

SUMMIT Support for Earthquake 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.

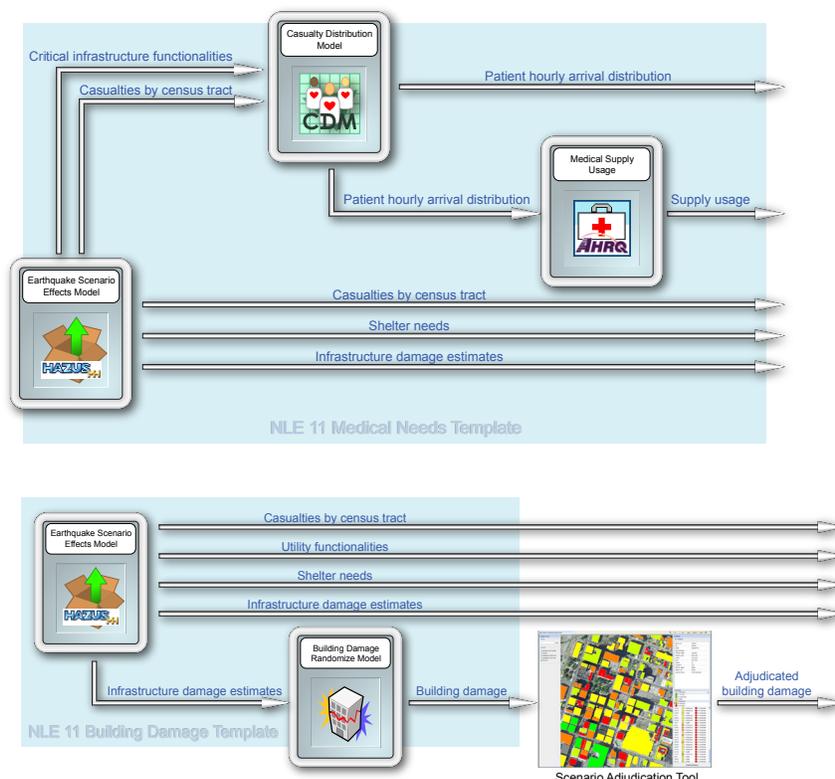
Currently, the NESC intends to use SUMMIT to support the National Level Exercise (NLE) program, while several FEMA exercise series are under consideration for pilot usages of SUMMIT. These pilots will allow the emergency management community to work with SUMMIT and begin to more intensely leverage M&S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

SUMMIT links models to create scenario data for earthquake 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 earthquake scenario, SUMMIT links models and data through two templates. In the earthquake building damage template, SUMMIT links FEMA HAZUS model outputs to a casualty distribution model and the AHRQ Hospital Surge Model. Casualties from HAZUS are distributed over time to the nearest undamaged hospitals, and then the Health and Human Services AHRQ Hospital Surge Model calculates medical needs (staffing, supplies, hospital census) for all hospitals and medical centers in the region of interest.

If building footprint data is available, SUMMIT can model building damage at the individual building level in the earthquake building damage template. This template links the HAZUS building damage probabilities and building inventory to a building damage random assignment model. These data can then be adjudicated with exercise planners using the SUMMIT scenario adjudication tool.

In addition, SUMMIT extends the HAZUS building damage data capability by computing collapsed building probabilities, by census tract, for all regions of interest.



