

Enhancing Use of Science-based Tools for Emergency Preparedness and Management

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October 7, 2014



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FEMA

Presentation Content

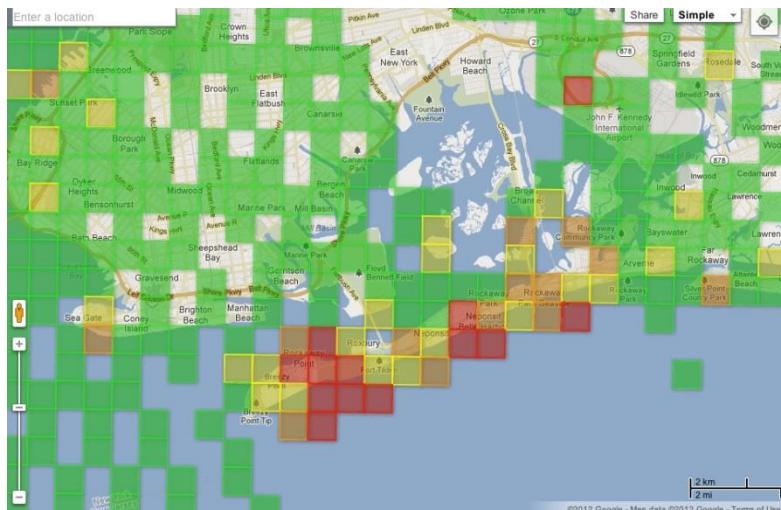
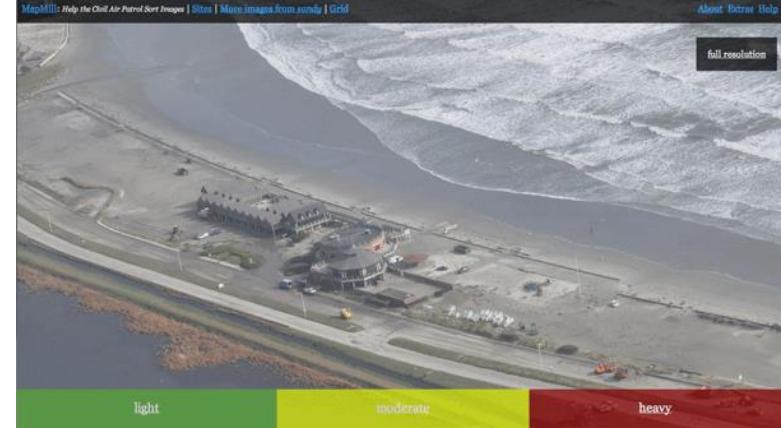
- The Challenge
- The Response
 - The Start of an Interagency Framework for Integrated Modeling & Simulation (ESFLG/MDWG)
 - DHS S&T/FEMA SUMMIT Capability
 - Program Vision and Motivation
 - SUMMIT Architecture and Technology
 - SUMMIT Applications: Exercises and Future Extension to Planning

The National Challenge

- Diverse events
- Complex, interconnected events
- Average of 337 disasters/yr (2000-2013)



Community Innovation



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The Technical Challenge

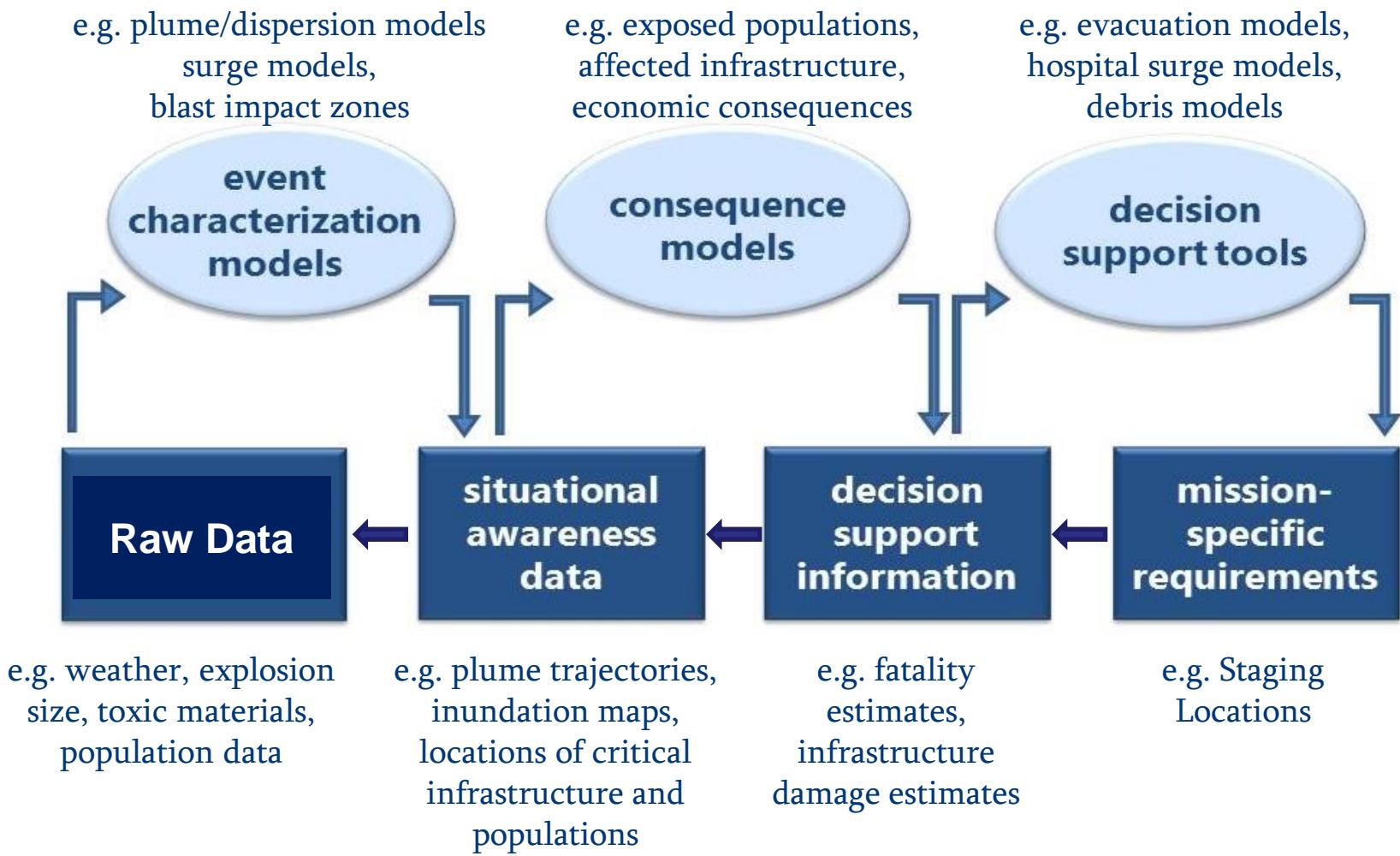
- Developing an information framework for risk analysis and planning in preparedness, response, recovery and mitigation efforts.
- Transparent, integrated ecosystem where data and models can be link together, with access controls, to drive information creation.

FEMA initiated study to identify and assess the data and modeling resources that are used across the U.S. interagency during emergency management

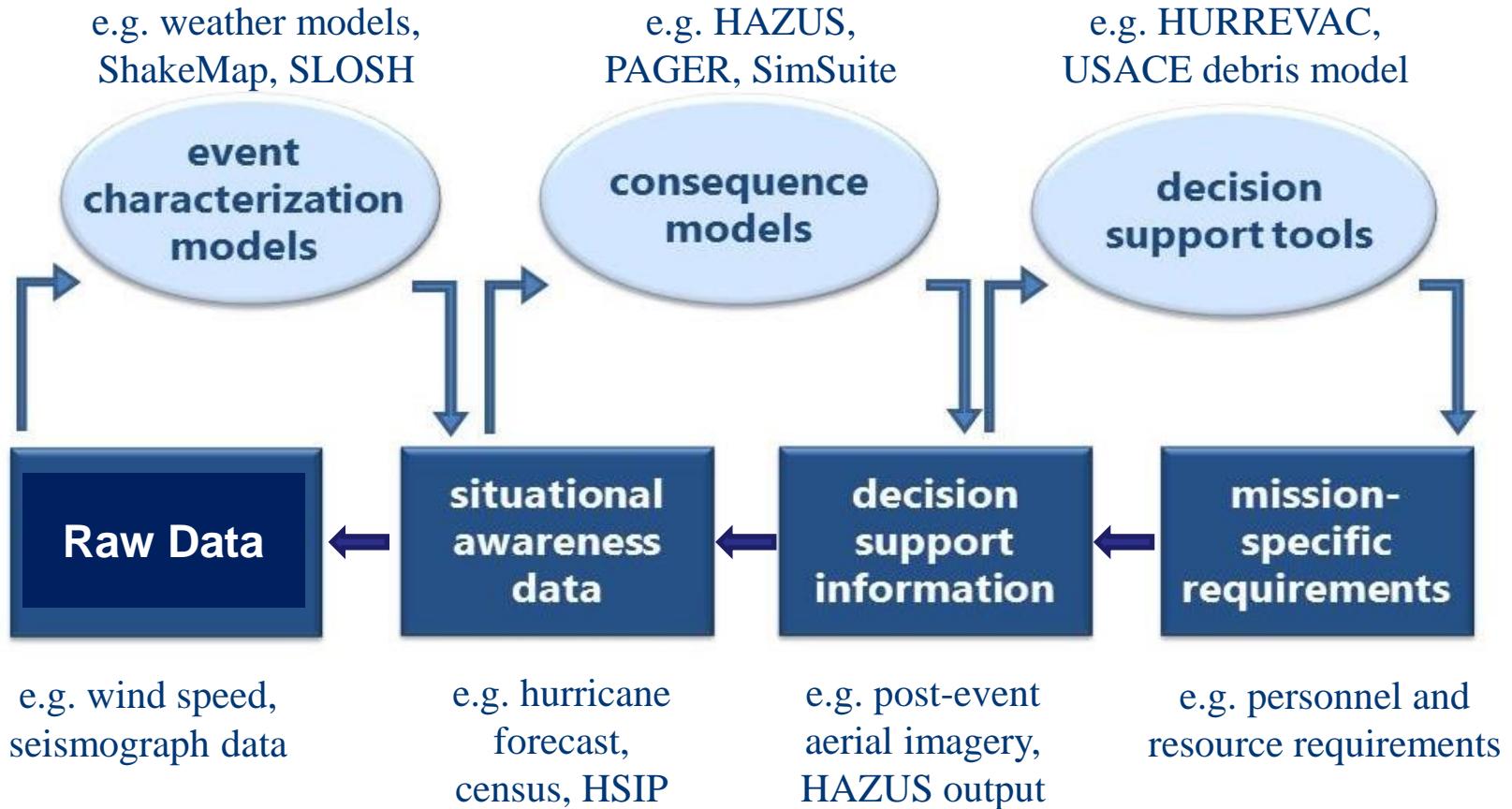
Modeling and Data Working Group (MDWG)

- Determine what information is needed by whom
- Develop an ontology to categorize the information requirements
- Identify and characterize the data and models that produce information relevant to hurricane and earthquake scenarios
- Perform network analysis to define gaps and identify linkages between resources and users/producers
- Build an interactive inventory cataloging the resources

