

A **FutureFD.com** White Paper



4704 Faust Ct.
Orlando, FL 32817
407-402-5533
www.futurefd.com

Improving **Interoperable Communications** through
National Incident Management System (NIMS)
High Fidelity Training Methodology

*By Bill Godfrey
Chief Consultant*

21 November 2006

Contents

Introduction	1
Problem Statement	1
Previous Options	2
High Fidelity Training Methodology	3
Implementation	4
Summary	5

Introduction

The Urban Area Security Initiative (UASI) regions conducted an unprecedented 75 live-event exercises in the last half of 2006 to test interoperable communications during emergency incidents. Interoperability among public safety responders is essential to effective and safe mitigation of emergencies. The exercises demonstrated *incredible* progress, and – just as clearly – how far we still have to go.

Technology is not enough. Interoperability requires technical capabilities and human skills. Responders must have razor sharp skills in command and control, decision-making, and interpersonal communication as well as radio communication.

Problem Statement

The UASI exercises yielded a catalog of areas for improvement (see ICTAP Exercise Findings Report). An inescapable commonality in the exercise findings was command and control practices that directly and adversely impacted interoperable communications. Though the National Incident Management System (NIMS) is the incident command system used by all UASI regions, the nature of implementation on any given incident varies dramatically.

Some examples of command and control observations from the 75 UASI exercises identified as areas for improvement are: failure to establish incident command, failure to implement unified command, failure to identify a single command post, ambiguity over who was in command, failure to identify command staff verbally and visually, improper and/or inconsistent use of command designations, improper and/or inconsistent use of NIMS nomenclature, siloed/duplicative command

structures, poor information sharing, poor problem-solving, deficient radio communication planning and/or poor dissemination of plans to responders, inadequate staging procedures, and non-existent or inadequate incident documentation.

While the shortcomings listed sound formidable, it's hardly the fault of public safety agencies. Incident command training continues to be disseminated in an academic, lecture-oriented setting. Responders cannot reasonably be expected to take this cognitive information and magically develop and employ the complex skills of command and control, decision-making, and communication without deliberate practice. Responders are relegated to learning these complex skills through trial and error of on-the-job training that is neither guided nor frequent.

Worse yet, on-the-job experience gained by most responders revolves around small, single-discipline and single-jurisdictional responses. Command officers can go their entire careers without ever experiencing a complex large-scale multi-discipline incident requiring regional and federal response to mitigate. The opportunity to experience unified command at a real-world incident can truly be a once-in-a-career chance. It is unrealistic to expect Public Safety responders to learn and maintain these complex command and control skill sets through on-the-job experience.

Previous Options

Though there is little empirical evidence, anecdotal information suggests very few Public Safety responders receive any command training beyond didactic information and on-the-job experience. Beyond classroom settings, training has included table-top and full-scale exercises, and, more recently, some e-Learning directed at cognitive skills.

Table-top exercises can allow responders to practice application of command and control theory but lack the fidelity of training in context. Studies have shown responders in command and control roles use recognition-prime decision-making to rapidly assess and choose the best course of action. Recognition-prime decision-making relies on mental models an individual responder develops over time and experience (like adding slides to a slideshow) letting the brain catalog a situation and rapidly recall 'I have seen this before.' Lacking visual and auditory cues, real-time play, and high fidelity interaction, table-top exercises are too artificial to build accurate mental models.

Full-scale exercises generally offer real-time play and high-fidelity interaction among responders, but they are extraordinarily resource intensive and expensive to organize and execute. As a result, full-scale exercises are infrequent occurrences and rarely repeated to offer all responders within a jurisdiction a training opportunity. Additionally, efforts to control costs by limiting the number of personnel involved frequently lead to exercise artificialities that diminish realism and adversely impact the opportunity to build mental models.

High Fidelity Training Methodology

Learning and Forgetting Theory argues that experts do not have innate abilities, but rather achieve expert status through *deliberate practice*. It is simply not enough to train responders in command and control theory; they must have opportunities to repetitively practice their craft and apply cognitive and psychomotor skills to improve performance and achieve excellence.

A training methodology to *teach experience* and develop mental models must be implemented and must include retraining to avoid loss of these perishable skills. The rate at which forgetting occurs increases with task complexity, but just a small amount of practice is sufficient to quickly return knowledge to the level reached before.

Use of an open-source software simulation platform enables a **training methodology** to produce high fidelity emergency incident simulations. The training methodology can be tailored not only to all hazards and public safety disciplines, but also can span the range from operational tasks to strategic command level functions within a given simulation. This unique training methodology permits responders to train in context applying real-time command and control, decision-making, and interpersonal communication as well as radio communication in a simulated and safe environment.

