Virtual Training: Implementing NAPSG's Incident Symbology

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Our Vision - A Nation of emergency responders and leaders equipped with the knowledge and skills in applying technology and data to change the outcome for survivors.

Our Mission - To equip emergency management & public safety with the knowledge, skills, and resources to apply decision support technology and data in enhancing preparedness and building a more resilient nation.
Provide awareness level training why and how to implement NAPSG’s standardized Incident Symbology Guideline and Symbol Set.
Learn what the Incident Symbology Guideline and Symbol Set is

Learn why and how to implement it in your agency to support a consistent language for communicating incident information

Learn about recent additions and enhancements to the Incident Symbology Guideline and Symbol Set

Gain access to valuable implementation tools and guidance

See how the symbology guideline and symbol set is applied in ArcGIS Desktop, ArcGIS Online, and other mapping tools
Key Terminology

- **Symbology** – the study or interpretation of symbols
- **Web Maps** – a map delivered by geographical information systems (GIS) that is both served and consumed on the World Wide Web
- **GeoPDFs** – Uses a geospatial PDF as a container for maps, imagery, and other data used to deliver an enhanced use experience such as the ability to widely share a map without access to desktop GIS and turn layers on and off to aid decision making
Over 400 stakeholders participated in a survey to inform incident symbol needs and requirements.

30 different local, state, and Federal agencies are represented on and participated in NAPSG’s Symbology Working Group.
NAPSG’s Incident Symbology Guideline is…

- A flexible and scalable framework for use in developing and applying map symbols

NAPSG’s Incident Symbol Sets are…

- Sets of specific symbols that apply the guideline and achieve symbol standardization for emergency response and management functions
• Initiated 5 years ago with focus on filling gaps for symbols used in pre-incident planning
  • Not a continuous effort due to resource constraints
• Iterative and grassroots process developed by and for local emergency responders
• Expanded to address harmonization of other incident symbology efforts and formal Standards
  • Hazard Symbols, Incident Symbols, and Pre-Incident Symbols
• Latest version of Incident Symbology Guideline and Symbol Sets will be available at www.napsgfoundation.org in the coming weeks
Consistently communicate incident information on maps

- Gain efficiencies in mutual aid planning and response
- Enhance operational coordination across organizations and jurisdictions

Common Language through Common Symbols
## What inputs were used?

### Symbol Sets Reviewed

<table>
<thead>
<tr>
<th>Symbol Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSI 415 and the FGDC HSWG Symbol Set</td>
</tr>
<tr>
<td>United Nations Office for the Coordination of Humanitarian Affairs Symbol Set</td>
</tr>
<tr>
<td>Canadian Emergency Mapping Symbology</td>
</tr>
<tr>
<td>Australasian All Hazards Map Symbology</td>
</tr>
<tr>
<td>National Wildfire Coordinating Group Symbol Set</td>
</tr>
<tr>
<td>Other Public Safety Symbol Offered by Esri</td>
</tr>
<tr>
<td>Noun Project</td>
</tr>
<tr>
<td>NFPA Standards</td>
</tr>
<tr>
<td>DOT Hazardous Materials Placard Standards</td>
</tr>
</tbody>
</table>
What is this?

- Wagon
- Aid Car
- Transport Unit
- Unit
- Truck
- Rescue
- Ambulance
- Medic
- Squad
- Rescue Ambulance
Emergency Responders Need Maps To:

- Find the problem they are going to
- Show where people and equipment are located that help solve the problem
- Identify hazards that can cause harm
- Inform the Public

Unit
Incident Command
Feature Location
Incident Symbols
Pre-Incident Symbols

Hazards
Identify hazards that can cause harm
Incident Symbols

- These symbols have a transparent (no fill) background
- Most commonly used to manage information during an active incident
- Also applicable for pre-scripted mission planning and other preparedness activities

**Infrastructure**
- Represents critical fixed features or Critical Infrastructure Protection. Noted by a rectangle with rounded corners

**Exposures**
  - The side visible in an incident. Define the section of the incident

**Unit Symbols**
- Symbols representing the semi-static to active location of a unit. Based on FEMA Resource Typing. Also based on the location of where the unit is “working”

**NIMS Command Structure Locations**
- Location of features that relate to the National Incident Management System Command Structure. Can be used for semi static mapping or if possible, active mapping of supervisors at an incident

- Water Tender
- Communications Unit
- Ambulance with icon
Symbol Modifiers

Dashed line if feature is “in the future”, “not in use”, or “planned”

- Clear text on the bottom
- Arrow on symbol to note direction
Preplanned Features

- Pre-incident symbols have a color background
- Derived from NFPA Standards

**Access Point**
- Access point and ways to access a building or incident area
- "Iconic" look stairway
- Knox or Key Box
- Attic Access