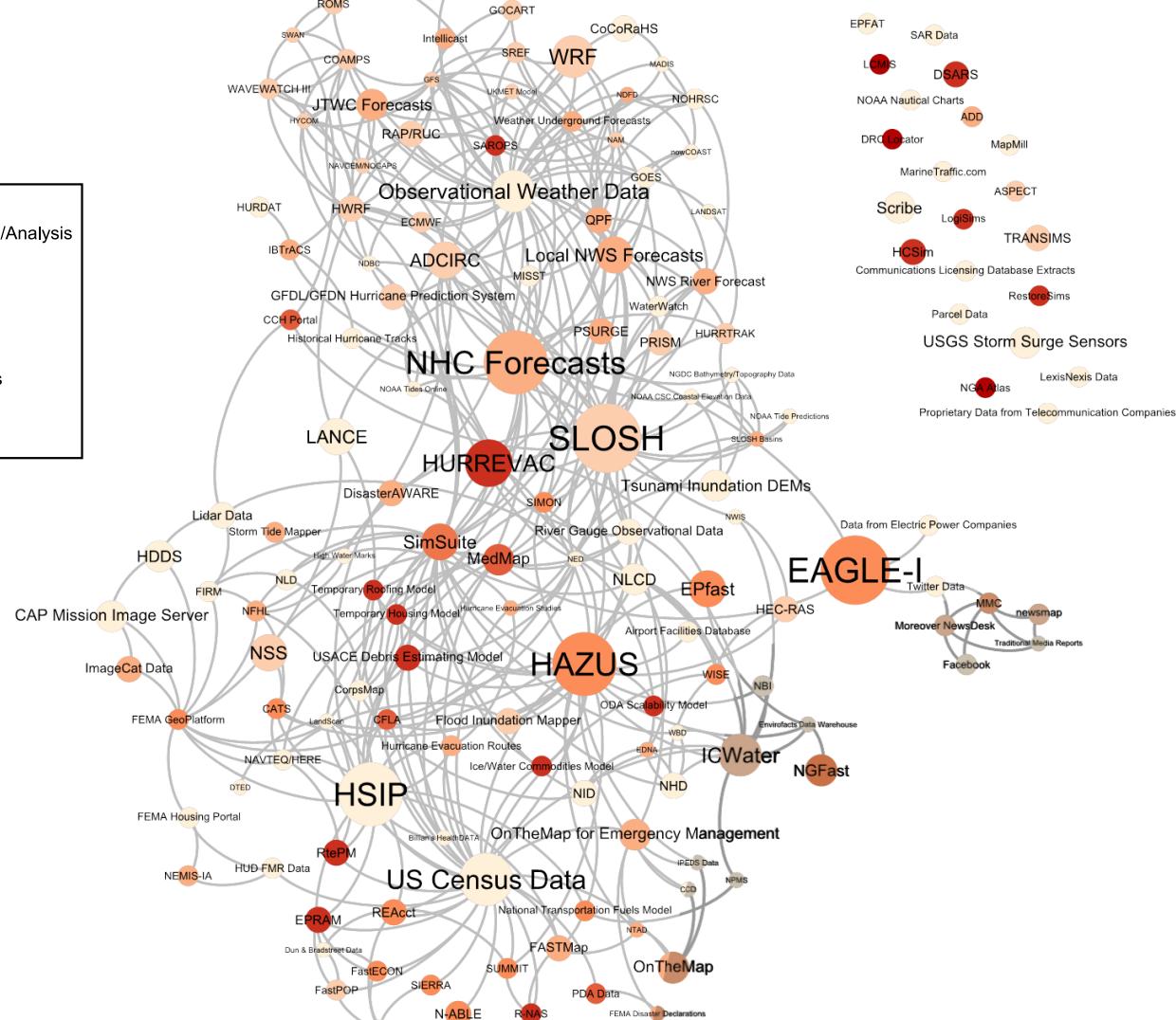
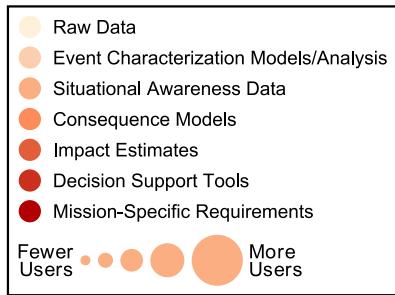
Recommended Framework



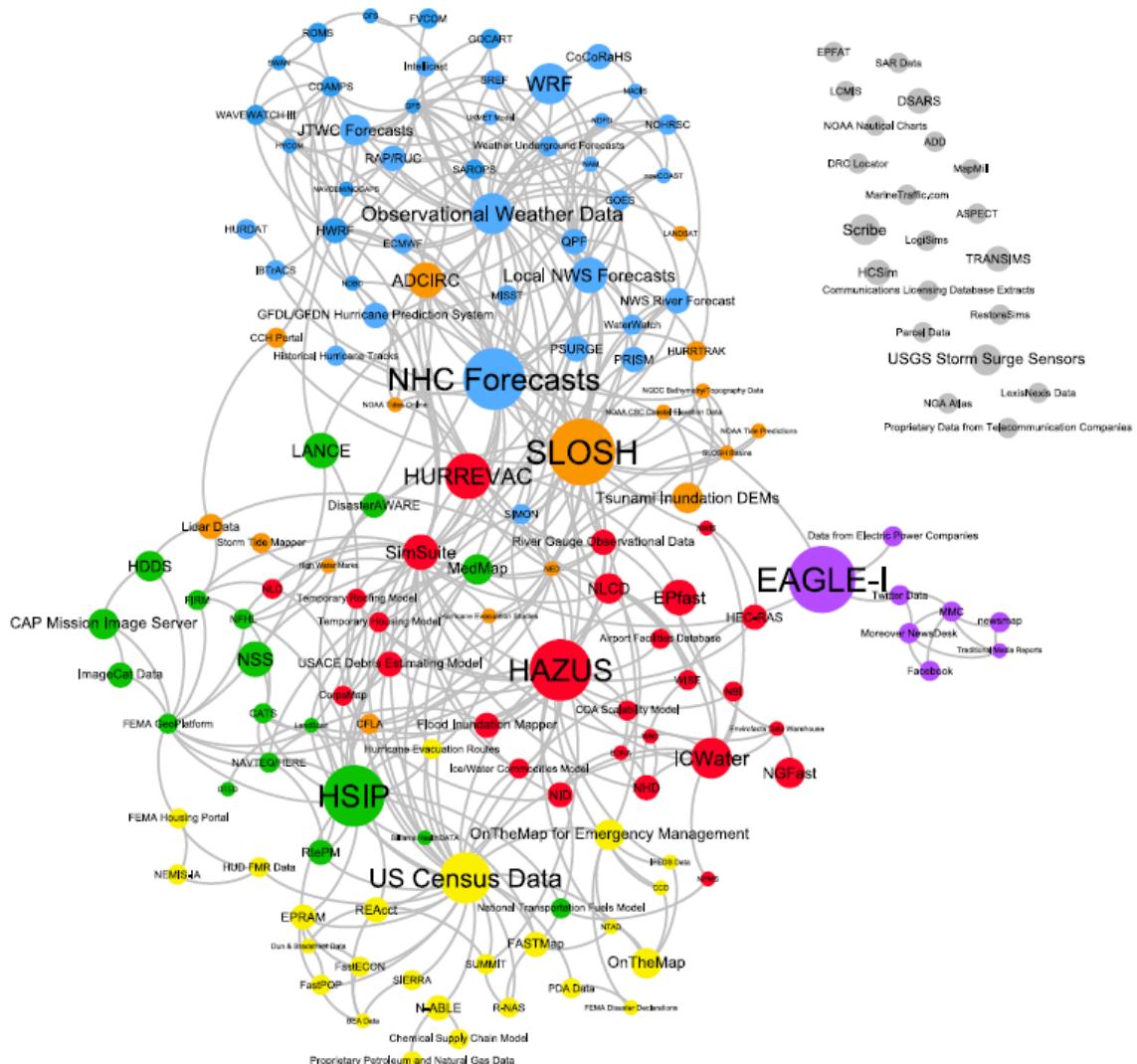
Example of Data Resources



Resource Network – Hurricane



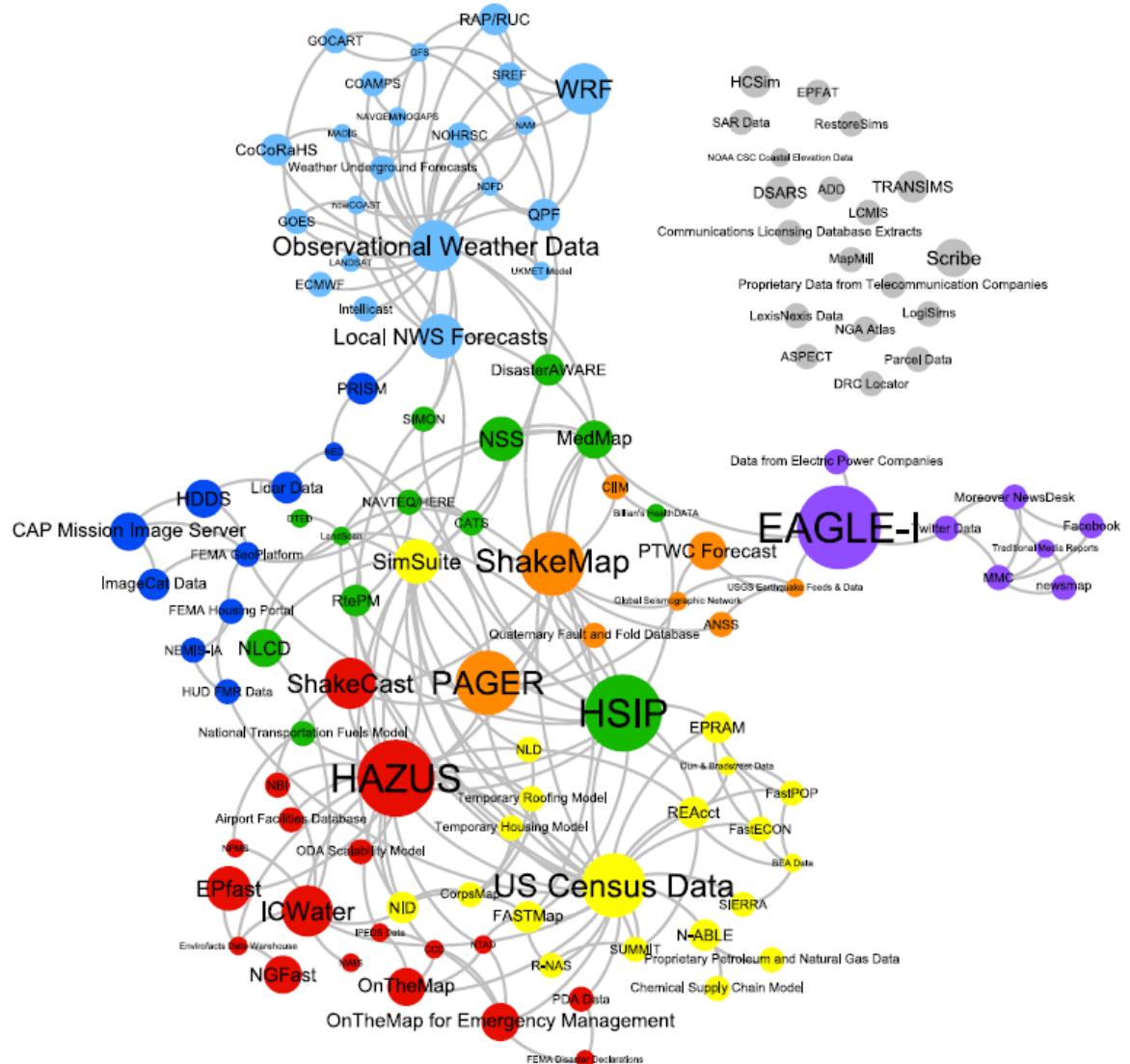
User Network – Hurricane



- Each node represents a resource in the inventory and sized by the number of organizations that use that resource across the federal interagency
- Colors represent different communities.



