NAPSG Symbology Working Group

November 14, 2019

Hosted by National Alliance for Public Safety GIS (NAPSG) Foundation

napsgfoundation.org | @napsgfoundation
Agenda

1:00  Introductions
1:10  Mission, Background, & Recent Updates
1:45  Symbology Working Group: Membership & Impact
2:00  Incident Symbology Framework & Guideline
2:20  Break
2:30  Post-Incident Review
3:00  Content Needs & Feedback
3:30  Usage Needs & Feedback
Introductions

- Name
- Agency or Organization
- (If you’re willing) the reason you chose to come to this session
Mission, Background, & Recent Updates
Purpose of NAPSG Symbology

• Consistently communicate incident information on maps
• Gain efficiencies in mutual aid planning, readiness, and response
• Enhance operational coordination across agencies, jurisdictions, and all levels of government
• Address needs for first responders for daily preparedness efforts and incident response

Common Incident Language through Common Symbols

- Hazards
- Infrastructure
- Public Alert
Key Terminology

- **Symbology** – the study or interpretation of symbols
- **PNG** – Portable Network Graphic is a raster graphics file format that supports lossless data compression
- **SVG** – Scalable Vector Graphic is an XML-based vector impact format for two-dimensional graphics with support for interactivity and animation
- **Style Sheet** – A file that provides style and layout information within an XML or HTML document.
Symbol Library Tool Capabilities

• Example Geodatabase Schema

• Example REST Features Services for Symbols by Group

• Symbols organized into commonly understood groups to form ‘Symbol Packages’. Packages contain symbols in the following formats for flexibility and scalability:
  • STYLE File
  • Fonts
  • SVG (Scalable Vector Graphic)
  • PNG 16, 32, 64, 256

• Ability to create customized “symbol packages” by selecting several individual symbols
Symbol Library Volume and Usage

• 940+ symbols across 13 categories
  • Access Hazards
  • Hazard
  • Hazardous Materials
  • Human Caused Hazards
  • Incident
  • Infrastructure
  • Lifelines
  • Natural Hazards
  • NIMS Positions
  • Preplan
  • Public Alert
  • Resources
  • Lifelines

• 3,400+ unique users in past 12 months
History

- **2008**
  - Formed Incident Symbology Working Group
  - Support NIMS, ICS, and facility pre-incident planning

- **2009**
  - Released first symbol set and framework

- **2010-2011**
  - Worked w/first responder agencies to implement symbology.

- **2012**
  - Expanded Incident Symbol Set and Framework

- **2015**
  - Conducted National Survey on needs and requirements
  - Implemented findings

- **2016**
  - Developed initial ~100 HIFLD symbols, USAR Symbols, and IPAWS event code symbols
  - Released first version of Symbol Library Tool

- **2017**
  - Developed additional ~50 HIFLD symbols
  - Standardized framework for law enforcement

- **2018**
  - Officially adopted by HIFLD Subcommittee

- **2019**
  - Developed icons for 7 Community Lifelines and 28 Lifeline Components
Symbology in Action

- Hurricanes Dorian and Barry
  - National Incident Management Team Dashboard
  - State of South Carolina
- FEMA Community Lifeline Dashboard
Recent Updates: Symbols for Community Lifelines

• Developed **7 Community Lifeline symbols** and **28 Community Lifeline Component symbols** using NAPSG stakeholder feedback process

• Symbology Working Group for initial design and vetting

• Broader feedback sought via 20,000 Member network & social media campaign

• FEMA provided final review and approval

• Published base symbols and status (color) symbols - both with and without labels to Symbol Library Tool
Symbology Working Group

Membership & Impact
Symbol Development Process

1. NAPSG Drafts (or Revises Existing) Symbols
2. SWG Reviews & Recommends Updates to Symbols
3. Symbols Published to Symbology Tool
4. Symbols Reviewed, Tested, & Validated
5. Stakeholders Vet Symbols
6. Real-World Validation

15
Symbology Working Group Impact

• The Symbology Working Group heavily impacts symbol design.
• Examples:

  Points of Distribution
  ![Draft Option](image1) ![Final Symbol](image2)

  Health & Medical Lifeline
  ![Draft Option](image3) ![Final Symbol](image4)

  Oil and Natural Gas Wells
  ![Draft Option](image5) ![Final Symbol](image6)

  Communications Lifeline
  ![Draft Option](image7) ![Final Symbol](image8)
Interested in Becoming an SWG Member?

