Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercising

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PROJECT BACKGROUND

The demand for domestic preparedness training and exercising (DP T&E) far exceeds the current delivery capacity. Delivery has traditionally taken place in classroom settings or with human-adjudicated exercises. Although this face-to-face emphasis on using experienced instructors and facilitators is effective, it cannot meet today's needs. An estimated 3.2 million first responders need DP T&E, not to mention an additional 4–5 million medical workers and countless others in the private sector.

In an effort to augment traditional T&E strategies, the Department of Homeland Security's Office for Domestic Preparedness (ODP) contracted with ThoughtLink, Inc. to evaluate models, games, and simulations (MS&G) in support of DP T&E. This report is the culmination of ThoughtLink's review of DP T&E requirements and analysis of nearly 100 MS&G. The purpose was to collect requirements and evaluate products supporting preparation and response to weapons of mass destruction (WMD). Originally, ODP focused on T&E for WMD, whereas their current mission encompasses all hazards.

It is not possible to rank the reviewed products into a "top 10" for DP T&E because they cover such a broad range of characteristics and capabilities—from simple training media, such as reference tools and CD-ROMs, to complex multi-team computer simulations. Instead, this document provides an assessment of current DP T&E requirements and provides recommendations on how MS&G may be applied to DP T&E. Individual written assessments for all products are also provided.

This document is written for two distinct audiences: ODP, which has a mandate to develop and implement the national preparedness training strategy; and state and local communities which must meet a variety of DP needs despite such constraints as limited manpower and budgets.

REQUIREMENTS ANALYSIS

The potential benefits of MS&G include increased DP T&E frequency, delivery (reach), and realism. They also have the potential to lower costs, facilitate feedback, improve lessons learned, and offer safer T&E conditions. Possible disadvantages include high costs, often due to customization or other vendor support that may be required.

To determine whether MS&G products met DP T&E needs, each product's capabilities were logically related (mapped) to a set of T&E requirements. In support of this goal, the initial project phase was to research existing T&E offered by ODP and to identify and collect requirements. ThoughtLink observed Nunn-Lugar-Domenici exercises, conducted interviews, and gathered authoritative source documents containing DP T&E requirements. To this end, over 1,100 requirements were documented in a database and served as the basis for the MS&G analysis.

An added benefit of the requirements collection was the ability to analyze existing DP requirements. There is a need to develop conditions and standards that are compatible with existing DP T&E requirements. The requirements database developed in support of this task can serve as the basis for this discussion, as well as a means for validation by all agencies and organizations concerned with DP T&E. An analysis of the collected requirements identified the following:

1. Most T&E requirements are associated with "all types" of WMD as opposed to specific types (e.g., chemical or nuclear), indicating a potential shortfall in the WMD-type specific requirements.
2. There were few requirements in the functional areas of public safety communications, government administrative, private sector, hospital personnel, and transportation.
3. The target audience for most requirements is the first responder community, with relatively few requirements falling into the categories of federal, state, and local officials.

MS&G PRODUCT SELECTION AND ANALYSIS

Following the collection of requirements, ThoughtLink conducted MS&G product assessments. Products were identified from a variety of sources and were selected if they contained WMD T&E content and/or had some sort of delivery mechanism beneficial to DP T&E. Using these criteria, over 180 products were initially identified, 100 were selected for analysis, and ultimately 96 products were used in this analysis.

Information on individual MS&G products was collected using a variety of methods, including interviews with vendors and/or users, product demonstrations, and occasional opportunities to see the product being used in an actual DP exercise. Significant observations and findings, based on the entirety of the assessed products include these:

1. There are more products supporting chemical and explosive disasters than there are for biological, radiological, or nuclear events.
2. Few MS&G are oriented towards senior officials.
3. Because many MS&G are customizable and/or require vendor support to use the product, pricing information was difficult to analyze. For certain types of MS&G, there appears to be a price floor with respect to ease of use, with high-fidelity virtual (2D/3D) simulations being the most costly..
4. Products that require vendor services for scenario adaptation and customization lack the same degree of scalability that current face-to-face T&E programs experience.
5. There appear to be more MS&G products available for first responder disciplines than functional areas such as public safety communications, private sector, and transportation.
6. There appear to be fewer products focused on awareness, while there are more products for planning and management (including the incident command system).
7. A number of products can be used in combination with traditional face-to-face exercises to enhance realism and authenticate decision-making. Other significant opportunities for MS&G include the ability to support pre-training for an exercise and part-task training, focused on specific elements related to larger DP requirements.
8. Using ODP's examination of current gaps in DP T&E, analysis of the MS&G reviewed showed that all but two gaps could be met with MS&G products. The two gaps not met by these product solutions were deemed gaps at the program level and were not addressable through simple changes in T&E.

Rather than focus on the advantages and limitations of each individual product, this report discusses how different product categories can best support DP T&E (e.g., computer-adjudicated exercise products support active learning and decision making, and record user-specific performance information). The advantages and disadvantages of each product category are provided in the body of the report to lend insight about how MS&G technologies can be used in DP T&E.

ThoughtLink's final deliverable report to ODP, under this contract, MS&G Roadmap for Enhancing Domestic Preparedness Training and Exercising (referred to as

the roadmap) will provide specific recommendations for the inclusion of MS&G and their relationship to a complete end-to-end national training system and strategy for domestic preparedness. The recommendations will be based on the analysis of DP requirements, MS&G product reviews, and other related initiatives. The roadmap will also discuss future use and enhancement of the two useful data sets collected in support of this project: the DP T&E requirements and product characteristics. This roadmap document will be delivered to ODP in the spring of 2004.

A. OVERVIEW

A.1. BACKGROUND

Office for Domestic Preparedness Mission

According to the Homeland Security Act of 2002, the Department of Homeland Security's Office for Domestic Preparedness (ODP) has primary responsibility to "build and sustain the preparedness of the United States to reduce vulnerabilities, prevent, respond to, and recover from acts of terrorism." Constituencies include federal, state, local, and tribal governments, the private sector, and international entities. As of December 2003, ODP's mission expanded to include delivering assistance to constituents in developing and meeting a national domestic all-hazards preparedness goal.[1]

Since 1998, ODP has sponsored a variety of domestic preparedness (DP) training and exercise (T&E) programs administered through universities and contractors. These are delivered primarily in person, face-to-face (F2F). Most training courses are offered at fixed sites to which the training audience travels. ODP is expanding the distance learning portion of the training program, and developing versions of some existing courses to be accessed via the Internet. Exercises are typically performed in a host city; involving contractor and ODP team travel.

One concern to ODP is that F2F T&E does not scale well, so the supply of domestic preparedness T&E cannot meet the current or future demand. Over 3.2 million first responders need training, while only 93,000+ (or about 3 percent) received it, according to an ODP-sponsored study of FY02 data.[2] Not included in these figures are sizable audiences beyond first responders, including government administrators at various levels, the private sector, and others.

ODP would like to offer local communities an array of T&E options with a wider choice of resources, pricing, and staffing levels. Some challenges for ODP in developing a more robust T&E program include:

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[1] HSPD 8, http://www.whitehouse.gov/news/releases/2003/12/20031217-6.html. Accessed 3/1/2004.

[2] Presentation at Training and Exercise System Study Group meeting on October 2, 3003 by Barbara Wisniewski Biehn.

- **Diverse Constituents**. Client organizations span federal, state, local, territorial, and tribal governments. Individual trainees range from local first responders to senior government officials.
- **Multiple Functional Areas**. The training and exercise audience is diverse, covering at least 13 functional areas - from Fire, Public Works, to Public Information.
- **Public and Private Sectors**. The T&E audience includes not only the public sector but also the private sector.
- **Range of Proficiencies**. A wide range of T&E proficiency levels must be supported - from basic to advanced, from initial acquisition to refresher training or exercising.
- **Geography and Demography**. A large geographic area must be covered: the entire country plus U.S. territories, covering small towns as well as large urban cities.
- **Hazards and Threats**. T&E requirements must address all hazards, including multiple WMD threat types.

Project Description

The goal of this project is to help ODP define how MS&G can enhance domestic preparedness T&E. Project tasks are listed below. This work was documented in several reports—see References for a complete listing.

- Review archived exercises (e.g., After Action Reports (AAR)) and the current ODP exercise program.
- Analyze the T&E requirements for all levels of the domestic preparedness spectrum of command from first responders to senior managers at the local, state, federal, and international levels.
- Conduct surveys of current and near-term related training and exercise initiatives in related domains.
- Evaluate government-owned and commercial off the shelf (COTS) models, simulations, and games, and critique candidate products for ODP use.
- Analyze the effect of the recommended MS&G on ODP's exercise strategy, and identify how the ODP exercise program would be affected, including the development of a gaming and simulation roadmap for the way ahead. This report is planned for spring of 2004.

At first glance, this work appears to be a requirements analysis problem: what are the T&E requirements, and how can media, specifically MS&G, satisfy them? The problem is complicated by several factors:

- The inclusion of both training and exercising, which often have different goals and different means to accomplish those goals.
- There is no existing formal comprehensive set of DP T&E requirements. Although several efforts are under way for various functional areas, this project had to start with requirements compilation.
- DP T&E requirements are continually evolving, as evidenced by ODP's current work defining terrorism prevention tasks and the associated T&E requirements.
- The project scope is limited to researching existing T&E products, looking for a potential fit between requirements and existing media instead of designing media and other elements of the T&E system according to established requirements.
- T&E system components that include training content, standards, feedback, etc., have not been defined in a methodical, comprehensive way.

ThoughtLink addressed these challenges using a team of subject matter experts in the areas of training, industrial/organizational psychology, human-machine interfaces, technology evaluation, and systems design and development.

A.2. DOCUMENT DESCRIPTION

This report presents two key analyses: 1) an analysis of the DP T&E requirements collected during this project and the products reviewed; and 2) an overview of how categories of MS&G might be applied to domestic preparedness T&E. Products were reviewed in three rounds: interim results from the first two rounds of MS&G product surveys were documented earlier; this document contains results aggregated from all three rounds.

A.3. AUDIENCE FOR THIS DOCUMENT

The document is written for two different audiences: ODP staff and ODP constituencies—federal, territorial, state, local, and tribal government organizations, generally referred to as the "domestic preparedness community" (DPC) in this document. These two audiences have somewhat different perspectives:

- ODP has a nationwide mandate, covering all possible functional areas. They are interested in current and future alternatives for systems and standardization. They want to know how MS&G can fit within the national training strategy and program.
- Local communities are focused on meeting *today's* T&E needs for their specific number and type of responder teams—subject to various departmental

constraints on budget, time, manpower, computer access, and equipment. T&E is only one concern, and DP T&E is just one component of a department's T&E needs.

Because different audiences may have different interests in using this document, not all parts of the report will be pertinent to all reader needs. Material may be of interest to federal agency officials responsible for T&E program design and development; response community decision makers responsible for selecting and procuring T&E tools and techniques; or industry and academic researchers involved in curriculum design and advanced systems development. This document also serves as a reference for forthcoming recommendations about ODP program development and management strategy. The following table shows the sections that are of interest to given audiences.

Table 1. Document Sections for Different Audiences

Section	Description	Reader Audience			
		ODP	Response Community	Research Community	Product Vendors
A. Overview	Background, project description	✔	✔	✔	✔
B. Why MS&G for Domestic Preparedness T&E?	Introduces concepts and terminology	✔	✔	✔	✔
C. Methodology	Describes project phases and tasks	✔		✔	
D. T&E System Requirements	Describes the research and analysis of domestic preparedness competencies	✔		✔	✔
E. Review of T&E Products	Evaluation results of MS&G products at aggregate and product category levels	✔		✔	✔
F. Role of MS&G in T&E	Guidance for selecting MS&G	✔	✔	✔	✔
G. Product Summaries	One-page product "briefs" describing intended use, primary attributes, and POC information	✔	✔		✔

Section	Description	Reader Audience			
		ODP	Response Community	Research Community	Product Vendors
H. Conclusions	Key findings	✔	✔	✔	✔
I. Summary	Provides concluding remarks based upon this body of research	✔	✔	✔	✔

B. WHY MS&G FOR DOMESTIC PREPAREDNESS T&E?

In general, MS&G for DP T&E offer the potential to improve domestic preparedness on multiple levels by enhancing the effectiveness and efficiency of T&E. MS&G have the potential to provide more realistic inputs for decision making, to help adjudicate learner decisions, to measure performance, and ultimately to feed performance results back into T&E system improvement efforts. They also have the potential to expand the reach of the training audience, to reduce per capita costs, and to provide an environment for greater training repetition and reinforcement. This section defines MS&G and looks more closely at some of the potential advantages and limitations of MS&G utilization for T&E.

B.1. WHAT ARE MS&G?

The terms models, simulations, and games have multiple meanings that differ between industries and disciplines. ThoughtLink's use of these terms derives primarily from Department of Defense (DoD) accepted definitions.[3] All relevant terms are defined in the Glossary, but the following definitions are pertinent throughout this document:

- **Model:** A physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process. For example, the tool *PEGEM* estimates chemical, biological, and high explosive effects.
- **Simulation:** A method for implementing a model over time. For example, *Virtual Clinic* is an interactive, three-dimensional (3-D) model of a patient presenting in a primary care setting. It is a virtual patient simulator for training clinicians in identifying and treating bioterrorism or other diseases.
- **Modeling and Simulation (M&S):** The use of models, including emulators, prototypes, simulators, and stimulators, either statically or over time, to develop data as a basis for making managerial or technical decisions. The terms "modeling" and "simulation" are often used interchangeably.

In the context of WMD events, models are simplified representations of physical phenomena ranging in complexity, for example, from the design of a building structure or a street map, to a set of mathematical algorithms that predict the dispersion of an airborne chemical, biological, or radiological agent using 3-D computational fluid dynamics. Complex mathematical prediction models, although they "simulate" events in time, are

[3] U.S. Department of Defense, January 1998. DoD 5000.59-M "DoD Modeling and Simulation (M&S) Glossary."

generally referred to as consequence assessment models in this document. "Simulation" is a term that is used more broadly, herein, to refer to the use of dynamic models to replace real-world phenomena in learning systems. Simulation is also used herein to describe training or exercising equipment that functions similarly to operational equipment. Examples include *Virtual Clinic*, described above, which is a human patient simulator simulating the human body, and *CAMSIM*, a hand-held chemical agent monitor simulator that functionally replicates the operational equipment.

- **Game:** The term is usually applied to a group activity or exercise in which players cooperate or compete toward a given end within the boundaries of established rules. Games are often intended to be engaging and fun. Evidence exists that games help motivation and interest in a subject matter. For cognitive learning, research suggests that games increase retention, energize the learning process, and facilitate understanding of the relationships between areas within a subject.[4]

Competition, as a potential element in domestic preparedness T&E, can serve to improve individual and organizational performance. It is believed that terrorists are using these techniques for training (e.g., it was reported that many of the September 11 terrorists allegedly used a flight simulator game, in addition to actual flying lessons).[5] Evaluation and feedback of performance can help to motivate participants in recurring T&E,[6] and aggregate performance data can be used to establish benchmarks, not just for individuals, but also for command and control (C2) processes and systems, organizations, and interdependent systems such as mutual aid agreements.

The Technology In Practice box below illustrates the use of games in U.S. Army training.

Technology In Practice
BreakAway Games, a game developer, has created a video game based on the streets of Iraq. The game was made for the Microsoft Xbox game system and was developed for the Army Research Institute, with the prime objective being to familiarize soldiers with an urban setting in a foreign country. The Institute has purchased thousands of Xboxes for soldiers to help them prepare. BreakAway has been able to develop new technology that will also make it possible for the setting of the game to change depending on where the military objective is. A spokeswoman for the firm said, "Suppose orders are given to

[4] Grieshop, J., 1987. Games: Powerful Tools for Learning. Journal of Extension, 25 (1).

[5] CBS news coverage: http://www.cbc.ca/news/indepth/targetterrorism/backgrounders/moussaoui_zacarias.html.

[6] Mory, G.H. Feedback Research, found in Chapter 32, The Handbook of Research for Educational Communications and Technology.

go into an area of conflict. What we are able to do is download satellite data for that area of conflict and put it into the game at real time. The objectives of the game stay the same, just the environment changes. Say, for instance, you are en route to an area that was bombed. You just get new data and burn a new disk, and the bombed area would be reflected in the game." This technology, called TREX, is said to be capable of merging multiple sources of data. The game brings together data from satellites that plot out buildings and their location with satellites that designate natural terrain and resources. All of the information has to be merged with the gaming system.[7]

- **Learning Systems:** Models, simulations, and games by themselves do not constitute complete "learning systems"; rather, they are components of such systems. T&E learning systems consist of the necessary personnel, products, and services needed to achieve stated training and/or exercising objectives. Components of the overall system include learners (students and participants), instructors (facilitators/coaches), training content, content delivery mechanisms (media, devices, tools, etc.), instructional methods and strategies, and learning system management (including the identification of T&E objectives). MS&G are just one part of this overall system, in the same way that a PowerPoint scenario is just one part of a table top exercise. Generally, in this report, the term MS&G refers to the combination of products and services that incorporate modeling, simulation, or gaming functionality. This document also includes reviews of a small number of information technology products that are not models, simulations, or games, such as training videotapes, CD-ROMs, collaboration technologies, and static documents. These products were selected because they can support T&E in some manner. In this report, such products are included when referring to "MS&G" in general.

B.2. THE CURRENT T&E PROGRAM

To properly conduct the product evaluations ThoughtLink reviewed the current and past ODP exercise program. Tasks included identifying how exercises are currently delivered, who participates, how they receive feedback, and other exercise media, curriculum, and strategy information. In addition ThoughtLink observed 15 exercises and interviewed 105 members of the DPC: 87 from local communities who were planners or participants in exercises; and 18 from ODP staff, contractor teams, and various local, state, and federal officials. The following are key findings and observations:

- Interviews identified the top four advantages of current WMD T&E as:

[7] White, B., 2003. Military game gives soldiers updates on foreign arenas. The Daily Record.

1) Increased preparedness.

2) Promotion of interagency cooperation.

3) Professional networking (interpersonal "trust building").

4) Evaluation of plans and readiness assessment.

- The majority of respondents (86 percent) are interested or very interested in using MS&G for T&E. All 105 respondents had access to a computer at work (possibly shared with others); had access to the Internet; and used computers running some version of Microsoft Windows.
- Existing training methods appear to be constrained by a number of factors:

1) A preference in the emergency response community for hands-on, F2F T&E delivered by recognized SMEs (i.e., a mind-set that it's hard to learn how to rescue victims in a burning building from a book—hence, skepticism of new media and training techniques).

2) The response community has been relatively slow in adopting alternative training media (like MS&G) due to lack of awareness or familiarity. Trainers are relatively inexperienced at selecting training objectives and designing T&E.

3) T&E events (particularly those requiring multi-organizational involvement) are limited in time and location due to scheduling/availability and funding constraints.

4) Resource limitations—money, staffing, and equipment. There appears to be no strategic approach to coordinating and prioritizing procurement of equipment and T&E regionally, leading to potential duplication of resources and potential shortfalls.

5) Inadequate participant preparation is often a factor that limits the overall effectiveness of exercises. Participants are sometimes chosen to attend T&E events at the last minute and do not have sufficient domain expertise or understanding of the T&E format to contribute effectively.

B.3. POTENTIAL VALUE OF MS&G

This section considers some specific and common T&E problems/concerns and ways in which MS&G might provide solutions. The chart below shows areas addressed by ODP's current T&E programs and areas in which MS&G can augment those programs. The vertical axis indicates the intended audience for the T&E, ranging from first responders through senior federal officials. The horizontal axis shows types of T&E, from equipment training up to national exercises. Diamond-filled squares denote the primary training audience for particular types of current training and exercising, while squares filled by vertical lines denote a secondary T&E audience. The solid squares are

associated with new types of T&E that are potentially necessary and may substantially benefit from the use of MS&G solutions.

As an example, part-task training is one type of training that appears in a solid square (towards the left-hand side of the horizontal axis). Part-task training on an individual basis could involve training each emergency operations center (EOC) staff person individually at their EOC station, to a criterion-level of proficiency in his or her respective knowledge and skills. Skills to be trained may include assessing incoming information, communicating with others, making decisions, and issuing directions in accordance with plans and procedures. Part-task training may address each of these skill areas separately. Subsequent training could integrate these part-tasks into the composite task, including team exercises that would further hone the individual's skills. For example, two of the products reviewed, *STAT Care* and *The Human Patient Simulator*, can be used to practice aspects of victim triage, which represents part of the tasks involved in victim treatment.

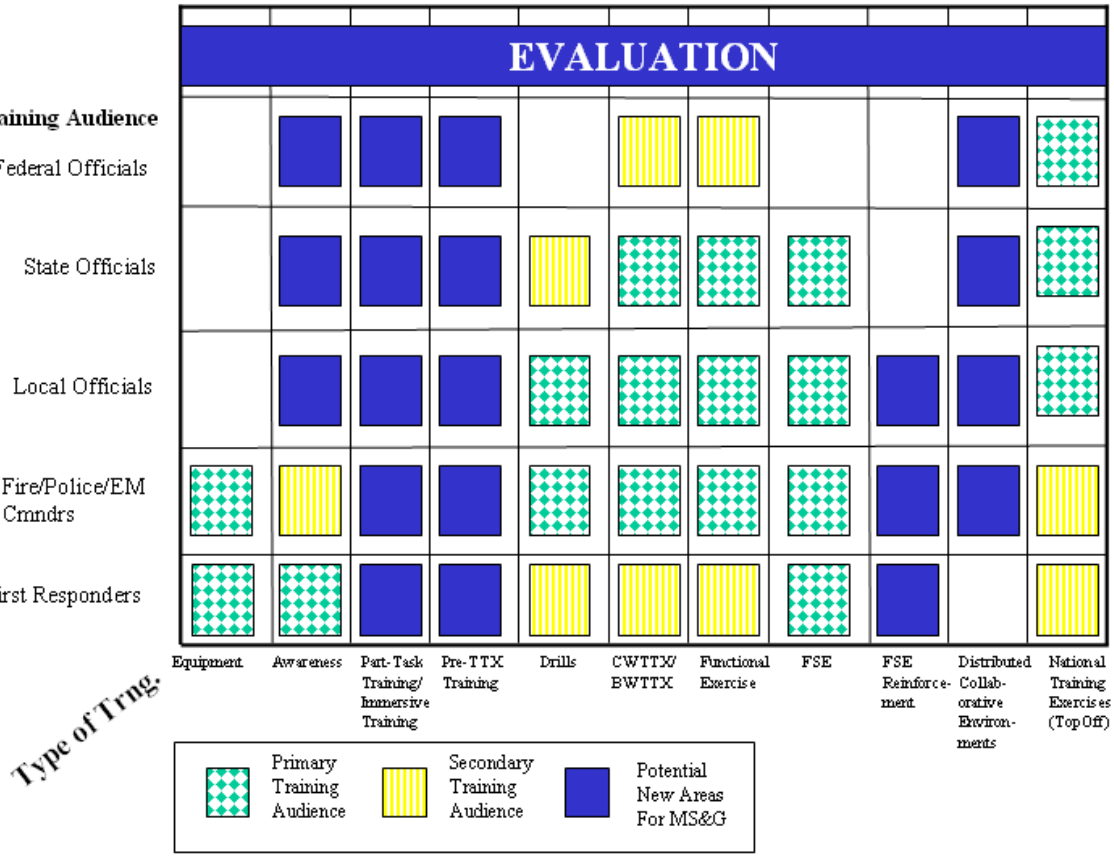

Figure 1. ODP Training/Exercises and Opportunities for MS&G

The following sections provide details on the ways in which MS&G can benefit T&E.

Exercise Planning

MS&G can enhance the exercise planning process by:

- Providing scenario path projections (i.e., allows planners to play out scenarios and estimate parameters that would stress their systems of response and test desired objectives).
- Preparing the evaluator team to anticipate responder actions, by providing detailed information about the evolving scenario and likely alternative conditions, events, and actions (e.g., death and injury counts associated with a specific chemical or biological agent, alternative scripts for dynamic plume movement and area covered, resource deployment and effectiveness, etc.). Thus, death and injury counts associated with multiple alternative scenario conditions (e.g., weather conditions) and responder actions (e.g., timing, type, and deployment of resources) could be rapidly generated and used by the planning team to tailor the scenario characteristics more effectively.
- Demonstrating likely results of circumstances with which the planning team may have little or no experience.
- Assisting in the development of performance criteria and measures. Using simulation, response planners might ascertain what stimuli (e.g., injects) are necessary to elicit and measure response.
- Providing a means of evaluating plans by modeling consequences based on specific city conditions and resources (e.g., performing cost estimations of response and recovery, taking into consideration costs of staff, damaged facilities, and the costs to replace resources consumed during the response).
- Allowing planners to design future, possible scenarios.

Realism

MS&G can add to exercise realism by approximating the situational environment and the participants' response experience. It has been demonstrated that "emotionality evoked in a simulation has a positive impact on learning for events that occur in the

simulation."[8] Elements provided by MS&G that approximate training to real conditions and enhance the training experience include:

- Engagement of the senses (e.g., via live voice communication and sound).
- Psychological and physical fidelity.[9]
- Realistic environment (e.g., weather, terrain, roads, waterways, buildings).
- Portrayal of perpetrators (e.g., actions taken and equipment utilized).
- Situational conditions and events (e.g., gas plume area and dynamic spreading, explosive damage).
- Responder resources and actions (e.g., fire apparatus, responder teams, responder decisions).
- Situation parameters (e.g., resource arrival time, disposition of resources at the scene, tracking of resources to prevent duplicate use, etc.).
- Experiential learning, a means of learning through experience.
- Awareness training of the lethality of WMD.
- Real time unfolding of events resulting from WMD.

Safety

MS&G make it possible for dangerous events, like nuclear and radiological explosions, to be experienced during training and exercising—without exposing personnel or the environment to the actual hazard; without using up actual resources like personal protective equipment kits, medical supplies, etc.; and with little or no possibility of accidental injuries to personnel.

Frequency

Training domestic preparedness will require repetition as a fundamental tool for instilling desired behaviors into first responders and decision makers.[10] The research literature on decision making and situation assessment demonstrates that "experience buys you the ability to size up situations quickly; to recognize typical ways of reacting to

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[8] Shilling, R. Zyda, M. & Wardynski, E.Z., 2002. Introducing Emotion into Military Simulation and Video Game Design: *America's Army: Operations and* VIRTE. The Third International Conference on Intelligent Games and Simulation. GameOn Conference, London, 30, 151-54.

[9] See Glossary for definitions.

[10] Repetition leads to over learning. Over learning is important for infrequently performed work tasks and is especially important for jobs involving stress (Rogers, Maurer, Salas & Fisk, 1997, in Ford et al, 1997).

problems; to mentally game out an option and see if it will work; to focus on the most relevant data elements; to form expectancies; to detect anomalies and problems; and to figure out plausible explanations for unusual events."[11] While it is understood to be effective for learning, repetition can be very expensive in terms of trainee participation, time, materials, and opportunity costs (i.e., the next most valuable use of the facility, resource, staff assignment etc.). Furthermore, repetition may not be possible due to real-world constraints and variables such as the inability to use actual locations (e.g., in urban areas), the danger in using actual WMD agents, staff or resource availability, etc.

MS&G hold the potential to reduce the limitations of real-world constraints (e.g., training on infectious diseases need not wait until a "real" case has been studied because such ailments can be modeled and medical interventions can be "practiced" on simulated patients) and to provide the necessary experience to enhance the decision making process in high-stress situations. With MS&G, depending to some degree on complexity of the tools, users may be able to experience T&E more frequently than possible in real-life settings (i.e., F2F exercises). This is because, again, MS&G minimize the issue of physical hazard, depend less on the availability of real-world resources, and in many cases let participants participate in T&E from their offices without requiring travel to a common physical site.

T&E Conduct

Many MS&G have a variety of tools to assist the instructor/facilitator in the conduct of the T&E process, thus enhancing its effectiveness. These may include, for example, student/participant monitoring information, real-time reference information resources (e.g., chemical information database), instructor/facilitator cues (e.g., impending scenario events, particular student actions), scenario/situation control features, observation and performance data collection aids, real-time data analysis providing performance related information, and presentation features for immediate and/or delayed instruction (e.g., student/participant guidance, feedback). These types of features can improve the T&E process in several ways, including improving the quality of information available to the instructor/facilitator, control of the T&E process, implementation of the instructional strategies (including exercise strategies), and the quality of information and instruction provided to students/participants (e.g., hot-wash feedback).

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[11] Klein, G. & Weick, K.E., 2000. Decisions. Across the Board, 37 (6), 16-22.

Automation of Data Collection

Currently, collection and management of data from T&E events is largely a manual process—exposed to problems of subjectivity, data transcription errors, time-consuming and labor-intensive data processing, etc. MS&G products that include automated performance monitoring can improve data management. For example, the *CAMSIM* simulator (see product review summary in Appendix G) automatically monitors student actions and compares them with established doctrine. Deviations from the doctrine are recorded in the internal simulator log (e.g., bumping the sensing nozzle against a contaminated source, incorrect mode change) and are available to the instructor at any time during the exercise, or after conclusion of the exercise (i.e., for immediate or delayed feedback). This information may be combined with observations from evaluators to present a more complete picture of response. Enhancement of data collection, in turn, should improve the quality, delivery, and speed of performance feedback to learners.

Measurement of Performance

A fundamental contribution MS&G can make to the ODP T&E program is in facilitating the collection, measurement, and analysis of learner performance. MS&G can codify performance elements—time, decision steps, resource expenditures, casualties, etc.—that will be computerized. The modeling of such systems through systems engineering enforces the use of objective standards and measurements. Not only can MS&G technology (e.g., recording user-specific performance and recording of learner information sharing) be used to assess individual or organizational performance, but the aggregated performance data can also be used for T&E management purposes in program assessment and accountability (e.g., GPRA[12] conformity), training program evaluation, and certification (including private industry).

Training for Prolonged Disasters

In response and recovery, time is a critical factor that must be addressed in T&E, particularly at management/government official levels. To date, there has been little attention given to the compounding effects of a WMD event on the "system of systems," in that only the direct effects are usually modeled and trained. The secondary (multi-hour, multi-day) effects of such events on transportation systems, wastewater treatment and waste disposal, recovery logistics systems, evacuation/victim management, etc., have

[12] Government Performance and Results Act—an act that systematically holds federal agencies accountable for achieving program results.

not been adequately incorporated into curriculum design due to time constraints, modeling complexity, and lack of prioritization. Arguably, management of these processes has significant effect on the sense of well-being of a population; they are amenable to planning and preparation, and should therefore be trained. MS&G, with effective models, could assist the investigation of long-term impacts, including trade-offs between alternative plans and actions. MS&G could also provide an effective context for T&E spanning an extended period of time. For example, a one-day exercise could address a multi-day incident response situation by focusing on selected one-hour periods (e.g., the first, fourth, seventh, twelfth, twenty-fourth, and forty-eighth hours) in the long-term response process. At the end of each focus-period, fast-time simulation could jump the situation to the next significant period. Although such time jumps are used in human-adjudicated simulations, computer-adjudicated simulations can facilitate this process and provide added realism based on underlying models.

Decision Making

Decision support systems using models are playing an increasingly important role in aiding organizational response to WMD by taking advantage of the computational power of PCs to predict probable outcomes based on situation conditions and potential decision choices. As these systems become more commonplace, it will be critical to train decision makers how to effectively utilize them. As response organization T&E requirements are more closely aligned with job duties, the ability to "play as you train, and train as you play" will become increasingly important. As this trend grows, the use of systems with MS&G components in dual operational/training modes may benefit hands-on T&E, while the cost of the systems can be amortized across both their operational and T&E use.

Breadth of Scenarios and Event Types

MS&G may provide benefit to the T&E of responders addressing low frequency/high value type threats. Considering the spectrum of events for which the DPC is training and exercising, some events like chemical spills and explosions are much more common and less devastating (high frequency/low risk) than others like radiological and nuclear events (low frequency/high risk). Given that there have been relatively few high-risk events, there is insufficient event data with which to validate low frequency/high value response domestic preparedness doctrine. T&E can be designed to allow statistical analysis of "repeated experiments" of low frequency/high value

scenarios. Statistical analysis of performance data can then provide the basis for deriving and training "best practices."

B.4. MS&G LIMITATIONS

Although MS&G present alternatives and potential enhancements in certain areas of DP T&E, they are not a panacea. Like all media, consideration should be given to the training requirements, instructional strategy, and other factors such as: cost, audience readiness, logistics, availability, effectiveness, etc. These factors determine the appropriateness of MS&G for particular T&E. Section F of this document provides specific advantages and disadvantages of categories of MS&G. Potential drawbacks of MS&G, in general, include these:

- Initial purchase, operating and maintenance costs may be high (more on MS&G cost is in Section E of this document).
- Some MS&G require contractor/vendor support, increasing operating costs.
- The need to tailor MS&G characteristics to the specific user (e.g., community features and resources may need to be accurately modeled to achieve certain T&E objectives) can increase costs.
- The potential need for special hardware/software may increase costs.
- Technology may be threatening to novices, and may require pre-training.
- Games may not provide sufficient connection between the learning context presented and the work setting.
- The potential for technology itself to distract from the actual T&E goal from either complexity or "fun factor".

C. METHODOLOGY

This section summarizes the methods used to research, catalog, and evaluate T&E requirements and MS&G products. The phases of the project and the main tasks involved are described. These tasks included the development of substantial databases used to document domestic preparedness requirements that may be achieved by training or exercising, and attributes of existing MS&G products related to training content, means of delivery, target audience, and other key indicators of utility.

C.1. PROJECT-LEVEL METHODOLOGY

The main elements of the project correspond to phases of the Instructional Systems Development process,[13] in which analysis and evaluation phases serve to inform the design, development, and implementation of T&E systems. The ISD process (depicted below) provided a structured approach to analyze instructional strategies and existing MS&G as applied to domestic preparedness T&E. The overall goal was to help improve the management and delivery of T&E to civil response organizations via the use of MS&G and other related technologies. Whereas traditional instructional systems development supports the full cycle of product development, this project tailored the approach to support adaptation of existing instructional systems.

The five project phases, described below, proceeded largely in parallel. Recommendations for the ODP T&E program (to be released as a strategic roadmap document in spring 2004) will be based on the results of the first four phases of the project.

[13] U.S. Air Force, 1993. Information for Designers of Instructional Systems. (Multi-volume Handbook). Department of the Air Force, Washington, D.C. AF Handbook 36-2265.

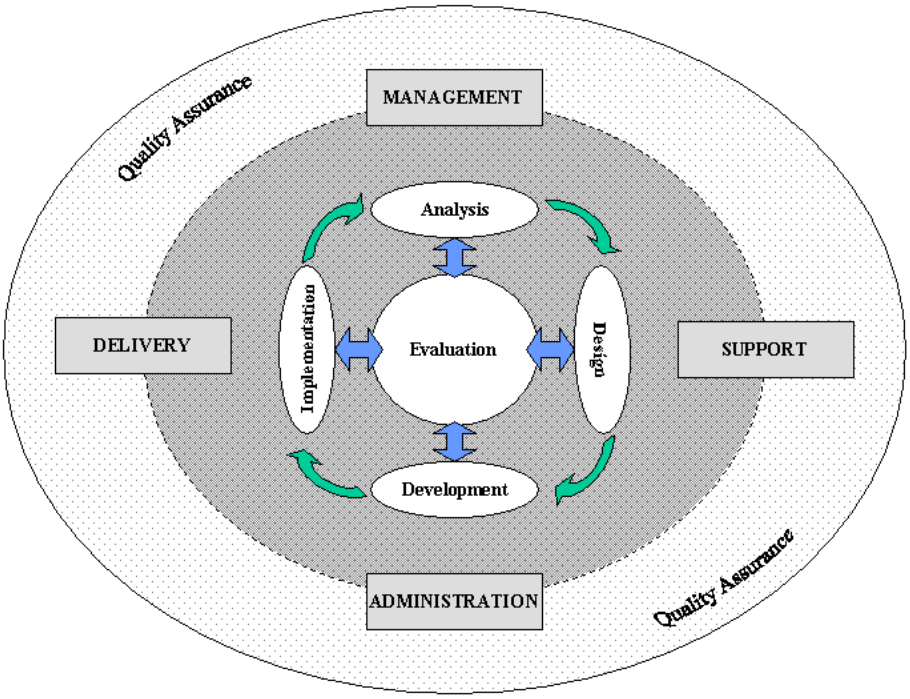

Figure 2. Instructional Systems Development Process

a. Perform Field Research of Existing National T&E Program

The initial phase of the project focused on interviewing participants in the Nunn-Lugar-Domenici (NLD) T&E program and making firsthand observations, the results of which were documented in ThoughtLink's initial report.[14] ThoughtLink observed 17 table top exercises (TTX), functional exercises (FE), and full-scale exercises (FSE), and attended several of the preceding planning meetings. ThoughtLink conducted interviews with 105 people involved in those exercises and meetings and gained insight into the current exercise program and exercise needs at the city level. This effort informed subsequent research and evaluation efforts through the development of an initial framework identifying potential areas for MS&G given the current T&E program and the wide audiences the T&E must address.

b. T&E Media and Requirements Research

This phase, combined with the Evaluation phase (described in c. below), was divided into three rounds in which selected products were researched, and results were

[14] Agrait, R., Evans, D., Grossman, L., Hammell, T., Loughran, J., Stahl, M., Office of Domestic Preparedness Program Review: Opportunities for Models, Simulations & Games, March 2003.

documented for ODP in successive reports. Interim results from the first two rounds of MS&G and requirements research were documented earlier[15, 16] (as of May and October 2003, respectively), while this third volume presents final results aggregated from all three rounds. The main steps are outlined here, while details are provided in the next section C.2. Methodology for Requirements and Product Review.

1) **Research T&E Media—**This involved the identification of MS&G, meeting and/or corresponding with product source representatives, and hands-on demonstration or use of the selected products when feasible. Media were selected for evaluation based primarily on apparent relevance to existing or potential use in T&E programs and secondarily on taking a wide-ranging sample of available technologies.

2) **Research Domestic Preparedness Requirements**—ThoughtLink identified and researched authoritative source documents for necessary competencies covering the spectrum of domestic preparedness activities of responders and decision makers. The requirements and source documents were recorded in a relational database.

c. Evaluation and Analysis of T&E System Characteristics

ThoughtLink developed two databases to store information about requirements, MS&G products, and characteristic attributes of each. The results of these evaluations, contained in this report, serve to support recommendations for the ODP T&E program and curriculum strategy (see e. below).

d. Research Related T&E Initiatives

ThoughtLink investigated a wide range of efforts in industry, government, military, and academia to survey the state of the art in the application of technology to DP T&E. This work served to identify opportunities for ODP to coordinate with other efforts.[17]

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[15] Agrait, R., Evans, D., Grossman, L., Hammell, T., Loughran, J., Stahl, M., Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercising, Volume I, May 2003.

[16] Agrait, R., Evans, D., Grossman, L., Hammell, T., Loughran, J., Stahl, M., Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercising, Volume II, October, 2003.

[17] Agrait, R., English, A., Evans, D., Grossman, L., Hammell, T., Loughran, J., Stahl, M. A Review of Related Initiatives to Support Domestic Preparedness Training and Exercises, February 2004.

e. Development of Recommendations for ODP

The current research will inform strategic and tactical recommendations for the ODP T&E program, to be described in the roadmap and delivered to ODP in spring 2004.

C.2. METHODOLOGY FOR REQUIREMENTS AND PRODUCT ANALYSIS

The details of the T&E Media and Requirements Research and Evaluation phases (b. and c from above) are addressed in this section.

a. Identify Composite Instructional Strategies for T&E

Throughout the three rounds of MS&G evaluations, T&E requirements were collected from authoritative document sources such as FEMA, ODP, NEMA, and Presidential Directives, and from interviews with members of the domestic preparedness community (see Appendix A: Requirement Source Documents). These hundreds of requirements were grouped into similar categories based upon selected design parameters (such as the student unit size or experience level) that could be used for certain instructional strategies.

b. Product Selection and Survey

Research of MS&G products was conducted between October 2002 and December 2003. Products were identified from team research of literature and public information sources, interviews with DPC members (including first responders), ODP suggestions, industry and military references, and Related Initiative research. ThoughtLink identified approximately 180 products for potential review. Products were selected primarily for featuring one or more of the following characteristics:

- Training or exercising content related to WMD or closely related subjects
- Model, simulation and/or gaming components
- Delivery mechanisms hypothesized to benefit ODP T&E.

Using these criteria, products from the candidate list were surveyed (see Table 6: Products, Acronyms, and Review Dates in Section E). The range of products (incorporating simple models to complex simulations) is intentionally quite diverse—from entertainment media to joint forces combat planning systems, from CD-ROM guides to incident response systems. The products offer different types of training content targeted to a wide range of potential users, across different disciplines, using a variety of technologies.

Although the selection process was a deliberate attempt to sample the entire spectrum of product types, it probably does not capture, in a statistically meaningful way, a representative sample of the entirety of MS&G products. The product selection and survey process imposed certain practical and theoretical limitations on the review of these products. First, there is no fundamental benchmark to which products can be compared, because the selection process was not guided by a set of user requirements or specifications for a training or exercising system. Second, surveys were conducted over the course of three rounds, such that data for specific MS&G products are current as of the dates of review, which ranged from October 2002 to December 2003. As stated earlier, "MS&G" may include not only products but also vendor or third party supplied services, which are difficult to quantify or qualify without a design specification. These variables and the approach used to store and analyze observations about products (necessitating some judgment on the part of the reviewer), constrain the degree to which purely objective conclusions can be drawn from the collected data.

c. Review MS&G Products

MS&G were surveyed using standardized templates (see Appendix B: Product Review Template for a blank copy) to facilitate the collection and examination of the same information for all products in each round of reviews. Approximately 180 candidate products were identified, 28 of which were considered unrelated to the scope of this project. One hundred products were selected for evaluation, out of which four products could not be completely evaluated due to a lack of information.

The types of observations recorded for analysis were system attributes, advantageous learning features, and available pricing data. Attributes are characteristics of products that pertain to the intended product users, the training content, how T&E is delivered, the degree to which products can be adapted or customized to user needs etc.

Attributes were rated according to specific attribute definitions (see Appendix C: Attributes for Product Evaluations), using two primary criteria: the functionality of the product was to be assessed at the time of its review regardless of potential future functionality; and each attribute was to be considered in the context of the intended (design) use of the product. For example, a real-time command and control system intended for emergency operations with potential application in DP T&E, such as a Web-based virtual emergency operations center, would be rated to prioritize its operational mode over T&E mode.

In order to reduce the effect of judgmental variation across six team members and across three product evaluation rounds, a single team member, working with the original evaluator, standardized product attribute ratings according to the definitions provided in Appendix C: Attributes for Product Evaluations.

d. Analyze Products

The requirements and MS&G product databases can be used to query or filter the large matrices of records to study relationships between either requirements and attributes or products and attributes. The results of queries can be combined to link training requirements with products. Examples of the intersections between requirements, products, and attributes are provided in section D to illustrate their potential application. Details on the analysis of products are described in section E.

e. Summary of the Analysis Methodology

The methodology was implemented on two levels—collecting data in great detail about individual products and requirements while performing the analysis at a higher, aggregated level based on groups of similar products and requirements. This approach provides system-wide macro-level conclusions and recommendations while maintaining the native detail in the databases for potential future analysis that may require greater resolution. Because the approach taken adopted elements of systems engineering methodologies, the flexible framework that ThoughtLink developed can be adapted in the future. Additional characteristics can be added to further describe requirements and/or products, and additional products and/or requirements can be evaluated and added to the databases. This allows for responsiveness to future changes in the ODP mission as prevention and recovery tasks, for example, add to T&E requirements, and as vendors develop increasingly sophisticated MS&G products. Importantly, the framework supports evaluation at the appropriate level of detail, without becoming burdened by requirement details and disparate product features.

D. T&E SYSTEM REQUIREMENTS

ThoughtLink's process for evaluating MS&G was closely tied to the collection of DP T&E requirements. The intent was to keep an audit trail to identify the source document for each requirement and to establish relationships between requirements and products. This collection of T&E system requirements serves as a basis for evaluating the usefulness/appropriateness of products and provides other benefits for ODP and the DPC. Requirements have been identified and associated with descriptive attributes from 19 source documents, including presidential directives and ODP produced documents, in addition to ThoughtLink's observations from the current T&E program.

The requirement management process to date can be summarized as follows:

- Requirement source documents, which include government reports and online materials, were identified, reviewed, and imported (in MS Word format) into Rational Requisite Pro (RRP, IBM's requirement management software tool). A screen shot from RRP below shows the partial list of source documents on the left, and the opening paragraph of one source document—the Emergency Responder Guidelines - on the right.

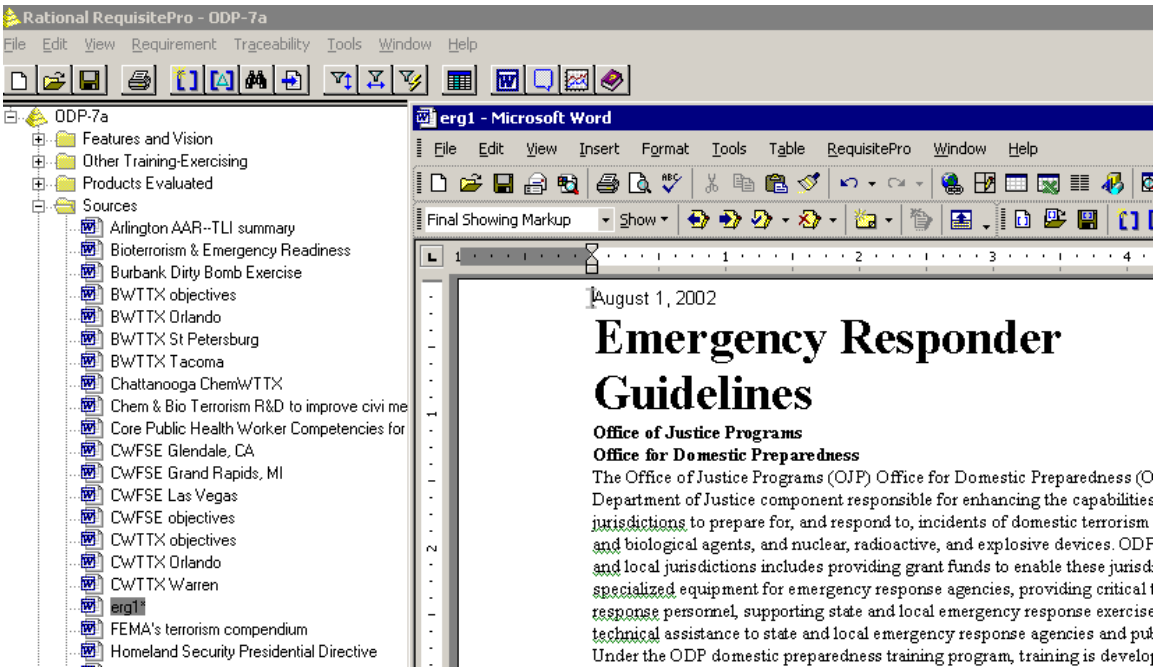


Figure 3. Screen Shot of Requirement Source Documents in RRP

- Pertinent individual requirements were highlighted and imported into the database, preserving the link between each requirement and its original source document.
- Each requirement was categorized by associating it with appropriate attributes (e.g., the attribute for WMD type for the requirement *Implement universal precautions for biological hazards involving blood and other bodily fluids* is "biological"). Each product is also categorized by an overlapping set of attributes. The use of a common set of attributes, characterizing both requirements and products, provides database relationships between products and requirements. This linkage supports queries of requirements and products on the same attributes.

The requirements management process is described in the following sections, followed by illustrations for its usability, caveats, and recommendations for future enhancements. The following list summarizes the key points about the current collection of requirements:

- The database described in this section is the only known aggregated collection of DP T&E requirements; with further enhancements, it could develop into the single, definitive source for such requirements.
- Requirements need additional work to make them more usable and amenable to analysis, including:
  - Dividing requirements into sub-tasks, so each requirement is as specific as possible.
  - Addition of conditions, standards and associated performance metrics.
  - Use of standardized terminology.
  - Validation by subject matter experts.
- Managing T&E requirements on an ongoing basis would substantially aid those responsible for curriculum design and development within ODP and at the state and local levels.
- Performing analysis of T&E requirements to specify which media is most appropriate is a time-consuming process that must be aided by technology, like the process performed here using RRP.

D.1. REQUIREMENT MANAGEMENT PROCESS

Requirements in this project are defined as T&E system characteristics necessary to meet ODP's domestic preparedness needs. ThoughtLink sought to capture requirements that formed a basis from which to evaluate MS&G, allowing the product reviews to be based on the training and exercise needs of the DPC. ThoughtLink's

research suggests that this is the first effort to accumulate a comprehensive set of responder requirements across multiple agencies and sources.

In order to manage the requirements collection process, ThoughtLink used RRP to maintain the requirements in a database (Microsoft Access) while linking them to the original source documents. There are many diverse sources (see Appendix A: Requirement Source Documents for a list), and there were many requirements (including ThoughtLink's own observations/recommendations). RRP can be extensively customized to help categorize and organize requirements.

A key part of the requirement management process is tagging each requirement with descriptive attributes. These attributes are defining characteristics of both requirements (defined by 15 types) and products (described by 30 attribute types). A set of common attributes, listed below in Table 2, consists of instructional strategy identifiers along with other attributes used for analysis and for potential future use by the response community (see Appendix C for a full list and definitions of attributes used).

Arranging information as attributes provides two important benefits. First, the large number of requirements can be classified in meaningful ways that are easier to manage and interpret (more on this topic is in section D.2. below). Second, classifying both requirements and products using a common set of attributes creates a link between these two data sets, allowing searches for requirements and products using queries and filtering along the same parameters (i.e., categories of instructional strategies). This is depicted in Figure 4.

Table 2. Attributes Common to Both Requirements and Products

Instructional Strategy Attributes	Attribute Values
Applied Context:	Non-Specific, Equipment
Application Environment:	Exercise, Training, Both
Content:	Applied, Knowledge, Hands-On
Environment:	Generic, Locale-specific
Learner Unit Size (Media Scale):	Individual, Group, Team, Multi-Agency Participation
Student Level:	Basic, Intermediate, Advanced
T&E:	Training, Exercise, Both, Neither
Additional Attributes	**Attribute Values**

Functional Area Supported:	EMS, EMA, FD, GA, HC, HAZMAT, LE, Private Sector, PH, PSC, PW, Transportation, Other federal officials
Potential Responder Training Levels:	Awareness, Performance A (or Operations), Performance B (or Technician/Specialist), Planning & Management (including Incident Command System)
Advantageous MS&G Features:	Enhanced T & E communication/Coordination, Hospital T & E, ICS/UCS
Target Audience:	First Responders, Commanders, Local Officials, State Officials, Federal Officials
WMD Event Type Supported:	Chemical, Biological, Radiological, Nuclear, Explosive

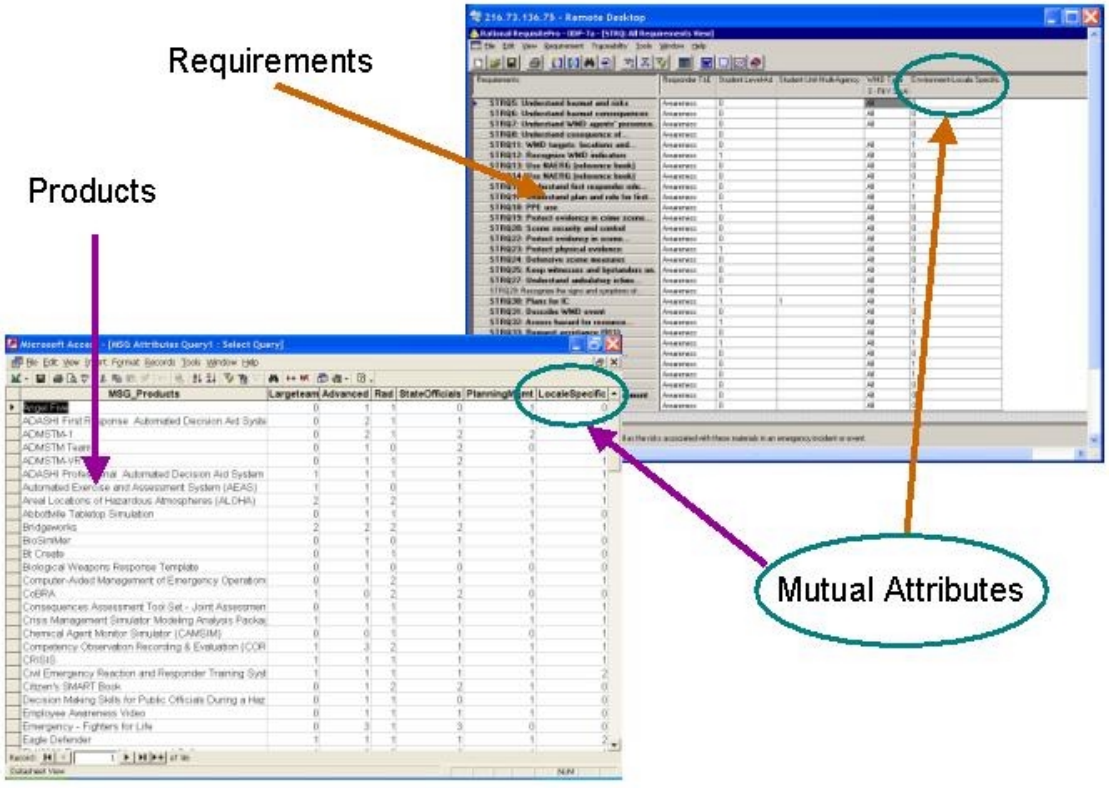


Figure 4. Shared Database Attributes

a. Limitations of Requirement Categorization

Some caveats about the requirement categorization include:

1) Attribute coding is subjective—based on the instructional design expertise of the ThoughtLink team, their experience with the subject matter, and their research since the project commenced. What matters, however, is that the coding process is consistent. ThoughtLink took steps to ensure reliability (consistency in ratings) by arriving at definitions that all raters clearly understood (as an iterative process), and by having a single team member perform quality checks on the aggregated ratings.

2) Numerous requirements are only partially coded—many requirement source documents did not list enough information to allow coding on every attribute considered important. Thus, many requirements have not been catalogued along some attributes (e.g., the level of responder for which the T&E is intended is unspecified for some requirements).

3) Requirements are not uniformly described—as a result, the collection of requirements is currently in many different formats (e.g., tasks and objectives). In order to be fully usable, these should conform to the same format and should specify performance measures. This is a potential future project in which subject matter experts from the DPC could assist ThoughtLink in enhancing the database.

4) The set of requirements is not comprehensive—this is the most complete set of currently available requirements, but it is not complete in terms of representing all requirements for all responder levels for all functional areas. Because documents were not identified or found, because they do not exist, and/or because they have not been imported at the time this report was published, the database is unavoidably incomplete. This should be considered a work in progress (see section D.3. below for recommended actions regarding data currency).

5) Some requirements may have significant overlap. Detailing the specification of each requirement item would enable reduction in overlap.

6) Verification and validation of the requirements by DPC experts are needed.

D.2. CURRENT REQUIREMENT CATEGORIES

ThoughtLink's approach to managing hundreds of requirements was to bundle individual requirements into higher-level requirement categories. While it was useful to

organize similar requirements into groups based on instructional design strategies, the database is not limited to this logic. If the database is made available to DPC members, users with other needs or interests can group requirements in any way they like, based on their choice of attribute values.

For example, suppose a member of the DPC wanted to investigate T&E requirements for advanced level users and biological WMD event type for health care and public works personnel using this requirements database. Table 3 shows the attributes that must be in common (in **bold**) among the T&E requirements and MS&G products.

Table 3. Example of Attributes Common to a Single Requirement-Product Combination

Attribute	Attribute Values
Student/ Participant Level	Basic, Intermediate, **Advanced**
WMD Type	Chemical, **Biological**, Radiological, Nuclear, Explosive
Functional Area	EMA, EMS, FD, GA, HAZMAT, **HC,** LE, **PH**, PW, Private, Transportation, Federal (e.g., FBI)

A query to select records with these attributes would currently result in 143 requirements for Public Works and 111 for Public Health (only a few of the resulting requirements are shown below). Table 4 below shows that, to date, there are several requirements for biological WMD at an advanced level which Health Care personnel, and Public Works personnel have in common (the first and second requirements for each functional area shown below) and that there are others unique to the functional area chosen (the remaining requirements). This type of query can aid in current course evaluations and future curriculum development. Also, the query illustrates the benefits of allowing users to create their own categorization of requirements.

Table 4. Sample Subset of a WMD T&E Requirements Query

Advanced, Biological WMD Requirements for:	
Public Health	**Health Care**
1) Assess the local response community's ability to reduce the spread of biological contamination.	1) Assess the local response community's ability to reduce the spread of biological contamination.
2) Discuss factors that would affect the handling of substantial numbers of contaminated remains.	2) Discuss factors that would affect the handling of substantial numbers of contaminated remains.
3) Use risk assessment of potential biological, chemical, or radiological hazards in the community to determine the roles and responsibilities of those involved in public health BT response.	3) Examine various threats posed by a terrorist biological WMD incident and the implications to the local medical and response communities (i.e., attack detection, mass casualties, and communicable agents).
4) Ensure that the agency (or agency unit) regularly practices all parts of emergency response.	4) Discuss ways to harmonize and enhance the respective efforts of the medical and law enforcement communities to identify the nature and cause of a terrorist-initiated biological weapons incident.
…	….

MS&G products can be analyzed the same way as requirements. The following table shows the acronyms of products[18] reviewed to date that correspond to the above-mentioned attributes, i.e., MS&G that train/exercise at an advanced level for biological WMD.

[18] See full product names listed in Section E: MS&G Review or in Appendix G.

Table 5. Requirements by Target Audience

Advanced, Biological WMD Products for:	
Public Health	**Health Care**
AEAS	AEAS
BTC	OPSC
BSMMR	SLRY
BWRT	SEAS
CBRA	FMIS
JANS	XYB
MMTE	
OPSC	
SLRY	
VIGI	
VCLC	

The remainder of this section analyzes the current collection of requirements by querying on specific attributes, as examples of how these data may be used. The data shown below were produced via queries in RRP and then charted in Microsoft Excel.

a. WMD Type

Figure 5 shows the number of requirements for each type of WMD. As depicted, there are very few requirements specific to a particular type of WMD (with the possible exception of Biological WMD, for which there are 79 requirements). The bulk of the requirements in ThoughtLink's database (1,035) correspond to all types of WMD (e.g., *Be able to coordinate and assist in the overall criminal investigation of the potential WMD event*). Inspection of the low numbers of requirements specific to chemical, radiological, and nuclear WMD (11, 1, and 1, respectively) is noteworthy. It is logical that the nature of these WMD types would require specialized knowledge, skills, and abilities beyond the requirements in the database and numbers shown in the figure. It could be that ThoughtLink has not yet identified extant documents detailing such requirements on which the DPC may base T&E, or that such documents are not available

or do not exist. The fact that such few specialized requirements were found is consistent with some of the comments of the responders and health care personnel interviewed (Agrait et al., 2003a), who mentioned having received some training in biological and chemical WMD, but who reported a lack of awareness and response training in the other WMD types.

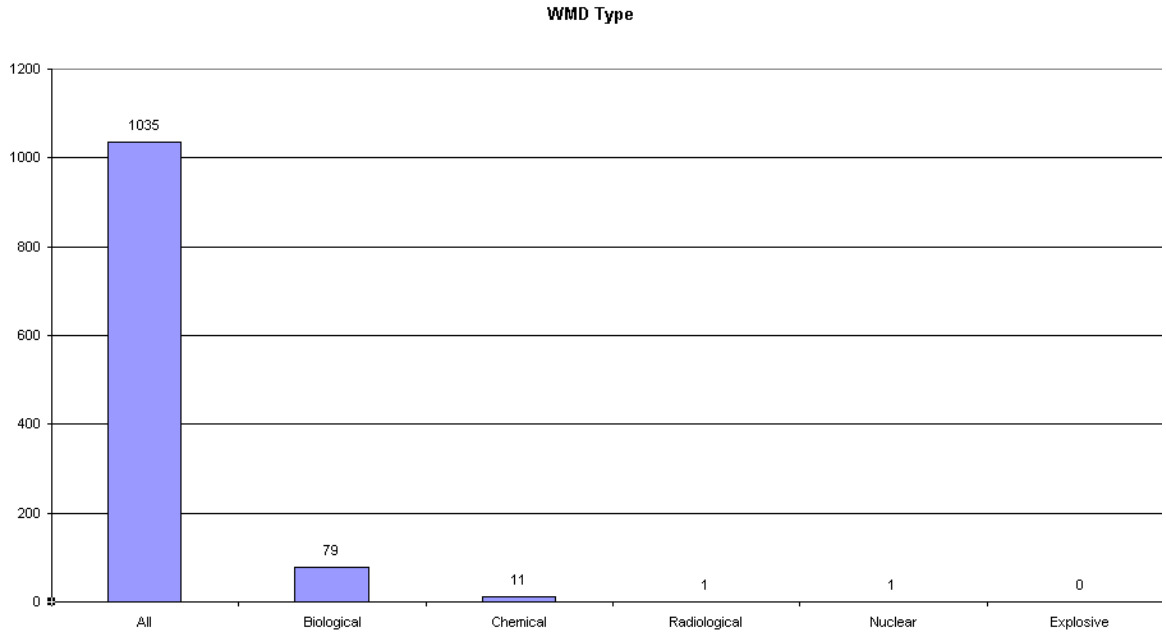


Figure 5. Requirements by WMD Type

b. Functional Area Specific Requirements

Figure 6 shows the current number of requirements in RRP for each functional area. Recall that some requirements overlap several functional areas, and there are others that are exclusive to a functional area. Requirements that overlap functional areas appear more than once in the figure below. Private Sector and Transportation requirements have the fewest requirements (2 and 1, respectively). This outcome is not surprising since those functional areas were added to the database only recently, and few documents have been identified that list such requirements.

The fewest requirements are for Public Safety Communications personnel (38 requirements). An example of such a requirement is [Have] *Knowledge of questions to ask caller to elicit critical information regarding an NBC incident.*

There are 57 requirements for which source documents did not identify the specific functional area to which it applied. These can be associated with the appropriate functional area after consulting with subject matter experts for requirement review.

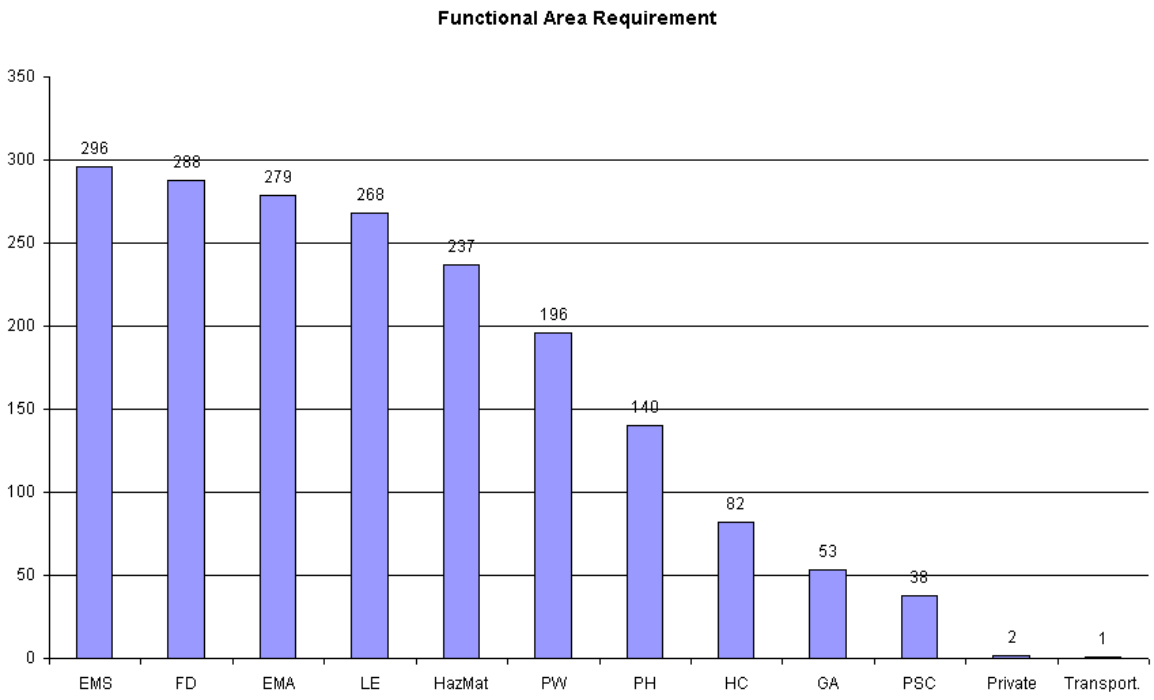


Figure 6. Requirements by Functional Area

EMA	Emergency Management Administration
EMS	Emergency Medical Services
FD	Fire Department
GA	Government Administration
HazMat	Hazardous Materials
HC	Health Care
LE	Law Enforcement
Private	Private Sector
PH	Public Health
PSC	Public Safety Communications
PW	Public Works
Transport.	Transportation

c. Hospital T&E Requirements

Hospital T&E requirements are addressed here as an example of focusing on a selected subset. This is an area worth investigating for completeness of requirements and media because the response community identified a dearth of T&E, from basic awareness to hands-on skill demonstration. Identified source documents list only eight requirements

(imported to date) that pertain specifically to hospital personnel (e.g., *Faster and more complete methods to facilitate access to experts and electronic disease reporting, from the health care provider level to global surveillance*).

As previously mentioned there are some requirements for which the source document did not indicate its functional area applicability, so there could potentially be more hospital and health care specific requirements in the database.

d. Incident Command System/Unified Command System

Another example of focused requirements analysis is ICS/UCS. Figure 7 depicts the number of ICS/UCS requirements per functional area. The numbers show that the majority of the ICS/UCS requirements are for LE, EMS, FD, EMA, and HAZMAT (18, 17, 17, 13, and 13, respectively).

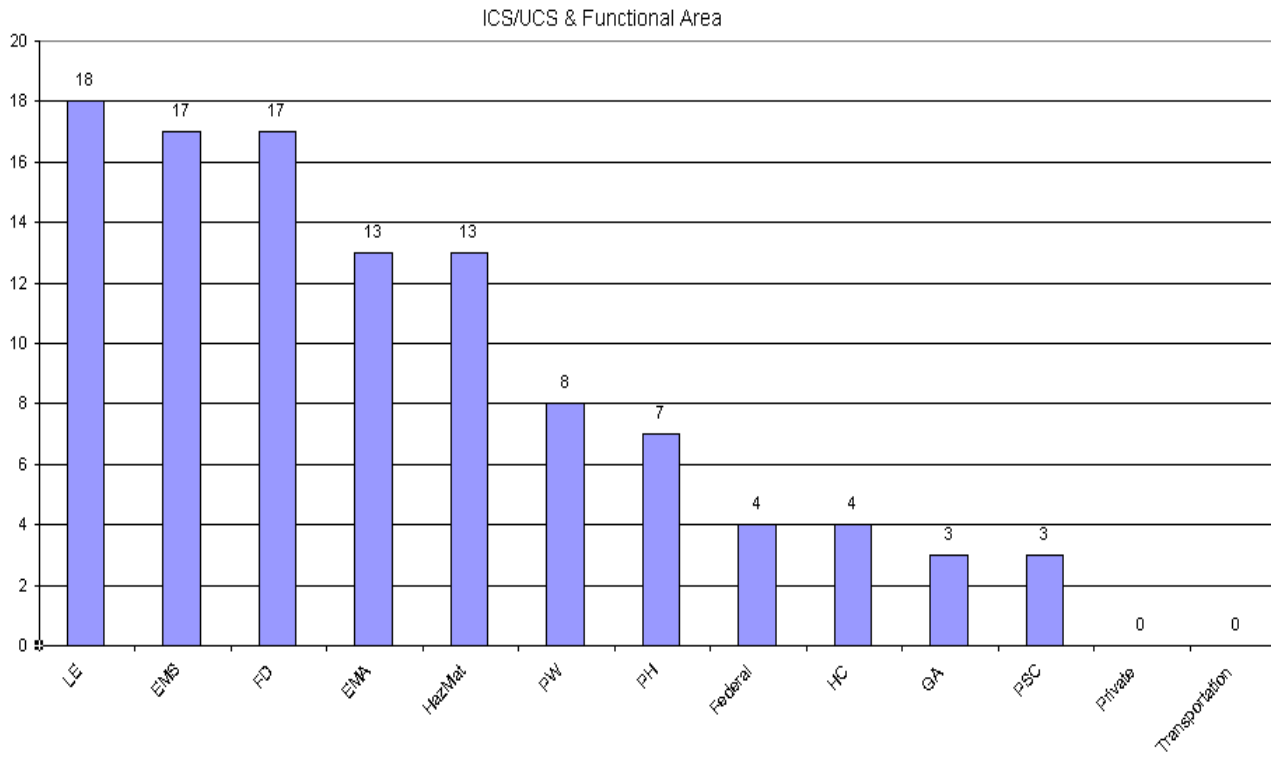


Figure 7. ICS/UCS Requirements by Functional Area

e. Target Audience

Figure 8 shows that more requirements contained in RRP are for first responders versus the other four target audiences in the figure. Because a large number of

requirement source documents did not identify the intended target audience, over half of the requirements contained in the database have not yet been classified for the audience they address. These requirements should be reviewed by SMEs and assigned the appropriate target audience. It is important that future requirements efforts list not only the audience, but also conditions and standards.

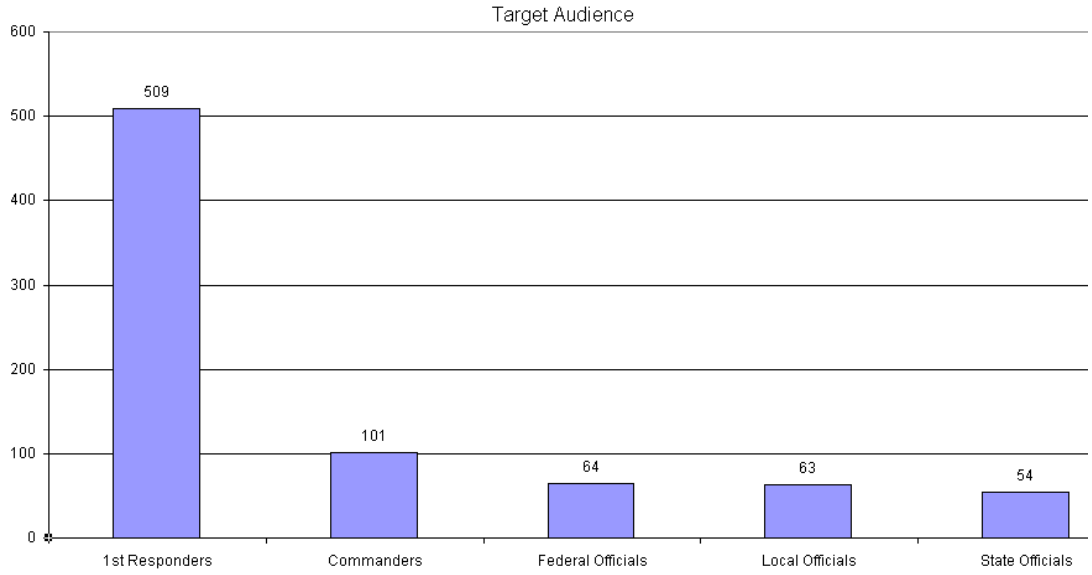


Figure 8. Requirements by Target Audience

D.3. FUTURE DATABASE REFINEMENTS

There is much work to be done in recording the entirety of T&E requirements (some of which may not have yet been documented), and in making them accessible for a wide range of users. ThoughtLink converted data into critical knowledge for the T&E system using RRP database functions (custom attributes, queries and filters).

The collection of requirements has substantial utility to local communities as well as ODP. These requirements can be an integral first step in the development of the National Exercise Program (NEP), the National Incident Management System (NIMS), the Homeland Security Exercise and Evaluation Program (HSEEP), and the implementation of Homeland Security Presidential Directive-8 (HSPD-8). This collection can serve users from different functional areas spanning different response levels. It can aid cities in forecasting preparedness by comparing plans, training courses, and exercises against the universal preparedness requirements list. It can also help in the requirements vetting process as ODP begins to work on developing conditions and standards for each requirement. Importantly, it can enhance ODP's capability to analyze available T&E media.

There are many factors involved in designing a T&E system: numerous requirements, a variety of media alternatives, audience diversity (levels of authority, learning/experience, functional areas), multiple response foci, etc. Conducting an analysis on paper would be ineffective and needlessly time consuming; such analysis must be aided by technology. The Technology In Practice Box below provides a real-life example in which the requirements database was used to compare the similarities and differences in requirements exercised by a TTX versus an FSE. It shows the value the requirements database provides when selecting or evaluating T&E methods.

Technology In Practice

Following ODP's transition into DHS from DOJ, proposals to cut costs were being considered to discontinue sponsorship of FSE for DP T&E. It was thought that TTX would suffice in allowing the DPC to exercise knowledge, skills, and abilities. ThoughtLink evaluated the value of TTX and FSE to investigate how these mapped to requirements. Aided by the collection of requirements, ThoughtLink demonstrated that each of these strategies has different strengths and weaknesses from a training and exercising effectiveness perspective; they are considered complementary, rather than redundant. Differences associated with achievement of training and exercising objectives, as well as other benefit differences between TTX and FSE, include:

- The FSE requires participants to actually perform skills, as well as demonstrate detailed knowledge. As a result, they may receive real-time feedback of effectiveness of response. TTX usually does not require skill performance; rather it requires exposition of knowledge—typically at a macro level rather than at a detailed implementation level.
- FSE provides an opportunity to exercise the entire response system. Many parts of the team/system, which may be critical to performance, are missing during a TTX. Actual system problems are more likely to be found during an FSE than a TTX.
- Responders must perform in real-time during an FSE, a major factor affecting system performance. The TTX does not require actual performance; rather, it requires discussion of how performance should (would be expected to) occur.
- The FSE is an exercising strategy in which the actual first responders (e.g., "cop on the beat") receive practice as part of the team/system. The TTX does not provide integrated training/exercising covering the breadth of the response team/system (i.e., the actual first responders are not included in a TTX).

An important issue is not whether the TTX can supplant the FSE today (as ThoughtLink's research suggests it cannot), but rather whether more cost-efficient training/exercising strategies can replace the FSE at some point in the future (or, at least decrease the cost and frequency of FSE, while improving the effectiveness of the training and exercising system).

This initial work on requirements is a work in progress that, if augmented, can serve as the foundation of a Decision Support System (DSS) with usability for various levels of the response community (e.g., local, state, DHS—ODP is conducting further analysis). If a DSS were developed in the future, the response community would be able to consult the database to identify requirements that should be trained/exercised and to learn of MS&G that is potentially applicable to their particular T&E needs (as illustrated in the example in D.2).

To this end, the following enhancements are suggested:

- Continue to compile, validate, and refine requirements. Now that the database has been populated with requirements and products, it is possible to search, based on attributes or text, for a particular topic, as previously illustrated (e.g., search for requirements related to a particular type of WMD). The areas where there appear to be a lack of requirements should be researched so that documents listing these requirements can be added. The same can be said for media; as MS&G are identified, information should be added to the database.
- Ensure uniformity of data. Requirements collected come from different sources (e.g., government documents and medical research organizations) should be standardized. Standardization should include specification of conditions, standards, and performance measures (this can be done via attributes). This is pertinent to all user requirements, from the first responder to higher-level officials (e.g., "Be able to coordinate the gathering of intelligence from a variety of sources and organizations that may be on the scene" versus: "Improve top officials' capabilities to respond in partnership to the crisis and consequence management aspects of a WMD terrorist incident").
- Develop conditions and standards for all requirements. Some of the currently captured requirements indicate what is to be accomplished, with minimal or no specification of how to perform them (e.g., "Share the latest intelligence with the on-scene incident commander"). By what means should intelligence be shared? When? How often? How would observer/controllers know that intelligence has been shared? What is the purpose of intelligence sharing?.

Conditions and standards serve to ensure T&E standardization and ensure evaluation beyond subjective ratings.

- Identify where the requirement fits in the response "life cycle stage."[19] When appropriate, requirements should be identified as applying to: awareness, prevention, preparedness, response, or recovery phases.
- Conduct a curriculum review based on requirements. The centralized data collection effort can ensure that local training and exercises conform to the national requirement repository. This can help avoid duplicate course work (e.g., responders complain that they were taught the same material over vastly differently characterized courses[20]), and will help tailor training courses to the emergency response community.
- Track the progression of objectives met from local to national level exercises. Related to the item mentioned above, a step towards conducting a national preparedness assessment is to track training, exercising, and proficiency to the set of requirements (e.g., from TTX objectives through the progression to national level exercises) as they are met through a variety of media. This will allow state officials to compile state assessments and regional and federal officials to perform similar analyses.
- Identify and catalogue non-emergency response community requirements. Ensure the private sector is included in exercise planning, execution, and evaluation. The public- and private-sector collaboration should begin with specification of requirements, for which few sources were found to date.
- National Glossary of Preparedness Terminology. This repository could serve to clarify and standardize terminology across response communities to enhance collaboration across disciplines (e.g., common Incident Command terminology for both epidemiological and criminal investigations) and levels of response (e.g., between first responders and federal officials across the nation).

[19] Term used in the National Response Plan (Initial Plan, Draft Retrieved from http://www.nemaweb.org/docs/National_Response_Plan.pdf) to refer to the range of Incident Management Activities.

[20] Stimson Center Report No. 35: Ataxia. The Chemical and Biological Terrorism Threat and the US Response. Available online: http://www.stimson.org/cbw/pubs.cfm?id=12.

E. REVIEW OF TRAINING AND EXERCISING PRODUCTS

This section characterizes MS&G products at an aggregate level to provide a high-level understanding of the product mix currently available, areas where products are lacking, and other overall insights into the tools supporting DP T&E. It is a snapshot of selected T&E products available as of late 2002 through 2003. This section discusses categories of products, whereas Appendix G: details individual product information in summary format. The reader who is interested in guidance on how MS&G fit into T&E or on which MS&G categories are most appropriate for specific needs should refer to Sections B or F, respectively.

Several caveats are in order. As a reminder, the generic term MS&G refers to products and the associated services they may require for support. This analysis does not specifically distinguish between "off the shelf" goods and vendor services, despite the potential importance of the distinction to different readers. It is also important to note that reviewed products are not necessarily applicable or available for distribution to all members of the DPC. Some products still may be under development, and/or distribution may be limited to government agencies and approved contractors.

E.1. GENERAL FINDINGS

Products map to all requirement categories, so there is theoretically at least one MS&G alternative for each instructional strategy group of requirements. Yet, there appear to be some areas of concern about the degree to which T&E needs are currently being met by existing products. Some of the findings from the product research are:

- More products exist for chemical events than for biological and radiological events.
- Few products are oriented toward senior officials. Many products address individual basic awareness for first responders, and many address team T&E.
- Vendor service—currently needed for expertise in scenario adaptation, localization, and systems (information/interface) management—demonstrates the same lack of scalability as the current F2F ODP program.
- Product pricing relates to vendor service and interface complexity. To increase T&E program breadth, the need for vendor service must be reduced.

Another approach for cost savings is to standardize or modularize learning system interfaces.

E.2. PRODUCTS REVIEWED

The following table lists the 100 MS&G products reviewed during this project. These were evaluated in three separate rounds of reviews, such that the data for each product is current as of the listed review date. Four products were not completely evaluated because not all necessary data could be obtained, yielding a sample size of 96 products for aggregate analysis. To facilitate limited space in graphs and tables, ThoughtLink assigned acronyms for all products reviewed.

Table 6. Products, Acronyms, and Review Dates

MS&G Product *(* indicates not completely reviewed)*	**Acronym**	**Review Date**
Abbottville Tabletop Simulation	ATS	April 2003
ADASHI First Response Automated Decision Aid System for Hazardous Incidents (ADASHI)	ADFR	October 2003
ADASHI Professional Automated Decision Aid System for Hazardous Incidents (ADASHI)	ADPR	October 2003
Advanced Disaster Management System—ADMSTM Team	ADMT	January 2004
Advanced Disaster Management System—ADMSTM-1	ADM1	January 2004
Advanced Disaster Management System—ADMSTM-VR	ADMV	January 2004
Angel Five	A5	April 2003
Areal Locations of Hazardous Atmospheres (ALOHA)	ALO	January 2004
Automated Exercise and Assessment System (AEAS)	AEAS	October 2003
Biological Weapons Response Template	BWRT	October 2003
BioSimMer	BSMR	October 2003
Bridgeworks	BRDG	January 2004
Bt Create	BTC	January 2004
Chemical & Biological Response Aid (CoBRA)	CBRA	January 2004
Chemical Agent Monitor Simulator (CAMSIM)	CMSM	January 2004
Citizen's SMART Book	CSB	January 2004
Civil Emergency Reaction and Responder Training System (CERRTS)	CRTS	October 2003
Competency Observation Recording & Evaluation (CORE)	COR	April 2003
Computer-Aided Management of Emergency Operations System (CAMEO)	CAMO	January 2004
Consequences Assessment Tool Set—Joint Assessment of Catastrophic Events (CATS-JACE)	CJJC	October 2003

MS&G Product *(* indicates not completely reviewed)*	**Acronym**	**Review Date**
CRISIS	CRI	April 2003
Crisis Management Simulator Modeling Analysis Package (CMSMAP)	CMS	April 2003
Decision Making Skills for Public Officials During a Hazardous Materials Incident	DMS	April 2003
E Team	ETM	October 2003
Eagle Defender	EGLD	October 2003
EM/2000 Emergency Management Software	EM2K	January 2004
Emergency-Fighters for Life	EFL	April 2003
Emergency Preparedness Incident Command Simulation (EPiCS)	EPI	April 2003
Emergency Response Synchronization Matrix	ERSM	October 2003
Emergency Response to Terrorism: Basic Concepts	ERTB	January 2004
Emergency Simulation Program (ESP)	ESP	January 2004
Employee Awareness Video	EAV	January 2004
EMS Simulator	EMS	April 2003
ERoom	ERUM	January 2004
FEMIS / EMAdvantage	FMIS	January 2004
Fire Studio 2.0	FS2	October 2003
First Responders Situational Awareness Tool (FiRST)	FRST	October 2003
Force Protection Operational Requirements Testbed (FORT)	FORT	January 2004
Full Spectrum Command	FSC	January 2004
Gaming and Multimedia Applications for Environmental Crisis Mgt. Training (GAMMA-EC)	GEC	October 2003
Groove	GRV	October 2003
Guard Force	GF	October 2003
Guardian Suite	GSUT	January 2004
Hazard Prediction and Assessment Capability (HPAC)	HPAC	October 2003
HLS RAM (Response Action Model)	HRAM	January 2004
Human Patient Simulator	HPS	April 2003
Hybrid Particle And Concentration Transport Model (HYPACT)	HYP	October 2003
JANUS (National Guard Version)	JANS	October 2003
Joint Conflict & Tactical Simulation (JCATS)	JCAT	October 2003
Joint Integrated Database Prep System (JIDPS)	JDPS	January 2004
Joint Theater Level Simulation (JTLS)	JTLS	October 2003
Learning Landscapes*		October 2003

MS&G Product *(* indicates not completely reviewed)*	**Acronym**	**Review Date**
LifeLine Videos	LLV	October 2003
Mapping Applications for Response, Planning, and Local Operation Tasks (MARPLOT)	MRPL	January 2004
Mass-Casualty Medical Training and Evaluation (MMT&E)	MMTE	October 2003
Meteorological Information and Dispersion Assessment System—Anti-Terrorism (MIDAS-AT)	MIDA	October 2003
MIND	MIND	January 2004
Minerva	MINV	October 2003
Multi-Layer Decision Simulation—School Violence	MLD	April 2003
National Security Network	NSN	October 2003
NBC CTS 2000	NBC	April 2003
OpsCenter	OPSC	October 2003
Planning Alternatives for Interdicting National Terrorism (PAINT)*		January 2004
PEGEM	PEGM	October 2003
Pollution Incident Simulation, Control, and Evaluation System (PISCES)	PIS	April 2003
Post-Incident Review for Emergency Command Training (PIRFECT)	PIRF	January 2004
PowerStripes	PWRS	January 2004
Quick Urban & Industrial Complex Dispersion Modeling system (QUIC)	QUIC	October 2003
Rainbow 6	R6	April 2003
RAMSAFE	RAM	October 2003
Regional Atmospheric Modeling System (RAMS)	RAMS	October 2003
Response Information Folder System (RIFS)	RIFS	October 2003
RestOps Simulation (RBITS)	RSTO	January 2004
S3-Exercise	S3	October 2003
San Louis Rey Online Simulation Training	SLRY	October 2003
ScribeVision	SCRB	January 2004
SEAS/Homeland Security Simulation	SEAS	October 2003
Security and Emergency Response Information System (SERIS)	SERS	January 2004
SIMfX	SMFX	January 2004
SimViz 3400ICS—Custom	SVZC	October 2003
SimViz 3400ICS—Standard	SVZS	October 2003
SimViz 3400ICS—Tailored	SVZT	October 2003
Site Profiler*		January 2004
SoftRisk	SOFR	October 2003

MS&G Product *(* indicates not completely reviewed)*	Acronym	Review Date
SPECTRUM	SPCM	October 2003
STAT Care	STC	October 2003
Tennessee Emergency Management (TEMA) Weapons of Mass Destruction Computer-Based Training CD-ROM	TEMA	January 2004
TUTOR	TTR	October 2003
Vigilent	VIGI	January 2004
Virtual Cities	VCIT	October 2003
Virtual Emergency Response Training Simulation	VER	April 2003
Virtual Terrorism Response Academy	VTRA	January 2004
VirtualClinic	VCLC	January 2004
Weapons of Mass Destruction Decision Analysis Center (WMD-DAC)	WDAC	October 2003
WebEOC	WEOC	October 2003
WebIQ*		January 2004
WisdomTools Scenarios	WSTL	January 2004
WMD Basic Awareness Training Interactive CD	WBA	April 2003
Worldreach Emergency Management Suite	WEMS	January 2004
Xybernaut Mobile Computing Tools	XYB	January 2004

E.3. TYPES OF MODELS, SIMULATIONS, AND GAMES

This section summarizes the essential functionality of modeling and simulation, T&E tools, and games. Products were identified, catalogued, and categorized into basic types of MS&G based on the definitions presented in Section B.

While six out of the 96 products evaluated did contain training content related to domestic preparedness, they did not contain any model, simulation, or gaming components. The remaining 90 products incorporated MS&G to varying degrees.

Models. These are defined as a representation of a real-world effect; a logical description of how a system performs. Seventy-one products contained at least one form of a model. Sample model types include:

- *Geography/demography*—maps, terrain databases, GIS layer databases, census databases.
- *Physical models*—scale replicas of geo-specific locations and structures that track resource movement. Typically used for TTX.

- *Combat models*—entity-level and aggregate-level models; 2-D and 3-D synthetic environments.
- *Health-related models*—biological agent epidemiology/etiology, human physiology and pharmokinesis, demographic health/disease databases, healthcare provider management, pharmaceutical prophylaxis policy.
- *Weapons effects models*—blast effects, vehicle bomb guide, dosimetry.
- *Logistics/resource deployment models*—entity-level modeling and tracking of specific emergency, marine, search and rescue, vehicles, supplies, resources.
- *User-tailored databases*—Hospital resources, victim case management including quarantine, syndromic surveillance, multi-purpose enterprise databases including financial, supply chain, and human resource (recruitment and training) management capabilities.

Simulations. Simulations are defined as the implementation of a model, or set of models, to represent the real world. Simulations test hypotheses and help gain insights about a problem or situation. Simulations are typically repeated numerous times to estimate likely outcomes. Seventy products were found to employ at least one type of simulation. Two products evaluated were equipment simulations (simulators), while the rest involved other types of simulation. These products, in some respect, replace actual, "live" events or stimuli with virtual ones for T&E.

Games. Games are defined as competitive environments where individuals or teams of individuals play against each other or against a computer in pursuit of a goal, following a set of rules. Games generally have winners and losers, and good games offer clear objectives about what constitutes success. Forty-one products involved competitive performance characteristics in which learners face various challenges. Fundamentally, there are two drivers for such challenges—either some type of reactive human adversary or controller, or a preprogrammed set of algorithms. For example, human adversaries may be involved in exercises in which a control and/or "Red Cell" represents an intelligent opposing force or otherwise presents adverse scenario conditions. Computer algorithms model and track such factors as response resources, costs, entity behavior (including human physiology), computer-generated forces, WMD hazard effects, and learner decisions.

T&E Tools. Forty-five products either contained tools or were tools that pertained to WMD T&E. Tools included in the product sample addressed, for example, exercise design/scenario development, operational decision aids, AAR analysis and

conduct, training education, simulation enhancement, database preparation, shared awareness, and reference tools.

E.4. PRODUCT ATTRIBUTES AND CLASSIFICATION

Products were rated on 93 characteristics as to whether they did, did not, or possibly could satisfy that attribute. Attributes can be grouped roughly into six kinds listed below (Appendix C: Attributes for Product Evaluations provides a complete listing and definitions).

- *T&E Learner Audience*—attributes pertaining to who is to be trained, functional areas, experience levels etc.
- *T&E Content/Application*—refers to what information is conveyed to the learner, training context, and the relevance in T&E.
- *Instructive Delivery Mechanisms*—attributes that address the means by which the instructional coaching function is carried out.
- *Product Hardware and Software*—attributes concerning the interconnectivity and accessibility of the product.
- *MS&G Product Vendor/Source*—attributes pertaining to the product/service provider, the degree to which product customization is needed, and prototype status.
- *Advantageous MS&G Features*—attributes that support potential applications or needs in domestic preparedness T&E, based on ThoughtLink's research.

Products are classified into categories and subcategories according to the description in Appendix D: Learning System Framework, in which MS&G product classification is determined by product functions.

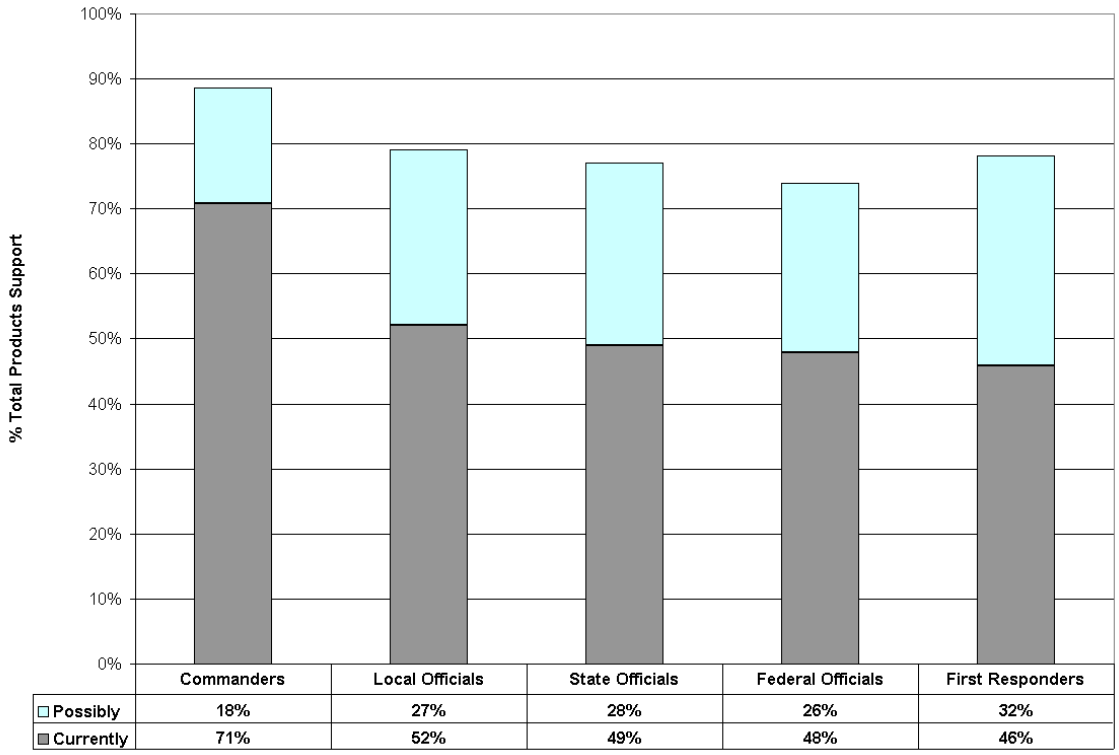
Using the six kinds of attributes listed above, Appendix E: Typical and Atypical Product Attributes by Category provides a table for each product category that lists the characteristics most and least commonly found for that category. This information can help users select among product categories and identify relevant MS&G.

E.5. REVIEW OF ALL MS&G

The first two volumes of MS&G product evaluation presented summary results of each round. Here, the results of all three rounds of product evaluations are presented in aggregate to draw conclusions about the entire sample. The charts below show the percentage of products (out of 96 analyzed) that currently support and may possibly support the given attribute.

a. Target Audience

Figure 9 below shows the percentage of products that currently support and may possibly support different target audiences. Commanders, at 71 percent current support, are the most commonly targeted learners, while first responders, at 46 percent current support, are the least commonly targeted learners. Although the reason for this is not clear, one possible explanation is that the MS&G reviewed emphasized command and control tasks. Such responsibilities typically involve higher level decision makers as opposed to first responders.



	Commanders	Local Officials	State Officials	Federal Officials	First Responders
Possibly	18%	27%	28%	26%	32%
Currently	71%	52%	49%	48%	46%

Figure 9. Target Audiences Supported

b. Functional Area

Disciplines that tend to be early participants in the response phase are the most common functional areas supported by the range of MS&G surveyed, as shown in Figure 10.

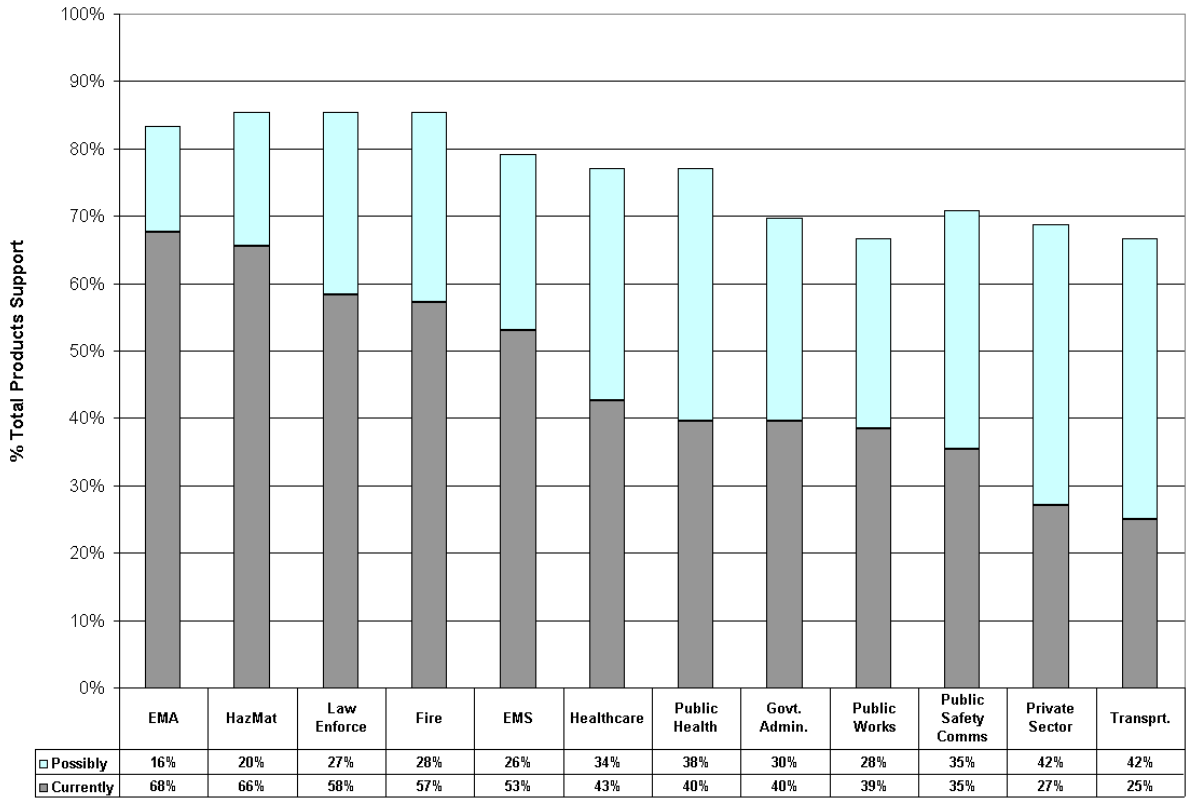


Figure 10. Functional Areas Supported

In rank order, they were Emergency Management Agency, HAZMAT, Law Enforcement, Fire and Emergency Medical Service (from 68 percent current support to 53 percent, respectively). At the low end of the support scale were Public Safety Communications, Private Sector, and Transportation, ranging from 35 percent current support down to 25 percent.

There may be several reasons for the apparent lack of products directed at PSC, the private sector, and transportation: a limited supply of such products in the market; evaluator judgment that existing products do not effectively or efficiently address such training; or a lesser need for products supporting these groups. This product gap should be evaluated in more detail to determine if the cause is based on a product shortage. If so, DHS might want to encourage product development in these areas.

c. ODP Training Levels Supported

As depicted in Figure 11, the largest share (75 percent current support) of MS&G products targets training or exercising at the planning and management level. The observation from the first two rounds of product reviews that awareness level training occupies the low end of the support range is demonstrated across the aggregate product

sample (only 26 percent of products currently support awareness level). The reason is not readily apparent why there are one-third as many MS&G products that address awareness as those that address planning and management. There may be several reasons for the apparent lack of awareness level training: a limited supply of such products in the market; evaluator judgment that existing products do not effectively or efficiently address such training; or a lesser need for products at this level. If a product gap in this area does exist, DHS may want to encourage product development in these areas.

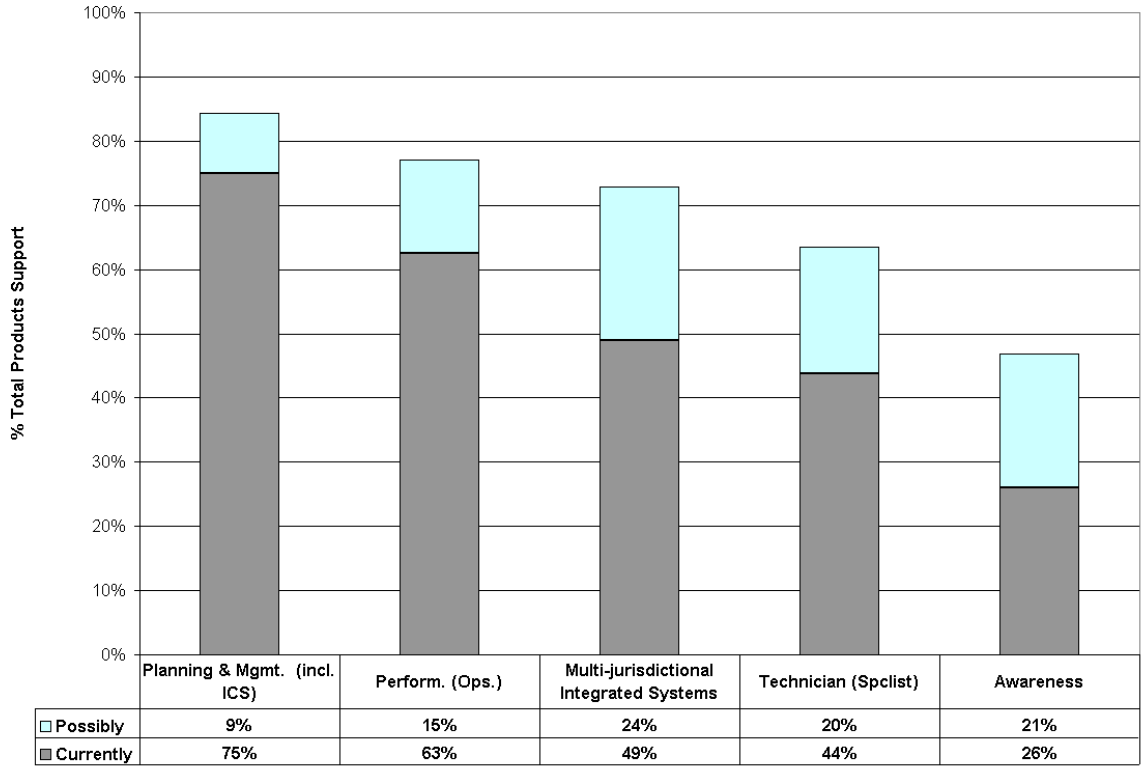


Figure 11. ODP Training Level Supported

d. Application Environment

Figure 12 offers the reader a sense of the spectrum of product types reviewed for this project. It shows the primary applications for the products reviewed. Unsurprisingly, products applicable to T&E make up the bulk (at 64 percent each) of the total, given that one of the main selection criteria was pertinence to WMD T&E. However, products normally associated with other uses were also part of the product mix, especially if they possessed attributes that were potentially applicable to ODP T&E.

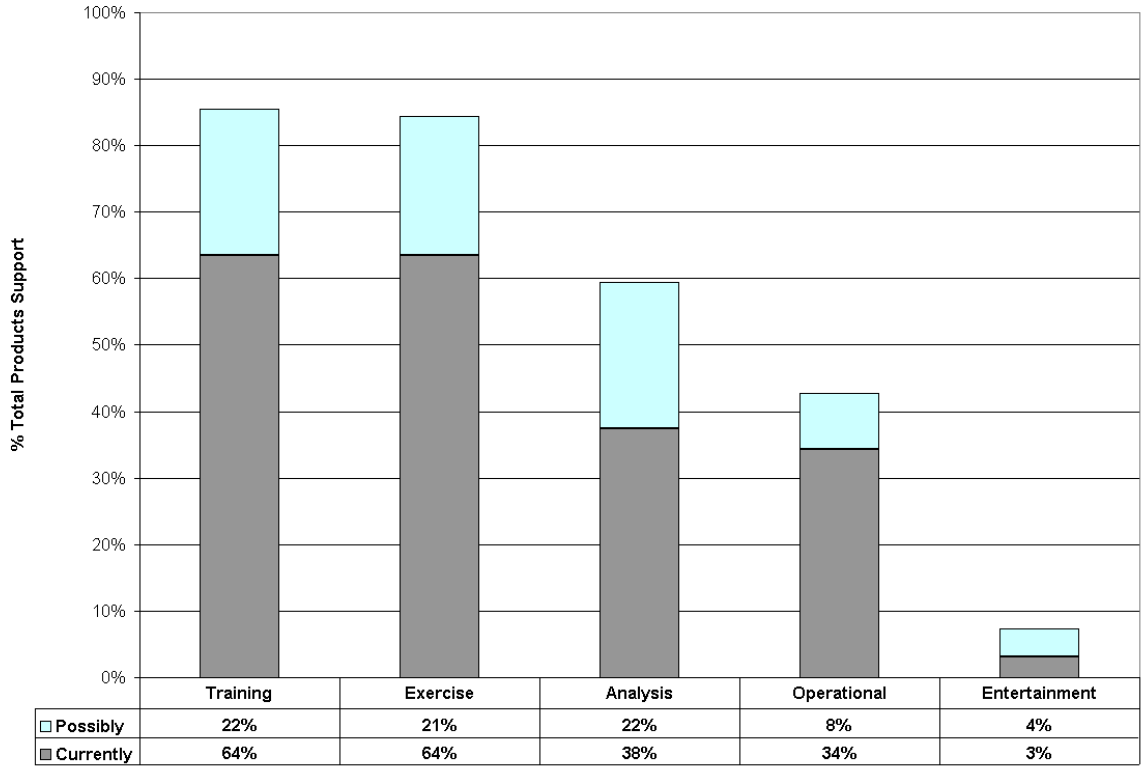


Figure 12. Application Environment Supported

e. Training Type Supported

The prevalence of MS&G products supporting different types of T&E is shown in Figure 13 below. Four of the top five T&E types are conducted today as F2F events: functional (command post) exercises, TTX, drills, and FSEs. These types of T&E require the collocation of learners, instructor/facilitators, training resources and facilities. Although the first responder community appears to prefer T&E delivered by SMEs, such types of T&E present difficulties in expanding the availability of domestic preparedness T&E nationwide. Anyone familiar with scheduling response personnel will recognize that coordinating the schedules of multiple trainees from multiple response organizations and jurisdictions is a significant challenge. Add to the equation the coordination of all other resources needed to fulfill an exercise plan, and it becomes apparent that such methods will not be wholly adequate for addressing the range of T&E needs and audiences throughout federal, state, local, and tribal governments; the private sector; and international entities. Different kinds of MS&G may be used in two ways: to support F2F T&E (e.g., using a simulation to adjudicate decisions in a functional exercise) or to conduct distributed T&E.

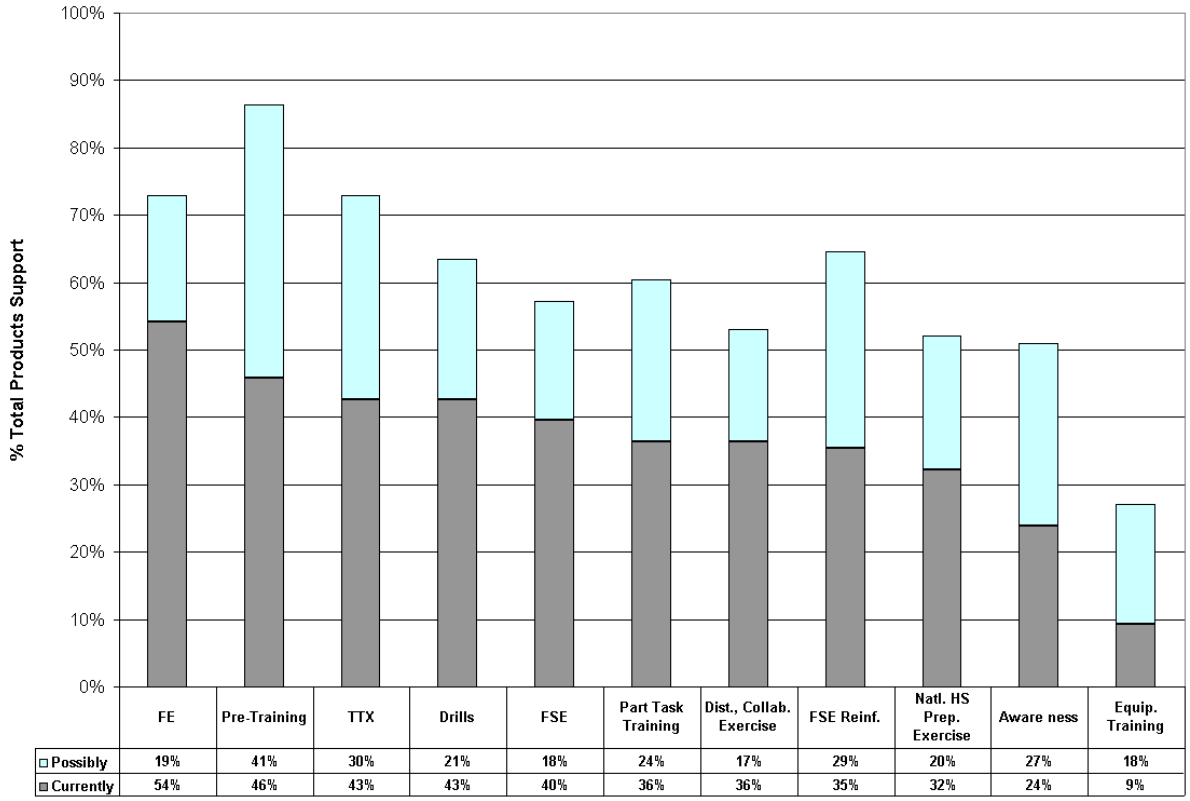


Figure 13. Training Type Supported

f. WMD Event Types Supported

The reviewed MS&G products most commonly supported threats that have been historically common in practice, namely chemical agent releases and explosions. The prevalence of current support for nuclear events was the lowest, at 44 percent of products.

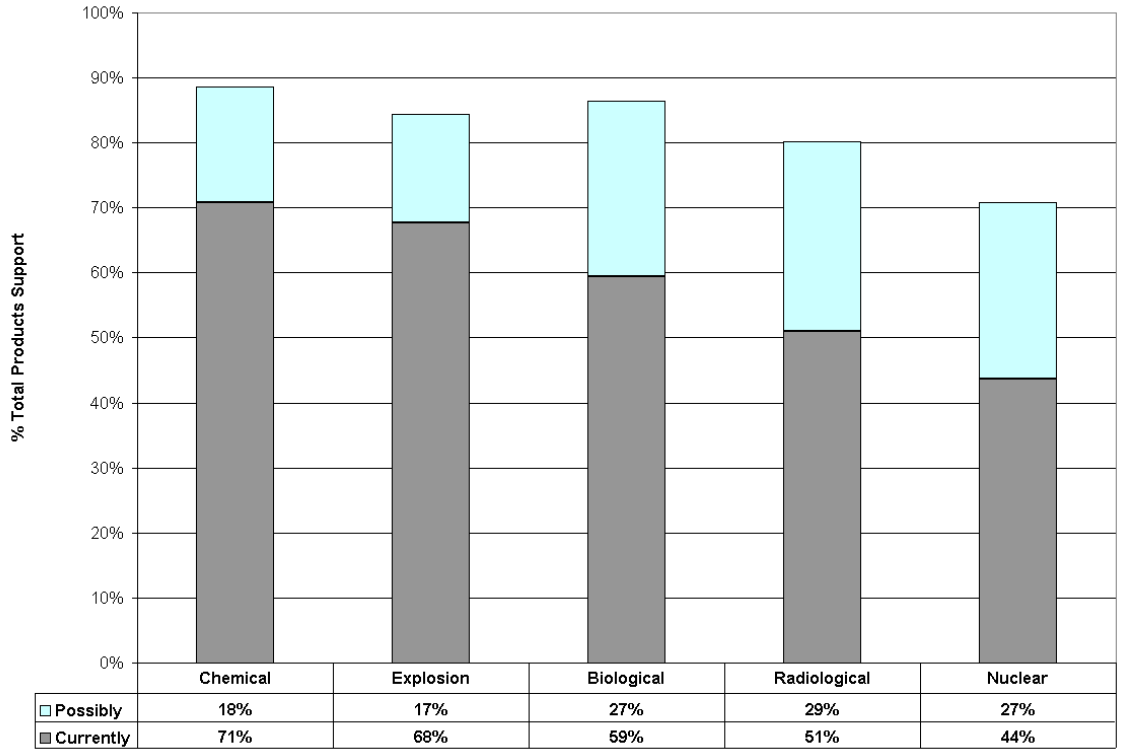


Figure 14. WMD Event Type Supported

MS&G product support for certain event types is an indirect indicator of the availability of such T&E. This indication could imply that the availability of training for low frequency/high value (radiological and nuclear) events may need greater attention. Several factors may contribute to the relative dearth of MS&G products that cover these areas:

- Expertise for radiological and nuclear devices and events is relatively limited. All products reviewed that contained nuclear prediction models, for example, were sourced from federal government organizations.
- Relatively few T&E requirements were found for radiological and nuclear types of WMD on which vendors could develop product designs.
- The time available for T&E extended events (those with lengthy recovery phases) is limited and likely affects the T&E design. For example, exercises are typically scheduled to consume between 4 and 8 hours of continuous contact time, and possibly run for 2 days. Traditional methods of T&E are incapable of adequately compressing recovery phase exercising into such a short time period.

- The impacts of low frequency/high value events on populational, environmental, infrastructure, and other systems are far-reaching and complex, complicating the design of such T&E.

Despite these challenges to improving availability of such T&E, it is precisely these types of events for which MS&G hold significant potential. Government validated predictive models exist that cover a wide range of threat types and MS&G and that are particularly useful in allowing time to be advanced much faster than real time, allowing planners, analysts, and learners to "see into the future" of a simulated event. Last, the interrelated effects of such events on human morbidity/mortality, behavior, health care systems, logistics/transportation systems, wastewater treatment and other systems can only be effectively modeled using simulations and federations of simulations.

T&E for Catastrophic Events

Models and simulations provide two key features for WMD event T&E:

1) **Predicting effects of weapons or agents on a regional scale.**
2) **Modeling events over extended time periods, including the recovery phase.**

g. MS&G Product Pricing

The nature of pricing data, tabulated in U.S. dollars, does not readily support "apples to apples" comparisons of product pricing. Difficulties in collecting and organizing pricing information included the following:

- Product sources were commercial, governmental (including military, national laboratories, agencies), a combination of commercial and governmental (e.g., DoD sponsorship of a commercial or academic developer), industrial, and/or academic consortia, often with unclear intellectual property or licensing provisions.
- MS&G products, as reviewed, consisted of either goods or services, or a combination of both goods and services.
- No baseline system configuration could be provided to vendors who would need to quote a system based upon user requirements.
- Many software products have different licensing schemes where price might be established by system installation, site installation, number of users, functional modules, upgrades, support fees and other variables.
- Vendors could generally only provide rough estimates for products requiring vendor customization of training content, scenario development, or terrain/location database development.

- MS&G product vendors typically could not provide pricing for third-party hardware or software required for system functionality.
- Some products were in developmental stages and did not have set pricing.

ThoughtLink's approach to analyzing pricing was to calculate product pricing per installation according to product categories (categories are described in Appendix D). Because installation pricing does not include upgrades for hardware, software, or services; extended warranties; or other optional services, the pricing analysis only provides a picture of comparative acquisition costs and does not provide a view of total ownership costs.[21]

Several reminders should be noted for interpreting the following charts:

- Some products are sourced from the federal government via technology transfer—for which the acquisition price was considered to be zero.
- The number of MS&G products in each category is not the same, where the sub-sample sizes range from 1 (Other Integrated T/E System) to 12 (Virtual Simulation).

Several analyses of pricing information were performed. The initial results are presented by product category to give an overview of the range of pricing. The chart below shows the average of the "potential" (maximum likely) prices per installation for like product types. These prices provide a sense of initial acquisition costs only. Given that the range of prices spans six orders of magnitude, prices are plotted on the vertical axis on a log scale. Maximum and minimum prices are shown by the vertical bars above and below each labeled average.

A quick interpretation of the chart, in which product types are sorted along the horizontal axis in ascending order by price, is that prices span a very wide range - from zero to well over 1 million dollars. The potential average installation price for about half of the product types is less than $15,000. Although there is wide variation in product prices, the overall trend in average price is clear—advanced technology is the most costly, while products distributed on mass media are the least costly. On average, commercially supplied Integrated Training/Exercise Systems (i.e., virtual simulation and equipment simulation) are the most expensive MS&G products.

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[21] Total ownership costs are more appropriate for evaluating "life time" costs of a product beyond acquisition and installation. It was beyond the scope of this project to ascertain total ownership costs for MS&G products.

At the low end of the price scale, Other Interactive T/E Systems (of which there was only one in the category) was an outlier, as this MS&G product is provided as a subsidized service of the Illinois Fire Service Institute. Apart from this category, Static Media (documents and presentations), and CD-ROM based Dynamic Media (self-guided training and entertainment) were the least costly MS&G products (composed of information, and lacking a hardware interface).

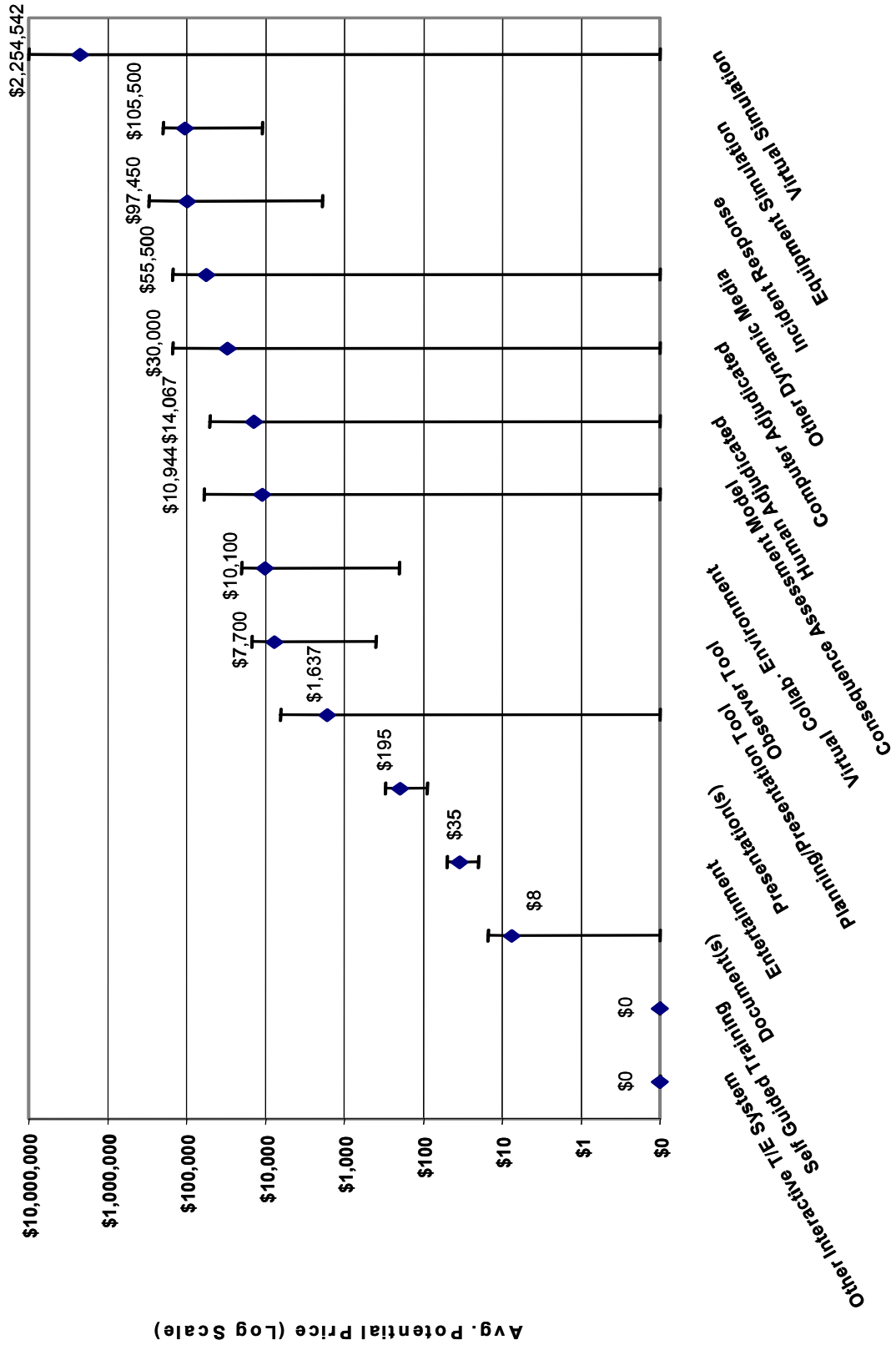

Figure 15. Average Product Category Pricing

By itself, the chart above indicates no relationship between pricing and causal factors. One potential relationship is charted below to demonstrate how the rise in product category pricing may correlate with the relative availability of "standardized" products (defined as - *"off the shelf" with functionality that is common to all target users. It neither requires the vendor to adapt the product prior to use nor supports significant user modification of functionality or content*). The chart below plots, on an inverted scale, the degree of product standardization within the product category (number of category products rated as standardized divided by the total products in category) with the same average prices by product category.

On the left-hand side of the horizontal axis are product categories that tend to be traditional mass-media (low cost, highly standardized). In the middle of the chart are categories that are not standardized (requiring customization by either user or vendor); and to the right are the most costly categories that exhibit slight to moderate levels of standardization. The conclusion is that price of product categories appears to be *somewhat* related to the degree of customization required for those product types.

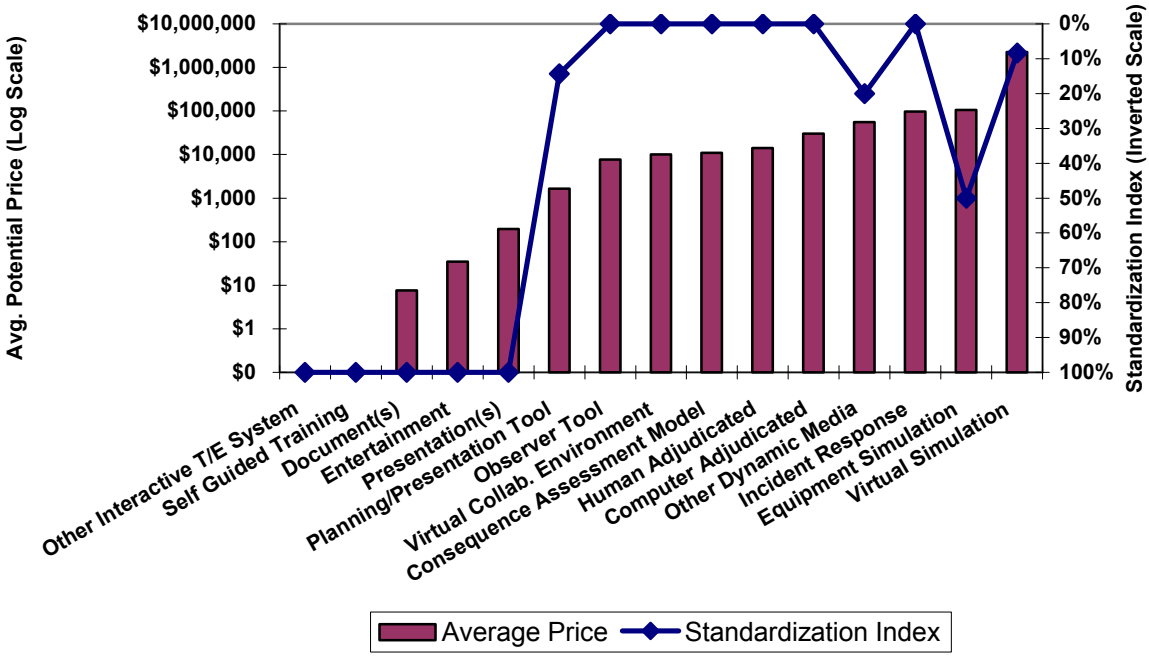

Figure 16. Average Product Category Pricing & Index of Standardization

The next relationship explored is how product category ease of use may relate to price. The following chart presents four variables: average product category potential

price (same as above) on the vertical axis plotted on a log scale; MS&G product ease of use on the horizontal axis; product category (bubble color), of which there may potentially be one per ease of use attribute; and the number of category products so rated (largest bubble = five products).

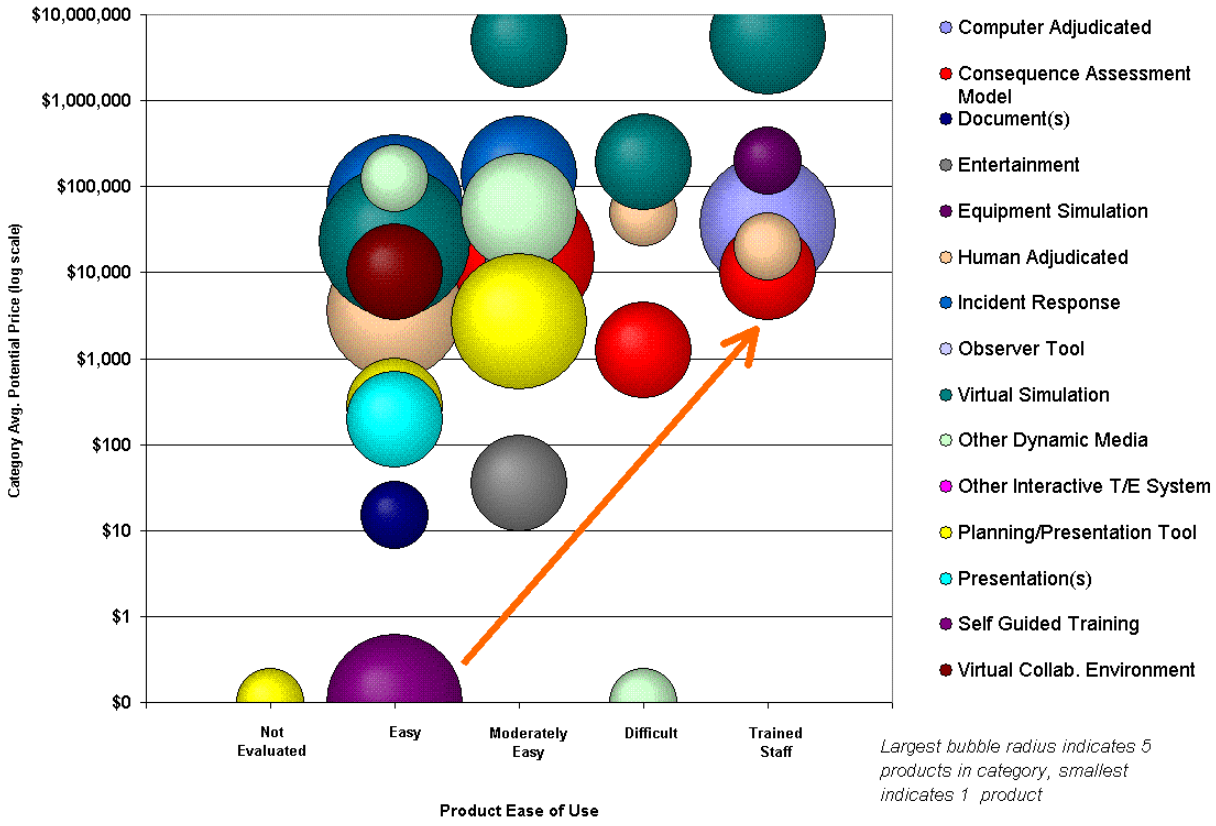

Figure 17. Average Product Category Pricing versus Ease of Use

The bubble chart shows that, although there is no direct relationship between price and ease of use (e.g., average prices for MS&G rated "Easy" span from free to $100,000), there appears to be a "price floor," which is depicted by the arrow. As product Ease of Use ratings increase from Easy, through Moderately Easy, and Difficult, to Trained Staff, the *minimum* average price tends to increase by one to one and a half orders of magnitude per increase in Ease of Use rating.

Finally, ThoughtLink performed statistical analyses between relevant attributes and potential price in order to more clearly identify those factors correlated with price. The product category identified as Integrated T/E System (Virtual Simulation) is the most related to a higher price. This likely results from the high prices of virtual simulation

products in the MS&G product sample. Price is positively correlated to vendor involvement in terms of product customization (e.g., database development) and the need for exercise support staff (i.e., they tend to raise price). Other factors appear related to technology adaptation: the use of communications capture technology, the potential to adapt MS&G to geo-specific locations for T&E, and recording user-specific performance. These technological factors determine the relative complexity of learning system interfaces.

The implications of the pricing analysis follow. The research demonstrates that product acquisition prices are substantially related to the complexity of the interface between learners and MS&G components. The research also demonstrates that the role of the federal government as a source of technology transfer is among the top factors affecting potential pricing. Learning system complexity is driven by a number of related factors:

- The degree to which organizations and individuals have learning requirements distinct from others (the diversity of T&E objectives).
- The need for human expertise (subject matter, T&E facilitation and observation, product modification, interface use).
- Adaptation of product technology (man-machine interface complexity, ability to model geo-specific locations, platform standardization).

Although MS&G components, particularly computer software and hardware, are responsive to the economies of scale brought about through mass production, training content is not similarly responsive. The desire to tailor T&E to given organizations, response protocols, local factors, and threat types has preempted the standardization of T&E content. Therefore, expertise is required to develop training scenarios and content and to translate this material into appropriate product formats. To date, there has been relatively little automation of the translation process, indicating that this segment of the technology market is still relatively immature. Therefore, vendor support is often needed before, during, and after T&E events—the service for which must be incorporated into the acquisition pricing of MS&G products. The automation of scenario and content generation may be something that DHS should look into in the future.

At the high end of the price range are virtual simulations with real-time event simulation engines presenting high fidelity 3-D graphics of geo-specific locations. At the other end of the range of products providing simulation are personal computer (PC) video games with virtual simulation engines presenting high fidelity 3-D graphics of generic locations—at a small fraction of the cost of the high-end systems. The games are mass-

market products in which advanced software technology is promoted through synergistic adoption of standardized computer hardware platforms (i.e., the IBM PC standard) and interface devices (keyboards, mice, joysticks, etc.). In short, the price of MS&G products (which is largely composed of computer hardware and software components) can be affected by scale economies through modularized content and standardized interfaces.

Because the trainee per capita cost of MS&G products will be a primary selection criterion, the DPC should develop a systematic approach to funding procurement of different types of MS&G products. To the extent that training content can be standardized (e.g., for awareness training), distribution of low-cost, mass-media products can help to broaden the reach of national T&E programs. On the other hand, costly specialized systems should be deployed in a manner that allows an organization or multiple organizations to amortize the investment over a large number of trainees using regional training centers.

Lastly, MS&G technology from federally funded programs is a rich resource that the DPC should tap for T&E. While it was beyond the scope of this project to investigate details of interagency technology transfer, ThoughtLink's research suggests that a uniform federal policy guiding the procurement and deployment of such technology would significantly benefit the domestic preparedness community. Given the range of existing, unclassified public sector products and related initiatives, there are opportunities for the federal government to help minimize T&E product acquisition costs while enhancing standardization. Recommendations concerning these issues will be addressed in the roadmap (spring 2004).

F. HOW DO MS&G FIT INTO T&E?

The first part of this section provides guidance for choosing among the different classes of MS&G, based on ThoughtLink's product review and requirements analysis. It presents advantages and disadvantages of types of MS&G and examples of their use. This discussion is intended to answer the questions:

- What types of products are available to assist the domestic preparedness community in T&E?
- How are the products used?
- What criteria are useful for product selection?

The second part of the section provides the results of an analysis comparing reviewed products against training gaps identified in an earlier ODP study.

F.1. PRODUCT SELECTION GUIDANCE

This section offers constituents of ODP T&E programs an overview of MS&G product advantages and disadvantages, considerations for product selection, and examples of their use for domestic preparedness T&E. The products have been grouped into 15 categories based on product attributes.

Ideally, the data used in this analysis would be made available to the DPC in an easy-to-use format. Currently, external use of the data is not feasible as it is not in a format readily usable by the DPC (e.g., data resides in two databases that require some expertise to link together). Should ODP commission the development of an electronic DSS, users would be able to either enter requirements (e.g., "I'm looking for T&E alternatives to train EOC members and my budget constraint is $1,000") and find relevant products; and/or to review products and see the related requirements they can train and exercise. Users might also access important data such as cost, availability of AAR, degree of customization, etc. Until such time, this analysis provides insights on how different product categories might be used for DP T&E.

a. Product Category Descriptions, Advantages, and Limitations

This section highlights the various categories of products—their advantages and limitations, as well as their characteristics. Once the reader identifies a product category of interest, he or she can check on specific products listed in each table by cross-referencing the acronym to the product summaries in Section G or the full product reviews on the CD-ROM published with this report.

All but one of the 15 product categories are summarized in two pages each. The category of Interactive T/E System (Other) was not included as it contained only one product: ERTB. Information about ERTB can be found in Appendix G or on the accompanying CD-ROM.

The left-hand page describes the kinds of exercises for which the product category is most typically used, examples of its use, and the advantages and limitations of the category. The right-hand page graphically depicts the presence and absence of what are termed Advantageous MS&G Features for each category. The absence/presence index charts provide a visual indication of the likelihood that a given class of products can support certain functions. The discussion for the first product category, Multi-Learner Exercise (Computer Adjudicated) describes this type of chart in more detail. The Advantageous MS&G Features used in this analysis are derived from ThoughtLink's field research and review of NLD exercises and are listed below.

Important Note: The charts describe features present or absent in the specific set of products included in this review. This does not imply a cause-and-effect relationship or indicate that the category cannot be used for other types of T&E. In fact, other products not reviewed in the same category might supply features missing in the product sample ThoughtLink reviewed. The charts are included because they give a quick overview of typical product characteristics, but they should not be viewed as defining the category.

The Advantageous MS&G Features used in the charts are:

- Active Decision Making—to stimulate learner engagement and retention of learning.
- Computer Simulation—to provide some of the advantages listed in Section B.3., including modeling WMD effects, dynamic scenario progression, decision adjudication, etc.
- Records Specific Performance—to isolate learning points and improve learner feedback, encourage individual and team performance, provide for learner

certification processes, and allow analysis of aggregated results to improve the T&E program and to feed into development of best practices.

- Distributed/Collaborative Decision Making Environment—to provide an alternative, asynchronous means of communication and coordination for T&E of learners with constrained schedules or travel.
- Enhanced Communications T&E—to focus on improving communications between learners or teams of learners.
- Info Sharing Auto-Recorded—to assist in identifying communications issues by tracking information flows between individuals and/or teams to improve AAR.
- Remote Observation—to allow observers to monitor T&E without interacting with learners and participants as a means to avoid interfering with or biasing learner behavior.
- Pre-Training—to prepare participants and learners prior to an exercise as a means of improving the overall effectiveness of such events.
- Part-Task Training—to isolate and train sub-tasks of more complex tasks and missions.
- Hospital T&E—to focus specifically on WMD victim health care.

b. Summary

In summary, analysis of aggregate product category absence/presence ratings suggests that different types of MS&G products are candidates for addressing some of the challenges observed in the NLD exercise program. One result common across all product types is the relative absence of products that address hospital T&E. Recommendations on this point and other observations will be addressed in the roadmap to be published in spring 2004.

Hospital T&E Needs Attention

Research of 100 products found a relatively low incidence of MS&G training or exercising content focused on health care of WMD victims.

The two-page category summaries are arranged in the following order:

Top-level Category	**Sub-category**
Multi-Learner Exercise	Computer Adjudicated
	Human Adjudicated
Interactive Training / Exercise System	Equipment Simulation
	Virtual Simulation
	*
Operational System	Incident Response
	Virtual Collaborative Environment
Dynamic Media	Consequence Assessment Tool
	Planning/Presentation Tool
	Self-Guided Training
	Observer/AAR Tool
	Entertainment
	Other
Static Media	Presentation(s)
	Document(s)

* The subcategory Other Training/Exercise System is not included in the set due to the inability to generalize observations from a sample size of one product.

Product Type:	Multi-Learner Exercise (Computer Adjudicated)
Surveyed Products:	EPI, JANS, JCAT, JTLS, SEAS, SPCM

Example of T/E Use: Alexandria, VA Emergency Management used the EPiCs simulation in a functional exercise to simulate a terrorist attack on a Federal courthouse. EPiCs creates a synthetic environment for commanders to exercise decision-making skills. The simulation models response resources in order to adjudicate decisions. Trained contractor support teams input instructions from field supervisors. Commanders (the primary training audience) are in a simulated command post in a different room, and do not interact directly with the simulation. Instead, they use real-world communication devices to issue commands and to receive situation reports from the field supervisors in the simulation room. Sergeant Joe Watson of the Alexandria, VA PD, who worked with the contractor to develop the scenario said: "It was real. They got to test what they knew."

	Advantages	Limitations
Who	• Can exercise small and large teams • Encourages active learner participation and interaction • Allows for opportunity to network, build relationships, and share information	• Not suited for entry-level training • Not cost effective for training or exercising individuals
What	• Models WMD events • Allows for changeability of scenarios (stimulus) and outcomes • Scenarios can be tailored to specific municipality features • Scenario content can be modified to incorporate new T&E content • Often emphasizes command, control, and communications	• Typically does not address equipment or hands-on T&E
How	• Involves learners in active decision-making • Simulation improves realism of threat modeling and learner behavior adjudication • Scenario events playback for AAR • SMEs facilitate exercise and AAR	• Learners must typically travel to the exercise event • Use of SMEs adds to cost
Where	• All participants do not need to be collocated • Simulation typically runs on a Local Area Network • Adaptable to most exercise locations	• Travel expense incurred for learners who need to be physically collocated at exercise • Security and technical issues typically prevent operation over the Internet
When	• AAR materials may potentially be distributed for individual learning apart from the exercise • Simulation prevents need to pre-empt use of public infrastructure and resources	• Concurrent participation requires learner schedule coordination • Single events • Often last for 1 or several days, requiring coverage for participant normal duties

Multi-Learner Exercise (Computer Adjudicated)

Bars on the left-hand side represent the percentage of computer adjudicated exercise products rated as *not supporting* the given feature divided by the total number (n = 6) of computer adjudicated exercise MS&G products. The right-hand bars display the same calculation for attributes that are *currently supported*. The chart gives a graphic representation of the strengths and weaknesses of one of the product categories, Computer Adjudicated Exercise, for potential application to T&E. The findings show that the six products in the Computer Adjudicated Exercise category, generally speaking, have strong potential to involve learners by engaging them in active decision making (as opposed to passive learning), and (by definition) to support determination of the probable outcomes of learner decisions using computer simulation. Features not supported in this particular product sample are part-task training and hospital T&E. Again, it is important to clarify that the absence of certain features in the six-product sample reviewed does not necessarily imply that Computer Adjudicated Exercises are inappropriate for Part-Task Training or hospital T&E—this chart is simply describing the particular products reviewed.

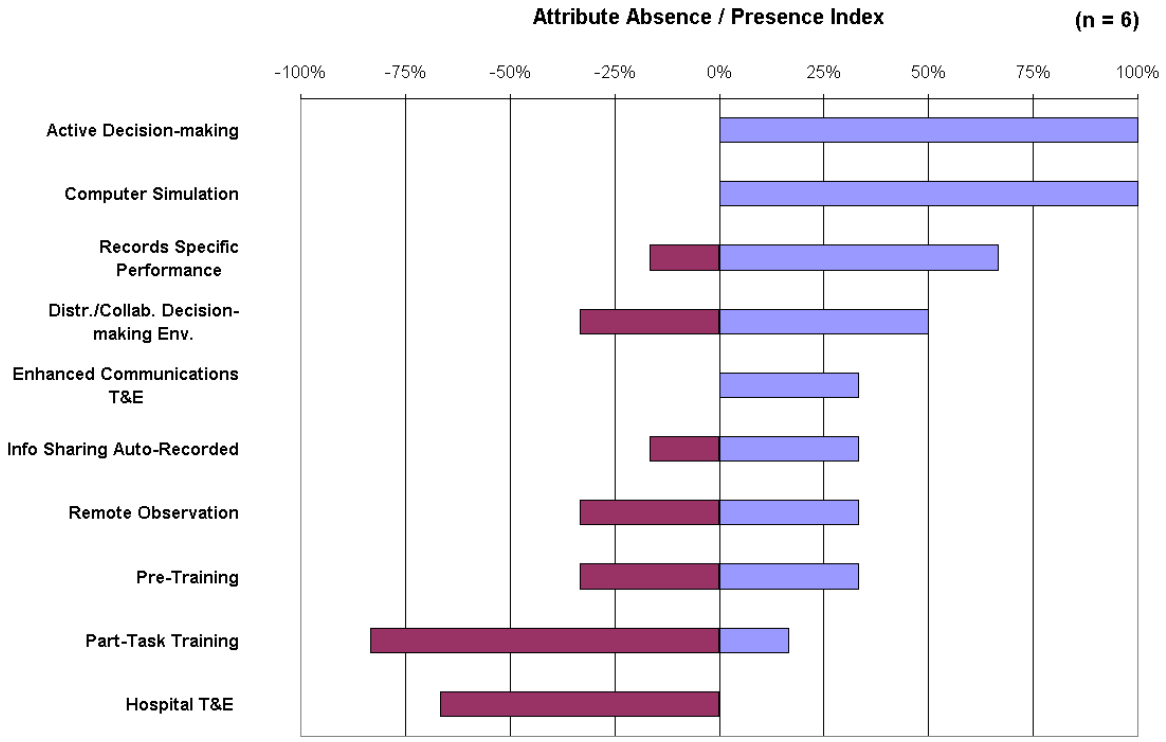

Figure 18. Presence/Absence Indices for Advantageous MS&G Features for the Category: Computer Adjudicated Exercise

Product Type:	Multi-Learner Exercise (Human Adjudicated)
Surveyed Products:	ATS, MLD, MMTE, MINV, NSN, SLRY, FORT, HRAM

Example of T/E Use: Products in this category are used in seminar-style exercises that emphasize decision-making, such as TTX and functional exercises. A facilitator initiates an emergency scenario, to which participants must make decisions and direct resources to effect response. People collaborate with each other in groups that may be F2F (e.g., MLD) or completely distributed (e.g., SLRY) or a mix of both (e.g., NSN). By their nature, these products rely heavily on SMEs for scenario design, post-exercise feedback, and especially for adjudication of outcomes and determining scenario event sequencing and probabilities (unlike Computer Adjudicated Exercises, in which computer programs primarily perform this function).

	Advantages	Limitations
Who	• Suited for exercising decision makers (planning and management level) and government officials • Allows for opportunity to network, build relationships, and share information	• Not suited for entry-level training • Not cost effective for training or exercising individuals
What	• Flexible support for different WMD types • Support for formal and informal interaction between people or groups • Potential to simulate stress and psychological fidelity • Focus on communication and team skills • Scenario content can be readily modified to incorporate new T&E content	• Typically does not address equipment or hands-on T&E • WMD weapons effects may not be adequately represented without computer simulation
How	• Involves learners in active decision making • SMEs provide feedback to learners • Exercise/measure individual and team tasks • Models and simulations improve scenario fidelity and assist learners in visualizing event • No specific equipment is needed	• Usually requires a high ratio of facilitators and SMEs to learners • Facilitator competence and skill directly affects learner benefits • Participant debriefing is required for AAR • Performance evaluation may lack objectivity (qualitative and non-comparative evaluation) • Not conducive to performance measurement testing
Where		• Participants may incur travel costs to attend the same event in the same place • Does not support distance learning
When		• Participants may incur travel costs to attend the same event at the same time

Multi-Learner Exercise (Human Adjudicated)

The main observation for Human Adjudicated Exercises (n=8), primarily used for TTX, is that they tend to provide active learner decision making but not to recording of user-specific performance or remote observation. Neither Computer Adjudicated Exercises nor Human Adjudicated Exercises appear to be a common way to train or exercise hospital focused objectives.

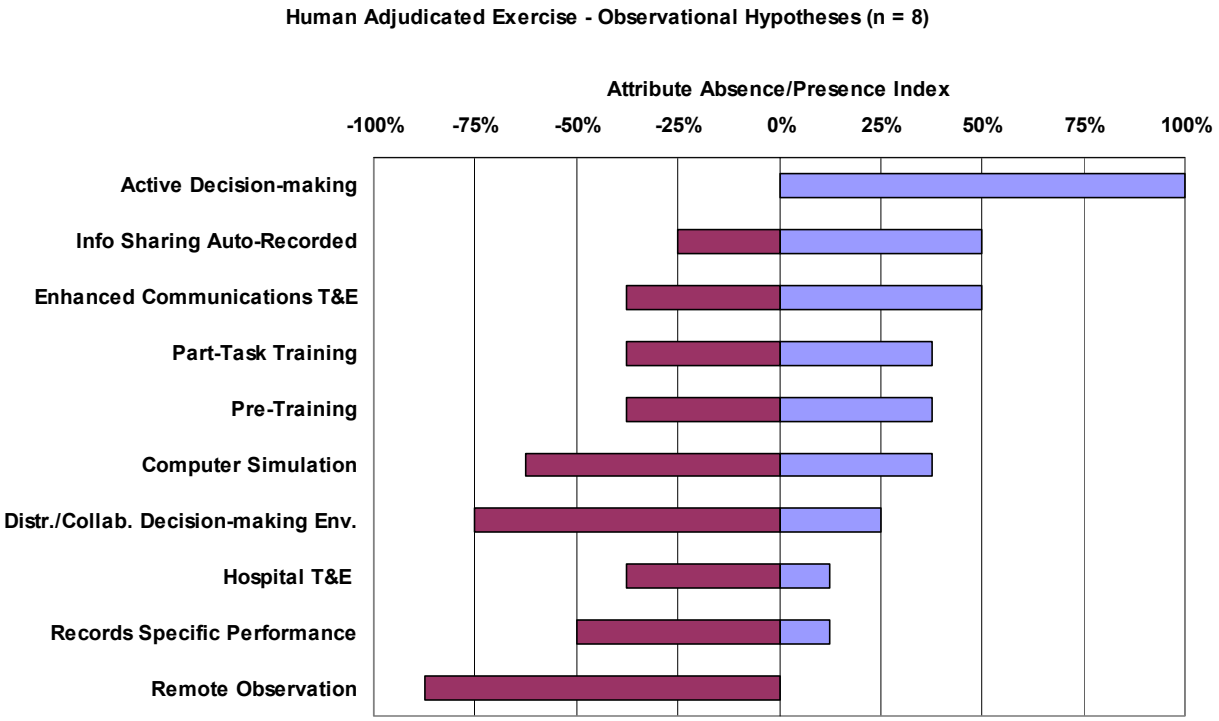

Figure 19. Presence/Absence Indices for Advantageous MS&G Features for the Category: Human Adjudicated Exercise

Product Type:	Interactive T/E System (Equipment Simulation)
Surveyed Products:	CMSM, HPS

Example of T/E Use: The Human Patient Simulator (HPS), one of the products in this category, is a sophisticated mannequin that can display a variety of symptoms to biological, chemical or radiological agents, and respond to simulated medical treatments. For example, it can be used by hospitals to train administration of anesthesia, using feedback via the mannequin's reaction to anesthetics (e.g., shallow breathing, dilated pupils). This product can be used for realistic T&E of low frequency scenarios associated with WMD in a manner that cannot be achieved by actors with scenario cards, or inanimate mannequins.

	Advantages	Limitations
Who	• Generally suited to first responder disciplines • Can be used individually or in teams • Can be used for basic, introductory training levels	• Typically not suited to large teams or interagency T&E
What	• Suitable for pre-training (prior to FSE) • Suited for WMD agent exposure T&E • Typically has application for concepts and skills to typical job challenges	• Typically not oriented to command, control, and communications T&E
How	• Hands-on learning involving equipment or mock systems • Simulation functionality provides dynamic learning conditions (stimuli) • May provide automated data summary • Train-the-trainer techniques used	• Generally instructor-led T&E, limiting the potential for self-guided learning
Where	• Typically portable devices can be transferred between training locations • Dedicated space is not necessary for the systems	• Does not support distance learning • Requires space of varying size, depending on T&E objectives
When		• Instructor and learner schedules must coincide

Interactive T/E System (Equipment Simulation)

These products, typically referred to as "simulators", substitute mock systems for real systems. The two products in this category support active learner decision making and record user-specific performance. The products in this sample support part-task training, but typically do not support remote observation or distributed/collaborative decision making. The equipment simulation products reviewed also were not oriented toward enhanced communications T&E or toward recording of learner information sharing.

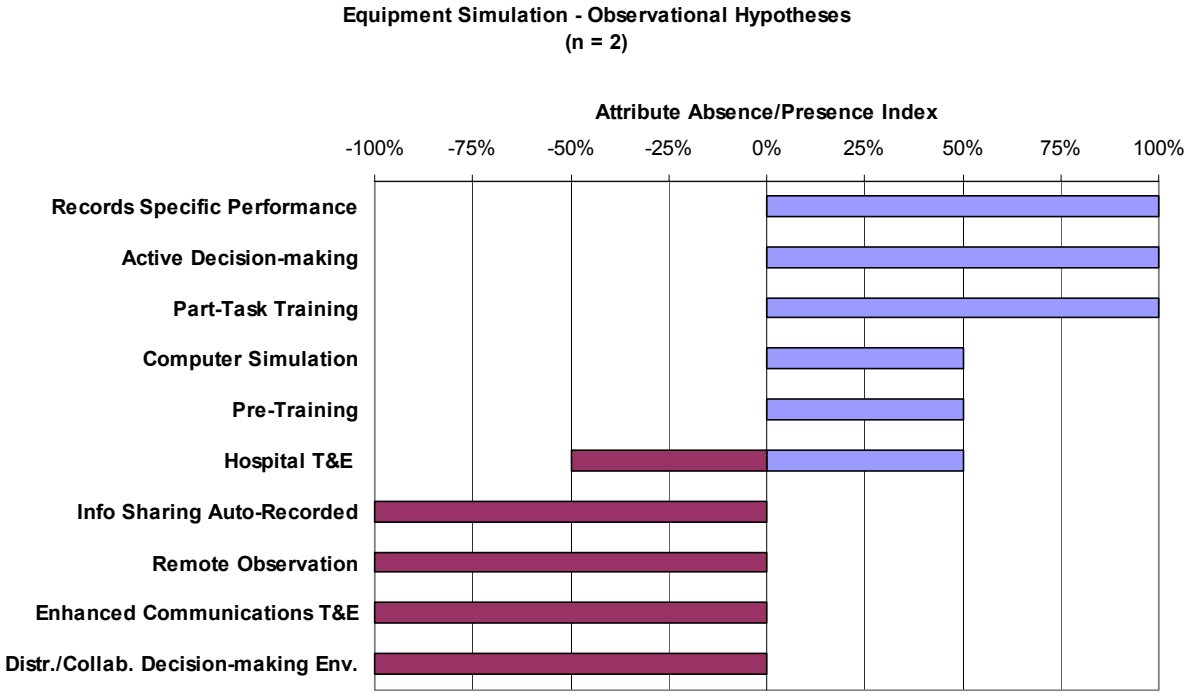

Figure 20. Presence/Absence Indices for Advantageous MS&G Features for the Category: Interactive T/E System (Equipment Simulation)

Product Type:	Interactive T/E System (Virtual Simulation)
Surveyed Products:	NBC, VER, AEAS, BSMR, CRTS, EGLD, GEC, SVZC, SVZS, SVZT, STC, TTR, WDAC, ADMT, ADM1, ADMV, FSC, PIRF, VTRA, VCLC

Example of T/E Use: Two of the advantages to this product category are that T&E are typically specific to a functional role and specific to a location or emergency context. The WMD Decision Analysis Center (Sandia Labs) is such an example. The bio-weapon version of this computer-based simulation has the learner fill the role of a California county or state public health officer who is tasked with detecting an anthrax outbreak by analyzing hospital records. The transmission of anthrax is scientifically modeled, first as an airborne plume, and second using a populational disease transmission model superimposed on actual health data. Upon detecting the disease, the PHO role player must then decide when and how to obtain and deliver Strategic Pharmaceutical Stockpile drugs within a geo-specific region. Relative measures of decision-making effectiveness are obtained through cumulative mortality and morbidity tallies over simulated (fast) time. The WMD-DAC has been used in the San Francisco bay area as a driver (inject and adjudication engine) for several county EMA functional exercises.

	Advantages	Limitations
Who	• Typically supports individual T&E • Often supports first responder disciplines (e.g., law enforcement, HAZMAT, EMA) • Supports intermediate learner levels	
What	• Training skills for events that would otherwise be too costly or dangerous to replicate in the real world • Suited for improving skill levels	• Content often must be developed to customer specifications (e.g., threat scenarios, terrain/location databases)
How	• Computer-based multimedia interfaces provide dynamic learning environments (stimuli) using simulation • Allows for repetition for skill improvement • Automatic data summary (scenario capture) • Records user-specific performance • Involves learners in active decision making • Replaces live hazards with virtual hazards • Replicates geo-specific/geo-cultural locations for T&E	• Advanced technology simulations are typically the most expensive type of T&E system
Where	• Typically use COTS computer systems • Typically hosted on a Local Area Network, allowing for limited distributed learning	• Generally suited to dedicated fixed or mobile training facilities
When	• Degree of schedule coordination is typically less than for Multi-learner Exercises	• Scheduling involves coordinating controller and learner schedules

Interactive T/E System (Virtual Simulation)

This category generally refers to computer-based systems that provide interactive training using multimedia. The products in this category (n=20) appear to support active-learner decision making and record user-specific performance. Virtual Simulation products were found to generally support pre-training for exercises. Based on the reviewed sample, these products typically do not support remote observation or distributed/collaborative decision making.

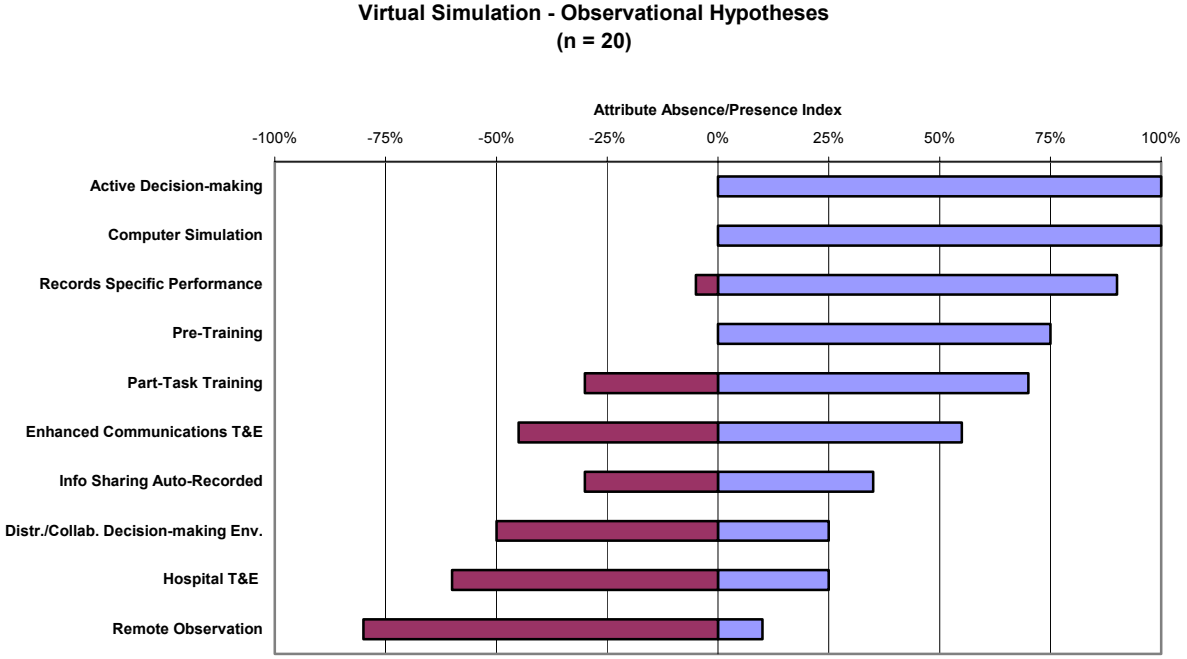

Figure 21. Presence/Absence Indices for Advantageous MS&G Features for the Category: Interactive T/E System (Virtual Simulation)

Product Type:	Operational System (Incident Response)
Surveyed Products:	CRI, CMS, PIS, ADPR, ETM, OPSC, RAM, SOFR, WEOC, EM2K, FMIS, GSUT, SCRB, SERS, VIGI, WEMS

Example of T/E Use: The products in this category provide decision support and communications for managing response to emergencies. Many include a training mode that can support functional exercises. For example, CRISIS is a networked computer system that supports both real-world incident response and command post training modes. Teams of 10 to 25 learners can participate in T&E for a range of natural and man-made disaster scenarios, using such tools as Geographic Information System maps, plume models, incident logging functions etc. Response strategies can be studied, and learner team performance can be measured in terms of (modeled) resources expended, frequency of communications, and (modeled) damage mitigation. The simulation component allows exercises to be rerun or replayed to study alternative decisions, and assist in providing AAR.

	Advantages	Limitations
Who	• Supports small and large teams of concurrent learners/users	
What	• Focuses on operational response • Trains/exercises communication and team skills • Suited for incidental T&E (does not require development and can cover 'current' events) • Contributes to knowledge management • Standardization of data collection	
How	• Dual operational and T&E use involving instructor/facilitator guidance and AAR • Training of system use can be incorporated into job training • Automates the capture and storage of learner/user information sharing • Supports distributed/collaborative decision making	• Need for instruction/facilitation generally increases cost • Care must be taken to distinguish T&E practice from actual operations (including visual cues, database interlocks, etc.)
Where	• Typically installed at dedicated sites (e.g., EOCs, dispatch centers, hospitals), allowing exercise and operations to use same space • Site can be duty station of learners	• Ongoing operations may preclude system use for T&E
When	• Use of such systems can reduce travel time if learners do T&E at duty station	• Ongoing operations may preclude system use for T&E

Operational System (Incident Response)

The hallmark of Operational Systems is automatic recording of information sharing among users. They are also strong in potential use for enhanced communications T&E and distributed/collaborative decision making. These results, however, are partly a result of how this subcategory was defined. Nevertheless, Incident Response Systems (n=16) and Virtual Collaborative Environments (n=3) provide functionality to help improve communications—one of the main concerns of emergency personnel at all levels. These systems, however, are not particularly suitable for part-task training or hospital T&E.

Operational Systems Track Communications

Incident Response Systems and Virtual Collaborative Environments demonstrate good functionality for tracking communications between users. Automated recording of communications can be used for AAR analysis for T&E, and audit trails for operations.

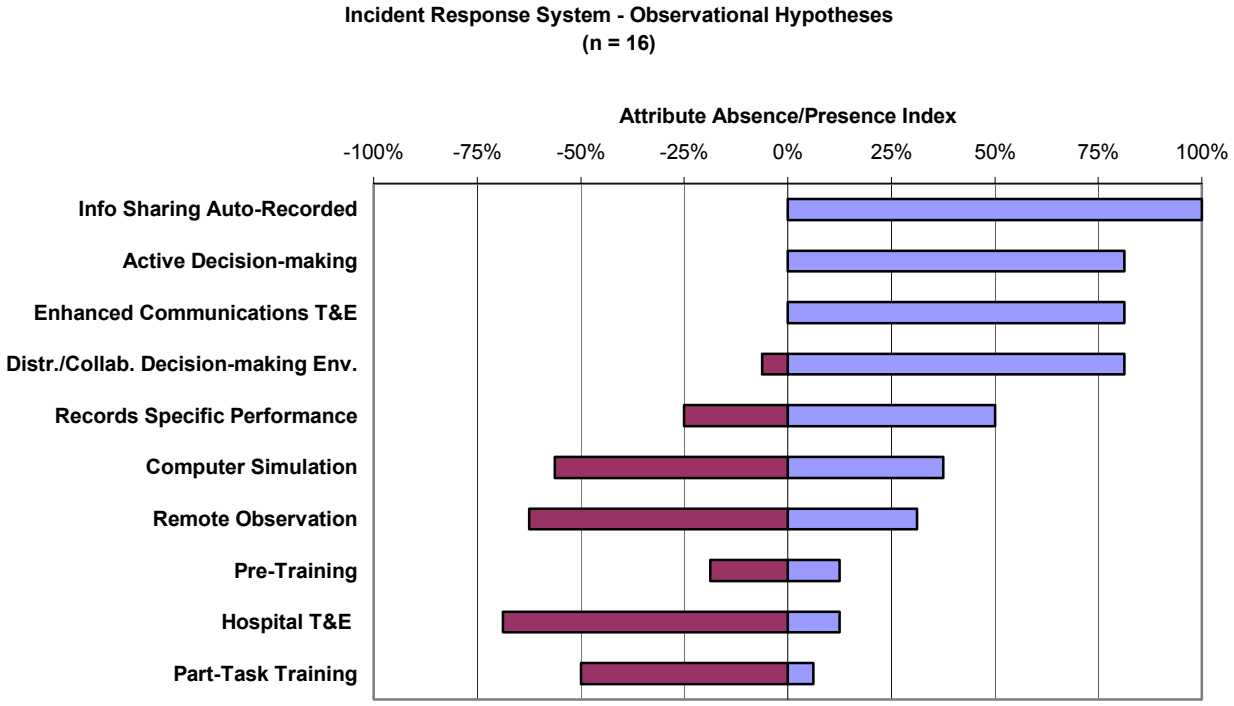

Figure 22. Presence/Absence Indices for Advantageous MS&G Features for the Category: Operational System (Incident Response)

Product Type:	Operational System (Virtual Collaborative Environment)
Surveyed Products:	GRV, ERUM, XYB

Example of T/E Use: These products allow groups to work from multiple physical locations, communicate with each other electronically, and maintain mutual situational awareness. Communication features vary by product, but typically include: text chat, email, and voice communication over a LAN or WAN. DHS, for example, is incorporating Groove, peer-to-peer collaboration software, into the Homeland Security Information Network for intelligence sharing among Federal and state agencies. Groove allows geographically separated computer users to share information, revise documents collaboratively, and maintain situational awareness of team activities across distributed locations. While the functionality supports routine operations, it also provides a medium through which instructors and learners can participate in remote events. This type of collaborative environment can be used to plan T&E and collaboratively develop training scenarios. It could also be used as a T&E environment by providing information and having the real-world participants discuss in a distributed environment how they would react, what plans are in place, what resources would be used, etc.

	Advantages	Limitations
Who	• Suited to small and large teams and multi-agency coordination tasks • Can be used by intermediate and advanced users who have regular access to a computer • Could be tailored for senior-level officials who have minimal time for travel or T&E	• Software licensing is often priced on a per-user basis, providing no or stepped scale advantages • Typically not appropriate for entry-level learners with limited computer skills
What	• Tool for improving or maintaining situational awareness • Provides a medium for collaborative decision making • Suited for incidental T&E (that does not require development and can cover 'current' events) • Can potentially be used for improving exercise communications • Can be used for a T&E planning tool	• Content is developed and supplied by the system users
How	• Real-time information sharing across geographic areas • Multimedia (usually Web page) based user interface • Automatically records learner/user information sharing	
Where	• Geographically distributed use • Enables distance learning • Typically hosted on Local and Wide Area Networks and the Internet	• Each learner needs access to a computer linked to the network
When	• Provides for synchronous and/or asynchronous communications between users	

Operational System (Virtual Collaborative Environment)

Virtual Collaborative Environments refer to networking software or hardware that allows geographically separated workers or learners to interact via computers connected to a Local or Wide Area Network (e.g., the Internet). Products in this category typically track information sharing by participants within the collaborative environment (e.g., chat, emails, file transfers), thus they support automatic recording of information sharing. Since participant interaction drives the product's use, products in this category are associated with the enhanced communications feature. Products may or may not allow remote observation of participant actions. These products do not dome with content or a simulation.

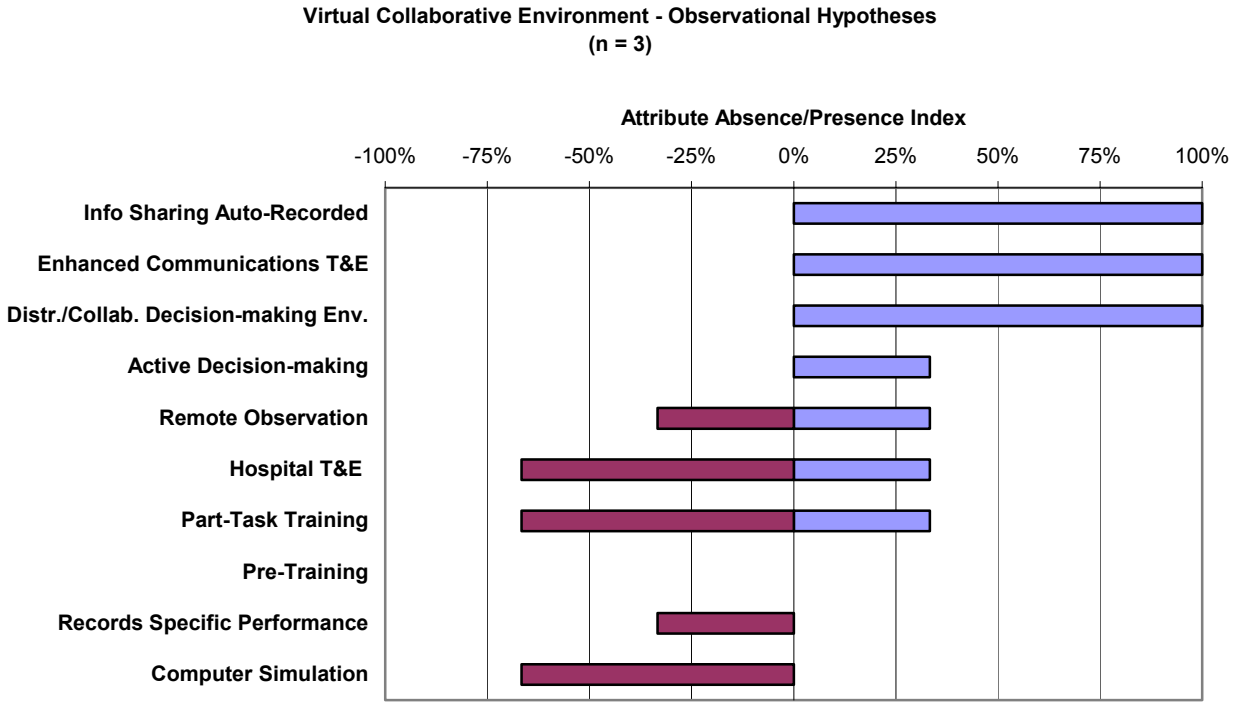

Figure 23. Presence/Absence Indices for Advantageous MS&G Features for the Category: Operational System (Virtual Collaborative Environment)

Product Type:	Dynamic Media (Consequence Assessment Model)
Surveyed Products:	ADFR, CJJC, HPAC, HYP, MIDA, PEGM, QUIC, RAMS, S3, ALO

Example of T/E Use: The Asymmetric Warfare Initiative – 03 was an exercise that incorporated WMD in a civil/military scenario of events involving numerous federal, military, state, and local governmental and public safety organizations. Since WMD events are significantly affected by the weather, meteorological expertise was required during the exercise. The scenario involved Ventura County (CA) Fire Department HAZMAT response to a chlorine gas incident. Weather and plume modeling provided inputs to the exercise participants – both first responders and commanders. The Hazard Prediction Assessment Capability (HPAC) was used to generate plume predictions based on weather inputs, and then displayed using CATS-JACE (CJJC). This system provided a means to disseminate and display gas plume results and projected impacts on the local population to all responders in the Incident Command Post.[22]

	Advantages	Limitations
Who	• Applies to planning and management levels of learners • Supports incident managers and decision makers in EMA and HAZMAT disciplines	
What	• Models WMD dispersion and effects • Suitable for pre-training (prior to FSE) • Suitable for changing T&E scenarios or environmental conditions	• Models are typically sensitive to initial conditions and source terms • Real-time, local weather conditions are needed for accurate predictions • Few models provide uncertainty or confidence interval information
How	• Can help adjudicate effects of WMD in exercises • Can be used as classroom media by instructor/SME • Provides dynamic, probabilistic modeling of complex events • Involves the user in active decision making	• Instruction is necessary prior to operating most models, limiting use for self-guided training
Where	• Can be used on most COTS computer systems • Some models can access weather information via Internet	• Most models operate on standalone computer systems limiting use in distributed/collaborative decision-making environments
When		

[22] Borgen, J., Dorn, R., McClung, T., McNitt, J., Dumont, R., and Evans, C. (2004). Post Exercise Report on Operational Meteorological (METOC) Support for Weapons of Mass Destruction (WMD) Events During Asymmetric Warfare Initiative – 03 (AWI-03).

Dynamic Media (Consequence Assessment Model)

This category refers to computer algorithms and graphical interfaces that predict and display the probable outcomes of man-made and natural disasters within a geographic region. The chart for Consequence Assessment Models (n=10) is unlike most other charts in having a large set of attributes with no presence/absence ratings. This is because such attributes were rated as not applicable or "possibly supported" because such models are not generally used as *primary* T&E media. Typically, these products are used as a supplemental input to T&E, and are not the sole focus of training or an exercise. Consequence Assessment Models require the user, at a minimum, to input initial conditions (source terms), and therefore require active user decision making. While they are computer simulations, they do not provide functionality that automatically records information sharing among users.

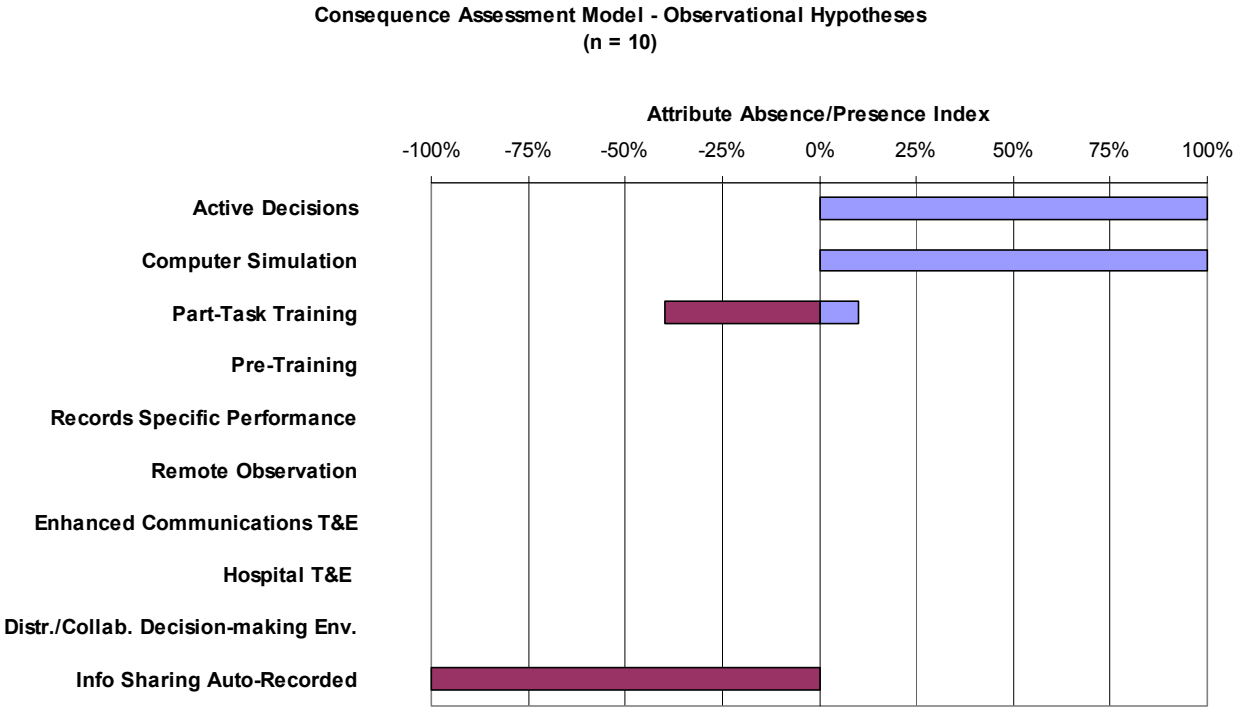

Figure 24. Presence/Absence Indices for Advantageous MS&G Features for the Category: Dynamic Media (Consequence Assessment Model)

Product Type:	Dynamic Media (Planning/Presentation Tool)
Surveyed Products:	ERSM, FS2, BTC, ESP, JDPS, MRPL, SMFX

Example of T/E Use: At the 2003 Firehouse Expo, Baltimore, MD, instructors John Mittendorf, LAFD (ret), Paul Stein, Santa Monica FD (ret) led a seminar titled "Developing Fireground Strategies and Tactics" using Fire Studio presentation software. Photos of one storey and two storey single family dwellings, brick multi-storey commercial, and strip commercial properties were used as the basis for discussion of "fireground size-up", the initial process of identifying the scope of the incident, communications, evaluating time, and determining operations. In addition to being displayed over imported digital photos, simulated fire and smoke was used in an animated 3D CGI image of a two storey central hallway hotel design. Seminar attendees volunteered for the role of on-scene commander, in which they were asked to do a size-up and simulate communication to the command center. The instructors would critique the size-up, and then do an in-depth analysis of the scene to explain tactics based on both accepted doctrine and experience.

	Advantages	Limitations
Who	• Tools used by trainers, instructors, and exercise developers	• Not intended for primary T&E audiences
What	• Guides and/or assists users through scenario and AAR creation for exercises • Suitable for changing T&E topics • Suited for incidental T&E (can aid in development of T&E to address 'current' events)	• Tools tend to be specialized for certain functions or types of presentations • Subject matter expertise is not provided as part of the tool
How		
Where	• Typically operate on standalone computer systems • Tools often allow planners or trainers to tailor content to municipality	• Typically does not allow for Internet use
When	• Tools are used prior to T&E events, and some are used as presentation tools during events	

Dynamic Media (Planning/Presentation Tool)

Planning/Presentation Tools cover products that are primarily software that instructors can use to prepare or present T&E on a range of subjects. These products (n=7) typically support pre-training and active user decision making. Because they are T&E development tools, they are not applicable to recording user-specific performance, automatic learner information sharing, or remote observation. These tools typically do not function within a distributed/collaborative environment because they tend to be standalone products.

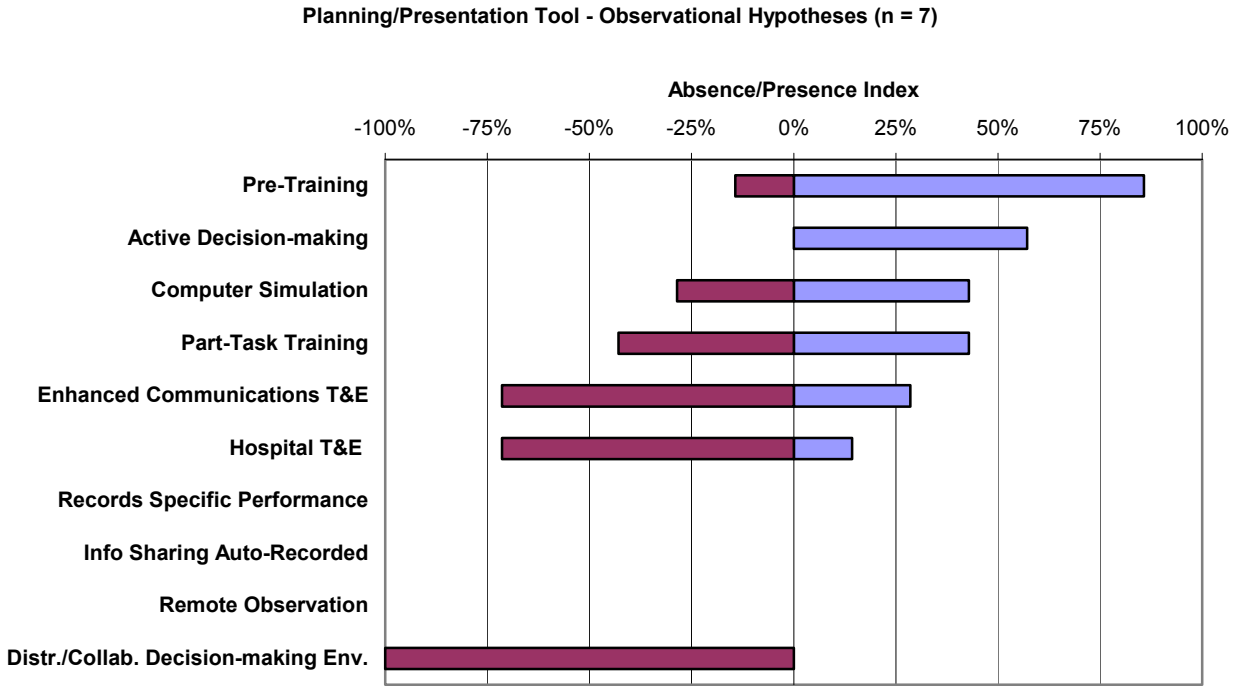

Figure 25. Presence/Absence Indices for Advantageous MS&G Features for the Category: Dynamic Media (Planning/Presentation Tool)

Product Type:	Dynamic Media (Self-Guided Training)
Surveyed Products:	A5, DMS, EMS, WBA, RSTO, TEMA

Example of T/E Use: Products in this category provide T&E content, typically to individual learners who navigate at their own pace through the material (without an instructor involved). As an example, Angel Five (A5) presents a WMD scenario using video clips. The learner role-plays an FBI special agent-in-charge, and is presented with multiple-choice decisions that guide subsequent scenario events. The learner can consult reference material and 'receives' email and FAXes (within the simulated environment) that further the story line. This product develops a new version of the scenario each time it is used, based on random numbers that determine scenario events and the threat, so it can be re-used by the same learner multiple times with different events and outcomes possible. These products vary in flexibility; some have only a single right way to use them, which minimizes any added benefit from re-use by the same learner.

	Advantages	Limitations
Who	• Individual learners	• Does not provide opportunity for learners to network, build relationships, or share information
What	• Standardized content presented in a manner that is controlled by the learner • Content can be distributed via low-cost mass media • Content can address awareness level learning	• User cannot change content so it cannot easily be adapted to current events • Not suitable for T&E of communication and/or team skills • The entirety of content cannot be responsive to individual needs
How	• Self-paced computer-based training • Immediate feedback • Minimal supervision needed	• May have one or a few paths through the content, limiting re-use by a given learner • May not address every level of learner • Limited ability to certify/validate learner performance and/or learning
Where	• Can often be delivered via Local Area Network or Internet • Learners do not need to travel • Supports distance learning	
When	• Training can occur on a flexible schedule according to learner needs	

Dynamic Media (Self-Guided Training)

This product category is called Self-Guided Training instead of the more common term - computer-based training (CBT), because many of the products reviewed are computer-based. What makes this category unique is that the training media allow the learner to conduct training unaided. The main advantage to Self-Guided Training (n=6) is its application to pre-training, in which individuals can independently prepare for multi-learner exercises. Because these products are designed for individual use, they are typically not applicable to or do not support learner information sharing, remote observation, or distributed/collaborative decision making.

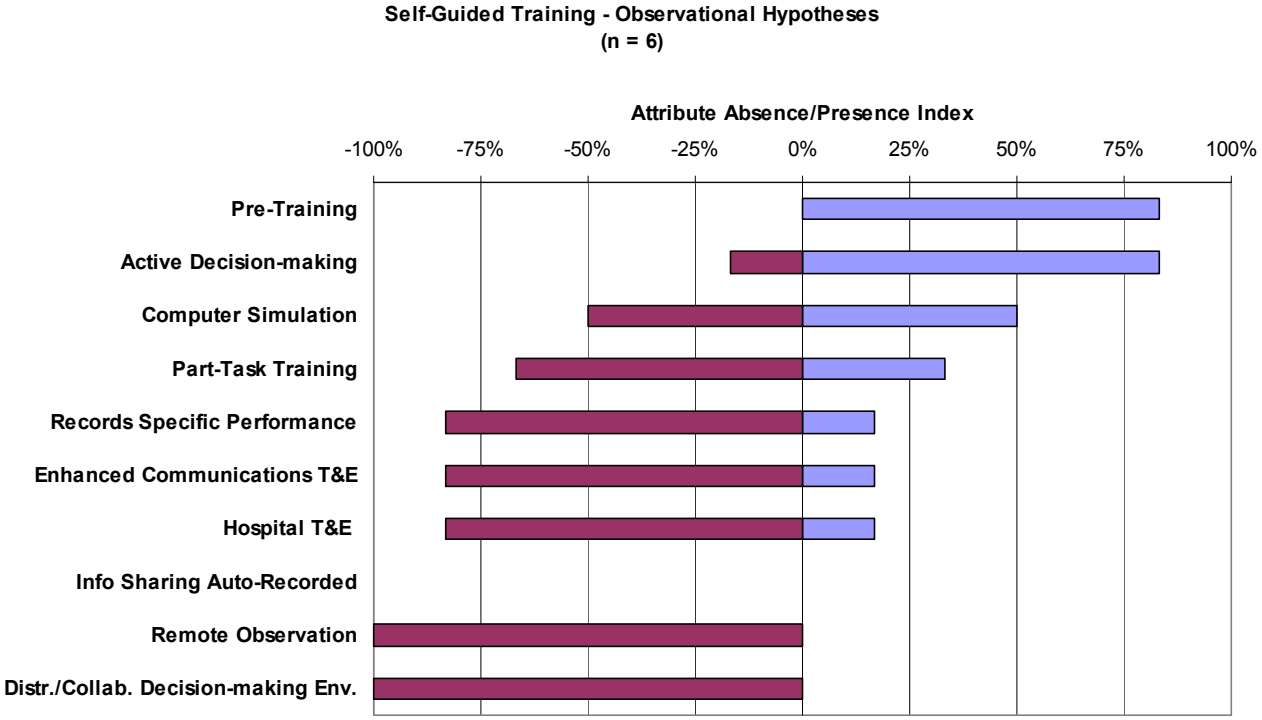

Figure 26. Presence/Absence Indices for Advantageous MS&G Features for the Category: Dynamic Media (Self-Guided Training)

Product Type:	Dynamic Media (Observer Tool)
Surveyed Products:	COR, MIND, PWRS

Example of T/E Use: These tools close the performance "feedback loop" by facilitating the collection and transfer of exercise data for analysis, After Action Review (AAR) preparation, and program management purposes. PowerSTRIPES, for example, is a software package that helps exercise coordinators and instructors export simulation data to Microsoft Office Suite applications for preparing AAR materials. Among the various uses of the tool, the U.S. Army and Marine Corps use it to automate the export of simulation data from ModSAF and OneSAF training simulations (e.g., munitions consumed, force attrition statistics) to Microsoft PowerPoint for AAR slide presentations.

	Advantages	Limitations
Who	• Partial automation of exercise observer duties • Partial automation of AAR preparer's duties	• Often not cost effective for small exercises
What	• Used for data collection and/or analysis of F2F exercises • Adaptable to changing T&E scenarios or content	• Not generally suited to freeform data, necessitating predetermined data formats
How	• Facilitates collection of user/learner specific performance data • Facilitates remote observation	• Battery power for electronic data collection devices may limit use without recharging • Displays on data collection devices may be difficult to read under certain light conditions • Input systems requiring significant writing or keying reduce data capture effectiveness
Where	• Most tools incorporate a wireless local area network (WLAN) that facilitates data transfer from handheld observer tools	• WLAN must be installed at exercise site(s) • To date, most observer tools do not provide for data transfer via Internet
When	• Potentially supports real-time data collection • Significantly reduces time to prepare AAR material	

Dynamic Media (Observer Tool)

Observer Tools are not T&E media, per se; instead, they assist in the collection of performance data from T&E events. These products are not used as the learner T&E interface, but transfer field data to analysis and presentation tools for After Action Review. the Observer Tools reviewed (n=3) are intended to record specific learner performance, and are used for remote observation (by definition).

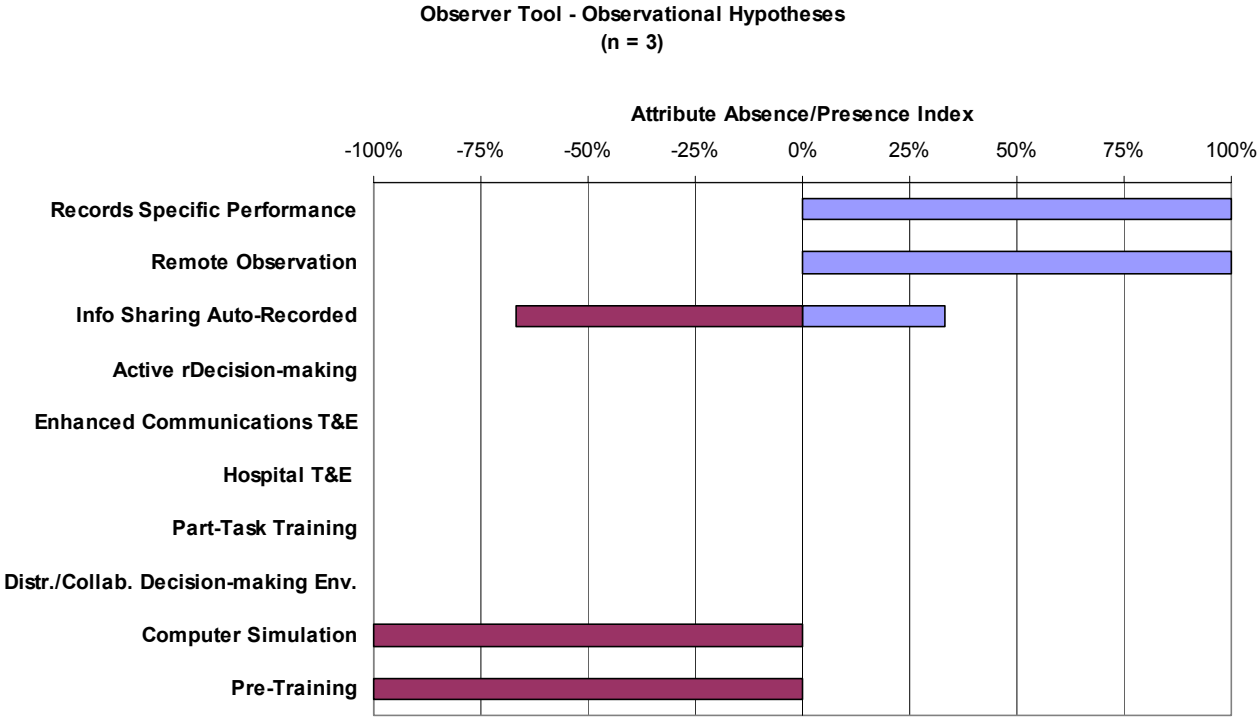

Figure 27. Presence/Absence Indices for Advantageous MS&G Features for the Category: Dynamic Media (Observer Tool)

Product Type:	Dynamic Media (Entertainment)
Surveyed Products:	EFL, R6

Example of T/E Use: Emergency Fighters for life is a PC game intended for the commercial marketplace. This product allows users to practice tactical decision-making in responding to thirty different accident or disaster scenarios. The main challenge is in choosing how to deploy emergency vehicles and teams according to the type of incident or scenario in a timely manner. The player directs emergency responders to perform certain actions to rescue victims, perform first aid, and transport them to hospital. This game is an example of a low-cost, engaging medium that holds the potential to support awareness-level learning and introductory decision-making, provided it be designed for T&E purposes.

	Advantages	Limitations
Who	• Individual and multiple users	
What	• Dynamic content presented in a manner that is controlled by the learner • Content can be distributed via low-cost mass media • Simulation improves realism of threat modeling and learner behavior adjudication • Scenario events can be played back for AAR	• Focus can be on entertainment objectives (having fun) vs. specific learning objectives • Generally does not support exercises • Typically not suitable for changing T&E topics • Training may not transfer directly to job duties • Not appropriate for incidental T&E (requires development/updates to T&E 'current' events) • May not be suitable for T&E communication and/or team skills
How	• Requires active user/learner decision making • Involves multimedia stimuli that engage the user/learner • Elements of competition can provide source of motivation	• Cannot be customized to specific location or organizational needs • Requires debrief • User/learner interfaces generally do not correspond to actual equipment
Where	• Widely available for COTS computers • Potentially network accessible, and some can be played over the Internet • May support distance learning	
When	• Individual learner scheduling is generally independent of others	

Dynamic Media (Entertainment)

Entertainment products, generally PC or TV-based video games (n=2), rated highly for recording user-specific performance, active decision making, and support by computer simulation. They were generally judged as not applicable to enhanced communications or hospital focused T&E. Therefore, these products are of interest not for direct use as T&E tools but as examples of how MS&G elements can be incorporated into T&E media.

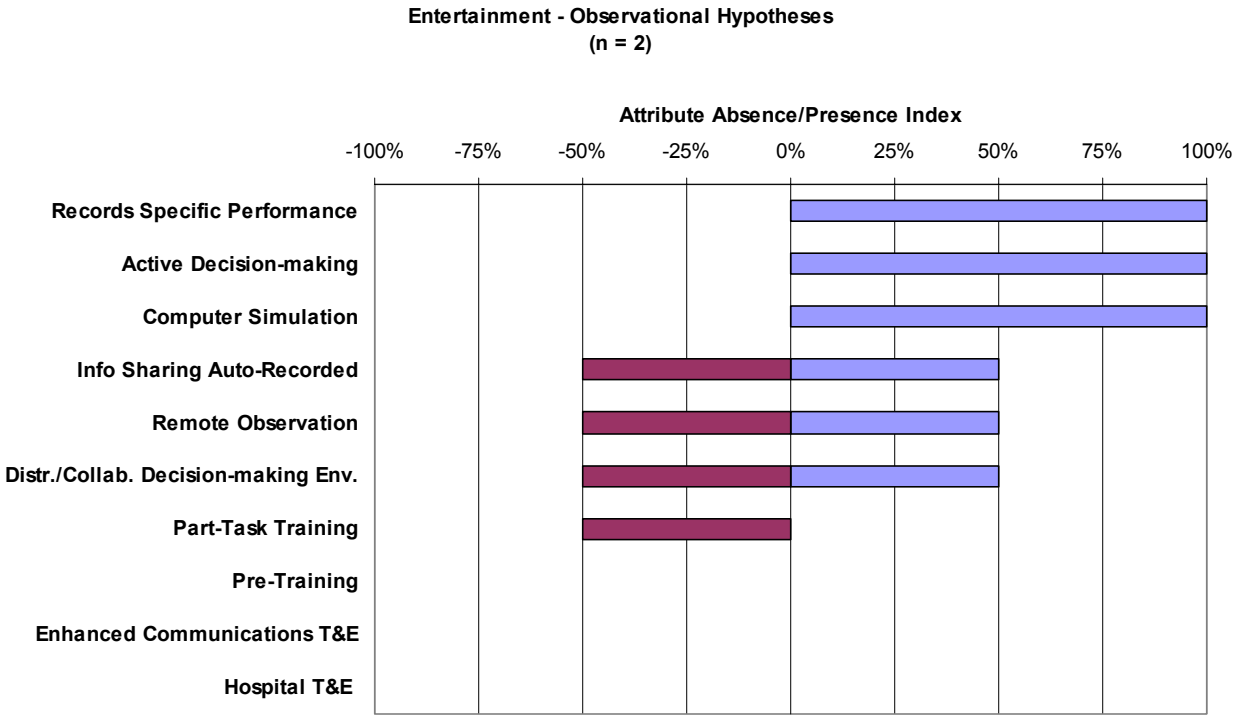

Figure 28. Presence/Absence Indices for Advantageous MS&G Features for the Category: Dynamic Media (Entertainment)

Product Type:	Dynamic Media (Other)
Surveyed Products:	FRST, GF, RIFS, VCIT, BRDG, CBRA, CAMO, WSTL

Example of T/E Use: CoBRA is a multi-purpose software program that can be used operationally as a field reference guide for a wide range of WMD information, wireless Internet communication medium with incident logging and other uses. In T&E, the laptop-based software can be used either as an instructional reference tool in traditional classroom, or self-delivered training, or it can assist in exercise management via Master Events Scenario List function, observer checklists, and wireless data collection capabilities. CoBRA was used in this capacity at the 2003 Gateway Response Exercise in New Jersey.

	Advantages	Limitations
Who	• Generally support individual learning	
What	• Computer-based multimedia provide learner information or stimuli • Some tools may integrate into operational systems	• Training content may require development to customer specifications • Often do not support hands-on T&E
How	• Typically target improvement type training • May be used for pre-training (prior to FSE)	• Typically do not involve equipment training • May require instruction/facilitation in person
Where	• Generally hosted on COTS computers • Some may be available over a network or the Internet	• Support for distance learning depends on particular product
When	• Some allow for independently scheduled learning	• T&E may need to be coordinated between instructor(s) and learners

Dynamic Media (Other)

This category, Other Dynamic Media (n=8), is a disparate group of products from which it is difficult to draw general conclusions. These products contain a range of functions that make them difficult to classify as any of the other Dynamic Media types, and are consequently defined what they are not, rather than what they are.

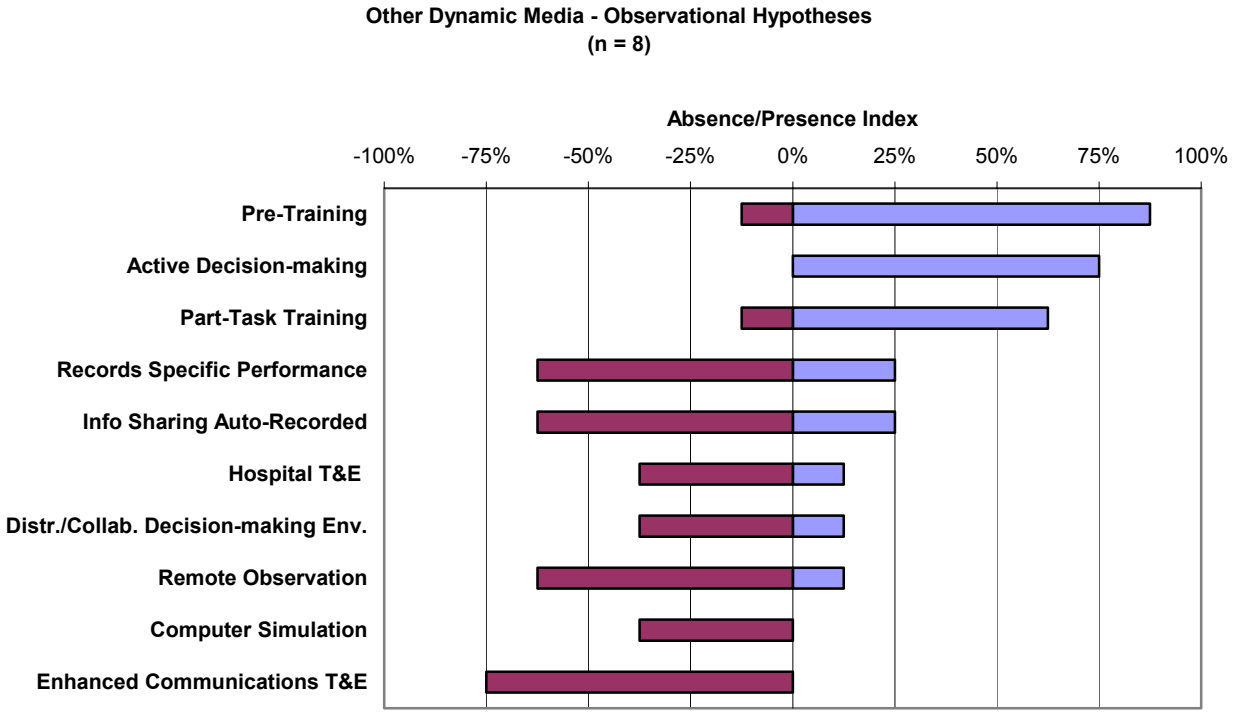

Figure 29. Presence/Absence Indices for Advantageous MS&G Features for the Category: Dynamic Media (Other)

Product Type:	Static Media (Presentations)
Surveyed Products:	EAV, LLV

Example of T/E Use: Training videos can be used in traditional classroom presentations on a wide variety of subjects. Similarly, video or other recorded multimedia presentations can be delivered via the World-wide Web to provide distance learning to remote trainees. Microsoft PowerPoint presentations, for example, are frequently used to introduce or facilitate table top exercises.

	Advantages	Limitations
Who	• Can be used by individuals and groups • Supports entry-level learning	• Static, passive, one-way delivery lacks interaction • Cannot be customized to varying audience knowledge levels
What	• Provides standardized training content distributed on low-cost mass media • Useful for pre-training (e.g., basic knowledge training before participating in drills/exercises) • Content can be developed by user organizations	• Typically not suitable for changing T&E topics • May not be appropriate for all training levels • Content cannot be readily updated • Not suitable for Training/Exercising communication and/or team skills
How	• Relatively low resource requirements and easily administered • Does not require training in use of media (e.g., videos/DVDs) • Can typically be delivered or converted for Web delivery	• Learner retention may be low • Very limited role in performance measurement
Where	• Widely available for COTS display hardware (VCRs, TVs, computers) • Generally supports distance learning	• Group use requires a space large enough to house learners concurrently
When	• Media can support independent scheduling for use	• If used for broadcast, learner scheduling must be coordinated

Static Media (Presentations)

Presentations, often recorded multimedia segments or videos, are characterized more by what attributes they do not support or to which they are not applicable. Presentation products (n=2) were found to support part-task training to varying degrees. These products do not support active user decision making because they are passive learning media.

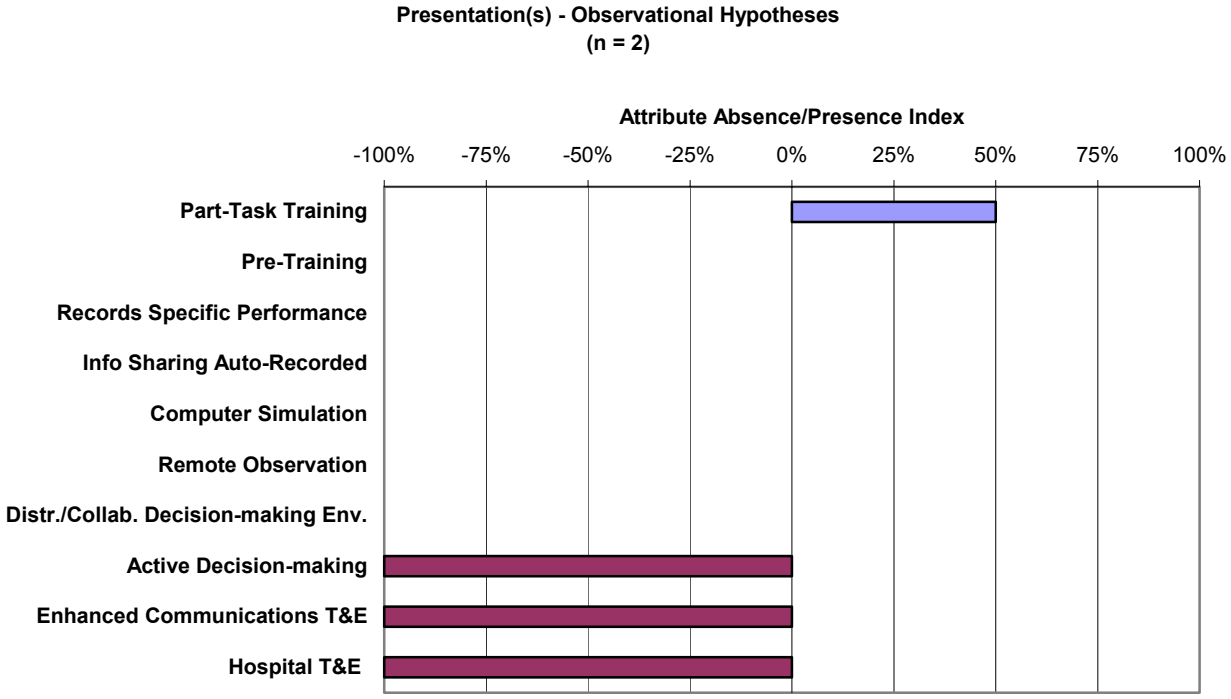

Figure 30. Presence/Absence Indices for Advantageous MS&G Features for the Category: Static Media (Presentations)

Product Type:	Static Media (Documents)
Surveyed Products:	BWRT, CSB

Example of T/E Use: Documents in the form of textbooks, reference books, repair manuals, paper maps etc. are traditional media used for training in circumstances where portability is a desirable feature. These media are common to traditional classroom instruction, operational field use, equipment maintenance etc. The Biological Weapons Response Template (BWRT) can be used as an instruction aid to demonstrate to health care learners the geometric growth in mortality over time for various types of biological agents, and provide a decision support template for choosing a course of action.

	Advantages	Limitations
Who	• Can serve as job aid for most trainees (according to availability and portability)	• Does not allow for opportunity to network, build relationships, or share information
What	• Standardized content delivered on low-cost mass media • Supports pre-training (e.g., read ahead materials before exercising) • Appropriate for reference materials • Content can be developed by user organizations • May support part-task training	• Not appropriate for incidental T&E (requires development/updates to T&E 'current' events) • Typically not suitable for changing T&E topics
How	• Allows for individual use • Relatively low resource requirements (development, administration, etc.) • Can be shared in electronic form (email, Web posting) • Does not require training on use • Does not require electricity	• No feedback to learners • Does not allow for experiential and/or social learning • Delivery is static and does not support interactive learning • Very limited role in performance measurement • May not support active user decision-making
Where	• Few restrictions on where T&E takes place • Field use of materials • Support distance learning	• Do not integrate with other elements of learning systems
When	• No constraints on when used	

Static Media (Documents)

Documents (n=2) were found to support part-task training to varying degrees and to support pre-training. These products do not support active user decision making because they are passive learning media. Although they generally do not support many advantageous MS&G features, they do offer the benefit of being backup reference materials in case of loss of electrical power (which may cause loss of access to computer-based media).

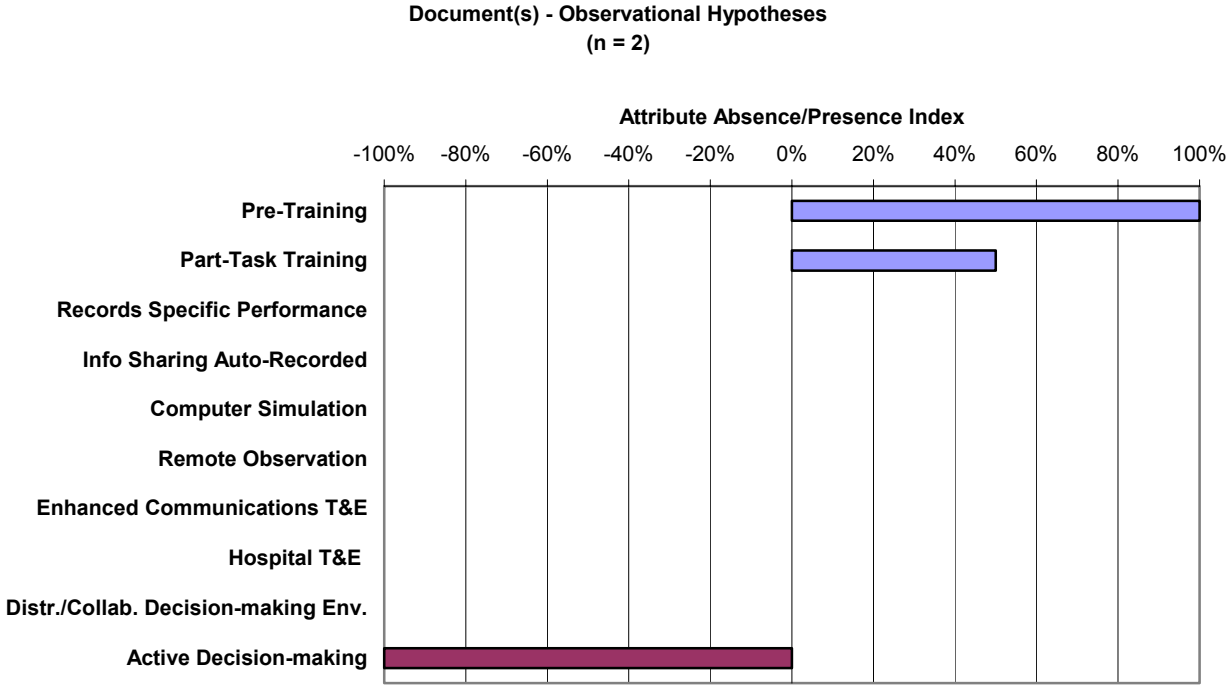

Figure 31. Presence/Absence Indices for Advantageous MS&G Features for the Category: Static Media (Documents)

F.2. GAP ANALYSIS OF ODP T&E DEFICIENCIES

In 2002, researchers identified a list of specific "Gaps [that] need to be remedied in existing training to assure consistency with The ODP Training Strategy."[23] The training curriculum at that time did not address certain tasks that were deemed to be of critical importance by a panel of response community SMEs. The gaps were said to be "complex tasks [that] generally involve coordination among and between disparate agencies or organizations…often at the higher levels of the cognitive domain, are the most difficult to teach or train and are almost always assessed through demonstration or exercise."[24] ThoughtLink analyzed these gaps by cross-correlating them with the sample of evaluated MS&G products to test whether or not any of the products could potentially satisfy the gaps.

Several points must preface the analysis. The first point is that the gaps were identified in the context of training, while this evaluation of MS&G products included both training and exercising. Thus, any relationship established between a task and a product indicates the task can either be trained, exercised, or both. The second point is that tasks were interpreted at face value, without the benefit of specific information. For example, an EMA gap—"*Apply the resource allocation plan"*—involves many sub-tasks that were not identified, such that the gap could only be judged at a macro level.

Most of the gaps were exclusive to a functional area (see Appendix F: Gap Analysis of ODP Training Strategy Requirements for a complete listing of the gaps along with the specific MS&G linked to each gap). Four of the gaps pertained to more than one functional area. One gap (*Maintain certifications and training in compliance with OSHA and other regulations*) did not provide sufficient information to perform an adequate media linkage, so it was left out of the analysis. Thus, 28 unique gaps were tested for product matches (4 tasks were considered for two different functional areas —for a total of 32 gaps).

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[23] Pelfrey, W., W. Kelley, Jr., J. May, Jr. (2002). The Office for Domestic Preparedness Training Strategy. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office for Domestic Preparedness, p.14.

[24] Pelfrey, Kelley, and May, Executive Summary, p. 15.

a. Gap Analysis Findings

Some MS&G products included in this review could fill most (30 out of the 32) of the key training gaps (see Table 7). For example, the task *Know how and when to operate diagnostic equipment* is a gap mapped directly to many tools, one of which is *CAMSIM (The Chemical Agent Monitor Simulator*), a T&E device that simulates the operation and use of chemical detection equipment (see Appendix F for the entire set of mappings).

Table 7. Breakdown of Gaps and MS&G Linkage

Functional Area	# of Gaps	# Gaps Met by MSG (Indirect Linkage Only)	# Remaining Gaps
EMA	12	10 (0)	2
EMS	1	1 (0)	0
FD	4	4 (0)	0
GA	1	0 (1)	0
GL	3	2 (1)	0
HM	6	6 (0)	0
LE	5	4 (1)	0
Total:	32*	27 (3)	2

*There are 28 total unduplicated tasks plus 4 that correspond to two functional areas.

Several of the relationships between functional area gaps and products (in parentheses in the table above) could not be mapped directly. For one of three reasons, those three tasks could be trained and/or exercised with some of the evaluated MS&G only indirectly. First, the products evaluated did not provide specific characteristics that directly support T&E as they were not specifically designed for that purpose. Second, the products were prototypes or under development at the time of their review, and therefore not available to the DPC. Third, the task contained more than one performance element (i.e., subtasks), one or more of which might partially be addressed by a product. For example, the gap mentioned above, *Know how and when to operate diagnostic equipment*, is indirectly related to the tool *CoBRA,* because the tool contains reference material on laboratory procedures for testing a range of chemical and biological agents, although it does not directly train or exercise the operation of diagnostic equipment. Most tasks were linked to several products, some of which were indirect and some were

direct links. Two of the 32 tasks were not linked, directly or indirectly, to any of the MS&G reviewed.

Table 8. ODP Training Gaps Unfulfilled by MS&G

Tasks NOT Linked to MS&G	Functional Area	Comment
Coordinate local WMD training for all potential responding agencies.	EMA	None of the tools surveyed train/exercise the aspect of coordinating training itself.
Develop mutual aid programs and protocols for WMD response	EMA	None of the surveyed train/exercise in the development of mutual aid programs; the task should be broken down into sub-tasks to allow for better media linkage.

b. Discussion

The gap analysis demonstrated the potential for MS&G products to train and exercise a diverse set of gaps in the ODP program. Except for two tasks, all of the gaps identified (94 percent) could be, at least partially, trained and/or exercised via selected products reviewed. The following observations and themes emerged from ThoughtLink's analysis:

- MS&G products can provide at least some of the context and stimulus necessary for training and exercising. Even products that mapped indirectly to gap tasks may provide some assistance for achieving T&E objectives in supporting roles.
- The description of training tasks, to date, has not been adequately structured to allow for systematic, objective analysis. Apart from identifying functional areas, the gap tasks did not provide information about who is responsible, the conditions, or context. For example, the gap tasks that were not satisfied by MS&G do not appear to be learning system requirements, but rather to be meta-level requirements (i.e., T&E program requirements).
- There are very few requirements directed specifically to trainer and observer/controller tasks and responsibilities. Several requirements, such as the unmet gap mentioned above—*Coordinate local WMD training for all potential responding agencies*—were related to training program management more than to operational response requirements.

- A more rigorous systems/process analysis approach should be used to describe tasks in a manner that distinguishes between requirements at the program level, the system level, and the team or individual level.
- Gaps were satisfied by a range of MS&G products including equipment simulation, large-scale simulators, information management tools, awareness videos, and modeling tools. The cost of such products may be quite diverse (e.g., AEAS and CRISIS both map directly to the greatest number of gaps, but AEAS is free whereas CRISIS can range from $20,000 up to several hundred thousand dollars).
- WMD tasks are not identified distinctly from "all hazards" tasks. Most of the gaps are tasks to be performed during "all hazards" response (i.e., not just WMD-related events). Likewise, a large number of the WMD-specific requirements in ThoughtLink's database could be applied to response events involving all types of hazardous materials (e.g., *Know how to use and read results from diagnostic and sampling equipment and reading instruments*).
- Only three gaps identified were specific to any type of WMD (in fact, to biological incidents). It is not clear from this gap analysis if the small number of product-requirement gaps specific to WMD is real or an artifact due to an incomplete set of WMD-specific requirements.

G. PRODUCT SUMMARIES

Appendix G contains one-page descriptions of all of the products researched during the three phases of the survey process. In the first round, seventeen products were reviewed (documented in Agrait et al, 2003b), one of which (ADMS) was subsequently re-evaluated as three separate products. ThoughtLink reviewed forty-five products in the second round (in Agrait et al, 2003c), and the remaining products in this volume to total 100 MS&G (96 of which were fully evaluated and used for the preceding analysis).

The Product Summaries contain the key attributes that ThoughtLink determined most relevant to the ODP T&E system and state/local constituents. Appendix C: Attributes for Product Evaluations provides explanations of all the attributes listed.

H. FINDINGS

The following conclusions derive from ThoughtLink's observation of the current T&E program and the 2-year analysis of 100 MS&G and over 1,000 requirements. Consideration of these findings, along with recommendations in the pending roadmap, can facilitate the systematic introduction of MS&G into the national T&E program.

H.1. REQUIREMENT MANAGEMENT

- Maintaining and improving the integrated set of DP T&E requirements created during this project will provide a single authoritative source for key upcoming efforts, including development of conditions and standards. It can also be a resource for T&E planners at the local, state, and federal levels.
- The requirement information is a first step in media selection and analysis. However, to fully implement MS&G, conditions and standards are needed for each of these tasks. This will support the concept of a national T&E program in which participants train and exercise to shared and accepted levels of performance.
- Developing a DSS is the most efficient way to help users access the extensive product and requirement data sets. Currently there are 1,100+ requirements described by 15 attribute types and 100 products described by 30 attribute groupings, which constitutes too much information to synthesize and present in a written document. It is also impractical to expect potential users to write database queries in order to use this information. A DSS can help by providing the linkage between requirements and products: users would be able to start with a set of requirements and find relevant products, or start with products and learn about their attributes and the set of DP T&E requirements they satisfy.
- Relevancy of product and requirements data, over time, is a concern. Once the information becomes outdated, it has very limited utility. Templates should be developed to facilitate maintenance of this database - as new product and requirement data becomes available.
- Thirty of the 32 functional tasks identified by ODP-commissioned researchers[25] as ODP training strategy gaps were matched with existing MS&G products. This result indicates that the gaps are less of a *training delivery* problem and more of a product/technology *integration* problem.

25 Pelfrey et al., 2001.

- Remaining gaps from the gap analysis may not be gaps in learning systems or curriculum but gaps at the program level (that cannot be completely addressed by T&E MS&G tools). These results indicate that ODP training strategy can potentially benefit from incorporation of MS&G products.

H.2. CURRICULUM DESIGN

- Disparity in training objectives across communities limits the degree to which training content can be standardized and delivered via low-cost mass media.
- There currently exists no formalized process for communicating or specifying T&E system requirements or threat scenarios to T&E product developers/vendors.

H.3. MEDIA

- There are many appropriate MS&G available today that can be used for DP T&E. Nearly all of the 100 products reviewed during this project can satisfy some subset of DP T&E requirements.
- This product review found relatively few MS&G that address the following areas:
  - T&E for senior officials.
  - Equipment and awareness training.
  - T&E for public safety communications, the private sector, and transportation.
  - Hospital T&E. There are also few requirements products in this area.
  - Biological and radiological events.

These product gaps should be evaluated in more detail to determine whether the cause is based on a product shortage or other reasons, such as evaluator judgment that other media and instructional strategies more effectively or efficiently address such T&E needs; or less of a need for products to support these areas. If the finding is that MS&G are appropriate media and there are few MS&G available, then DHS should consider encouraging product development in such areas.

Analysis of MS&G pricing found four primary drivers of product acquisition pricing:

- Greater learner interface complexity increases price.
- Need for vendor support to customize or use the product increases price.
- Inclusion of hardware in the product specification increases price.
- Federal government technology transfer reduces price.

- In addition to federal government technology transfer, cost reductions may be achieved via standardization of training content, economies of scale in procuring MS&G when possible, and—when special purpose systems are required—deploying them in a way that allows amortization of costs over a large number users.
- Analysis of TTX and FSE shows they are not interchangeable. TTX and FSE support different T&E requirements and have different instructional/exercising strategies (demonstration of skills vs. discussion of decision-making). One cannot replace the other.

At the time of ThoughtLink's analysis (August 2003), seven groups of requirements were examined—this included all of the groups dealing with multi-agency requirements, totaling 240 requirements.

- 153 requirements (64 percent) were supported by FSE and not TTX.
- 61 requirements (25 percent) could be trained/exercised via TTX.
- 26 requirements (11 percent) could not be trained/exercised via TTX or FSE (other media is necessary).

The cost-effectiveness of an FSE is a concern; all communities may not be able to afford this type of exercise. Alternative training/exercising strategies and media are currently available, and can be used to supplement FSEs to increase program reach. Other methods and tools to reduce the cost and improve the effectiveness of FSEs should continue to be pursued (e.g., in terms of people, planning, development and conduct).

- "The gaps in the current curriculum are complex and typically require demonstration of skills—which usually involves coordination of teams"[26] (hence, classroom training is not the best media choice to fulfill these needs).[27] Part of the problem is the lack of opportunity to demonstrate skills (beginning with lack of stimuli—media). F2F exercises cannot provide repeated experiential opportunity for all learners, whereas MS&G can augment and supplement F2F events.

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[26] Pelfrey et al., 2002

[27] Smith-Jentsch, K.A., Salas, E., & Baker, D.P. (1996). Training team performance-related assertiveness. *Personnel Psychology*, 49, pp. 909-36. The finding was that a behavior modeling approach (which emphasized practice/role-playing and performance feedback) had a significant effect on performance (in this case a demonstration of assertiveness skills) over and above lecture only and lecture combined with demonstration training formats.

H.4. OTHER

- Given that many users are interested in MS&G but few understand how to incorporate them into T&E, there is a clear need for additional training and education on how to select and use MS&G.
- Current standards for M&S data architectures, protocols, and formats have been adopted and used for DoD applications, but have not been adopted for domestic preparedness applications.

H.5. SUMMARY

MS&G can be an important component in augmenting ODP's current, primarily F2F T&E program. MS&G can potentially help by:

- Increasing the frequency of T&E.
- Offering broader dissemination of T&E, particularly at basic levels of awareness for large numbers of personnel.
- Improving overall effectiveness by providing pre-training to help prepare for face-to-face T&E events, and part-task training.
- Providing additional, alternative opportunities for T&E of senior officials.

ThoughtLink's review shows that MS&G (used as media within a larger program that includes appropriate instructional strategies, curricula, feedback, etc.) can fulfill many of the current DP T&E requirements. The key to success is to choose an appropriate product that meets the well-defined needs for a particular group of users: their T&E requirements, logistical and cost constraints, etc.

Based on the MS&G review, no single group of products can be recommended that will work for all communities. Of the 100 products reviewed, nearly all of them are suitable for some kind of T&E. In order to help readers make informed decisions, this report discusses key factors to consider at the product category level, and provides detailed evaluations of individual products on the CD-ROM accompanying this report.

The positive news from this project is that MS&G have significant potential to fundamentally improve ODP's T&E programs:

- New T&E niches can be filled (see discussion in Section B.3.).
- MS&G offer the potential to increase frequency of T&E and expand program reach to many more T&E participants.
- Many suitable products are available today.

To incorporate MS&G in T&E effectively, however, users will have to clearly define their needs in order to identify appropriate products. DHS should consider developing education and training for users on how to select and use MS&G. There is much interest in the DPC in the use of MS&G, but few understand how to incorporate them into T&E..

This report has discussed the areas of T&E in which MS&G can be most useful and provided examples of their use. Ultimately, the user community will likely require additional focused education. Possible alternatives include regional conferences, mobile education, and Web sites.

Maximum leverage from the results of this project will come from linking the product database and the requirements database in an easy-to-use system and making this extensive data set available to all interested users. Such a system could then be used to review existing or planned T&E against a universal list of requirements and to aid in incorporating MS&G (and other media) into the T&E system. This can also be the basis for a more highly integrated end-to-end T&S system.

As the final deliverable to this overall effort, the roadmap will propose more recommendations in several related areas: requirements and products, ways to help users identify and select appropriate MS&G, and ways to more effectively share this information with users.

APPENDIX A: REQUIREMENT SOURCE DOCUMENTS

APPENDIX A: REQUIREMENT SOURCE DOCUMENTS

Requirements were extracted and imported to the requirements database from the following set of documents.

- Agrait, Evans, Grossman, Hammell, Loughran, and Stahl (2003a). ODP Exercise Program Review: Opportunities for Models, Simulations and Games.
- Arlington County After Action Report of the response to September 11. Retrieved from http://www.co.arlington.va.us/fire/edu/about/docs/aar.htm
- Assessment of Federal Terrorism Preparedness Training for State and Local Audiences (FEMA).
- Bioterrorism and Emergency Readiness: Competencies for all Public Health Workers. Columbia University School of Nursing, Center for Health Policy. Retrieved from http://cpmcnet.columbia.edu/dept/nursing/institute-centers/chphsr/btcomps.pdf
- Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response (1999) (ISBN 0309061954), Committee on R&D Needs for Improving Civilian Medical Response to Chemical and Biological Terrorism Incidents, Institute of Medicine. Retrieved from http://www.nap.edu/catalog/6364.html
- Core Public Health Worker Competencies for Emergency Preparedness and Response. Center for Health Policy Local Public Health Competency for Emergency Response. Columbia University School of Nursing, April 2001. Retrieved from http://www.mailman.hs.columbia.edu/CPHP/cdc/COMPETENCIES.pdf
- Exercise objectives contained in the materials developed by the ODP exercise contractors.
- Federal Emergency Management Agency Federal Response Plan (February 7, 1997). Retrieved from http://www.fas.org/irp/offdocs/pdd39_frp.htm
- Homeland Security Presidential Directive/HSPD-5. Retrieved from http://www.whitehouse.gov/news/releases/2003/02/20030228-9.html

- Internal TLI memorandum. Notes on New Jersey Gateway Response Exercise, Port Newark, Newark, NJ, December 12, 2002.
- Internal TLI memorandum. Notes on Terrorism Preparedness and Response: Enhancing the Capability of First Responders conference in New Orleans, LA, June 02-04, 2003.
- Internal TLI memorandum dated January 8, 2003. Notes on Operation Critical Response exercise – City of Burbank, November 14, 2002.
- National Response Plan (Initial Plan, Draft). Retrieved from http://www.nemaweb.org/docs/National_Response_Plan.pdf
- NLD exercises observed by TLI: Chattanooga CWTTX, Glendale CWFSE, Grand Rapids CWFSE, Las Vegas CWFSE, Orlando BWTTX & CWTTX, St. Petersburg BWTTX, Tacoma BWTTX, Warren CWTTX.
- Pelfrey, W., W. Kelley, Jr., J. May, Jr. (2002). The Office for Domestic Preparedness Training Strategy. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office for Domestic Preparedness.
- Presidential Decision Directive 39. Retrieved from http://kyem.dma.state.ky.us/training/trainingdocs/WMD%20ExDev/Presidential%20Decision%20Directive%2039.doc
- U.S. Department of Homeland Security (June 2003). The Office for Domestic Preparedness Guidelines for Homeland Security. Prevention and Deterrence. Washington, DC. Top Officials 2 Exercise Objectives and Goals (ODP).
- US Department of Justice. Department of Justice Exercise Evaluation Program (JEEP, Draft, August 2002).
- US Office for Domestic Preparedness. Emergency Responder Guidelines (August, 2002). Retrieved from http://www.ojp.usdoj.gov/odp/docs/EmergencyRespGuidelinesRevB.pdf.

APPENDIX B: PRODUCT REVIEW TEMPLATE

APPENDIX B: PRODUCT REVIEW TEMPLATE

SURVEY FORM
COMMERCIAL & GOVERNMENT MODELS, SIMULATIONS & GAMES

A. Basic Product Information

Name of Product:

Developer:

Contact information:

And additional Contact information:

Web site: Product status (version in use):

Date of Evaluation:

Source(s) of Evaluation: *check all that apply*

Observed Product in use during a training or exercise
Observed Demo
Played/Used product
Attended Briefing
Reviewed CD-Rom or other software
Reviewed Website
Spoke/emailed with POC
Interview(s) with Product Users (please paste into the end of this document)
Product developer filled-in evaluation form
TLI team modified evaluation form

Materials in our Possession:

Brochure/Prospectus
CD-Rom
Related Papers
Material from Internet
Other: please state

B. Summary Product Description: please provide an introductory summary identifying what the product is and describing key elements. Include the following:

- Focus/specialty of product: (Incident response operational tool/system, incident response training/exercise tool/system, other):

- Current Target audience:

- Potential equipment and/or facilities product can address:

- In one paragraph, how is this product potentially relevant to ODP's T&E program?

C. Technical Attributes:

a) Identify major product components and their operation ... hardware, software, simulation and functional (e.g., Multi-player collaboration, gaming, 3-d interactive model, 2-d topography, video, plume model, questions & answers, HELP).

b) Large multi-station system, or based on individual PCs (if applicable)?

c) Stand-alone product, or requires other hardware and software to function (e.g., external simulation models, data base, operational equipment):

d) If simulation models are used, what is the basis of the data and/or distributions used?

e) Other facilities required (Home/office; building, multiple rooms, auditorium; LAN; etc.)?

2. Personal Computer Requirements *(if appropriate; most software will offer minimum and recommended configurations).*

a) Software Operating System *(Windows XP, 2000, etc.; MAC OS; UNIX; other):*

b) Processor speed (in MHz):

c) Memory (SDR/DDR):

d) Free disk space:

e) Internet connection speed (if any):

f) Display adapter:

g) CD-ROM speed:

h) Optional accessory requirements:

3. Describe the user interface characteristics:

4. If multiple users:

a) Identify the range of persons it can simultaneously support (min-max)?

b) Custom/proprietary hardware required? If so, identify:

5. Describe any user HELP features:

6. Data recording & storage features (e.g., Scenario events; student performance, student tracking):

D. Training characteristics

1. Describe any initial training provided? (Set-up, familiarize user with product):

2. Product Content

a) Training content description (briefly identify any relevant WMD-specific content):

b) Exercise/scenario length/time(typical):

c) Is product directly applicable to counter-terrorism training/exercises or are modifications required? If modifications are required briefly describe them.

d) If the product has been used for WMD-related counter-terrorism training, please describe the event(s) and organization(s) involved.

3. Instructional Attributes (if applicable)

a) Does a curriculum already exist? If so, briefly describe its form and content?

b) Student/participant/team feedback features (immediate and AAR); identify each (e.g., Text/graphic information displays, animation; audio; situation cues; immediate/delayed; etc.):

5. Instructor/controller/evaluator tools

a) Scenario/exercise design & development (e.g., Instructor handbook; scenario conditions & events scripting; fast-time models; scenario library; MSEL support):

b) Scenario/exercise conduct (e.g., Student-action/situation warning/cues; scenario/exercise conduct controls; real-time/fast-time/time-jump; data recording & real-time analysis & display; displays & controls to support immediate feedback to participants):

6. Customization

a) Can the product be customized? If so, how, and by whom? What is the process and how much time does it take to develop or modify a new exercise/scenario?

b) What is the process and how much time does it take to setup an exercise/scenario to run?

7. Analysis features (e.g., Post-exercise/scenario analysis tools; real-time analysis tools):

E. Product Attributes and Ratings:

1. What is the product? (Descriptive Product Categories)

	Electronic Simulation
	Non-Electronic Simulation
	Computer Based Training (other than Simulation)
	Game
	Student Learning
	Instructor/Facilitator Aid
	Support/Platform Technology

(See appendix for classification)

2. Product Capabilities:

	Developer/Owner		**Product Re-Playability**
	Government owned		Multiple dynamic paths / probabilistic outcomes
	Commercially owned		Static configuration: fixed path / deterministic outcomes
	Media Scale		**AAR Capability**
	Individual		Scenario replay
	Group		Automated summary of data
	Small multi-user team (up to 25 persons)		SME controls AAR
	Large multi-user team (more than 25 persons)		Does not provide feedback or AAR
	Multi- Agency Participation		
			HLA Compliance (does product support HLA?)
	Applied Context		
	Non-specific		**Interconnectivity**
	Equipment		Standalone
			LAN
	Environment		WAN
	Generic		Internet
	Locale Specific		

(0 = Not Currently Supported, 1 = Currently Supported, 2 = Possibly Supported, 3 = Not Applicable)

3. Training Attributes

	Application Environment:		**Content**
	Training		Knowledge
	Exercise		Applied
	Operational		Hands-on
	Analysis		
	Entertainment		**Target Audience**
			First Responders
	Mode of Delivery:		Commanders
	Self-paced		Local Officials
	Instructor/Facilitator		State Officials
			Federal Officials
	Student Level – Relevant Domain		
	Basic		**Potential Training Levels:**
	Intermediate		Awareness
	Advanced		Performance (operations)
			Technician (specialist)
	WMD Event Supported:		Planning & Mgmt. (incl. ICS)
	Chemical		Multi-jurisdictional Integrated Systems
	Biological		
	Radiological		**Training Type Supported**
	Nuclear		Equipment Training
	Explosion		Awareness
			Part Task Training
	Functional Area Supported:		Pre-Training
	EMS		Drills
	EMA		TTX
	Fire		FE
	Govt. Administrator		FSE
	Health Care		FSE Reinforcement
	HazMat		Distributed Collaborative Exercise
	Law Enforcement		National Training Exercise
	Public Health		
	Public Safety Communication		
	Public Works		
	Transportation		
	Private Sector		
	Learning Supported:		
	Initial Acquisition		
	Improvement		
	Maintenance/Refresher		

(0 = Not Currently Supported, 1 = Currently Supported, 2 = Possibly Supported, 3 = Not Applicable)

4. TLI Evaluation

Face Validity
High
Medium
Low
N/A

Current Applicability to ODP
Very
Somewhat
Limited

Ease of Use
Easy
Relatively Easy
Difficult
Requires trained support staff

5. TLI Observations & Recommendations:

Selected General Observations: product allows for/can be used for:

Specific objectives, criteria, metrics/measure or level of preparedness
Audit and evaluate plans and procedures prior to an exercise/Plan development
Dissemination of best practices/expansion of learning benefits i.e. report generation
Tracking participant performance through multiple tries (automation)
Structured Feedback among players *(during collaboration they are aware of others' actions)*

Selected TTX Observations: product allows for/can be used for:

Decision-making
Tracking Interactions/info-sharing among players

Selected Functional Observations: product allows for/can be used for:

Simulation Support

Selected FSE Observations: product allows for/can be used for:

Remote Observation
Enhanced Communication T&E/does it practice/train/exercise communications?
Hospital T&E

Selected New Concepts for Improving T&E: product allows for/can be used for:

Distributed, collaborative, decision-making environment
Measure of learning/retention & transfer of learning (implies pre-test and post-test)

F. Cost

The following set of questions can be used to collect MS&G product cost information that allows for ease of database coding. The question order is intended to assist in cost classification.

1. Can the vendor provide a price for a given (or typical) product or system? (choose one)
    a. Yes (*proceed to Q2*)
    b. No, Vendor must quote a system based on user requirements (*end here*)

2. Does the cost apply to: (choose one)
    a. Product
    b. Service
    c. Product & Service Bundle

3. Product (content) configuration, as priced, is: (choose one)
    a. Standardized
    b. Vendor Customized
    c. Allows User Customization

4. What are the prices (in $USD) according to type: (fill in all applicable)

    Please make notations about price unit bases below the table (e.g., $/hour service), as appropriate.

	PRICE (USD$)			
	Actual	Typical	Min. Likely	Max. Likely
Product Purchase				
Module Purchase				
Product License (unspecified)				
Product License (Site)				
Product License (Base System)				
Product License (Terminal)				
Product License (User)				
Module License (unspecified)				
Module License (Site)				
Module License (Base System)				
Module License (Terminal)				
Module License (User)				
Product Upgrade Option				
Warranty Upgrade Option (Base System)				
Warranty Upgrade (Terminal)				
Auxiliary Product Purchase				
Auxiliary Product License				
Service Usage				
Vendor Quoted Service				
System Training/Support/Maintenance				
Daily Rate and/or Travel				
Instructor Fee				
Trainee Fee				

APPENDIX C: ATTRIBUTES FOR PRODUCT EVALUATIONS

APPENDIX C: ATTRIBUTES FOR PRODUCT EVALUATIONS

Products were rated on the extent to which they met certain attributes described in the following table. For each product evaluated, attributes were assigned one of the following values:

0 = Absent (Not Currently Supported)

1 = Present (Currently Supported)

2 = Attribute may possibly be supported, depending on a variety of factors (e.g., human factors, T&E curriculum design, incomplete assessment of prototype functionality etc.).

3 = Not Applicable. In general, the product category or sub-category does not embody functionality to support the attribute, or the attribute does not pertain to the particular product (regardless of category).

Attribute	Definition
Applied Context	
Non-Specific	The product does not require the participant to use specific equipment during T&E.
Equipment	The product requires the participant to use specific equipment for training or exercising that involves motor skills.
Application Environment	
Analysis	Can be used as a stand-alone product to evaluate a specific issue. The results may also be used to support training, operations, or exercises.
Entertainment	Developed and marketed to provide enjoyment—primary purpose was not intended to be training or exercising.
Exercise	"Tool for practicing and evaluating how prepared for and how well an organization responds to a potential terrorist incident". [1]
Training	Systematic acquisition of knowledge, skills, rules, concepts, or attitudes that result in improved performance.
Operational	Used in real-world emergency response or ongoing support activities.
Configuration	
Prototype Version Evaluated	Prototypes are characterized by substantially different functionality from existing versions of similar products and were not complete with regard to vendor design specification. Generally, they have not been released for purposes other than testing/evaluation and have not been marketed, sold, or fielded for operation as of the review date.
Standardized / "As Is"	The product is "off the shelf" with functionality that is common to all target users. It neither requires the vendor to adapt the product prior to use nor supports significant user modification of functionality or content.

[1] HSEEP, Vol. IV: Exercise Evaluation and Implementation [Draft] 2/04/03, p. 4.

Requires Customization or Development by Vendor	The product requires adaptation of the feature set to fulfill anticipated user training or exercising needs.
User Customizable	The user (instructor/facilitator or learner) may modify product features or functionality to meet anticipated training or exercising needs.
Content	
Knowledge	The product, as delivered to the customer, contains facts or ideas acquired by study, investigation, observation, or experience.
Applied	Given a new problem, the learner must employ correct abstractions and procedures. Involves the application of skills, as well as knowledge (hence, applied content).
Hands-On	Uses psychomotor skills for performing physical tasks or procedures to demonstrate proficiency beyond knowledge or applied content.
Current Applicability to ODP	
Very	The product appears to directly support the training and or exercise missions of ODP.
Somewhat	The product may support the training and or exercise missions of ODP.
Limited	Without significant modification, the product appears to provide limited support for the training and or exercise missions of ODP.
Developer / Owner	
Commercially Owned (CO)	Property rights belong to a non-governmental organization (including business, academic institutions, charitable organizations, etc.). Rights may potentially be shared with the government.
Government Owned (GO)	Property rights belong to the United States (including the military, departments, agencies, or other organizations within or sponsored by the U.S. government). Rights may be potentially shared with a non-governmental organization.
Ease of Use	
Easy	The product requires minimal computer knowledge and provides simple navigation and embedded assistance (e.g., drop menus, drag-and-drop features).

Relatively Easy	The product requires basic computer knowledge and skill, but does not provide as much embedded assistance as above.
Difficult	The product requires substantial computer knowledge and skill or trained support staff.
Environment	
Generic	Acquisition of knowledge, skills, and abilities pertains to a non-specific environment (e.g., hypothetical city).
Locale-specific	Knowledge, skills, and abilities are trained in a real or simulated environment with geo-cultural features particular to an actual location.
Face Validity / Fidelity	
High	Training content and presentation appear to accurately represent the environment, events, and operational tasks of actual conditions.
Medium	Training content and presentation appear to adequately represent the environment, events, and operational tasks of actual conditions.
Low	Training content and presentation appear to inadequately represent the environment, events, and operational tasks of actual conditions.
Not Applicable	The product does not contain training content, or such content is provided by the customer (either before or during use).
Functional Area Supported[2] / Discipline	
Emergency Medical Services (EMS)	Individuals who serve as emergency medical technicians and paramedics (either ground or air based) and provide pre-hospital emergency care.
Emergency Management Administration (EMA)	Organizations, both local and state, that are directed to coordinate preparation, recognition, response, and recovery for emergency incidents including weapons of mass destruction.
Fire	Individuals who provide life safety services including fire suppression, rescue, arson investigation, public education, and prevention.

2 From Pelfrey, Kelly, and May, 2001. Unless otherwise cited.

Government Administration (GA)	Elected and appointed officials responsible for public administration of community health and welfare during an incident.
Healthcare (HC)	Clinical, forensic, and administrative personnel in hospitals, physician offices, clinics and other facilities, responsible for providing medical care to include surveillance (passive and active), diagnosis, laboratory evaluation treatment, mental health support, and epidemiology investigation, evidence collection, along with fatality management for humans and animals.[3]
HAZMAT	Individuals who identify, characterize, provide risk assessment, and mitigate/control the release of a hazardous substance or potentially hazardous substance.
Law Enforcement (LE)	Individuals with responsibility as sworn law enforcement officers.
Private Sector	Representative from privately owned resources affected by an incident or potentially affected by an incident (i.e., power company).
Public Health (PH)	"Personnel whose responsibility includes preventing epidemics and the spread of disease, protecting against environmental hazards, preventing injuries, promoting and encouraging healthy behaviors, responding to disasters and assisting communities in recovery, and assuring the quality and accessibility of health services."[4]
Public Safety Communications (PSC)	Individuals who link persons reporting an incident to response personnel and emergency management.
Public Works (PW)	Organizations and individuals who control and maintain community infrastructure.
Transportation	Organizations and individuals whose responsibility is ensuring and providing the trouble-free use of the transportation system.
High Level Architecture (HLA)	
HLA Compatible	The product has been demonstrated to successfully link to another system using the High Level Architecture (IEEE 1516) standard, or has been certified to be compliant.

[3] From Glossary Definitions Associated with Prevention Tasks, ODP August 2003.

[4] The Public Health Workforce: An Agenda for the 21st Century. A Report of the Public Health Functions.

Interconnectivity	
Stand-alone	The product must be used directly. No network connectivity is supported.
LAN	Connectivity to the product is supported by a Local Area Network or intranet.
WAN	Connectivity to the product is supported by a Wide Area Network, distinct from the Internet (typically requiring secure/encrypted links).
Internet	Connectivity to the product is supported by the public Internet.
Learning Type Supported	
Initial Acquisition	Participants acquire knowledge and skills for the first time.
Improvement	Participants continue to develop previously acquired knowledge and skills.
Maintenance/Refresher	Participants practice and refresh previously acquired knowledge and skills, but no additional learning occurs.
Learner Unit Size (Media Scale)	
Individual	Each participant receives training individually.
Group	Participants receive the same instruction (e.g., classroom). There is no interdependence among learners; unique roles are not necessary.
Small team	Less than 25 participants who have unique roles and must interact in order to successfully complete the training or exercise.
Large team	More than 25 participants who have unique roles and must interact in order to successfully complete the training.
Multi-Agency Participation	Participants from two or more agencies participate in training or exercising together.
Mode of Delivery for T/E	
Self-paced	Product allows the learner to proceed at own pace during training or exercising use.
Instructor/Facilitator	Product requires an instructor or facilitator to help guide user during training or exercising.

Performance Feedback Capability	
Scenario Replay	The product can record and play back events as audio, video, or computer animation.
Automated Summary of Data	The product automatically summarizes performance or observation data and allows the user to review and analyze it.
SME provides Feedback or AAR	The instructional function of providing learner feedback or After Action Review is not automated and requires a human instructor, facilitator, or subject matter expert to constitute a complete learning system.
Provides Performance Related Feedback to Learners	Provides information to learners about their performance of training or exercising tasks, or provides related feedback generated by other system users or decision support features.
Potential Responder Training Levels	
Awareness	Individuals who are likely to witness, discover, or respond to a WMD incident and who have been trained to initiate an emergency response sequence. They would take no further action beyond notifying the authorities of the release.
Performance (Operations)	Individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site of a WMD incident for the purpose of protecting nearby persons, property, or the environment from the effects of the incident. Their function is to contain the incident from a safe distance, keep effects from spreading, and prevent exposure.
Technician (Specialist)	Individuals who respond to actual or potential incidents involving weapons of mass destruction for the purpose of stopping the incident or treating casualties. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to prevent or mitigate the release of a hazardous substance or treat affected personnel.
Planning & Management (including Incident Command System)	Incident commanders who will assume control of the incident scene beyond the first responder awareness level and have emergency response plan training equal to the first responder operations level as well as emergency response plan competency.

Integrated Systems	Personnel involved in multi-jurisdictional emergency coordination beyond ICS level.
Product Categories	
Multi-Learner Exercise	A complete learning system for rehearsing skills and abilities that comprises the four functions of Medium, Interpretation, Coaching, and Administration. Such a system requires multiple participants (a learner unit with multiple members) who necessarily share information. Some or all of the functions may be provided as a service. An Exercise is usually procured as a service as opposed to a product.
Operational System	A learning system component that comprises the functions of Medium and Interpretation. In "native" operational mode, it requires multiple participants who communicate (share information). To compose a complete learning system, Coaching and Administration functions are typically provided as separate service(s) and/or product(s). The full title of the category is "Multi-member Operational System."
Interactive Training/Exercising System	A learning system component that comprises the functions of Medium, Interpretation, and Coaching. An individual or multiple learners may use it at the same time. It may potentially support individual exercising. To compose a complete learning system, the Administration function is typically provided as separate service(s) and/or product(s). An Interactive Training System is usually procured as a product as opposed to a service.
Dynamic Media	A learning system component that comprises the functions of Medium and Interpretation that can be used by an individual learner or multiple learners at the same time. It does not support information sharing within a single function (e.g., learner collaboration). To compose a complete learning system, the Administration and Coaching functions are typically provided as separate service(s) and/or product(s).

Static Media	A learning system component that comprises the Medium function only. An individual learner or multiple learners may use it at the same time. It represents one-way information flow to the Learner Unit and does not support learner information sharing. To comprise a complete learning system, the Interpretation, Administration, and Coaching functions are typically provided as separate service(s) and/or product(s).
Product Sub-categories	
Multi-Learner Exercise [Computer Adjudicated]	Interpretation function is primarily performed by a human facilitator/instructor with little or no benefit of computer simulation. Typically, Coaching and Administration will also be human.
Multi-Learner Exercise [Human Adjudicated]	Interpretation function is performed primarily by a computer simulation to determine the course of events and may be augmented by human facilitators/controllers. Coaching and Administration functions can be human.
Operational System [Incident Response]	The system incorporates functionality for command and control of actual, real-time emergency response, detection, surveillance, or similar activities.
Operational System [Virtual Collaborative Environment]	The system provides generic “out-of-the box” functionality for sharing multimedia information but does not include specific incident response functionality.
Interactive T/E System [Virtual Simulation]	The learner uses a computer-generated “synthetic” environment in which to train and/or exercise primarily decision and/or communication skills. May or may not be a spatial (2-D, 3-D) representation.
Interactive T/E System [Equipment Simulation]	The learner uses actual or simulated equipment that provides performance feedback to train or exercise motor control skills and potentially decision and/or communication skills.
Dynamic Media [Consequence Assessment Model]	A predictive model for consequence or risk evaluation, based on scientific algorithms.
Dynamic Media [Planning/Presentation Tool]	A tool that is used for developing plans, presentation materials, and/or After Action Review preparation.
Dynamic Media [Self-Guided Training]	A tool or system that allows the user to direct or modify the course of learning, delivery of content etc.

Dynamic Media [Observer Tool]	A tool that is used to collect Learner Unit performance data and/or present performance feedback to learners.
Dynamic Media [Entertainment]	Dynamic media, having capabilities or content related to training or exercising, that is primarily intended for entertainment or enjoyment.
Dynamic Media [Other]	Dynamic media with a purpose other than the above Dynamic Media subcategories.
Static Media [Presentation(s)]	Training content that may consist of multimedia (audio, video, props, etc.)
Static Media [Document(s)]	Content, regardless of the delivery medium, in the form of written and/or graphical material that does not change through use.
Re-playability / Decision Branching	
Dynamic/Stochastic	The course of events, outcomes, predictions or other information delivery is not predetermined and may be altered by learner/user inputs.
Static/Deterministic	The course of events, outcomes, predictions or other information delivery is mainly predetermined and cannot be substantially altered by learner/user inputs.
Desired MS&G Features	
Records User-Specific Performance	Records and provides user-specific performance measurements for coaching feedback or administrative purposes.
Requires Active User Decision Making	Requires active decision making of the learner/user in training or exercising.
Automated Recording of Learner Unit Information Sharing	Automatically captures and records learner unit member communications, and at a minimum identifies learner, time, and message content.
Support by Computer Simulation	Contains algorithms or computer simulation software for adjudicating learner decisions or the course of events in a training or exercising scenario.
Remote Observation	The product allows for participants or observers in different sites to monitor learner unit actions.
Enhanced T&E communication	Communications are an essential part of this product. Participants must communicate in order for the exercise to progress, allowing for improved communications with use.
Hospital T&E	The product provides training or exercising for these with regard to medical care, triage, or medical logistics/planning for chemical/biological/

	radiological/nuclear/explosion victim care.
Part-Task Training	Training or exercising that breaks down a complex set of skills into smaller elements each taught separately. Skills can be combined later.
Pre-Training	Acquisition of knowledge and skills necessary for exercise/training conduct.
Distributed Collaborative Decision Making Environment	The product provides generic "out-of-the box" functionality for sharing multimedia information among physically/geographically dispersed decision makers via a wide area network or Internet.
Student Level	
Basic	Personnel who have recently become involved with weapons of mass destruction planning or response activities. Training or exercising for these students involves generic skills and knowledge related to WMD.
Intermediate	Personnel with more experience in WMD than a job newcomer and the ability to effectively perform additional response tasks. Training or exercising for these students involves knowledge of the basic hazard and risk assessment techniques and proficiency in performing the assessments.
Advanced	Personnel with considerable experience with WMD incident response or planning, high-level decision maker, operations supervisor, or technical expert. Training or exercising for these students involves high-level planning, decision making, management, and leadership.
Target Audience	
First Responders	Personnel involved in response activities in the field.
Commanders	Personnel leading the response making decisions and coordinating efforts.
Local Officials	Personnel elected or otherwise with access to resources and authority in a municipality.
State Officials	Personnel elected or otherwise with state-level access to resources and authority.
Federal Officials	Personnel elected or otherwise with access to federal resources and authority.

Training / Exercise Type	
Equipment Training	Training to use specific equipment related to WMD response.
Awareness	Training designed to teach or practice fundamental skills and knowledge.
Part-Task	Training or exercising that breaks down a complex set of skills into smaller elements each taught separately. Skills can be combined later.
Pre-Training	Acquisition of knowledge and skills necessary for exercise/training conduct.
Drill	A coordinated, supervised activity normally used to test a single specific operation or function within an organization. Drills are commonly utilized to provide training with new equipment, to develop new policies and procedures, or to practice and maintain current skills.
Table Top Exercise (TTX)	Simulates an emergency in an informal, stress-free, conference-room-type setting. They usually involve senior staff, elected or appointed officials, or other key staff. In a TTX, objectives are aimed at facilitating understanding of a concept, identification of opportunities or problems, and/or achieving a change in attitude.
Functional Exercise (FE)	Also known as a Command Post (CP) exercise, this type of exercise is driven by a Master Scenario Events List (MSEL) to motivate realistic actions and includes very little or no field activities. Only key personnel participate. Such an exercise usually takes place in an operations center, field environment, or a combination of the two.
Full-Scale Exercise (FSE)	Exercise designed to evaluate the operational capability of response systems in a highly stressful environment that simulates actual response conditions. Resources are required to mobilize and deploy to a simulated site or locale, generally over an extended time frame.
Full Scale Reinforcement	Strengthening knowledge and skills applied during an FSE.
National Training Exercise	A training exercise that involves national components, strengthening nationwide response capability.

Distributed Collaborative Exercise	Training or exercises in which participants interact with each other while geographically dispersed.
WMD Event Type Supported	
Chemical	Chemical agent used.
Biological	Biological agent used.
Radiological	Release of radiation other than that of a nuclear fission reaction (e.g., radioisotope decay).
Nuclear	Release of significant radiation from a nuclear fission source.
Explosive	Conventional explosive device or munitions.

APPENDIX D: LEARNING SYSTEM FRAMEWORK

APPENDIX D: LEARNING SYSTEM FRAMEWORK

PURPOSE

This appendix provides definitions of category labels and ratings used for classifying products. The overall scheme is described, followed by definitions of systems, categories, and subcategories. A decision tree specifies the classification logic, and is used in a step-by-step example to sort a product reviewed into a subcategory.

GENERAL SCHEME DESCRIPTION

The essential thesis is that training or exercising systems (collectively termed "learning systems") can be separated into sub-functions and components. There are four "primary" functions that define a "learning system": Medium, Interpretation, Coaching, and Administration (see definitions below). Any learning system must provide, at a minimum, all four functions in order to be considered complete *for the purpose of categorization*. Note that other elements of a complete learning system, which would include an instructional plan, curriculum, etc., while necessary, do not explicitly form part of the categorization scheme. It is important to observe that the selection of surveyed MS&G products are not all transferable goods; rather, they are goods, services, or a combination of both.

SYSTEM DEFINITIONS

Learning System: The entirety of the necessary actors, products, and services needed to effect training or exercising to achieve stated objectives. It is a term meant to include both training and exercising exclusively rather than inclusively ("Training" or "Exercising" System as opposed to "Training and Exercising" System). ThoughtLink defines it to be composed of four primary Functions (defined below), without which training or exercising is incomplete.

Learner Unit: The learner unit may represent a single learner, a group of learners learning individually, a group of learners learning collaboratively, a group of learners learning in different roles, etc. This term is used generically to refer to trainees, students, exercise participants, and others who, individually or collectively, are involved in the

process of improving their knowledge, skills, or abilities. The Learner Unit does not include controllers, observers, or evaluators.

Information Flow: The transfer of information from one component of a learning system to another component (e.g., information sharing)

Function: A learning system component necessary to achieve the goal of training or exercising. There are four "primary" functions (defined below). A function consists of both the information flow and the activity induced by the information flow. All functions may be fulfilled by human and/or technological (e.g., computerized, automated) means.

1) ***Medium (Media):*** The process of delivery and the information flow itself to the Learner Unit. For a Learner Unit composed of multiple members (individuals, groups, teams, etc.), the Medium may present different information to different members at the same time. The Medium may or may not support synchronous or asynchronous access by multiple members of a Learning Unit.

2) ***Interpretation:*** The function of receiving information (e.g., decisions, actions, lack of action) from the Learner Unit that may qualitatively or quantitatively change the course or outcome of training or exercising. Through assessment or adjudication of decisions or actions taken by the Learner Unit, and determination of the sequence and/or probability of subsequent events, the Interpretation function translates Learner Unit behavior at decision branch points to modify learning conditions (e.g., altering the presentation of training content by the Medium function).

3) ***Coach/Coaching:*** The instructional function of obtaining and evaluating information from the Learner Unit and providing performance-related feedback to the Learner Unit.

4) ***Administration:*** The function of managing the programmatic aspects of training or exercising, to include such actions as recording attendance and material covered, syllabus preparation, observation/data collection, plan preparation, scheduling, auditing, student certification, etc. This function, as the interface between the Learning System and the training or exercise program, represents a combination of activities rather than any single activity (e.g., data collection).

Minimum Required Participants: The number of individual members needed to compose the Learner Unit in order to effect training or exercising objectives. For

example, a Learner Unit composed of a single individual cannot effectively undertake Team exercising, such that multiple participants are required for team exercise.

TOP-LEVEL CATEGORY DEFINITIONS

Multi-Learner Exercise: A complete Learning System for rehearsing skills and abilities that comprises the four functions of Medium, Interpretation, Coaching, and Administration. Such a system requires multiple participants (a Learner Unit with multiple members) who necessarily share information. Some or all of the functions may be provided as a service. An Exercise is usually procured as a *service* as opposed to a product.

Operational System: A Learning System component that comprises the functions of Medium and Interpretation. In "native" operational mode, it requires multiple participants who communicate (share information). To compose a complete Learning System, Coaching and Administration functions are typically provided as separate service(s) and/or product(s). The full title of the category would be "Multi-member Operational System."

Interactive Training/Exercising System: A Learning System component that comprises the functions of Medium, Interpretation, and Coaching. An individual or multiple learners may use it at the same time. It may potentially support individual exercising. To compose a complete Learning System, the Administration function is typically provided as separate service(s) and/or product(s). An Interactive Training/Exercising System is usually procured as a *product* as opposed to a service.

Dynamic Media: A Learning System component that comprises the functions of Medium and Interpretation that can be used by an individual learner or multiple learners at the same time. It does not support information sharing within a single function (e.g., learner collaboration). To compose a complete Learning System, the Administration and Coaching functions are typically provided as separate service(s) and/or product(s).

Static Media: A Learning System component that comprises the Medium function only. An individual learner or multiple learners may use it at the same time. It represents one-way information flow to the Learner Unit and does not support learner information sharing. To comprise a complete Learning System, the Interpretation, Administration, and Coaching functions are typically provided as separate service(s) and/or product(s).

SUB-CATEGORY DEFINITIONS

The top-level categories may be broken into sub-categories according to the following criteria.

Top-level Category	Sub-category	Criterion
Multi-Learner Exercise	Computer Adjudicated	Interpretation function is performed primarily by a computer simulation to determine the course of events and may be augmented by human facilitators/controllers. Coaching and Administration functions can be human.
	Human Adjudicated	Interpretation function is primarily performed by a human facilitator/instructor with little or no benefit of computer simulation. Typically, Coaching and Administration will also be human.
Interactive Training / Exercise System	Equipment Simulation	The learner uses actual or simulated equipment that provides performance feedback to train or exercise motor control skills and potentially decision and/or communication skills.
	Virtual Simulation	The learner uses a computer-generated "synthetic" environment in which to train and/or exercise primarily decision and/or communication skills. May or may not be a spatial (2-D, 3-D) representation.
	Other Training/Exercise System	A training/exercise system that is not classified as either virtual or equipment simulation.
Operational System	Incident Response	The system incorporates functionality for command and control of actual, real-time emergency response, detection, surveillance or similar activities.

Top-level Category	Sub-category	Criterion
	Virtual Collaborative Environment	The system provides generic "out-of-the box" functionality for sharing multimedia information but does not necessarily include specific incident response functionality.
Dynamic Media	Consequence Assessment Tool	A predictive model for consequence or risk evaluation, based on scientific algorithms.
	Planning/Presentation Tool	A tool that is used for developing plans, presentation materials, and/or After Action Review preparation.
	Self-Guided Training	A tool or system that allows the user to direct or modify the course of learning, delivery of content, etc.
	Observer/AAR Tool	A tool that is used to collect Learner Unit performance data and/or present performance feedback to Learners.
	Entertainment	Dynamic media, having capabilities or content related to training or exercising, that is primarily intended for entertainment or enjoyment.
	Other	Dynamic media with a purpose other than the above Dynamic Media subcategories.
Static Media	Presentation(s)	Training content that may consist of multimedia (audio, video, props, etc.)
	Document(s)	Content, regardless of the delivery medium, in the form of written and/or graphic material that does not change through use.

MSG can be classified into categories and subcategories using the following decision tree.

DECISION TREE FOR MS&G PRODUCT CLASSIFICATION

The decision tree refers to the particular MS&G product under consideration. It starts at number one, and concludes where an [End] is reached.

1. Does it have the Medium function and ***no*** Interpretation, Coaching, and Administration functions?
    a. If YES = Static Media. Is it content, regardless of the delivery medium, in the form of written and/or graphical material that does not change through use?
        i. If YES = ***Static Media (Document).*** [End]
        ii. Else = ***Static Media (Presentation).*** [End]
    b. Else go to step 2.
2. Does it have the Medium, Interpretation and Coaching functions?
    a. If YES = Exercise or Interactive Training System. Does it require multiple members of a Learner Unit who communicate (share information) in its "native" mode of operation?
        i. If YES = Exercise. Are learner decisions or actions primarily adjudicated by a human (instructor, facilitator, SME, or similar scenario/vignette controller)?
            1. If YES = ***Exercise (Human Adjudicated).*** [End]
            2. Else, is it adjudicated by a computer simulation?
                a. If YES = ***Exercise (Computer Adjudicated)***. [End]
                b. Else = ***Exercise*** (no subcategory). [End]
        ii. Else = Interactive Training System. Does training or exercising primarily involve practice of motor skills in using actual or simulated equipment?
            1. If YES = ***Interactive Training System (Equipment Simulation).*** [End]
            2. Else does the learner use a computer-generated "synthetic" environment in which to train and/or exercise primarily decision-making and/or communication skills?

a. If YES = ***Interactive Training System (Virtual Simulation).*** [End]

b. Else = ***Interactive Training System*** (no subcategory). [End]

b. Else go to step 3.

3. Does it have the Medium, Interpretation functions?

   a. If YES = Operational System or Dynamic Media, go to step 4.

   b. Else, there is a problem with the system and cannot be classified as currently defined. [End]

4. Does it require multiple members of a Learner Unit who communicate (share information) in its "native" mode of operation?

   a. If YES = Operational System. Does it incorporate "out-of-the-box" functionality for command and control of actual, real-time emergency response, detection, surveillance or similar activities?

      i. If YES = ***Operational System (Incident Response)***. [End]

      ii. Else, does it provide generic "out-of-the box" functionality for sharing multimedia information?

         1. If YES = ***Operational System (Virtual Collaborative Environment).*** [End]

         2. Else = ***Operational System*** (no subcategory). [End]

   b. Else = Dynamic Media, go to step 5.

5. Does it predict consequences or risks based on scientific algorithms?

   a. If YES = ***Dynamic Media (Consequence Assessment Model).*** [End]

   b. Else go to step 6.

6. Is it used for planning or preparing training and/or exercising materials?

   a. If YES = ***Dynamic Media (Planning/Presentation Tool).*** [End]

   b. Else go to step 7.

7. Does it allow the learner self-guided use?

   a. If YES = ***Dynamic Media (Self-Guided Training).*** [End]

b. Else go to step 8.

8. Does it provide entertainment?

   a. If YES = ***Dynamic Media (Entertainment).*** [End]

   b. Else = ***Dynamic Media (Other).*** [End]

WALK-THROUGH EXAMPLES OF MSG CATEGORIZATION

The above decision tree is used to classify a sample product: **WebEOC**.

1) Does it have the Administration function and ***no*** Medium, Interpretation, and Coaching functions? **NO, has Medium, Interpretation.**

   ~~a)~~

   b) Else go to step 2

2) Does it have the Medium function and ***no*** Interpretation, Coaching, and Administration functions? **NO, has Medium, Interpretation.**

   ~~a)~~

   b) Else go to step 3

3) Does it have the Medium, Interpretation and Coaching functions? **No Coaching.**

   ~~a)~~

   b) Else go to step 4

4) Does it have the Medium, Interpretation functions? **YES**

   a) If YES = Operational System or Dynamic Media, go to step 5

   ~~b)~~

5) Does it require multiple members of a Learner Unit who communicate (share information) in its "native" mode of operation? **YES, in operational mode it is a multi-member communications system.**

   a) If YES = Operational System. Does it incorporate "out-of-the-box" functionality for actual, real-time emergency response, detection, surveillance or similar activities?

      i) If YES = ***Operational System (Incident Response)***. [End]

Discussion

- Can an individual learner/participant use the MSG (WebEOC) to achieve the training or exercise objective? *No.* Because an emergency operations center is composed of more than one individual, the general training or exercise objective must involve team training (which supersedes the potential for an individual training mode). This reduces the potential categories to either Exercise or Operational System.
- Does the MSG require information sharing among learners/participants? *Yes.* Team training requires collaboration, which requires information sharing.
- What functions does the MSG contribute to the entire training or exercising system? *Medium* and *Interpretation*. It outputs information (e.g., a graphical display of activities), which the Learner Unit can act upon, and it can accept information from the Learner Unit about conditions that may change the course of training or exercising events (e.g., a HAZMAT team extinguishes a contaminant source). Because WebEOC does not handle the Coaching and Administration functions it is classified as an Operational System.
- Does the system contain functionality for actual emergency response? *Yes*. WebEOC is therefore an (Incident Response) Operational System.

APPENDIX E: TYPICAL AND ATYPICAL PRODUCT ATTRIBUTES BY CATEGORY

APPENDIX E: TYPICAL AND ATYPICAL PRODUCT ATTRIBUTES BY CATEGORY

METHODOLOGY

Determination of typical and atypical attributes is done by a two-step screening of the attribute codes in Microsoft Excel, whereby three indices are calculated for each [product type x attribute] combination. The index specific to the presence (or "currently supports") rating is the proportion of subcategory products with the attribute rated present to the total number of subcategory products (count of subcategory products rated "1" divided by the total number of subcategory products). ThoughtLink does the same calculation for attribute ratings of absent (counting "0" ratings instead of "1's"). The sum of these two quotients, the "presence" and "absence" indices respectively, (i.e., the count of subcategory products rated "1" or "0" divided by total number of subcategory products) is used as the first filter to identify those attributes that do not exhibit a significant degree of reviewer judgment. By selecting a threshold of 85%, ThoughtLink eliminates attributes for subcategories that have more than 15% rated as "possibly supports" or "not applicable." ThoughtLink next screens for the presence index at a threshold of 80% to identify what can be regarded as "typical" attributes of each subcategory and repeats the process for the absence index using the same threshold to identify "atypical" attributes.

LIMITATIONS

Caution must be used in basing subsequent observations or conclusions on these results due to several reasons:

- The number of products in each subcategory varies from 1 to 20 (mean = 6.4, median = 6), such that typical/atypical attributes of product types with small sub-sample sizes cannot be used with any degree of confidence as subcategory predictors.
- The screening thresholds for filtering presence/absence indices, while kept constant across all product types, were chosen subjectively to yield a manageable number of resulting attributes. Lower thresholds would produce more typical and atypical attributes, while higher thresholds would yield fewer.

- Some typical attributes are artifacts of the category or subcategory definition (per the Learning System Framework). For example, Interactive T/E Systems, by definition, must apply to individual learners, so the Individual attribute is an *a priori* characteristic of Equipment and Virtual Simulations.

Two subcategories are "catch-all" subtypes for products classified by category that do not share attributes with the other subcategories. These are Other Dynamic Media and Other T/E System. Because the Other Interactive T/E System subcategory contained only one product, ThoughtLink does not present generalized findings for this product subtype.

Multi-Learner Exercise Attributes

	Computer Adjudicated (n = 6)		*Human Adjudicated (n = 8)*	
	Typical	**Atypical**	**Typical**	**Atypical**
Audience	First Responders Large Team Performance-Ops Small Team Technician Advanced EMS Intermediate	Federal Officials Govt Admin Individual Local Officials State Officials	EMA Local Officials Planning & Mgmt Small Team	Individual Awareness Training
Content/Application	Exercise Applied Chemical Explosives Locale Specific	Equipment Training Operational	Applied Biological Chemical Explosives Nuclear Radiological	Entertainment Equipment Training Initial Acquisition
Delivery	Dynamic/Stochastic Feedback to Learners Scenario Replay No Specific Equipment SME AAR	Part-Task Training Static/Deterministic Equipment Use	Dynamic/Stochastic Feedback to Learners SME AAR No Specific Equipment	Static/Deterministic
Hardware	LAN	Internet		
Vendor	Government Requires Vendor	Prototype Standardized User Customizable		Prototype Standardized
Desired MS&G Features	Requires Active User Decisionmaking Supported by Computer Simulation		Requires Active User Decisionmaking	Remote Observation

Operational Systems Attributes

	Incident Response (n = 16)		*Virtual Collaborative Environment (n = 3)*	
	Typical	**Atypical**	**Typical**	**Atypical**
Audience	Large Team Small Team		Small Team Large Team Multi-Agency	
Content/Application	Locale Specific Applied Generic Improvement	Equipment Entertainment Hands On	Intermediate Advanced	
Delivery	Dynamic/Stochastic Auto Data Summary SME AAR No Specific Equipment Instructed/Facilitated	Static/Deterministic		Equipment Use
Hardware		HLA	LAN WAN Internet	
Vendor	Commercial	Standardized Prototype	Commercial	Standardized Government Prototype
Desired MS&G Features	Automated Recording of Learner Unit Info Sharing Distributed/Collab Decisionmaking Env		Automated Recording of Learner Unit Info Sharing Enhanced Comms T&E Distributed/Collab Decisionmaking Env	

Dynamic Media Attributes

	Consequence Assessment Models (n = 10)		*Planning/Presentation Tools (n = 7)*		*Self-Guided Training (n = 6)*	
	Typical	**Atypical**	**Typical**	**Atypical**	**Typical**	**Atypical**
Audience	EMA HAZMAT Intermediate Commanders Planning & Mgmt		Intermediate Planning & Mgmt Individual Govt Admin HAZMAT Commanders Integrated Systems	Awareness Level	Individual EMS Radiological	Small team Large team Multi-Agency
Content/Application	Locale Specific Applied Knowledge Explosives	Entertainment	Applied Locale Specific TTX	Entertainment Hands On Initial Acquisition	Chemical Biological Generic	
Delivery	No Specific Equipment Dynamic/Stochastic SME AAR Instructed/Facilitated Maintenance/Refresher	Static/Deterministic Equipment Use	Instructed/Facilitated No Specific Equipment	Awareness Training Equipment Use	Static/Deterministic Self-paced No Specific Equipment	Dynamic/Stochastic SME AAR
Hardware	Standalone	Internet WAN HLA	Standalone	HLA LAN WAN Internet	Standalone	HLA LAN WAN Internet
Vendor	User Customizable	Prototype Standardized Requires Vendor		Prototype Standardized Requires Vendor	Standardized	Prototype Requires Vendor User Customizable
Hypothesis	Requires Active User Decisionmaking Supported by Computer Simulation	Automated Recording of Learner Unit Info Sharing	PreTraining	Distributed/Collab Decisionmaking Env	Requires Active User Decisionmaking	Remote Observation Distributed/Collab Decisionmaking Env Records User Specific Performance Enhanced Comms TE Hospital TE

Dynamic Media Attributes

	Consequence Assessment Models (n = 10)		*Planning/Presentation Tools (n = 7)*		*Self-Guided Training (n = 6)*	
	Typical	**Atypical**	**Typical**	**Atypical**	**Typical**	**Atypical**
Audience	EMA HAZMAT Intermediate Commanders Planning & Mgmt		Intermediate Planning & Mgmt Individual Govt Admin HAZMAT Commanders Integrated Systems	Awareness Level	Individual EMS Radiological	Small team Large team Multi-Agency
Content/Application	Locale Specific Applied Knowledge Explosives	Entertainment	Applied Locale Specific TTX	Entertainment Hands On Initial Acquisition	Chemical Biological Generic	
Delivery	No Specific Equipment Dynamic/Stochastic SME AAR Instructed/Facilitated Maintenance/Refresher	Static/Deterministic Equipment Use	Instructed/Facilitated No Specific Equipment	Awareness Training Equipment Use	Static/Deterministic Self-paced No Specific Equipment	Dynamic/Stochastic SME AAR
Hardware	Standalone	Internet WAN HLA	Standalone	HLA LAN WAN Internet	Standalone	HLA LAN WAN Internet
Vendor	User Customizable	Prototype Standardized Requires Vendor		Prototype Standardized Requires Vendor	Standardized	Prototype Requires Vendor User Customizable
Hypothesis	Requires Active User Decisionmaking Supported by Computer Simulation	Automated Recording of Learner Unit Info Sharing	PreTraining	Distributed/Collab Decisionmaking Env	Requires Active User Decisionmaking	Remote Observation Distributed/Collab Decisionmaking Env Records User Specific Performance Enhanced Comms TE Hospital TE

Dynamic Media Attributes (continued)

	Observer Tools (n = 3)		*Entertainment (n = 2)*		*Other Dynamic Media (n = 8)*	
	Typical	**Atypical**	**Typical**	**Atypical**	**Typical**	**Atypical**
Audience	Individual Planning & Mgmt		Individual Performance-Ops	Multi-Agency Integrated Systems	Individual Planning & Mgmt	
Content/Application	Generic Locale Specific Improvement Applied Drills FE	Equipment Training Entertainment	Generic Chemical Radiological Explosives Knowledge Applied	Equipment Training Locale Specific Operational Part-Task Training Drills FSE FSE Reinforcement National HS Prep Exercise	Generic Training Improvement Applied	Entertainment Hands On
Delivery	Dynamic/Stochastic Auto Data Summary SME AAR Instructed/Facilitated No Specific Equipment	Static/Deterministic	Dynamic/Stochastic No Specific Equipment	Static/Deterministic Scenario Replay Equipment Use	Pre-Training No Specific Equipment	Equipment Use
Hardware	LAN	HLA	Standalone	HLA		HLA
Vendor		Prototype Standardized	Comm Standardized	Govt Prototype Requires Vendor User Customizable		Prototype
Hypothesis	Records User Specific Performance Remote Observation	Supported by Computer Simulation PreTraining	Auto Data Summary Records User Specific Performance Requires Active User Decisionmaking Supported by Computer Simulation			

Static Media Attributes

	Document(s) (n = 2)		*Presentation(s) (n = 2)*	
	Typical	**Atypical**	**Typical**	**Atypical**
Audience	Individual Intermediate Advanced EMS First Responders Performance - Ops	Small Team Large Team	Individual Group Intermediate Advanced Federal Officials	Small Team Large Team Multi-Agency Private Sector Technician
Content/Application	Generic Training Exercise Improvement Maintenance/Refresher Part-Task Training Pre-Training Applied	Locale Specific Operational Entertainment FSE Distrib/Collab Exercise National HS Prep Exercise	Generic Applied	Equipment Training Locale Specific Entertainment Hands On Part-Task Training
Delivery	Static/Deterministic No Specific Equipment	Dynamic/Stochastic	Static/Deterministic Instructed/Facilitated No Specific Equipment	Dynamic/Stochastic Self Paced Equipment Use
Hardware	Standalone	HLA LAN WAN	Standalone	HLA LAN WAN Internet
Vendor	Standardized	Prototype Requires Vendor User Customizable	Standardized	Prototype Requires Vendor User Customizable
Desired MS&G Features	Pre-Training	Requires Active User Decisionmaking		Requires Active User Decisionmaking Enhanced Comms T&E Hospital T&E

APPENDIX F: GAP ANALYSIS OF ODP TRAINING STRATEGY REQUIREMENTS

APPENDIX F: GAP ANALYSIS OF ODP TRAINING STRATEGY REQUIREMENTS

This table corresponds to the discussion in Section E about the gap analysis performed to match potential MS&G products with identified training deficiencies. Shown in the first column are the tasks (i.e., training requirements) identified as gaps by ODP.[1] The second column denotes the functional area(s) to which the task pertains. The third and fourth columns indicate the MS&G reviewed by ThoughtLink that were determined to be suitable for training and/or exercising the requirement, either directly (the objective can be supported by the product as is), or indirectly. Products that were mapped in the databases to the gaps indirectly indicate one of two possibilities: a) that the products may provide the context for training and/or exercising the requirement but may not be used to address the gap directly; b) the product was under development at the time of the review and was not yet available as a production version.

Legend

EMA	Emergency Management Agency
EMS	Emergency Medical Services
FD	Fire Department
GA	Governmental Administrative
Global	Global (all functional areas)
HAZ	Hazardous Materials
LE	Law Enforcement

[1] Pelfrey, Kelley, and May, 2002.

Gap	Functional Area	Directly Mapped Products	Indirectly Mapped Products
STRQ59: Joint, regular training with other agencies. Participate in a joint training exercise or drill with other emergency response organizations that are expected to participate in responding to a potential WMD event i n the local area.	LE	ADMT, ADMV, AEAS, CRI, CRTS, EGLD, EPI, FORT, HRAM, JANS, JCAT, MINV, PIS, SCRB, SEAS, SOFR, SPCM, TTR	ATS, CBRA, CMS, , ERSM, FMIS, GEC, MLD, SLR, XYB
STRQ377: Apply resource allocation plan.: Be able to apply the resource allocation plan when needed.	EMA	ADM1, ADMT, ADMV, , AEAS, CRI, CRTS, EPI, FMIS, GSUT, JANS, NBC, PIS, SEAS, SPCM, SVZC, SVZS, SVZT, TTR	ADPR, CMS, , EGLD, GEC, SERS, WDAC
STRQ414: Information sharing.: Assure vital information about the incident is effectively sha red with all agencies	EMA	ADM1, ADMT, ADMV, , AEAS, CRI, CRTS, EPI, FMIS, GSUT, ,NBC, SEAS, SPCM, SVZC, SVZS, SVZT, TTR, EGLD, EM2K, ETM, MLD, OPSC, RAM, SCRB, SOFR, WEMS, WEOC	ADPR, ATS, CAMO, CBRA, CMS, GEC, JANS, PIS, SERS, WDAC
STRQ419: Coordinate mul ti-agency WMD training.: Coordinate local WMD training for all potential responding agencies.	EMA		
STRQ460: Train EMA directors.: Train all EMA agency directors, supervisors, and staff in WMD response (EMA)	EMA	ADM1, ADMT, ADMV, AEAS, BTC, BWRT, CRI, CRTS, DMS, EPI, FMIS, FORT, JANS, JCAT, NBC, PIS, SPCM, TEMA, TTR	ADFR, ADPR, ALO, ATS, CAMO, EGLD, ERTB, GEC, GSUT, SERS, SLR

Gap	Functional Area	Directly Mapped Products	Indirectly Mapped Products
STRQ461: Manage and coordinate the activities of the EOC.	EMA	ADM1, ADMT, ADMV, ADPR, AEAS, CRI, CRTS, EPI, FMIS, FORT,JCAT, NBC, SPCM, ,TTR, EM2K, ETM, GSUT, OPSC, RAM, SEAS, WEMS, WEOC	ATS, GEC, JANS, PIS, SCRB, SERS
STRQ489: Develop a public policy vision for community recovery from a WMD incident.: Be able to formulate, in conjunction with other involved jurisdictions, an integ rated public policy vision for recovery.	GA		CMS, CRI, PIS, CJJC, , GSUT, HRAM, NSN
STRQ517: Write agency plan for response and integrate with other agency plans.: Be able to prepare a comprehensive plan for each element of the agency, which also integrates with plans of other related agencies, which provides written guidelines, procedures and protocols for emergency response and coordination during an incident.	LE		CRI, EPI, FRST, PIS, VRTS
STRQ814: *Conduct agent control/containment (HAZ).	HAZ	EPI, PIS	CJJC, CMSM, HPAC, JCAT, MIDA, MINV, VTRA
STRQ833: *Understand the use and capability of detection equipment to identify WMD agents.	HAZ, FD	CMSM	CBRA, VTRA
STRQ836: *Be familiar with emergency patient care.	FD	LLV, TEMA	ADPR, VTRA
STRQ837: *Be familiar with reference utilization for incident mitigation.	HAZ, FD	CJJC, CRI, ERSM, FMIS, PIS, RAM, SERS, TEMA	ADFR, ADPR, ALO, CAMO, CBRA, FMIS, GEC, MIDA, RIFS, VTRA

Gap	Functional Area	Directly Mapped Products	Indirectly Mapped Products
STRQ841: *Coordinate public warning, instruction, and information updates (EMA).	EMA	ADPR, AEAS, CRI, EPI, ERSM, FMIS, JCAT, RAM	CJJC, GSUT, JANS, PIS, SERS, SPCM
STRQ846: *Develop mutual aid programs and protocols for WMD response (EMA).	EMA		
STRQ854: *Integrate criminal investigation with epidemiological investigation (LE).	LE	AEAS, EPI, FORT	FRST, OPSC, RAM
STRQ856: *Investigate the incident (LE).	LE	AEAS, HRAM, JCAT, MINV	A5, FRST, VTRA
STRQ864: *Maintain data inventory of state and local resources.	HAZ	EM2K, ETM, OPSC, WEMS, WEOC	ADPR, CSB, SCRB
STRQ874: Coordinate local, state, and feder al assets: Coordinate local, state, and federal assets (EMA).	EMA	EM2K, ETM, OPSC, WEMS, WEOC, ADM1, ADMT, ADMV, CMS, CRI, EPI, FMIS, GSUT, JCAT, NBC, PIS, RAM, SCRB, SEAS, SERS, SOFR, SPCM, TTR	CRTS, EGLD, ERSM, JANS, SLR, WDAC
STRQ881: *Coordinate evacu ation/sheltering and protect in place activities (EMA).	EMA	ADPR, AEAS, CRI, EPI, ERSM, FMIS, FRST, JCAT, NBC, PIS, RAM, SEAS	ALO, CAMO, CJJC, GSUT, HPAC, JANS, MIDA, MRPL, PEGM, SLR, SPCM
STRQ894: Manage recovery program: Manage and oversee the local or state WMD response and recovery program.	EMA	GSUT, RAM	AEAS, CJJC, CMS, CRI, PIS, SERS, WDAC
STRQ1363: Coordinate activities of volunteers, ham radio operators, and ERT.: Coordinate the activities of volunteer agencies, ham radio operators, and community emergency response team	EMA	CRI, EM2K, ERSM, ETM, GSUT, JANS, OPSC, RAM, SCRB, WEMS, WEOC	FMIS, PIS

Gap	Functional Area	Directly Mapped Products	Indirectly Mapped Products
STRQ1364: Coordinate request, acquisition, distribution, and security of resources.: Coordinate the request, acquisition, distribution, and security of an y needed resources.	EMA		ADM1, ADMT, ADMV, AEAS, ATS, CBRA, CRI, EGLD, EM2K, EPI, ETM, FMIS, GEC, GSUT, NBC, OPSC, PIS, RAM, SCRB, SEAS, SERS, SLR, SPCM, SVZC, SVZS, SVZT, TTR, WDAC, WEMS, WEOC
STRQ1365: Participate in Intelligence Sharing: Participate in intelligence sharing	FD	ADMT, ADMV, ADPR, AEAS, CMS, CRI, CRTS, EGLD, FORT, JANS, MINV, PIS, SEAS, SPCM, TTR	ATS, CBRA, EM2K, EPI, ETM, FMIS, FRST, MLD, OPSC, RAM, SCRB, SLR, SOFR, WEMS, WEOC, XYB
STRQ1366: Implement media management plan integrated with other agencies.: Implement a media management plan integrated with other agencies consistent with that of the government administration.	Global		CRI, EPI, FMIS, FORT, JANS, MMTE, NSN, PIS, SPCM
STRQ1367: Use of operational security techniques.: Use effective operational security techniques before, during and after a WMD incident.	Global	ADMT, ADMV, AEAS, EGLD, FMIS, FORT, FRST, FSC, JCAT, JTLS, MINV, MMTE, RSTO, SPCM, TTR	CJJC, CRI, CRTS, EPI, JANS, MLD, PEGM, PIRF, PIS, SERS, VTRA
STRQ1368: Integration of volunteers into the WMD response plan.: Integrate volunteers, community groups, and individual expertise, as appropriate, into the WMD response plan	Global	CRI, ERSM, FMIS, FORT, PIS, RAM	CMS, EPI, ERUM, ETM, GSUT, JANS, MMTE
STRQ1369: Integrate activ ities with EOD	HAZ	FORT, FRST, RSTO	ADPR, CMS, CRI, EGLD, JANS, PIS

APPENDIX G: PRODUCT DESCRIPTIONS

List of Product Descriptions

Product Name: Abbottville Tabletop Simulation

Company:	**Contact Information:**
Command School	Scott Porman
117 South West End Ave.	866-238-6688
Lancaster, PA 17603	scott@commandschool.com
Web Site: www.commandschool.com	

Key Product Attributes:

Product Type: Exercise (Human Adjudicated) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Multi-Agency Participation **Application Area:** Exercise	**Training Type It Supports:** Part-Task Training, Pre-Training, Tabletops, FSE Reinforcement **Functional Area(s) It Supports:** EMS, EMA, Fire, Government Administration, HazMat, Law Enforcement, Public Health, Healthcare, Public Safety Communications and Public Works **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, and Federal Officials

Product Description: Abbottville Tabletop Simulation is a 3-D physical model of a generic city consisting of over 400 buildings ranging from suburban, rural, industrial, urban, to high-rise buildings or special hazards with simulated sound effects. The tabletop is led by an instructor or facilitator from the Command School. The model is used to support TTX that can be adapted for the needs of local officials.

There are three main versions available: a city diorama, a mall diorama (12' x 9' mall and surrounding strip mall), and an Emergency Operations Center (EOC) using an Incident Command System (ICS) and stations for each area of ICS/EOC. Aspects that can be used in the model include airports, chemical companies, a zoo, a high school, and a carnival. Real fire and smoke can be used, emergency equipment is dispatched and simulated via the use of scale model apparatus, police cars and ambulances are positioned on the board. Emergency personnel are identified by wearing vests. The instructor controls background sounds of fire, sirens, and wind and portrays people (e.g., agitated victims), all of which set the scene.

Actual incidents are used as the basis for 85 percent of the scenarios. Scenarios include personal injury accidents, structural fires, chemical releases, terrorist acts, tornados, earthquakes, floods, and airplane and train accidents. Scenarios can run as short as 40 minutes and as long as 8 hours.

Advantageous MS&G Features: Active User Decision Making; Simulation Support; Enhanced Communication T&E; Pre-Training

Version: N/A – versions are referred by title and diorama type

Date Evaluated: February 25, 2003

Product Name: ADASHI First Response Automated Decision Aid System for Hazardous Incidents (ADFR)

Company:	**Contact Info:**
Optimetrics, Inc.	Alex M. Menkes, Program Manager
2107 Laurel Bush Rd., Suite 209	Optimetrics, Inc.
Bel Air, MD 21015	2107 Laurel Bush Rd, Suite 209
Web site: www.ADASHI.org	Bel Air, MD 21015
	amenkes@ADASHI.org

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model)	**Training Type it Supports:** *Possibly* Awareness, Part-Task Training, Pre-Training, TTX, FE
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administrator, HazMat, Law Enforcement
Media Scale: Individual	**Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials
Application Environment: Exercise, Operational, Analysis	

Product Description:

ADASHI First Response is a stand-alone, off-the-shelf HAZMAT and terrorism incident public safety decision aid for first responders. The program is founded on well-known tools such as CAMEO and ERG 2000 and includes a sophisticated interface design to allow manual-free and training-free operations during life-threatening hazardous incidents. The software provides emergency responders, decision makers, and support personnel with a user-friendly, intelligent PC-based tool to plan, mitigate, and track both large scale and daily hazardous incidents.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 1.0

Date evaluated: August 28, 2003

Product Name: ADASHI Professional Automated Decision Aid System for Hazardous Incidents (ADPR)

Company:	**Contact Info:**
Optimetrics, Inc.	Alex M. Menkes, Program Manager
2107 Laurel Bush Rd., Suite 209	Optimetrics, Inc.
Bel Air, MD 21015	2107 Laurel Bush Rd, Suite 209
Web site: www.ADASHI.org	Bel Air, MD 21015
	amenkes@ADASHI.org

Key Product Attributes:

Product Type: Operational System (Incident Response)	**Training Type it Supports:** Awareness, Part-Task, Drills, TTX, FE, FSE, and Distributed Collaborative Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, HazMat, Public Safety Communication
Media Scale: Small Multi-User Team, Large Multi-User Team	**Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Training, Exercise, Operational, Analysis	

Product Description:

The Automated Decision Aid System for Hazardous Incidents (ADASHI) product line provides civil authorities responding to chemical, biological, radiological, nuclear, or explosive (CBRNE) events with an "over the shoulder" decision-support system to assist incident commanders in making better, timelier decisions by rapidly processing the multivariate input data and providing critical information in high-stress environments.

ADASHI effectively integrates the specific technical functions required to mitigate both an everyday HAZMAT incident and an infrequent WMD event. The product features include hazardous agent identification, source analysis, physical protection of responders, decontamination, medical treatment, casualty care, resource and equipment monitoring/tracking, multi-tier communication, scenario-based planning and training, and EOC command and control displays.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Remote Observation; Enhanced Communication T&E; Part-Task Training

Version: Under development

Date evaluated: August 28, 2003

Product Name: Advanced Disaster Management System—ADMS-1

Company: Environmental Tectonics Corporation (ETC) 12001 Science Drive, Suite 180 Orlando, FL 32826 **Web site**: www.adms.info	**Contact Info:** Mr. Shabbir Merchant, President, Simulation Division (407) 282-3378 info@etcflorida.com

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO **Media Scale:** Individual **Application Environment:** Training, Exercise	**Training Type it Supports:** Pre-Training, Part-Task Training, Drills, FSE, FSE Reinforcement, Functional Exercise **Functional Area(s) it Supports:** EMA, Fire, HazMat, Law Enforcement **Primary Target Audience:** First Responders, Commanders

Product Description:

DMS-1 is a "real-time virtual reality engine" that addresses operational planning and incident response and management from the on-scene responder to the incident commander to the local city or county EOC, up to state and national level Command and Control Centers. It is the portable, "train the trainer" version of the ADMS suite of products. This tool can be used for training and exercising of first responders to make decisions based on scene information and multi-agency communications, and for command personnel to exercise their management functions. Its configurations allow users to mirror their current operation set-up (e.g., communication capabilities) to evaluate adequateness of plans and response. It can be tailored to the user's geospecific environment to increase fidelity of response. In addition it contains performance data recording and AAR capabilities.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Enhanced Communication T&E; Part-Task Training; Pre-Training

Version: ADMS-1

Date evaluated: 11/10/03

Product Name: Advanced Disaster Management System—ADMS-Team

Company: Environmental Tectonics Corporation (ETC) 12001 Science Drive, Suite 180 Orlando, FL 32826 **Web site**: www.adms.info	**Contact Info:** Mr. Shabbir Merchant, President, Simulation Division (407) 282-3378 info@etcflorida.com

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Multi-Agency Participation **Application Environment:** Training, Exercise	**Training Type it Supports:** Part-Task Training, Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMA, Fire, HazMat, Law Enforcement **Primary Target Audience:** First Responders, Commanders

Product Description: Operational planning and personnel training and exercising in all areas of incident response from the on-scene responder to the incident commander to the local city or county EOC, up to state and national level Command and Control Centers. ADMS Team provides a reality-based virtual environment with simulation of numerous real training facilities. It simulates vehicular traffic accidents, small fires, explosions, large-scale disasters such as incidents involving chemical agents, or wind-driven fire. The tool allows teams of teams to interact, communicate, share information, and manage resources and incident scenes in real time (time can also be accelerated). All actions and communications are captured from different points of view and can be replayed for post-incident review.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment; Part-Task Training; Pre-Training

Version: ADMS Team

Date evaluated: 11/10/03

Product Name: Advanced Disaster Management System—ADMS-VR

Company: Environmental Tectonics Corporation (ETC) 12001 Science Drive, Suite 180 Orlando, FL 32826 **Web site**: www.adms.info	**Contact Info:** Mr. Shabbir Merchant, President, Simulation Division (407) 282-3378 info@etcflorida.com

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Multi-Agency Participation **Application Environment:** Training, Exercise	**Training Type it Supports:** Part-Task Training, Pre-Training, Drills, FE, FSE, FSE Reinforcement **Functional Area(s) it Supports:** EMA, Fire, HazMat, Law Enforcement **Primary Target Audience:** First Responders, Commanders

Product Description: Tool for operational planning and personnel training and exercising in all areas of incident response from the on-scene responder to the incident commander to the local city or county EOC, up to state and national level Command and Control Centers. It is marketed as having the following trainer capabilities: Incident Management, Emergency Vehicle Driver Trainer, Terrorism Mitigation Trainer, Disaster Exercise (Mock Drills), and Command Staff Proficiency and Evaluation. It is a fully featured and modular system that is not platform specific, and it is designed to immerse the user in a 180-degree screen of a scene (user can see any part of the scene and hear scene operations as well as communicate with players off scene).

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Enhanced Communication T&E; Part-Task Training; Pre-Training

Version: ADMS VR

Date evaluated: 11/10/03

Product Name: Angel Five

Company:	**Contact Information:**
Visual Purple, LLC Mr. John W. Jarrett Vice President, Product Development Visual Purple, LLC 805-595-7579 x116 jjarrett@visualpurple.com **Web Site**: www.visualpurple.com.	At this time, not available for use outside the FBI. Walt Mesler, Contracts Office 703-814-4900

Key Product Attributes:

Product Type: Dynamic Media (Self-Guided Training)	**Training Type It Supports:** Pre-Training, Drills, and TTX
Commercial or Government Owned: GO	**Functional Area(s) It Supports:** Law Enforcement
Media Scale: Individual and Group	**Primary Target Audience:** Federal Officials
Application Area: Training	

Product Description: Angel Five is a PC-based crisis management training and response tool that can be used as an individual trainer and in a TTX forum. The purpose of the product is to teach FBI Special Agents In Charge and Assistant Special Agents in Charge how to manage the FBI response to a WMD radiological event. It is a third-person interactive role-playing simulation; the user role plays a Special Agent In Charge in a Midwestern city. The story develops based on a) user decisions and b) 158 parameters chosen randomly in each new simulation execution.

The simulation appears as a series of video clips, showing the current situation, followed by a decision point for the user, with 3-9 possible choices given. The user picks one, which then determines the next set of video clips to show and in turn, the next set of possible actions/decisions. This is a multi-path, interactive video simulation using live actors and on-location, Hollywood-style filming techniques. Environments are either actual locations (FBI offices) or faithful representations of the same. Interactions are realistic and based on current procedures and protocols.

Angel Five contains video surveillance, an Intelligence Summary Board, and other typical FBI crisis management aids. The user can access simulated communication modes like FAX and email; their use is integrated into decision making. A large reference library is incorporated into the product.

Advantageous MS&G Features: Active User Decision Making; Simulation Support; Pre-Training

Version: N/A

Date Evaluated: February 25, 2003

Product Name: Areal Locations of Hazardous Atmospheres (ALOHA)

Company:	**Contact Info:**
National Oceanographic and Atmospheric Administration; Environmental Protection Agency **Web site**: http://www.epa.gov/ceppo/cameo/aloha.htm	EPA regional office: http://www.epa.gov/ceppo/cameo/regcont.htm NOAA: 206-526-6317

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model) **Commercial or Government Owned:** GO **Media Scale:** Individual, Group **Application Environment:** Training, Exercise, Operational, Analysis	**Training Type it Supports:** Drills, TTX, FE, FSE, FSE Reinforcement, National Training Exercise **Functional Area(s) it Supports:** EMA, Fire, HazMat, Law Enforcement **Primary Target Audience:** First Responders, Commanders, Local Officials

Product Description: ALOHA is a computer program that uses information the user provides, along with physical property data from its chemical library, to predict how a hazardous gas cloud might disperse in the atmosphere after an accidental chemical release. It can predict rates of chemical release from broken gas pipes, leaking tanks, and evaporating puddles, and it can model the dispersion of both neutrally buoyant and heavier-than-air gases. ALOHA is intended for use during hazardous chemical emergencies, as well as for planning, training, and exercising. Scenarios can be entered into ALOHA, representing actual situation parameters, or parameters of a hypothetical situation, to support planning, training, exercising or analysis investigation. It can display a "footprint" plot (i.e., plume) of the area downwind of a release where concentrations may exceed a user-set threshold level, as well as other plots of source strength (release rate), concentration, and dose over time; and a text summary.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 5.2.3

Date evaluated: December 2003

Product Name: Automated Exercise and Assessment System (AEAS)

Company:	**Contact Info:**
Science Applications International Corporation (SAIC) **Web site**: None	Richard Solomon 1209 Science Dr. Orlando, FL 32826-3248 solomonri@saic.com

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** GO **Media Scale:** Individual, Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Training, Exercise, Analysis	**Training Type it Supports:** Part-Task Training, Pre-Training, TTX, FE, FSE, FSE Reinforcement **Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials

Product Description:

Constructive simulation (war game) that exercises emergency response decision makers in scenarios involving the use of WMD. It provides an interactive decision making environment for responders at the incident scene and EOC. It allows training/exercising of the ICS and is customizable to reflect the community's tasks, operations (e.g., radio communications), and standards. Their actual response capabilities (e.g., resources) are used in the simulation and in automatically generated AAR.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Enhanced Communication T&E; Part-Task Training; Pre-Training

Version: 1.0, March 31, 2003

Date evaluated: August 26, 2003

Product Name: Biological Weapons Response Template (BWRT)

Company:	Contact Info:
U.S. Army Soldier and Biological Chemical Command (SBCCOM) Gregg Mrozinski 410-436-2963 **Web site**: http://www.sbccom.army.mil www.ramsafe.com	RAMSAFE Technologies, Inc 3225 Shallowford Rd., Ste. 700 Marietta, GA 30062 800-477-8778 770-977-7233 info@ramsafe.com

Key Product Attributes:

Product Type: Static Media (Document) **Commercial or Government Owned:** GO **Media Scale:** Individual, Group, Multi-Agency Participation **Application Environment:** Operational, Analysis	**Training Type it Supports:** Part-Task Training, Pre-Training **Functional Area(s) it Supports:** EMA, Government Administrator, Health Care, Public Health, and Private Sector **Primary Target Audience:** Local Officials, State Officials, and Federal Officials

Product Description:

The biological weapons response template (BWRT) is a decision tree in paper format developed by SBCCOM so that communities can evaluate their preparedness for a bioterrorism incident. The BWRT lists the response elements needed to respond to a biological attack. There are detailed response activities associated with each element of the template, formatted as worksheets that can be used by a community to develop their response plan.

An automated version of BWRT is owned exclusively by RAMSAFE Technologies and is used as a component of their information management software designed for emergency managers. RAMSAFE calls it the bioterrorism response template and uses it to predict casualties and response/resource requirements for an incident.

Advantageous MS&G Features: Part-Task Training; Pre-Training

Version: N/A

Date evaluated: August 29, 2003

Product Name: BioSimMER (BSMR)

Company:	**Contact Info:**
Sandia National Laboratories Mathematics and Computer Science Dept. 212 Williams Hall Ithaca College Ithaca, NY 14850 **Web site**: none	Sharon Stansfield 607-274-3630 Fax 607-274-1588 sstansfield@ithaca.edu

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO **Media Scale:** Individual, Small Multi-User Team **Application Environment:** Training, Exercise	**Training Type it Supports:** Part-Task Training, Pre-Training **Functional Area(s) it Supports:** EMS, Health Care **Primary Target Audience:** First responders

Product Description:

Fully immersive virtual reality platform for training/exercising first responders in treating victims of a bioterrorism attack. The virtual patient is a dynamic, interactive simulation that presents clinical symptoms of the modeled injury and whose state changes realistically over time both spontaneously (due to injury) and in response to user actions, thus providing real-time feedback. It supports the manipulation of virtual objects, allowing users to act upon their environment. It features a voice recognition component, allowing the user to request information such as vital signs and to command certain actions (e.g., exposing the patient). The system has a recording capability that stores high-level actions along with a time stamp.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Hospital T&E; Part-Task Training; Pre-Training

Version: Prototype, not yet in use

Date evaluated: August 14, 2003

Product Name: Bridgeworks

Company:	**Contact Info:**
Bridgeborn LLC 3113 Pacific Avenue Virginia Beach, VA 23451 **Web site**: www.bridgeborn.com	Tim Ambrosino (CEO) Bridgeborn LLC Phone: (757) 437-5000 Fax: (757) 422-3439 info@bridgeborn.com tambrosino@bridgeborn.com

Key Product Attributes:

Product Type: Dynamic Media (Other) **Commercial or Government Owned:** CO **Media Scale:** Individual, Group, Small Multi-User Team **Application Environment:** Training, Exercise	**Training Type it Supports:** Equipment Training, Part-Task Training, Pre-Training **Functional Area(s) it Supports:** EMS, EMA, Health Care, HazMat, Law Enforcement, Public Works **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials

Product Description:

Bridgeborn has developed a proprietary, patented-pending software technology—Bridgeworks—for the design, development and implementation of interactive, 3-D, Web-based environments. Bridgeborn uses this technology to create visualizations of products, complex processes, and systems as well as visualizations of abstract data.

Advantageous MS&G Features: Requires Active User Decision Making; Part-Task Training; Pre-Training

Version: N/A

Date evaluated: December 17, 2003

Product Name: Bt CREATE

Company:	**Contact Info:**
National Association of County and City Health Officials 1100 17th St. N.W., 2nd Floor Washington, DC 20036 **Web site**: http://www.naccho.org/prod140.cfm	Tel.: 202-783-5550 FAX: 202-783-1583

Key Product Attributes:

Product Type: Dynamic Media (Planning/Presentation Tool) **Commercial or Government Owned:** CO **Media Scale:** Individual **Application Environment:** Training, Exercise	**Training Type it Supports:** Awareness, Pre-Training, TTX, FSE Reinforcement **Functional Area(s) it Supports:** EMS, EMA, Health Care, Public Health **Primary Target Audience:** Commanders, Local Officials

Product Description:

Bt CREATE is a tool for developing TTX scenarios. It is an interactive CD-ROM-based application intended to educate, inform, and assist emergency response communities as they prepare for and respond to bioterrorism, other outbreaks of infectious disease, and other public health threats and emergencies. The content of Bt CREATE is primarily directed toward assisting the user in developing a TTX scenario using a biological agent. The application contains presenter materials for three biological agents that could be used as weapons: botulism (Botulinum toxin), plague (Yersinia pestis), and smallpox (Orthopox virus, Variola). These materials consist of fact sheets, guidance documents, and Journal of the American Medical Association (JAMA) consensus statements describing the agents, transmission, symptoms, prevention measures, treatments etc.

Advantageous MS&G Features: Requires Active User Decision Making; Hospital T&E; Pre-Training

Version: 1.0 (2003)

Date evaluated: 10/17/2003

Product Name: Chemical Agent Monitor Simulator (CAMSIM)

Company:	**Contact Info:**
Argon Electronics Unit 16 Ribocon Way Progress Business Park Luton Bedfordshire LU4 9UR U.K. **Web site**: http://www.argonelectronics.com	Steven Pike 011 44 1582 491616 sales@argonelectronics.com

Key Product Attributes:

Product Type: Interactive (Equipment Simulation) **Commercial or Government Owned:** CO **Media Scale:** Individual, Small Multi-User Team **Application Environment:** Training, Exercise	**Training Type it Supports:** Equipment Training, Part-Task Training, Drills, FSE, National Training Exercise **Functional Area(s) it Supports:** EMS, Fire, Health Care, HazMat, Law Enforcement, Transportation **Primary Target Audience:** First Responders, Commanders

Product Description: CAMSIM is an individual student training device that simulates the Chemical Agent Monitor (CAM) operational equipment (a hand-held instrument capable of detecting nerve or blister agents or liquid agent contamination), and its behavior. It enables training in detection and response to chemical and HAZMAT substances, including indoors and outdoors, without the need to use hazardous material (ultrasound and magnetic technologies are used). It simulates vapor and contamination hazards for nerve and blister agents, including the effects of wind direction. The system can simulate contamination and decontamination of vehicles, cargo, luggage, ground areas, aircraft, ships and people. This technology can also simulate other CW agents, toxic industrial substances, and radiological and biological hazards. The system simulates partial and full decontamination and persistency. The technology can be adapted to simulate virtually any hazardous material detector.

The CAMSIM system is used to teach the correct use of WMD detection and identification equipment. It has the ability to monitor students' use of the CAM instrument and report any procedural errors. It also has provision for recording user errors and supporting the AAR. Although training curricula are not provided with CAMSIM, this device has been widely used in the U.S.; curricula are available at user agencies (e.g., U.S. Army SBCCOM have developed a CD-ROM-based guide).

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Part-Task Training

Version: Various (e.g., CAMSIM 2; CAMSIM PLUS)

Date evaluated: December 2003

Product Name: Chemical Biological Response Aid (CoBRA)

Company:	**Contact Info:**
The Defense Group Inc. 2034 Eisenhower Avenue, Suite 115 Alexandria, VA 22314 **Web site**: http://www.cobraguides.com	Brad Gardner, VP CoBRA Division Tel.: 703-535-8720 Email: brad.gardner@defensegp.com

Key Product Attributes:

Product Type: Dynamic Media (Other) **Commercial or Government Owned:** Commercial **Media Scale:** Individual, Small and Large Multi-user Teams, Multi-Agency Participation **Application Environment:** Training, Exercise, Operational	**Training Type it Supports:** Equipment Training, Awareness, Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, Health Care, HazMat, Law Enforcement **Primary Target Audience:** First Responders, Commanders

Product Description:

CoBRA® is an operational tool for emergency incident planning and response. It combines reference materials, checklists, and reporting mechanisms into a single software package. The software is intended for installation on individual PCs (laptops, desktops, or handhelds). Individual PCs can, however, be networked to allow CoBRA® data to be transmitted from on-scene users to higher levels in the Incident Command System structure. The latest version includes a Master Scenario Events List capability that can be used to drive exercises.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Remote Observation; Hospital T&E; Pre-Training

Version: 2.0

Date evaluated: October 15, 2003

Product Name: The Citizen's SMART Book	
Company: American Book Publishing P.O. Box 65624 Salt Lake City, UT 84165 Phone: 1-800-296-1248 **Web site**: www.american-book.com	**Contact Info:** Steve Gamache Low.tec@verizon.net Home (760) 256-1759 Cell (760) 900-4435 Office (760) 380-5313 www.citizenseries.com
Key Product Attributes:	
Product Type: Static Media (Document) **Commercial or Government Owned:** CO **Media Scale:** Individual **Application Environment:** Operational	**Training Type it Supports:** Pre-Training **Functional Area(s) it Supports:** Public Health, Private Sector **Primary Target Audience:** *Possibly* First Responders, Commanders, Local Officials, State Officials, Federal Officials
Product Description: The focus of this book is to distribute information the authors feel every American citizen should know about terrorism and terrorist threats. This includes addressing the threat of terrorism faced by the average American, how to avoid an attack, and what to do if caught in an attack. The information and the avoidance/protective procedures are presented at a basic but realistic level. **Advantageous MS&G Features:** Pre-Training	
Version: N/A **Date evaluated:** December 18, 2003	

Product Name: Civil Emergency Reaction and Responder Training System (CERRTS)

Company:	**Contact Info:**
Raytheon Company	Kenneth R. Woodall
621 Six Flags Drive, Suite 100	Business Development
Arlington, TX 76011	Network Centric Systems
	817-619-9465 Fax 817-619-9410
Web site: http://www.raytheon.com	Kenneth_R_Woodall@Raytheon.com

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Exercising	**Training Type it Supports:** Part-Task Training, Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, National Training Exercise **Functional Area(s) it Supports:** Commanders, Local Officials, State Officials, Federal Officials **Primary Target Audience:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Works

Product Description:

Computer-driven, emergency response and crisis rehearsal tool for training and exercising incident command and EOCs at various echelons of command. It consists of a Windows-based, menu-driven interface with embedded plume modeling capabilities. It features distributed mission planning capabilities and man-in-the-loop decision making utilities with 2-D and 3-D interactive environments, alert and casualty notifications, AAR, and time-stamped recording of all activities.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Enhanced Communication T&E; Part-Task Training; Pre-Training; Distributed/Collaborative Decision Making Environment

Version: 1.0

Date evaluated: August 14, 2003

Product Name: Competency Observation Recording & Evaluation (CORE)

Company:	**Contact Information:**
Naval Air Warfare Center, Training Division	Rosemary Garris
12350 Research Parkway	Code 4691
Orlando, FL 32826-3275	407-380-4833
	Rosemary.garris@navy.mil

Key Product Attributes:

Product Type: Dynamic Media (Observer Tool)	**Training Type It Supports:** Drills, FE, FSE, FSE Reinforcement, National Training Exercise
Commercial or Government Owned: GO	**Functional Area(s) It Supports:** *Possibly* EMS, EMA, Fire, Government Administration, HazMat, Law Enforcement, Public Health, and Public Works, Healthcare, and Public Safety Communications
Media Scale: Individual, Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	
Application Area: Training, Exercise	**Primary Target Audience:** First Responders, Commanders, State Officials, Federal Officials

Product Description: CORE is a hand-held device used for remote exercise control, status monitoring, and data entry. It is intended for use by instructors and exercise staff (controllers, evaluators, facilitators, and observers) who are located remotely from the training/exercise control station (e.g., located among students/participants in the field of a large-scale exercise). It can communicate wirelessly with exercise control, or provide data via a docking station after conclusion of the exercise. CORE software is being developed by the Navy (GOTS); the hardware is COTS (primarily a PDA, interfacing with a PC).

It is intended as an instructor and exercise-staff tool to support real-time FSEs. The wireless hand-held device can cue evaluators, provide status information, enable remote control of scenario, collect/record performance data, and transfer data to the exercise/analysis computer for the AAR and subsequent analysis.

Advantageous MS&G Features: Records User-Specific Performance; Remote Observation

Version: N/A

Date Evaluated: April 1, 2003

Product Name: Computer-Aided Management of Emergency Operations (CAMEO)

Company:	**Contact Info:**
National Oceanographic and Atmospheric Administration; Environmental Protection Agency **Web site**: http://www.epa.gov/ceppo/cameo/	EPA regional office: http://www.epa.gov/ceppo/cameo/regcont.htm NOAA: 206-526-6317

Key Product Attributes:

Product Type: Dynamic Media (Other) **Commercial or Government Owned:** GO **Media Scale:** Individual, Group, Multi-Agency Participation **Application Environment:** Training, Exercise, Operational, Analysis	**Training Type it Supports:** Part-Task Training, Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, National Training Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, Health Care, HazMat, Law Enforcement, Private Sector **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials

Product Description: CAMEO is a system of software applications used to plan for and respond to chemical emergencies. It includes a national component (e.g., a chemical database of over 6,000 hazardous chemicals, 80,000 synonyms, and product trade names), and a local component (e.g., detailed information about local facilities). CAMEO provides a search engine that allows users to find chemicals instantly. Each chemical is linked to chemical-specific information on fire and explosive hazards, health hazards, firefighting techniques, cleanup procedures, and protective clothing. The local data contains basic information on facilities that store chemicals, on the inventory of chemicals at the facility (Tier II), and on emergency planning resources. Additionally, there are templates where users can store EPCRA information. CAMEO connects the planner or emergency responder with critical information to identify unknown substances during an incident. It provides local emergency planners with a tool to enter local information and develop incident scenarios to better prepare for chemical emergencies.

This system came about by integrating the original CAMEO chemical database and a methodology to manage the data, with an air dispersion model (ALOHA), and a mapping capability (MARPLOT). All modules work interactively to share and display critical information in a timely fashion.

Advantageous MS&G Features: Requires Active User Decision Making; Part-Task Training; Pre-Training

Version: 1.0

Date evaluated: December 2003

Product Name: Computer Assisted Protective Action Recommendation System (CAPARS)

Company:	**Contact Info:**
AlphaTRAC, Inc. Sheridan Park 8 8670 Wolff Court Suite 120 Westminster, CO 80031 **Web site**: http://www.alphatrac.com	Jack Pikas, Program Manager 303-428-5670 info@alphatrac.com

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model) **Commercial or Government Owned:** CO **Media Scale:** Individual, Group **Application Environment:** Operational, Analysis	**Training Type it Supports:** N/A **Functional Area(s) it Supports:** EMA, Fire, HazMat, Law Enforcement **Primary Target Audience:** First Responders, Commanders, Local Officials

Product Description:

CAPARS is a capability for predicting the path and impacts from an atmospheric release of hazardous materials. Specialized rapid-response products tell the Crisis Manager where the plume will go, when it will get there, how serious the impacts will be, and what protective actions to take. The modeling system is specifically designed for application in hazards and risk assessments, emergency preparedness, and real-time emergency response. It provides a variety of plume, weather, hazard, and related information to support all levels of emergency management and response, including first response teams. CAPARS consists of six major subsystems: Task Management, Communication, Graphical User Interface, Atmospheric Modeling, Geographical Information System, and Risk/Hazard Assessment.

Advantageous MS&G Features: Observations of CAPARS were not made. This product was not fully reviewed, because AlphaTRAC, Inc. did not provide the requested information.

Version: N/A

Date evaluated: January 2004

Product Name: Consequence Assessment Tool Set with Joint Assessment of Catastrophic Events (CATS-JACE)

Company:	**Contact Info:**
Defense Threat Reduction Agency	Tel.: (703) 325-6106
Consequence Assessment Branch (TDOC)	FAX (703) 325-0398
6801 Telegraph Rd.	ACEhelp@dtic.mil
Alexandria, VA 22310-3398	
Web site: http://cats.saic.com/	

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model)	**Training Type it Supports:** FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise
Commercial or Government Owned: CO and GO	**Functional Area(s) it Supports:** EMA, Government Administrator, HazMat, Law Enforcement
Media Scale: Individual, Multi-Agency Participation	**Primary Target Audience:** Commanders, Local Officials, State Officials, and Federal Officials
Application Environment: Training, Exercise, Operational, and Analysis	

Product Description:

CATS-JACE is a decision support system for analyzing the consequences of man-made threats (CBRNE) and natural disasters (earthquakes and hurricanes). The target audience is U.S. government agencies and military commands, state and city emergency agencies, and commercial users. The system consists of a graphical user interface (GUI) and geographic information system (GIS) mapping, simulation, and reporting features. ArcView provides the GIS mapping capability for analysis and display of predictions, consequence assessments, and resources. Simulation is performed by a large number of modeling packages. CATS-JACE is an integration layer that combines access to multiple models through a common GUI. Most access to external software and modeling code is transparent to the user, except for procurement of ArcView. The customer/user must obtain a copy of ArcView from ESRI separately, in order to run CATS-JACE.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 4.60

Date evaluated: September 5, 2003

Product Name: Core Training & Exercise System (CT&ES)

Company:	**Contact Info:**
Lockheed Martin	James F. Jarboe
12506 Lake Underhill Road	497-306-2514
Orlando, FL 32825-5002	james.jarboe@lmco.com
Web site: www.lockheedmartin.com	

Key Product Attributes:

Product Type: N/A	**Training Type it Supports:** Awareness, Part-Task Training, Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector
Media Scale: Individual, Small Team, Large Team, Multi-Agency Participation	**Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Training, Exercise, Analysis	

Product Description: System designed to follow DoD models and to cover the entire preparedness cycle by providing plan auditing consulting and modeling, training and exercise needs identification and targeted interventions (e.g., online training and simulated exercises with constructive simulations), and timely AARs. It will be developed by Lockheed and carried out in partnership with other vendors (e.g., Capstar, Texas A&M, and Sandia National Laboratories). CT&ES' concept of operations is cyclical and described as: a) Federal, state, and local plan/procedure audit and testing; b) Course and exercise development; c) Pre-exercise training and orientation; d) Team planning/training exercise and evaluation; e) Exercise evaluation AAR; f)Training and plans evaluation and detailed exercise report; g) start cycle again (indefinitely). System is designed to initially require contractor support, and parts of it can potentially be carried out by the users alone.

Advantageous MS&G Features: Product is still a prototype and was not rated on observations at this time.

Version: Prototype

Date evaluated: January 9, 2004

Product Name: Crises Management System Modeling Analysis Package(CMS MAP)

Company:	**Contact Information:**
Applied Science Associates	Chris Galagan, Project Manager
Eoin Howlett, General Director	401-789-6224 Ext. 30
401-789-6224 Ext. 18	chris@appsci.com
ehowlett@appsci.com	

Key Product Attributes:

Product Type: Operational System (Incident Response)	**Training Type It Supports:** Drills, Tabletops, Functional Exercises, FSE, FSE Reinforcement, National Training Exercises, Pre-Training
Commercial or Government Owned: CO	**Functional Area(s) It Supports:** EMS, EMA, Fire, Government Administration, HazMat, Law Enforcement, Public Health, and Public Works, Healthcare, and Public Safety Communications
Media Scale: Small Multi-User Team, Large Multi-User Team	**Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials
Application Area: Training, Exercise, Operational, Analysis	

Product Description: CMS is a multi-functional application used to simulate a team's response to an emergency situation. It is primarily oriented toward oil spill and chemical/hazardous-material release types of incidents in a port area. It can be used to simulate oil spills, chemical spills, search and rescue operations, nuclear fallout, and marine emergencies. CMS enables a team to provide coordinate location, purchasing, and deployment of task forces and resources at any level of the incident/emergency situation.

CMS can be and is used operationally; it has rapid prediction models that assist the response team in understanding the likely direction and impact of a pollutant during the incident. The user may track deployed equipment, personnel, and other resources. This allows cooperative action and communication from any number of emergency service providers

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Remote Observation; Enhanced Communication T&E; Pre-Training

Version: 4.4

Date Evaluated: March 31, 2003

Product Name: CRISIS

Company:	**Contact Information:**
Ship Analytics Inc. 183 Providence – New London Turnpike North Stonington, CT 06359 **Web Site**: www.shipanalytics.com	Michael Collins, Chief of Development 860-535-3092 Fax: 860-535-0560 mcollins@shipanalytics.com

Key Product Attributes:

Product Type: Operational System (Incident Response) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team **Application Area:** Training, Exercise, Operational, Analysis	**Training Type It Supports:** Drills, TTX, FE, FSE, FSE Reinforcement, National Training Exercise, **Functional Area(s) It Supports:** EMS, EMA, Fire, Government Administration, HazMat, Law Enforcement, Public Health, Public Works, Healthcare, and Public Safety Communications **Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials

Product Description: CRISIS™ is a large scale system simulation designed to support a full EOC team in responding to and managing incident response for applications ranging from oil spill, storm, and natural disaster, to police counter-terrorism. It has a Command Center training focus.

CRISIS™ can be used in the development of response plans, alternative strategies, and performance measurement scoring of trainee performance to ensure a state of readiness. It has predictive models, including nuclear and chemical release, coupled with countermeasure simulations that allow the evaluation of alternative countermeasures dynamically against the spread of a particular crisis and its impact in terms of economic and biologic damage.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Remote Observation; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 5.3

Date Evaluated: February 24, 2003

Product Name: Crisis/Consequence Management Simulation (UCMS)

Company:	**Contact Info:**
Unitech 5870 Trinity Parkway 4th Floor Centreville, VA 20120 **Web site**: http://www.unitech1.com	Michael Brown 2000 Randolph SE, Suite 104 Albuquerque, NM 87106-4281 505-265-4767 info@UNITECH1.com

Key Product Attributes:

Product Type: Dynamic Media (Other) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team**,** Multi-Agency Participation **Application Environment:** Training, Exercise	**Training Type it Supports:** TTX, FE, Pre-Training **Functional Area(s) it Supports:** *Possibly* EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** *Possibly* First Responders, Commanders, Local Officials, State Officials, Federal Officials

Product Description: UCMS is one of five components of UNITREX, a suite of Web-based tools assembled to integrate and facilitate exercise design, planning, delivery, and evaluation. UCMS is an automated approach to training exercises. It provides an interactive, computer-based training exercise aimed at improving critical decision making in crisis situations through practice. It provides simulated, terrorism-related emergencies that require responders to employ critical decision making skills while under the pressure of time and resource limitations. As such, it replicates real-time events and allows customization to user needs and objectives. UCMS is identified by its developer as well suited for enhanced TTX and FE, in support of homeland security.

UNITREX is a suite of Web-based tools used to develop and deliver progressive exercise programs that build from initial orientation to full-scale field exercises, and it includes pre- and post-training. This exercise design process is in a digital form for distribution through wide-area networks or the Internet.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support; Pre-Training

Version: Not available

Date evaluated: January 2004

Product Name: Decision Making Skills for Public Officials During a Hazardous Material Incident

Company:	**Contact Information:**
Carley Corporation for FEMA	Nancy Kaufman, Project Manager
6023 Selwood Place	6023 Selwood Place
Springfield, VA 22152	Springfield, VA 22152
Web Site: www.carleycorp.com.	nkaufman@carleycorp.com

Key Product Attributes:

Product Type: Dynamic Media (Self-Guided Training)	**Training Type It Supports:** Awareness, Pre-Training
Commercial or Government Owned: GO	**Functional Area(s) It Supports:** EMS, EMA, Fire, Government Administration, HazMat, Law Enforcement, Public Health, and Public Works
Media Scale: Individual, Group	**Primary Target Audience:** Local Officials
Application Area: Training	

Product Description: "Decision Making Skills for Public Officials During a Hazardous Materials Incident" is a CD-ROM computer-based training (CBT) product. The six-disk set is aimed at educating Public Officials about making decisions during a HazMat incident using the same information they would have available in an actual incident. The training is designed with audio and video clips to increase the interactive quality of the experience. It was developed by the Carley Corporation through a contract with the Emergency Management Institute (EMI) of the Federal Emergency Management Agency (FEMA).

According to the Carley Corporation home page, "FEMA wanted to present these officials with an accurate simulated emergency to test strategic decision making." The goal of this training is to "… allow public officials to build experience and confidence in their critical thinking and decision making skills before facing the next disaster." This training is designed to simulate the same data elements; time constraints; and political, safety, financial, and legal pressures that public officials would encounter in an actual incident.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support; Pre-Training

Version: There is only one version; it has been distributed to the States by FEMA.

Date Evaluated: March 4, 2003

Product Name: Disaster Response Board Game

Company:	**Contact Info:**
Learning Landscapes Note: This company is no longer in business. The American Red Cross Disaster Services Program owns the Disaster Response Board Game. **Web site**: www.learninglandscapes.com	Al Vliet, Manager - Individual and Organizational Learning. Disaster Preparedness 202.303.8699 vlieta@usa.redcross.org

Key Product Attributes: Unknown at this time

Product Type: Exercise (Human Adjudicated)	**Training Type it Supports:** N/A
GOTS/COTS: CO	**Functional Area(s) it Supports:** N/A
Media Scale: Group, Small Multi-User Team, Large Multi-User Team	**Primary Target Audience:** N/A
Application Environment:	

Product Description:

According to the Learning Landscapes Web site: "the Disaster Response Board Game is a board game that simulates a moderate size disaster relief operation. The simulation is played over two days. …the simulation allows participants to experience some of the key elements of a disaster relief operation from preparedness capabilities through to after-action analysis of the incident. Emphasis is on communication and the decision making framework with quality service as the goal. Each game board requires 6-8 players. Up to four boards may be played simultaneously, for a maximum total of 32 participants. Participants are disaster leadership staff."

"In the simulation, participants manage a relief operation for a flood that affects four communities. The primary decisions revolve around providing service to people affected by disaster, the human resources and training pipeline, the logistics pipeline, and information flow. The objectives of the simulation are to: manage the systems of a disaster relief operation; explain the importance of planning and preparedness activities; focus on problem-solving with quality service as a goal; and use resources wisely."

The game has built-in mechanisms to track three main performance measures: quality service to clients, improvements in the community's capacity to handle future disasters, and relief operation costs. At the completion of the game, participants debrief first as a team, discussing their decisions around these quality measures and their effectiveness as individual leaders and as a team. Finally, all teams participate in a group debrief, which focuses on the impact of the underlying systems of any disaster relief operation.

Advantageous MS&G Features: *Possibly* Records User-Specific Performance; Requires Active User Decision Making; Pre-Training

Version: Unknown

Date evaluated: September 3, 2003

Product Name: Eagle Defender (EGLD)

Company:	**Contact Info:**
McDonald Research Associates	Dr. Bruce McDonald
120 University Park Dr., Suite 200	McDonald Research Associates
Winter Park, FL 32792	120 University Park Dr., Suite 200
Web site: www.mrassociates.com	Winter Park, FL 32792
	bruce@mrassociates.com

Key Product Attributes:

Product Type: Interactive (Virtual Simulation)	**Training Type it Supports:** Part-Task Training, Pre-Training, TTX, FE, FSE Reinforcement, Distributed Collaborative Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMA, Fire, Government Administrator, HazMat, Law Enforcement, and Public Health
Media Scale: Individual, Group, Small Multi-User Team, Large Multi-User Team **Application Environment:** Training	**Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials

Product Description:

Eagle Defender is a desktop real-time computer simulation tool that allows leaders and decision makers from multiple organizations to practice large- and small-scale incident responses without tying up large numbers of front line personnel. It is an outgrowth and expansion of Security Forces Distributed Mission Training technology developed for the Air Force. The tool simulates the incident, activities of the perpetrators, and activities of the assets (equipment and personnel) deployed by the incident response planners and decision makers. With this tool, leaders can practice:

- Deploying assets to prevent or detect an incident.
- Responding to reports from field personnel.
- Deciding on courses of action and which assets to deploy in response.
- Directing field personnel to execute the courses of action.
- Requesting and providing assistance and assets from/to other jurisdictions, including military Civil Support Teams.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Enhanced Communication T&E; Part-Task Training; Pre-Training

Version: 3.2

Date evaluated: August 28, 2003

Product Name: EM/2000

Company:	**Contact Info:**
BizcomUSA 5440 NW 33rd Ave, Suite 106 Ft. Lauderdale, FL 33309-6338 **Web site**: http://www.bizcomusa.net/em2000.html	David Klein (800) 440-8515 ext. 212 DavidK@bizcomusa.net

Key Product Attributes:

Product Type: Operational System (Incident Response) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Operational	**Training Type it Supports:** Drill, TTX, FE, FSE, Distributive Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials

Product Description: EM 2000 is a "PC based emergency management software system that streamlines the flow of critical information during emergency incidents or major events." It is designed to be used operationally, during non-emergency periods, with daily use features such as contact and resource management, GIS mapping, task management, messaging, workgroup discussions, calendaring and scheduling, etc. It can be used to "ascertain the magnitude of an emergency or disaster, locate and deploy resources, log incident activities, track requests and tasks, generate situation reports and communicate critical information across local and wide-area networks and the Internet."

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 4.09

Date evaluated: December 1, 2003

Product Name: Emergency: Fighters for Life

Company:	**Contact Information:**
The WizardWorks Group, Inc. 2300 Berkshire Lane North Plymouth, MN 55441 **Web Site**: www.wizworks.com	http://www.ina-support.com Infogrames, Inc. 417 Fifth Avenue New York, NY 10016 Tel. 212-726-6500 support@wizworks.com

Key Product Attributes:

Product Type: Dynamic Media (Entertainment) **Commercial or Government Owned:** CO **Media Scale:** Individual **Application Area:** Entertainment	**Training Type It Supports:** Awareness **Functional Area(s) It Supports:** N/A **Primary Target Audience:** N/A

Product Description:

This product is a computer game that allows the user to practice strategic and tactical decision making while responding to 30 different accident or disaster scenarios. The main challenge is in choosing how to deploy emergency vehicles and teams in a timely manner according to the type of incident or scenario. Emergency responders must then be directed to perform certain actions to rescue victims, perform first aid, and transport them to the hospital. The simulation tests basic incident response decision making in pre-scripted scenarios.

The simulations are pre-defined scenarios, which have either implicit or explicit constraints. Emergency bases are located in a given geography, and vehicles and responder personnel have fixed rates of movement. Some scenarios require task completion in a given amount of time or before a victim dies of injuries. Only certain types of responders can deal effectively with WMD type events (firefighters in HazMat suits, for example). The simulation software determines the success or failure of each mission based upon successful task completion, timing, and victim health. Different degrees of victim injury require different types and speeds of emergency response. Similarly, entities have realistic constraints on their actions; ambulance orderlies cannot fight fires, firefighters cannot direct traffic, police cars cannot tow vehicles.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support

Version: N/A

Date Evaluated: March 31, 2003

Product Name: Emergency Preparedness Incident Command Simulation (EPiCS)

Company:	**Contact Information:**
TRADOC Analysis Center (AST, Inc.)	Dr. Julie Seton, EPiCS Project Leader
Building 1400	505-678-4949
WSMR, NM 88002	Setonj.contractor@trac.wsmr.army.mil
Web Site:	

Key Product Attributes:

Product Type: Exercise (Computer Adjudicated)	**Training Type It Supports:** FE, FSE, Distributed/Collaborative Exercise
Commercial or Government Owned: GO	**Functional Area(s) It Supports:** EMS, EMA, Fire, Government Administration, HazMat, Law Enforcement, Public Health, Public Works, Healthcare, and Public Safety Communications
Media Scale: Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials
Application Area: Training, Exercise	

Product Description:

EPiCS was developed to support emergency response capabilities and events. It is a simulation and visualization training and exercise tool consisting of a set of 20 software packages designed to provide realistic practice for public safety managers—including response to WMD. The two main elements of EPiCS are the Janus simulation engine and the visualization and exercise playback tool Operational Test Visualization (OTVIS).

EPiCS can be used to model the physical, geo-specific environment and entities of choice. It provides human-in-the-loop (HITL) simulation in which human participants control the action of simulated entities; discrete events and behaviors are attributable to individual entities.

The training/exercise audience does not interact with the simulation itself—they interact with role-players who are interacting with the simulation. After the exercise, in an AAR, the training audience will be exposed to visualizations produced by playback of the simulation.

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Remote Observation; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: Experimental prototype of operational system

Date Evaluated: April 5, 2003

Product Name: Emergency Response Synchronization Matrix (ERSM)

Company:	**Contact Info:**
Argonne National Laboratory	Jacques Mitrani
Center for Integrated Emergency Prep.	Associate Director
Building 900	Tel.: (630) 252-7087
9700 South Cass Avenue	Email: jacquesm@anl.gov
Argonne, IL 60439-4832	
Web site: http://ersm.dis.an.gov/default.asp	

Key Product Attributes:

Product Type: Dynamic Media (Planning/Presentation Tool)	**Training Type it Supports:** Pre-Training, TTX, FE, FSE, FSE Reinforcement
Commercial or Government Owned: GO	**Functional Area(s) it Supports:** EMA, HazMat, Law Enforcement, Public Works, Transportation
Media Scale: Individual, Group, Multi-Agency Participation	**Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Training, Analysis	

Product Description:

The Emergency Response Synchronization Matrix is a software tool for planning emergency response processes that span multiple organizations and jurisdictions. Functionally, the product is a database with a GUI that produces process/information flow charts as its main output. It is a single PC platform planning system for incident response that supports individual or small group use.

Advantageous MS&G Features: Pre-Training

Version: 2.1.1 (October 2002)

Date evaluated: September 5, 2003

Product Name: Emergency Response to Terrorism: Basic Concepts (ERT:BC)

Company:	**Contact Info:**
Illinois Fire Service Institute 11 Gerty Drive Champaign, IL 61820 **Web site**: http://www.fsi.uiuc.edu	Richard L. Jaehne, Director 217-333-8926 jaehne@uiuc.edu

Key Product Attributes:

Product Type: Interactive (Other) **Commercial or Government Owned:** GO **Media Scale:** Individual **Application Environment:** Training	**Training Type it Supports:** Awareness, Pre-Training **Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** First Responders, Local Officials, State Officials

Product Description: The ERT:BC is a Web-based course addressing awareness training. The first session of this course will be conducted in January 2004. This course is an evolution of a resident course that was taught at various venues throughout the State of Illinois. This prototype Web-based course is planned to be taught exclusively over the Internet, with a video tape module (video tape is loaned to the students' local libraries) and limited remote instructor assistance (e.g., for certain homework items). This is the course's initial implementation; it may be subsequently modified as a result of experiences during its conduct. A variety of modifications are possible, in keeping with the instructional tools typically used by the IFSI (e.g., student internet chat rooms; video tapes loaned to students' local libraries; instructor availability to respond to student inquiries).

This program is designed to help responders recognize and understand acts of terrorism, both domestic and international. It provides responders with basic knowledge on implementing self-protective measures, scene security, and tactical considerations when dealing with terrorism. Explosives, chemical, radiological, and etiological types of harm are discussed. This class also gives the responders an overview of the incident command structure and their role within a mass casualty disaster involving a multi-jurisdiction command system.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Pre-Training

Version: N/A

Date evaluated: December 2004

Product Name: Emergency Simulation Program (ESP)

Company:	**Contact Info:**
Straylight Multimedia	Jay Storey
5512 Broadway	(604) 298-5521
Burnaby, B.C. Canada V5B 2X7	jstorey@telus.com
Web site: www.straylightmm.com	

Key Product Attributes:

Product Type: Dynamic Media (Planning/Presentation Tool)	**Training Type it Supports:** Part-Task Training, Pre-Training
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, HAZMAT, Law Enforcement
Media Scale: Group, Small Multi-User Team	**Primary Target Audience:** First Responders, Commanders
Application Environment: Training, Exercise	

Product Description:

ESP is an authoring/presentation software program. It comes equipped with a library of still or motion video vignettes that can be arranged to simulate a pre-arranged scenario. It is designed to control the creation and presentation of multimedia simulations used to train personnel involved in emergency response.

Advantageous MS&G Features: Requires Active User Decision Making; Supported by Computer Simulation; Enhanced Communication T&E; Part-Task Training; Pre-Training

Version: 4.2.2

Date evaluated: December 12, 2003

Product Name: Employee Awareness Video

Company:	Contact Info:
WMD Installation Preparedness Program Services : AMSSB-REN-HD (E3331/117) 5183 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5424 Tel: (410) 436-3674 Email: homeland.defense@sbccom.apgea.army.mil **Web site**: http://hld.sbccom.army.mil/ip/fs/wmd_ip_courses_fact_sheet.htm	Linda Harris EAI Corporation Ph: 410-676-1449

Key Product Attributes:

Product Type: Static Media (Presentation) **Commercial or Government Owned:** GO **Media Scale:** Individual, Group **Application Environment:** Training	**Training Type it Supports:** Awareness **Functional Area(s) it Supports:** Private Sector **Primary Target Audience:** *Possibly* First Responders, Commanders, Local Officials, State Officials

Product Description:

Employee Awareness training is a 30-minute video presentation intended to provide basic WMD awareness to a diversified audience of private-sector employees, installation military, civilians, and dependents. The training is presented in layman's terms and is available in both English and Spanish. There is no instructor requirement; however, a facilitator is recommended to guide one through the video.

Advantageous MS&G Features: *Possibly* Part-Task Training; Pre-Training

Version: 1

Date evaluated: December 19, 2003

Product Name: EMS Simulator

Company:	**Contact Information:**
Less Stress Instructional Services	John Mateus, Mary Rongo
138 Buena Vista Ave.	888-277-3671
Hawthorne, NJ 07506	jmateus@lessstress.com
Web Site: www.lessstress.com	

Key Product Attributes:

Product Type: Dynamic Media (Self-Guided Training)	**Training Type It Supports:** Awareness, Pre-Training
Commercial or Government Owned: CO	**Functional Area(s) It Supports:** EMS, Healthcare
Media Scale: Individual, Group	**Primary Target Audience:** First Responders
Application Area: Training	

Product Description:

EMS Simulator is a Web-based training accessible to the general public. The training is accessed through www.lessstress.com and is designed to increase knowledge and awareness of "pre-hospital" medical emergencies. The site claims that the delivered content is not meant to replace normal "hands on" training courses. The targeted users are emergency medical personnel who opt to refresh their training in the delivery of first aid to a range of victims. Targeted users for the CPR simulations are bystanders in non-specific or work settings.

Both the CPR and EMS applications are Web-based, individual, fixed-path computer-based training tools. Strictly speaking, these applications are not simulations but deterministic, discrete models used to test functional processes in a narrative format. Users progress through sets of Web pages by making decisions that conform to pre-defined decision logic representing first responder best practices. The user selects discrete choices of action in a given stage of each scenario. If the wrong decision is made, the user is coached that there is a more appropriate selection and forced to return to the previous screen. All scenarios for both the CPR and EMT tools are fixed-path training providing the user with established decision logic.

Advantageous MS&G Features: Requires Active User Decision Making; Pre-Training

Version: N/A

Date Evaluated: March 12, 2003

Product Name: eRoom

Company:	**Contact Info:**
Documentum 6801 Koll Center Parkway Pleasonton CA 94566 **Web site**: http://www.documentum.com/solutions/collaboration/index.htm	1-888-593-7666 Email: info@documentum.com

Key Product Attributes:

Product Type: Operational System (Virtual Collaborative Environment) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Operational	**Training Type it Supports:** *Possibly* Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** *Possibly* EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** *Possibly* Commanders, Local Officials, State Officials, Federal Officials

Product Description:

eRoom is a general-purpose collaborative environment. It provides a central location for sharing digital files and has a robust document revision and tracking capability, as well as collaboration tools (mostly asynchronous). Features include: project planning capabilities like Gantt charts and task tracking; robust document handling including version tracking, full-text search and group editing of files; and threaded discussions, dynamic polling, and automated alerts. Most of the collaboration is asynchronous (threaded discussions, file sharing); the real-time synchronous capability is application sharing, where multiple users can share the same application view simultaneously and have a chat capability while doing so.

eRoom might be used in the T&E development process. Putting together an exercise is often a complicated coordination process, requiring much scheduling coordination, as well as tracking of milestones and documents generated along the way: schedules, scenario injects, supporting reference documents, etc. eRoom's collaboration and document capabilities are a natural fit for this kind of process. eRoom might also be used for an online distributed exercise, so long as player interaction can occur primarily asynchronously.

Advantageous MS&G Features: Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 7

Date evaluated: 12/19/03

Product Name: E Team (ETM)

Company:	**Contact Info:**
E Team	Charles Mancini
	877-546-7892 x257
Web site: http://www.eteam.com	cmancini@eteam.com

Key Product Attributes:

Product Type: Operational System (Incident Response)	**Training Type it Supports:** Drills, TTX, FE, FSE, Distributed Collaborative Exercise, and National Training Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector
Media Scale: Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Operational	

Product Description:

Browser based information management software that allows users to share a common operation picture in the form of standardized summaries, reports, requests, notifications, directives, annotated maps, and a resource tracking utility. It was designed to allow users to share information, make decisions, and deploy resources without being physically present at the EOC. Functionalities include resource management, action planning and personnel tasking, creation of directories, and real-time messaging.

Advantageous MS&G Features: Records User-Specific Performance; Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 2.1

Date evaluated: August 14, 2003

Product Name: FEMIS and EM*Advantage*

Company:	**Contact Info:**
Pacific Northwest National Laboratory	David Millard
P.O. Box 999, MS K7-28	Tel.: (509) 375-2947
Richland, WA 99352	Email: dave.millard@pnl.gov
Web site: http://www.pnl.gov/emadvantage/	

Key Product Attributes:

Product Type: Operational System (Incident Response)	**Training Type it Supports:** Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise
Commercial or Government Owned: CO (EMAdvantage), and GO (FEMIS)	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Law Enforcement, HazMat, Public Safety Communications, Public Works, Private Sector
Media Scale: Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Training, Exercise, Operational	

Product Description:

FEMIS/EMAdvantage is an automated decision support system for use in incident response management by Emergency Operations Centers. While the system is primarily intended for operations, it includes a training and exercise mode. FEMIS/EMAdvantage has a planning module that allows new students and trainers to create and manage exercises, hazards, and scenarios. For any defined hazard/exercise/scenario the system allows emergency managers to examine threat and risk information, make and track protective action decisions, and share status information across the extended emergency operations center. FEMIS/EMAdvantage was designed to support planning, operations, and response using information from multiple users and jurisdictions. It provides the ability to identify all of the key facilities, sensors, traffic control points, etc. affected by a specific hazard or threat. It supports the preparedness, daily operations, and response activities for multiple hazards and threats. The operations status boards subsystem allows status boards and other highly dynamic information to be viewed, edited, and added from multiple locations and users.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automatic Recording of Learner Unit Information Sharing; Simulation Support; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 1.5.3

Date evaluated: November 12, 2003

Product Name: Fire Studio (FS2)

Company:	**Contact Info:**
Digital Combustion, Inc 9121 Atlanta Ave., #705 Huntington Beach, CA 92646 800-884-8821 **Web site**: www.digitalcombustion.com	9121 Atlanta Ave., #705 Huntington Beach, CA 92646 949-348-1120

Key Product Attributes:

Product Type: Dynamic Media (Planning/Presentation Tool) **Commercial or Government Owned:** C0 **Media Scale:** Individual, Group, Small Multi-User Team **Application Environment:** Training, Exercise	**Training Type it Supports:** Part-Task Training, Pre-Training, TTX, and FSE Reinforcement **Functional Area(s) it Supports:** Fire, HazMat **Primary Target Audience:** Commanders

Product Description:

Fire Studio is a versatile instructor aid that allows trainers to create fire scene simulations on a PC. This software program allows users to create their own simulations by adding animated smoke and fire to pictures of buildings, landscapes, planes, anything that can be photographed, even the inside of the building. Fire Studio is entirely customized; it allows customers to prepare for fires in their own city. Customers take pictures of structures, landscapes, planes, etc. in their own city and load it into the program. Users can bring in clip art and add equipment, fire hydrants, etc. Once the picture of the location of the fire is loaded into the program, users can select from a menu of different types of fire and smoke to create the simulation. The program includes HazMat cues such as the type of flames, smoke/vapor color, and thickness. Customers can also bring in sound files to simulate reality.

Instructors can set up four monitors with a student at each monitor (each with a different view of the fire) and see how the students coordinate the response. Users do not interact with the program but rather with each other. The program allows the user to save and repeat simulations or change them in any way they want. Customers can also email the scenarios and share them with others who have the same software.

Advantageous MS&G Features: Simulation Support; Part-Task Training; Pre-Training

Version: 2

Date evaluated: August 29, 2003

Product Name: First Responders Situational Awareness Tool (FiRST)

Company:	**Contact Info:**
ALION Science and Technology 1901 N. Beauregard St., Suite 400 Alexandria, VA 22311 703-933-3323 and 888-566-7672 **Web site**: www.msiac.dmso.mil www.alionscience.com	1901 N. Beauregard St., Suite 400 Alexandria, VA 22311 703-933-3323 msiac@msiac.dmso.mil

Key Product Attributes:

Product Type: Dynamic Media (Other) **Commercial or Government Owned:** CO **Media Scale:** Individual, Group **Application Environment:** Exercise, Operational, Analysis	**Training Type it Supports:** Part-Task Training, Pre-Training, TTX, FSE Reinforcement **Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials

Product Description:

FiRST is a suite of programs/tools designed to make simulations more accessible and usable. It allows mission planning, rehearsal, and analysis. It can also be used operationally and provides information on demand about terrain and buildings.

FiRST has a set of capabilities that include the 3-D Immersive models and panoramic views of building interiors, exteriors and surrounding areas, GIS capability, and 2-D topography with interactive simulation (usually JCATS). The user will see a 3-D image of a building they can navigate as well as a 2-D map of the same installation. The image and map are synchronized. The program can be used in planning response to particular incidents at specific locations in their community. FiRST is easy to use and only requires familiarity with Microsoft PowerPoint and Web browsers.

Advantageous MS&G Features: Requires Active User Decision Making; Part-Task Training; Pre-Training

Version: 1.3

Date evaluated: September 11, 2003

Product Name: FORT (Force Protection Operational Requirements Testbed)

Company:	**Contact Info:**
U.S. Army	Dan D. Belk
AMSRD-AMR-SS-AE	256-876-4466
Redstone Arsenal, AL 35898	dan.belk@us.army.mil
Web site: N/A	

Key Product Attributes:

Product Type: Exercise (Human Adjudicated)	**Training Type it Supports:** Awareness, Part-Task Training, Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise
Commercial or Government Owned: GO	**Functional Area(s) it Supports:** EMS, EMA, Fire, HazMat, Law Enforcement, Public Safety Communications, Public Works
Media Scale: Small Multi-User Team	**Primary Target Audience:** First Responders, Commanders
Application Environment: Training, Exercise, Analysis	

Product Description:

FORT is a suite of simulations and 3-D viewing tools depicting terrorists, responders, vehicles, and others moving within a synthetic environment. The environment size is scalable but would generally correspond to a DoD installation, a city, or county. Exercise support has been provided to the Redstone Arsenal (RSA) and the Camp Shelby Training Support Brigade. Battlefield simulations adapted from legacy force-on-force modeling and actual commercial 911 software linked seamlessly with DIS have been used to date, but any DIS or HLA compliant simulation is a candidate for inclusion. Responders (both within RSA and which may be reasonably expected to respond to calls for mutual aid from the surrounding community), unmanned aerial and ground vehicles, fire, MP, quick reaction forces, and NASA protective services have been modeled.

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information; Simulation Support; Part-Task Training; Pre-Training

Version: N/A

Date evaluated: December 19, 2003

Product Name: Full Spectrum Command

Company:	**Contact Info:**
U.S. Army RDECOM Simulation and Training Technology Center 12423 Research Parkway Orlando, FL 32826 **Web site**: http://www.ict.usc.edu/disp.php?bd=proj_games_fsc	Karen Williams Tel.: (407) 384-3937 Email: karen.e.williams@us.army.mil

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO and GO **Media Scale:** Individual **Application Environment:** Training	**Training Type it Supports:** Part-Task Training, Pre-Training **Functional Area(s) it Supports:** *Possibly* HazMat, Law Enforcement, Public Safety Communications **Primary Target Audience:** Commanders

Product Description: Full Spectrum Command is 2-D and 3-D interactive gaming software with AAR and review question and answers. FSC includes a user-level Scenario Editor for developing new or modifying existing scenarios. The program contains about 16 pre-scripted scenarios with differing missions, time of day, rules of engagement, weapons, and technological aids. All of these parameters are adjustable. Training can be conducted in a self-guided mode or in an instructor evaluation mode for curriculum-based use. Both modes support automated data and scenario recording for AAR. The user can pause, stop, save, and restart scenarios as necessary and may choose to append or start a new separate AAR data file.

Full Spectrum Command combines a number of training and functional characteristics that would be useful in ODP's T&E program. Training elements that would be useful include tactical planning, a "gaming" approach involving an intelligent OPFOR (human-controlled or automated forces), and potential for facilitated or self-guided AAR. Functional presentation elements that could be applied include 3-D virtual reality "gaming" action, automated scenario capture and replay from any vantage point, automated performance-related statistics and AAR, and a scenario editor that can be used to modify training content so that trainees are not presented with the exact same scenarios.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Part-Task Training, Pre-Training

Version: 1.0.2 (February 25, 2003)

Date evaluated: December 12, 2003

Product Name: Gaming and Multimedia Applications for Environmental Crisis Management Training (GAMMA-EC)

Company:	**Contact Info:**
The GAMMA-EC Consortium TNO-FEL Oud Waalsdorperweg 63 2597 AK The Hague The Netherlands **Web site**: http://www.tno.nl/instit/fel/gamma_ec/index.html	Dirk Stolk Tel.: +31-70-374-0177 stolk@tno.fel.nd

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO and GO **Media Scale:** Individual, Group, Small Multi-User Team **Application Environment:** Training	**Training Type it Supports:** Pre-Training, FE, Distributed Collaborative Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, HazMat, Law Enforcement **Primary Target Audience:** Commanders

Product Description:

GAMMA-EC is a software application that provides a combination of multimedia educational content for self-paced training and an interactive crisis simulation for team training of emergency management staff. Users may access the system either by means of a local area network (intranet) or by the Internet. Two training modules included in the prototype version address chemical spills and forest fires, whereby trainees make decisions based on visual, text, and audio cues on a 2-D terrain map to respond to the given crisis. A key feature of GAMMA-EC is the built-in testing and performance measurement of trainees.

Advantageous MS&G Features:

Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Pre-Training; Distributed/Collaborative Decision Making Environment

Version: Prototype

Date evaluated: September 15, 2003

Product Name: Groove (GRV)

Company:	**Contact Info:**
Groove Networks, Inc	http://www.groove.net/about/contact.html
877-747-6683	877-747-6683
Web site: http://www.groove.net	info@groove.net

Key Product Attributes:

Product Type: Operational System (Virtual Collaborative Environment) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Operational	**Training Type it Supports:** *Possibly* Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** *Possibly* EMS, EMA, Fire, Government Administrator, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communication, Public Works, Transportation, and Private Sector **Primary Target Audience:** *Possibly* Commanders, Local Officials, State Officials and Federal Officials

Product Description:

This product is designed to support online collaboration among multiple users in different geographic locations. This is a generic collaboration product designed for business use. It is not designed explicitly for training or exercises, thus there is no existing training or exercise content.

Given the flexible distributed collaboration methods it supports, Groove could be used in a variety of trainings or exercises involving multi-agency or intra-agency coordination and planning. Digital scenario elements (text or video) could be sent to participants via email or communicated via text chat/messaging. Participants could work on the scenario by communicating with each other and/or reviewing plans and other materials stored in the virtual workspace or on the Web. Digital communications can be archived and analyzed for AARs.

Persistent workspaces can also be useful for T&E planners and developers. Scenario elements, agendas, briefings, etc. can be developed, saved, and stored for later use, and materials can be easily found and reviewed by other planners. Best practices and case studies can be stored in the shared environment with easy accessibility to Groove users. Users can communicate with each other synchronously (in real time) or asynchronously (at different times) using a variety of interactive tools.

Advantageous MS&G Features: Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 2.5

Date evaluated: June 26, 2003

Product Name: Guard Force (GF)

Company:	**Contact Info:**
Semi Logic Entertainments, Inc. for the National Guard 9434 Deschutes Rd., Ste. 200 Box 923 Palo Cedro, CA 96073 530-547-3730 **Web site**: http://www.1800goguard.com/guardforce/info.asp www.semilogic.com	Glen Thompson, V.P. 530-547-3730 1-800-GO-GUARD glen@semilogic.com

Key Product Attributes:

Product Type: Dynamic Media (Other)	**Training Type it Supports:** N/A
Commercial or Government Owned: GO	**Functional Area(s) it Supports:** N/A
Media Scale: Individual	**Primary Target Audience:** N/A
Application Environment: Entertainment	

Product Description:

Guard Force is a computer game developed by Semi Logic Entertainments, Inc. for the National Guard in its effort to market the Guard to recruits. It is a single-player, real-time strategy game that requires a user to build and defend a military base and perform other tasks that reflect National Guard missions. There are six missions for a player to complete including the training mission. The other missions are Flood Relief, Covert Strike, Embassy Escape, Base Protection, and Overthrow General. It is not a single-shooter game, although one can order individual troops (e.g., snipers) to fire on the enemy. Building the base starts with a Headquarters building, after which a player can add other types of buildings such as supply depots. Buildings can only be constructed if there are enough supplies. The cost of each building is provided. Each building has specific units attached to it (the Rotary Air Center deploys helicopters). The player can move units and troops around as well as buildings and supplies. An enemy army will attack the base and troops in each mission except for Flood Relief. Guard Force was created with a limited budget to allow the National Guard to evaluate its effectiveness. It is currently being revised and improved as the Guard has found it a useful element in their recruitment efforts.

Advantageous MS&G Features: Requires Active User Decision Making

Version: 2002

Date evaluated: August 28, 2003

Product Name: Guardian Suite

Company:	**Contact Info:**
Peoplesoft, Inc. 4460 Hacienda Drive Pleasanton, CA 94588-8618 **Web site**: http://www.peoplesoft.com	Raymond Vigil, Business Development Manager Tel.: (877) 414-9212 Email: Raymond.Vigil@peoplesoft.com

Key Product Attributes:

Product Type: Operational System (Incident Response) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Operational, Analysis	**Training Type it Supports:** Pre-Training, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMA, Government Administration, Public Safety Communications, Private Sector **Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials

Product Description: Guardian Suite is an integrated set of PeopleSoft's existing enterprise application software that includes solutions for recruitment, skills assessment, and deployment of the nation's first responders. It utilizes many of PeopleSoft's core software solutions, with some extensions built specifically for first responder business processes, to provide a comprehensive operational management information system that addresses the range of domestic preparedness processes: plan, prepare, respond, and assess.

Guardian Suite applications provide a wide range of options for governments to construct their own information system solutions for homeland security. Guardian Suite aggregates and organizes data from many different sources through a customized Web portal interface. As part of the solution, the Command Center Console provides a complete 360-degree view of personnel information and skills, enabling agencies to respond to a crisis with the right people and resources. In addition, the Command Center Console is designed to manage the information and communication needs of emergency command centers both in times of crisis and in the daily management of their workforces. It can be used to monitor emergency alerts, track resources and assess personnel skills, allowing users to manage emergency response from any location.

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Pre-Training; Distributed/Collaborative Decision Making Environment

Version: 8.8

Date evaluated: December 3, 2003

Product Name: Hazard Prediction and Assessment Capability (HPAC)

Company: Defense Threat Reduction Agency (DTRA) Consequence Assessment Branch 8725 John J. Kingman Rd., MSC 6201 Fort Belvoir, VA 22060-6201 **Web site**: http://www.dtra.mil/td/acecenter/td_hpac.html	**Contact Info:** HPAChelp@dtic.mil Phone: (703) 325-6106 FAX: (703) 325-0398

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model) **Commercial or Government Owned:** GO **Media Scale:** Individual **Application Environment:** Training, Exercise, Operational, Analysis	**Training Type it Supports:** FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMA, Government Administrator, HazMat, Public Health, Public Works **Primary Target Audience:** Commanders, Local, State and Federal Officials

Product Description:

HPAC is software code that models CBRNE dispersion and potential affects on civilian and military populations in local to regional areas. It can be used as a stand-alone system (via GUI) or can be integrated into other HLA-compliant systems (e.g., CATS – Consequence Assessment Tool Set). HPAC models atmospheric turbulence using SCIPUFF (second order closure, Lagrangian puff), and contains six incident and source term description modules for nuclear, biological, and chemical facilities and weapons. HPAC can access weather observation data from Meteorological Data Servers maintained by DTRA, or import standard weather reports for model predictions.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 4.0

Date evaluated: September 9, 2003

Product Name: Homeland Security Response Action Model (HLS-RAM)

Company:	**Contact Info:**
NDU/Joint Forces Staff College	Claire Marie
7800 Hampton Blvd	757/443-6542
Norfolk VA 23511-1702	mariec@jfsc.ndu.edu
Web site:	

Key Product Attributes:

Product Type: Exercise (Human Adjudicated)	**Training Type it Supports:** TTX, FE
Commercial or Government Owned: GO	**Functional Area(s) it Supports:** Government Administration, Law Enforcement
Media Scale: Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** Federal Officials
Application Environment: Exercise	

Product Description:

HLS-RAM has representations of resources, terrain as represented within the COTS software MapInfo, scenario injects (email or video), limited chemical or radiological plume modeling, and the ability for users to communicate with each other via email. Currently, it has very limited adjudication: resources can move to the site of the plume, but they do not affect the plume in any way—controllers make those decisions. It can be used as an exercise driver to promote communication and decision making among users, though it cannot provide simulated results of those decisions (except regarding resource movement). One positive aspect of HLS-RAM is the ability to relatively easily change inputs and customize them for a given city. Resources are described via XML files, any city could create these files representing their own resources, and the underlying terrain representation comes from MapInfo—a commercial product.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 1.56

Date evaluated: December 19, 2003

Product Name: Human Patient Simulator

Company:	**Contact Information:**
Medical Education Technologies Inc. (METI) 6000 Fruitville Road Sarasota, FL 34232 **Web Site**: www.meti.com	Ron Carovano: Director of New Business Development. rcarovano@meti.com 941-504-5563 Dina Dennis, Southern Regional Sales Manager.

Key Product Attributes:

Product Type: Interactive (Equipment Simulation) **Commercial or Government Owned:** CO, GO **Media Scale:** Individual, Group, Small Multi-User Team **Application Area:** Training, Exercise	**Training Type It Supports:** Equipment Training, Part-Task Training, Pre-Training, Drills, FE, FSE **Functional Area(s) It Supports:** EMS, Healthcare, Public Health **Primary Target Audience:** First Responders

Product Description:

The Human Patient Simulator is a computer model-driven, full-sized mannequin. The mannequin allows participants to practice emergency response (medical diagnosis and treatment) with a simulated patient in realistic scenarios. The mannequin systems are equipped with a variety of electronic, hydraulic and mechanical subsystems that imitate patient physiology; the chest rises and falls; and it has realistic heart sounds. Real treatment options can be used on the mannequin; blood pressure can be checked with BP cuff, chest compressions actually register, and it responds to medications.

This system has the basic capabilities to support training and exercises. HPS uses six medical education areas: anesthesia, medicine, emergency medicine, nursing, respiratory care, and paramedic/EMT. Exercises and scenarios have been adapted to portray the effects of biological, chemical, and radiological/nuclear weapons on humans.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Hospital T&E; Part-Task Training; Pre-Training

Version: 6

Date Evaluated: February 25, 2003

Product Name: Hybrid Particle And Concentration Transport Model (HYPACT)

Company:	**Contact Info:**
ATMET, LLC	Craig Tremback
PO Box 19195	ATMET, LLC
Boulder, CO 80308-2195	PO Box 19195
Web site: www.atmet.com	Boulder, CO 80308-2195
	tremback@atmet.com

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model)	**Training Type it Supports:** *Possibly* Training, Awareness, Part-Task Training, Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** *Possibly* EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector
Media Scale: Individual, Group, Small Multi-User Team, Large Multi-User Team	**Primary Target Audience:** *Possibly* First Responders, Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Analysis	

Product Description:

HYPACT represents a state-of-the-art methodology for predicting the dispersion of air pollutants in 3-D, meso-scale, and time-dependent wind and turbulence fields. HYPACT allows assessment of the impact of one or multiple sources emitted into highly complex local weather regimes, including mountain/valley and complex terrain flows, land/sea breezes, urban areas, and other situations in which the traditional Gaussian-plume based models are known to fail.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 1.3

Date evaluated: August 28, 2003

Product Name: JANUS

Company:	**Contact Info:**
National Simulation Center	Joe Whitworth, JANUS Team Leader
410 Kearny Avenue	National Simulation Center
Fort Leavenworth, KS 66027-1306	410 Kearny Avenue
Web site:	Fort Leavenworth, KS 66027-1306
www-leav.army.mil/nsc/famsim/janus/index.htm	whitworth@leavenworth,army.mil

Key Product Attributes:

Product Type: Exercise (Computer Adjudicated)	**Training Type it Supports:** Drills, FE, FSE, FSE Reinforcement, National Training Exercise
Commercial or Government Owned: GO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Health Care, HazMat, Law Enforcement, Transportation
Media Scale: Small Multi-User Team, Large Multi-User Team	**Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Training, Exercise, Analysis	

Product Description:

JANUS is an interactive, stochastic, ground combat simulation featuring precise color graphics. “Interactive” refers to the interplay between the military personnel who decide what to do in crucial situations during simulated combat and the systems that model that combat. Up to six sides may be simulated. The disposition of opposing sides is largely unknown to the players in control of a side. “Stochastic” refers to the way the system determines the results of actions like direct fire engagements, according to the laws of probability and chance. “Ground combat” means that the principal focus is on ground maneuver and artillery units. JANUS also models weather and its effects, fixed wing aircraft, resupply, and a chemical environment.

JANUS has been used to support WMD civilian training and exercising in various locales, under the auspices of the State National Guards.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support

Version: 7.2

Date evaluated: August 28, 2003

Product Name: Joint Conflict and Tactical Simulation (JCATS)

Company:	**Contact Info:**
Auburn University Emergency Response and Homeland Security Training Program 410 Green Hall Annex Auburn University, AL 36849-5532 **Web site**: http://www.jwfc.jfcom.mil/about/fact_jcats.htm	Dr. Paul Waggoner Program Manager Tel.: 334-844-4541 Email: waggolp@auburn.edu

Key Product Attributes:

Product Type: Exercise (Computer Adjudicated) **Commercial or Government Owned:** GO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Training, Exercising	**Training Type it Supports:** Pre-Training, FE, FSE, Distributed Collaborative Exercise **Functional Area(s) it Supports:** EMS, EMA, Government Administrator, HazMat, Law Enforcement, Public Safety Communication, and Public Works **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials

Product Description:

JCATS is an interactive, high-resolution, entity-level war fighter simulation that represents air, ground, and sea-borne combat between discrete and aggregate units on a digitized polygonal terrain. The system is a constructive simulation used to drive exercises and rehearse missions ranging from small teams to joint task force level. Besides combat scenarios, JCATS can simulate exercises for drug interdiction, disaster relief, peacekeeping, counter-terrorism, hostage rescue, and site security. The system is currently being adapted by multiple organizations to meet new needs with respect to theater-level combat simulation (the JCATS-JTLS federation effort), and to civil emergency response simulation. Intended uses are for planning and rehearsal, training and exercises, experimentation, and analysis.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Pre-Training; Distributed/Collaborative Decision Making Environment

Version: 4.0 (October 2002)

Date evaluated: September 10, 2003

Product Name: Joint Integrated Database Preparation System (JIDPS)

Company:	**Contact Info:**
U.S. Army – U.S. Joint Forces Command (JFCOM) 1562 Mitscher Ave, Suite 200 Norfolk, VA 23551-2488 **Web site**: http://www.jwfc.jfcom.mil/about/fact_jidps.htm	Jeffrey Irwin (757) 686-6973 jeffrey.irwin@jfcom.mil

Key Product Attributes:

Product Type: Dynamic Media (Planning/Presentation Tool) **Commercial or Government Owned:** GO **Media Scale:** Individual **Application Environment:** Analysis	**Training Type it Supports:** *Possibly* Drills, TTX, FE, FSE, Distributed Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** *Possibly* EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation **Primary Target Audience:** Commanders, State Officials, Federal Officials

Product Description: JIDPS is a computer software system that accesses source data and uses that data to generate application-ready files. "JIDPS accesses and retrieves data from various authoritative data sources (ADS) and uses that data to produce simulation-ready force, target, and terrain files in support of training and exercise, analysis, planning, and mission rehearsal." It is a tool that can be used for reducing the time required to create exercises for simulated training and exercises (i.e., build accurate simulation databases to be executed by a compatible simulation).

Advantageous MS&G Features: Requires Active User Decision Making

Version: 3.4

Date evaluated: December 9, 2003

Product Name: Joint Theater Level Simulation (JTLS)

Company:	**Contact Info:**
Roland and Associates Corp.	Dr. Ronald J. Roland, President
500 Sloat Avenue	500 Sloat Avenue
Monterey, CA 93940	Monterey, CA 93940
Web site: www.rolands.com	President@rolands.com

Key Product Attributes:

Product Type: Exercise (Computer Adjudicated)	**Training Type it Supports:** FE, Distributed/Collaborative Exercise, National Training Exercise
Commercial or Government Owned: CO and GO	**Functional Area(s) it Supports:** Health Care, Public Health
Media Scale: Small Multi-User Team, Large Multi-User Team	**Primary Target Audience:** State Officials, Federal Officials
Application Environment: Training, Exercise	

Product Description:

JTLS system is an interactive, multi-sided war gaming system that models a joint and coalition force air, land, and naval warfare environment. Its purpose is as a tool for use in the development and analysis of joint warfighting operation plans, including:

- Combat planning analysis tool.
- Support material for education.
- Exercise support for training.
- Means to investigate the results of combat.

The JTLS system consists of six major programs and numerous smaller support programs that work together to prepare the scenario, run the game, and analyze the results. Designed as a tool for use in the development and analysis of operation plans, the model is theater independent and does not require knowledge of programming. The JTLS system operates on a single computer or on multiple computers, either at a single or at multiple distributed sites.

Advantageous MS&G Features: User Specific Performance; Requires Active User Decision Making; Simulation Support; Enhanced Communication T&E

Version: 2.5

Date evaluated: August 28, 2003

Product Name: Various Products from LifeLine Videos (LLV)

Company:	**Contact Info:**
LifeLine Videos PO Box 66303 Seattle, WA 98166-0303 **Web site**: www.lifelinevideos.com	Toll Free: 800-571-6433 (Continental US Only) Phone: 206-244-4615 Fax Orders: 206-244-4615 info@lifelinevideos.com

Key Product Attributes:

Product Type: Static Media (Presentation) **Commercial or Government Owned:** CO **Media Scale:** Individual, Group **Application Environment:** Training	**Training Type it Supports:** Equipment Training, Awareness, Part-Task Training **Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** First Responders

Product Description:

LifeLine Videos is a company that provides training videos, slides, CD-ROMs, instructor manuals, and workbooks for first responders. It is designed to be a one-stop shop providing many training choices. ThoughtLink previewed videos of the Overview of the Incident Command System, Implementing the ICS at HazMat Incidents, and an EMS video concerning soft tissue and muscular-skeletal damage. ThoughtLink also previewed a CD-ROM that included PowerPoint presentations for equipment training (The Automated External Defibrillation Training (AED) Program).

LifeLine has more than 60 EMS/First Aid videos, more than 70 Fire videos, more than 35 HazMat videos, and 7 video trainings devoted to terrorism. All videos are designed for use by trainers/facilitators and for incorporation into pre-existing training programs for first responders. The videos are not designed to be stand-alone trainings. There are seven terrorism awareness videos: First Response, Biological Agents, Chemical Agents, Explosives (bomb threats), Medical Response, Anthrax, and a Roll Call edition reviewing the material in the other six videos. Each video comes with an instructor's manual and provides awareness level information on its particular topic. The Web site lists an additional training video in the terrorism series (Explosive and Incendiary Weapons) that was not on the preview tape. There are videos dealing with additional chemical agents in the HazMat Video collection.

Advantageous MS&G Features: Part-Task Training

Version: N/A

Date evaluated: September 5, 2003

Product Name: MARPLOT

Company: National Oceanographic and Atmospheric Administration; Environmental Protection Agency **Website**: http://response.restoration.noaa.gov/cameo/marplot.html	**Contact Info:** orr.cameo@noaa.gov

Key Product Attributes:

Product Type: Dynamic Media (Planning/Presentation Tool) **Commercial or Government Owned:** GO **Media Scale:** Individual, Group **Application Environment:** Operational	**Training Type it Supports:** Pre-Training **Functional Area(s) it Supports:** EMA, Public Works, Transportation **Primary Target Audience:** Commanders

Product Description: MARPLOT is a general-purpose mapping application, jointly developed by NOAA and EPA, which runs on both Macintosh computers and in Windows. It is designed to be easy to use and fast, and to consume as little disk and memory space as possible, so that one can create, view, and modify maps quickly and easily. It also allows a user to link objects on computer maps to data in other programs, including CAMEO.

Advantageous MS&G Features: Requires Active User Decision Making; Pre-Training

Version: 3.3

Date evaluated: December 19, 2003

Product Name: Mass Casualty Medical Training and Evaluation Services (MMTE)

Company:	**Contact Info:**
SAIC (Science Applications International Corporation) **Web site**: http://www.saic.com/natsec/homeland-security/casualty-medical-evaluation.html	Mike Congleton 10260 Campus Point Drive, MS D5 San Diego, CA 92121 858-826-7281 congletonm@saic.com

Key Product Attributes:

Product Type: Exercise (Human Adjudicated) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Multi-Agency Participation **Application Environment:** Exercise	**Training Type it Supports:** TTX, FSE **Functional Area(s) it Supports:** First Responders and Commanders **Primary Target Audience:** EMS, Health Care and Public Health

Product Description:

In-the-field medical training (simulated crisis event) for exposure to chemical, radiological, and biological hazards. Users practice treating simulated trauma victims (actors or mannequins) of WMD. All training is done under typical time/pressure constraints and is performed on the equipment used in an actual crisis. It is currently in use by all branches of the military and is also available to civilian emergency responders. It features a number of patient algorithms that address care beginning with the first responder, through stabilization, up to the victim's definitive care. The live training/exercise is monitored by observer/evaluators who note user behavior (either on paper-based evaluation sheets or via an electron-pen-based system) and prompt for action based on victim algorithms. MMTE provides for assessment of command, control, logistics, transportation, and support services. It integrates evaluations, training, and management of casualties.

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Hospital T&E

Version: N/A

Date evaluated: September 3, 2003

Product Name: Meteorological Information and Dispersion Assessment System—Anti-Terrorism (MIDAS-AT)

Company:	**Contact Info:**
Research Place	Keith Woodard
Suite 200A	Research Place
Rockville, MD 20850	Suite 200A
Web site: www.absconsulting.com	Rockville, MD 20850
	kwoodard@absconsulting.com

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model)	**Training Type it Supports:** Awareness, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administrator, HazMat, Public Safety Communication
Media Scale: Individual, Group, Small Multi-User Team, Large Multi-User Team	**Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Training, Exercise, Operational, Analysis	

Product Description:

MIDAS-AT models radiological, industrial chemical, and chemical and biological agent releases to the atmosphere, inside buildings, and in urban terrain environments. It also has the capability to collect digital data from sensors and to provide appropriate alarms and displays. MIDAS-AT contains:

- All atmospheric releases (5-minute auto updates).
- GUI.
- Universal GIS (US and World).
- Flat terrain, complex terrain and urban models.
- Inside-building releases.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 1.7.09

Date evaluated: August 28, 2003

Product Name: MIND

Company:	**Contact Info:**
Visuell Systemteknik i Linköping AB	Dr Johan Jenvald
Storskiftesgatan 21	+46 13 378145
SE-583 34 Linköping, Sweden	johan@vsl.se
Web site: http://www.vsl.se	

Key Product Attributes:

Product Type: Dynamic Media (Observer Tool)	**Training Type it Supports:** Drills, FSE, FSE Reinforcement
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, HAZMAT, Law Enforcement, Transportation
Media Scale: Individual, Group, Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** First Responders, Commanders, Local Officials
Application Environment: Analysis	

Product Description: The MIND system is a comprehensive AAR tool that quickly combines multiple sources of data (e.g., emergency vehicles are equipped with GPS receivers) and provides timely feedback on exercise performance. This tool produces a computer-based model of the course of events, which can be replayed and browsed to investigate and analyze a particular situation. Events of an exercise are simultaneously recorded in a database. After the exercise is completed, the entire course of events can be replayed and the exercise can be saved for analysis.

Advantageous MS&G Features: Records User-Specific Performance, Remote Observation

Version: 3.5

Date evaluated: October 21, 2003

Product Name: Minerva (MINV)

Company:	**Contact Info:**
Metropolitan Police Service Centre for Applied Learning Technologies (CALT)	+44 (0)20 8358 1145 +44 (0)20 8358 1370/2
Peel Centre	+44 (0)20 8358 1376 **fax**
Aerodrome Road Hendon London NW9 5JE United Kingdom	
Web site: http://www.minerva-hydra.org.uk	

Key Product Attributes:

Product Type: Exercise (Human Adjudicated)	**Training Type it Supports:** Part-Task Training, Drills, FE, FSE Reinforcement
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, Fire, HazMat, Law Enforcement, Public Safety Communication, Transportation, Private Sector
Media Scale: Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** Commanders
Application Environment: Exercise, Analysis	

Product Description:

Minerva is a real-time computer simulation system that runs across a network enabling the training of command teams. Minerva simulates large-scale, often critical, policing incidents affording teams of commanders the opportunity to practice command skills such as scene assessment and management, coordination, communication, and problem-solving. Minerva puts the student in a real-life situation by simulating conditions via audio and video. Students typically work in teams and see those incidents and events specific to their command position and location. Other command teams may be working elsewhere at the simulated event (and accordingly, elsewhere on the Minerva network). Each of these individual and specific incidents is part of the larger incident being simulated. All communication and decisions are recorded and synchronized with the video playing at that time and available for replay and analysis during the AAR. Minerva is run by controllers and not by the computer; in that sense it is like a FSE where controllers enter injects and change the scenario as the event unfolds.

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Part-Task Training

Version: N/A

Date evaluated: September 11, 2003

Product Name: Multi-Layer Decision Simulation – school violence (MLADS)

Company:	**Contact Information:**
Crisis Intervention Resources	Roger Mason
8640 Oakdale Ave.	818-886-3088
Winnetka CA 91306	rogcmason@aol.com
Web Site:	

Key Product Attributes:

Product Type: Exercise (Human Adjudicated)	**Training Type It Supports:** Drills, TTX, FE
Commercial or Government Owned: CO	**Functional Area(s) It Supports:** Fire, Law Enforcement, Public Safety Communications
Media Scale: Small Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** First Responders, Commanders, and Local Officials
Application Area: Training, Exercise	

Product Description:

MLADS is a board game designed to teach and exercise decision making in the context of a school violence scenario (an active shooter in the school). Currently MLADS is focused at two layers of decision makers in fire, law enforcement, and public safety communication disciplines. The game emphasizes effective incident command system (ICS) and unified command (UC) operation.

The game consists of a 3-D representation of a school and its immediate neighborhood, about 2-3 blocks in all directions. To date, CIR has developed versions for Burbank, CA and New Brunswick, NJ that use an actual school and the actual streets and houses in the surrounding neighborhood.

MLADS emphasizes how sensitive this situation is to initial conditions, so decisions made early on will generate large effects later. Thus the scenario focuses on the initial 1-2 hours at the scene. The scenario is described by the facilitator, who provides new events as the situation unfolds and can redirect the scenario as needed, based on player actions.

The facilitator determines how events will proceed, based on a general list of scenario events. This involves identifying in advance some key skill sets: evacuate school, look for gunman, and control scene.

Advantageous MS&G Features: Requires Active User Decision Making; Enhanced Communication T&E

Version: N/A

Date Evaluated: November 14, 2002

Product Name: National Security Network (NSN)

Company:	**Contact Info:**
Boeing-Autometric	Marcy Lewis
7702 Boston Rd.	Tel.: 703-270-6687
Springfield, VA 22153	Marcia.a.lewis@boeing.com
Web site: http://www.autometric.com	

Key Product Attributes:

Product Type: Exercise (Human Adjudicated)	**Training Type it Supports:** Awareness, TTX, Distributed Collaborative Exercise, National Training Exercise
GOTS/COTS: COTS	**Functional Area(s) it Supports:** Government Administration, Public Safety Communication
Media Scale: Small Multi-User Team, Large Multi-User Team	**Primary Target Audience:** Federal Officials
Application Environment: Training, Exercise	

Product Description:

The National Security Network (NSN) is an exercise tool that combines a content management system and a master scenario event list scheduler (MSEL). It is a set of HTML coded Web pages and templates, combined in a single user interface and hosted on a LAN. It is used to drive a classroom exercise via scenario injects. The NSN is currently used to support an annual simulation exercise at the National Defense University regarding policy decision making in national/international security matters. The software application is accessed through a standard Web browser (MS Explorer), providing an integrated gateway for instructors, staff, and students to the MSEL and reference information, as well as providing associated software applications for data retrieval, editing, email, and other functions.

Advantageous MS&G Features: Requires Active User Decision Making; Distributed/Collaborative Decision Making Environment

Version: N/A

Date evaluated: September 5, 2003

Product Name: NBC CTS 2000 (Note that the name may change in future)

Company:	**Contact Information:**
Army Medical Department Center & School, Battle Simulation Center AMEDDC&S Battle Simulation Center Fort Sam Houston, TX 78234 **Web Site**: http://www.cs.amedd.army.mil/simcenter/NBC%20CTS.htm	William J. McCormick Training Systems Analyst/Webmaster, DAC Office: 210-221-0944 Mobile: 210-559-6395 http://www.cs.amedd.army.mil/simcenter

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO **Media Scale:** Individual, Small Multi-User Team, Multi-Agency Participation **Application Area:** Exercise	**Training Type It Supports:** Part-Task Training, Pre-Training, FSE, FSE Reinforcement, Distributed/Collaborative Exercise **Functional Area(s) It Supports:** EMS, EMA, Healthcare, Public Health **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, and Federal Officials

Product Description: NBC CTS is a role- and task-based simulation that supports training of Army medical personnel in the diagnosis, treatment, and management of mass casualties generated from the use of nuclear, biological, and/or chemical weapons as well as other disasters/injuries. Players take on the roles of various Army medical personnel who would have casualty case responsibilities in the event of such an attack. It is task oriented in that the simulation projects updated data (e.g., reduction in personnel), and it takes into consideration amount of time to complete a task. It can be used to develop training and exercises. It serves as a decision support tool for command control personnel (such as EOC personnel) and can be used for stand-alone exercises.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Enhanced Communication T&E; Hospital T&E; Part-Task Training; Pre-Training; Distributed/Collaborative Decision Making Environment

Version: NBC CTS

Date Evaluated: March 4, 2003

Product Name: OpsCenter (OPSC)

Company:	**Contact Info:**
Alert Technologies Corporation	Joseph Santamaria
7709 Wexford Way	Vice President Business Development
Port St. Lucie, FL 34986	7709 Wexford Way
Web site:	joseph.santamariajr@alerttech.com
http://www.alerttech.com/products_main.htm	

Key Product Attributes:

Product Type: Operational System (Incident Response)	**Training Type it Supports:** Drills, TTX, FE, FSE, Distributed/Collaborative Exercise, National Training Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector
Media Scale: Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Operational	

Product Description:

Real-time, Internet-based, information management system designed for use during actual emergencies (i.e., Operational Tool). It was designed to aid organization of response details electronically and to replace chalkboards, grease boards, flip charts, and paper updates. Users assume their normal roles, and tasks can be managed via chronologically arranged checklists (requires user input/update; i.e., not automatic).

Advantageous MS&G Features: User Specific Performance; Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 2.3 with Service Pack 1

Date evaluated: August 25, 2003

Product Name: Planning Alternatives for Interdicting National Terrorism (PAINT)	
Company: Roland Associates 500 Sloat Avenue Monterey, CA 93940 **Web site**: www.rolands.com	**Contact Info:** Dr. Ronald J. Roland Ph: 831-373-2025 president@rolands.com
Key Product Attributes:	
Product Type: N/A **Commercial or Government Owned:** CO **Media Scale:** Individual **Application Environment:** N/A	**Training Type it Supports:** N/A **Functional Area(s) it Supports:** N/A **Primary Target Audience:** N/A
Product Description: PAINT was developed over 10 years ago for a private client. It was a one-sided game with a semi-automated opponent. It is no longer in production, and information on this product is not available. **Advantageous MS&G Features:** Insufficient information to make observations.	
Version: **Date evaluated:** December 19, 2003	

Product Name: Pollution Incident Simulation, Control, and Evaluation System (PISCES)

Company:	**Contact Information:**
Transas (USA) Inc. 19105 36th Ave. W.,Suite #101 Lynnwood, WA 98036 **Web Site**: http://www.transas.com	Virtual Planet Services, David S. Nieri 516-674-3626 (Phone) 928-222-2816 (Fax) vplanet2000@yahoo.com dnieri@transasusa.com

Key Product Attributes:

Product Type: Operational System (Incident Response) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team **Application Area:** Training, Exercise, Operational, Analysis	**Training Type It Supports:** Drills, TTX, FE, FSE, FSE Reinforcement, National Training Exercise **Functional Area(s) It Supports:** EMS, EMA, Fire, Government Administration, Healthcare, HazMat, Law Enforcement, Public Health, Public Safety Communications, and Public Works **Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials

Product Description: PISCES is a complex simulation-based system originally designed to develop and control large-scale multi-agency response-preparedness exercises for the U.S. Coast Guard; it is being expanded to address other types of incidents including WMD (PISCES2). It includes a variety of exercise development, control, simulation, data collection and AAR capabilities.

PISCES includes control, monitoring, AAR, geoplot and status displays, as well as GPS monitoring link to real on-scene assets. The system uses simulation models, scripts, and real-time control inputs. There are manual and automatic/semi-automatic control of resources and other time-dependent scenario actions/events.

The system can be used to support development of FSEs, conduct FSEs, and evaluate response plans.

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Remote Observation; Enhanced Communication T&E

Version: PISCES2

Date Evaluated: February 25, 2003

Product Name: Post-Engagement Ground Effects Model (PEGEM)

Company:	**Contact Info:**
BAE Systems Inc. **Web site**: http://www.mevatec.com/pegem/main.htm	William Moore 1525 Perimeter Parkway Huntsville, AL 35806 256-890-8071 William.k.moore@baesystems.com

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model) **Commercial or Government Owned:** GO **Media Scale:** Individual, Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Training, Exercising, Operational, Analysis	**Training Type it Supports:** Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMA, Fire, HazMat **Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials

Product Description:

Tool that models the hazard effects (3-D) of chemical, biological, and high explosive effects. It incorporates digital terrain and weather data. Applications include missiles, battlefield weapons, and storage facilities. It also provides predictions of urban setting transport, contamination footprints, evacuation routes, and backtrack of sensor readings for two or more separate unknown locations. It has built in spatial GPS data for the planet and urban GIS for Washington D.C., Chicago, Anytown USA, and Baghdad (any urban terrain can be modeled per user's request).

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 5.0

Date evaluated: August 25, 2003

Product Name: Post Incident Review for Emergency Command Training (PIRFECT)

Company:	**Contact Info:**
FAAC Inc. 1229 Oak Valley Drive Ann Arbor, MI 48108 **Web site**: http://www.faac.com	James Naatz Tel. (800) 506-9365 James.naatz@faac.com

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO **Media Scale:** Individual, Small Multi-User Team **Application Environment:** Training, Exercise	**Training Type it Supports:** Awareness, Part-Task Training, Pre-Training, Drills, FE **Functional Area(s) it Supports:** EMS, EMA, Fire, HazMat, Law Enforcement **Primary Target Audience:** First Responders, Commanders, Local Officials

Product Description: The PIRFECT Incident Command Simulator is designed to augment classroom training and actual experiences by enabling the training of proper decision making to potentially dangerous conditions. The simulator provides situational awareness training, resource management training, and judgment training. The training scenarios contained in the prototype version focus on aircraft and structural fires. The design of the simulator can support the development of a wide variety of scenarios, including hostage situations, and WMD.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Remote Observation; Enhanced Communication T&E; Part-Task Training, Pre-Training

Version: Prototype

Date evaluated: December 3, 2003

Product Name: PowerSTRIPES

Company: AcuSoft, Inc. 13501 Ingenuity Drive, Suite 200 Orlando, FL 32828 **Web site**: http://www.acusoft.com/products/powerstripes/	**Contact Info:** Bruce Leistikow 407-658-9888 x 103 brucel@acusoft.com

Key Product Attributes:

Product Type: Dynamic Media (Observer Tool) **Commercial or Government Owned:** CO **Media Scale:** Individual **Application Environment:** Analysis	**Training Type it Supports:** Awareness, Drills, FSE Reinforcement, Distributive Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** *Possibly* EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** Commanders

Product Description: Tool provides 3-D visualization of simulation exercises and automated AARs. It is currently used for observing, recording, reviewing, and analyzing simulated military exercises. It enables an observer to integrate a 2-D map view display and 3-D stealth view of an exercise with the exercise database that is recorded during execution of the exercise. Following the exercise, a user can replay simulated events as they occurred, to include synchronization of the 2-D map and 3-D stealth views executed during the exercise. PowerSTRIPES also provides the ability to generate AAR briefings composed of map views, predefined database reports, task organization views of the exercise forces, movement/snail trails, animated playbacks, and boilerplate presentation slides.

Advantageous MS&G Features: Records User-Specific Performance; Automated Recording of Learner Unit Information Sharing, Remote Observation

Version: 2.5

Date evaluated: October 29, 2003

Product Name: Quick Urban and Industrial Complex (QUIC) Dispersion Modeling System

Company:	**Contact Info:**
Los Alamos National Laboratory Los Alamos, NM 87545 **Web site**: www.lanl.gov/source/orgs/d/d4/atmosphere/chbio.html	Michael Brown Group D-4 Mail Stop F604 Los Alamos National Laboratory Alamos, NM 87545 mbrown@lanl.gov

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model) **Commercial or Government Owned:** GO **Media Scale:** Individual **Application Environment:** Operational, Analysis	**Training Type it Supports:** *Possibly* Awareness, Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** *Possibly* EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** Local Officials, State Officials, Federal Officials

Product Description:

QUIC is an urban fast-response transport and dispersion modeling system (i.e., plume model) that computes 3-D wind patterns and dispersion of airborne contaminants around clusters of buildings. The system is composed of the following:

- Graphical user interface (QUIC-GUI).
- Wind model (QUIC-URB).
- Dispersion model (QUIC-PLUME).

The system runs quickly (generally in real time) on a laptop computer. This type of model can support real-time applications, such as analysis, classroom instructor's aid, and training/exercising scenarios.

QUIC is intended for use in planning, assessment, and emergency response scenarios.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 2

Date evaluated: August 28, 2003

Product Name: Tom Clancy's Rainbow Six

Company:	**Contact Information:**
Red Storm Entertainment 3200 Gateway Ctr. Blvd., Suite 100 Morrisville, NC 27560 **Web Site**: www.redstorm.com	http://support.ubi.com

Key Product Attributes:

Product Type: Dynamic Media (Entertainment) **Commercial or Government Owned:** CO **Media Scale:** Individual, Group, Small Multi-User Team, Large Multi-User Team **Application area:** Entertainment	**Training Type It Supports:** *Possibly* Awareness, Part-Task Training, Pre-Training **Functional Area(s) It Supports:** N/A **Primary Target Audience:** N/A

Product Description: Rainbow Six is a computer action game based on a Tom Clancy Novel and designed for entertainment purposes. The Rainbow Six game places the user in tactical command of a team of counter-terrorist operatives, much like a military combat unit or a SWAT team. There are 16 missions, each with objectives that are explained in a briefing, which is presented in both text and audio formats to the user. After listening to the briefing and completing a planning stage, the action begins. The user is part of the attack and sweeps through a structure, shooting terrorists along the way. The challenge is to kill the terrorists without being killed oneself and to learn how to do things such as open doors, disable bombs and security systems, and use all the commands available in the game.

The primary focus of this game is tactical; players plan the attack, distribute resources (personnel, materiel, and weapons), create redundancies, and try to get the teams to work together. There are bio-hazards that can kill a player who does not have PPE. The missions are pre-defined, and a player must complete each one successfully in order to move on to the next one. Missions can be replayed as often as a player chooses.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Remote Observation; Distributed/Collaborative Decision Making Environment

Version: Rainbow Six (first version) and Demo for Rainbow Six: Raven Shield (version three)

Date Evaluated: March 4, 2003

Product Name: RAMSAFE

Company:	**Contact Info:**
RAMSAFE Technologies 9434 Deschutes Rd.,	3225 Shallowford Rd., Ste. 700
3225 Shallowford Rd., Ste. 700	Marietta, GA 30062
Marietta, GA 30062	800-477-8778
800-477-8778	770-977-7233 770-579-5955 fax
770-977-7233 770-579-5955 fax	info@ramsafe.com
Web site: www.ramsafe.com	

Key Product Attributes:

Product Type: Operational System (Incident Response)	**Training Type it Supports:** Drills, TTX, FE, FSE Reinforcement, Distributed/Collaborative Exercise, National Training Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector
Media Scale: Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Exercise, Operational, Analysis	

Product Description: RAMSAFE is a real-time software database management tool that can be used at all phases of an incident: pre-incident planning and preparation, incident response, and recovery. RAMSAFE acts as a framework and repository of information that is populated by the customer. Users can create one or multiple Web portals and secure access to specific people. RAMSAFE provides live updates, which can be accessed via the Web portal.

RAMSAFE includes the bio-terrorism response template, which predicts casualties and response/resource requirements for an incident. It can forecast events based on different sets of variables, such as biological agent, number of infected individuals, available medical resources, and community population.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version:

Date evaluated: September 11, 2003

Product Name: Regional Atmospheric Modeling System (RAMS)

Company:	**Contact Info:**
ATMET, LLC	Craig Tremback
PO Box 19195	ATMET,LLC
Boulder, CO 80308-2195	PO Box 19195
Web site: www.atmet.com	Boulder, CO 80308-2195
	tremback@atmet.com

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model)	**Training Type it Supports:** *Possibly* Awareness, Part-Task, Pre-Training, Drills, TTX, FE, FSE, FSE Reinforcement, Distributed Collaborative, National Training Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** *Possibly* EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector
Media Scale: *Possibly* Individual, Group, Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** *Possibly* First Responders, Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Analysis	

Product Description:

RAMS is a highly versatile numerical code originally developed by scientists at Colorado State University and the *ASTER division of Mission Research Corporation for simulating and forecasting meteorological phenomena and for depicting the results. The RAMS model generates predicted weather data over time periods ranging from seconds to years, for various area sizes and topography, and at high grid resolutions (e.g., 500-meter and higher resolution grids). The database generated by RAMS can be used to specify weather conditions at specific predicted times or can act as inputs to dispersion models (i.e., plume models). Hence, RAMS can be used as an operational tool, an analysis tool, and as a training tool (alone, or integrated with other simulation tools).

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support

Version: 4.4

Date evaluated: August 28, 2003

Product Name: Response Information Folder System (RIFS)

Company:	**Contact Info:**
ALION Science and Technology	ALION Science and Technology
1901 N. Beauregard St., Suite 400	1901 N. Beauregard St., Suite 400
Alexandria, VA 22311	Alexandria, VA 22311
703-933-3323 703-933-3325 fax	703-933-3323 703-933-3325 fax
888-566-7672	888-566-7672
Web site: www.msiac.dmso.mil www.alionscience.com	msiac@msiac.dmso.mil

Key Product Attributes:

Product Type: Dynamic Media (Other)	**Training Type it Supports:** Part-Task Training, Pre-Training, TTX, and FSE Reinforcement
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector
Media Scale: Individual, Group, Multi-Agency Participation	**Primary Target Audience:** Commanders, Local Officials, State Officials, and Federal Officials
Application Environment: Exercise, Operational, Analysis	

Product Description:

RIFS was designed to implement the Los Angeles County Sheriff's Department of Terrorism Early Warning Group's 23 target folder information categories. It integrates 3-D immersive images of terrain and buildings with critical information about specific buildings and locations. RIFS can be used for response planning, course of action analysis, operations, and training. It provides key information that first responders want in an incident, such as a response resource list and information on surrounding microclimates (winds), which helps with planning evacuations. The resource list has detailed information about a site or a building and what is nearby. Playbooks listing standardized practices and procedures for various incidents can be linked through RIFS.

Advantageous MS&G Features: Requires Active User Decision Making; Part-Task Training; Pre-Training

Version: 1.7

Date evaluated: September 25, 2003

Product Name: RestOps SRC

Company:	**Contact Info:**
Visual Purple, Inc. 6633 Bay Laurel Dr., 2nd Floor, PO Box 465 Avila Beach, CA 93424 **Web site**: http://www.visualpurple.com/pages/products.htm	John Creger Tel.: 805-595-7579 Ext. 115 Email: john.creger@visualpurple.com

Key Product Attributes:

Product Type: Dynamic Media (Self Guided Training)	**Training Type it Supports:** Equipment Training, Part-Task Training, Drills
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMA, HazMat, Public Works, Transportation
Media Scale: Individual	**Primary Target Audience:** *Possibly* First Responders, Commanders
Application Environment: Training	

Product Description:

RestOps is designed to familiarize combat service support staff in the operation of an Oracle software application used for airbase operability called SRC Command3 (SRC3), covering such areas as civil engineering, fire fighting, and explosive ordnance disposal. The instructional approach and mode of delivery are relevant to domestic preparedness training. The instructional approach includes the use of an incident response scenario that is videotaped for multiple learning segments that are cued by student decisions. The video scenario helps to provide the context for the emergency and to impart some of the stress that may be experienced under such conditions. This can aid in providing training "realism" and potentially motivate greater interest in the learning process. The part of the tutorial that emulates the Oracle SRC3 system can be replaced with dynamic content for essentially any other type of incident response system or application. Given such changes, the CD-ROM based tutorial could be used as a readily distributed means of providing self-guided training related to such areas as EOC operations, dispatch, or other key operational response functions.

Advantageous MS&G Features: Requires Active User Decision Making; Part-Task Training

Version: Rev.# 082003

Date evaluated: November 14, 2003

Product Name: S3 Exercise (S3)

Company:	**Contact Info:**
International Safety Research Inc. (ISR)	Francois Lemay, Director ISR
457-A Sussex Dr, 2nd floor	613-241-4884
Ottawa, Ontario	fax: 613-241-1250
Canada K1N 6Z4	cell: 613-282-4885
530-547-3730	FrancoisLemay@i-sr.ca
Web site: www.i-s-r.ca	

Key Product Attributes:

Product Type: Dynamic Media (Consequence Assessment Model)	**Training Type it Supports:** Part-Task Training, Drills, TTX, FE, FSE, Distributed Collaborative Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMA, Government Administrator, HazMat, Public Health, Public Safety Communications, Public Works
Media Scale: Group, Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Training, Exercise	

Product Description:

S3-Exercise is a PC-based computer simulation that can be used as a tool by controllers or trainers during a radiological table top, full scale, or functional exercise. Users can create a simulated radiological incident by choosing the location and time of release, as well as amount of radiation released, the shape of the plume, and duration of the event. Users can also choose meteorological conditions that will affect the plume over time. There is an option for deposition of environment such as open grassland or an urban area. Typically users purchase International Safety Research Inc. (ISR) maps of their community to be used with the program. Therefore, users can produce simulated radiological releases over any part of the community. With this program, a real-time drill can be created in less than an hour. Traditionally, drills featuring radiological dispersion devices were time-consuming to create as someone had to do all of the calculations that create the instrument readings and the scenario.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support; Part-Task Training

Version:

Date evaluated: August 28, 2003

Product Name: San Luis Rey (SLR)

Company:	**Contact Info:**
Teleologic, for the Naval Postgraduate School	Craig Baldwin
P.O. Box 166	P.O. Box 25
114 SW Arch St	Pomfret, CT 06258
Atlanta, IL 61723	860-963-7707
21-/648-5077 **Web site**: http://www.teleologic.net	cbaldwin@teleologic.net

Key Product Attributes:

Product Type: Exercise (Human Adjudicated)	**Training Type it Supports:** Part-Task Training, Pre-Training, Distributed/Collaborative Exercise
Commercial or Government Owned: GO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation
Media Scale: Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Training, Exercise, Analysis	

Product Description:

SLR is a hypothetical city that is used by several courses throughout the Naval Post-Graduate School (NPS) Homeland Security (HLS) master's degree program. Right now, the first generation of SLR consists of various 2-D maps and background information about the city, county, and two neighboring states. This information includes history of the area, information about personalities of key personnel, information about local services, and HLS plans for the city, county, and states.

The curriculum is designed to move the students from tactical level thinking and decision making to an operational/strategic level that focuses on policies and assessment vs. actions. San Luis Rey is implemented as a component of a network-based learning environment that includes a digital library, collaboration tools, and scenarios that rely on SLR information.

Currently, SLR is used to promote discussion and decision making among teams of students with a fixed environment and scenario elements layered over it.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Part-Task Training; Pre-Training; Distributed/Collaborative Decision Making Environment

Version: 2.5

Date evaluated: June 26, 2003

Product Name: Scenarios

Company:	**Contact Info:**
Wisdom Tools	Gale Nichols, VP Finance and Admin
501 N. Morton St., Suite 102	812/855-8632
Bloomington IN 47404	gale.nichols@wisdomtools.com
Web site: http://www.wisdomtools.com	

Key Product Attributes:

Product Type: Dynamic Media (Other)	**Training Type it Supports:** Pre-Training
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** Private Sector and *Possibly* EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation
Media Scale: Individual, Small Multi-User Team, Multi-Agency Participation	**Primary Target Audience:** *Possibly* First Responders, Commanders, Local Officials, State Officials, Federal Officials
Application Environment: Training, Exercise	

Product Description: Wisdom Tools uses Scenarios 4.0 to create distributed collaborative multimedia environments customized for specific clients—there is no off-the-shelf product. The resulting scenario is an engaging story about various characters covering several events. Scenario events may be text, audio, or video. Items associated with an event can be quizzes, questions for consideration, or surveys. This product has potential for disseminating lessons learned and reusing exercise experiences, by taking real-world exercise or operational experiences and turning them into scenario events with appropriate reflective questions for the user.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Pre-Training; Distributed/Collaborative Decision Making Environment

Version: 4.0

Date evaluated: December 19, 2003

Product Name: ScribeVision Technologies

Company:	**Contact Info:**
ScribeVision Technologies Inc. 144 Chippewa Avenue Tampa, FL 33660-3520 **Web site**: http://www.scribevision.com	Ted Wilhite 813-380-4002 tedw.rtw@gte.net

Key Product Attributes:

Product Type: Operational System (Incident Response) **Commercial or Government Owned:** CO **Media Scale:** Group, Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Exercise, Operational	**Training Type it Supports:** Drills, TTX, FE, FSE, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works **Primary Target Audience:** First Responders, Commanders

Product Description:

"Commercial Web-based command and control/decision support system." Designed to convert manual reporting to an electronic platform that can be accessed by multiple users. It provides a single resource that unit commanders and training event observer/controllers can use to distribute orders, assess unit combat strength, review significant events and intelligence reports, monitor subordinate element activities, and combine data elements from current and legacy C4I systems." It is also marketed as a distributed planning tool and job aid. Vendor also provides complete live exercises (tool can be linked with vehicle and/or individual responder tracking devices) that include scenario development and exercise support staff.

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing, Remote Observation; Distributed/Collaborative Decision Making Environment

Version: ScribeVision Technologies

Date evaluated: November 10, 2003

Product Name: SEAS/Homeland Security Simulation

Company:	**Contact Info:**
Simulex, Inc. Purdue Technology Center 3000 Kent Avenue West Lafayette, IN 47906 Phone: (765) 463-2690 Fax: (765) 463-2699 **Web site**: http://www.seasllc.com	Alok Chaturvedi, Ph.D. (Chief Technology Officer) Shailendra Raj Mehta, Ph.D. (Chief Economist) Phone: (765) 463-2690 Email: alok@simulexinc.com

Key Product Attributes:

Product Type: Exercise (Computer Adjudicated) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Exercise, Analysis	**Training Type it Supports:** Part-Task Training, Pre-Training, TTX, FE, FSE Reinforcement, Distributed Collaborative Exercises, National Training Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials

Product Description: SEAS is a flexible agent-based simulation that can be extensively customized by the user or developer. The simulation engine is integrated with multiple models: geography and infrastructure, mobility, well being of people, epidemiological, radiological, and transportation to simulate a variety of incidents and their economic effects.

SEAS allows integration across models, and effects can be intertwined across models including psychological models (simulates changes in behavior: panic, rioting, clustering, crowd behavior) at varying levels of detail, with a variable number of agents.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Remote Observation; Part-Task Training; Pre-Training; Distributed/Collaborative Decision Making Environment

Version: 2.5

Date evaluated: June 26, 2003

Product Name: Security and Emergency Response Information System (SERIS)

Company:	**Contact Info:**
US ARMY ARDEC, Picatinny Arsenal Bldg. 95, AMSRD-AAR-AEF Picatinny, NJ 07806 **Web site**: http://www.pica.army.mil/HLD/	Ms. Beverly Laidig, Development Project Officer (DPO) Tel #: 973-724-3018, email: blaidig@pica.army.mil

Key Product Attributes:

Product Type: Operational System (Incident Response) **Commercial or Government Owned:** GO **Media Scale:** Large Multi-User Team, Multi-Agency Participation **Application Environment:** Training, Exercise, Operational, Analysis	**Training Type it Supports:** FE, FSE, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMA, Government Administration, HazMat **Primary Target Audience:** First Responders, Commanders, Federal Officials

Product Description: The Security and Emergency Response Information System (SERIS) is a prototype situational awareness, control, tracking, and decision support system for Homeland Security and Incident/Emergency Response operations by local and regional emergency management agencies.

