given at the conclusion of each lesson. These lessons can also be instructor lead in classroom environments, using the knowledge checks and examples as areas for discussion, though we recommend developing a more complete classroom course with detailed facilitator notes and in-class exercises. Soldiers have the ability to progress through each lesson in the sequence provided or they can jump ahead to more advanced content. However, once a learner reaches a knowledge check area, they must complete the knowledge check assessment before progressing to additional lesson content. The premise behind the lesson organization was to provide Soldiers scaffolded instruction (Bruner, 1975) by presenting information with a guided explanation of the content. Specific instructional methods were selected for each lesson based on the defined terminal learning objectives.

The learning taxonomy used in the HTM training design first provides foundational knowledge about the content discussed in each lesson and then provides motivators for acquiring new knowledge. Due to the human interaction and cultural consideration skills required to conduct HTM, the design focused on providing Soldiers with real-world examples throughout the instruction.

Instructional Method Design Features

The goal of the present research was to identify high priority training content material and develop innovative methods and tools for training that could be applied to HTM instruction. Module 1 (Tactical applications of HTM) presents training content in a simple slide-show fashion. Module 3 (Observation Techniques) provides a digital file with a paper-based program of instruction. Efforts to design, develop, and apply innovative training methods and tools were

directed primarily to the development of Module 2 (Information Elicitation). The design of the Module 2 content and interactive elements (audio, video, dynamic text, rollovers, and pop-ups) incorporated systematic instructional systems design principles. All audio, video, and text-based content was designed to promote active engagement, encourage self-reflection, and convey the personal relevance of knowledge. Text, interactive graphics, and videos were used to accommodate the visual learner and audio-based graphics for the auditory learner. The text-based and interactive content were designed using the seven principles of design identified by Houser and DeLoach (1998):

1. Contrast. Using a range of values, colors, textures, shapes, and other elements. Contrast creates visual excitement, increases interest, and places emphasis on content.
2. Emphasis. The creation of a center of interest for the viewer. The center of interest attracts attention to emphasize its importance compared to the other elements in the composition.
3. Balance. The appearance of visual equality in shape, form, value, and color. Balance can be symmetrical, asymmetrical, or radial.
4. Unity. Enhance instruction by harmonizing sections and providing content cohesion.
5. Patterns. Art elements that use planned or random repetition to enhance composition and increase users' visual experience.
6. Movement. The visual flow of the content by object placement and position throughout composition.
7. Rhythm. The repetition of visual movement in terms of color, shape, and lines.

Instructional Content Design Features

Due to the amount of information presented and the visual elements needed to expand upon points or teach an objective, most of the instruction was designed on a generalized content screen template. The content screen template contained the following elements:

- A slide title at the top of the slide with the Army logo.
- Multiple levels of bulleted text.
- A graphical element such as a diagram, photo, or image, video.

Many of the content screens contained custom animations such as animated diagrams, text animations, and fade-ins of images. Moreover, content screens used a simple architecture with limited graphical treatments using various forms of multi-media and text. The interface was programmed using Adobe Flash, which provides a screen view ability of the interactive presentations at nearly any resolution. For operational purposes, the screens were designed to have a resolution of 1280 x 1024 and 1024 x 768.

Knowledge Assessment Design Features

Assessment screens within the HTM training present objective quiz-based questions after each lesson. In general, the pages consist of text with a page header. The custom templates are aesthetically and instructionally sound and include composite graphics, graphical headers, subtle graphical backgrounds, bullet treatments, and animations styles that provide for an attractive and

consistent instructional presentation of module content. “Knowledge Check” assessment screen elements consist of the following:

- Assessment directions.
- Dynamic text.
- Multi-media.
- Informative response-specific feedback.

Training Development

Training Development Overview

Development of the HTM training content and framework began immediately following the design phase. There were two primary objectives for this phase. The first was to develop a web-based framework that would house the instructional content. The second objective was to develop the presentation content with lesson assessments and embedded multi-media or dynamic interactions to exemplify the content. The primary elements of the HTM Online Trainer created during the development phase of the project included: a) an electronic book (E-book), b) interactive presentations, c) lesson assessments, and d) embedded dynamic content. A combination of coding languages to include Hypertext Markup Language, Extensible Markup Language, and Adobe Flash were used to develop the electronic book (E-book) and interactive content.

Electronic Book

The first element created during development was the E-book. The HTM E-book was developed to act as an all-encompassing online storehouse that would contain and organize all of the interactive presentation content and assessments. Some of the features of the E-book include a search function, dynamic toolbars, interactive glossary, print function, multimedia support, customized header and sub-header graphics, World Wide Web Consortium/Sharable Content Object Reference Model 2004 compliance, and multimedia support.

Interactive Presentation and Embedded Dynamic Content

Once the E-book was developed, the Flash framework and interactive presentation content were created from the storyboards (Appendix D). Figure 1 illustrates how the following interactive presentation techniques were integrated into the HTM E-book interface features:

1. Customized logo area.
2. Dynamic content toolbar.
3. Content notes tab.
4. Search function.
5. Volume control bar.
6. Main content stage.
7. Status bar.
8. Interactive content: video controller.

9. Main presentation controller.
10. Interactive content indicator button.
11. Presentation zoom function.
12. Presentation attachments function.

Additional features developed for the interactive presentation in Module 2 include audio narration for nearly every presentation slide and embedded dynamic pop-ups with audio and video to exemplify specific points in the presentation.



Figure 1. HTM Online interactive presentation interface features.

Lesson Assessments

A variety of interactive assessments were developed for Module 2 to assess Soldiers' performance which includes: true and false, multiple choice-multiple response, fill-in-the-blank, matching-drag and drop, matching with drop down menus, and essay response format allowing up to 5,000 words. Soldiers complete these knowledge checks following the lesson content. Figure 2 shows the general features of the interactive assessment interface for Module 2 which includes: (a) main content assessment stage, (b) multi-media placeholder, (c) feedback window, and (d) submit button. In addition, customized feedback windows are available after Soldiers submit each question so they can receive immediate informative feedback.