User Network – Earthquake



- Each node represents a resource in the inventory and sized by the number of organizations that use that resource across the federal interagency
- Colors represent different communities.

Integrated Threat and Hazard Analysis Capability using SUMMIT

(Standard Unified Modeling Mapping and Integration Toolkit)

SUMMIT Program Manager

Chase Garwood

Department of Homeland Security (DHS)

Science & Technology Directorate

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FEMA National Preparedness Assessment Division

Department of Homeland Security (DHS)

Federal Emergency Management Agency (FEMA)



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Problem Statement

DHS is not making full, effective use of Modeling and Simulation (M&S) to support Disaster Response Planning and Operations

Project Objective:

Provide USG (FEMA, OHA, NPPD) a **scalable M&S platform** to efficiently produce data for multiple scenarios or archive, share, and reuse any data utilized in plan creation for future planning, comparative analysis or during emergency response operations.

Current Gaps

- **Integration:** currently disparate systems prohibits complex, cascading analysis, sharing, and collaboration
- **Uncertainty:** Planning only done for single scenarios and response does not typically convey uncertainty
- **Reuse:** data from planning not archived and used during response or subsequent planning

Desired Outcome

- Enhanced national preparedness (THIRA) through robust multi-scenario planning capability
- Dramatically shorten the time to respond to disaster requests for informations

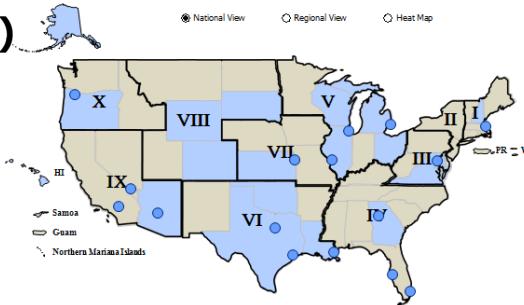




US Planning and Disaster Declarations Modeling & Simulation (M&S) Needs Are Underserved Due to Cost and Capability Constraints

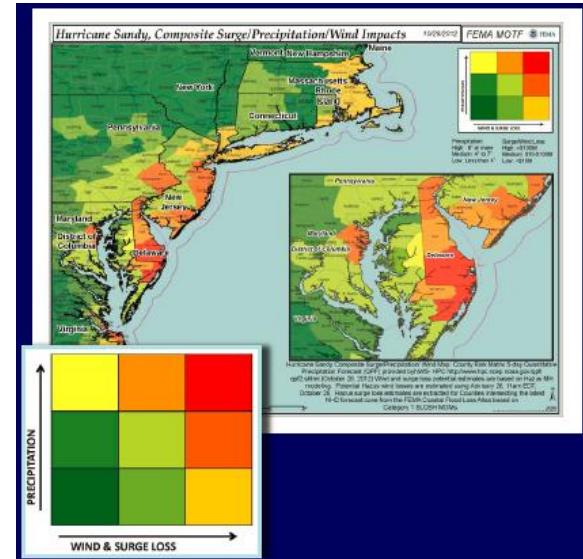
FEMA Threat and Hazard Identification and Risk Assessments (THIRAs)

- Impact: \$1.2B/yr of FEMA Grant awards depend on THIRAs.
- Integration: 700+ scenarios generated with uncoordinated, disparate tools and data. 96% shared scenario types
- Uncertainty: Plans based on only a single scenario with well defined parameters primarily due to cost and capability constraints.
- Reuse: Data not archived in any usable manner, making “what-if” analysis during an event impossible and requiring new M&S data to be generated for future planning efforts.



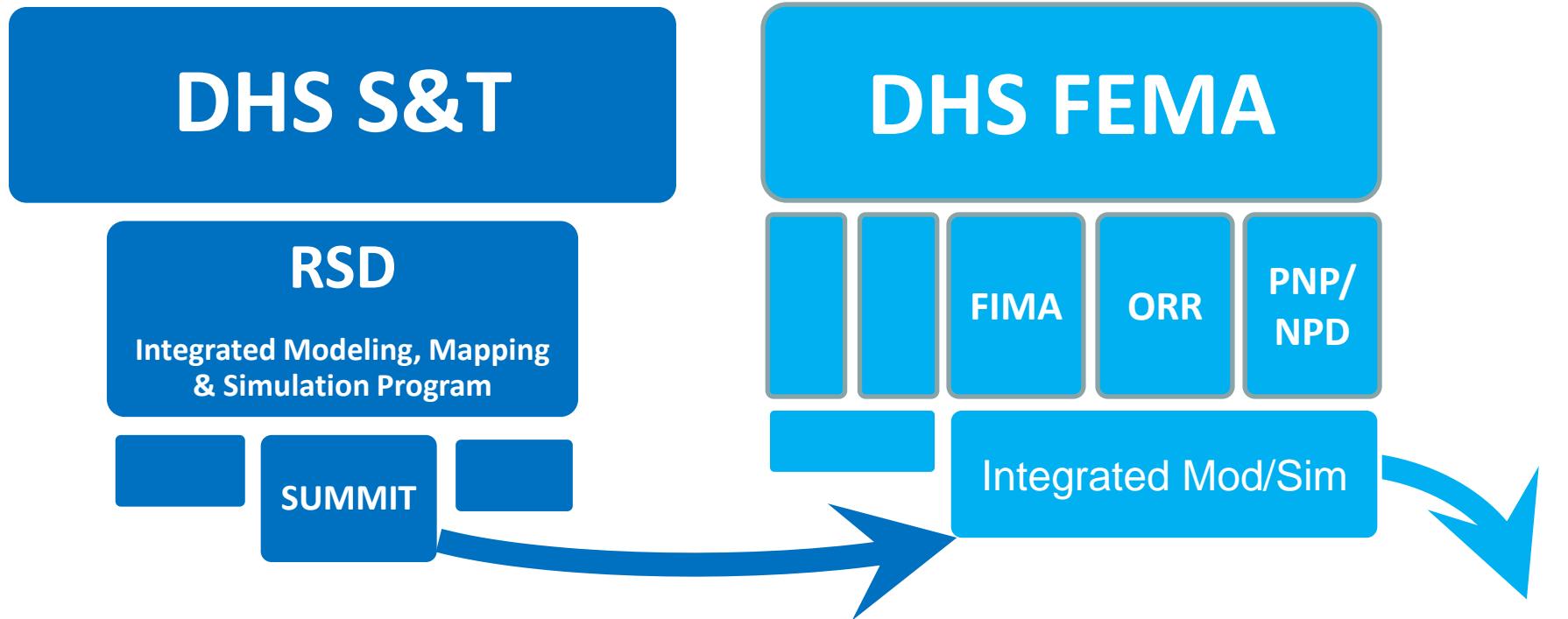
Operations

- Impact: Disparate tools for RFIs. M&S credited with expediting FEMA Individual Assistance (*\$4.4M saved in Hurricane Sandy alone*). Resource and capability constraints limited MOTF in 2013 to ~5 of 95 disaster declarations (~5%).
- Integration: emergency operations community primarily rely on tools provided by private and open source community designed for the general public use to create situational awareness and integrate data. Technologies do not accommodate emergency planning and operations processes.
- Uncertainty: M&S for operations do not typically convey uncertainty, have difficulty handling incomplete information, and are not available on the necessary time-scales for effective decision making.



FEMA Modeling Task Force (MOTF)

Program Vision for SUMMIT

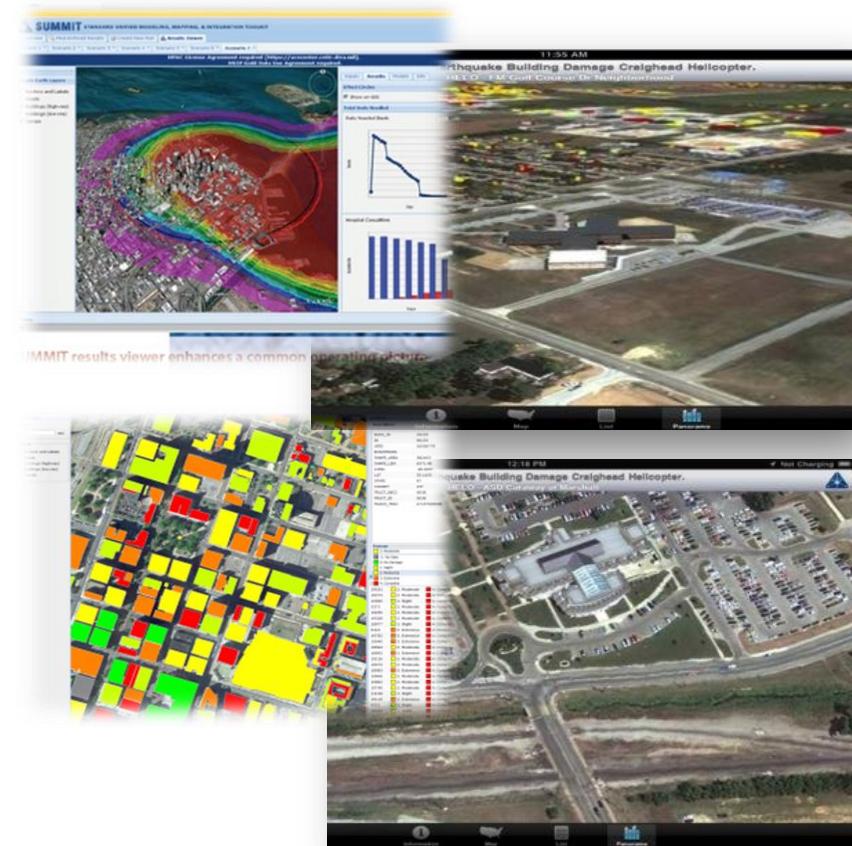


Vision: A capability for linking together “best-in-class” modeling and simulation tools to enable analysts, emergency planners, and incident managers more effectively, economically, and rapidly prepare, analyze, train, and respond to real or potential incidents.

