

The Power of the Crowd

Emergency Manager's Guide to Crowdsourcing for Situational Awareness



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Justin Kates- Director Nashua, NH Office of Emergency Management

Rob Neppell - CEDR Digital Corps.

Erin Arkison - GIS Corps

Session OBJECTIVES



By the end of this session you will:

- Understand crowdsourcing and its application to emergency management
- Understand why you should consider implementing a crowdsourcing program in your organization
- Become familiar with and contribute to the resource [CrowdsourceEM.org](https://www.crowdsourceem.org) by adding your input to the brainstorming cards
- Answer questions that will help you understand how to build your own crowdsourcing program.

Why Crowdsource?

Whole Community Approach

FEMA's Citizen Responder Training: "You are the Help, Until Help Arrives"



Priscilla

@MaeMee



#Houston Hang on. The CAJUN NAVY is already activated and on the way.

3:28 PM - Aug 27, 2017

♡ 7,618 💬 3,306 people are talking about this



Houston Police ✓

@houstonpolice



Anyone with a boat who can volunteer to help please call 713-881-3100 #HurricaneHarvey

7:52 PM - Aug 27, 2017

♡ 35.4K 💬 43.6K people are talking about this



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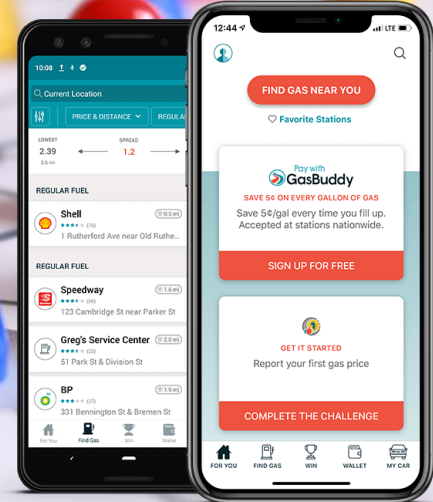


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Crowdsourcing is a participatory approach for gathering ideas, content, or services by soliciting contributions from a large group of people.



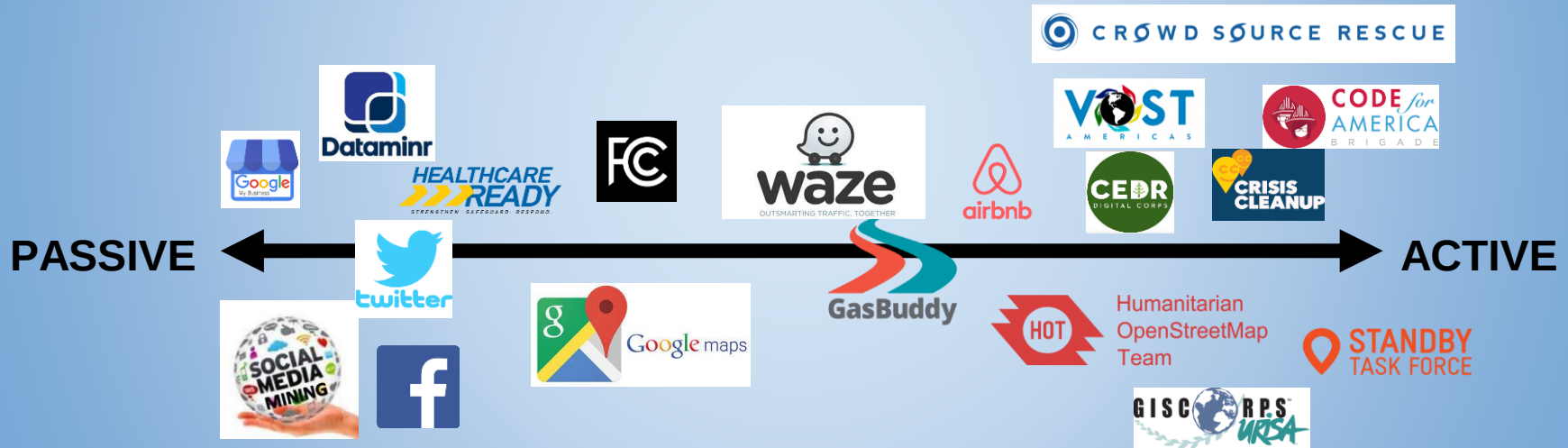
Where does Crowdsourced Data come from?

- Social Media
- Internet of Things
- First Person accounts
- Websites / Internet
- News / Media
- Imagery
- Sensors



Types of Crowdsourcing

Spectrum of Passive to Active Public Engagement



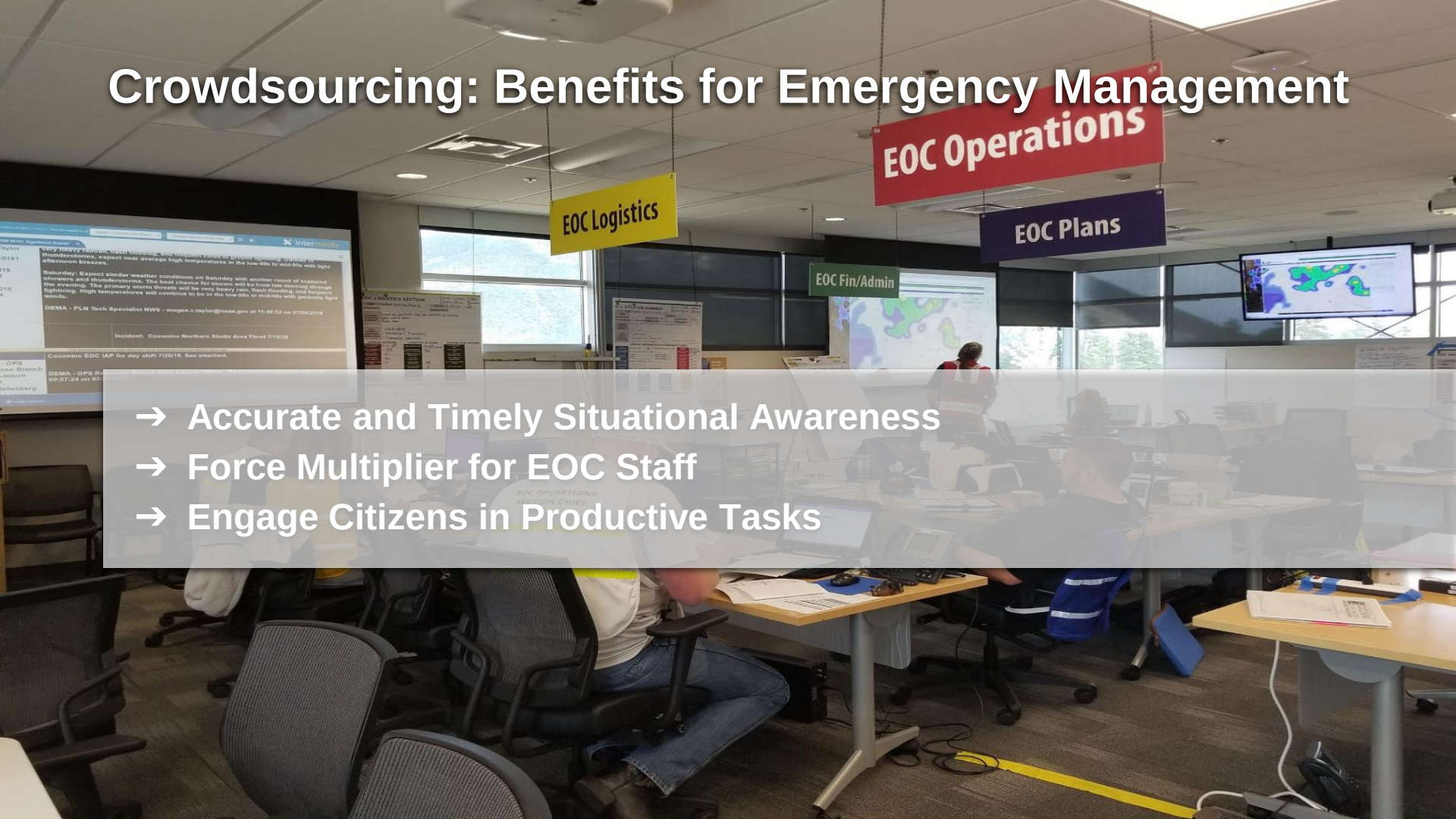
Typical Misconceptions

- Crowdsourced data is not accurate, not vetted, and not high-quality
- Crowdsourcing is just social media monitoring and listening



Crowdsourcing: Benefits for Emergency Management

- Accurate and Timely Situational Awareness
- Force Multiplier for EOC Staff
- Engage Citizens in Productive Tasks



Using the Crawl, Walk, Run Approach

People

-  **Crawl**
 - Collateral duty of existing staff
-  **Walk**
 - Part time role of staff member
-  **Run**
 - Dedicated crowdsourcing coordinator

Crawl, Walk, Run- Crowdsourcing Maturity Model

People and Process	• Adoption • Training • Staffing • Agreements • EOC/ICS Placement • Digital Volunteers
Governance	• Documentation • Data Standards • Policies
Technology	• Information Products • Tools and Licenses • Applications • System Integration

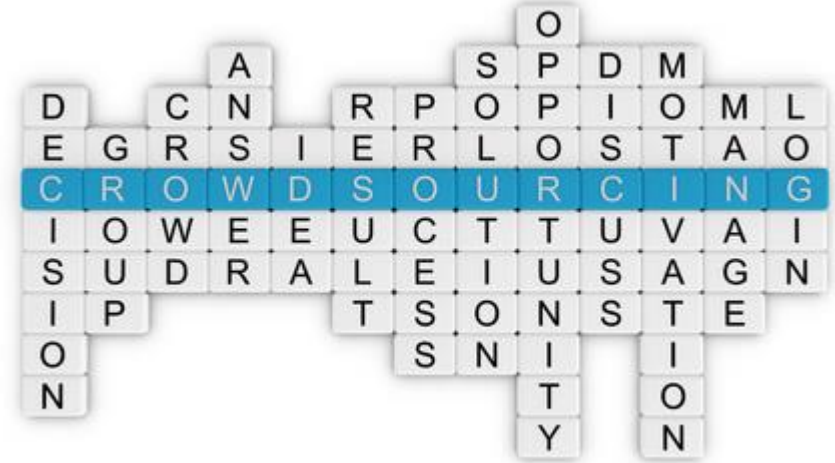
The toolkit is designed to be progressive, building capability over time. Start small, think big.



Crowdsourcing Business Case

- Why do you want to use crowdsourcing at your organization?
- What problems are you trying to solve?
- What will be the Return on Investment?
- What are the challenges or barriers to implementing crowdsourcing?

DHS Science and Technology published the [Social Media Business Case Guide](#) which you can adapt to build your crowdsourcing business case.





