



U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND – SOLDIER CENTER

Analyzing, Developing, and Testing Standard Operating Procedures In a Virtual Environment: A Case Study

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AGENDA



- **Historical Perspective of Standard Operating Procedures (SOPs)**
- **Changing Threats and Needs – Changing SOP Approach**
- **Enhanced Dynamic Geo-social Environment (EDGE) Study: General Findings**
- **Enhanced Dynamic Geo-social Environment (EDGE) Study: First Responder Findings**
- **Enhanced Dynamic Geo-social Environment (EDGE) Study: Educator Findings**
- **Study Next Steps**
- **For Further Information**





HISTORICAL PERSPECTIVE OF SOP DEVELOPMENT (1 OF 2)



- Standard Operating Procedures (SOPs) define how specific activities are accomplished
- Military and first-responders use them extensively as do educational institutions
- Training is specifically focused on the execution of SOPs so they become second nature



Gerry Broome/AP



trainingandcareereexplorer.wordpress.com



Massachusetts Department of Fire Services

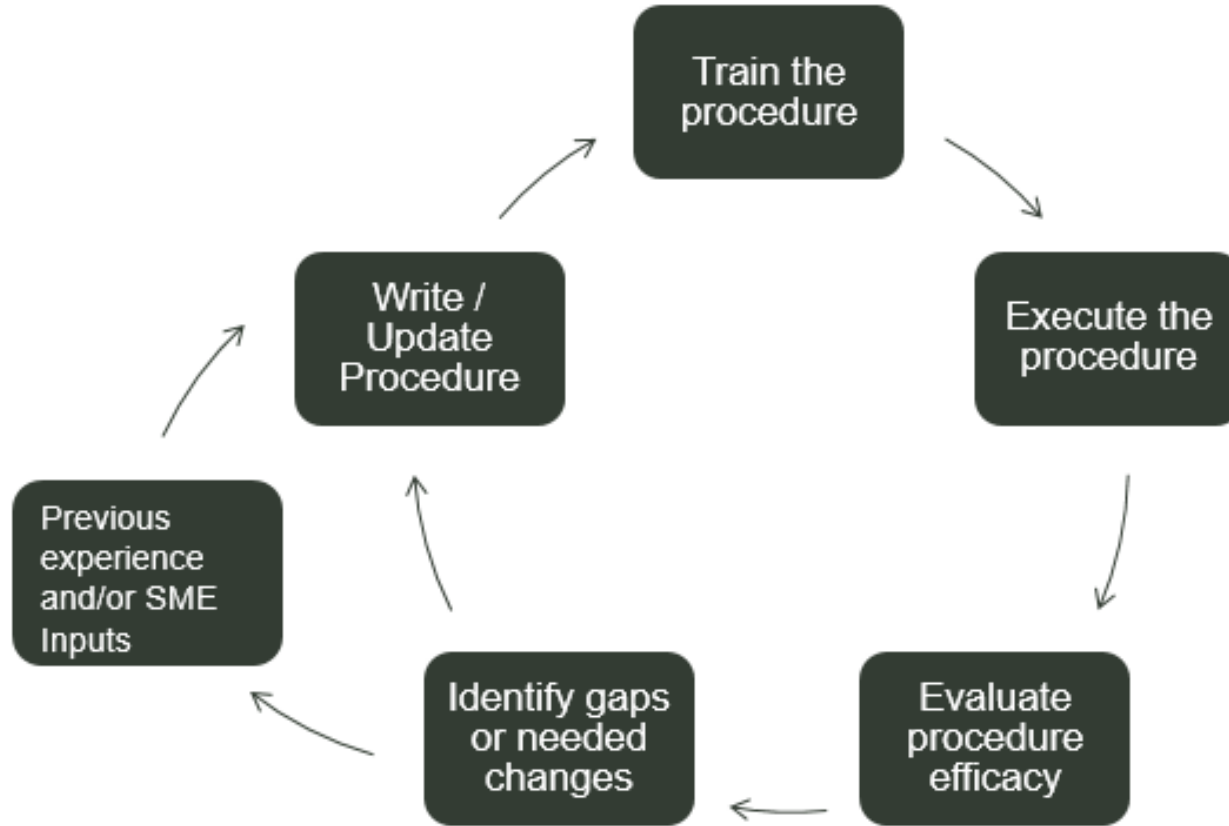




HISTORICAL PERSPECTIVE OF SOP DEVELOPMENT (2 OF 2)