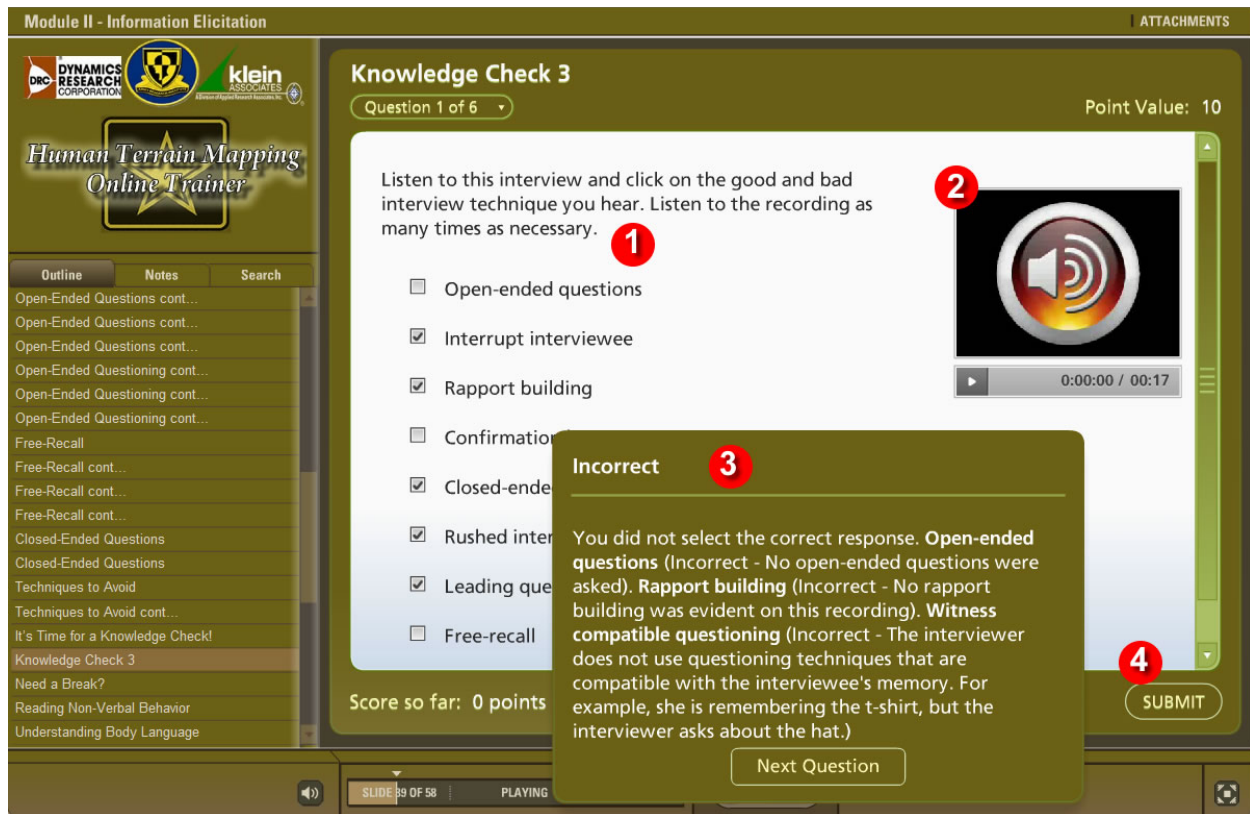


Figure 2. Assessment features.

After responding to all the questions presented on a Knowledge Check screen, the Soldier views an after-action review screen with their score (Figure 3). At this point, the Soldier has the option to review the final score (a), review answers to each question (b), try answering the questions again (c), or finish and move on to additional lesson content (d). Assessment questions were equally weighted at 10 points per question to provide the Soldier with a percentage score and a pass or fail, with a score of 80% or higher set as the criteria for passing.

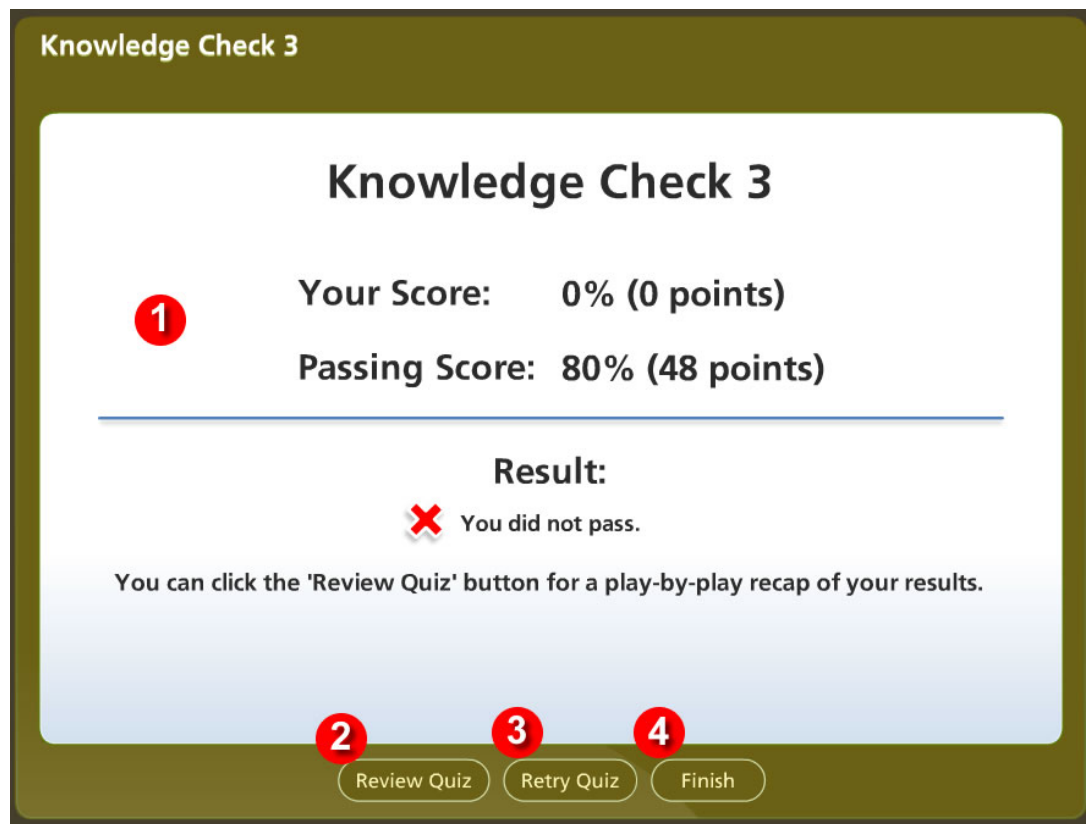


Figure 3. Knowledge Check after-action review features.

Formative Evaluation

Method

Participants

Ten members of the U.S. Army's 3rd Armored Cavalry Regiment at Ft. Hood, TX, participated in a hands-on review of the draft HTM training system. All Soldiers had recently returned from Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF) deployments. Five Soldiers were intelligence officers and five were armor military occupation specialty enlisted personnel.

Procedures

Given troop support and time constraints only, Module 2 (Information Elicitation) was used in the formative evaluation. Module 2 was chosen because this module incorporated interactive content design features. Two evaluation sessions were held each day for two days. Each session began with a summary of the project and the evaluation objectives (Appendix E). Instructions were first provided on how to use the system and then Soldiers worked through the module at their own pace. Soldiers were instructed to take the course as if they were students and to evaluate both the learning content and the usability of tool. After finishing the module,

they completed a post-run evaluation form that contained short-answer questions and ratings about the learning content and the tool (Appendix F). Finally, each Soldier participated in a one-on-one discussion about the lesson and tools with one of the researchers.