**Ventilation**
- Place to manage the exhaust of gases
- HVAC System
- Smoke Vent
- Vent Opening

**Utility Shutoffs**
- Location of where you shutoff utilities
- Compressed Natural Gas Shutoff
- Gas Shutoff
- Fuel Shutoff

**Assessment Features**
- Alarms and other
- Control Panel with Burglar Alarm Modifier
- Fire Alarm Reset Panel
- Public Alert alarm symbol with red triangle with blue circle
- Fire Department Connection with NFPA Icon

**Water Flow Control Valves and Water Sources**
- Water flow devices
- Post Indicator Valve with NFPA Icon
- Fire Department Connection with NFPA Icon
- Dry Chemical Reel station with NFPA Icon

**Detectors And Building Extinguishment Systems**
- Dry Chemical
- Duct Detector
- CO2 System
The most important symbols
Derived from several hazard features

- DHS “Incident” Symbology
- DOT HazMat Placarding
- NFPA 704

General Hazard
**Hazard Types**

- **DIAMOND** is the reserved shape for any emergency hazard.
- Symbols are variable other than shape.

**Human-Caused Threats / Hazards**
- Indicates events that happen at locations related to man-made features, intentional or accidental.
  - Radioactive Hazard
  - Child Abduction

**Natural Hazards**
- Indicates natural hazards events.
  - Fire
  - Flood
  - Earthquake

**HazMat Hazard**
- NFPA 704 symbols and DOT HazMat Placarding.
  - Acids
  - Corrosives
  - NFPA 704
  - Explosives

**Access Hazards**
- Features that indicate restricted or limited access of people or vehicles.
  - Narrow Access
  - Restricted Weight Access

**Specific Hazard**
- Ad-Hoc symbols used for indicating a local specific hazard.
  - Fall Hazard
  - Building Collapse
What is New in 2015?
Standardized Treatment:

- Diamond shape with black border
- Black icons
- Denotes specific hazards that occurred or that present a risk

Natural Hazards
Natural Event that is predicted of happening, is occurring, or is still impacting

Human Caused Threats/Hazards
An event that has some human related interaction that is either accidental or intentional
Natural Hazards (cont.)

- **Volcano**
  - Active or Still Impacting

- **Wind Storm**
  - Active or Still Impacting
  - Immediate Risk
  - Potential risk or watch

- **Tornado**
  - Active or Still Impacting

- **Snow Event (Blizzard)**
  - Dust
  - Sand
Human Caused Threats / Hazards

- Explosion
- Structural Collapse
- HazMat Release
- Child Abduction
- Fire
  - Commercial
  - Wildland
  - Education
  - Residential
  - Industrial
- Radiological
  - Nuclear Power Plant
Fire Station

Hospital

Police Station

EMS Station
Avalanche Warning
Blizzard Warning
Child Abduction Emergency
Civil Emergency Message
Dust Storm Warning
Earthquake Warning
Fire Warning
Public Alerts and Warnings (cont.)

- Hurricane Warning
- Law Enforcement Warning
- Nuclear Power Plant Warning
- Presidential Emergency Alert Notification
- Shelter in Place Warning
- Radiological Hazard Warning
- Tornado Warning
- Flash Flood Warning / Flood Warning
• Area Feature showing the impact area
• Feature label with the point symbol for flood

Point Only
Public Alerts and Warning
- May or may not have a specific location
- May be used to alert or warn the public
- May be used on public information maps
- May be used on situational awareness maps to track where alerts and warnings were issued.

Hazards
- Most often has a specific location
- Depicts a hazard or threat with either near term measurable risk of occurring or recently occurred with the impact skill present
- May be used on a broad spectrum of public safety maps
Used to indicate:
- Severity of an event
- Risk level predicted

Can apply to both points and polygons

Apply consistently to hazard-specific standard
### Color Ramp Example

<table>
<thead>
<tr>
<th>Image</th>
<th>Scale</th>
<th>Wind Speed</th>
<th>Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Icon" /></td>
<td>EF0</td>
<td>65 to 80</td>
<td>Minor Damage</td>
</tr>
<tr>
<td><img src="image2.png" alt="Icon" /></td>
<td>EF1</td>
<td>86 to 110</td>
<td>Moderate Damage</td>
</tr>
<tr>
<td><img src="image3.png" alt="Icon" /></td>
<td>EF2</td>
<td>110 to 135</td>
<td>Considerable Damage</td>
</tr>
<tr>
<td><img src="image4.png" alt="Icon" /></td>
<td>EF3</td>
<td>135 to 165</td>
<td>Severe Damage</td>
</tr>
<tr>
<td><img src="image5.png" alt="Icon" /></td>
<td>EF4</td>
<td>166 to 200</td>
<td>Extreme Damage</td>
</tr>
<tr>
<td><img src="image6.png" alt="Icon" /></td>
<td>EF5</td>
<td>&gt;200</td>
<td>Total Destruction</td>
</tr>
</tbody>
</table>