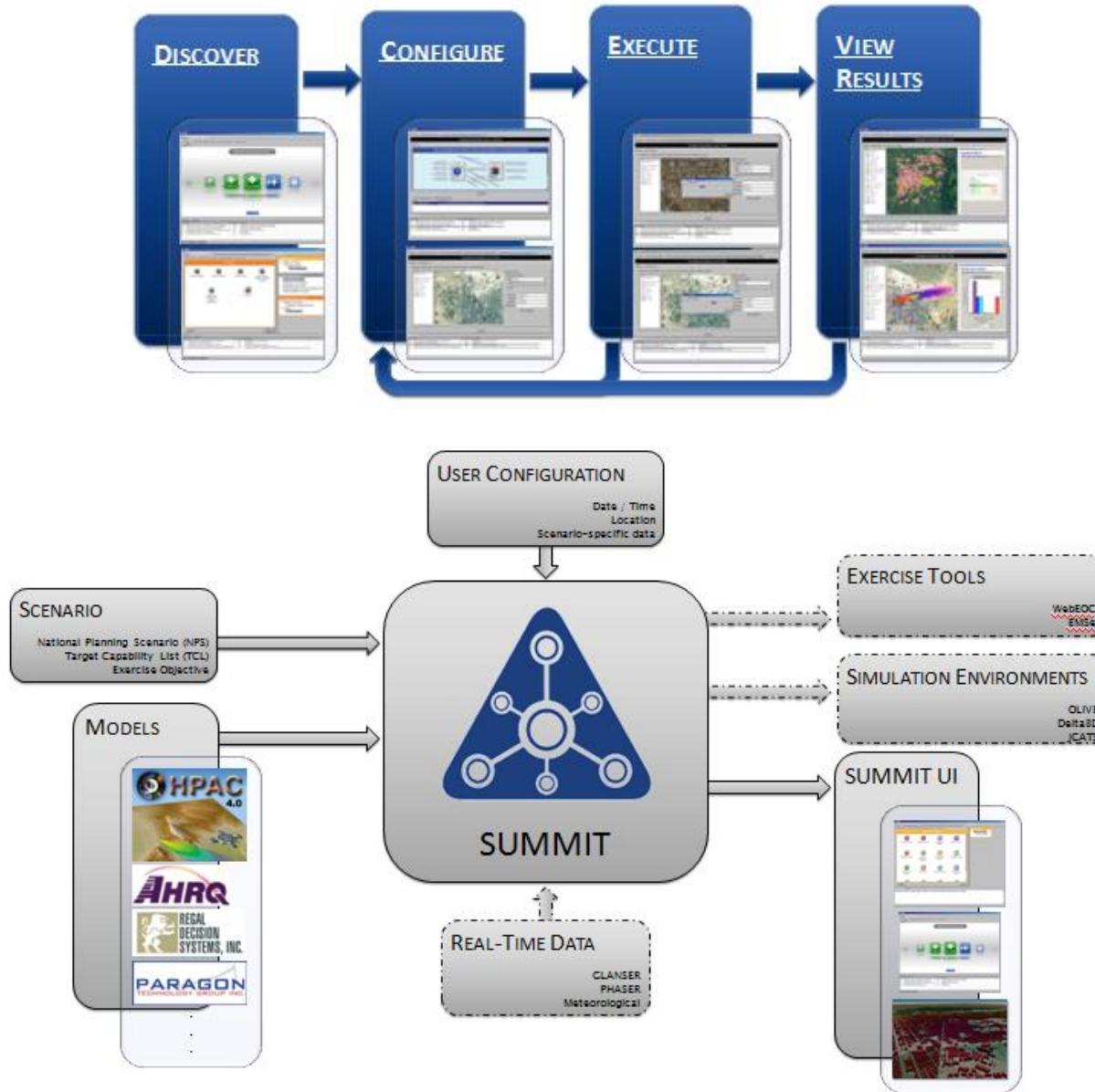
Integrated Modeling and Simulation for Analysts

CURRENT capabilities to support the following scenarios

- Improvised Nuclear Device
- Hurricane
- Tsunami
- Earthquake
- Chemical Release
- Biological Release
- Cyber Attack



SUMMIT Architecture



SUMMIT Technology

SUMMIT innovation is new method for model integration

- Extendable repository of Templates, Slots, NIEM datatypes, and Model Wrappers
- User-supplied description and usage meta data
- Slots categorized by Taxonomy (syntax and semantics)

SUMMIT STANDARD UNIFIED MODELING, MAPPING, & INTEGRATION TOOLKIT

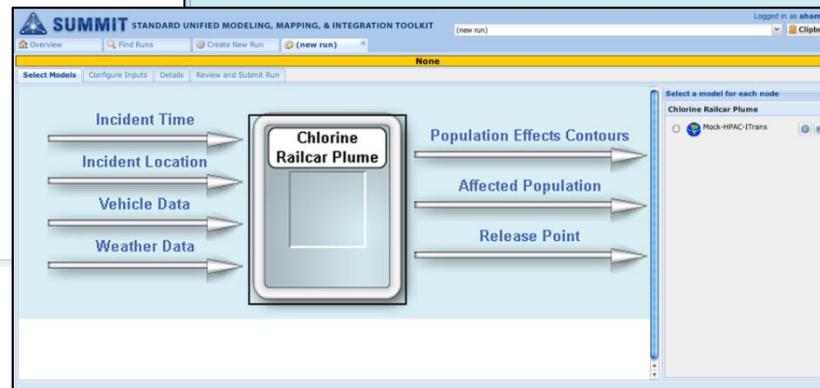
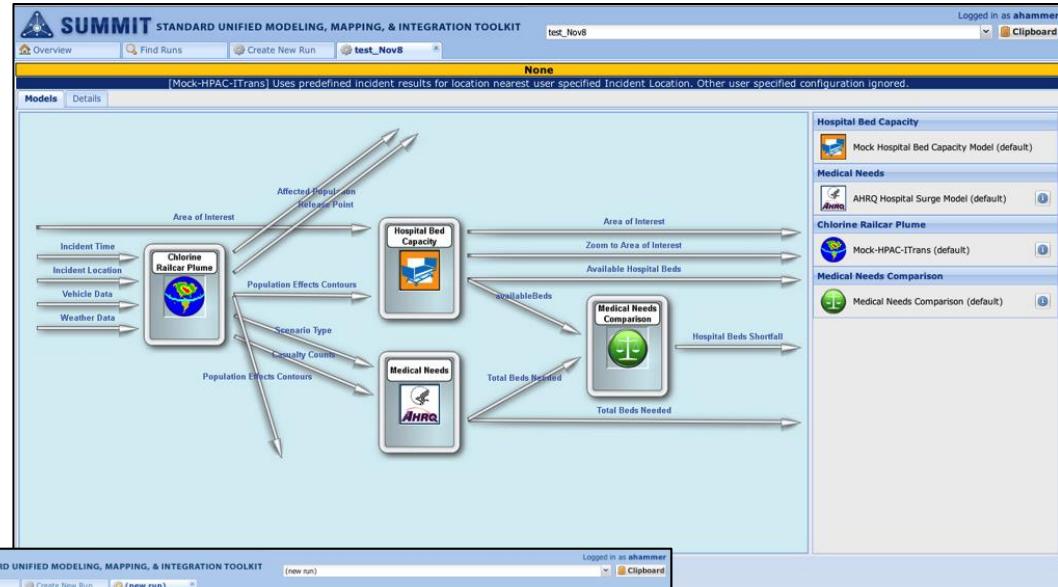
Overview Find Runs Create New Run Queue Admin

Search

Matching Results

... or select a scenario

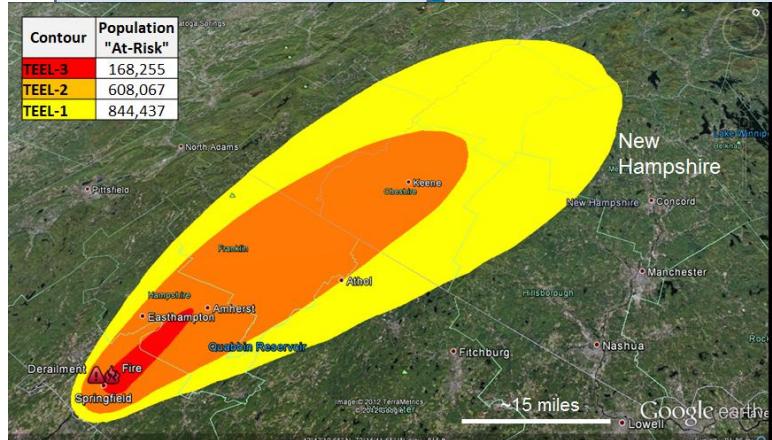
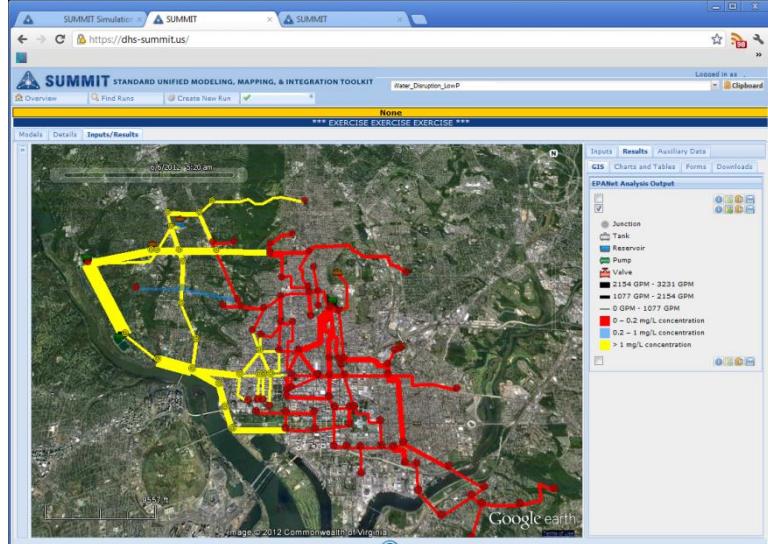
ID	Hazard	Title
1	Nuclear Detonation	Improvised Nuclear Device
2	Biological Attack	Aerosol Anthrax
3	Biological Disease Outbreak	Pandemic Influenza
4	Biological Attack	Plague
5	Chemical Attack	Blister Agent
6	Chemical Attack	Toxic Industrial Chemicals
7	Chemical Attack	Nerve Agent
8	Chemical Attack	Chlorine Tank Explosion
9	Natural Disaster	Major Earthquake
10	Natural Disaster	Major Hurricane
11	Radiological Attack	Radiological Dispersal Device
12	Explosives Attack	Bombing Using Improvised Explosive Device
13	Biological Attack	Food Contamination
14	Biological Attack	Foreign Animal Disease
15	Cyber Attack	