Results

Training Content

The feedback from the evaluation was largely positive. Most Soldiers stated that their skills improved in the five areas addressed by the Module 2 learning objectives. Table 6 lists the objectives and the average rating based on a 5-point scale ranging from 1 = none to 5 = exceptional.

Table 6

Soldiers' Ratings of Their Skill Improvement Based on the Learning Objectives

After completing this lesson, the participant will be able to...	Mean Rating
1. List the key components of interview procedures.	3.6
2. Use effective techniques to build rapport with interviewees.	3.9
3. Apply different questioning techniques at appropriate times during interviews.	3.6
4. Describe verbal and non-verbal behaviors that are effective and non-effective indicators of deception.	3.5
5. Define actionable intelligence.	3.2

Training Relevance

Soldiers viewed the training program favorably. Table 7 presents Soldiers' ratings of training relevance based on a 5-point scale from 1 = Strongly Disagree to 5 = Strongly Agree.

Table 7

Soldiers' Ratings of the Training Program Relevance

Rate the following comments about the lesson...	Mean Rating
1. The lesson presented content that can be applied in real-world situations.	4.4
2. This lesson taught me interview techniques I previously did not know.	3.6
3. I have a better understanding of how to ask questions and assess information during interviews.	3.9
4. I will apply these techniques during HTM operations and/or while on patrol.	4.7
5. I would participate in other lessons on HTM using this program in the future.	4.6

All Soldiers reported that the Module 2 presentation was organized, easy-to-use, and user-friendly. Some comments made by Soldiers included:

- It had a logical progression with good timing for Knowledge Checks. Knowledge Checks were grouped well. I like the final essay.
- Easy to use click and play, interactive examples throughout presentation.
- The transition from one screen or lesson to another was orderly and the audio presentation assisted understanding the lessons.
- The interface was straightforward and not overly complex.

Soldiers agreed that the learning environment presented information in a way that was engaging. The majority of Soldiers would “highly recommend” the Module 2 learning environment for a multi-lesson course on HTM. When asked why they would recommend this course, some comments were:

- Easy to use and provides thorough information.
- In a multi-lesson course, the learning environment will present more of an interactive environment between trainees and trainers.
- This tool educates a user very quickly and provides a set of skills that may provide very useful in many environments.
- This learning environment is good for a baseline.
- Easy to get individuals to participate.
- Easy to understand for Soldiers both with and without combat experience.

Soldiers, all of whom had a good amount of experience conducting HTM, did not consider the lesson particularly challenging. They asserted that the course would be challenging for Soldiers without HTM experience. Soldiers commented on the skills, concepts, and techniques they learned:

- I was able to see exactly how bad we are in dealing with locals.
- How to be effective in questioning using purposeful techniques was very helpful.
- Building rapport will be extremely important training needed for future classes. After a rapport is set, the rest will come naturally.
- The skills are valuable in building rapport and concepts and techniques are presented in a way that encompasses a broad cultural spectrum.
- The entire program makes interviewers much more aware of their own actions as well as the actions of the interviewee.
- Good overview of interviewing techniques.
- I learned how to better build rapport.
- Everything taught was the fundamentals of proper questioning. Anyone going through this would have a firm grasp of how it ought to be.

In answer to the question “What did you like least about this module?” most responses dealt with programming or content issues that were easily fixed for the final version, such as mismatches between audio and written content, slow presentation of information, and vague

questions. Some Soldiers suggested that the HTM training course should be employed as part of classroom instruction, rather than as a solo teaching tool. Extending this course to in-class training would provide an opportunity for students to engage in facilitated discussion and to practice skills through role-playing exercises. In facilitated group settings, students would likely gain a higher level of comprehension and experience. Future development of this course should include instructors' guides for classroom training and unit training.

Soldiers made comments about the module's lack of focus on one particular culture. Though the content centered on Middle Eastern culture, the training purposefully did not focus on Iraq or Afghanistan, or any particular region or tribe in these countries. Instead, the training presents principles and practices that should generalize across cultures. Some Soldiers agreed with this approach while others thought culture-specific training would be more useful to troops who must know about the cultural specifics associated with their AO. These Soldiers contend that cultural differences in customs and body language are pronounced enough that generalized training is not sufficient. Making training specific to a variety of cultures would be time-consuming and expensive. However, the issue may be important enough that it warrants serious consideration. Future training development should further explore this issue.

Soldiers generally had a favorable opinion of the HTM training products. They most liked the use of military video examples, the Knowledge Checks, the examples of incorrect techniques, and the ease of use. Many suggested using this training format for other classes they take. They liked the interface, layout and design, interactive nature of the content, along with the real-world examples, applied exercises, and challenging Knowledge Checks. It is possible to apply the structure of this course and the interface to most PowerPoint formatted courses and to build interactive activities and exercises into the original content. This is a recommendation for future work.

Training Update

The purpose of the formative evaluation was to validate the training materials and ensure that they met the goals of the instruction. The evaluation used the decision-making template for designing an effective formative evaluation developed by Weston, McAlpine, & Bordonaro, (1995). The formative evaluation provided user feedback about problems with the tools and content, and provided recommendations for tool enhancements. Problems were documented in checklist fashion which facilitated updates. The formative evaluation also helped to identify how much time could be devoted to building additional content or enhancements after making necessary changes. Based on feedback from the evaluation additional audio, graphics, and video material was added, file navigation errors were corrected, and the large block of instruction in Module 2 was segmented into five shorter lessons.

Conclusions and Recommendations

The research effort gathered HTM training requirements and TTP from members of an intact unit that had worked together performing the HTM functions in a recent deployment. Soldiers identified many areas where training would help Soldiers at all levels accomplish effective HTM. Training lessons were created that addressed the greatest needs identified by

Soldiers conducting patrol activities. Three computer-based training modules were created for this project which address HTM-specific training requirements. The three modules introduce HTM concepts to Soldiers and provide information and guidance to assist them as they collect information in their AO through interviews and observations. The evaluation of Module 2 revealed that Soldiers would benefit from a structured interview course. Soldiers commented favorably on the training delivery format and saw instant application of the tool to other courses. Future training could be for either individual training or facilitated classroom training.

The research identified four categories of training:

- Live exercise training.
- HTM concepts training.
- Communication and information elicitation training.
- Technology and equipment training.

