



1st Responder Technology Assessment Study and Interactive Training NIMS/Incident Command Structure and Scenario Analysis

This study builds and substantially expands upon a previous 2007 1st responder technology needs assessment study for the 1401 Office (*1st Responder Technology Needs Assessment Study Command, Control & Communication (C3) for Situational Awareness*, CCAT, SDSU, 2007) which concentrated on Command, Control, and Communications (C³). In particular, this study:

- Examines decision making, information needs, and technology needs based on different critical incident scenarios
- Utilizes the NIMS ICS structure
- Examines interactive training and advanced learning technologies (ALT) needs in detail (recommendation from the 2007 needs assessment study).

The study also compliments various Technology Work Group (TWG) studies, such as the recent report, *High Priority Technology Needs* (DHS, Sci&Tech, 2007), which tend to be practitioner-based committee analysis and discussions rather than actual survey based needs assessment of 1st responders.

The research was supported by the Center for Commercialization of Advanced Technology (CCAT) and the San Diego Regional Technology Center (RTC). CCAT is a Department of Defense/SPAWAR funded consortium of public and private institutions with a mission of facilitating technology transfer between public and private agencies to enhance the nation's military and homeland security. The San Diego RTC is a federally-funded initiative through the City of San Diego to carry out functions as a Homeland Security technology testing center and informational clearing house for 1st responder technologies. The RTC is located at San Diego State University.

This research represents a three-month detailed survey and examination of 1st Responder technology needs considering: a) different critical incident scenarios, such as a natural disaster, a HAZMAT incident, or a active shooter incident, and b)

the NIMS Incident Command System (ICS), which identifies the organizational structure and decisions associated with incident command versus logistic and other support activities.

The study was specifically conducted for the *1401 Technology Transfer Program* within the Office of the Assistant Secretary of Defense (Homeland Defense and America's Security Affairs). The *1401 Technology Transfer Program* was established by the 2003 National Defense Authorization Act – Section 1401 which states that the "Secretary of Defense shall designate a senior official of the Department of Defense to coordinate all Department of Defense efforts to identify, evaluate, deploy, and transfer to Federal, State, and local 1st responders technology items and equipment in support of homeland security." The goals of the 1401 Technology Transfer Program are to:

*Expedite the successful transfer of technologies to 1st responders,
Expand the use of technologies to the broader public safety community, and
Build awareness and support of the 1401 technology transfer program
through coordination with existing technology transfer initiatives*

The research was conducted between October, 2008 and January, 2009, and consisted of over forty interviews and focus groups with senior management of 1st responder agencies in both North Carolina and California. These agencies included local law enforcement, fire departments, bomb and arson squads, HAZMAT units, central dispatch managers, port security teams, military, and offices of emergency management from small and large communities in both states.

North Carolina and Southern California were chosen for the study since they experience different types of natural disasters, have different types of geographical terrain, and enjoy a full range of urban and rural environments. However, North Carolina and Southern California also share many characteristics that result in similar homeland security threats, such as having nuclear power facilities, coastal ports, large military installations and internationally prominent high technology and financial centers.

The study concluded that there are several classes of technology needs for the 1st responder community. In particular, the study examined in detail the technologies related to six different "need" categories: resource management, personnel tracking, situational awareness and common operational picture), communications and interoperability, information sharing, and computerized modeling (GIS). By examining different critical incident scenarios it became apparent that certain technology needs were shared, or common, across critical incident scenarios, while other technology needs were more "scenario specific."

In general, the research found that North Carolina communities generally lag behind their California counterparts in acquiring these technologies. Both North Carolina and California, however, would benefit from additional technology

research and development that enhances interagency communication and information sharing, automates situational awareness, and manages resource deployment during a crises.

In addition, the study found that there was a real need and high interest for interactive training and advanced learning technologies (ALT) in 1st responder training. ALT is derived from video gaming technology using simulation learning and digital game-based learning paradigms. ALTs are generally 3-D, data driven training applications. This need is, in part, driven by insufficient funding for training after initial purchase, insufficient training for volunteer 1st responders on advanced equipment, and the opportunity seen by many senior 1st responders to use modern interactive training for command decision making.

While both North Carolina and California 1st responders are well trained, dedicated to serving the public, and continuously looking to improve their management of critical incidents, the acquisition of new and advanced technologies would be very beneficial to their effort. Table A, in the full report, provides a summary of the different technology needs and the importance (rated by how often mentioned, etc.) of these technologies.

Go to http://www.ccatsandiego.org/1401FinalReport_110107.pdf to download a copy of the full report in pdf format.

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