

SUMMIT Support for Aerial Dispersion Exercises

About SUMMIT

The Infrastructure Protection and Disaster Management Division (IDD) of the Department of Homeland Security (DHS) Science and Technology (S&T) directorate has funded the development of the Standard Unified Modeling, Mapping and Integration Toolkit (SUMMIT), a software toolkit that enables analysts, emergency planners, responders, and decision makers to seamlessly access integrated suites of modeling tools and data sources for planning, exercises, or operational response. Currently in its pilot phase, initial SUMMIT versions will be deployed at the Federal Emergency Management Agency (FEMA) National Exercise and Simulation Center (NESC). The NESC is a congressionally-mandated exercise and simulation facility within FEMA Headquarters. The NESC's primary objectives include providing state-of-the-art modeling and simulation capabilities to support national, federal, state, local and tribal exercises. Sandia National Laboratories is the principal SUMMIT architect.

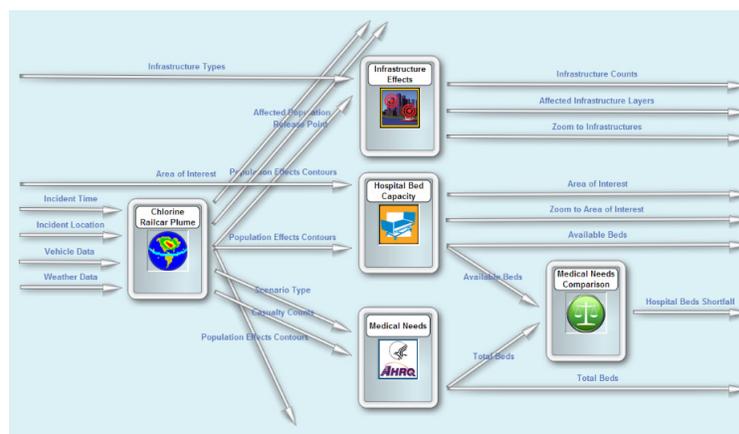
SUMMIT allows emergency management personnel to easily and rapidly discover, integrate, configure, execute, and view the results of the nation's modeling and simulation (M&S) resources and related data. These resources help ensure a scientific grounding for exercises and other emergency management activities, while enabling a dynamic view of fast-moving events that allows for analysis of the "what if" trade-offs that are so crucial to effective response during an actual event. Further, SUMMIT offers M&S tool and data providers a standard mechanism for making their resources widely available, providing the nation greater access to a broad range of exercise planning resources.

Currently, the NESC intends to use SUMMIT to support the National Level Exercise (NLE) program, while several FEMA exercise series are under consideration for pilot usages of SUMMIT. These pilots will allow the emergency management community to work with SUMMIT and begin to more intensely leverage M&S in emergency management activities.

SUMMIT links models to create scenario data for aerial dispersion exercises

SUMMIT facilitates development of integrated scenario data through its model linking capabilities. SUMMIT templates represent the workflow for linking models and data to address a specific incident. For an aerial dispersion scenario, SUMMIT links models and data through multiple templates. SUMMIT links models that output aerial dispersion results (DTRA HPAC) to a number of models, including:

- an infrastructure effects model to determine which critical infrastructures are affected by the release,
- a medical needs model (AHRQ Hospital Surge Model) to determine medical needs for a given release,
- a hospital bed capacity model to determine availability of unaffected hospital beds within a specified area,
- a medical needs comparison model to compare needed beds to available hospital beds and calculate the shortfall,
- a population movement model to determine where the affected population may travel,
- a Point of Distribution (POD) model (AHRQ_BERM) to determine number of PODS and staffing needs associated with the PODs for a given release.