CEDR Digital Corps

Crowd Emergency Disaster Response

Rob Neppell

Technology Innovation & Incident Response Lead

- Technology professional with 25+ years experience in software development, systems implementation and technology consulting
- Active in early days of “social media”: created the first directory / ranking of weblogs and developed some of the first tools for social media analytics
- Began focusing on DR / ER in 2017 after a friend self-deployed to Hurricane Harvey and reported back on the numerous information challenges he encountered



Rob Neppell

@8bitmeme Follows you

Technologist, father, social media pioneer:
aka N.Z. Bear, Blog Ecosystem guy.
Focusing on effective use of tech in
disaster response & emergency
management.

📍 Orange County, CA

<https://twitter.com/8bitmeme>

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CEDR Digital Corps

Crowd Emergency Disaster Response

Who we are

- 501c3 all-volunteer nonprofit incorporated in early 2018 after previous spontaneous responses during Hurricanes Maria, Irma, and Harvey
- "Digital helpers during disasters"

What we do

Our mission is to identify and address information gaps during disasters by:

- Gathering, organizing, and validating lifeline EEI's and other critical information via crowdsourcing (human volunteers) and automated methods
- Amplifying official messaging via our social media platforms (esp. <https://twitter.com/cedrdigital>)
- Promoting better communication and collaboration between both formal and spontaneous volunteer organizations and official agencies
- Applying new technologies and innovations to develop more effective solutions to the challenges of EM/DR

How we activate

- "Self-activating" but welcome requests for assistance from official agencies
- Our primary activation criteria is identifying an information gap which we believe we have the capability to address effectively



CEDR Digital Corps

Crowd Emergency Disaster Response

Hurricane Shelter Crowdsourcing

Gathered information on shelter locations from county emergency management & other local sources via crowdsourcing and automated techniques.

Published as a publicly available ArcGIS layer:
https://services8.arcgis.com/X1w9TNdH7ukf6Awg/arcgis/rest/services/Shelters_CEDR_2019/FeatureServer

Storms: Florence, Michael, Barry, Dorian, Imelda, Karen

In partnership with: FEMA Crowdsourcing Unit



Hurricane Dorian Shelters



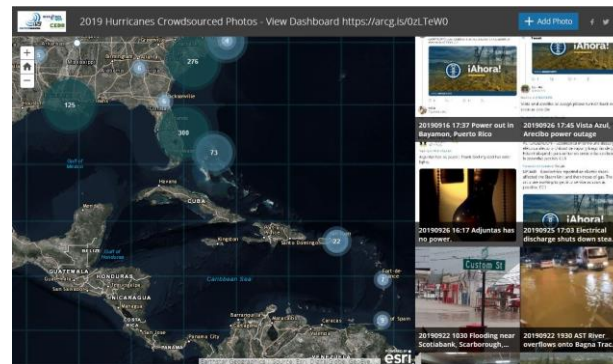
CEDR Digital Corps

Crowd Emergency Disaster Response

Hurricane Photo Story Map

In partnership with: NAPSG Foundation, GIS Corps

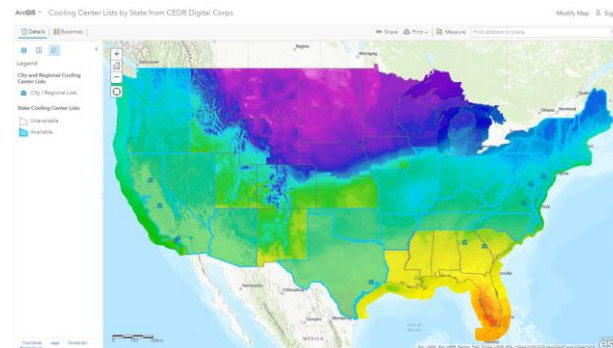
<https://napsig.maps.arcgis.com/apps/StoryMapCrowdsource/index.html?appid=11a2f86ad1eb4f428bf66f3327d24099>



Cooling Center Map

During the July 2019 heatwave, CEDR created a map with links to lists of cooling centers provided by state and local authorities nationwide.

<https://www.arcgis.com/home/webmap/viewer.html?webmap=b18d8ba598bb42d89f454c808465ad04&extent=-131.5862,17.4577,-48.969,56.2813>





CEDR Digital Corps

Crowd Emergency Disaster Response

Technology Innovation

CEDR seeks to identify how new and emerging technologies, platforms and tools can be applied to help the public and emergency management professionals during disasters.

As one example, this video explores the potential of a new way to communicate the geographic context of wildfires. The animation was created using Google Earth Studio, and provides a virtual 'flyover' of Oregon's Milepost 97 Fire in July 2019.

The video includes the fire perimeter, IR hotspots, and building footprint outlines (in light blue) from Microsoft's machine-learning generated open dataset.



Milepost 97 Fire - July 30th, 2019

<https://youtu.be/FAmC8YSGYtw>



Erin Arkison

Profession

- GIS Analyst, Oil & Gas Industry

Volunteer

- Alpha Search & Recovery - www.alphasar.org
 - Board of Directors
 - HRD K9 Handler - K9 Marshall
 - GIS Specialist
- GISCorps - Volunteer
 - 2018 Hurricane Crowdsourcing Project
 - Camp Fire Damage Assessment
 - 2019 Hurricane Crowdsourcing Project
 - MRA Mapping Project



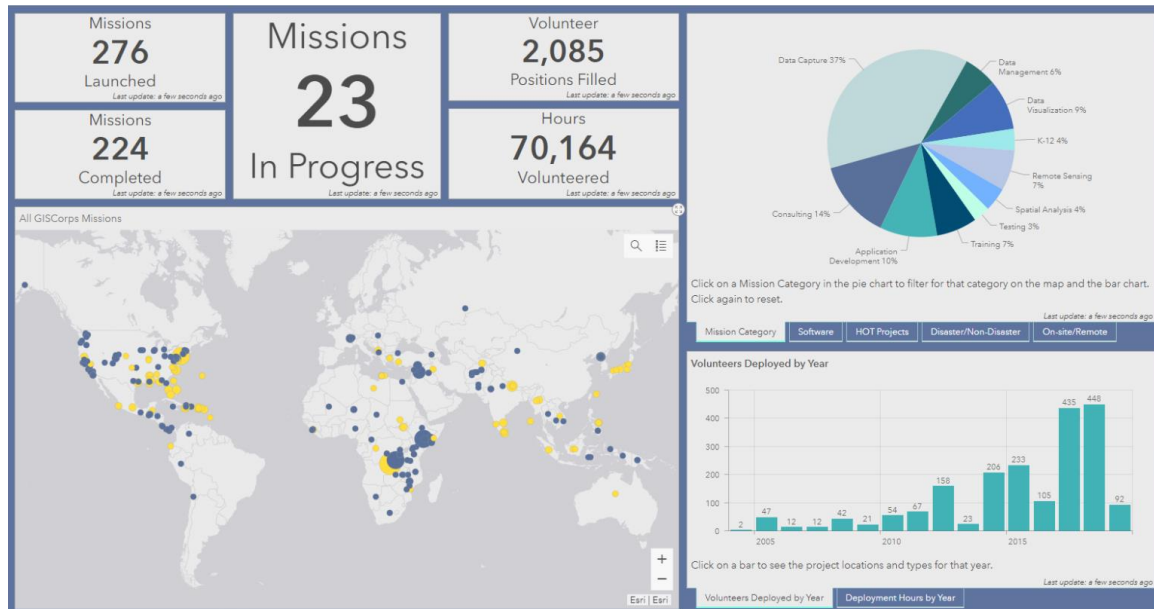


Who are we?

- 5,000 GIS professionals registered to volunteer across all specialties
- Since 2003, GISCorps has launched 276 missions and filled 2,078 volunteer positions in 74 countries. That amounts to over 70,000 volunteer hours contributed to date!

What do we do?

- “The mission of GISCorps is to coordinate short-term volunteer GIS services to communities in need worldwide”
- We vet volunteers to provide the most suitable and skilled GIS personnel for the task at hand.



How we work:

- Screen groups for consistency with our mission
- Develop job descriptions for recruitments
- Evaluate volunteers
- Put the Volunteers in contact with the Partner Agency
- Monitor and evaluate the outcome



How We Can Help

Preparedness

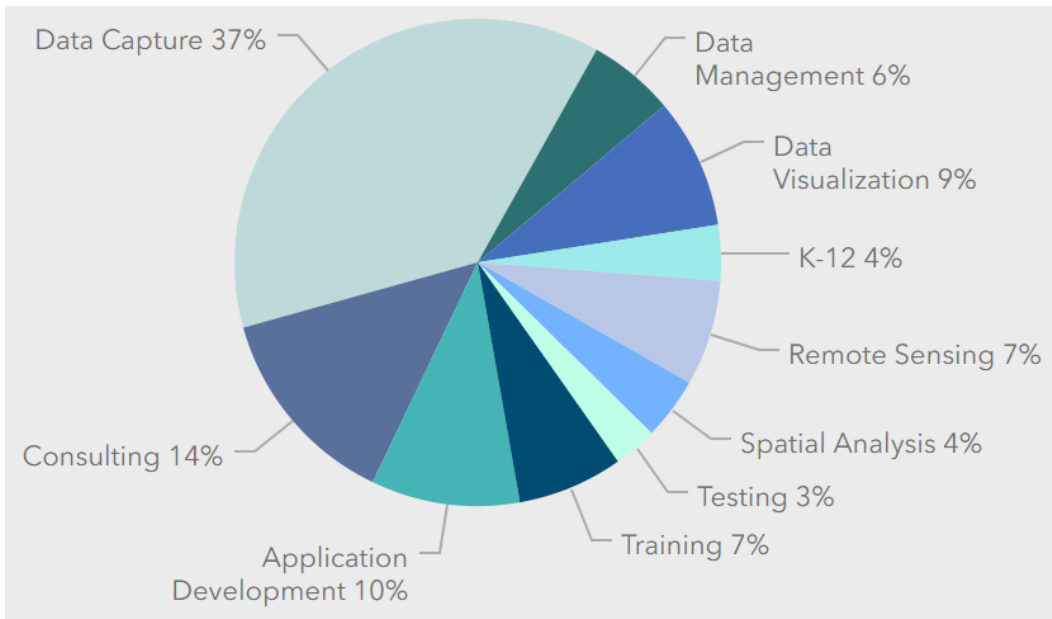
- Training & technical workshops
- Story maps & application development
- Building/designing/cleaning databases

Response

- Crowdsourcing for situational awareness
- Basic data entry/digitizing/geocoding

Recovery

- Damage assessment
- Image analysis
- Spatial analysis
- Cleaning databases/geocoding