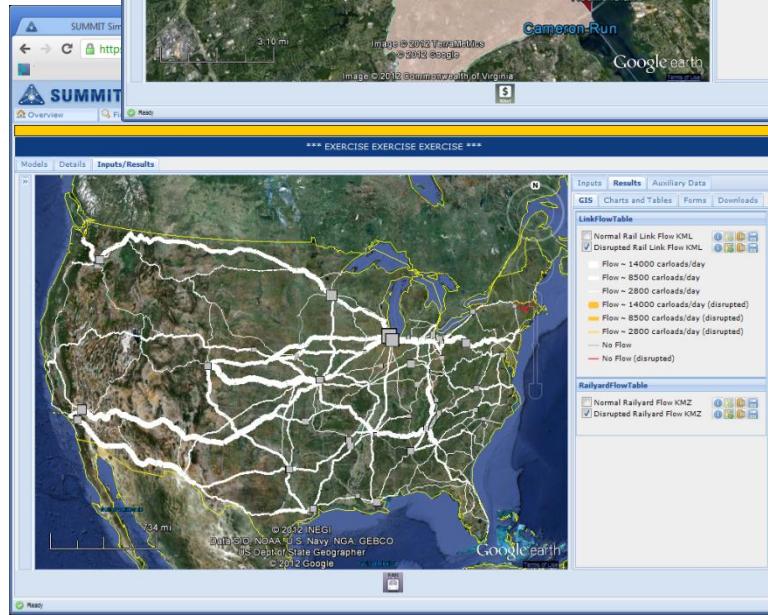
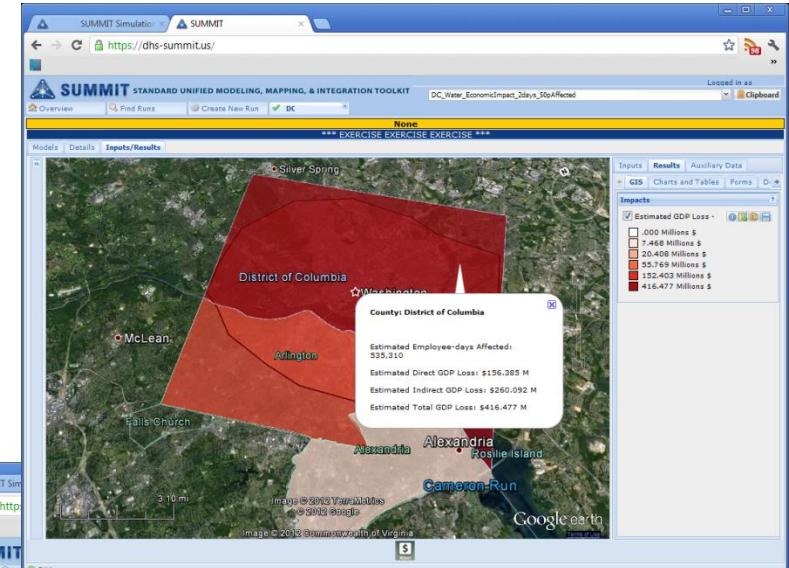
Example SUMMIT Results

Economic Disruption

Lifeline Disruption



Populations at-risk



Logistics Disruption



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Models Currently Available

(additional models constantly being added to SUMMIT ecosystem)

Legend

NPS: National Planning Scenario

I.D.: Infrastructure Damage

 Model available in template to support scenario

 Model could be added to template to support scenario

 Mature model and template used in support of multiple exercises

In progress:

1. United Nations IED
2. US Census model
3. DHS trucking/pallet
4. Imperial College Asteroid
5. NOAA HYSPLIT
6. HotSPOT (RDD)
7. FARSITE wildfire
8. LandScan Population
9. RtePM Evacuation

	Scenario																	
	NPS 1	NPS 2	NPS 3	NPS 4	NPS 5	NPS 6	NPS 7	NPS 8	NPS 9	NPS 10	NPS 11	NPS 12	NPS 13	NPS 14	NPS 15	I.D.	Flood	
THREAT MODELS																		
Air Dispersion (Plume)																		
HPAC																		
Sweden Plume Model																		
Disease																		
SIR Disease Model																		
CONSEQUENCE MODELS																		
Medical Needs																		
AHRQ Hospital Surge Model																		
Hospital Bed Capacity Model																		
BERM Clinic Staffing Model																		
Transportation																		
(RAIL) - RNAS																		
Population Movement																		
Air Travel Population Movement Model																		
Regional Travel Model																		
Infrastructure Effects																		
Building Damage Randomization Model																		
HAZUS Data Extractor (**Extraction ONLY)																		
Sweden Infrastructure Effects Model																		
Flood critical infrastructure effects model																		
HSIP Infrastructure effects model																		
GIS Utility Slot Model																		
Casualties																		
HPAC																		
HAZUS Data Extractor (**Extraction ONLY)																		
AEGL Health Effects Models																		
GIS Utility Slot Model																		
Water Networks																		
EPANet																		
Flood																		
Flood Inundation Model																		
Flood Population Effects Model																		
Economic Effects																		
ReAcct																		
Mass Care and Sheltering																		
The Army Corps of Engineers Commodities Model																		



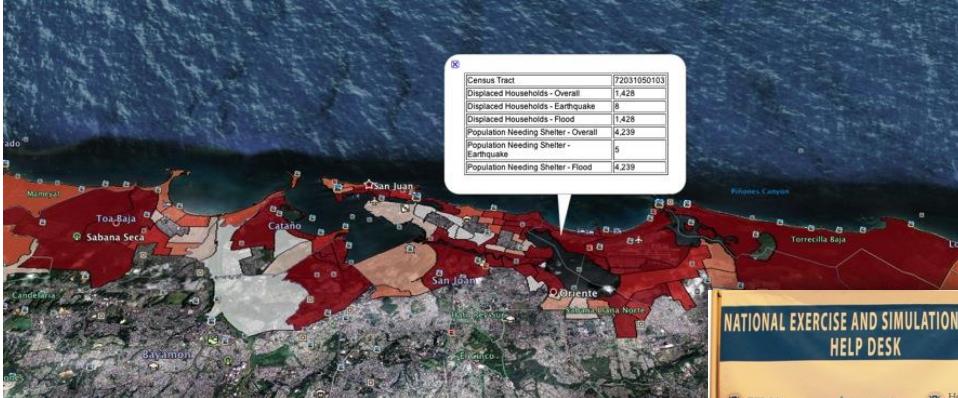
EXERCISES



SUMMIT Exercise Support Examples

FEMA Region II Blue Surge (May 2013)

- 3 day functional exercise focusing on the first 72 hours a tsunami in the Caribbean. SUMMIT provided:
 - HAZUS earthquake and flood
 - USACE/DoD commodities
 - Trucks, Ice, PODs, Staff
 - Casualty distribution
 - Infrastructure effects
 - Displaced households



National Level Exercise 2012 (June 2012)

- Cyber-security exercise. SUMMIT provided:
 - Model-based scenario data
 - Capability to view integrated M&S results to enhance situational awareness and common operating picture during exercise conduct.
- Models/data integrated in SUMMIT:
 - Regional Economic Accounting (REAcct)-GDP
 - Railroad Network Analysis System
 - EPAnet – effects of chemical levels in water
 - HPAC – air dispersion model
 - FASTMap - infrastructure effects map



SUMMIT Transition (*in progress*)

- FEMA National Exercise Division
 - *Amazon Cloud System*



FEMA

- California Exercise Simulation Center
 - *Sacramento, CA*



- Sweden
 - *Swedish National Defense College*





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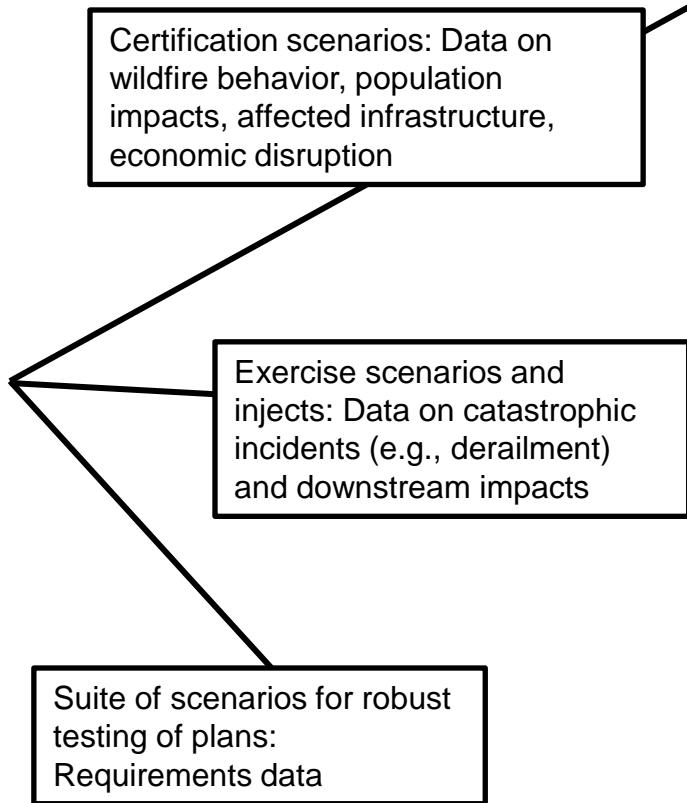
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SUMMIT Impact @ CESC*



Training Certifications (CICCS)

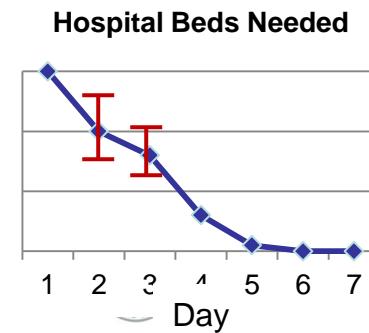
“Performance-based System”



Incident Command Exercises



Plans Validation



R&D and Value Roadmap for SUMMIT

Q4/FY2014

Q4/FY2015

Timeline

“base capability”

SUMMIT R&D Capability	Planning Focus			Response Focus			
	SUMMIT Capability						
	Batch	Model Run Library	Basic Informatics	Live Data Fusion	Data Analytics	Visualization and Uncertainty	
	Capability to run hundreds of SUMMIT scenarios automatically by specifying a range of input parameters	Archive library of batch runs that can be queried using the basic informatics described below	Ability to search library of batched SUMMIT results for parameter values (e.g., max/min)	Capability to incorporate real-time data feeds from other tools or sources that are important for response operations. For example, the use of live data for the configuration of models (e.g. inverse plume modeling based on environmental sensor data feeds).	Capability to perform analyses/data manipulation of real-time operational data to support decision-making. Analytics performed on SUMMIT results to provide an initial testable hypothesis of incident scope, scale, impact and resource needs or other decision support via what-if analysis.	Human factor-informed data representation for intuitive interpretation of data and data uncertainty for use by a variety of client types including mobile computing platforms.	
Value Add	Planning: Enables user to analyze the variability and sensitivity of scenario parameters and response decisions on scenario outcomes in order to develop robust operational plans .			Response: Data analytics will build on Basic Informatics, providing users with response guidance and ability to develop robust operational plans. Live data fusion will enable the user to replace modeling data with real data over the course of operations, and use best available estimates for decision-making. Visualization will enable the user to intuitively interpret complex data and data uncertainty , to obtain situational awareness and respond more effectively and efficiently.			

Future SUMMIT Application to Emergency Planning

In the future, SUMMIT could be used to develop libraries of modeling runs that provide data to answer key planning questions, incorporating scenario variations and uncertainty.