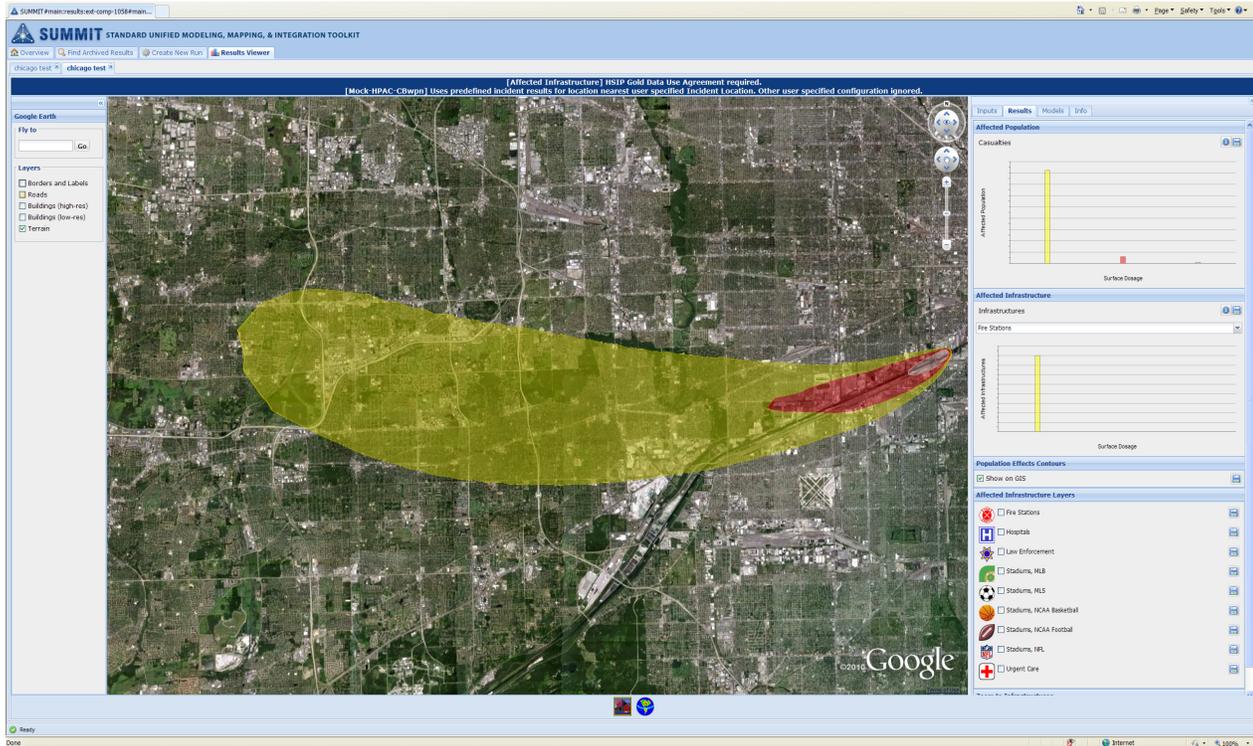


Example of a SUMMIT template for a chlorine railcar release

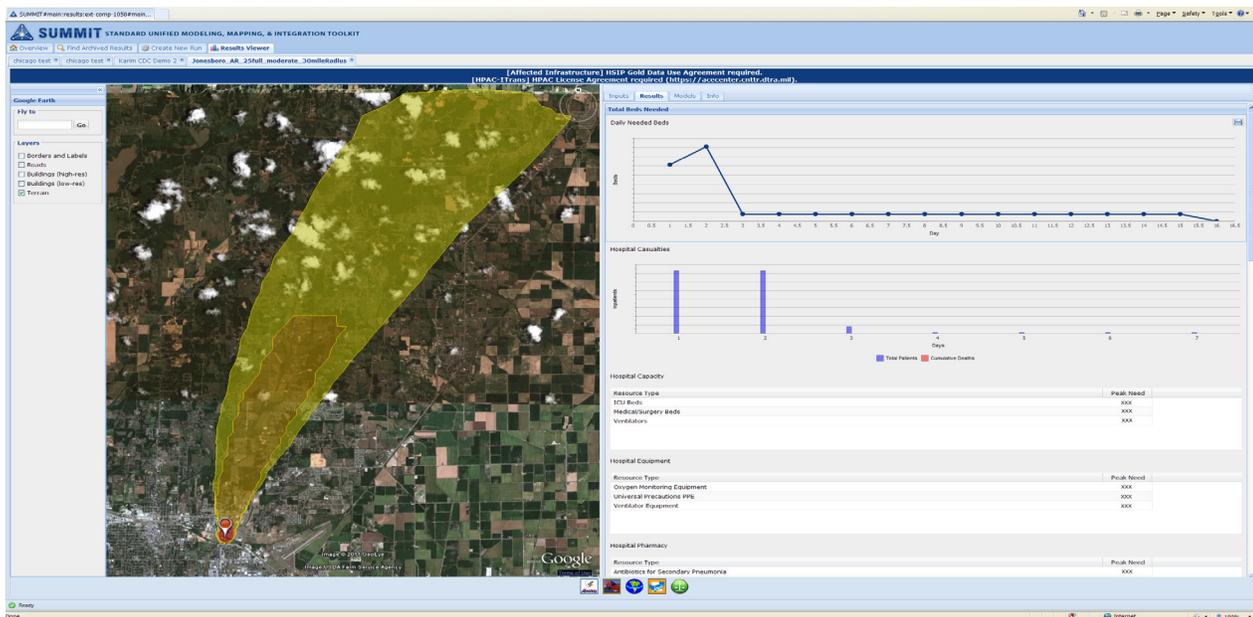
Note that the availability of each of these is dependent upon available data for the location of interest and the specific agent.

SUMMIT Capabilities and Products: Aerial Dispersion Exercises

Visualization of plume with casualties and affected infrastructure



Medical needs over time -- beds, casualties, supplies



Piloted in conjunction with



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