Developing symbology standards for emergency mapping

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Overview

Department of Homeland Security The contains many diverse organizations that produce or use maps in daily operation. Audiences for these maps range from geospatial analysts to the general public. While individual organizations have their own standards or conventions for map symbology, there is not a consistent set of symbols used across the entire Department.

INCIDENTS		NATURAL EVENTS	OPERATIONS		INFRASTRUCTURE		
civil disturbance incident	flammable gas	after shock	emergency medical	law enforcement operation	food retail	natural gas	irport
civil demonstrations	flammable liquid	avalanche	EMT station locations	ATF ATF ATF ATF Bur. Alcohol, Tobacco, Firearms & Explosives	grain storage	🛞 🛞 🛞 nuclear facilities	H H H bridge
civil displaced	flammable solid	earth quake epicenter	ambulance	border patrol	\$ \$ \$ banking finance & insurance	petroleum facilities	bus station
civil rioting	non-flammable gas	landslide	The second secon	Customs service	ATMs	Propane facilities	Lee Lee Lee Lee ferry terminal
criminal activity incident	organic peroxides	subsidence	health department	DEA DEA DEA DEA Drug Enforcement Administration	S S S banks	government site	helicopter landing site
bomb threat	oxidizers	volcanic eruption	B B B hospital	Department of Justice	👑 😹 🔛 bullion storage	military infrastructure	
bomb	radioactive material	volcanic threat	hospital ship	FBI FBI FBI FBI FBI Federal Bureau of Investigation	Image: State	😹 💽 military armory	maintenance facility
bomb explosion	spontaneously combustible	drizzle	D D D D medical facilities out patient			military base	port
looting	toxic gas	drought	The second secon	Prison	financial services	postal service infrastructure	a a a a a a a a a a a a a a a a a a a
poisoning	toxic and infectious	flood	R R R R Pharmacies	Secret service	Commercial infrastructure	Barrie Conter	rest stop
shooting	unexploded ordnance	fog	triage	TSA TSA TSA TSA Transportation Security Admin.	chemical plant	Description for the second sec	ship anchorage
fire incident	air incident	hail	emergency operation		firearm manufacturers	A	toll facility
whot spot	air accident	inversion	emergency collection evacuation point	US Marshalls	Firearm retailers	enclosed facility	traffic control point
non-residential fire	air hijacking	rain	emergency incident command center	Sensor operation	hazardous material production	open facility	Figure 1 Figure 1 traffic inspection facility
origin	marine incident	sand dust storm	emergency operations	5 🛞 🛞 🛞 🎯 biological sensor	be hazardous material storage	A A A A recreational area	🙈 💽 💽 tunnel
residential fire	marine accident	snow	emergency public information center	Chemical sensor	industrial site	religious institution	water supply infrastructure
school fire	marine hijacking	thunder storm	emergency shelters	() () () () () () () () () () () () () (Special needs infrastructure	
smoke	rail incident	tornado	emergency staging	🛞 🛞 🛞 🥨 nuclear sensor	R R pharmaceutical manufacturer	Ko Ko Ko adult day care	dam
special needs fire	rail accident	tropical cyclone	emergency teams	Contraction and the sensor sensor	Superfund sites	child day care	discharge outfill
wild fire	rail hijacking	tsunami	emergency water distribution center]	다. 다. 다. 다. coic release inventory	A R R R R R R R R R R R R R R R R R R R	小小 (小) (小) ground well
hazardous materia incident	l vehicle incident	bird infestation	emergency food distribution center	A A A A A A A A A A A A A A A A A A A	educational facilities	telecommunications	
chemical agents	vehicle accident	insect infestation	fire suppression operation	agricultural laboratories	College university	telecommunications	reservoir

To support increased information sharing across the Department, DHS S&T is sponsoring a project to document the current use of map symbols in different homeland security missions and to develop a repeatable process for expanding symbol sets to support new needs.