- **Hot Zone, Inner Perimeter, Fire Perimeter**
- **Warm Zone, Outer Perimeter, Transition Zone**

- EF0: 65 to 80 mph, Minor Damage
- EF1: 86 to 110 mph, Moderate Damage
- EF2: 110 to 135 mph, Considerable Damage
- EF3: 135 to 165 mph, Severe Damage
- EF4: 166 to 200 mph, Extreme Damage
- EF5: >200 mph, Total Destruction
Risks: Restricted Access/Routes

Emergency Route (Ingress/Egress)
(color/web)

Emergency Vehicle Access Only
(color/web)
Evacuation

Evacuation Routes - Symbol denotes type of incident (color/web)
Steady-state: line style green and symbols have operational treatment

Evacuation Routes - Symbol denotes type of incident (color/web)
Active state: line style red and symbols have “incident” treatment (diamond shape)
- PNG - for use on web maps
- True Type Fonts - for use with GIS software
- ESRI
  - Style sheets
  - Map Packages
  - Layer Files
- Sample Map Templates
Add a point to a map and change symbol

Demonstration Using Google Earth
Simple map for Google Earth (Everyone)
Create a simple map in AGOL
Create a paper map with sample
Use a web maps to edit and view data
- Easy and free to use
- Good for sharing small amount of data
Using ArcGIS Online for Rapid Incident Decision Support

Link to Web App Example and Template:
http://napsg.maps.arcgis.com/apps/webappviewer/index.html?id=c1278d5be10642c096007c2246d8989f
ESRI built platform

Benefits

- Maintain GIS Data
- Create various web based applications
- Can do analysis and simple map production
Sample on AGOL
Do need GIS user to modify
Consider
  - Audience
  - Detail
  - Task
Use US National Grid
• Fire and police units are dispatched to a suspicious container in the field on the 6000 block of New Hampshire

• First arriving units note container in a field with brownish gas emanating from it
Common Questions

- How do I use the hazard feature for the public alert feature?
- When is the web site available for the symbols?
- How do I create my own symbols?
  - Font Based
  - PNG
- Technical Implementation Guidance (version 1.0)
- Implementation Guidance for Operators (beta version)
- Map Templates and Example Workflows (version 1.0)
- Geodatabase Schema (version 1.0)
Eases search and discoverability
- Eases and automates use and integration
- Version 1 launch planned for early October
- Ongoing enhancements and features
What is next?

- Additional Symbols to Fill Gaps
  - Symbols for key HSIP data layers
  - Remaining public alert & warning event codes
  - Remaining critical infrastructure
  - Law enforcement event types

- Integration of symbol guideline and symbols into ANSI standards process

- Coordination with Esri and other solution provides

- Symbol Library and Tools
We want to know….What other priority symbol needs do you have?

Send an email to: rharned@publicsafetygis.org with your needs and/or if you would like to get involved with NAPSG’s Symbology Working Group
<table>
<thead>
<tr>
<th>Name</th>
<th>Agency</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brian Crumpler</td>
<td>Virginia Information Technologies Agency</td>
<td>VA</td>
</tr>
<tr>
<td>Xenophon (Yo) Gikas</td>
<td>LA City Fire Department</td>
<td>CA</td>
</tr>
<tr>
<td>Eric Fisher</td>
<td>Fairfax County Fire Rescue</td>
<td>VA</td>
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<tr>
<td>Soheila Ajabshi</td>
<td>Miami-Dade Emergency Management</td>
<td>FL</td>
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<td>Bill Burgess</td>
<td>NSGIC, Washington Liaison</td>
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<td>Tommy Presley</td>
<td>Huntsville Police Department</td>
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<td>Paul Morgan</td>
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<td>Rusti Liner</td>
<td>St. Tammany Parish Government</td>
<td>LA</td>
</tr>
<tr>
<td>Vanessa Glynn-Linaris</td>
<td>National Parks Service</td>
<td>AZ</td>
</tr>
<tr>
<td>Mike Domingue</td>
<td>New Hampshire National Guard</td>
<td>NH</td>
</tr>
<tr>
<td>John McKenna</td>
<td>New York City Police Department</td>
<td>NY</td>
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<tr>
<td>Rusty Russell</td>
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<tr>
<td>Larry Fox</td>
<td>Mount Laurel Fire Department</td>
<td>NJ</td>
</tr>
<tr>
<td>Pablo Lee</td>
<td>Seattle Police Department</td>
<td>WA</td>
</tr>
<tr>
<td>Robert Bingham</td>
<td>FBI Joint Terrorism Task Force</td>
<td>AL</td>
</tr>
<tr>
<td>Lori Peltz Lewis</td>
<td>US Forest Service (NWCG Liaison)</td>
<td>CA</td>
</tr>
<tr>
<td>Chris Renshaw</td>
<td>University of Connecticut Fire Department</td>
<td>CT</td>
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Thank You!