Additional requirements from end-users are needed

Example

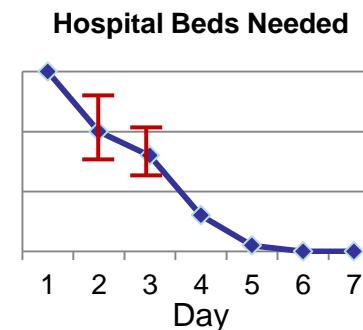
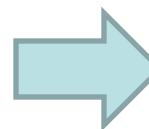
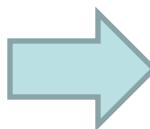
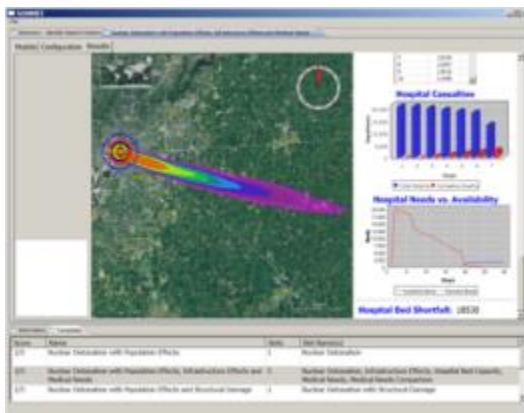
1 SUMMIT run for 1 set of inputs:

- 1 IND detonation location
- Winds W 15mph
- Static population (home locations)...

Thousands of SUMMIT run for varying inputs:

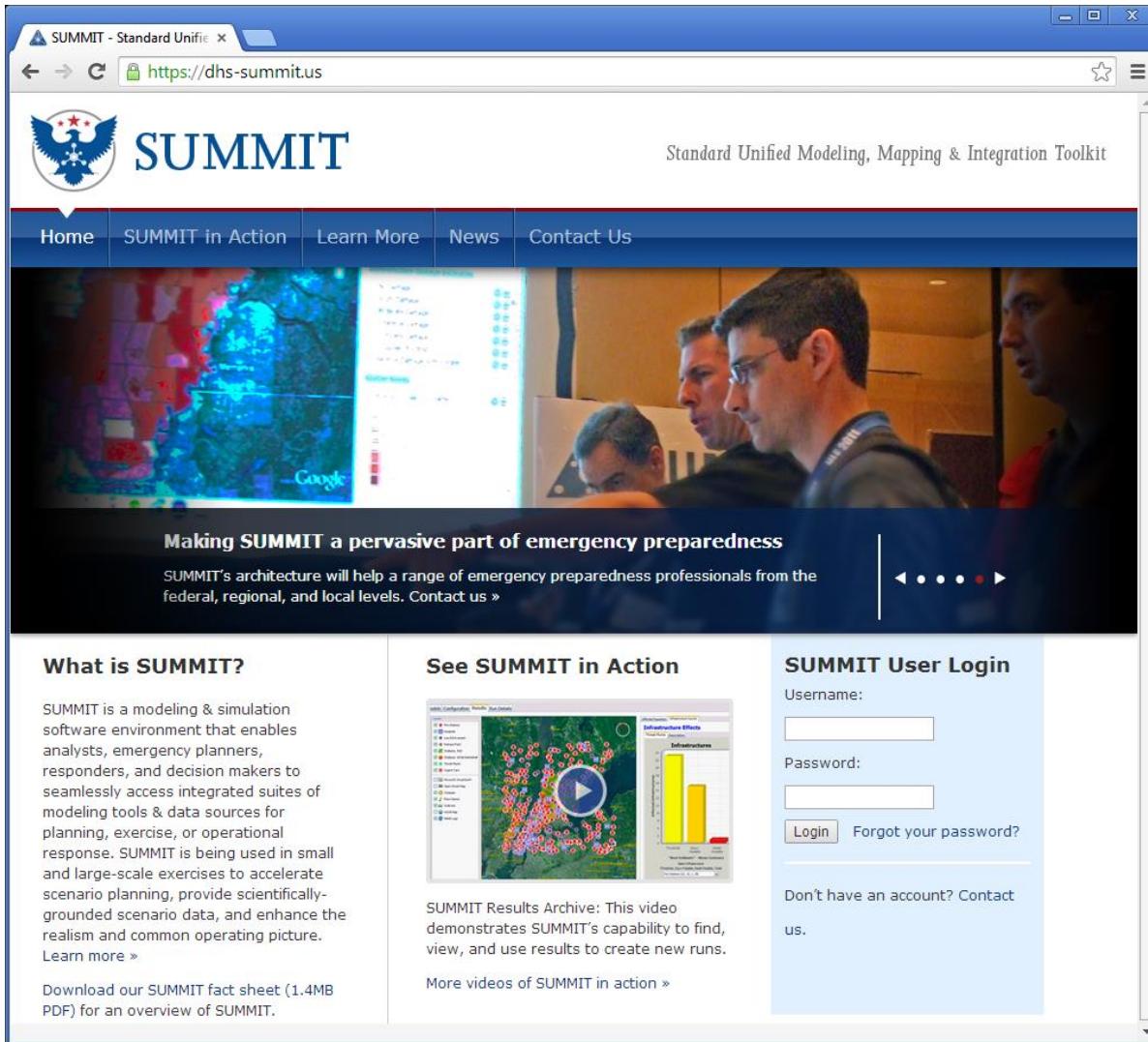
- Multiple detonation locations
- Varying weather conditions by time of year
- Population distributions for home, work...

Planning Guidance (e.g., Medical surge requirement for IND detonation threat)



SUMMIT is being advanced to automate this capability

Beta version of SUMMIT available online



The screenshot shows the SUMMIT beta website homepage. The header features the SUMMIT logo (a stylized eagle with a gear and stars) and the text "SUMMIT" in large blue letters, with "Standard Unified Modeling, Mapping & Integration Toolkit" in smaller text. The navigation menu includes "Home", "SUMMIT in Action", "Learn More", "News", and "Contact Us". Below the menu is a large banner image showing a map and several people in a control room setting. The banner text reads "Making SUMMIT a pervasive part of emergency preparedness" and "SUMMIT's architecture will help a range of emergency preparedness professionals from the federal, regional, and local levels. Contact us »". The main content area is divided into three sections: "What is SUMMIT?", "See SUMMIT in Action", and "SUMMIT User Login". The "What is SUMMIT?" section describes SUMMIT as a modeling & simulation software environment for emergency preparedness. The "See SUMMIT in Action" section includes a video player showing a map and data visualization, and a link to the "SUMMIT Results Archive". The "SUMMIT User Login" section contains fields for "Username" and "Password", a "Login" button, a "Forgot your password?" link, and a link for users without an account.

SUMMIT
Standard Unified Modeling, Mapping & Integration Toolkit

Home | SUMMIT in Action | Learn More | News | Contact Us

Making SUMMIT a pervasive part of emergency preparedness

SUMMIT's architecture will help a range of emergency preparedness professionals from the federal, regional, and local levels. Contact us »

What is SUMMIT?

SUMMIT is a modeling & simulation software environment that enables analysts, emergency planners, responders, and decision makers to seamlessly access integrated suites of modeling tools & data sources for planning, exercise, or operational response. SUMMIT is being used in small and large-scale exercises to accelerate scenario planning, provide scientifically-grounded scenario data, and enhance the realism and common operating picture.

Learn more »

Download our SUMMIT fact sheet (1.4MB PDF) for an overview of SUMMIT.

See SUMMIT in Action

SUMMIT Results Archive: This video demonstrates SUMMIT's capability to find, view, and use results to create new runs.

More videos of SUMMIT in action »

SUMMIT User Login

Username:

Password:

Login | Forgot your password?

Don't have an account? Contact us.

Next Generation Response & Recovery

SHERPA

SUMMIT for Homeland Emergency Response & Planning Analysis



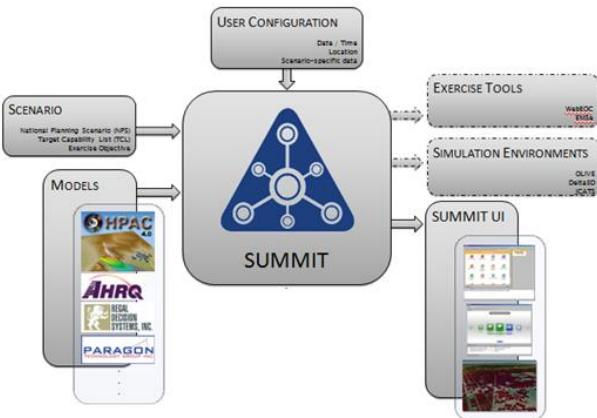
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Chase Garwood
Resilient Systems Division
Science and Technology Directorate



Standard Unified Modeling and Mapping Integration Toolkit (SUMMIT)

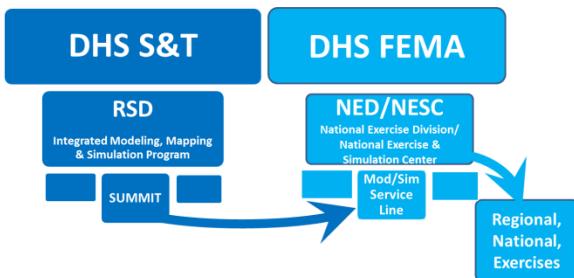


SUMMIT

Platform technology developed for FEMA National Exercise Division to linking together “best-in-class” modeling and simulation tools to enable analysts, emergency planners, and incident managers more effectively, economically, and rapidly prepare, analyze, and train during exercises.

SUMMIT innovation

- Extendable repository of Templates, Slots, and Model Wrappers
- User-supplied description & usage meta data
- Slots categorized by Taxonomy (syntax and semantics)



FEMA NED Transition



SUMMIT^R aligns to Nation and End User Priorities

<u>Division</u> RSD Strategic Plan (2013)	RSD Thrust 1 – Adaptive Risk Mitigation RSD Thrust 2 – Agile Disaster Management
<u>Agency</u> FEMA Strategic Plan (2011) S&T Strategic Plan: Goal 1, 3 (2011)	FEMA Initiative 2 -Build the Nation's Capacity to Stabilize and Recover from a Catastrophic Event FEMA Initiative 3 - Build Unity of Effort and Common Strategic Understanding Among the Emergency Management Team S&T #1. Rapidly develop and deliver knowledge, analyses, and innovative solutions that advance the mission of the Department. S&T #3. Strengthen the Homeland Security Enterprise and first responders' capabilities to protect the homeland and respond to disasters.
<u>Department</u> Quadrennial Homeland Security Review (2010)	HS Core Mission 5: Ensuring Resilience to Disasters HS Enterprise Mission: Maturing and Strengthening the Homeland Security Enterprise
<u>Department/Nation</u> DHS Strategic Plan 2012-16 (2012) National Preparedness Goal (2011)	A secure and resilient nation with the capabilities required across the whole community to prevent, protect against, mitigate, respond to, and recover from the threats and hazards that pose the greatest risk
<u>Nation</u> Presidential Policy Directives PPD-8 (2011) & PPD-21 (2013)	PPD-8: ..an integrated, all-of-Nation, capabilities-based approach to preparedness...concrete, measurable, and prioritized objectives to mitigate that risk. PPD-21 Strategic Imperative #3: Implement an integration and analysis function to inform planning and operations decisions regarding critical infrastructure.