- **Common issues with SOPs:**
 - Based on expertise and/or prior experience
 - Live training or other live events to evaluate SOP execution occur infrequently
 - Typically backward-looking
 - Often reactive rather than proactive
- **As a result, it may take a very long time to develop effective procedures**





CHANGING THREATS AND NEEDS – CHANGING SOP APPROACH (1 OF 3)



Paul White/AP



BCCL



Florida News Network

- Threats are constantly evolving and changing
- “Soft” targets are increasingly at risk
- SOPs struggle to be “nimble” enough to keep up
- Critical need for rapid forward looking SOP development
- Virtual training provides an ideal environment for effective SOP development, testing, and evaluation





CHANGING THREATS AND NEEDS – CHANGING SOP APPROACH (2 OF 3)



- **DHS Science & Technology Directorate (S&T) identified a training gap and was charged with developing a virtual training tool for the nation's first responders**
- **They identified the following requirements for the tool:**
 - Support large numbers of responders to train concurrently / repeatedly, both as individuals and teams, in both classroom and distributed environments (e.g. disparate locations via the web)
 - Allow responders from multiple agencies, disciplines and jurisdictions to train for coordinated incident response
 - Have flexibility to integrate local operational tactics and procedures
 - Record and play back the exercise from multiple views for After Action Review
- **Commercial off-the-shelf products were not sufficient to meet needs so DHS S&T teamed with the U.S. Army CCDC Soldier Center to leverage the Army's Enhanced Dynamic Geo-social Environment (EDGE) platform to build the First Responder Sandbox (FRS) training software**





CHANGING THREATS AND NEEDS – CHANGING SOP APPROACH (3 OF 3)



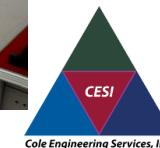
- **The initial EDGE environment - FRS v1**

- Full-scale 26-story hotel with a full interior build-out and 2 cross-streets
- Roles include law-enforcement, Fire, Emergency Medical Services, Unified Command, Dispatch, Suspects and Civilians



- **Newly launched - FRS v2**

- In light of the increased need, DHS S&T and the Army developed the FRS v2 environment: a school with fully modeled classrooms, library, cafeteria, auditorium and gymnasium
- Roles build on functionality from v1 with the addition of teachers and staff roles





EDGE STUDY: GENERAL FINDINGS (1 OF 2)



- **To date the most effective training flow moves sequentially:**
 - Basic introduction to the software
 - Guided hands on “free play”
 - Training session followed by session AAR
 - Repeat bullet above sequentially escalating from simple to complex within time constraints
- **This overall flow seems to provide the deepest level of immersion and acceptance**
 - A crawl, walk, run approach,
 - Reduces frustration with the technology
- **Most critical components?**
 - An effective training team, aka “White Cell” is essential
 - A skilled moderator to guide AAR discussions

NOTE: The General findings cover both EDGE FRS v1 and v2





EDGE STUDY: GENERAL FINDINGS (2 OF 2)



- Guided “Free play” time and low-level scenarios are critical for non-gamers and general EDGE familiarization
- Most significant value is viewing the AAR and related discussions:
 - **The mechanics of the “in world” portion of the exercises accounted for only ~20% - 30% of training value as compared to the AAR**
- Participants found virtual training to be an engaging and effective means to accomplish both “standard” training and SOP analysis
 - New protocols are replayed in same scenario or new situations.
 - SOP revisions and improvements are often the focus.

NOTE: The General findings cover both EDGE FRS v1 and v2





EDGE STUDY: FIRST RESPONDER FINDINGS (1 OF 4)



- **User Acceptance of the Tool**

- Most responders had limited, or no experience in virtual environments (games)
- Many were uncertain how the tool could help them with their tasks

- **User engagement**

- 99% of users were navigating the environment effectively after 30 minutes of practice and drills
- There was a high degree of immersion as they experienced threats
- Users reacted in the environment as they would 'in real life'
- Some users had physiological reactions to stressors in the environment, such as sweating and shouting
- Users quickly saw the value of training alongside other first-responders, and in some cases, educators as a coordinated team

NOTE: First Responder findings cover both EDGE FRS v1 and v2





EDGE STUDY: FIRST RESPONDER FINDINGS

(2 OF 4)