Starting with basic incident command scenarios, instructors monitor and guide simulations while coaching responders to success. Through analysis, critique and coaching, responders immediately apply lessons learned through repetitive deliberate practice while instructors systematically increase scenario difficulty and complexity. Responders rapidly progress through the learning curve culminating in proficiency managing large-scale multi-agency multi-discipline emergency responses utilizing Unified Command within the scope of NIMS.

Through a combination of live, virtual, and constructive simulation, responders gain high-fidelity experience and develop critical mental models. By starting with small, limited scope incident simulations and building to complex large-scale incidents, first-line **operational responders through emergency managers and elected officials** are afforded high-fidelity immersion to learn and develop their mental models in context. Perhaps equally important, they are provided the opportunity to *practice* Unified Command in their region with their counterparts from other disciplines and jurisdictions.

This training methodology does not require the large number of personnel and resources necessary to support a full-scale exercise. Emergency response vehicles do not need to be removed from service for use in a drill, and only a small number of support personnel are needed to work with the command team trainees. Simulations can be quickly initiated, terminated, critiqued, and run again. While there is mental fatigue at the end of a day, there is no physical fatigue as associated with full-scale exercises that

interferes with the ability to run multiple simulation exercises back-to-back.

Implementation

Simulation Development

While some pre-built simulations are already available with the open-source software platform, a small number of additional simulations must be developed to support the course delivery. A selection of targeted simulations should be developed with the input and participation of the various response disciplines, such as (but not limited to) law enforcement, emergency medical services, fire, hazardous materials, emergency managers, elected officials, homeland security personnel from Federal agencies, and the military.

Example Scenarios

(for illustration purposes only)

- Barricaded suspect/hostage
- Chlorine leak
- Explosion
- Large fire
- Mass casualty incident (MCI)
- Radiological emergency
- School shooting
- Tornado
- Train/transportation accident

Instructor Development

A core group of instructors must be selected and trained to support the initial course delivery. These instructors should be recruited based on but not limited to their teaching ability, interpersonal skills,

emergency response competencies, and command experiences. A methodology will be used by instructors to recognize and designate exceptional student participants as having ‘Instructor Potential’ (IP). Responders from various regions and disciplines receiving IP designation will be recruited to attend Instructor Trainer academies and become certified instructors. This method of instructor development not only insures a growth of competent and excellent instructors to scale with course delivery demand, but also aids in providing qualified peer instructors available around the country in various jurisdictions to conduct ongoing refresher training and insure newly developed skills of public safety responders are maintained.

Course Delivery

Several different course levels are envisioned for course delivery to insure the right training is delivered to the right audience. Instructional design will include experimentation and analysis of pilot classes to determine the optimal mix of major components to achieve maximum return on investment (ROI) for course contact hours. The mix of four (4) major components to be optimized is:

- Responder command-level responsibility
- Simulation mix
- Scenario complexity
- Duration of training

In this instance, multiple course levels are not intended to be separate course delivery efforts; to the contrary, it is intended the course levels be delivered sequentially as one course intermixing audience members from the region as command and control complexity level increases. For example, a week-long course might occur in three phases beginning with segregated

simulations for fire and law enforcement responders on basic-level command such as working a large fire or responding to a barricaded suspect (e.g. audience fire lieutenants and battalion chiefs; police sergeants and lieutenants respectively). Phase two could progress to medium-level joint simulations during the week such as mitigating a school shooting or train accident (e.g. fire battalion chiefs, police lieutenants, and assistant chiefs). In the last phase, the course could culminate in large unified command regional response simulations such as managing a tornado or a terrorism/WMD event (e.g. assistant chiefs, chief officers, emergency managers, city/county managers, and elected officials).

Summary

Achieving public safety interoperability requires more than technical capabilities; it requires responders have skill in command and control, decision-making, and interpersonal communication as well as radio communication. Command and control practices that directly and adversely impacted interoperable communications were identified in 75 live-event exercises in the last half of 2006.

Training in use of the National Incident Management System (NIMS) continues to focus heavily on lecture-based theory and is seriously deficient in practice and application.

An open-source software simulation platform enables a **training methodology** to produce high fidelity emergency incident simulations for all hazards and public safety disciplines spanning operational tasks to strategic command level functions. The methodology permits responders to train in context applying real-time command and control, decision-making, and interpersonal communication as well as radio communication in a simulated environment.

The success of this methodology to command and control training lies in its simplicity: *build competence and confidence from the bottom up* one command level at a time. Through providing high fidelity cross-discipline training, public safety responders advance with *coaching* and the repetition of *deliberate practice* – in a safe environment.

Then they do it again... on their own.