The training methods and tools developed for this project focused on addressing the first three categories of training. While technology and equipment training are important areas to identify for HTM training, the development of specialized training for specific pieces of equipment was beyond the scope of what could be accomplished in the current research effort. The three training modules that were developed can provide a basic level of understanding for the material, though more advanced training is needed. Considering the information gathered from the interviews and questionnaires, and the needs identified in each of the four categories of training, several recommendations can be made for future training development:

- Develop training modules for specific regions or AOs. The modules developed were general in nature and did not address specific cultural, religious, and ethnic regions like Afghanistan, Iraq or other areas where U.S. Soldiers are deployed.
- Explore whether elements of the HTM training system could be incorporated into the curriculum of U.S. Army service schools.
- With additional resources, the HTM product could be upgraded/expanded with animation and other Interactive Media Instructional methods.
- The product was designed for Soldiers at the platoon level and below. With additional resources training could be developed for Soldiers at higher levels of responsibility.
- Create a classroom version of this training with additional modules and instructor resources including group exercises and facilitated discussion guides.
- Extend the interview training to include role-playing exercises and realistic scenarios.
- Create exercise scenarios and a train-the-trainer course so trainers can facilitate exercise sessions including Socratic questioning and structured debriefing sessions.
- Develop a debriefing training lesson to teach techniques specifically designed to elicit information from troops, contractors, and others returning from the field and to provide feedback after successful operations.

The research findings are being used to guide ongoing research by the U.S. Army Research Institute with support from JRTC, to develop innovative methods and tools for CoIST sustainment training. The HTM training materials developed in this research effort reflect the experience and insights shared by Soldiers of one recently deployed Brigade. The computer-

delivered training materials are being included in an expanded follow-on effort to develop exemplar training materials for CoIST teams. The follow-on research combines both the HTM and CoIST training materials into a single product useful to the same target audience. Both platoon personnel conducting HTM activities and CoIST teams exchanging information with the platoons should have access to the same training materials on a single tool.

References

- Bruner, J. S. (1975). The ontogenesis of speech acts. *Journal of Child Language*, 2, 1-40.
- Crandall, B., Klein, G., & Hoffman, R. R. (2006). *Working minds: A practitioner's guide to cognitive task analysis*. Cambridge, MA: The MIT Press.
- Houser, R., & DeLoach, S. (1998). Learning from games: Seven principles of effective design. *Technical Communication*, 45, 319-329.
- Kipp, J., Grau, L., Prinslow, K., & Smith, D. (2006). The Human Terrain System: A CORDS for the 21st Century. *Military Review*, September-October.
- Marr, J., Cushing, J., Garner, B., & Thompson, R. (2008, January-February). Human Terrain Mapping: A critical first step in winning the COIN fight. *Infantry*, 11-15.
- Pryor, M. (2008, January-February). Human terrain team helps soldiers in Iraq understand cultural landscape. *Infantry*
- Salmoni, B., & Holmes-Eber, P. (2008). *Operational culture for the warfighter: Principles and applications*. Marine Corps University Press, Quantico Virginia.
- Sanders, W., & Schaefer, P. (2009). Identifying the training challenges and needs of deploying units. (Research Report 1891). Arlington, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- United States Marine Corps (2004). *Company intelligence cell in stability and support operations (SASO): Tactics, techniques and procedures (TTPs)*. Marine Corps Warfighting Laboratory, X-File 2-1.1.
- Weston, C., McAlpine, L., & Bordonaro, T. (1995). A model for understanding formative evaluation in instructional design. *Educational Technology Research and Development*, 43, 29-48.

Appendix A

List of Acronyms

3 rd ID	Third Infantry Division
AO	Area of Operations
ARI	U.S. Army Research Institute for the Behavioral and Social Sciences
BAT	Biometric Automated Toolset
CA	Civil Affairs
CoIST	Company Intelligence Support Team
CPOF	Command Post of the Future
CTA	Cognitive Task Analysis
E-book	Electronic Book
HIIDE	Handheld Interagency Identity Detection Equipment
HTM	Human Terrain Mapping
HTT	Human Terrain Teams
HUMINT	Human Intelligence
INT	Intelligence Sources
IO	Information Operations
JRTC	Joint Readiness Training Center
NCO	Non-Commissioned Officer
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
PSYOP	Psychological Operations
S2	Intelligence Officer
SIGINT	Signals Intelligence
SME	Subject Matter Expert
TTP	Tactics, Techniques, and Procedures
USMC	United States Marine Corps

HUMAN TERRAIN MAPPING TRAINING NEEDS DISCUSSION

HUMAN TERRAIN MAPPING (HTM): Methods and tools used to systematically collect and catalog social and ethnographic information for a unit's area of operations. To gather HTM information a unit plans and executes patrols to answer specific questions about the population (religious boundaries, key economic structures, mosques and sheiks, the pattern of everyday activities).

GOALS FOR THE RESEARCH:

- Identify the critical HTM tasks, TTPs, and best practices to incorporate into training
- Identify training methods (e.g., scenarios) that would enhance HTM skills training

Part I – Human Terrain Mapping TTP's and Best Practices

Describe your experiences collecting HTM information.

1. What do you consider the most vital information to gather?
2. What tools or techniques do you use to gather HTM information?
 - Describe the most effective information gathering techniques.
3. What are some challenges you face when collecting HTM information?
4. Describe situations where you had to improvise to gather needed information.
5. What errors do inexperienced Soldiers make when gathering HTM information?
 - What information might they overlook?
6. What important lessons have you learned about HTM through experience?

Describe how you assess incoming information and create actionable intelligence.

7. How do you evaluate incoming information for reliability and usefulness?
8. Describe experiences you had where information you gathered turned into actionable intelligence.
 - How did you collect that information?
9. What are some challenges you face when interpreting and assessing the information gathered?
 - How do you overcome these challenges?

Describe what you do to understand local community customs and social norms.

10. How do you differentiate cultural, ethnic and/or religious divisions within the community?
11. What do you do to build and maintain relationships with the local community?
 - Describe how you establish trust within these relationships.
 - How do you leverage these relationships to gather information?

Part II – Training Needs

What are the biggest challenges faced when learning HTM skills?

12. Describe the tasks that are particularly difficult for Soldiers as they learn the process of HTM data collection.
13. Are there any areas where you would like to see additional HTM training?
 - Describe the training activities you think are the most useful.
 - Describe any training activities/scenarios you would like to see added in the future.

If you were going to create a training scenario that addresses some of the challenges described today, what would you put in that scenario?

14. What factors would add ambiguity or uncertainty to this situation?
15. To reach a successful outcome, what are the critical tasks that need to be completed?
16. What cues and factors should students focus on to understand and make decisions during this scenario?
17. What vital pieces of information should they seek out as they deal with the situation?

Appendix C

PT# 61-72

HUMAN TERRAIN MAPPING (HTM) TRAINING NEEDS DISCUSSION
BACKGROUND INFORMATION

HTM Definition: Methods used by Soldiers at all levels to systematically collect and catalogue social and ethnographic information to create actionable intelligence.