Visit bit.ly/21hWf8u
Incident Symbology Framework & Guideline
Standards Philosophy: Challenges

- Different public safety disciplines adopt standards exclusively from specific Standards Developing Organizations (SDOs)
- SDO-based standards are sometimes not capable of rapid updating to meet evolving needs and requirements resulting from recent incidents and technology developments
- Many require users to purchase copies of standards, making implementation cost prohibitive
- Some SDOs require working group members to pay in order to participate in the process
Standards Philosophy: Solutions

✓ Participate in and support multiple SDO-based standards development and maintenance efforts across public safety disciplines and technology standards bodies

✓ Solicit stakeholder input that reflects a truly national perspective through focused and no-cost Task Forces and Working Groups

✓ Fill critical gaps that require more nimble and agile solutions and tools

✓ Develop and disseminate tools to the community that enable and expedite implementation
Why a Guideline?

• A guideline is flexible and scalable
• Creates a framework to standardize
• Allows for the creation of symbols where gaps exist

EXAMPLE: Public Alerts and Warnings

<table>
<thead>
<tr>
<th>Reserved Shape</th>
</tr>
</thead>
</table>
| The TRIANGLE is the reserved shape for any public alert and warning symbol. Public alert and warning symbols have three primary uses:
1) Integrated into wireless emergency alert content to provide a complimentary visual of the event type and/or action, as a means to optimize message content for people with disabilities and limited English proficiency
2) Use in public safety situational awareness applications to track where and when public alerts and warnings were issued during an event
3) Use in public information maps where public alerts and warnings were issued.
Notes:
• Most public alert and warning symbols apply the icon used in the emergency hazard symbol to achieve consistency in communicating incident information.
• IPAWS live feed is publicly available for use in public safety mapping applications at: [https://gii.dhs.gov/ags/rest/services/GEP/IPAWS/MapServer/0](https://gii.dhs.gov/ags/rest/services/GEP/IPAWS/MapServer/0)

<table>
<thead>
<tr>
<th>Modifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>The color of the triangle can be modified to indicate types of public alerts. Below is the color schematic for each alert type. The color values for each correspond to the RGB and HEX values above in section 3.</td>
</tr>
<tr>
<td>Statements</td>
</tr>
<tr>
<td><img src="triangle_blue.png" alt="Statement Triangle" /></td>
</tr>
</tbody>
</table>
What is this?

- Wagon
- Aid Car
- Transport Unit
- Medic
- Squad
- Unit
- Truck
- Rescue
- Ambulance
- Rescue Ambulance
Same Information, Different Rendering

Storm Surge Scenarios
- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
- Levee protected areas

Storm Surge Zones
- Tropical Storm
- Category 1
- Category 2
- Category 3
- Category 4
- Category 5
Hazards

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

Man Made Hazards
Indicates events that happen at locations related to man-made features. Intentional or accidental.
- Radioactive Hazard
- Child Abduction

Natural Hazards
Indicates natural hazard events
- Flood
- Fire
- Earthquake

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

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

Specific Hazard
Ad-Hoc symbols used for indicating a specific local hazard
- Building Collapse
- Fall Hazard
• RECTANGLE with Rounded Corners is the reserved shape for any infrastructure
• Symbols are variable other than shape
• Based on HIFLD Infrastructure Layers
  • Not Exclusively HIFLD

**Infrastructure**

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

- Electric Power Generating Plants
- Hospitals
- American Red Cross Chapter Facilities
- Bridges
Public Alert

- TRIANGLE with Rounded Corners is the reserved shape for any Public Alert
- Symbols and color are variable

**Warning**
Symbol indicating a “Warning” event

**Watch**
Symbol indicating a “Watch” event

**Statement**
Symbol indicating a “Statement”

Storm Surge
Break
In recent disasters...
  • Flooding in the Midwest (March 2019)
  • M 7.1 Earthquake in California (July 2019)
  • Hurricane Barry (July 2019)
  • Hurricane Dorian (August - September 2019)
  • Others

...what challenges or headaches did you face related to symbology?
Content Needs & Feedback

• **What challenges or headaches do you face related to symbology?**
  • What symbology needs do you have?
  • Have you encountered problems with existing symbols?
  • What non-disaster symbols are needed (e.g., special events)?
  • How can we better collect feedback and suggestions from the community?
    • Would a comment or voting mechanism be useful?
    • What should the vetting process be for suggested symbols?
  • What active symbology efforts should we collaborate with?
    • Current collaboration with DOD, EMSINA (International), FEMA, USAR community, etc.
Usage Needs & Feedback

• What challenges or headaches do you face related to *using* symbology?

Current delivery methods:

• Example Geodatabase Schema
• Example REST Features Services for Symbols by Group
• Symbols organized into commonly understood groups to form ‘Symbol Packages’. Packages contain symbols in the following formats for flexibility and scalability:
  • STYLE File
  • Fonts
  • SVG (Scalable Vector Graphic)
  • PNG 16, 32, 64, 256
• Ability to create customized “symbol packages” by selecting several individual symbols
Thank you!

Charlotte Abel cabel@publicsafetygis.org
Chris Rogers crogers@publicsafetygis.org