SUMMIT^R Approach – Planning

- M&S/data utilized during planning process is archived for use during future planning sessions, assessment protocols or emergency operation activities
- M&S execution augmented through model library availability within standardized integrating architecture
- M&S utilized to determine sensitivity of key planning assumptions to scenario characteristics (e.g., hurricane wind speed correlation to evacuation route)
- M&S utilized to generate results from incomplete data (e.g., vary parameters with incomplete data)
- Archived planning scenarios reused in subsequent planning efforts reducing cost

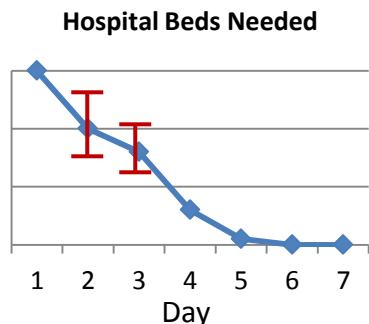
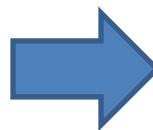
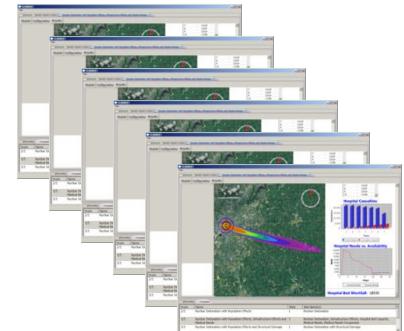
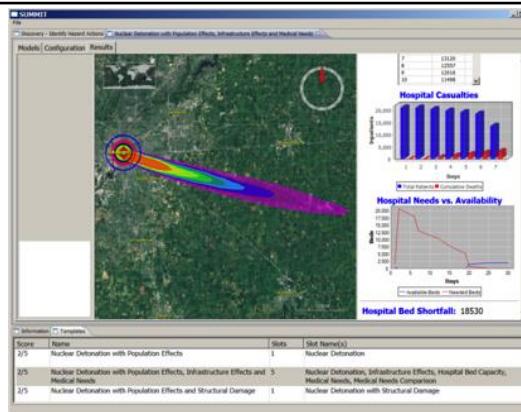
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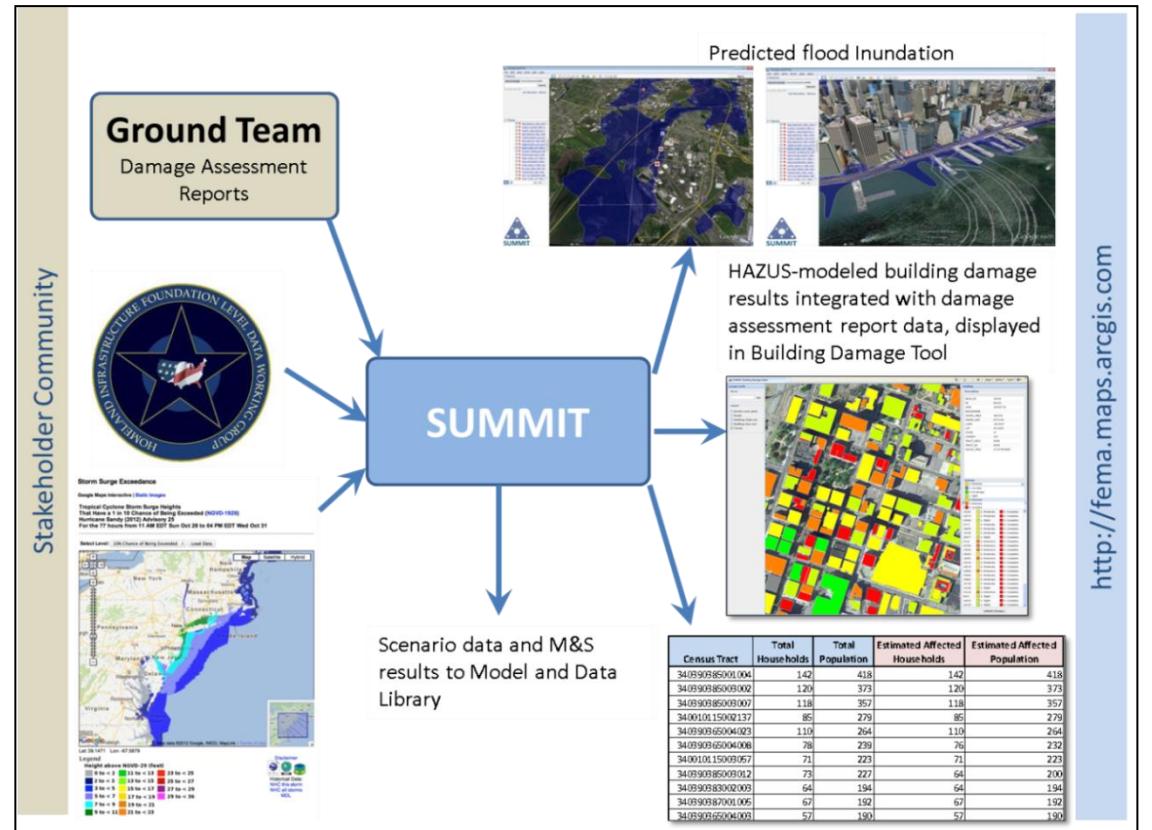
Planning Guidance (e.g., Medical surge requirement for IND detonation threat)



End state: M&S execution library covering scenario and outcome space able to be utilized for all emergency planning activities (e.g., library containing all hurricane tracks on eastern seaboard for past 100 years).



SUMMIT^R Approach – Operations



Current two dominant mechanisms:

1) Reach-back centers:
too expensive for planning, only used during operations

2) M&S available to community:
tools require expertise to operate, which is not generally available during operations

Use M&S to retrieve real-time information and capture complex impact estimates uncertainty given incomplete situation awareness

FEMA adoption of M&S for exercises has increased awareness of need and technology gaps

End state:

M&S data created during planning utilizable during emergency operations to guide incident management and address questions such as "How bad could this get?" and "What are we prepared to handle?"

Current approach does not support "Train as you fight, fight as you train" philosophy

Strong community support for SUMMIT

FEMA Region 2 Administrator

U.S. Department of Homeland Security
Region II
Jacob K. Javits Federal Office Building
26 Federal Plaza, Room 1311
New York, NY 10278-0002



FEMA

July 18, 2013

Dr. Tara O'Toole
U.S. Department of Homeland Security
Science and Technology Directorate
1120 Vermont Ave., N.W.
Washington, DC 20005

Dear Dr. O'Toole:

I am writing to thank you for the tremendous support the Department of Homeland Security Science and Technology Directorate (DHS S&T) has provided to the Federal Emergency Management Agency (FEMA) Region II Blue Surge Exercise. The Resilient Systems Division's leadership was instrumental in supporting the exercise by helping us use the Standard Unified Modeling, Mapping & Integration Toolkit (SUMMIT) and increase its impact on our mission objectives.

Blue Surge was a large tsunami-based exercise that measured the operational performance of not only FEMA Region II, but also local emergency management agencies from Puerto Rico and the U.S. Virgin Islands. SUMMIT allowed our Regional Exercise Office and its controllers to provide outputs from science-based models and data to enhance the scenario realism. Moreover, SUMMIT products were utilized throughout the exercise enabling us to advance the use of technologies such as modeling and simulation (M&S) with a wide range of participants from emergency managers to urban search and rescue officials.

The Blue Surge exercise has demonstrated that through the SUMMIT environment FEMA will be able to decrease the time and cost needed to train for, analyze, and respond to real or potential incidents—while increasing preparedness effectiveness. We look forward to a wider deployment/use of SUMMIT for our ongoing activities as well as employing the technology to analyze the cascading effects of disasters on our key infrastructure as we strive to improve our resilience.

Sincerely,

MaryAnn Tierney
Acting Regional Administrator
FEMA Region II

cc: Jalal Mapar
Carla Boyce

www.fema.gov • PH: (212)680-3600



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Science and Technology

Congressman Bera and California Exercise Simulation Center

AMMI BEREA, M.D.
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COMMITTEE ON FOREIGN AFFAIRS
SUBCOMMITTEE:
ASIA AND THE PACIFIC
AFRICA, GLOBAL HEALTH, AND HUMAN RIGHTS
COMMITTEE ON SCIENCE, SPACE, AND
TECHNOLOGY
SUBCOMMITTEE:
RESEARCH
SPACE



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Thursday, July 11, 2013

Under Secretary Dr. Tara O'Toole
Department of Homeland Security
Science and Technology Directorate
245 Murray Lane SW
Washington, DC 20528

Dear Under Secretary O'Toole,

On behalf of the 7th District of California, I am writing to support the California Governor's Office of Emergency Services, Exercise Simulation Center (CESC), currently under development by the Sacramento Metropolitan Fire District (Metro Fire). The project is at a critical juncture in the development of important software solutions and desires your support in coordinating with the appropriate federally funded research and development centers.

The CESC project team greatly appreciates the close working relationship they have had with the United States Department of Homeland Security Science and Technology Directorate, Infrastructure Protection and Disaster Management Division, Standard Unified Modeling, Mapping and Integration Toolkit, the Federal Emergency Management Agency, National Training, Education and Exercise Division, National Exercise Simulation Center, Sandia National Laboratories and the Naval Post Graduate School, Modeling, Virtual Environments and Simulation Institute.

The CESC facility is located in Metro Fire's headquarters located at 10545 Armstrong Ave, Mather, CA, 95655. The CESC project is funded through a \$4 million grant from FY2011 State Homeland Security Grant Program. The grant is administered through the Federal Emergency Management Agency. When the CESC facility is completed, it will fill existing gaps through interdependency and coordination exercises, in addition to preparedness, response and recovery plan socialization and validation at the regional, state and federal levels.