Please circle or write in the response that most applies to you (*continue on back as necessary*):

- 1) *Branch:* _____
- 2) *Rank:* _____
- 3) *Current duty position/assignment held:* _____
- 4) *Total Years of Service:* _____
- 5) *Age:* _____
- 6) *Gender:* Male Female
- 7) *Most recent combat experience (ex. OIF 4):* _____
- 8) *Location(s) of Combat Tours (If multiple locations please provide the number of months served in each location):* _____

- 9) *Duty position/assignment for most recent combat deployment:* _____

- 10) *Describe any training related to HTM that you have received:*

- 11) *Estimate how frequently you engaged in HTM tasks in your last deployment:*
Never -----I-----I-----I----- Every Day
 Yearly Monthly Weekly
- 12) *Describe typical HTM tasks you perform:* _____

- 13) Please list any **education or trained skills** you have that are particularly useful when conducting Human Terrain Mapping (include language skills, cultural training, equipment, or technology skills, etc.):

- 14) Estimate how important HTM was to mission success in your last deployment.

Unimportant -----I-----I-----I-----
 Minimal Moderately Important Very
 Importance Important Important Important

Please explain. _____

- 15) Rate how often you use the following methods to gather information
 (1 = least frequent method through 5 = most frequent method):

- ____ Gather information directly through conversation/interaction with the population.
 ____ Gather information indirectly (i.e., second and third hand from population).
 ____ Gather information through observation.
 ____ Gather information broadly (i.e., country studies, Intel sources).
 ____ Gather information from friendly forces.

- 16) What aspects of current HTM training do you find most useful?

- 17) What is currently missing from HTM training?

- 18) Describe the types of training needed to improve HTM skills:

Appendix D

HTM ANALYSIS – HIGH LEVEL CATEGORIES

CATEGORY #1 – Soldiers’ Understanding of HTM

This category provides insight into Soldiers’ mental models of HTM and the HTM process

- Provides situational awareness in a Soldiers Area of Operation.
 - Focuses a Soldier on critical information.
 - Gathers intelligence on potential problems areas that lead to actionable intelligence.
 - Used as prevention.
 - Provides intelligence for ongoing operations.
 - Helps secure the region.
-

CATEGORY #2 – Identified Training Needs/Wants

This category discusses training needs/wants identified during the interviews.

- Realistic simulated exercises (scenario-based training) to practice HTM skills.
 - Discussions that focus on the type of HTM information to gather, how to gather the information, and how to communicate/display the information.
 - Subject matter expert (SME) guided lectures/presentations that focus on specific experiences/examples of HTM data collection missions.
 - Live exercises that challenge Soldiers to practice HTM skills in real-world contexts (e.g., have Soldiers conduct Q & A’s with average Americans).
 - Brainstorming activities that force Soldiers to think about recon objectives, areas of interest, and methods of collecting HTM intelligence prior to an HTM mission.
 - Develop a CPOF display that trains Soldiers to make sense of HTM data (i.e., rollovers or radio button overlays; see Major Cushing’s note for examples and descriptions of the CPOF displays).
 - Discussion that motivates Soldiers and provides a purpose for collecting HTM data.
 - Train interview techniques and do exercises to practice asking effective questions.
 - BAT, HIIDE (Handheld Interagency Identity Detection Device – Technology device for collecting HTM data) training to Soldiers prior to deployment.
 - General class on HTM-related technology capabilities and/or terms.
 - Train to conduct sensitive sit exploitation (SSE) in order to collect accurate HTM intelligence.
 - Train to understand body language, subtle culture norms and differences, etc.
 - Train to collect information like Intel people do it, teach how to dig for information.
 - Create a central database to store/track information and provide systems training on using the database.
 - Cultural awareness training on topics such as religion, customs, courtesy, etc.
 - Train Soldiers on how to use sources versus informants, the differences between them.
 - Possible scenario: Soldiers/leaders interact with political and community figures, company commander deals with military figures, police, etc. in the area, brigade level deals with mayors, attend banquets, etc.
 - Novice mistake: being on the defensive all the time, mistrusts everyone, down-talk people, don’t get out and talk to people. You can’t assume everyone is cool; you have to develop a rapport and develop confidence and get to know the people. Not knowing the people would be a big mistake.
 - They teach you how to fight battle and then you show up and they say, “go make friends with that guy.” You have to rely on your personal skills, teach people skills, how to make friends with people, training to get used to doing it.
 - Teach new guys what you know, what was successful, we’ve been there so go back and train others on the experiences from when you were there.
 - Confidence building – knowing you have to get out there and make friends. Gain confidence just by doing it, knowing you can sit down and just have a conversation with them, it doesn’t have to be question after questions. They will talk.
-

CATEGORY #2 – Identified Training Needs/Wants (continued)

- It's human nature to be nervous in front of people so - have the younger Soldiers give a talk or give a class, get up in front of people, see how they do. The more you speak in front of people the more comfortable you get, do it in front of your squad or platoon, to get you started.
 - A class where we can learn a few key phrases so we can talk to people without an interpreter.
 - Need more range in the role-players, more ambiguity, not all a**holes, some are nice; some are ambivalent – not so black and white.
 - Language training on the computer – hated it. If you say one thing a tiny bit wrong, it says you got it wrong. If we could, have an Arabic teacher to say, “this is why you are messing up, this is why they are not going to understand you.”
 - Training scenario – safety of Soldiers, teaching to talk to Iraqis to mitigate the threat, can't become complacent, and have to remember the threat even while gaining their trust.
 - Possible scenario: to balance the safety and gaining trust – general population, leader of village is either ambiguous or friendly towards Americans and you need to get something simple done in his village (set up a water pipe or restore power, etc.). Even though the leader is on board, they are afraid to talk to you because there is a three-man cell in the village. Their objective is to snatch a Soldier. This combines the safety. The townspeople are not going to give up the three-man cell because they know that when you leave at night they are not safe. They are afraid, but they won't tell you why. Trainees need to figure out what it is they have to be on the lookout for because the cell is out there trying to snatch a Soldier. You can mess with the balances – make them more of a threat or less of a threat. That scenario would cover a lot of bases.
 - Scenarios should not have short time limits – maybe be over a couple of days. If you only give them two hours to figure it out, they will either be ineffective or destroy the village. They need to realize this is a progressive process.
 - In this scenario (above) there should be intelligence that the Soldiers need to follow. If we are supposed to go into a peaceful local village and pretend like we've been there many times before, then we would go in and act like we are going to have a meeting, as opposed to this is a hostile village where I'm expecting an RPG to come out of every window. A problem with many scenarios is the amount of time we train is too short.
-

CATEGORY #3 – HTM Process in the field (all levels)

This category presents the HTM processes, tactics, and procedures practiced in the field before, during, and after mission operations.