SUMMIT Capabilities and Products: Earthquake Exercises

Medical surge data for all hospitals and medical centers in region of interest

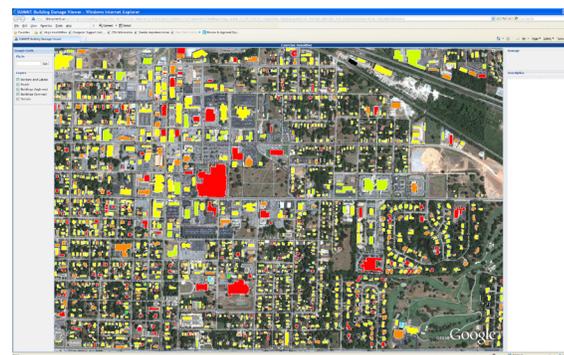
County	Minor	Delayed	Immediate	Expectant	Affected	Req Med Care
1 Adams	0	0	0	0	0	0
3 Alexander	40	8	1	2	50	11
41 Bond	0	0	0	0	0	0
5 Brown	0	0	0	0	0	0
6 Calhoun	0	0	0	0	0	0
8 Cass	0	0	0	0	0	0
8 Christian	0	0	0	0	0	0
10 Clark	0	0	0	0	0	0
11 Clay	0	0	0	0	0	0
11 Clinton	0	0	0	0	0	0
12 Coles	0	0	0	0	0	0
13 Crawford	0	0	0	0	0	0
14 Cumberland	0	0	0	0	0	0
15 Edwards	0	0	0	0	0	0
16 Effingham	0	0	0	0	0	0
17 Fayette	0	0	0	0	0	0
18 Franklin	1	0	0	0	1	0
19 Fulton	0	0	0	0	0	0
20 Gallatin	1	0	0	0	1	0
21 Greene	0	0	0	0	0	0
22 Hamilton	0	0	0	0	0	0
23 Hancock	0	0	0	0	0	0
24 Hardin	0	0	0	0	0	0
25 Jackson	6	1	0	0	7	1
26 Jasper	0	0	0	0	0	0
27 Jefferson	0	0	0	0	0	0
28 Jersey	0	0	0	0	0	0
29 Johnson	1	0	0	0	1	0
30 Lawrence	0	0	0	0	0	0
31 McDonough	0	0	0	0	0	0
32 Macoupin	0	0	0	0	0	0
33 Madison	3	0	0	0	3	0
34 Marion	0	0	0	0	0	0
35 Mason	0	0	0	0	0	0
36 Massac	41	8	1	2	52	11
37 Menard	0	0	0	0	0	0
38 Monroe	0	0	0	0	0	0
39 Montgomery	0	0	0	0	0	0
40 Morgan	0	0	0	0	0	0
41 Moultrie	0	0	0	0	0	0
42 Peoria	0	0	0	0	0	0
43 Perry	0	0	0	0	0	0
44 Pike	0	0	0	0	0	0
45 Pope	1	0	0	0	1	0
46 Pulaski	29	6	1	1	36	7
47 Randolph	1	0	0	0	1	0
48 Richland	0	0	0	0	0	0
49 St Clair	6	1	0	0	7	1
50 Saline	2	0	0	0	2	0

