

# CAE EM-SIM

## Emergency management simulation

Plan, test, train, deploy – today, emergency preparedness planning, training, and operations have become key priorities for governments, critical infrastructure owners, and industry to mitigate the risk of threats from natural disasters, terrorism, human-made disasters, and other disruptions to operations. Through CAE EM-Sim, organizations engage in structured, simulation-based emergency management planning, analysis, and training for all-agency, all-hazard responses.



### Training to meet today's challenges

Perhaps the greatest challenge facing today's emergency managers and response personnel is the ability to train effectively. Multi-agency, multi-jurisdictional teams must be prepared to collaborate and respond to any variety of threats; however, traditional live exercises are insufficient and costly to exercise multiple agencies for multiple scenarios. CAE EM-Sim offers the solution – as an exercise management and training tool, CAE EM-Sim supports the training and exercising of multi-jurisdictional response teams at both the first responder and incident command level. Using interactive first-person environments integrated with command and control tools, CAE EM-Sim provides a realistic immersive environment to train response teams.

### Providing structure for planning and analysis

CAE EM-Sim offers a structured approach to planning and analyzing strategies for multi-agency collaboration. Our all-agency methodology analyzes the relationships between response organizations from the frontline municipal level responders, through provincial and state level agencies, to national and international level organizations.

The CAE EM-Sim environment is developed based on organizational analysis using CAE's Capability Engineering and Design Approach (CEDA™), which identifies the agencies that must collaborate; their roles within the multi-agency response; their relationships with other agencies within the team; and their internal structures,

business processes, and systems. From this data, the organizational behaviours of each agency are modelled and represented within the virtual environment. This feature allows agencies to test their response strategies, as well as train, at any time independent of multi-agency exercises. The virtual units of each organization respond according to the business processes and strategies identified.

Emergency management professionals use the CAE EM-Sim environment to plan and test their strategies for any variety of threats. They can conduct capability-level analysis of organizational processes, resource management, acquisition decisions, and system interoperability.

## Tools for supporting operations

CAE works with clients to develop operational decision support tools to support command and control level decision making. Through an integration of simulation and intelligent reasoning engines, these tools support real-time emergency response. The CAE team works with industry partners and emergency management professionals to develop complex analysis tools enabling decision makers to analyze the immediate and longer term impact of critical decisions. When decisions on resource allocation mean lives, operational decision support technologies can help provide immediate insight into decisions before they are executed.

## Scalable to meet the client's goals

CAE EM-Sim offers a scalable suite of simulation tools for planning, analysis, training, and operations support at any level of response. From the first responder on the scene – inside a building or on the street – to command level situational awareness at the city, regional, national, and even international levels, our interoperable suite of visualization tools allows all response teams to exercise in a collaborative environment.

## All-hazards modelling

CAE EM-Sim offers a spectrum of threats scenarios for emergency management professionals to plan, test, and train their strategies against. Our team uses scientifically validated models to simulate natural disasters, such as flood, fire, and earthquake, and human-made threats, such as chemical releases, biological agents, radiological sources, nuclear releases, and explosives. In addition, CAE has recently added pandemic models and socio-economic effects to its portfolio of threat scenarios.

## Working with colleges and training centres

CAE EM-Sim is being used to support emergency management programs at colleges and training centres. Students engage in multi-agency response scenarios to build strategies, test their knowledge, and learn the team-building skills required for multi-agency collaboration. Student strategies are evaluated using CAE EM-Sim's integrated after-exercise reporting tool which measures the strategy's effectiveness based on value-focused metrics such as casualty levels, response times, and communication efficiency.

## Program example – Framework for municipal-provincial-federal emergency response

CAE has been contracted by the Canadian Department of National Defence to develop an analysis framework to evaluate joint municipal, provincial, and federal response to a chemical, biological, radiological, or nuclear emergency event within a simulation environment. This program will demonstrate the use of CAE's CEDA methodology to analyze the effectiveness of collaborative emergency response operations. CAE will be responsible for integrating a common operating picture environment that embeds simulation within existing operational response management systems, including a simulation-based, scenario-driven training tool to train the local and provincial first responder community for multi-agency collaboration.

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