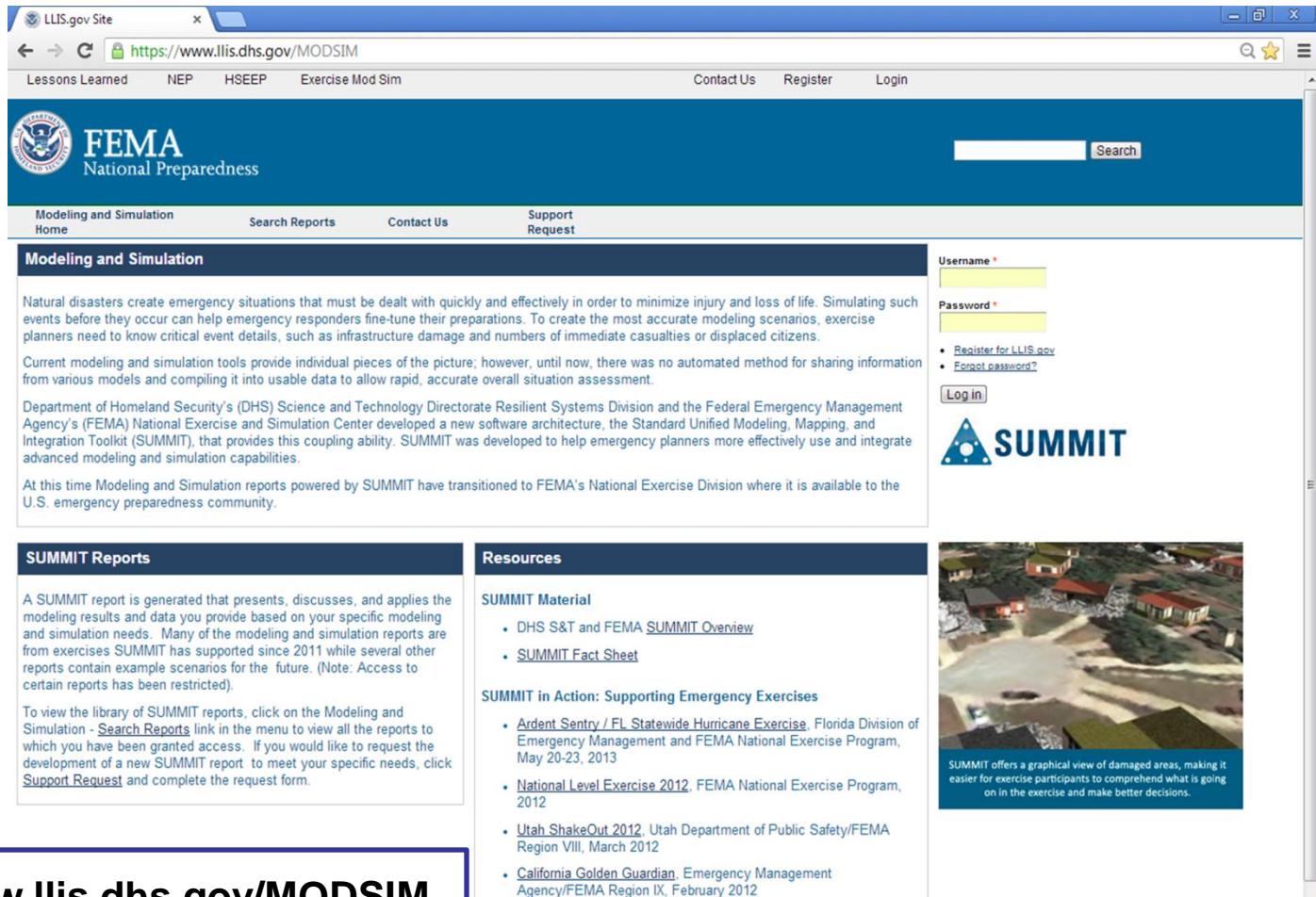
Statewide exercise planning and execution require millions of dollars of support each year. Although these efforts play a critical role in enhancing preparedness, the expense makes it impossible to utilize this method frequently enough to have a sizeable impact on learning, skills development and plan validation. These challenges limit access to improvement opportunities that would enhance vital preparedness and response efforts.

The financial and operational limitations of the current economic and service environment demand the exploration of new and more efficient methods of operation. OES recognized that



FEMA

SUMMIT Reporting Capability has Successfully Transitioned from DHS S&T to FEMA's LLIS and HSEEP



The screenshot shows a web browser window for the LLIS.gov Site (https://www.llis.dhs.gov/MODSIM). The page header includes the FEMA National Preparedness logo and links for Lessons Learned, NEP, HSEEP, and Exercise Mod Sim. The main content area is titled "Modeling and Simulation" and discusses the transition of SUMMIT to FEMA's National Exercise Division. It features a "SUMMIT Reports" section and a "Resources" section with links to various exercises. A sidebar on the right shows a login form and a "SUMMIT" logo. A callout box at the bottom right highlights a 3D rendering of a damaged area.

LLIS.gov Site <https://www.llis.dhs.gov/MODSIM>

Lessons Learned NEP HSEEP Exercise Mod Sim Contact Us Register Login

FEMA
National Preparedness

Modeling and Simulation Home Search Reports Contact Us Support Request

Modeling and Simulation

Natural disasters create emergency situations that must be dealt with quickly and effectively in order to minimize injury and loss of life. Simulating such events before they occur can help emergency responders fine-tune their preparations. To create the most accurate modeling scenarios, exercise planners need to know critical event details, such as infrastructure damage and numbers of immediate casualties or displaced citizens.

Current modeling and simulation tools provide individual pieces of the picture; however, until now, there was no automated method for sharing information from various models and compiling it into usable data to allow rapid, accurate overall situation assessment.

Department of Homeland Security's (DHS) Science and Technology Directorate Resilient Systems Division and the Federal Emergency Management Agency's (FEMA) National Exercise and Simulation Center developed a new software architecture, the Standard Unified Modeling, Mapping, and Integration Toolkit (SUMMIT), that provides this coupling ability. SUMMIT was developed to help emergency planners more effectively use and integrate advanced modeling and simulation capabilities.

At this time Modeling and Simulation reports powered by SUMMIT have transitioned to FEMA's National Exercise Division where it is available to the U.S. emergency preparedness community.

SUMMIT Reports

A SUMMIT report is generated that presents, discusses, and applies the modeling results and data you provide based on your specific modeling and simulation needs. Many of the modeling and simulation reports are from exercises SUMMIT has supported since 2011 while several other reports contain example scenarios for the future. (Note: Access to certain reports has been restricted).

To view the library of SUMMIT reports, click on the Modeling and Simulation - [Search Reports](#) link in the menu to view all the reports to which you have been granted access. If you would like to request the development of a new SUMMIT report to meet your specific needs, click [Support Request](#) and complete the request form.

Resources

SUMMIT Material

- DHS S&T and FEMA [SUMMIT Overview](#)
- [SUMMIT Fact Sheet](#)

SUMMIT in Action: Supporting Emergency Exercises

- [Ardent Sentry / FL Statewide Hurricane Exercise](#), Florida Division of Emergency Management and FEMA National Exercise Program, May 20-23, 2013
- [National Level Exercise 2012](#), FEMA National Exercise Program, 2012
- [Utah ShakeOut 2012](#), Utah Department of Public Safety/FEMA Region VIII, March 2012
- [California Golden Guardian](#), Emergency Management Agency/FEMA Region IX, February 2012

SUMMIT offers a graphical view of damaged areas, making it easier for exercise participants to comprehend what is going on in the exercise and make better decisions.

<https://www.llis.dhs.gov/MODSIM>

SUMMIT Reports are Searchable by Type and Category

 **FEMA**
National Preparedness

[Modeling and Simulation Home](#) [Search Reports](#) [Contact Us](#) [Support Request](#)

Modeling and Simulation – Search Reports

The table below lists all reports to which you have been granted access. Use the filter selections to narrow your area of interest and click "Apply" to update the list of reports.

Report Run Name	Report Run ID	Report Run Description	National Planning Scenario Hazard and Title		
<input type="text"/> <input type="text"/> <input type="text"/> <input type="button" value="Any"/>					
Tags	<input type="radio"/> Author	<input type="text"/>	Creation Date Range: Start Date <input type="text" value="E.g. 2013-08-13"/>	Creation Date Range: End Date <input type="text" value="E.g. 2013-08-13"/> <input type="button" value="Apply"/>	
Report Run Name	National Planning Scenario		Sensitivity	Author	Creation Date
Chlorine Release (Severe) Railcar with Population Effects Medical Needs: Chicago		6: Chemical Attack: Toxic Industrial Chemicals	Open Source	CJJohn	04/02/2013 1:55 am
Chlorine Release (Moderate) Railcar Population Effects and Medical Needs: LA		6: Chemical Attack: Toxic Industrial Chemicals	Open Source	CJJohn	04/01/2013 12:14 pm
Chlorine Release from Railcar with Population Effects, Infrastructure Effects and Medical Needs: Washington, DC		6: Chemical Attack: Toxic Industrial Chemicals	For Official Use Only (FOUO)	CJJohn	04/01/2013 3:17 am
Nuclear Detonation with Population Effects, Infrastructure Effects and Medical Needs - IND Region 5 Seminar: Chicago		1: Nuclear Detonation: Nuclear Device	For Official Use Only (FOUO)	CJJohn	03/28/2013 11:12 am
Chlorine Release from Railcar Tanker with Population Effects, Infrastructure Effects and Medical Needs: Chicago		6: Chemical Attack: Toxic Industrial Chemicals	For Official Use Only (FOUO)	CJJohn	03/28/2013 7:53 am
Chloride Explosion from Railcar Tanker with Population Effects: Houston 2		6: Chemical Attack: Toxic Industrial Chemicals	For Official Use Only (FOUO)	CJJohn	03/28/2013 5:52 am
Chlorine Release from Railcar Tanker with Population Effects: Houston		6: Chemical Attack: Toxic Industrial Chemicals	For Official Use Only (FOUO)	CJJohn	03/28/2013 5:16 am
Chlorine Explosion from Railcar Tanker with Population Effects: Chicago		6: Chemical Attack: Toxic Industrial Chemicals	For Official Use Only (FOUO)	CJJohn	03/28/2013 2:55 am
Chlorine Release (Severe) Railcar Tanker with Population Effects: Chicago		6: Chemical Attack: Toxic Industrial Chemicals	For Official Use Only (FOUO)	CJJohn	03/27/2013 1:43 pm
Chlorine Release (Moderate) Railcar Tanker with Population Effects: Chicago		6: Chemical Attack: Toxic Industrial Chemicals	For Official Use Only (FOUO)	CJJohn	03/26/2013 2:34 am

SUMMIT M&S Report Page

SUMMIT's M&S report feature downloadable data including:

- Analysis notes
- Model(s) parameters
- Excel/CSV results data
- GIS layers (Google Earth and ESRI Shapefiles)
- Result Images
- PDF summary
- Raw data formats

The screenshot shows a web browser displaying the FEMA National Preparedness website. The page title is "Modeling and Simulation - Report Details for Chlorine Release" and the subtitle is "Moderate Railcar Population Effects and Medical Needs: LA". The page content is organized into several sections:

- Report Run Metadata**: Includes fields for Report Run ID (23d1ac6e-2354-44ce-9214-9c165cb942e7), Author (CJJohn), Creation Date (Monday, April 1, 2013 - 12:14), and Sensitivity (Open Source).
- Tags**: Los Angeles, Chlorine Railcar Transition, DDS_SUMMIT.
- Models**: AHRQ Hospital Surge Model, Medical Needs Comparison, Mock Hospital Bed Capacity Model, Mock-HPAC-ITrans.
- Additional Restrictions**: Mock-HPAC-ITrans: Uses predefined incident results for location nearest user specified Incident Location. Other user specified configuration ignored.
- Report Run Description**: Chlorine Release (Moderate) Railcar Population Effects and Medical Needs - Los Angeles (LA CTRail Mod Mock).
- Analyst Notes**: Analysis: Hospital Capacity (LA_CTRail_Mock_Mod_AvailBeds.png) - Hospital Capacity Available reports the total number of available beds for the hospitals listed. There are approximately 2,818 available beds at this time for an approximate demand in excess of 40,000 inpatient beds needed. Analysis: Acute Exposure Guideline Levels (AEGL) (LA_CTRail_Mock_Mod_GIS1.jpg) - Analysis of mock data Acute Exposure Guideline Levels (AEGL) represent a threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. Death Possible (Red AEGL 3) is the airborne concentration of chlorine, which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death. Injury Possible (Orange AEGL 2) is airborne concentration of chlorine above which it is
- Report Run Files**: PDF Report (Chlorine Tanker Railcar Mock Moderate: LA), Images and Screen Shots (Hospital Capacity, Acute Exposure Guideline Levels (AEGL) 1, Acute Exposure Guideline Levels (AEGL) 2, Population Effects, Medical Resources), Google Earth (Chlorine Tanker Railcar Mock Moderate: LA - KML), CSV / Excel (Daily Needed Beds, Hospital Casualties, Hospital Capacity, Hospital Equipment, Hospital Pharmacy, Hospital Staff), Report Inputs.