2018/2019 Hurricanes Crowdsourced Photos Projects

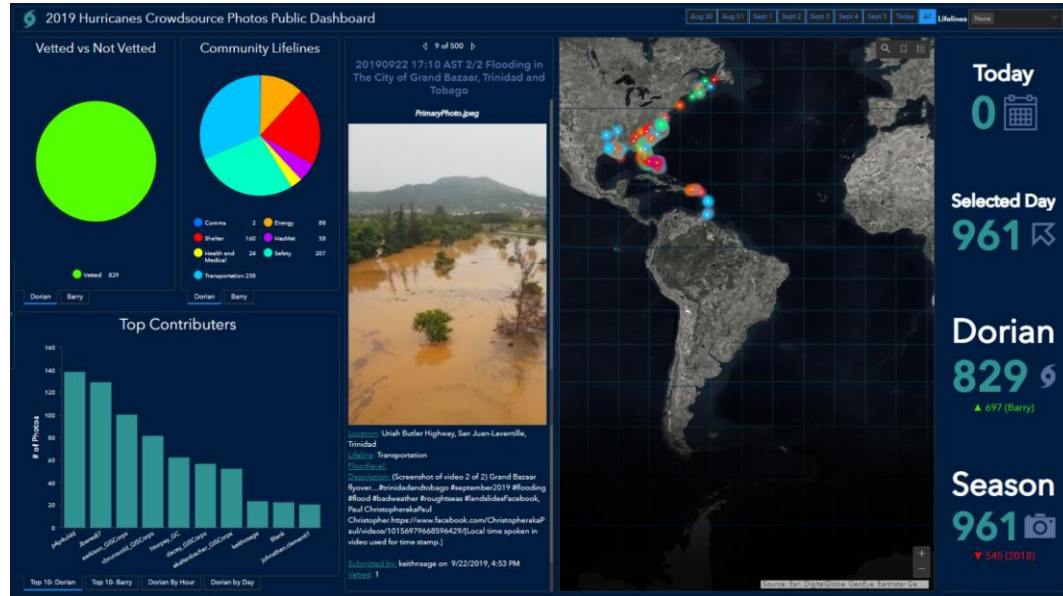
Since 2018, NAPSG and GISCorps have provided situational awareness by mapping crowdsourced photos during four hurricanes.

2018

- **Florence Stats:** 335 Hours - 911 Photos
- **Michael Stats:** 170 Hours - 597 Photos
- [Map & Photo Gallery:](https://arcgis.com/gallery/#/0eHq4j) <https://arcgis.com/gallery/#/0eHq4j>
- [Dashboard](https://arcgis.com/dashboard/#/Hnfb0) - <https://arcgis.com/dashboard/#/Hnfb0>

2019

- **Barry Stats:** 50 Hours - 132 Photos
- **Dorian Stats:** 362 Hours - 829 Photos
- [Map & photo Gallery:](https://arcgis.com/gallery/#/0Hj1XD) <https://arcgis.com/gallery/#/0Hj1XD>
- [Dashboard:](https://arcgis.com/dashboard/#/0zLTW0) <https://arcgis.com/dashboard/#/0zLTW0>



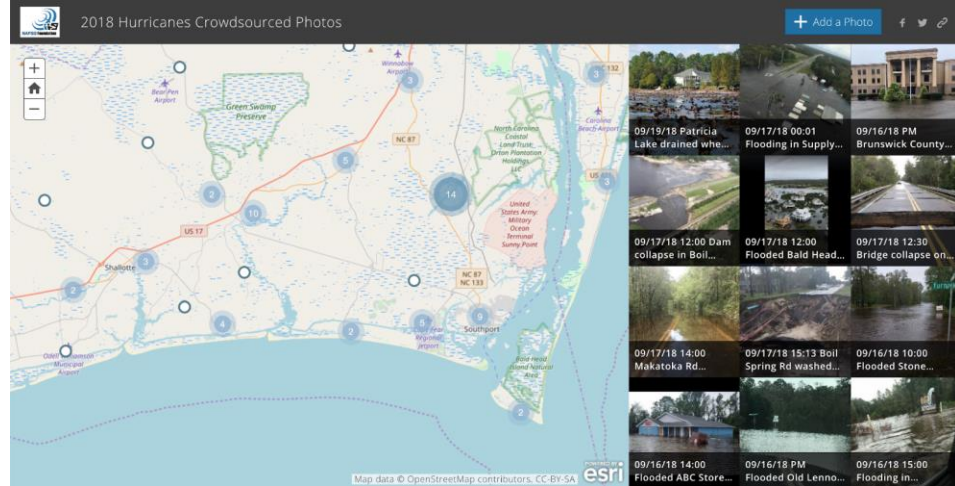
Crowdsourced Photos Project Workflow

Activation

- NAPSG requests support
- GISCorps activates their Admin Team
- GISCorps recruits volunteers
- NAPSG & GISCorps admins update data, applications, and workflow documentation
- GISCorps adds volunteers to Slack channels

Deployment

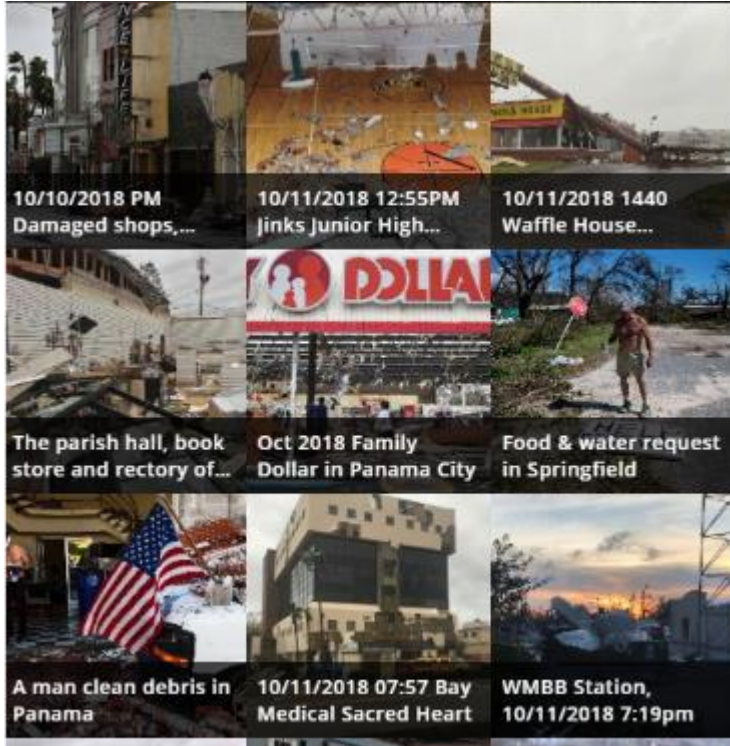
- Volunteers divide and conquer:
 - Some focus on mining social media and news outlets for timely and relevant photos
 - Others focus on geolocating and posting photos to the map
- Admins validate photos as they are posted, assign FEMA Community Lifelines to photos, and support volunteers in Slack channels



Challenges

Ongoing Issues

- Improving volunteer communication and participation
- Streamlining workflow to avoid duplication of effort and increase productivity
- Addressing software limitations
 - Crowdsense App no longer supported
 - Could not modify the data entry fields
 - Did not work with any other data collection apps like S123, Collector, etc.



Future Plans

Community Lifelines



Comms	2	Energy	88	Shelter	160
HazMat	38	Health and Medical	24	Safety	207
Transportation	238				

Plans for 2020 Hurricane Season

- New configuration: Survey123 integrated with ESRI's new Attachment Viewer photo gallery application
- Custom dashboards for separate agencies

Help us test our new configuration!

- Post photos of your pets, office, view, etc. to the new Survey!
- Please use this link or QR Code to post pictures:
<https://arcg.is/1n90Tb>
- Then check out the resulting photo map:
<https://arcg.is/1LuOaG>





Want to help? Need help?

Volunteer

- **GIS Professional** - Join the GISCorps and help with project in your area of expertise! Visit the website and sign up:
<https://www.giscorps.org/become-a-volunteer/>

Agency/NGO

- Visit www.giscorps.org to request volunteers
- Steps:
 - Complete the Volunteer Request form at <https://www.giscorps.org/request-volunteers/>
 - GISCorps Core Committee member will schedule a call to evaluate your project and define project requirements and goals
 - A GISCorps Core Committee member writes up a job description
 - GISCorps recruits the right GISCorps volunteers to accomplish your objectives

"We make a living by what we get. We make a life by what we give." -Winston Churchill

Discussion Point



- What area will crowdsourcing add the most value to your organization? (business case)

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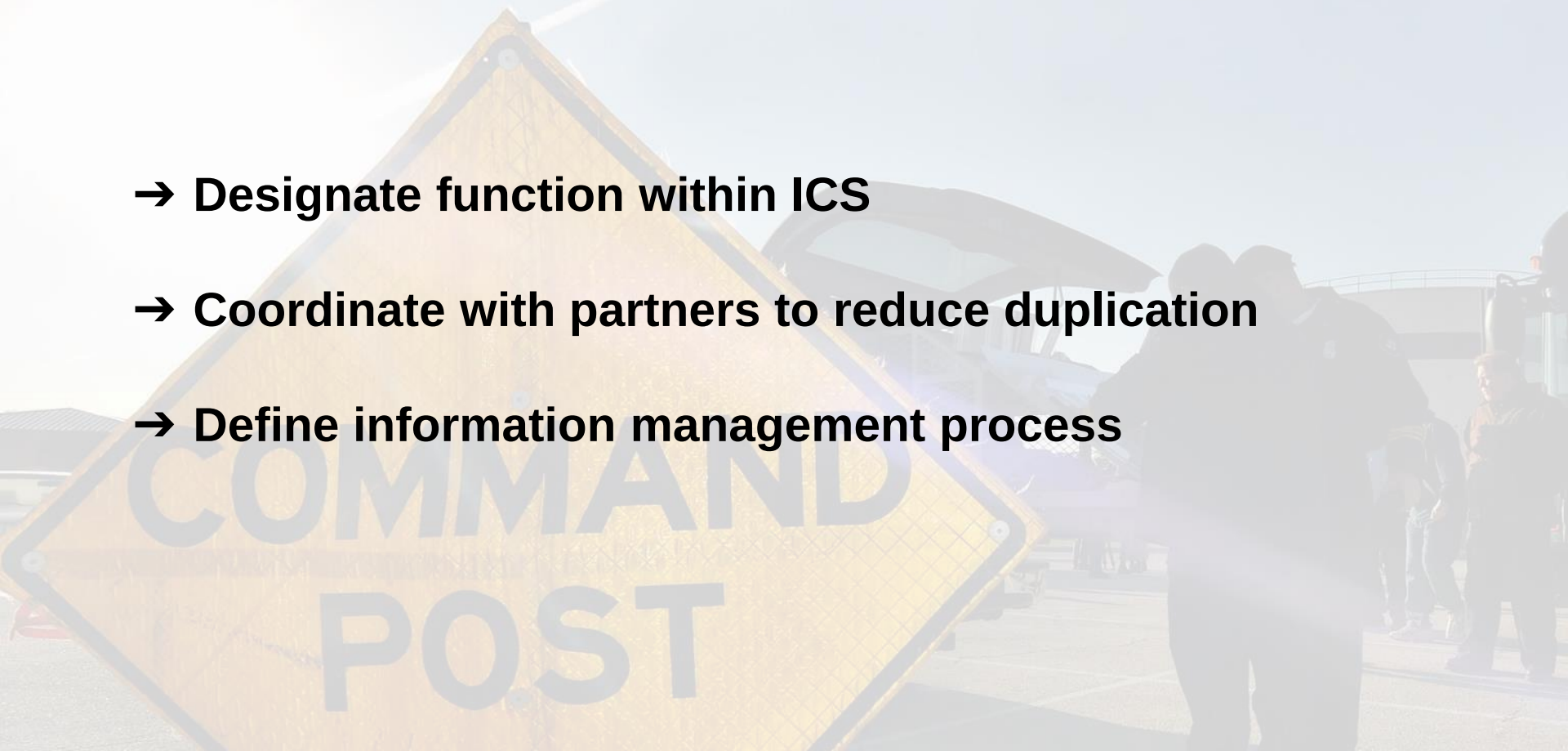
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Integrating Crowdsourcing