- Use CPOF or CPOF-like technologies (e.g., mock-up power points with maps and hyperlinks) to make sense of the HTM data.
 - Consolidate information from patrol briefings to make sense of the intelligence. Briefings are reviewed and analyzed at the brigade level.
 - Use annotations when collecting HTM intelligence to describe medical conditions, misinformation, humanitarian assistance, etc.
 - Use improvised strategies to obtain HTM intelligence from informants regarding factors such as money/rewards/grants/economic stimulus services, water services, sewer services, electricity, goods exchanged for information, etc.
 - Use various methods to collect HTM data such as BAT or HIIDE, paper and pencil, cameras with 3X5 note cards containing the interviewee's information.
 - Breakdown HTM data in SITREPS that describe high-value individuals and situations.
 - Use Google Earth and other easily accessible, free web mapping to map intelligence to imagery and patrol pre-brief and debriefs.
 - Use interpreters to build relationships with potential informants.
 - Build relationships by building rapport.
 - Handout humanitarian bags, use this setting to obtain HTM intelligence from locals.
 - Organize HTM intelligence chronologically based on time and location.
 - Gather information that plays into the big picture.
 - Receive information from multiple sources, get information from secondary sources.
-

CATEGORY #3 – HTM Process in the field (all levels) (continued)

- Be wary of who we make aware of information about our movements, raids, etc.
 - Information comes in through HUMINT, civil affairs.
 - Attend community meetings, council meetings.
 - Brigade gives information through targeting workshops, target meetings, IO, civil affairs, the S3
 - As you go through the process, think, “what are the desired outcomes, potential targets, and courses of action.”
 - Consider the secondary and tertiary effects after taking action (i.e., after removing a leader who is a bad guy).
 - Determine who are the neutral, pro-, and anti-American leaders.
 - Talk to the “INTS” and to the doctors going out, find out what they know, tell them what you know.
 - Try to focus on recurrent themes when combining information at the brigade level.
 - Those with less experience should talk to company commanders and key leaders to get a “data dump” on what they are seeing in the area, read everything and talk to everyone, network within the organization.
 - Brigades let HUMINT and others know what information they need.
 - Brigades push down the big picture based on what the various teams provide and they have other INTs to confirm information and create a big picture.
 - Company level pushes up HUMINT information.
 - Evaluate who the information comes from – an upset neighbor or a reliable source.
 - Company level pushes analysts down to process information gathered on the ground.
 - Use the leaders of the Sons of Iraq to find people willing to talk, gain their trust, and interview them.
 - Follow up on leads given by informants.
 - Establish trust - talk to people, sit down, talk to their family, visit them more than once. The more you sit down, the more they see you the more they trust you. The more you deal with them, the more confidence you gain. Go in and do the little things, speak to the kids, show you really care. The more you get out, talk, try to speak their language, show genuine concern, the more they will trust you.
 - Building rapport should not be interpreted as always being nice to the people. Sometimes they respect you more if they bulls**t and you call them on it. But, you have to be careful with that so you don’t embarrass them. With their culture, you have to be sure about the B.S. and then talk to them privately, not in front of their peers. You have to be careful about how you are not nice to them.
 - You want to be respectable about your authority, so be polite and ask for help.
 - If someone says, “There is a cache over here” then we would say “bring it to me” and the guy would back up. Where someone else would bring a cache and we’d pay them. A rookie mistake would be if someone says where a cache is and then follow the guy around town. They’ll lead you through town, sometimes intentionally run you around, maybe they think there is something there and they’ll find it and we’ll give them the money. It’s better to let them bring it to you.
 - Find the key leaders – go to their village, go to their house, you’re just kind of there, a part of daily life.
 - When we patrol, we take money and we buy from their market, eat their bread, and after awhile they are looking forward to you coming and being involved. If they want to establish a relationship it will happen, they have to want it, want to get rid of the bad guys. We can only do so much. Villages see that we bring in water and money to another village, so they reign in their kids from throwing rocks and things so we will come to their village. Maybe they don’t want us there, but they want the things we bring with us.
 - Information comes from the division and we get it and act upon it – they might say “look out for this car; it might be in your area sometime.” It is sort of the game of telephone – the information we get has been passed up the chain and then back down to us. By then it looks a lot different.
 - Good interpreter and bad interpreters – the good ones can make you sound really good, people fight over them. You say “do you have clean water” and the interpreter makes you sound like a philosopher.
 - The interpreters know the culture too, so it’s not us being blunt. And if we do something that might offend them, the interpreter will tell us not to do that.
-

CATEGORY #4 – HTM Examples

Interviewees provided examples of HTM related incidents

- Rocket Attack on Platoon Hammer.
- Placing of IEDs on the road.
- Use of money for information to lead to actionable intelligence.
- A mayor was passing along troop information to bad guys – troops did a deception operation to direct him away from the mission.
- A battalion commander would go to community meetings and people would hand him information and intelligence.
- Anomaly – A Sons of Iraq leader that had not applied for contract dollars. Most leaders would want contracts so they could skim off the top, but this guy wasn't seeking funds. Indicates either he is getting paid from the bad guys or his intentions are true and he is trying to remove the threat.
- We determined there was illegal activity on a river. Intel and community leaders told us there was no fishing on the river and no good reason there would be activity there. We observed activity, went through the planning cycle, and destroyed the boats. No one complained that we destroyed their boats, indicating illegal activity.
- We had an individual responsible for multiple attacks, gathered information from multiple sources. Through HUMINT and others, we found him and conducted operations outside our area to get him.
- We did not have a complete picture of the network and took out the leader too soon. They guy who stepped up to lead was not who we expected and was worse than the leader we took out.
- We had a program where people could turn in a cache that they found and we would give reward money. That was sometimes a useful source of information, because a guy would come up, say, dragging an artillery shell and we'd say "thanks, here's \$100, if you know where there are more, bring them and we'll give you more \$. They'd be like "ya, I know where there are five more I can get you."
- One time we had kids coming in and turn in a grenade for \$50, and they kept bringing in one grenade at a time, the same brand and type. We said, "if you bring them all in at once we will give you a lot more money" and they said "we can only buy one at a time from the guy downtown with the money you give us" we were like "wait, what?"
- We had a lot of people who wanted to do projects in the area, reconstruct roadways, bridges, that kind of thing so they were cooperative. We had one guy who spoke English and he was trustworthy, so that really helped us out. He was a teacher at the elementary school; he approached us and gave us a lot of information about who is in charge and the villages in the region.
- I had one village sheik and a couple others who came from other villages. We wanted to start a Sons of Iraq in their village. The sheik was on-board with it, so I get out my maps to determine checkpoints, and my satellite photos. I was pointing where we'd put the checkpoints, coordinates, going on and on and the sheiks were nodding their heads. Come to find out they had no idea what I was talking about; they didn't know what the map was.
- New troops coming in acted like the locals had no idea about anything "look, we make fire" "we come from a land called America." They had the assumption that the people would be in a box or something. The locals were like "we watch MTV all day."
- We had an instance where a sheik thought he should be in charge, so they started ratting on the current sheik, so sometimes those personal battles bring us information.
- One time we got information about an IED being in a wall, and by the time, it went up the chain and back down the message was there is an IED in the wall where we were right now. But really, there was an IED in a Forward Operating Base over there that we could go get right now.
- Once, another unit placed a blue force IED icon on the roadside, we hadn't heard about it, no one had heard that there was something there. We would feel stupid if we assume it's old and it's not, but no one knew because the system was not updated.
- My Soldiers, they tried to learn some of the language, not very good, but the locals appreciated that we tried, tried to talk with the kids outside. They appreciated that and next time we showed up the wife came right up to us.