Casualty counts by county within region of interest

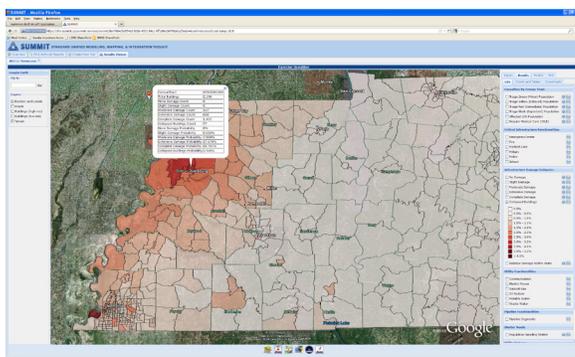
Fac ID	County	Name	Address	City	Latitude	Longitude	Census Tract	Total Casualties	Total Deaths	Total Injuries		
41	49	PUTNAM	COOKVILLE REGIONAL MEDICAL CENTER	340 WEST FIFTH STREET	COOKVILLE	36.588218	-85.58842	4714200000	247	175	227	4
42	43	HOWARTH	NORTHWEST MEDICAL CENTER	200 NORTHWEST CORNER	SPRINGFIELD	36.845026	-86.981784	4714200000	100	17	80	3
43	43	RUTHERFORD	MOORE TENNESSEE MEDICAL CENTER	600 NORTH HIGHLAND AVENUE	MURFREESBORO	35.888820	-86.381967	4714200000	286	205	263	4
44	43	RUTHERFORD	STONERIDGE MEDICAL CENTER	200 STONERIDGE BOULEVARD	SARASOTA	35.571039	-85.569719	4714200000	75	53	45	4
45	44	SHERIFF	SANIT FRANCIS HOSPITAL	2986 KATE BOND ROAD	SMARTTLET	35.201957	-89.801000	4715300000	100	71	7	900
46	45	SHERIFF	SAFFERT MEDICAL HOSPITAL	COLLEENWILL 1200 WEST POPULAR AVENUE	COLLEENVILLE	35.069489	-89.784533	4715700000	61	49	14	1403
47	45	SHERIFF	SAFFERT MEDICAL HOSPITAL	6205 POPULAR AVENUE	GERMANTOWN	35.050468	-89.827860	4715700000	1551	1101	1117	1004
48	47	SHERIFF	SAFFERT MEDICAL HOSPITAL	1603 WALNUT GROVE ROAD	MEMPHIS	35.127766	-89.81366	4715700000	206	501	51	1574
49	45	SHERIFF	SAFFERT MEDICAL HOSPITAL	8225 HUMPHREYS BOULEVARD	MEMPHIS	35.127766	-89.81366	4715700000	142	89	9	554
50	49	SHERIFF	DELTA MEDICAL CENTER	1600 GETWELL ROAD	MEMPHIS	35.063525	-89.81491	4715700000	249	173	18	1105
51	50	SHERIFF	HEALTHCARE REHABILITATION HOSPITAL	1420 WESTERN HEAVEN HIGHWAY	MEMPHIS	35.217325	-89.92565	4715700000	40	28	1	60
52	51	SHERIFF	HEALTHCARE REHABILITATION HOSPITAL	282 LINDEN AVENUE	MEMPHIS	35.137859	-89.81317	4715700000	80	57	3	184
53	52	SHERIFF	LANSDOWN BEHAVIORAL HEALTH SYSTEM	290 BRIDGECREEK ROAD	MEMPHIS	35.262475	-89.72485	4715700000	15	11	1	60
54	51	SHERIFF	LE BONHEUR CHILDREN'S MEDICAL CENTER	50 NORTH DUNLAP STREET	MEMPHIS	35.148369	-89.81317	4715700000	225	160	10	634
55	54	SHERIFF	METHODIST NORTH HOSPITAL	290 WEST COLUMBIA HILL	MEMPHIS	35.262475	-89.81317	4715700000	151	101	72	4419
56	55	SHERIFF	METHODIST SOUTH HOSPITAL	1180 WINDLEY DRIVE	MEMPHIS	35.148369	-89.81317	4715700000	225	160	10	634
57	56	SHERIFF	METHODIST SOUTHWEST HOSPITAL	1400 LINDEN AVENUE	MEMPHIS	35.148369	-89.81317	4715700000	151	101	72	4419
58	57	SHERIFF	REGIONAL MEDICAL CENTER AT MEMPHIS	877 JEFFERSON AVENUE	MEMPHIS	35.142782	-89.81317	4715700000	631	448	29	1780
59	58	SHERIFF	SELECT MEDICAL HOSPITAL	3009 PARK AVENUE	MEMPHIS	35.069489	-89.827860	4715700000	39	28	2	121
60	59	SHERIFF	SHILOH REGIONAL MEDICAL CENTER	NC 158 HOSPITAL DRIVE	CANTHAGE	36.264108	-85.08724	4715900000	63	45	58	1
61	60	SUMNER	SUMNER REGIONAL MEDICAL CENTER	355 HORTONVILLE PINE	GALLATIN	36.267792	-86.433999	4716000000	145	109	87	3
62	61	SUMNER	HONORSVILLE MEDICAL CENTER	325 WEST SHAWNEE BLVD	CLACKAMINBOROUGH	43.148888	-86.12128	4716000000	110	78	66	5
63	62	SUMNER	PORTLAND MEDICAL CENTER	108 REDBUD DRIVE	PORTLAND	45.572429	-86.511007	4716800000	311	221	187	1
64	63	TROSBAND	TROSBAND MEDICAL CENTER	500 CHURCH STREET	HARTSVILLE	36.873961	-86.56111	4716800000	25	18	23	1
65	64	WARREN	RIVER PARK HOSPITAL	1300 SPARTA STREET	MCMINNVILLE	35.700017	-85.30284	4717900000	125	89	115	3
66	65	TROSBAND	TROSBAND MEDICAL CENTER	100 CALDWELL STREET	WINDYBROOK	36.873961	-85.30284	4717900000	25	18	23	1

Individual building damage*

*if building footprint data is available



Building damage probabilities by census tract



Website: www.dhs-summit.us



Homeland Security
Science and Technology

Piloted in conjunction with



FEMA



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