- Designate function within ICS
- Coordinate with partners to reduce duplication
- Define information management process

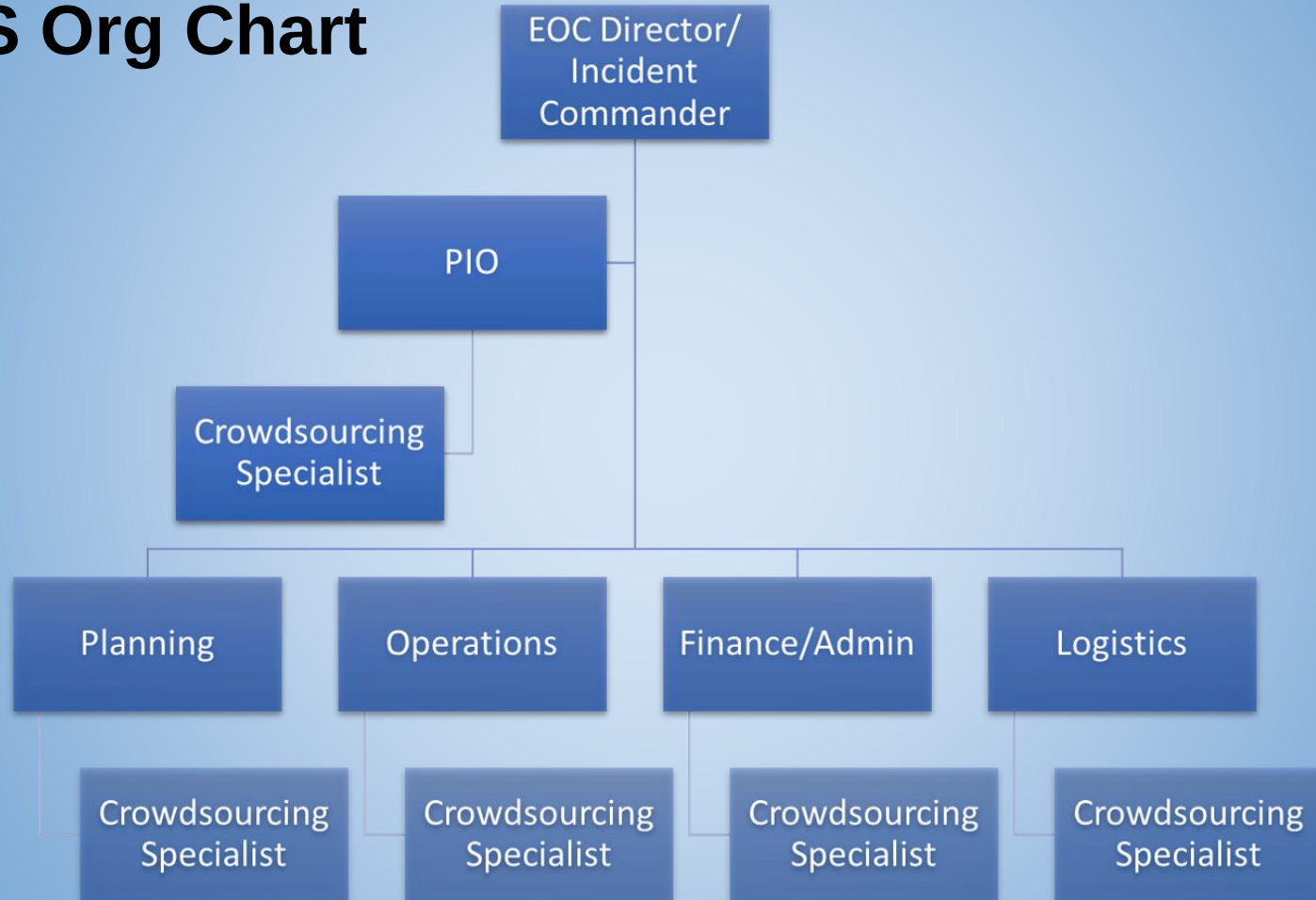


Crowdsourcing Program Management

Where does crowdsourcing best fit into your agency? Who will have the capacity to maintain and build the program?

- Collateral duty of existing staff?
- Part time role of staff member?
- Dedicated crowdsourcing staff member?
- Public Information/External Affairs/Communications
- Geographic Information Systems (GIS)
- Information Technology
- Watch Center/Dispatch

ICS Org Chart



Crowdsourcing Methodology for Data Collection

Define a process for how your organization will validate, share, and display crowdsourced data:

- Develop a strong data validation process
- Be transparent with the source(s) of crowdsourced data
- Use common data attributes and data standards
- When possible, develop products & tools that allow the opportunity for decision makers to compare traditional & crowdsourced data in one location



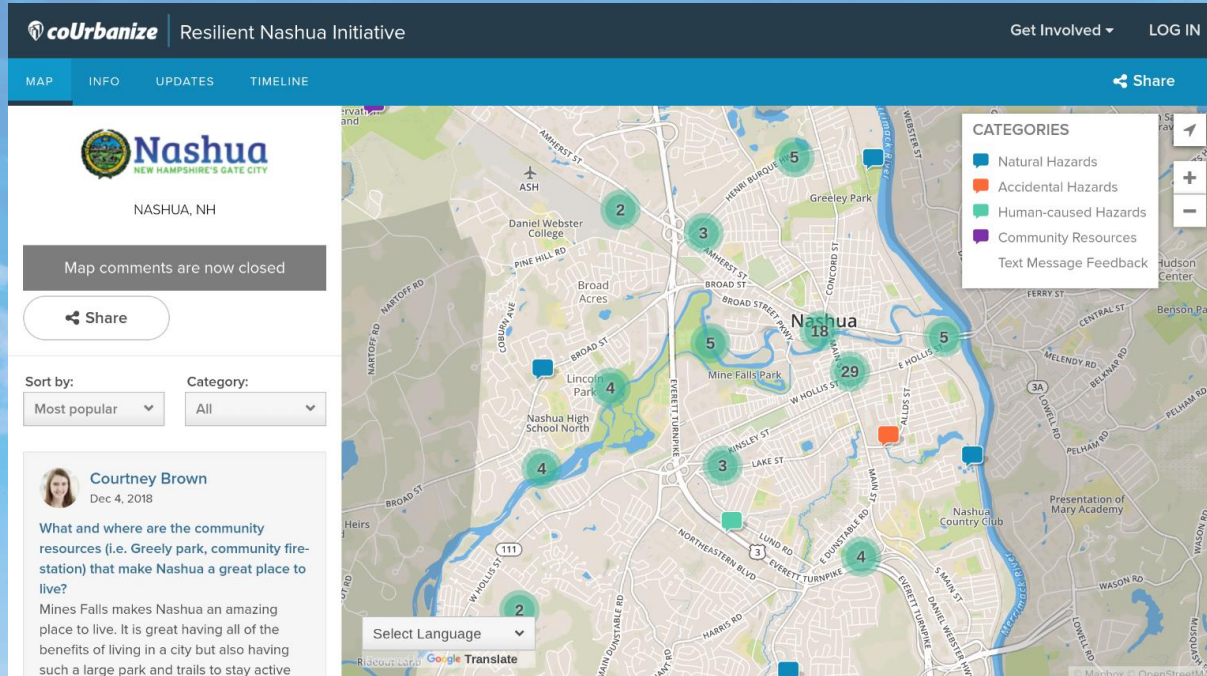
Synchronizing Crowdsourcing Activities



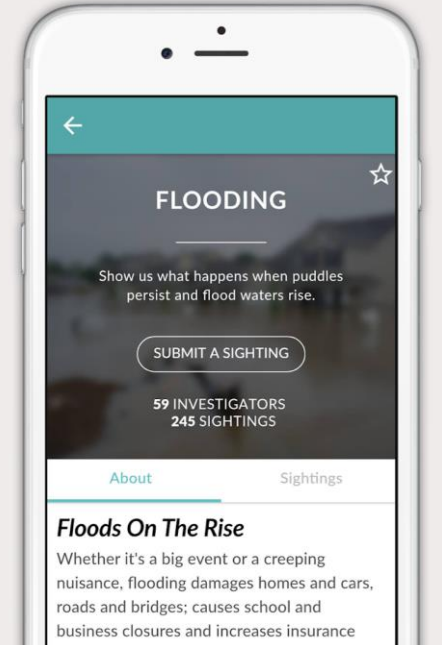
How will your organization's crowdsourcing specialist coordinate with:

- Joint Information System/Center
- Other agencies involved in the response that are leveraging crowdsourcing
- FEMA's National Crowdsourcing Unit

Blue Sky Examples



Submit sightings
from your community.



Discussion Point



During response how would you integrate crowdsourcing into your incident management structure?

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Data Framework

Organize your situational awareness program using the Community Lifelines approach.

Community lifelines reframe incident information to provide decision-makers with impact statements and root causes.

Community Lifelines

 lifelines@fema.dhs.gov

 fema.gov/media-library/assets/documents/177222

Definition

A lifeline enables the continuous operation of **critical business** and **government functions** and is essential to **human health** and **safety** or **economic security**.

Purpose

Root Cause Analysis

Interdependencies

Prioritization

Ease of Communication

Assessing

Status → What?

Impact → So What?

