

EPiCS Briefing



Julie A. Seton, PhD
EPiCS Project Leader
TRAC-WSMR (AST, Inc)
Julie.seton@us.army.mil
505-642-3946

US Army
TRADOC
Analysis
Center

White Sands Missile Range, New Mexico
A National Laboratory



Mission Essential Task List

Provide **relevant, accurate, and credible** analyses to inform the decision maker:

- Conduct studies & analyses to enable Army decisions.
- Lead analysis for Army experimentation.
- Develop scenarios to underpin Army transformation.
- Develop and apply verified and validated models & simulations.
- Research battlefield phenomenology to improve modeling & analysis.



Army Operations
Within
Joint Combined Arms
Warfighting Context

TRAC-WSMR Capabilities and Tools

Capabilities

- **Core Capabilities:**
 - Operational Analyses
 - Training Analyses
 - Cost Analyses
 - M&S Development
 - Scenario Development
 - Visualization
 - Survey/Interview Development
 - Experimental Design
 - Model-Experiment-Model
- **TRAC-WSMR Workforce:**
 - Highly skilled workforce; most have advanced degrees in Mathematics, Physics, Engineering, Operations Research, Engineering Psychology, Statistics, and Computer Science.
 - Military Expertise: 30+ Active Army Officers, FA49s.

Tools

- **M&S:**
 - Combined Arms and Support Task Force Evaluation Model (CASTFOREM)
 - Janus HITL
 - Emergency Preparedness Incident Command Simulation (EPiCS) System
 - COMBAT XXI (in development)
 - Graphics and Visualization Tools
 - TRAC Army Mix Model (Cost)
- **MAPEX, CAMEX**
- **Scenario Development:**
 - Military expert judgment
 - Dynamic from HITL exercises
- **Testing & Data Collection:**
 - Stimulate Exercises
 - Simulate Forces for Live Exercises
 - Expert Elicitation

TRAC Analytic Simulations

Current Simulations

Echelon

Under Development

TACWAR*

XXXX



JWARS*

*Joint staff simulations, configuration managed by TRAC

Corps
and
Division

**VIC
Eagle**

XXX



XX



AWARS

Variable
Unit Level
Aggregation

Brigade,
Battalion,
and Below

**CASTFOREM
Janus**

X



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**OneSAF
COMBAT XXI**

Entity
Level

Background

- **1999 – Under contract with US DOJ – National Institute of Justice- Office of Science & Technology**
- **1999-2002 – Tested new capabilities in a series of exercises sponsored by NIJ-OST**
- **2002 –Federal Laboratory Consortium Mid-Continental Region - 2002 Partnership Award**
- **2002 – Under contract with DTRA to support nuclear weapons accident response steering group activities**
- **2003 – Initiated plans for multiple exercise, multiple scenario implementation**
- **2004 – Seeking to establish dedicated EPiCS teams to develop scenarios and facilitate exercises**

What is EPiCS?

- A system that provides a robust, high resolution, computer-driven stimulator to drive training and exercises for emergency managers and their staffs.
- Used to validate plans, procedures, and techniques.

Tool	Stimulation	Recording	Playback
Scenario	X		
Janus	X	X	
OTVis		X	X
3-D Visual	X	X	X
Audio		X	X
Video	X	X	X
Photos	X		X

Functions

- **Enforces time/space/distance relationships**
 - Simulation provides real-time time delays and real probabilities of equipment failure
- **Stimulates decisions based on**
 - Janus simulation as ground truth described by tactical-level “field supervisors”
 - On-hand quantities of resources
 - Real communication media functionality
- **Provides recording and playback of what happened**
 - Simulated ground truth in 2-D and 3-D
 - Audio-visual of command level activities
 - Audio of radio transmissions

The lessons learned ... were indispensable in perfecting response plans within each of the organizations as well as the integration of those organizations." Joe Trindal, Director, Federal Protective Service, National Capital Region.