CATEGORY #5 – Tactics, Techniques, and Procedures Recommendations

This category presents tactics and procedure suggestions made during the interviews

- Need a centralized database that all the information goes into (some have CPOF).
 - Do detailed debriefs, find out what people saw and how they reacted to it, ask detailed questions and draw out information about the environment, etc.
 - There needs to be timeliness in disseminating information. Current practice is the S3 keeps information until they are ready to deal with it, but this effects the big picture.
 - Soldiers should conduct their own HTM, to confirm/deny information, gives a better situational awareness.
 - Automated databases are useful for standard information that is easy to confirm.
 - To make the process more reliable, close the loop a little faster, we can do a better job – if an Lt. says there's BOLO on a car, and then catches him and interviews him, the information still goes up the chain and back down and we don't know the incident is over.
 - It would be good to purge the information from the system.
 - Top things to pass along to new people.
 - Develop trust in people by taking things one-step at a time – develop relationships, see what people want/need.
 - Know your area, have confidence in the people and your area.
 - Create a sense of normalcy – become a part of their day.
 - Identify key leaders and develop a sense of trust, or at least a working relationship – even if you have to make up projects “we don't like each other but we have to work together to get this waterway built.”
-

CATEGORY #6 – HTM Information Gathering Tools and Resources

This category presents some of the known tools and techniques to gather HTM information

- BAT/HIIDE.
 - CPOF.
 - Paper and pencil.
 - Civil Affairs Teams (CA teams).
 - Sons of Iraq – Local neighborhood group.
 - City councils.
 - Tactical Intelligence Teams (TNT).
 - Digital cameras.
 - Interpreter.
 - Community meetings.
 - HUMINT, SIGINT, PSYOP, etc.
 - Medics going into the field, give and/or ask for information.
 - Informal interviews and debriefs.
 - Imagery.
 - People delivering food, mail – they just drove through your AO, what did they see?
 - Adjacent units.
 - Ask people what they saw in an area, how villagers were reacting to their presence.
 - Establish a forum for communication – weapons exchange program, community meetings, etc.
-

CATEGORY #7 – Important HTM Information

This category lists the cues and factors that indicate potentially useful HTM information

- White and black concrete (indicated IED attack).
 - Windows broken out.
 - Extreme population decrease.
 - Villagers with increase in income.
 - Building structures.
 - Demographic information – useful at ground level, not so much at brigade level.
 - Ethnicity of local population.
 - Tribal relationships and links between villages.
 - Infrastructure such as roadwork, paved and unpaved roads, climatology, width of roads.
 - Key political and religious figures, community leaders – their areas of influence, their ideology, level of corruption, how easily they are influenced.
 - Identify puppets for extremist organization, their potential for a hidden agenda and manipulation.
 - A person's associations – he may be the one you want or he may lead you to information or the person you want.
 - Listen to content of sermons, if messages change.
 - Graffiti – civil affairs can look at records, verify that particular graffiti is associated with terrorists.
 - Spot anomalies.
 - Information on contractors – where from, who they are, did they finish the job, was there an increase in kinetic activity.
 - Neighbor feuds – people may report bogus information to get their enemy in trouble.
 - It is important to know your area. We would drive around the town, get to know where everything is first, then get out, and get to know the people.
 - Weigh information and factors that indicate someone is lying – the number of people who say “this guy” “that guy.” Take what they say and try to match it with others. Talk to the kids.
 - Information about the bad-guys, caches, you can't work if you don't know who the bad guys are.
-

CATEGORY #8 – COA's based HTM Information Gathered

This category describes the kinds of actions taken based on the HTM information collected

- Upload the information to CPOF/PowerPoint: Download information from the BAT or HIIDE into the database.
 - Create a debrief with images – battalion staff read the debrief and tried to see trends, created notes on a shared drive and showed the trends.
 - Identify threat areas, potential areas of concern, something that only needs a spark to ignite (to quell it).
 - Information about infrastructure influences maneuverability.
 - Do deception operations to get the person of interest to do something else, to identify the bad guy.
 - Kinetic strike.
 - Non-kinetic – influence with PSYOP or IO.
 - Simply remove the bad guy (threat) from the situations.
 - Gain information from those who are willing to talk or who is easily influenced.
 - Interrogate to obtain information on subsequent targets.
 - Instead of engaging individual target, go to key family members – peer pressure.
 - At brigade level, two key tasks: provide big picture, provide confirmation for Intelligence section.
 - We give the information to our commander and run it through the higher ups and they say whether they want us to act on it.
 - Platoon Sergeant – go out and get information and compare it with other platoons.
-

CATEGORY #9 – Past Related HTM Training

This category describes HTM training that interviewees received in the past

- TRADOC – possible sites for TTPs.
 - BAT and HIIDE training – Currently being provided at Ft. Hood.
 - Learned by talking to company commander.
 - Learned from informal interviews and debriefs.
 - Training scenarios are not entirely realistic, the idea is good, they just need some fixing in order to be relevant. They tell the role-player “OK, be an a**hole” so he’s just having fun being a jerk instead of someone who is just not sure about Americans.
 - Current scenario training is not done with an interpreter.
 - In the scenarios, they have every person hate you, which isn’t how it really is.
-