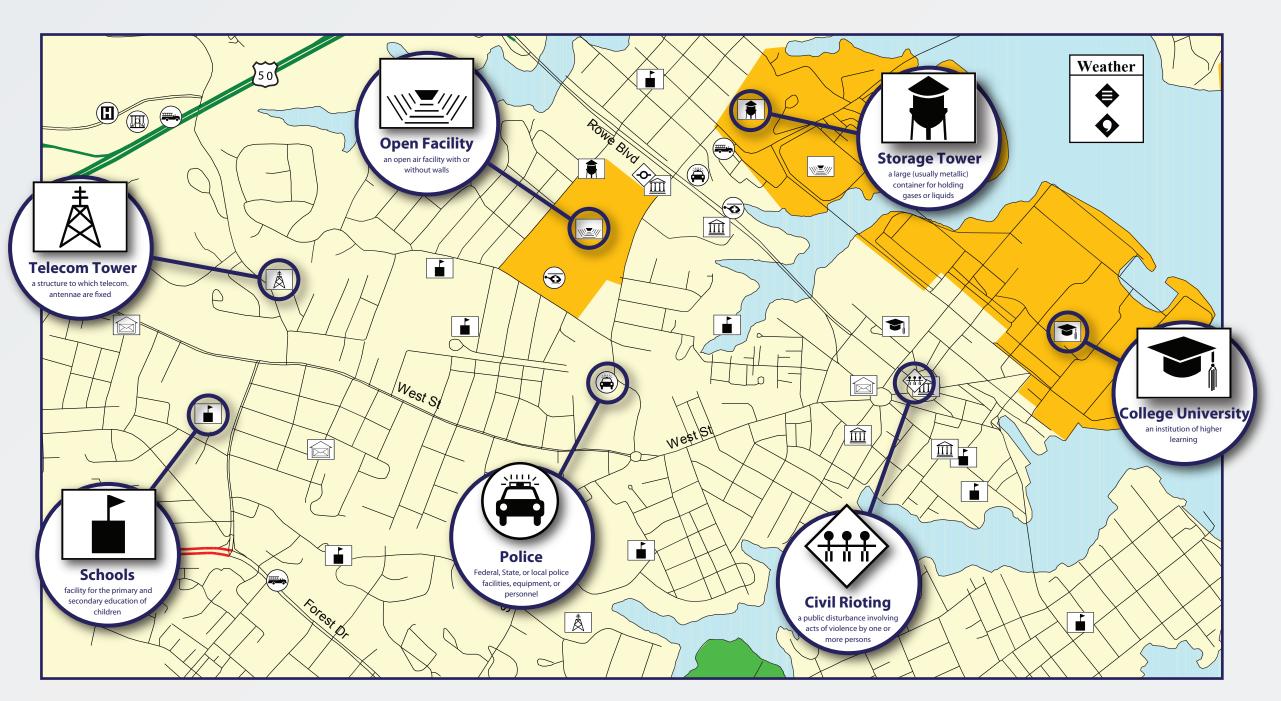




Figure 1: The ANSI INCITS 415 point symbology standard for emergency mapping developed by the Federal Geographic Data Committee Homeland Security Working Group (source: http://www.fgdc.gov/HSWG/)

Project Goals and Outcomes

An ANSI standard (ANSI INCITS 415-2006) was developed to address point symbology needs for some elements of the emergency management community, but it is unknown how widely it has been adopted and what barriers to adoption may exist. In addition, there are many map symbol needs not currently addressed by the standard.

The purpose of the current DHS S&T project is three-fold:

- Survey use of existing map symbols and symbol palettes and use of the existing standard to understand what needs exist
- Develop a repeatable process for adaption and expansion of the existing symbol standard to support domains and applications that it does not currently support

Figure 2: An example map using the ANSI INCITS 415 point symbology standard (source: http://www.fgdc.gov/HSWG/)

Project Team

This project is sponsored by DHS S&T Directorate's Command, Control, and Interoperability (CCI) Division through the Information Sharing Capstone IPT. The Geospatial Management Office is the business representative for this project and is acting as advocate for the needs of the component organizations. The research project team includes two researchers from the Department of Geography at Penn State University and a staff member from the DHS S&T-sponsored National Visualization and Analytics Center (NVAC) at Pacific Northwest National Laboratory. The team is being advised by DHS S&T and subject matter experts from DHS' geospatial working group.

Test the process on a selected domain or application

The end goal of this project is to develop a process and framework for development of new symbology. This process will help promote collaboration and information sharing at DHS.

You Can Participate!

Do you have interest and expertise in emergency mapping? Have you worked with the ANSI INCITS 415-2006 standard? Do you have your own standard symbology for making or using emergency maps?

We are currently soliciting input from professionals who make or use maps related to homeland security. If you are interested in participating, or know others in your organization who would like to be involved, please contact Dr. Anthony Robinson at arobinson@psu.edu.