Actions → Now What?

Limiting Factors → What's the Gap?

Stabilization

Occurs when basic lifeline services or capabilities are provided to survivors (may be temporary solutions requiring sustenance).

COMPONENTS of Lifelines



Law Enforcement/Security



Food



Medical Care



Power (Grid)



Infrastructure



911 and Dispatch



Highway/Roadway



Facilities

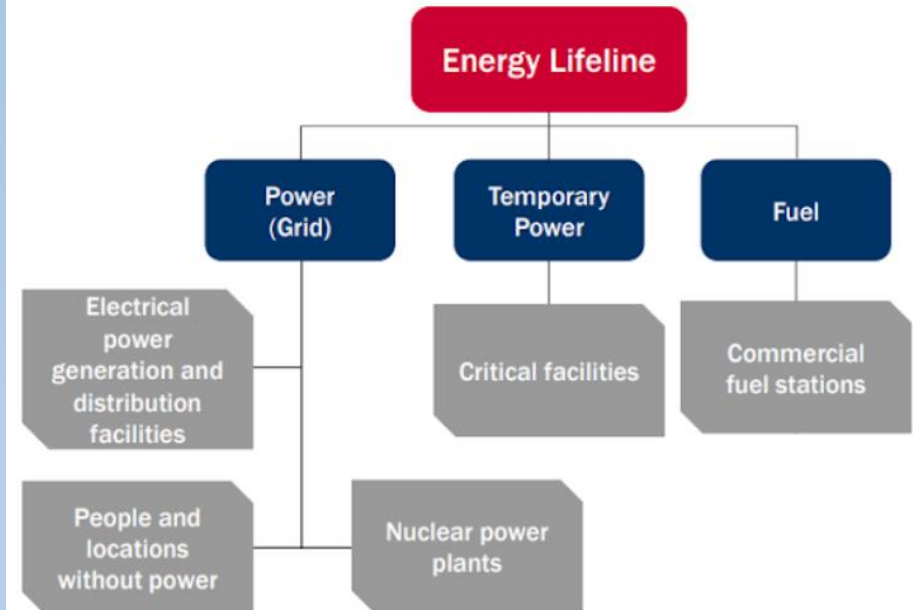


Identifying Essential Elements of Information (EEIs)

The Community Lifelines construct helps the emergency manager organize their information collection and answer questions such as:

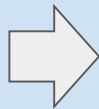
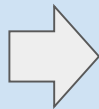
- What's the status of our critical services?
- What happens if our critical services fail or are degraded?
- What do I do to get them back up and running?
- Are there any obstacles we will face to get them back up and running?

Example of Energy Lifeline, Components, and EEIs



Identifying Data and Data Sources to Support the Community Lifelines Construct

Energy	Built Environment	Police Station	Safety/Security
	Power Plants	Prisons	
	Retail Gas Stations	Fire Station	
	Crude production	Government Buildings	
Food/Water/Shelter	Petroleum refineries	State & Local EOCs	Transportation
	Natural Gas facilities	DoD Facility	
	Petroleum Terminals	Schools	
	Electric Substations	Daycare	
Health/Medical	Shelters	Dams / Levees	Communication
	Home Improvement Stores	Urban Search & Rescue	
	Grocery Stores	Historic/Cultural Resources	
	Hotels / Lodging	Airports (Commercial & Military)	
Hazard	Distribution Facilities	Roads (Federal & Local)	Primary Data Source
	Crop & Animal Production	Railway (Freight & Passenger)	
	Residential/Mobile Home Park	Rail / Bus Transit Stations	
	Wastewater Plant	Ports / Ferries / Waterways	
Hazard	Water Treatment Plant	Bridges (Highway & Local)	Secondary Data Source
	Nursing Home	Public-Safety Answering Point	
	Blood Banks	Cellular Towers	
	Pharmacies	AM & FM Transmission Towers	
Hazard	Hospital / Urgent Care	Microwave Service Towers	Tertiary Data Source
	EMS Stations	Data Centers	
	Dialysis & Burn Centers	Banks / ATMs (Transmit)	
	Landfill / Superfund Sites		
Hazard	Nuclear Plants		Quaternary Data Source
	Toxic Release Facility		
	Chemical Facilities		
	Biological Facilities		



	Primary Source (Operational Reporting)	Alternate Source (Operational Reporting)
Power Outages	DOE's Eagle-I	Poweroutage.us
Nuclear Plants		
Power Plants		RSOE EDIS, US Nuclear Reg Com
Retail Gas Stations		GasBuddy
Crude production		
Petroleum refineries		GasBuddy
Natural Gas facilities		
Petroleum terminals		
Residential Structures	Digital Map Products (HIFLD)	Humanitarian Open Street Map Team (Hot)
Shelters	National Shelter System	Crowd Emergency Disaster Response Digital Corps (CEDR), Code for America
Home Improvement Stores		Master Card/Visa
Grocery Stores		Master Card/Visa
Hotels/Lodging		Master Card/Visa, Airbnb
Distribution Facilities		
Crop & Animal Production		
School/University		
Day Care		
Nursing Home	HHS	
Blood Banks	HHS	
Pharmacies		Healthcare Ready/Rx Open
Hospital/Urgent Care	HHS	StandBy Task Force
EMS Stations		
Dialysis & Burn Centers		RxOpen
Wastewater Plant		
Water Treatment Plant		
Toxic Release Facility		
Biological Facility		
Chemical Facility		
Landfills / Superfund Sites		Crisis Cleanup
Police Station		
Fire Station		
DoD Facilities		
Government Buildings		
Local EOC		
State EOC		
Prisons		
Dams/Levees		
Historic/Cultural Resources		
Airports (Commercial & Military)		
Roads (Federal & Local)	DOT	WAZE
Railway (Freight & Passenger)		Amtrak
Rail/Bus Transit Stations		
Ports/Ferries/Waterways	USCG Homeport	
Bridges (Highway & Local)		
Public-safety answering point	FCC/DIRS	
Cellular Tower	FCC/DIRS	Facebook
AM & FM Transmission Towers		
Microwave Service Towers		
Data Centers		
Banks/ATMs		Master Card/Visa
Manufacturing		
Retail		Master Card/Visa, SABER

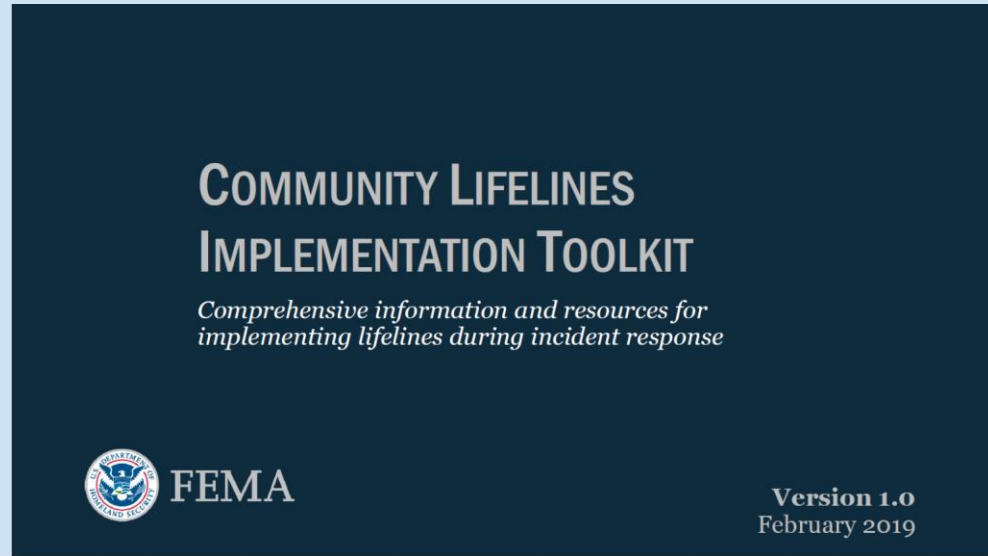
Crowdsourcing Considerations for EEIs

EEIs help you understand **information requirements** to ensure good situational awareness.

Identify which EEIs you can **share to reduce duplication** and promote unity of effort.

Consider:

- How can crowdsourcing inform existing gaps your EEIs?
- Is the data publicly available or does it require a partnership?
- Can you use both active and passive crowdsourcing solutions?
- What are some unique tools, platforms, and organizations that may have access to crowdsourced data related to the incident?



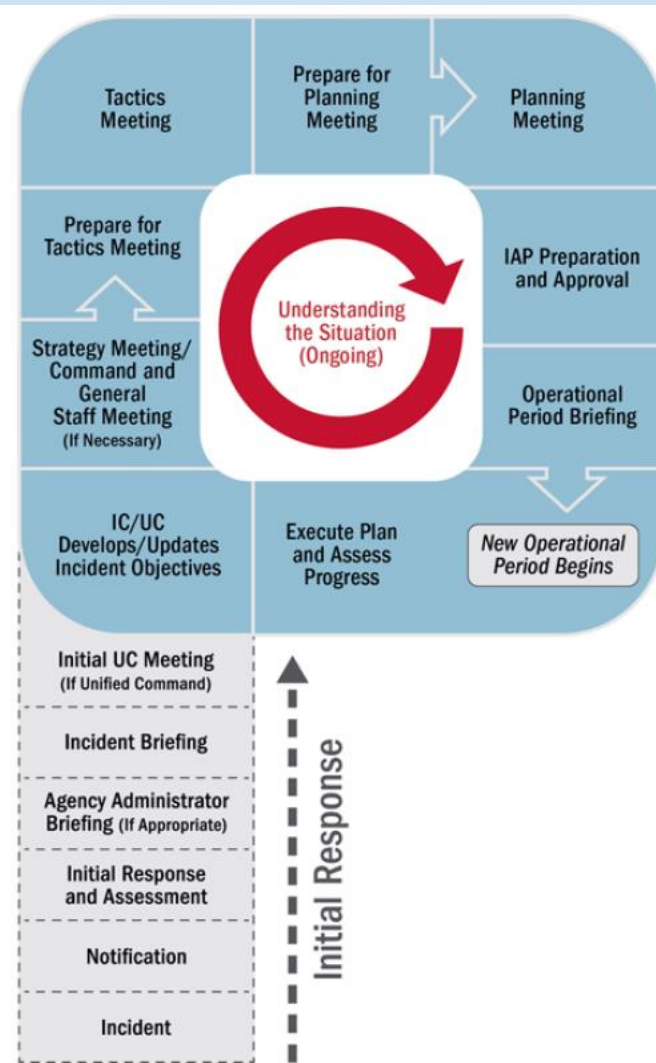
Get Help: Use the FEMA Community Lifelines Toolkit, NISC, and NAPSG tools as a starting point.