EPiCS Process

Task

Source



Develop Operational Scenario Based on Objectives
– Environment, Event, History, Threat/Crisis, Resources

**TRAC-WSMR and
Lead Agency**

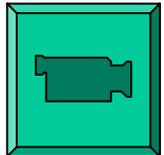


**Build Terrain and Force Structure Databases
based on Agency Resources**

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Test and Approve Scenario

Lead Agency



**Conduct and Record the Exercise
Develop the After-Action Review Tools**

TRAC-WSMR



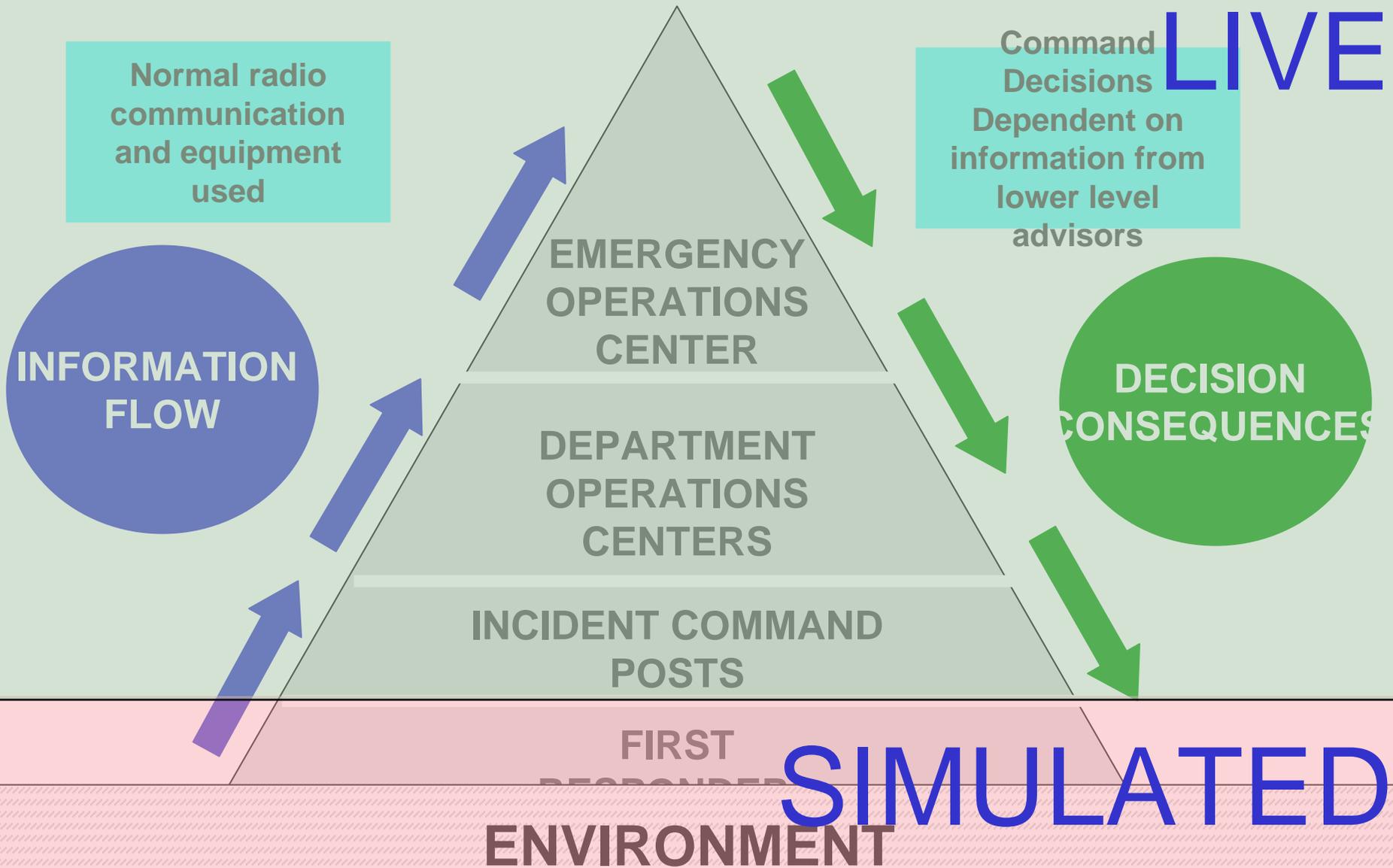
**Agency Directors Conduct After-Action Review
Using Dynamic Scenario**