Appendix E

STORYBOARD EXAMPLE

Course:	Human Terrain Mapping Online Trainer		
Module:	Knowledge Elicitation	KE	KE3-1-1
Lesson:	Questioning Techniques	3	
Segment:	Open-Ended Questions	1	
Page Title:	Open-Ended Questions	1	
Child Page:			
Objective:			
<p>On-Screen Text: Open-ended questions are questions that allow for more than one word responses. For example: “Describe some of the activities you have seen around town that concern you.” “Tell me about how those buildings were destroyed.” “Describe what the tribal leader looks like.” None of these are actual questions and they do not allow for a one-word response Open-ended questions elicit more information than questions that ask for one-word or yes/no answers. This audio clip illustrates questioning that limits the amount of information received and stops discovery of new information By asking an open-ended question, interviewees may provide new leads or information about other threats or terrorist activities.</p>			
<p>Narration/Closed Captioning: Narrator Ask questions that allow interviewees to open up about the information they know rather than constrain them to reporting only the information you are currently interested in. For instance, you enter a village to determine if terrorists are operating out of an old warehouse: Ask “Describe activities you have seen around town that concern or frighten you” Do not ask “Have you see any suspicious activity going on at that warehouse?” If interviewees don’t talk about the warehouse activities, follow up with more specific questions, such as “We are concerned about terrorist activities that are threatening this community, describe situations you have seen that make you think terrorists are operating in your village” - By not asking directly about the warehouse you prevent people from agreeing with you just to be helpful, to be correct, to not sound stupid or uninformed, to get rid of you</p>			
Graphics: (P – photo; G – graphic; F – flash animation; T – table/chart/graph; V – video)			
Audio: Play EW interview e.g. file “audio_cut_3”			
Knowledge Check:		Remedial Screen: <i>Page ID</i>	
Correct Feedback:			
1 st try incorrect:			
2 nd try incorrect:			
<p>Explanatory Information: Make Open-ended questions a rollover: By asking open-ended questions, interviewees open up about the information they know. Closed-ended questions constrain interviewees so they report only the information you are currently interested in. With open-ended questions: - Interviewees may report critical information you did not know about. - You may learn more when their answers are not limited to specific questions. - This type of questioning flows naturally from building rapport.</p>			
Branching:	Back:	Next:	

Appendix F

Evaluation Plan Training Methods to Build Human Terrain Mapping Skills

Date: 14-15 July 2009

Location: Ft. Hood, TX

Overview:

- Each day will consist of two 3-hour sessions containing four Soldiers in each session.
- We will start each session with an introduction about the project and the module.
- We will instruct Soldiers on how to use the program.
- Soldiers will take the lesson individually and at their own pace.
- After completion, each participant will fill out the Post-Run Evaluation Form.
- With the time remaining, we will engage the group in a discussion about the module and program, and answer any questions.

Include in the introduction:

- Welcome and thank you for taking the time to assist us.
- The purpose of this evaluation is to:
 - Evaluate the module content.
 - Evaluate the program delivering the module.
 - Your feedback will provide us with guidance on the module content and usability of the tool.
 - We will use the information you provide to update this module and the tool.
- This session will last three hours maximum.
- Summarize the HTM project:
 - We did interviews to understand HTM training needs.
 - Identified several areas where computer-based lessons could benefit troops.
 - Three Modules:
 - Tactical Applications of HTM.
 - Information Elicitation.
 - Observation Techniques.
- Today we will evaluate Module II: Information Elicitation.
 - **The purpose of this module** is to teach you how to elicit information from community members, witnesses, victims, suspects, and other people who might hold information about terrorist activities or other events of interest.
- Please go through this module as if it were a real class, read all content and complete all tasks.
- If you have any questions while completing the module, please raise your hand and one of us will assist you.
- Ask if they have any questions before beginning.

System instructions

Prior to starting the session, provide Soldiers with instruction on using the system.

- Navigate the menu.
- Pop-ups and rollovers.
- Knowledge checks.
- Ask if they have any questions.

Post-Run Evaluation Form

Once Soldiers finish their modules hand them a Post-Run Evaluation Form to complete.

- Soldiers should complete these individually with no discussion between Soldiers.

Debrief and discussion

Once all Soldiers finish the Post-Run Evaluation Forms, the facilitators will provide a debrief on the session to include:

- We conducted this session to evaluate the lesson content and delivery method.
- Based on your feedback we will make changes and corrections to the content and the computer program.
- If time, hold a discussion.
 - In addition to the survey data you provided, we would appreciate hearing any addition comments you have about the course – both favorable and unfavorable.
- Do you have any questions about this lesson, future lessons, this session, our research, etc.

Appendix G

Post-Run Evaluation Form Participant Reaction

Company: Klein Associates Division of ARA/DRC **Facilitator(s):**

Module: Information Elicitation **Date:**

Unit/Rank: _____
Position: _____
Years in this position: _____
Lesson(s) reviewed: _____
Start Time: _____
End Time: _____

Five learning objectives are listed below. Please rate the improvement in your ability to accomplish these lesson objectives. Use the following scale:

- 1 – None = no apparent improvement in my ability to perform this objective
- 2 – Slight = slight improvement in my ability to perform this objective
- 3 – Moderate = moderate improvement in my ability to perform this objective
- 4 – Substantial = substantial improvement in my ability to perform this objective
- 5 – Exceptional = exceptional improvement in my ability to perform this objective

After completing this lesson, the participant will be able to...	<i>Improvement</i>				
	None	Slight	Moderate	Substantial	Exceptional
1. List the key components of interview procedures.	1	2	3	4	5
2. Use effective techniques to build rapport with interviewees.	1	2	3	4	5
3. Apply different questioning techniques at appropriate times during interviews.	1	2	3	4	5
4. Describe verbal and non-verbal behaviors that are effective and non-effective indicators of deception.	1	2	3	4	5
5. Define actionable intelligence.	1	2	3	4	5

Please rate the following comments about the lesson using the following scale:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

The Training Program	Agreement				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The lesson presented content that can be applied in real-world situations.	1	2	3	4	5
2. This lesson taught me interview techniques I previously did not know.	1	2	3	4	5
3. I have a better understanding of how to ask questions and assess information during interviews.	1	2	3	4	5
4. I will apply these techniques in during HTM operations and/or while on patrol.	1	2	3	4	5
5. I would participate in other lessons on HTM using this program in the future.	1	2	3	4	5

Short Answer

Directions: Please answer the following questions about using the simulator.

- 1. Was the module presentation organized, easy-to-use, and user-friendly? Y N**

Why or why not

- 2. To what degree did the learning environment present information in a way that was engaging?**

<i>Not at all engaging</i>	1	2	3	4	5	<i>Extremely engaging</i>
----------------------------	---	---	---	---	---	---------------------------

Please provide an explanation of your rating:

- 3. Would you recommend that this learning environment be used for a multi-lesson course on HTM?**

<i>Do not recommend</i>	1	2	3	4	5	<i>Highly recommend</i>
-------------------------	---	---	---	---	---	-------------------------

Why or why not?

4. How challenging was the content of this module?

<i>Not at all challenging</i>	1	2	3	4	5	<i>Extremely challenging</i>
-------------------------------	---	---	---	---	---	------------------------------

Why or why not

5. Please comment on skills, concepts, and techniques you learned in this module:

6. What did you like best about this module?

7. What did you like least about this module?

ADDITIONAL COMMENTS: