

Work Plan Project: Modeling, Simulations, & Simulators (MS&S) Selection Matrix



PROBLEM

Emergency response organizations considering purchasing modeling, simulation, and simulator technologies require a resource that provides them with selection criteria to help identify a solution that meets their needs. This resource should include questions for purchasers to ask vendors so that purchasers can determine if a particular product meets their requirements. Existing and developmental technologies for modeling, simulation, and simulators (as defined in following paragraphs) offer various opportunities to enhance and improve emergency preparedness and response training. However, industry sales representatives regularly approach emergency responders and government decision makers promoting their technologies as the next greatest modeling, simulation, and simulator solution. As a result, there can be a disconnect between the desired usage of a technology (i.e., what the user wants) and its intended purpose (i.e., what the system can provide). There is little guidance currently available to help make emergency preparedness agencies “educated consumers.”

PROPOSAL

This proposal outlines the parameters for developing a two-part Modeling, Simulation and Simulator (MS&S) Selection Tool. The purpose of the MS&S tool is to develop standard selection criteria for models, simulations, and simulators for use by the civilian emergency preparedness and response community. The selection criteria shall address various scenarios at the federal, state, local, regional, and tribal level as well as involvement of individuals, teams, or groups of teams of various sizes as employed in operational scenarios. The MS&S tool will help users evaluate and determine which models, simulations, and/or simulators will best meet their training needs given their available funding and personnel resources. The MS&S tool will consist of a specific list of criteria to be considered, allowing purchasers to efficiently compare MS&S technologies and make effective purchasing decisions based on their particular training needs and organizational considerations.

Categorizing available models, simulations, and simulators according to their ability to support various scenarios is a critical aspect of the MS&S tool because it will support an organization’s ability to rapidly identify what solutions are best suited to address the scenarios they have identified based on the knowledge, skills, and abilities (KSA’s) to be trained.

An important element of any tool is the ability to ensure it is working properly and to improve it. This will require feedback from users as well as opinions for outside experts. The MS&S selection tool will have to build in formal and informal forms of evaluation of the selection tool as well as a formal mechanism to implement the most relevant and important suggestions.

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BACKGROUND

For the purposes of consistency, the following definitions shall be used:

- **Model** - A computer generated approximation/representation that behaves or operates like a real-world process or problems, thereby enabling the prediction of behavior based upon a set of parameters and conditions.
- **Simulation** - A computer-generated-imagery (CGI), that attempts to simulate real-world conditions over time. Tends to be knowledge-based and cognitive oriented.
- **Simulator** - A piece of equipment using computer generated simulations designed to artificially duplicate the conditions likely to be encountered in some operation or with a device, instrument. Tends to be skill-based and psychomotor oriented.

SELECTION CRITERIA

1. Decision making tool – responders will use these questions to narrow down the type of technology
 - a. What roles does the organization want to train?
 - b. What types of missions/tasks does the organization want to teach?
 - c. What knowledge, skills and abilities (KSAs) does the organization seek to teach? What are the responder KSAs addressed by the technology? What KSAs are “trainable” by this MS&S? (i.e. are the KSAs to be trained affective, cognitive or psychomotor)
 - d. What degree of support for interdisciplinary and multi-jurisdictional activities is the organization seeking?
 - e. Does the organization require live, virtual, and/or constructive uses of the technology?
2. Purchasing tool - questions to ask of a particular MS&S
 - a. Are the training modes Individual, Multiplayer, or team based?
 - b. What are the maximum and minimum numbers of participants?
 - c. Does the technology support co-located as well as geographically separate participants?
 - d. What are the networking requirements? (i.e. internet, intranet, etc.)
 - e. What are the interactions between players?
 - f. What is the level of participant interactivity?
 - g. Does the system support interdisciplinary and multi-jurisdiction activities?
 - h. What disciplines and specialties does the technology address? How does the technology handle multiple disciplines (purchasers should consider relative weighting for multi-discipline technologies). What missions does the system support? (i.e. Fire, EMS, Law Enforcement, SWAT, Incident Commander) - note: link to definition of players per NFPA 472
 - i. What is the ability of the purchasing organization to configure the technology to its requirements?
 - j. Can the technology be customized? If yes, what is the degree of vendor support required for customization?

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- k. Do customization capabilities allow for the ability to modify the MS&S for specific uses based on local threats/conditions/issues?
- l. What is the degree of interoperability with other systems and technologies? *A key concern for the use of MS&S is whether a given model/simulation is compatible with other existing technology systems. For instance, can a 3-dimensional CAD drawing be used in a specific simulation program designed with a different software package. This makes it possible to integrate different platforms without the need for re-engineering or custom development.*
- m. What technology platforms are required and supported? (desktop, laptop, handheld, other portable devices)
- n. What is the degree of compliance with technical and functional standards? (i.e. Shareable Content Object Reference Model conformance and compliance)
- o. How does the technology incorporate national priorities/target capabilities for homeland security?
- p. What are the intellectual property and open source considerations for this technology?
- q. How is student training and registration data protected from unauthorized disclosure?
- r. How does the MS&S track student performance (Learning Management System, After Action Review)?
 - i. What student performance data does the technology capture/track?
 - ii. How can student performance data be manipulated?
- s. How is training data protected? (Operational Security)
- t. What is the number of personnel required to operate the technology?
 - i. Instructor/controllers recommended to run the program
 - ii. In-house technical support staff
- u. How long does it take to become proficient in the initial use of the MS&S technology?
 - i. Instructor/controller
 - ii. Participant/player
- v. What is the availability of technical support for operation (reachback support)
- w. What is the total cost of ownership including
 - i. Procurement cost (including licensing model - concurrent, non-concurrent users)
 - ii. Operation
 - iii. Technical Support and Maintenance
 - iv. Sustainment
 - v. Computer requirements and peripheral specifications
 - vi. Cost of customization
- x. Can the technology be purchased iteratively, in modular fashion?

NEXT STEPS

The Training and Exercise (T&E) Subgroup of the InterAgency Board (IAB) will explore options for developing the MS&S selection tool. The group anticipates that it can be developed over a period of one year, which should provide sufficient time to develop a fully functional tool, test it, and implement it. In

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the interim, the group will seek to make the selection criteria available to the response community through other methods.

**Please contact the InterAgency at info@interagencyboard.us with any comments, feedback, and questions. Additional information on the InterAgency Board is available at www.IAB.gov.