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Simulation Support; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 1.0, to be beta tested in January 2004

Date evaluated: December 11, 2003

Product Name: SIMfX Interactive Training Simulations

Company:	**Contact Info:**
Wildwood Resources 5590 50Th. St. N.W. Salmon Arm, BC V1E 3A6 Canada **Web site**: www.simfx.com	Jake Jacobson Ph/Fax: 250-832-2300 Email: info@simfx.com

Key Product Attributes:

Product Type: Dynamic Media (Planning/Presentation Tool) **Commercial or Government Owned:** CO **Media Scale:** Individual, Group, Small Multi-User Team **Application Environment:** Training, Exercise	**Training Type it Supports:** Awareness, Part-Task Training, Pre-Training, Drills, TTX, FE **Functional Area(s) it Supports:** EMA, Fire, HazMat, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** First Responders, Commanders

Product Description: The SIMfX simulation program is geared primarily toward two main groups: first responders such as firefighters, and support staff such as incident decision makers. The program can be used for practical training exercises, for pre-planning, for enhancing overhead managements view of a situation, as a media presentation tool, as a public relations tool, and for much more.

Advantageous MS&G Features: Simulation Support; Enhanced Communication T&E; Part-Task Training; Pre-Training

Version: 5.0

Date evaluated: December 17, 2003

Product Name: SimViz/3400ICS—Custom

Company:	**Contact Info:**
STAR Technology Corporation	Johnny Harper
8003 Forbes Place, Suite 310	President and CEO
Springfield, VA 22151	jharper@startechcorp.com
Web site: http://www.startechcorp.com/structure.htm	

Key Product Attributes:

Product Type: Interactive (Virtual Simulation)	**Training Type it Supports:** Awareness, FE, *Possibly* Distributed/Collaborative Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMA, Fire, HazMat, Law Enforcement
Media Scale: Individual, Small Multi-User Team	**Primary Target Audience:** Commanders
Application Environment: Training, Exercise, *Possibly* Analysis	

Product Description: The SimViz/3400ICS simulator is a computer-based system that provides a synthetic environment in which structure-based emergency incidents are used to train emergency response command staff in the application of the ICS.

The system can also be used to teach strike team leaders or division supervisors how to manage their response resources and make proper decisions based on the audiovisual cues they receive in a scenario.

Advantageous MS&G Features:

Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; *Possibly* Hospital T&E; Distributed/Collaborative Decision Making Environment

.

Version: Custom

Date evaluated: September 11, 2003

Product Name: SimViz/3400ICS—Standard

Company:	**Contact Info:**
STAR Technology Corporation	Johnny Harper
8003 Forbes Place, Suite 310	President and CEO
Springfield, VA 22151	jharper@startechcorp.com
Web site: http://www.startechcorp.com/structure.htm	

Key Product Attributes:

Product Type: Interactive (Virtual Simulation)	**Training Type it Supports:** Awareness, FE
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMA, Fire, HazMat, Law Enforcement
Media Scale: Individual, Small Multi-User Team	**Primary Target Audience:** Commanders
Application Environment: Training, Exercise	

Product Description: The SimViz/3400ICS simulator is a computer-based system that provides a synthetic environment in which structure-based emergency incidents are used to train emergency response command staff in the application of the ICS.

The system can also be used to teach strike team leaders or division supervisors how to manage their response resources and make proper decisions based on the audiovisual cues they receive in a scenario.

Advantageous MS&G Features:

Records User-Specific Performance; Requires Active User Decision Making; Simulation Support

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Version: 1.0

Date evaluated: September 11, 2003

Product Name: SimViz/3400ICS—Tailored

Company:	**Contact Info:**
STAR Technology Corporation	Johnny Harper
8003 Forbes Place, Suite 310	President and CEO
Springfield, VA 22151	jharper@startechcorp.com
Web site: http://www.startechcorp.com/structure.htm	

Key Product Attributes:

Product Type: Interactive (Virtual Simulation)	**Training Type it Supports:** Awareness, FE
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMA, Fire, HazMat, Law Enforcement
Media Scale: Individual, Small Multi-User Team	**Primary Target Audience:** Commanders
Application Environment: Training, Exercise	

Product Description: The SimViz/3400ICS simulator is a computer-based system that provides a synthetic environment in which structure-based emergency incidents are used to train emergency response command staff in the application of the ICS.

The system can also be used to teach strike team leaders or division supervisors how to manage their response resources and make proper decisions based on the audiovisual cues they receive in a scenario.

Advantageous MS&G Features:

Records User-Specific Performance; Requires Active User Decision Making; Simulation Support

.

Version: Tailored

Date evaluated: September 11, 2003

Product Name: Site Profiler Assessor

Company:	**Contact Info:**
Digital Sandbox, Inc. 12355 Sunrise Valley Drive, Suite 501 Reston, VA 20191 **Web site**: http://www.dsbox.com/products/site_profiler_assessor.html	Charlie Dublin, Chief of Staff 703.390.9770 x105 cdublin@dsbox.com

Key Product Attributes:

Product Type: Unknown classification at time of review. **Commercial or Government Owned:** CO **Media Scale:** Individual. **Application Environment:** Operational, Analysis	**Training Type it Supports:** *Possibly* Part-Task Training, Pre-Training, Drills, TTX, FE, FSE **Functional Area(s) it Supports:** *Possibly* EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector. **Primary Target Audience:** *Possibly* First Responders, Commanders, Local Officials, State Officials, Federal Officials.

Product Description: "Tool that enables…consistent, collaborative approach to vulnerability assessment." It "provides a user-friendly, efficient job aid for assessors and enables them to seamlessly capture information and data to perform assessments—all within an intuitive, workflow-style interface. Plus, it has the added benefits of integrating analytic blast and WMD models and interfacing with the Site Profiler Enterprise Server. Using Site Profiler Assessor, vulnerability assessment teams can: introduce added structure and consistency to assessments/audits, assess against standards or organizational checklists, compare against previous audits and best practices, perform team assessments including risk analysis, simulate scenarios and weapon effects, export data and reports to Web-accessible information systems, and generate risk analysis data and reports."

Advantageous MS&G Features: Insufficient information to make observations (there was not enough time for vendor to participate in survey).

Version: 2.0

Date evaluated: January 6, 2004

Product Name: SoftRisk SQL (SOFR)

Company:	**Contact Info:**
SoftRisk Technologies	Mr. Jim Fraser
PO Box 20163	613-241-4884
St. Simon Island, GA 31522	jfraser@softrisk.com
912-634-1700	techsupport@softrisk.com
912-638-3340 fax	
Web site: www.softrisk.com	

Key Product Attributes:

Product Type: Operational System (Incident Response)	**Training Type it Supports:** Drills, TTX, FE, Distributed/Collaborative Exercise, National Training Exercise
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector
Media Scale: Small Multi-User Team, Large Multi-User Team	**Primary Target Audience:** Commanders, Local Officials, State Officials, and Federal Officials
Application Environment: Operational, Analysis	

Product Description:

SoftRisk is a real-time emergency management software program used operationally to help a command post manage information related to an incident. It assists responders in keeping track of events, resources, equipment, and people during an incident by managing a large database that is integrated with word processing, graphic files, and mapping. Users can manage emergency operations, create standardized data collection and reports, as well as manage resources and information about resources. The program creates an audit trail, which provides users with excellent data that can later be analyzed and used to improve response plans. Users enter information about events, equipment, and people in the database during an incident, allowing them to share information with other users on the network. Once information is entered into the program, it is immediately available to all users on the system. The database is designed to be incident-centric, and information is organized and linked to a particular incident as entered by a user, such as a flood.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 5.1 SQL

Date evaluated: September 2, 2003

Product Name: SPECTRUM	
Company: Army Constructive Training Federation Directorate National Simulation Center Fort Leavenworth, KS **Web site**: http://www-leav.army.mil/nsc/famsim/spectrum/index.htm	**Contact Info:** Tony Medici Spectrum Chief Trainer Tel.: 913-684-8123 Email: Medicia@leavenworth.army.mil
Key Product Attributes:	
Product Type: Exercise (Computer Adjudicated) **Commercial or Government Owned:** GO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Training, Exercise	**Training Type it Supports:** FE **Functional Area(s) it Supports:** EMA, Fire, Government Administrator, HazMat, Law Enforcement, Public Health, and Public Works **Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials
Product Description: Spectrum is a constructive simulation exercise system developed by the National Simulation Center to provide the Army command and control training in military operations other than war. The simulation has been used to drive WMD exercises for a state emergency operations center composed of state emergency management personnel and federal officials. In addition to modeling movement, combat, and logistics operations, Spectrum also models subjective political, economic, and socio-cultural activities that may affect security and anti-terrorism decision making. Use of the system is limited to U.S. DoD and military users due to terrain generation data accessed from NIMA. **Advantageous MS&G Features:** Requires Active User Decision Making; Simulation Support	
Version: 1.6.3 (14 November 2002) **Date evaluated:** September 5, 2003	

Product Name: STAT Care (STC)

Company:	**Contact Info:**
RTI International	Paul N. Kizakevich
Research Triangle Institute	P.O. Box 12194
3040 Cornwallis Rd.	RTP, NC 27709
Research Triangle Park, NC 27709	kiz@rti.org
Web site: http://www.patient-simulation.com/default.asp	

Key Product Attributes:

Product Type: Interactive (Virtual Simulation)	**Training Type it Supports:** Part-Task and Pre-Training, Drills, FE
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** EMS
Media Scale: Individual	**Primary Target Audience:** First Responders
Application Environment: Training, Exercise	

Product Description:

Interactive, virtual-reality patient simulator that presents a scenario comprising a 3-D scene, an incident that produces trauma or medical conditions, and one or more patients. The caregiver can navigate and survey the scene, interact and converse with the virtual patient, use medical devices, administer medications, monitor diagnostic data, and perform interventions. It features case-based virtual scene scenarios and one or more patients, physiology that responds to trauma and treatment, integrated pharmokinetic drug models, and assignable probability of critical conditions.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support; Hospital T&E; Part-Task Training; Pre-Training

Version: 1.8.0

Date evaluated: August 26, 2003

Product Name: Tennessee Emergency Management Weapons of Mass Destruction Computer Based Training CD-ROMS (TEMA)	
Company: Tennessee Emergency Management Agency 3041 Sidco Drive Nashville, TN 37204-1502 **Web site**: www.tnema.org/training/DomestPrep.Htm	**Contact Info:** Media Relations: 1-800-258-3300 Beverly Evans, Ph: 616-253-5849 Email: info@tnema.org
Key Product Attributes:	
Product Type: Dynamic Media (Self-Guided Training) **Commercial or Government Owned:** GO **Media Scale:** Individual **Application Environment:** Training, Exercise	**Training Type it Supports:** Equipment Training, Awareness, Part-Task Training, Pre-Training **Functional Area(s) it Supports:** EMS, EMA, Fire, Health Care, HazMat, Law Enforcement, Public Health, Public Works, Private Sector **Primary Target Audience:** First Responders, Commanders
Product Description: TEMA developed this four CD-ROM set to support WMD training activities. These CDs were developed to provide the means to minimize and ensure survivability in the event an incident involved WMD. **Advantageous MS&G Features:** Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Enhanced Communication T&E; Hospital T&E; Part-Task Training; Pre-Training	
Version: 1.0 **Date evaluated:** December 19, 2003	

Product Name: TUTOR

Company:	**Contact Info:**
BCD Modeling Ltd. **Web site**: http://www.bcd-modelling.com/tutor.html	Patrick Benham-Crosswell PO BOX 136, ALTON, Hampshire GU34 1YR paddy@bcd-modelling.com +44 1420 590110

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Training, Exercise, Analysis	**Training Type it Supports:** Part-Task Training, Pre-Training, Drills, TTX **Functional Area(s) it Supports:** EMA, Fire, Health Care, HazMat, Law Enforcement, Public Safety Communications **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials

Product Description:

Simulation designed for emergency services decision makers to visualize and prepare for crisis management contingencies, such as public order and safety incidents and terrorist and firearms incidents. TUTOR was adapted from a military combat simulation developed by the UK government. It features terrain visualization, entities, activities carried out by entities, management/control of events, and operational analysis and debrief for providing assessments. It is designed for command staff and their subordinates to gain experience implementing contingency plans and experience carrying out plans despite unanticipated problems.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Enhanced Communication T&E; Part-Task Training; Pre-Training

Version: 2.0

Date evaluated: September 3, 2003

Product Name: Vigilent

Company:	**Contact Info:**
Compressus Inc. 101 Constitution Ave. NW Washington, DC 20001 **Web site**: http://www.compressus.com/index.html	Victoria Laing, Project Manager (o) 202-742-4307 (m) 571-228-0139 vlaing@compressus.com

Key Product Attributes:

Product Type: Operational System (Incident Response) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Operational, Analysis	**Training Type it Supports:** Drill, TTX, FE, FSE, Distributed Collaborative Exercise, National Exercise **Functional Area(s) it Supports:** Health Care, Public Health **Primary Target Audience:** Local Officials, State Officials, Federal Officials

Product Description: Real-time surveillance and tracking tool for healthcare professionals/ decision makers to rapidly detect and identify known pathogens (i.e., identify WMD outbreak). This system can substitute paper reporting of medical surveillance based on collection of patient symptoms in the outpatient and inpatient clinical setting. Critical Care Tracking is available for the following: visual of the ambulance diversion status give EOC, ECC, and dispatch centers the ability to route patient to the appropriate facility; visual of resources, bed counts, and staffing tab (the combination of all three will give a clear picture of current capacity and surge capacity); automatic alerts for hospital diversion.

Advantageous MS&G Features: Requires Active User Decision Making; Automated Recording of Learner Unit Information Sharing; Hospital T&E; Distributed/Collaborative Decision Making Environment

Version: Vigilent

Date evaluated: November 10, 2003

Product Name: Virtual Cities (VCIT)

Company:	**Contact Info:**
Advanced Interactive Systems 1750 Tysons Blvd., 4th Floor MacLean, VA 22102 **Web site**: http://ais-sim.com	Mr. Robert Clover Tel.: 703-744-1034 clover@ais-sim.com

Key Product Attributes:

Product Type: Dynamic Media (Other) **Commercial or Government Owned:** GO **Media Scale:** Individual, Group, Small Multi-User Team, Large Multi-User Team **Application Environment:** Training, Exercise, Analysis	**Training Type it Supports:** Awareness, Part-Task Training, Pre-Training, Drills, FE, FSE Reinforcement, Distributed Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, HazMat, Law Enforcement **Primary Target Audience:** First Responders, Commanders

Product Description:

Originally developed at the Institute for Defense Analyses, Virtual Cities are high-resolution, geo-specific, immersive models of cities and select building interiors (where requested). The Virtual Cities are the synthetic environments used by manned training systems to permit the military and first responders to train in the mitigation of WMD incidents in their own locales. The product consists of software in the form of files that describe high definition, 2-D and 3-D environments that can be used for multiple purposes. Virtual Cities provide realistic, interactive 3-D environments for manned simulators; 2-D environments for scenario augmentation by way of the Semi-Automated Forces (SAF) applications and/or the VERTS Scenario Generation tool; and 3-D geometry for accurate 3-D plume dispersion modeling using computational fluid dynamics algorithms. Virtual Cities models have been integrated into prototype VERTS simulators and used by National Guard WMD Civil Support Teams to train in site reconnaissance, detection, and related training.

Advantageous MS&G Features: Part-Task Training; Pre-Training

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Version: Specific cities and locales are available

Date evaluated: September 5, 2003

Product Name: Virtual Clinic

Company:	**Contact Info:**
RTI International	Paul N. Kizakevich
3040 Cornwallis Road	919.541.6639
Research Triangle Park, NC 27709	kiz@rti.org
Web site:	
http://www.patient-simulation.com/default.asp	

Key Product Attributes:

Product Type: Interactive (Virtual Simulation)	**Training Type it Supports:** Part-Task Training, Pre-Training
Commercial or Government Owned: CO	**Functional Area(s) it Supports:** Health Care
Media Scale: Individual	**Primary Target Audience:** *Possibly* First Responders
Application Environment: Training	

Product Description: Virtual Clinic is an interactive, 3-D model of a patient presenting in a primary care setting. It is a virtual patient simulator for training clinicians in identifying and treating bioterrorism or other diseases. Each patient may present at different stages of disease with a chief complaint, vital signs, and animated clues such as hyperventilation, coughing, and sneezing. The clinician makes inquiries regarding medical history and physical condition, orders diagnostic and lab tests, enters differential diagnoses, and plans treatment and patient management. The patient's medical record is updated as new findings become available. Clinical findings are taken from actual case studies.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Hospital T&E, Part-Task Training, Pre-Training

Version: Research Prototype

Date evaluated: November 26, 2003

Product Name: Virtual Emergency Response Training Simulation (VERTS)

Company:	**Contact Information:**
U.S. Department of Defense Program Executive Office, Simulation, Training and Instruction (PEO STRI) U.S. Army PEO STRI Orlando, Florida 32826	Major Lee Dunlap, S-CATT/ VERTS Project Director 407-384-5358 Lee_Dunlap@peostri.army.mil

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** GO **Media Scale:** Individual, Group, Small Multi-User Team **Application Area:** Training, Exercise, Analysis	**Training Type It Supports:** FE, Distributed Collaborative Exercise **Functional Area(s) It Supports:** EMS, EMA, Healthcare, HazMat, Law Enforcement, Public Health, Public Works **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials

Product Description: VERTS is intended for consequence management preparedness training of first responders and ICS staff for WMD events. VERTS is a virtual 3-D simulation that provides a realistic representation of specific cities, including roads, building exteriors and some interiors, as well as other key geo-cultural features. VERTS combines a constructive simulation with a 3-D synthetic environment. The constructive simulation maintains the terrain database, entity behaviors, and models of incident effects. The virtual reality "immersion" stations enable users to interact with the constructive simulation. Trainees control avatars in the synthetic environment, some of which are controlled by motion sensors on human-in-the-loop operators (e.g., a user can move towards a chemical spill and use detection equipment). VERTS is currently a prototype system seeking federal funding to develop this technology into production systems for deployment at National Guard, active, and reserve military sites.

Advantageous MS&G Features: Requires Active User Decision Making; Simulation Support; Remote Observation; Enhanced Communication T&E

Version: Prototype

Date Evaluated: April 11, 2003

Product Name: Virtual Terrorism Response Academy (VTRA)

Company:	**Contact Info:**
Program on Counter-terrorism Preparedness and Training, Institute for Security Technology Studies, Dartmouth College and Interactive Media Laboratory, Dartmouth Medical School One Medical Center Drive Colburn Hill Bldg. STE 204 Lebanon, NH 03756-0001 **Web site**: http://iml.dartmouth.edu	Dr. Joe Henderson (603) 653-1500 joe.henderson@iml.dartmouth.edu

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** CO and GO **Media Scale:** Individual **Application Environment:** Training, Exercise	**Training Type it Supports:** Equipment Training, Awareness, Part-Task Training, Pre-Training, Drills **Functional Area(s) it Supports:** EMS, Fire, HazMat, Law Enforcement, Private Sector **Primary Target Audience:** First Responders

Product Description: VTRA is a training system configured for use on a PC with the student interacting via a display and typical input devices. It includes the use of virtual mentors and instructors who work with and guide the student, a learning institution-like virtual environment in which the training takes place, a simulation lab in which the student participates in applied real-time scenarios, and a focus on applied experiential learning. The content is provided by CD-ROM media or transmitted over the Internet. The major component is a robust Advanced Distance Learning infrastructure termed the VTRA. It consists of reusable, effective, high-quality instructional and multimedia designs and an underlying set of technological capabilities and tools.

The training takes place in a progressive fashion, with the student moving through pre-planned activities and interacting with various experts. In the final segment of training, after the student has obtained a key, the student participates in simulated realistic incident situations. The training relies on use of high quality video and audio of "mentors" and instructors, as well as action scenes to advance the "plot" of simulations. This, in addition to other graphic, audio, and text elements, creates an immersive multimedia environment conducive to experiential learning.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Enhanced Communication T&E; Part-Task Training; Pre-Training

Version: N/A

Date evaluated: December 2003

Product Name: Weapons of Mass Destruction Decision Analysis Center (WMD-DAC)

Company:	**Contact Info:**
Sandia National Laboratory Advanced Concepts Group PO Box 969 MS 9201 Livermore, CA 94551-0969 **Web site**:	Howard Hirano Advanced Concepts Group Manager Tel.: (925) 294-2053 Email: hhhiran@sandia.gov

Key Product Attributes:

Product Type: Interactive (Virtual Simulation) **Commercial or Government Owned:** GO **Media Scale:** Individual, Group, Small Multi-User Team **Application Environment:** Analysis	**Training Type it Supports:** TTX, Distributed/Collaborative Exercise **Functional Area(s) it Supports:** EMA, Government Administrator, Public Health **Primary Target Audience:** Local Officials, State Officials, Federal Officials

Product Description:

The WMD-DAC, in its current form, is a prototype planning and analysis system that addresses the early identification of public health threats. It eliminates "artificialities" by using actual health and census data to replicate the exact flux of patients in a given time period. The system is an interactive simulation, running in either a stand-alone or distributed mode that models an anthrax attack. It requires the main user, in a public health officer role, to interpret hospital data and choose prophylaxis strategy. As a departure from typical deterministic tabletop exercises, the role player makes decisions that alter the outcome of the simulation (i.e., population morbidity and mortality are stochastic variables). The system is broadly applicable to state and local public health and emergency management agencies but requires actual health records to achieve the intended degree of realism.

Advantageous MS&G Features: Records User-Specific Performance; Requires Active User Decision Making; Simulation Support; Hospital T&E; Distributed/Collaborative Decision Making Environment

Version: Prototype

Date evaluated: August 8, 2003

Product Name: Web EOC Standard (WEOC)

Company:	**Contact Info:**
Esi®--Emergency Services Integrators 699 Broad St. Suite 1011 Augusta, GA 30901 **Web site**: http://www.esi911.com/esi/products/webeoc.shtml	John O'Dell 800-596-0911 jodell@esi911.com

Key Product Attributes:

Product Type: Operational System (Incident Response) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Exercise, Operational	**Training Type it Supports:** Drill, TTX, FSE, Distributed Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** Commanders, Local Officials, State Officials, Federal Officials

Product Description:

Web-based information management system providing real-time access to emergency information that can be simultaneously shared among emergency response teams, decision makers, and supporting organizations during the planning, response, and recovery phases of emergencies. It features automatic update of information displays (e.g., information tracking status reports) as different users (who can be remotely located) input information via status boards. The tool was designed for use with overhead projections, but this is not a requirement. It also contains a simulation template for exercise conduct. The user inputs expected actions at identified times, and the simulation populates status boards to prompt player actions.

Advantageous MS&G Features: Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Distributed/Collaborative Decision Making Environment

Version: 5.6

Date evaluated: May 22, 2003

Product Name: WMD Basic Awareness Training Interactive CD

Company:	**Contact Information:**
Paratus Associates, LLC	Roger Dannenberg 412-268-3827
JITL.MPL.COM 304-472-9520	rbd@cs.cmu.edu
Ken Sharp 412-268-2613	ks5d@andrew.cmu.edu; jitl-list@cs.cmu.edu
Web Site:	

Key Product Attributes:

Product Type: Dynamic Media (Self-Guided Training)	**Training Type It Supports:** Awareness, Pre-Training
Commercial or Government Owned: CO	**Functional Area(s) It Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Law Enforcement, Public Health, Public Safety Communications, Public Works
Media Scale: Individual, Group	**Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, and Federal Officials
Application Area: Training	

Product Description: WMD Basic Awareness Training Interactive CD-ROM is a computer-based application displayed using the freely downloadable Just In Time Lectures (JITL) player (included in the CD-ROM) that also supports URL (Universal Resource Locator) addresses that call up browsers, media players, and email clients as needed. The media player software (and the required QuickTime installation kit) is included. The training was designed to run on Windows 3.1 and subsequent versions.

The training was specifically designed to focus on disaster preparedness for WMD. It is in a lecture format. It consists of basic-level, awareness-independent modules that provide definitions and examples of chemical properties, chemical agents, biological agents, incendiary and explosive, and nuclear/radiological agents as well as information on safety and personnel protection. There is a discussion of key agency roles and responsibilities and crisis and consequence management with a focus on federal and general first responder roles.

Advantageous MS&G Features: Pre-Training

Version: 0.3

Date Evaluated: February 25, 2003

Product Name: WorldReach

Company:	**Contact Info:**
WorldReach Software Corporation 1420 Blair Place, Suite 500 Ottawa, Ontario, K1J 9L8 **Web site**: http://www.worldreachsoftware.com/emergency/?id=emerg_intro	Gordon Wilson, President 613-742-6482 gordw@amita.com

Key Product Attributes:

Product Type: Operational System (Incident Response) **Commercial or Government Owned:** CO **Media Scale:** Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Operational	**Training Type it Supports:** Drills, TTX, FE, FSE, Distributed/Collaborative Exercise, National Training Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, Government Administration, Health Care, HazMat, Public Health, Public Safety Communications, Public Works, Transportation **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials

Product Description: "First responders, medical teams, and emergency management agencies can use the Emergency Management Software System to share information; assist and track victims, patients, and families; and have up-to-date information for other agencies and the public." This tool can serve as a real-time central repository and case management suite for persons needing to 1) track those affected by any incident requiring treatment and/or assistance; 2) communicate internally and externally about cases; and 3) coordinate with other providers the status of the case and/or actions including requests for inputs into the system. All this information is stored in a central database with time and user stamps identifying inputs/actions and made searchable.

Advantageous MS&G Features: Requires Active Decision Making; Automated Recording of Learner Unit Information Sharing; Enhanced Communication T&E; Hospital T&E; Distributed/Collaborative Decision Making Environment

Version: 6

Date evaluated: December 15, 2003

Product Name: Xybernaut Mobile Solutions

Company:	**Contact Info:**
Xybernaut Corporation 12701 Fair Lakes Circle, Suite 550 Fairfax, VA 22033 **Web site**: http://www.xybernaut.com	Ed Newman Tel.: 703-631-6925 Email: enewman@xybernaut.com

Key Product Attributes:

Product Type: Operational System (Virtual Collaborative Environment) **Commercial or Government Owned:** CO **Media Scale:** Group, Small Multi-User Team, Large Multi-User Team, Multi-Agency Participation **Application Environment:** Training, Exercise, Operational	**Training Type it Supports:** Equipment Training, Part-Task Training, Drills, FE, FSE, Distributed/Collaborative Exercise **Functional Area(s) it Supports:** EMS, EMA, Fire, Health Care, HazMat, Law Enforcement, Public Safety Communications, Public Works, Transportation, Private Sector **Primary Target Audience:** First Responders, Commanders, Local Officials, State Officials, Federal Officials

Product Description: Xybernaut Mobile Solutions—the MA-V and the Atigo-M, and Atigo-T—are mobile, handheld/wearable computers with embedded operating systems (CE.net and XP) that enable wireless data interoperability with audio/video interoperability. Includes multiple touch, voice, and body activated controls and is used by DoD, state, and international agencies for emergency incident response; distributed training; distributed data communications/document management; field inspections; mobile first responder; and war fighter emergency alert, maintenance, care, communications, tracking, and evaluation activities.

Advantageous MS&G Features: Requires Active User Decision Making; Automatic Recording of Learner Unit Information Sharing; Remote Observation; Enhanced Communication T&E; Hospital T&E; Part-Task Training; Distributed/Collaborative Decision Making Environment

Version: 5 MA, Atigo M, Atigo T.

Date evaluated: December 19, 2003

GLOSSARY

3-D	Three-dimensional; refers to the visual display that exhibits breadth, height, and thickness or depth. Standard 2-D computer images and television displays create a flat image with only height and breadth.[1]
Adjudication	The act of judging validity, effectiveness, or other measures of learner behavior, either by human means or computerized measurement against encoded subject matter expertise.
Algorithm	A prescribed set of well-defined, unambiguous rules or processes for the solution of a problem in a finite number of steps.*
Analytical Model	A model consisting of a set of solvable equations; for example, a system of solvable equations that represents the laws of supply and demand in the world market.*
Asynchronous	The property of information channels or computerized communications in which transmissions between parties can be stored and retrieved without the need for the parties to use the communication medium at the same time.
Attribute(s)	Characteristic(s) of learning systems, instructional techniques, or products used as components of such systems.
Best Practice	A way or method of accomplishing a domestic preparedness function or process that subject matter experts consider to be superior to all other known methods.
Computer Generated Forces (CGF)	A generic term used to refer to computer representations of forces in simulations that attempts to model human behavior sufficiently so that the forces will take some actions automatically (without requiring man-in-the-loop interaction). Also referred to as Semi-automated Forces.*
Computer Simulation	A dynamic representation of a model, often involving some combination of executing code, control/display interface hardware, and interfaces to real-world equipment.*
Consequence Assessment	The prediction of outcomes from man-made or natural events for the purpose of risk analysis, using scientific algorithms (e.g., airborne dispersion, “plume”, models).

[1] DoD 5000.59-M “DoD Modeling and Simulation (M&S) Glossary”, January 1998.

* Ibid.

Constructive Model or Simulation	Models or simulations that involve simulated people operating simulated systems. Real people stimulate (make inputs to) such simulations but are not involved in determining the outcomes.*
Data Standardization	The process of documenting, reviewing, and approving unique names, definitions, characteristics, and representations of data according to established procedures and conventions.*
Data Validation	The documented assessment of data by subject area experts and its comparison to known values. Data user validation is an assessment as appropriate for use in an intended model. Data producer validation is an assessment within stated criteria and assumptions.*
Database	A collection of interrelated data, often with controlled redundancy, organized according to a schema to serve one or more applications; the data are stored so that they can be used by different programs without concern for the data structure or organization. A common approach is used to add new data and to modify and retrieve existing data.*
Decision Support System (DSS)	An interactive, computer-based system intended to assist decision makers in using data and models to solve problems and make decisions. It is designed to support managerial judgment in unstructured or partially structured tasks.
Delivery	The means or technique by which training is provided, including media, products, and simulations.
Deterministic	Pertaining to a process, model, simulation or variable whose outcome, result, or value does not depend upon chance. Contrast with Stochastic.*
Discipline(s)	Professional field(s) pertinent to organizations and personnel actively engaged in preventing, detecting, and responding to a potential WMD incident such as law enforcement, fire, emergency management, and emergency medical personnel.
Distributed/Collaborative Environment	Software that enables multiple users to electronically interact with each other from different geographical locations, either simultaneously or at different times (asynchronously). Example interactions include: video teleconferencing, email, and file sharing. Syn. – Virtual Collaborative Environment.
Domestic Preparedness Community	All federal, state, territorial, tribal, and local organizations and personnel involved in the homeland security mission. Syn. Emergency response community.
Dynamic Model	A model of a system in which there is change, such as the occurrence of events over time or the movement of objects through space; for example, a model of a bridge that is subjected to a moving load to determine characteristics of the bridge under changing stress.*

Emulation	A model that accepts the same inputs and produces the same outputs as a given system. See also Simulation.*
Entity	A distinguishable person, place, unit, thing, event, or concept about which information is kept.*
Environment	The texture or detail of the natural domain, that is, terrain relief, weather, day, night, terrain cultural features (such as cities or farmland), sea states, etc.; and the external objects, conditions, and processes that influence the behavior of a system (such as terrain relief, weather, day/night, terrain cultural features, etc.).*
Face Validation	The process of determining whether a model or simulation seems reasonable to people who are knowledgeable about the system under study, based on the model's performance. This process does not review the software code or logic but rather reviews the inputs and outputs to ensure they appear realistic or representative.*
Facilitator	The moderator of an exercise or training.
Fidelity	The degree of realism or accuracy of a representation when compared to the real world.
First Responders	Individuals who in the early stages of an incident are responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers as defined in section 2 of the Homeland Security Act of 2002 (6 U.S.C. 101), as well as emergency management, public health, clinical care, public works, and other skilled support personnel (such as equipment operators) who provide immediate support services during prevention, response, and recovery operations.[2]
Full-Scale Exercise	An exercise employing a city's actual response elements including equipment, personnel, and other resources for the purpose of rehearsal or testing capacity and capability. It involves activation of EOCs and command posts, response to simulated threats or attacks, practice of hazardous materials procedures and decontamination, and victim care.
Functional Area	See Discipline(s).

[2] HSPD 8 http://www.whitehouse.gov/news/releases/2003/12/20031217-6.html, Accessed 3/1/2004.

Functional Exercise	An exercise designed to test plans, policies, and procedures in command, control, and communications systems. It simulates the reality of operations in a functional area by presenting complex and realistic problems under stressful conditions, requiring participants to quickly generate rapid and effective responses.
Game(s)	a) A physical or mental competition in which the participants, called players, seek to achieve some objective within a given set of rules. See also Game Theory.* b) Simulations of operations that often involve two or more teams, usually in a competitive environment, using rules, data, and procedures designed to depict an actual or assumed real-life situation. The sequence of events affects, and is in turn affected by, the decisions made by the players. Each episode is moved to the next level of detail or complexity, taking into account the players' earlier decisions. The decisions made by game participants determine the flow of the game. The goal is to explore decision making processes and the consequences of decisions. Games stress the importance of the planners' and players' understanding and comprehension of interrelated processes.[3]
Game Theory	a) The study of situations involving competing interests, modeled in terms of the strategies, probabilities, actions, gains, and losses of opposing players in a game. See also War Game. b) The study of games to determine the probability of winning given various strategies.*
Geo-cultural	Of or pertaining to an exact man-made physical location, including structures, transit systems, buildings, and moveable features.
Geo-specific	Of or pertaining to an exact location on Earth, including terrain or other natural features of the environment.
Graphical Model	A symbolic model whose properties are expressed in diagrams; for example, a decision tree used to express a complex procedure. Contrast with mathematical model; narrative model; software model; tabular model.*
Hardware	Tangible computer equipment necessary to implement software operating systems and applications.
High Frequency/Low Value Event	A type of event that occurs relatively often, the consequences of which are small in scope (e.g., chemical spill from a traffic accident).

[3] U.S. Office for Domestic Preparedness, Homeland Security Exercise and Evaluation Program, Volume II: Exercise Evaluation and Improvement, 2003, p. 9.

High Level Architecture (HLA)	Major functional elements, interfaces, and design rules, pertaining as feasible to all DoD simulation applications and providing a common framework within which specific system architectures can be defined.*
Human-in-the-Loop (HITL)	A model that requires human interaction. See Interactive Model.*
Immersive	The human perception of a synthetic spatial environment as a complete mental frame of reference.
Infrastructure	An underlying base or foundation; the basic facilities, equipment, and installations needed for the functioning of a system.*
Instructional Simulation	A simulation intended to provide the equivalent of a real or hypothesized stimulus that could occur in the synthetic environment for the purpose of training.*
Interactive Model	A model that requires human participation. Syn: Human-in-the-Loop.*
Knowledge	The rules, environment, etc. that form the structure humans use to process and relate to information, or the information a computer system must have to behave in an apparently intelligent manner.*
Learning System(s)	The entirety of the necessary actors, products, and services needed to effect training or exercising to achieve stated objectives. It refers generally to systems that train or exercise.
Live Simulation	A simulation involving real people operating real systems.*
Live, Virtual, and Constructive Simulation	A broadly used taxonomy for classifying simulation types. The categorization of simulation into live, virtual, and constructive is problematic, because there is no clear division between these categories. The degree of human participation in the simulation is infinitely variable, as is the degree of equipment realism. This categorization of simulations also suffers by excluding a category for simulated people working real equipment (e.g., smart vehicles).*
Local Area Network	A class of data network that provides high data rate interconnection between network nodes in close physical proximity.*
Low Frequency/High Value Event	An event that occurs rarely but often incurs catastrophic consequences (e.g., terrorist WMD attack). Contrast with High Frequency/Low Value.
Mapping	Establishing a logical relationship between two or more items (e.g., fields of database records).

Media (Medium)	The means for communicating information to learners. Used synonymously with products or devices used to train and exercise (including simulations, computer-based training courses, games, books, tutorials, video teleconferencing, Web-based instruction, and MS&G).
Metadata	Information describing the characteristics of data; data or information about data; descriptive information about an organization's data, data activities, systems, and holdings.*
Metric(s)	A process or algorithm that may involve statistical sampling, mathematical computations, and rule-based inferencing. Metrics provide the capability to detect and report defects within a sample.*
Mock-Up	A full-sized structural, but not necessarily functional, model built accurately to scale, used chiefly for study, testing, or display. See also Physical Model.*
Model	A physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process.*
Modeling	Application of a standard, rigorous, structured methodology to create and validate a physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process.*
Modeling and Simulation (M&S)	The use of models, including emulators, prototypes, simulators, and stimulators, either statically or over time, to develop data as a basis for making managerial or technical decisions. The terms "modeling" and "simulation" are often used interchangeably.*
M&S Interoperability	The ability of a model or simulation to provide services to and accept services from other models and simulations, and to use the services so exchanged to enable them to operate effectively together.*
MS&G Product(s)	Model, simulation, and gaming component(s) of learning systems that may be composed of transferable goods and/or services.
Observational Hypotheses	Concepts for improving training and exercising developed by the contractor to assess the presence or absence of product functionality that supports such concepts.
Part-Task Training	Isolated training each part of an integrated set of tasks separately rather than training the set of tasks as a combination.

Pre-Training	Preparation and orientation of learners and participants prior to an exercise or training event as a means of improving the overall effectiveness of such events.
Physical Fidelity	The degree to which the simulation imitates the visual, auditory, spatial, kinesthetic, and tactile characteristics present in the real world.[4]
Physical Model	A model whose physical characteristics resemble the physical characteristics of the system being modeled; for example, a plastic or wooden replica of an airplane. A mock-up. See also iconic model; Scale Model.*
Predictive Model	A model in which the values of future states can be predicted or are hypothesized; for example, a model that predicts weather patterns based on the current value of temperature, humidity, wind speed, and so on at various locations.*
Preparedness	The existence of plans, procedures, policies, training, and equipment necessary at the federal, state, and local levels to maximize the ability to prevent, respond to, and recover from major events. The term "readiness" is used interchangeably with preparedness.[5]
Psychological Fidelity	The degree to which the salient cues for performance are present in the model and produce the same psychological, cognitive, and effective responses as are present in the real world.[6]
Real-Time	In modeling and simulation, simulated time advances at the same rate as actual time; for example, running the simulation for 1 second results in the model advancing time by 1 second.
Requirement(s)	Selected competencies in domestic preparedness; tasks that are to be trained or exercised through ODP programs.
Scale Model	A physical model that resembles a given system, with only a change in scale; for example, a replica of an airplane one tenth the size of the actual airplane.*
Scenario	a) Description of an exercise. It is part of the session database that configures the units and platforms and places them in specific locations with specific missions. b) An initial set of conditions and time line of significant events imposed on trainees or systems to achieve exercise objectives.*

[4] Department of Defense and Canadian Forces Synthetic Environment Lexicon (draft).

[5] HSPD 8, http://www.whitehouse.gov/news/releases/2003/12/20031217-6.html, Accessed 3.1.2004.

[6] Ibid.

Simulation	A method for implementing a model over time.*
Simulator	a) A device, computer program, or system that performs simulation. b) For training, a device that duplicates the essential features of a task situation and provides for direct human operation.*
Stimulation	The use of simulations to provide an external stimulus to a system or subsystem. An example is the use of a simulation representing the radar return from a target to drive (stimulate) the radar of a missile system within a hardware/software-in-the-loop simulation.*
Stochastic	Pertaining to a process, model, or variable whose outcome, result, or value depends on chance. Contrast with Deterministic.*
Tabletop Exercise (TTX)	A facilitated discussion of various issues surrounding response to a hypothetical WMD event. Tabletops typically occur in a classroom setting and involve representatives from emergency response organizations in the local community (fire, police, ambulance service, hospitals, etc.), elected or appointed officials, senior staff of various agencies, and state and federal officials.
Tool	An apparatus used to perform a particular function to aid training/exercise or provide training/exercise itself. Used interchangeably with the terms “product” and “media” in this report.
Vignette	A self-contained portion of a scenario.*
Virtual Simulation	A simulation involving real people operating simulated systems. Virtual simulations inject human-in-the-loop in a central role by exercising motor control skills (e.g., flying an airplane), decision skills (e.g., committing fire control resources to action), or communication skills (e.g., as members of a C4I team).*
War Game	A simulation game in which participants seek to achieve a specified military objective given pre-established resources and constraints; for example, a simulation in which participants make battlefield decisions, and a computer determines the results of those decisions. Syn: Constructive Simulation; higher order model.*
Wide Area Network (WAN)	A communications network designed for large geographic areas.*

ABBREVIATIONS AND ACRONYMS

2-D	Two-dimensional
3-D	Three-dimensional
A5	Angel Five
AAR	After Action Review
ADASHI	Automated Decision Aid System for Hazardous Incidents
ADFR	ADASHI First Response Automated Decision Aid System for Hazardous Incidents
ADM1	ADMS-1
ADMT	ADMS-Team
ADMV	ADMS-VR
ADPR	ADASHI Professional Automated Decision Aid System for Hazardous Incidents
AEAS	Automated Exercise and Assessment System (AEAS)
ALO	Area Locations of Hazardous Atmospheres (ALOHA)
ATS	Abbottville Tabletop Simulation
BRDG	Bridgeworks
BSMR	BioSimMER
BTC	Bt Create
BWRT	Biological Weapons Response Template
C2	Command and Control
CAMO	Computer-Aided Management of Emergency Operations System (CAMEO)
CAP	Corrective Action Plan
CATS-JACE	Consequences Assessment Tool Set - Joint Assessment of Catastrophic Events
CBRA	Chemical & Biological Response Aid (CoBRA)

CBRNE	Chemical, Biological, Radiological, Nuclear, Explosive
CBT	Computer Based Training
CD	Compact Disc
CD-ROM	Compact Disc-Read Only Memory
CERRTS	Civil Emergency Reaction and Responder Training System
CGI	Computer Generated Imagery
CGF	Computer Generated Forces
CJJC	Consequences Assessment Tool Set - Joint Assessment of Catastrophic Events (CATS-JACE)
CMS	Crisis Management Simulator Modeling Analysis PackageCMSM Chemical Agent Monitor Simulator (CAMSIM)
COR	Competency Observation Recording & Evaluation (CORE)
COTS	Commercial off-the-shelf
CRI	CRISIS
CRTS	Civil Emergency Reaction and Responder Training System (CERRTS)
CSB	Citizen's SMART Book
DHS	Department of Homeland Security
DMS	Decision Making Skills for Public Officials During a Hazardous Materials Incident
DoD	Department of Defense
DOE	Department of Energy
DOJ	Department of Justice
DP	Domestic Preparedness
DPC	Domestic Preparedness Community
DSS	Decision Support System
DTRA	Defense Threat Reduction Agency

EAV	Employee Awareness Video
EFL	Emergency Fighters for Life
EGLD	Eagle Defender
EM2K	EM/2000 Emergency Management Software
EMA	Emergency Management Agency
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EMS	EMS Simulator
EPI	Emergency Preparedness Incident Command Simulation
ERSM	Emergency Response Synchronization Matrix
ERTB	Emergency Response to Terrorism: Basic Concepts
ERUM	eRoom
ESP	Emergency Simulation Program
ETM	E Team
F2F	Face-to-face
FD	Fire Department
FE	Functional Exercise
FEMA	Federal Emergency Management Agency
FMIS	FEMIS / EMAdvantage
FORT	Force Protection Operational Requirements Testbed
FRST	First Responders Situational Awareness Tool
FRST	First Responders Situational Awareness Tool (FiRST)
FS2	Fire Studio 2.0
FSC	Full Spectrum Command
FSE	Full Scale Exercise
GA	Government Administrator

GAMMA-EC	Gaming and Multimedia Applications for Environmental Crisis Management Training
GEC	Gaming and Multimedia Applications for Environmental Crisis Mgt. Training (GAMMA-EC)
GF	Guard Force
GIS	Geographic Information System
GOTS	Government off-the-shelf
GPRA	Government Performance and Results Act
GPS	Global Positioning System
GRV	Groove
GSUT	Guardian Suite
GUI	Graphic User Interface
HazMat	Hazardous Materials
HC	Health Care
HITL	Human-in-the-Loop
HLA	High Level Architecture
HPAC	Hazard Prediction and Assessment Capability
HPS	Human Patient Simulator
HRAM	HLS RAM (Response Action Model)
HYP	Hybrid Particle and Concentration Transport Model (HYPACT)
HYPACT	Hybrid Particle And Concentration Transport Model
ICS	Incident Command System
IEEE	Institute of Electrical and Electronics Engineers
ISD	Instructional Systems Development
JANS	JANUS (Natl. Guard Version)
JCAT	Joint Conflict and Tactical Simulation (JCATS)
JDPS	Joint Integrated Database Prep System (JIDPS)

JTLS	Joint Theater Level Simulation
KSA	Knowledge, Skills, Abilities
LAN	Local Area Network
LE	Law Enforcement
LLV	LifeLine Videos
MIDA	Meteorological Information and Dispersion Assessment System - Anti-Terrorism (MIDAS-AT)
MIDAS-AT	Meteorological Information and Dispersion Assessment System - Anti-Terrorism
MIND	MIND
MINV	Minerva
MLD	Multi-Layer Decision Simulation - school violence
MMTE	Mass-Casualty Medical Training and Evaluation (MMT&E)
MRPL	Mapping Applications for Response, Planning and Local Operation Tasks (MARPLOT)
MS&G	Models, Simulations, and Games
N/A	Not Applicable
NBC	NBC/CTS 2002
NEMA	National Emergency Management Association
NLD	Nunn-Lugar-Domenici
NSN	National Security Network
NIMA	National Imagery and Mapping Agency
ODP	Office for Domestic Preparedness
OPSC	OpsCenter
PC	Personal Computer
PEGM	PEGEM
PH	Public Health

PIRF	Post-Incident Review for Emergency Command Training (PIRFECT)
PIS	Pollution Incident Simulation, Control, and Evaluation System
PPE	Personal Protective Equipment
PSC	Public Safety Communications
PW	Public Works
PWRS	PowerStripes
QUIC	Quick Urban and Industrial Complex Dispersion Modeling System
R6	Rainbow 6
RAM	RAMSAFE
RAMS	Regional Atmospheric Modeling System
RIFS	Response Information Folder System
RRP	Rational Requisite Pro
RSTO	RestOps Simulation (RBITS)
S3	S3-Exercise
SBCCOM	U.S. Army Soldier and Biological Chemical Command
SCRB	ScribeVision
SEAS	SEAS/Homeland Security Simulation
SERS	Security and Emergency Response Information System (SERIS)
SLRY	San Louis Rey
SME	Subject Matter Expert
SMFX	SIMfX
SOFR	SoftRisk
SOP	Standard Operating Procedure
SPCM	SPECTRUM

STC	STAT Care
SVZC	SimViz 3400ICS - Custom
SVZS	SimViz 3400ICS - Standard
SVZT	SimViz 3400ICS - Tailored
T&E	Training and Exercise
TEMA	Tennessee Emergency Management (TEMA) Weapons of Mass Destruction Computer-Based Training CD-ROM
TLI	ThoughtLink, Inc.
TOPOFF	Top Officials Exercise
TTR	TUTOR
TTX	Table Top Exercise
VCIT	Virtual Cities
VCLC	Virtual Clinic
VER	Virtual Emergency Response Training Simulation
VIGI	Vigilent
VTC	Video Teleconference
VTRA	Virtual Terrorism Response Academy
WAN	Wide Area Network
WBA	WMD Basic Awareness Training Interactive CD
WDAC	Weapons of Mass Destruction Decision Analysis Center (WMD-DAC)
WEMS	Worldreach Emergency Management Suite
WEOC	WebEOC
WMD	Weapons of Mass Destruction
WMD-DAC	Weapons of Mass Destruction Decision Analysis Center
WSTL	WisdomTools Scenarios
XYB	Xybernaut Mobile Computing Tools

REFERENCES

Agrait, R., Evans, D., Grossman, L., Hammell, T.J., Loughran, J.J., and Stahl, M. (2003a). Office for Domestic Preparedness Exercise Program Review: Opportunities for Models, Simulations, and Games. Washington, DC: Office for Domestic Preparedness.

Agrait, R., Evans, D., Grossman, L., Hammell, T.J., Loughran, J.J., and Stahl, M. (2003b). Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercising. Volume I. Washington, DC: Office for Domestic Preparedness.

Agrait, R., Evans, D., Grossman, L., Hammell, T.J., Loughran, J.J., and Stahl, M. (2003c). Review of Models, Simulations, and Games for Domestic Preparedness Training and Exercising. Volume II. Washington, DC: Office for Domestic Preparedness.

Agrait, R., English, A., Evans, D., Hammell, T.J., Loughran, J.J., and Stahl, M. (2004). A Review of Related Initiatives to Support Domestic Preparedness Training and Exercises. Washington, DC: Office for Domestic Preparedness.

Arlington County After Action Report of the Response to September 11. Retrieved from http://www.co.arlington.va.us/fire/edu/about/docs/aar.htm

Borgen, J., Dorn, R., McClung, T., McNitt, J., Dumont, R., and Evans, C. (2004). Post Exercise Report on Operational Meteorological (METOC) Support for Weapons of Mass Destruction (WMD) Events During Asymmetric Warfare Initiative – 03 (AWI-03).

Bowman, J. & Ward, L. (2001, December, updated 2002, July). Zacarias Moussaoui. CBC News Online. Retrieved March 2, 2004 from http://www.cbc.ca/news/indepth/targetterrorism/backgrounders/moussaoui_zacarias.html

Center for Health Policy Local Public Health Competency for Emergency Response. Columbia University School of Nursing (April 2001). Core Public Health Worker Competencies for Emergency Preparedness and Response. Retrieved from http://www.mailman.hs.columbia.edu/CPHP/cdc/COMPETENCIES.pdf

Chemical and Biological Arms Control Institute (1997). Bioterrorism in the United States: Threat, Preparedness, and Response. Alexandria, VA. Retrieved from http://www.cbaci.org/

Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response (1999) (ISBN 0309061954). Committee on R&D Needs for

Improving Civilian Medical Response to Chemical and Biological Terrorism Incidents, Institute of Medicine. Retrieved from http://www.nap.edu/catalog/6364.html

Columbia University School of Nursing, Center for Health Policy (2002). Bioterrorism & Emergency Readiness: Competencies for all Public Health Workers. Retrieved from http://cpmcnet.columbia.edu/dept/nursing/institute-centers/chphsr/btcomps.pdf

Druckman, D. & Bjork, R.A. (Eds.) (1994). Learning, Remembering, Believing: Enhancing Human Performance. Committee on Techniques for the Enhancement of Human Performance, National Research Council. Retrieved from http://www.nap.edu/catalog/2303.html

Federal Emergency Management Agency (February 1997). Federal Response Plan. Retrieved from http://www.fas.org/irp/offdocs/pdd39_frp.htm

Federal Emergency Management Agency (FEMA) (2002). *Assessment of Federal Terrorism Preparedness Training for State and Local Audiences*. FEMA.

Grieshop, J. (Spring 1987). Games: Powerful Tools for Learning. Journal of Extension, 25 (1) Retrieved from http://www.joe.org/joe/1987spring/iw2.html

Kapp, K.M. (2002). Blended Learning for Compliance Training Success. Institute for Interactive Technologies. Retrieved from http://astd.org/NR/rdonlyres/456DB5F7-D0FE-49B8-AE38-78167D308C7B/0/blendedlearning.pdf

Klein, G. & Weick, K.E. (2000, June). Decisions. Across the Board, 37 (6), 16-22.

McIntyre, David (Winter 2002-2003, accessed on 12/19/02). Education for Homeland Security – The Critical Need. ETS News, GDR Ltd., UK; "reprinted" Retrieved from http://www.homelandsecurity.org/HLSCommentary/Education_for_Homeland_Security.htm.

Mory, G.H. Feedback Research, found in Chapter 32, The Handbook of Research for Educational Communications and Technology. Retrieved from http://www.msu.edu/~kidwaikh/cep901b/literaturereview/week02feedback.htm

National Response Plan (Initial Plan, Draft). Retrieved from http://www.nemaweb.org/docs/National_Response_Plan.pdf

Department of Defense and Canadian Forces Synthetic Environment Lexicon (April, 2002, draft). Retrieved from http://www.drdc-rddc.dnd.ca/seco/documents/MS_Lexicon_Apr02.doc

Pelfrey, W.V., Kelly, W. and May Jr., J.W. (2001). *Training Strategy for ODP with Implications for WMD Training*. Office for Domestic Preparedness, Department of Justice.

Pelfrey, W., W. Kelley, Jr., J. May, Jr. (2002). The Office for Domestic Preparedness Training Strategy. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office for Domestic Preparedness.

Presidential Decision Directive 39 (June 21, 1995). Retrieved from http://kyem.dma.state.ky.us/training/trainingdocs/WMD%20ExDev/Presidential%20Decision%20Directive%2039.doc

Putnam, P., C. Cyba. M.F. Cuellar, L. Donohue, L. Eden, M. Lynn, M. May, E. Pate-Cornell, J. Pullen, M. Race, and A. Stuart. "TOPOFF2 Full Scale Exercise May 11-15, 2003, Final Report," For Official Use Only (Center for International Security and Cooperation, Stanford University, June 2003).

Rogers, W., Maurer, T., Salas, E. & Fisk, A. (1997). Task Analysis and Cognitive Theory: Controlled and Automatic Processing Task Analytic Methodology. In J.K. Ford, S.W.J. Kozlowski, K. Kraiger, E.Salas. & M.S. Teachout (Eds.), Improving Training Effectiveness in Work Organizations. (pp.19-45). Mahwah, New Jersey: Lawerence Erlbaum Associates.

Rubin, J. N. (January 2004). Recurring Pitfalls in Hospital Preparedness and Response. Journal of Homeland Security. Retrieved from http://www.homelandsecurity.org/journal/Articles/displayarticle.asp?article=101

Shilling, R. Zyda, M. & Wardynski, E.Z. (2002). Introducing Emotion into Military Simulation and Video Game Design: *America's Army: Operations and* VIRTE. The Third International Conference on Intelligent Games and Simulation. GameOn Conference, London, 30, 151-154. Retrieved from http://www.movesinstitute.org/~zyda/pubs/ShillingGameon2002.pdf

Smith-Jentsch, K.A., Salas, E., & Baker, D.P. (1996). Training team performance-related assertiveness. Personnel Psychology, 49, 909-936.

Stimson Center Report No. 35: Ataxia. The Chemical and Biological Terrorism Threat and the US Response. Retrieved from http://www.stimson.org/cbw/pubs.cfm?id=12

Taylor, J.G., MV-4656 Aggregate Combat Models (accessed 1/26/2004). Naval Post-Graduate School. Retrieved from http://www.npsnet.org/~jtaylor/MV4656.html.

U.S. Air Force (1993). Information for Designers of Instructional Systems. (Multi-volume Handbook). Department of the Air Force, Washington, D.C. AF Handbook 36-2265.

U.S. Department of Defense (January 1998). DoD 5000.59-M DoD Modeling and Simulation (M&S) Glossary.

U.S. Department of Homeland Security (March 2003). Homeland Security Exercise Evaluation Program (HSEEP, Draft) Vol. I. Washington, DC.

U.S. Department of Homeland Security, Office for Domestic Preparedness (March 2003). Homeland Security Exercise and Evaluation Program, Volume I: Overview and Doctrine. Washington, DC.

U.S. Department of Homeland Security, Office for Domestic Preparedness (2003). Homeland Security Exercise and Evaluation Program, Volume II: Exercise Evaluation and Improvement. Washington, DC.

U.S. Department of Homeland Security. Presidential Directive/HSPD-5. Retrieved from http://www.whitehouse.gov/news/releases/2003/02/20030228-9.html

U.S. Department of Homeland Security. Presidential Directive/HSPD-8. Retrieved on 3/1/2004 from http://www.whitehouse.gov/news/releases/2003/12/20031217-6.html

U.S. Department of Homeland Security (June 2003). The Office for Domestic Preparedness Guidelines for Homeland Security Prevention and Deterrence. Washington, DC.

U.S. Department of Justice (08/12/02). Department of Justice Exercise and Evaluation Program (JEEP, Draft). Washington, DC.

U.S. Office for Domestic Preparedness (2002). Emergency Responder Guidelines. Office for Domestic Preparedness, Department of Justice. Washington, DC. Retrieved from http://www.ojp.usdoj.gov/odp/docs/EmergencyRespGuidelinesRevB.pdf

U.S. Office for Domestic Preparedness (2002). Strategy for Blended Learning (Draft). Washington, D.C.: Vertex Solutions Inc.

White, B. (2003, April). Military game gives soldiers updates on foreign arenas. The Daily Record.