Lead Agency

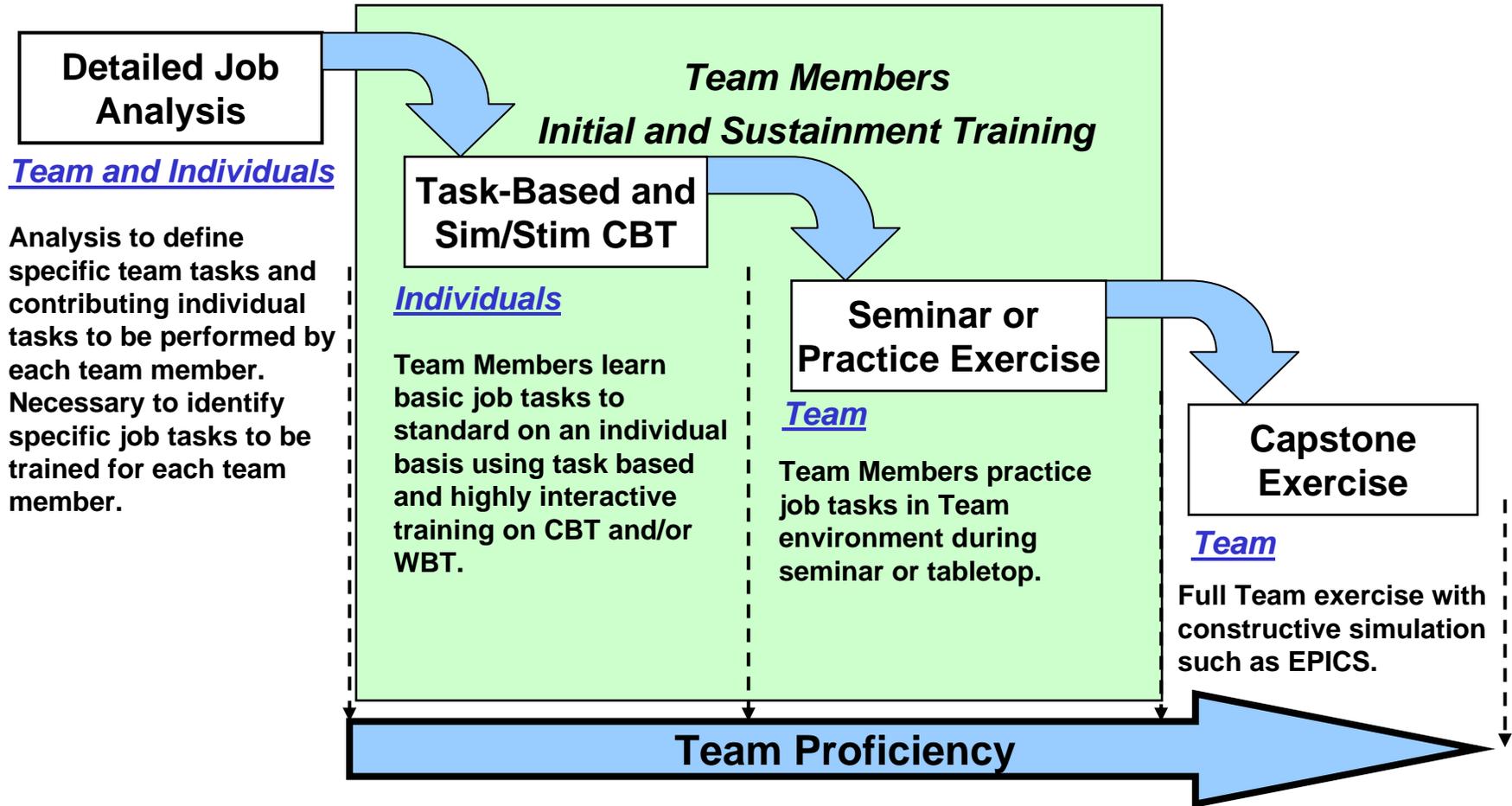
Analyze Dynamic Scenario for Lessons Learned