Information Collection Plan

An Information Collection Plan is a helpful resource. Develop it prior to embarking on a crowdsourcing program.

Your ICP should:

- Include possible data sources (what) and collection schedule (when) to inform the EEIs and situational awareness products for decision makers.
- Be continuously updated as sources change.



Data Format & Interoperability

- Does a data standard or model exist?
- Have common status attributes been identified?
- Can the data be collected in an editable format?
- Is it possible to enable real-time data sharing?

Discussion Points



In small groups discuss where your organization is in the crawl, walk, run stage of developing a crowdsourcing capability.

- In what ways is your organization already using crowdsourcing?
- Where does the crowdsourcing program best fit within your organization?
- What knowledge, skills and abilities do staff need to lead crowdsourcing activities?
- How do you plug in crowdsourcing data to your existing information management system?
- What doctrine or policy do you need to integrate crowdsourcing data into your organization?

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Filling Gaps

Based on my Information Collection Plan, where do I have gaps information?
Where could I use supplemental information?

- 1. What existing crowdsourcing tools & platforms inform your desired EEIs?**
- 2. Is there an emergent group of digital volunteers already collecting the desired EEI?**
- 3. Can a Digital Volunteer Network be activated to collect information from the crowd on the desired EEI?**

Emergent Groups



Keep Track of Your Crowdsourcing Projects

Challenge: Coordinating crowdsourcing projects with multiple Digital Volunteer Networks, emergent groups, Tech Sector partners, and partner emergency response agencies.

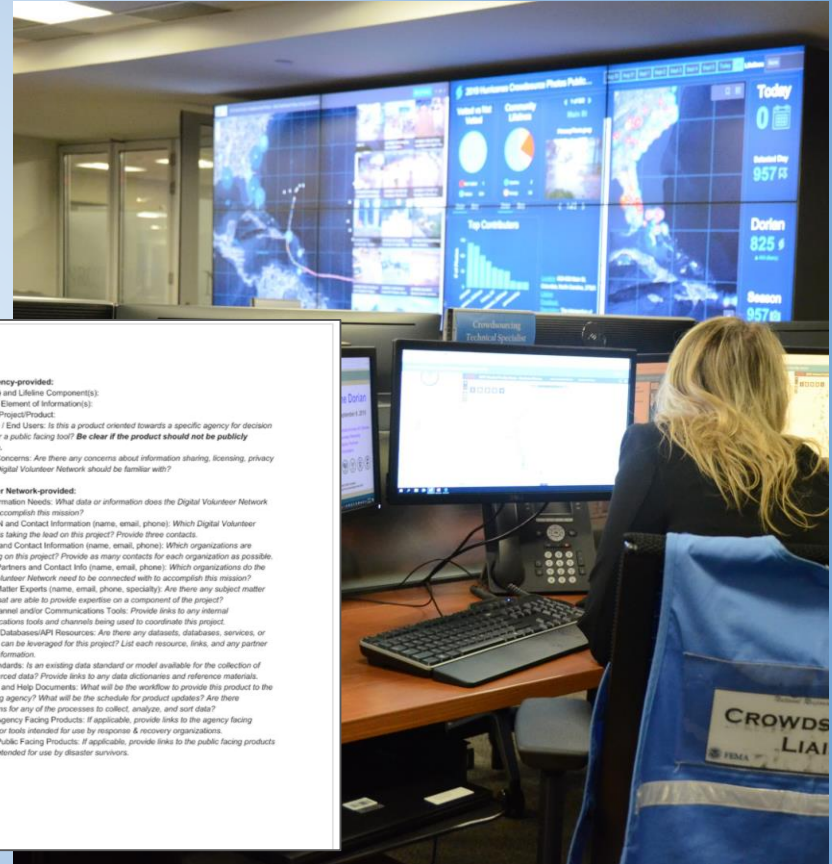
- **Solution:** Create a **Crowdsourcing Coordination Project Sheet** for each crowdsourcing project to include points of contact, datasets, workflow procedures, and other resources that are available.
- **Mission Assignments vs “Mission Ideas”**

Requesting Agency provided:

1. Lifelines and Lifeline Component(s):
2. Essential Element of Information(s):
3. Name of Project/Product:
4. Audience / End Users: Is this a product oriented towards a specific agency for decision making or a public facing tool? **Be clear if the product should not be publicly available.**
5. Agency Concerns: Are there any concerns about information sharing, licensing, privacy that the Digital Volunteer Network should be familiar with?

Digital Volunteer Network provided:

6. DVN Information Needs: What data or information does the Digital Volunteer Network need to accomplish this mission?
7. Lead DVN and Contact Information (name, email, phone): Which Digital Volunteer Network is taking the lead on this project? Provide three contacts.
8. Partners and Contact Information (name, email, phone): Which organizations are partnering on this project? Provide as many contacts for each organization as possible.
9. Desired Partners and Contact Info (name, email, phone): Which organizations do the Digital Volunteer Network need to be connected with to accomplish this mission?
10. Subject Matter Experts (name, email, phone, specialty): Are there any subject matter experts that are able to provide expertise or a component of the project?
11. Slack Channel and/or Communications Tools: Provide links to any internal communications tools and channels being used to coordinate this project.
12. Datasets/Databases/API Resources: Are there any datasets, databases, services, or APIs that can be leveraged for this project? List each resource, links, and any partner contact information.
13. Data Standards: Is an existing data standard or model available for the collection of crowdsourced data? Provide links to any data dictionaries and reference materials.
14. Workflow and Help Documents: What will be the workflow to provide this product to the requesting agency? What will be the schedule for product updates? Are there instructions for any of the processes to collect, analyze, and sort data?
15. Links to Agency Facing Products: If applicable, provide links to the agency facing products or tools intended for use by response & recovery organizations.
16. Links to Public Facing Products: If applicable, provide links to the public facing products or tools intended for use by disaster survivors.



Discussion Point



You identify an emergent group collecting data for an EEI.

What are the challenges and opportunities with working with them?

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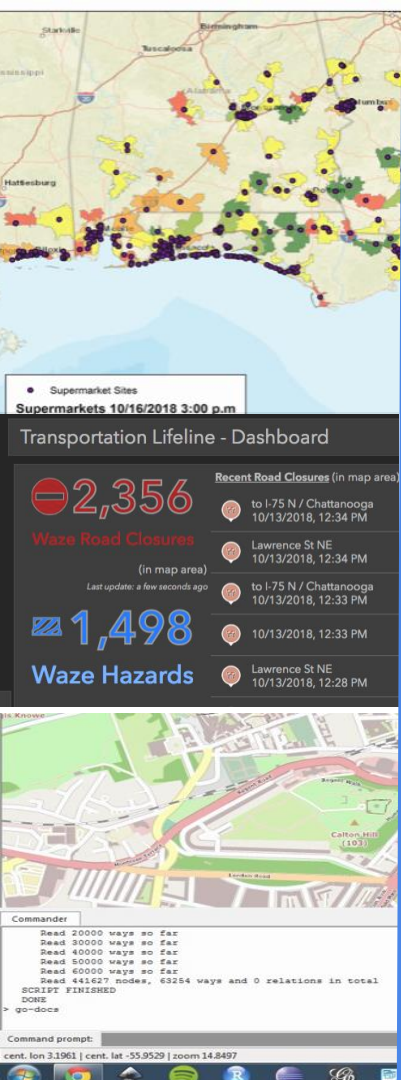


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Tools and Platforms



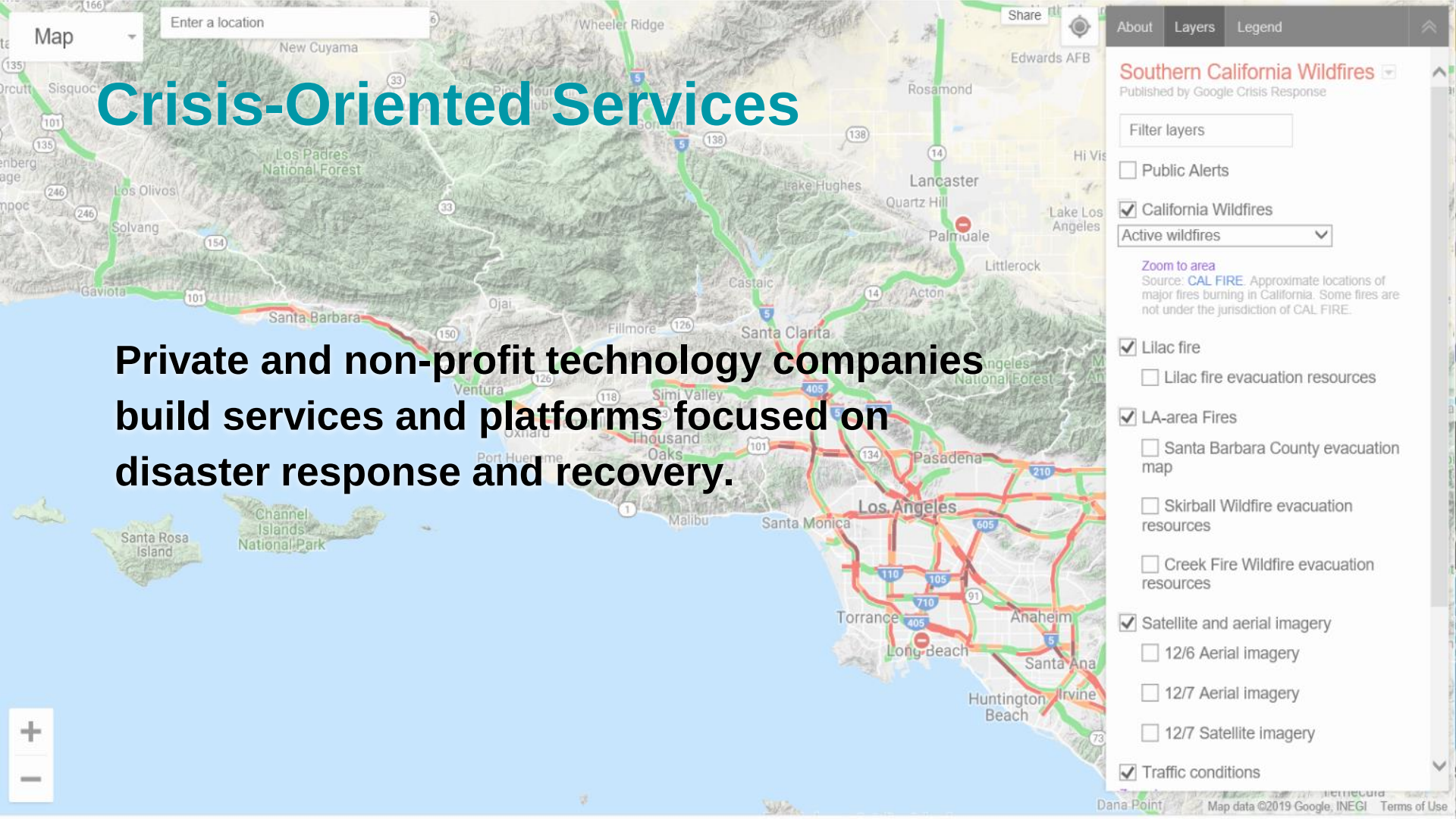
→ Crisis-Oriented Services

→ Platforms with Crowdsourcing
Applications

→ Tools & Resources

Crisis-Oriented Services

Private and non-profit technology companies build services and platforms focused on disaster response and recovery.