- **EDGE exercises and AARs illustrated gaps in SOPs:**
 - For certain complex events (e.g. active shooter with fire and civilians)
 - For cross-agency (Law Enforcement / Fire / Emergency Medical Services)
- **EDGE exercises and AARs identified issues with:**
 - Clear communications about the scene and ongoing actions - Unified command often lacks critical information needed from responders
 - Coordination due to conflicting or incompatible SOPs, especially as multiple disparate agencies respond
 - Outdated SOPs
 - Over-reactions due to current events

NOTE: First Responder findings cover both EDGE FRS v1 and v2





EDGE STUDY: FIRST RESPONDER FINDINGS

(3 OF 4)



• EDGE exercises and AARs identified areas of improvement:

- First-responders and educators need to understand and work with one another's focus and responsibilities
- They need to be aware of partner agency's (law enforcement, medical, fire, educators, incident command, etc) SOPs to facilitate better interaction
- As an event evolves, handover of responsibilities is often when greatest mistakes occur
- Situational awareness of the response team, victims, civilians and the threat is critical
- The need for appropriate communication through appropriate means cannot be overstated

NOTE: First Responder findings cover both EDGE FRS v1 and v2





EDGE STUDY: FIRST RESPONDER FINDINGS

(4 OF 4)



- **SOP development and updates can occur coincidental with training for a wide range of scenarios:**
 - Hostage taking
 - Agitated civilian / disgruntled coworker
 - Found weapon or explosive device
 - Noise complaints / disturbances
 - Missing child / distraught parent
 - Gas leak / Kitchen fire
 - Etc.

NOTE: First Responder findings cover both EDGE FRS v1 and v2





EDGE STUDY: EDUCATOR FINDINGS (1 OF 9)



Training team needs a combination of skills in adult learning, school safety, and instructional technology

NOTE: Educator findings cover only EDGE FRS v2





EDGE STUDY: EDUCATOR FINDINGS (2 OF 9)



- **For educators, focus should be on:**
 - Student safety
 - De-escalation
 - Communication
 - Critical response decisions
 - Collaboration with emergency responders

NOTE: Educator findings cover only EDGE FRS v2





EDGE STUDY: EDUCATOR FINDINGS (3 OF 9)



Educators must be equal participants in training and SOP development, not props or “targets”

NOTE: Educator findings cover only EDGE FRS v2





EDGE STUDY: EDUCATOR FINDINGS (4 OF 9)



- **Training with EDGE can inform SOP development and updates beyond active shooter response scenarios:**

- Angry parent
- Unknown intruder
- Found weapon
- Suicide in school
- Missing student

NOTE: Educator findings cover only EDGE FRS v2





EDGE STUDY: EDUCATOR FINDINGS (5 OF 9)



- **Educators felt very immersed, almost overwhelmed, high levels of emotion and anxiety.**
 - Need for sensitivity and support

NOTE: Educator findings cover only EDGE FRS v2





EDGE STUDY: EDUCATOR FINDINGS (6 OF 9)



- **EDGE scenario drills and AARs illuminate the discrepancy between:**
 - educators' understanding and/or awareness of SOPs and their ability to apply them

NOTE: Educator findings cover only EDGE FRS v2





EDGE STUDY: EDUCATOR FINDINGS (7 OF 9)



- **EDGE scenario drills and AARs illuminate the disconnect between:**
 - expectations and perceptions of

- emergency responders
- educators

NOTE: Educator findings cover only EDGE FRS v2





EDGE STUDY: EDUCATOR FINDINGS (8 OF 9)



- **EDGE scenario drills and AARs illustrate gaps in:**
 - Empowered, autonomous decision-making by educators

NOTE: Educator findings cover only EDGE FRS v2





EDGE STUDY: EDUCATOR FINDINGS (9 OF 9)



- **EDGE scenario drills and AARs illustrate problems with:**
 - Application of communication SOPs

NOTE: Educator findings cover only EDGE FRS v2





STUDY NEXT STEPS



- **Initial findings indicate the use of a virtual environment is an effective tool for both training and the development and assessment of SOPs**
- **The team intends to follow several agencies' progress over time**
 - Traditional first-responders / civil-security
 - Education-based institutions
- **The focus will be on how organizational users are monitoring and evolving their processes through the use of the tool**
- **The team will conduct further data comparisons to assess the overall efficacy of a virtual environment tool for SOP development and management**
- **As the user base grows, a community of users will be formed to share experiences and lessons learned**





FOR FURTHER INFORMATION



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