Participating Agencies

Information Flow and EPICS

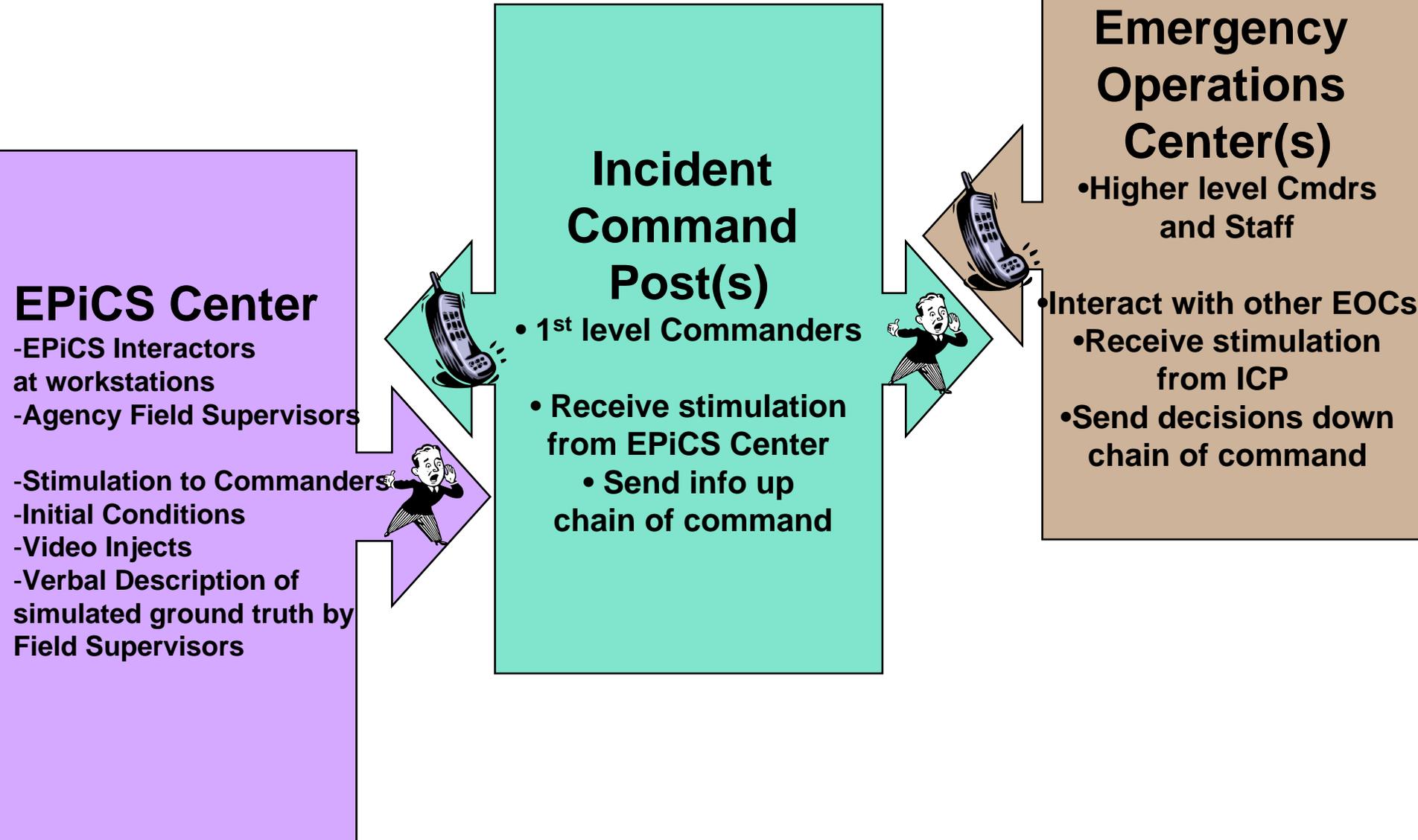


EPiCS as Part of a Training System



Ideal Exercise Set Up

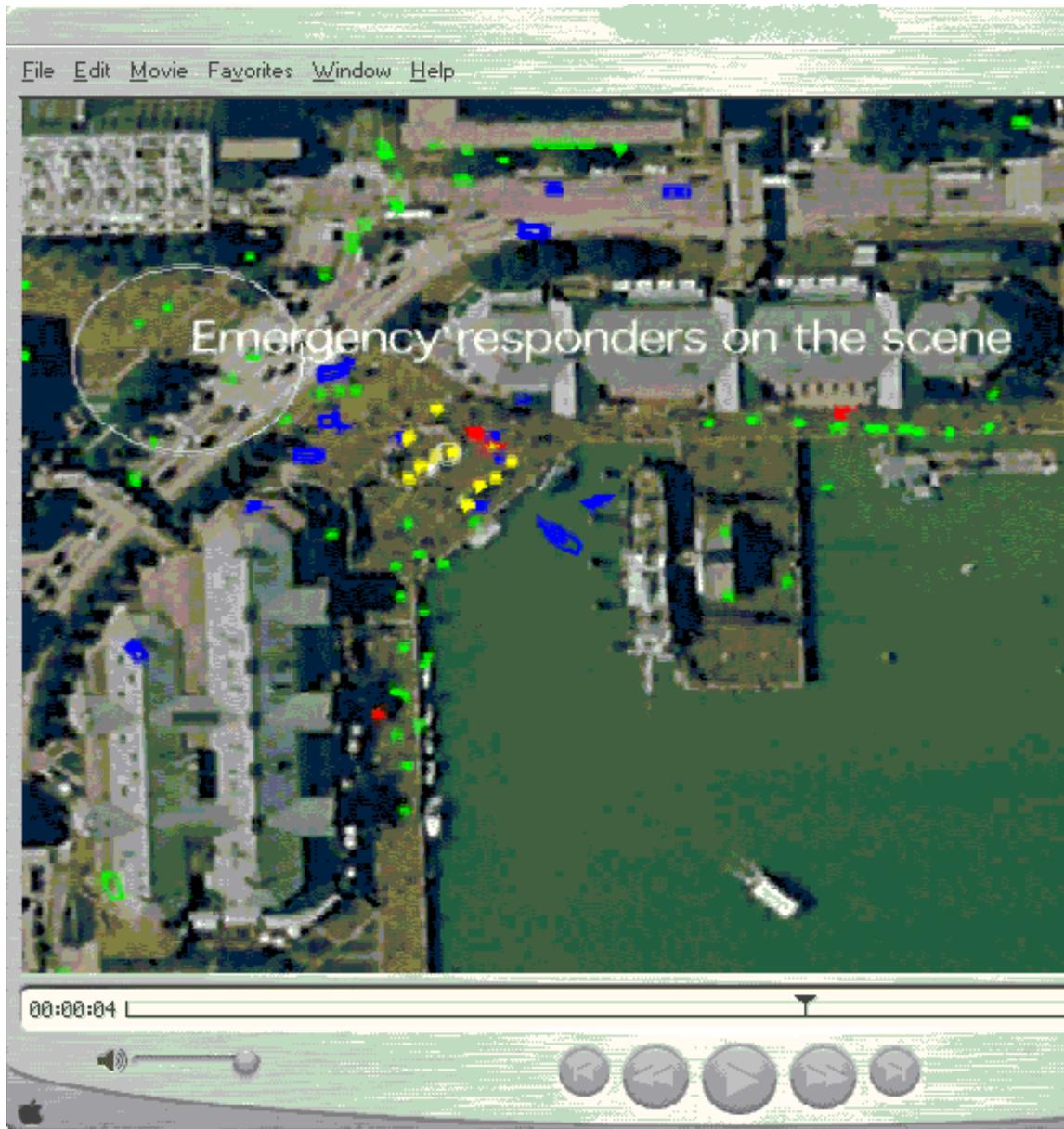
Separate Locations



Operational Scenarios Currently Available

- **Civil Disobedience**
- **School Safety**
- **Prison Uprising**
- **WMD (Chemical) in Subway**
- **Terrorist Attack on a Federal Building**
- **WMD (Radiological) Attack in Tourist Harbor Area**
- **Nuclear Weapons Transport Accident (Ground and Air)**
- **WMD (Chemical) Terrorist Attack on an International Airport**
- **Terrorist Attack on a military post (WMD chemical) with Hostages**

Dynamic Scenario Screen



Blue = First Responders

Yellow = Injured

Green = Civilians

White = Dead/Damaged

Red = Threat

For More Information

- **Contact Julie Seton**
 - **Julie.seton@us.army.mil**
 - **(505) 678-4949**
- **Visit www.astcorp.com/EPiCS**