Map

Enter a location

Share

About Layers Legend

Southern California Wildfires

Published by Google Crisis Response

Filter layers

- ☐ Public Alerts
- ☒ California Wildfires
 - Active wildfires
 - [Zoom to area](#)
Source: [CAL FIRE](#). Approximate locations of major fires burning in California. Some fires are not under the jurisdiction of CAL FIRE.
- ☒ Lilac fire
 - ☐ Lilac fire evacuation resources
- ☒ LA-area Fires
 - ☐ Santa Barbara County evacuation map
 - ☐ Skirball Wildfire evacuation resources
 - ☐ Creek Fire Wildfire evacuation resources
- ☒ Satellite and aerial imagery
 - ☐ 12/6 Aerial imagery
 - ☐ 12/7 Aerial imagery
 - ☐ 12/7 Satellite imagery
- ☒ Traffic conditions

Dana Point Map data ©2019 Google, INEGI Terms of Use

Crowdsourced Data Integrated into FEMA Dashboards



Transportation Lifeline - Dashboard

2,356

Waze Road Closures

(in map area)

Last update: a few seconds ago

1,498

Waze Hazards

(in map area)

Last update: a few seconds ago

103

Waze Accidents

(in map area)

Last update: a few seconds ago

800

Waze Jams

(in map area)

Last update: a few seconds ago

Road and Traffic Conditions

Airports and Ports

Recent Road Closures (in map area)

to I-75 N / Chattanooga

10/13/2018, 12:34 PM

Lawrence St NE

10/13/2018, 12:34 PM

to I-75 N / Chattanooga

10/13/2018, 12:33 PM

10/13/2018, 12:33 PM

Lawrence St NE

10/13/2018, 12:28 PM

10/13/2018, 12:27 PM

to I-75 N

10/13/2018, 12:21 PM

to I-75 N

Last update: a few seconds ago

Map Legend

Low Impact GDOT Incidents View



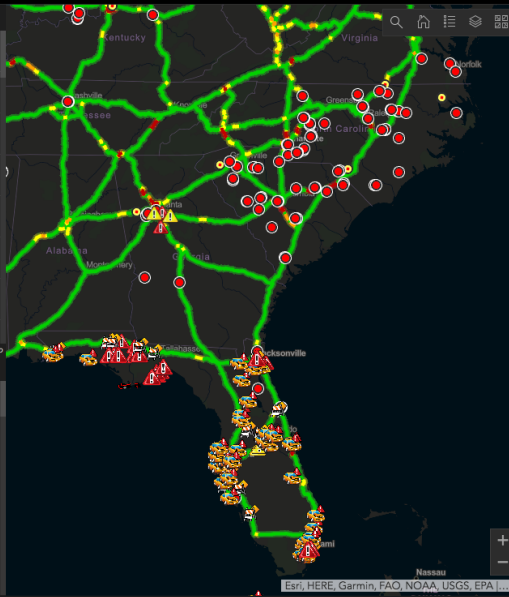
High Impact GDOT Incidents View



Florida Road Closures

FHP

Closures



Energy Lifeline - Dashboard

Gas Stations Without Fuel

2.9%

Gas Stations Without Power

2.7%

Gas Stations Without Diesel

4%

GasBuddy Station Outages Fuel Availability All St...

gl_id: 134133

station_name: Circle K

city: Plant St Joe

state: FL

brandname: RaceTrax

address: 2176 W US-98

crossed: Perryman St

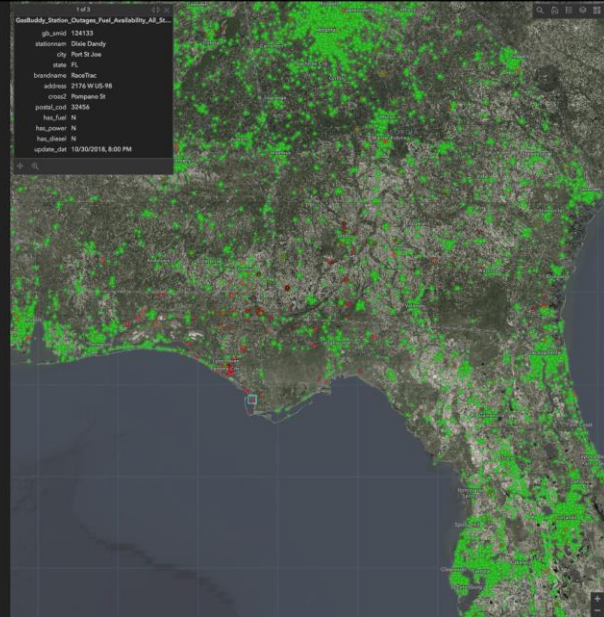
profile_id: 32456

has_fuel: N

has_power: N

has_diesel: N

update_date: 10/30/2018, 8:00 PM



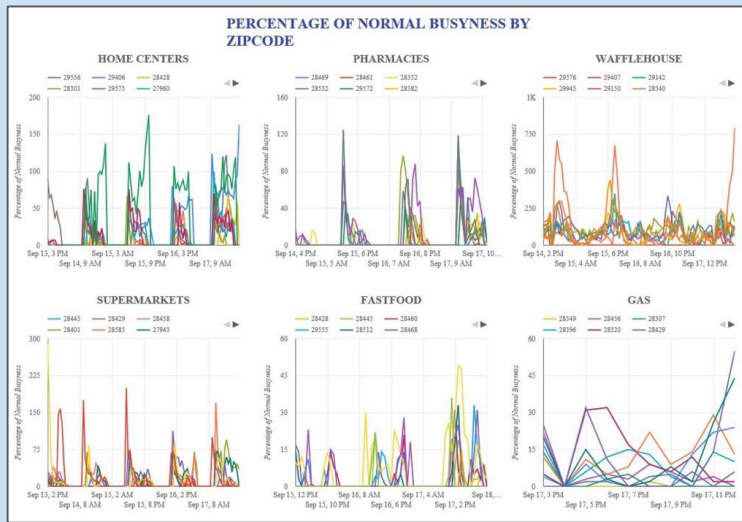
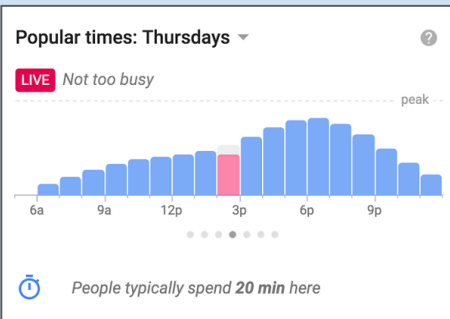
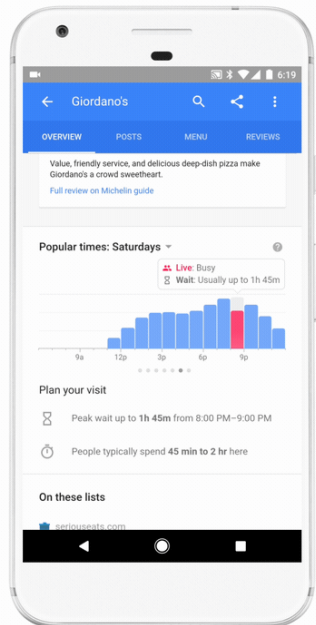
Platforms with Crowdsourcing Application

- Meet people on the platforms they are already using.
- Platforms aren't designed for emergency managers but can be adapted to provide important functionality during a crisis.

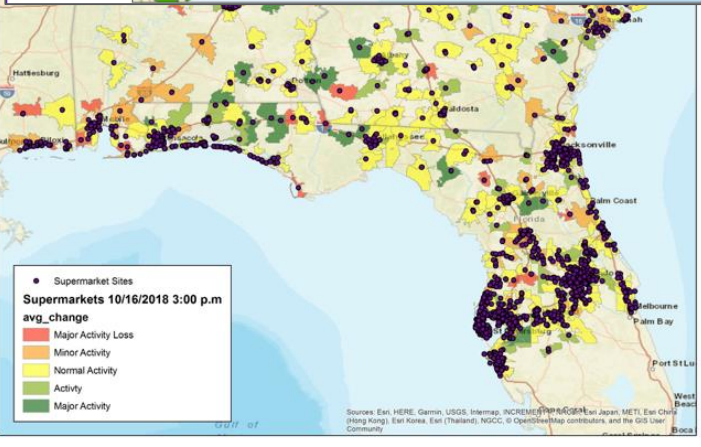
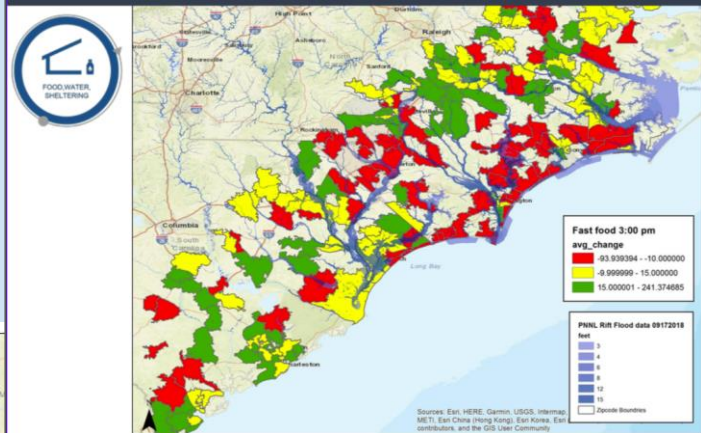


Google Business - Busyness Data

Impact to commerce indicating businesses that are open or closed with long or no wait times.



Food, Water, Shelter – Fast Food Establishments: 17 September 2018



Tools and Resources

- Organizations develop purpose-built templates, applications, and tools
- Many resources are open-sourced and are available to use for future disasters without having to start from scratch
- Commercially and publicly available data sources and applications can be used to support, analyze, and organize crowdsourcing efforts



Discussion Point



- Based on the EEIs that had gaps or needed supplemental information what existing crowdsourcing tools & platforms inform those EEIs?

↳ Toolkit Sections

www.CrowdsourceEM.org



[Introduction](#)



[Integrating Crowdsourcing](#)



[Data Framework](#)



[Mission Scoping](#)



[Tools & Platforms](#)



6 [Digital Volunteer Networks](#)

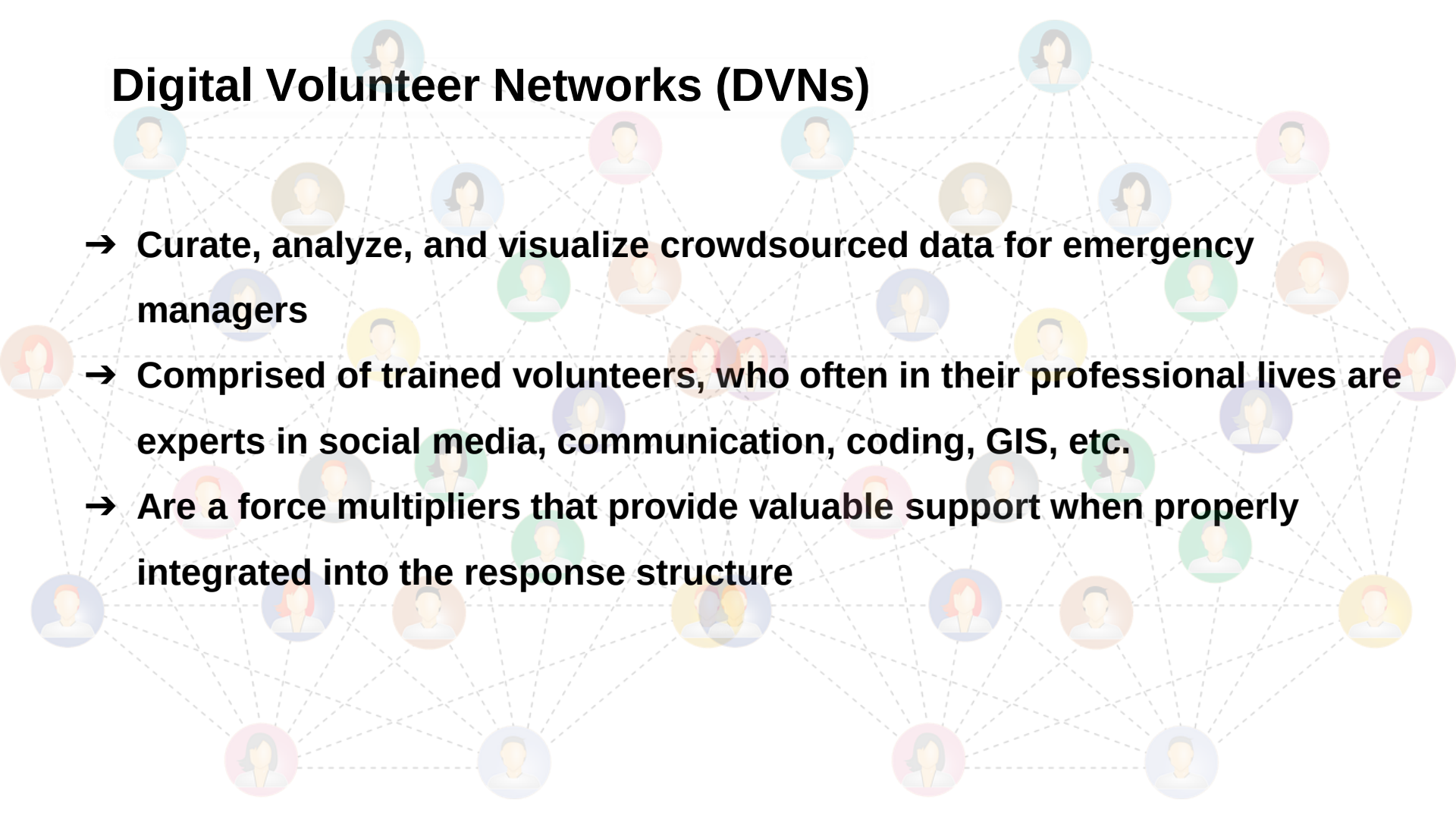


[Case Studies](#)



[Recommend an Edit/Resource](#)

Digital Volunteer Networks (DVNs)



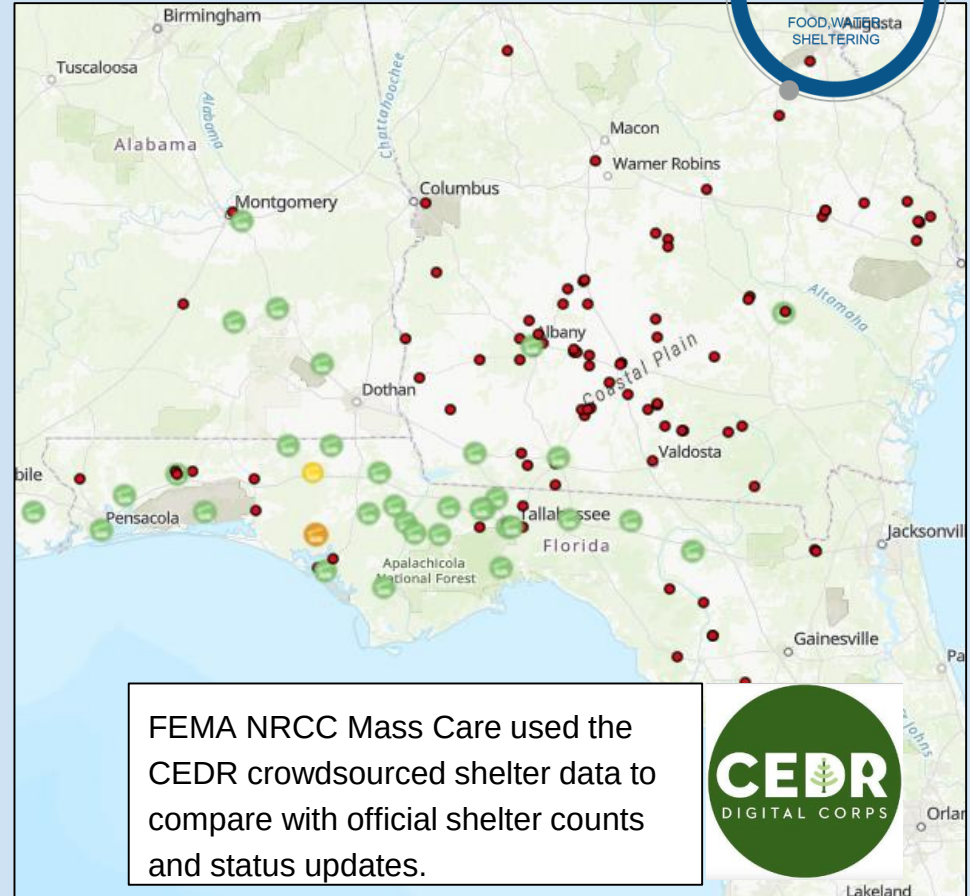
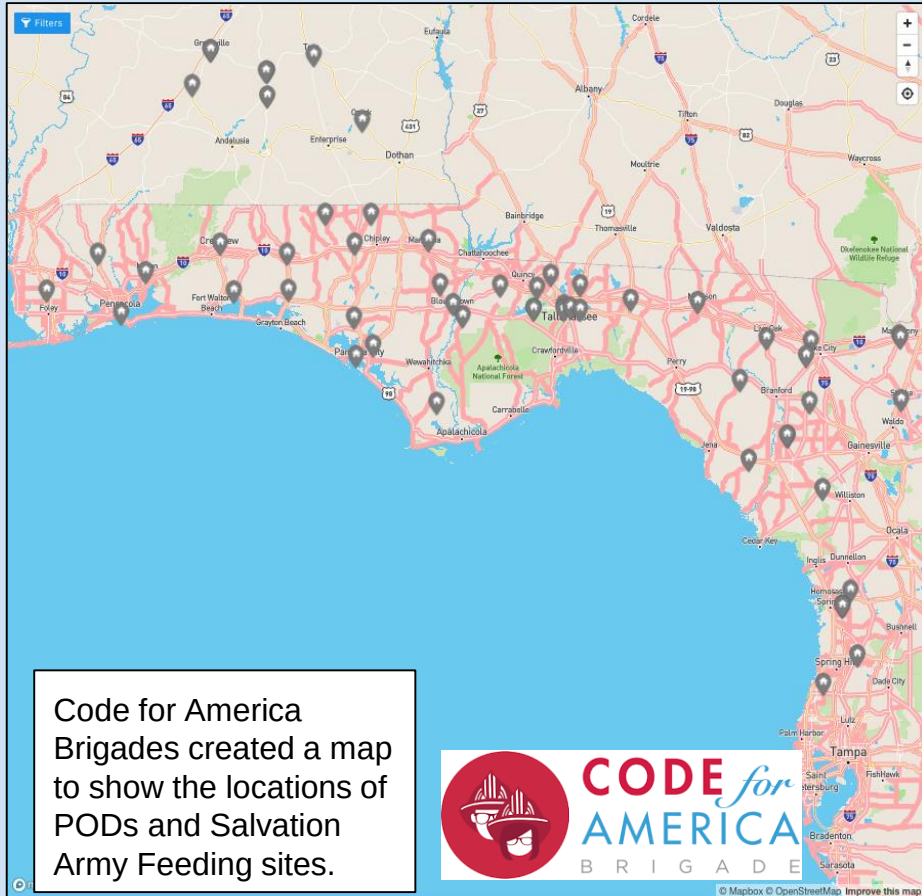
- **Curate, analyze, and visualize crowdsourced data for emergency managers**
- **Comprised of trained volunteers, who often in their professional lives are experts in social media, communication, coding, GIS, etc.**
- **Are a force multipliers that provide valuable support when properly integrated into the response structure**

Types of Digital Volunteer Networks

- **Virtual Operations Support Teams (VOSTs)** are typically affiliated with government
- **Volunteer and Technical Communities** are independent groups
- **Emergent groups** develop during crisis



EI Requirement: Shelter Status and Location of Points of Distribution



Discussion Points

Think of your last activation. In small groups discuss the following questions in the context of that activation.



- How would you identify the need for crowdsourced data?
- How would you get access to crowdsourcing tools and integrate them? What technology does your organization need to operationalize crowdsourcing?
- How would you engage an emergent group of digital volunteers already collecting information your organization would benefit from?
- How would you deploy a Digital Volunteer Network to collect information from the crowd on your EEIs?

Crawl, Walk, Run

The toolkit is designed to guide emergency managers through building their crowdsourcing capability.

- Crawl: Look at the free private sector tools to use in EOCs
- Walk: Partner with a DVN to support EOC activations
- Run: Join or form a VOST (think regionally)

www.CrowdsourceEM.org

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