

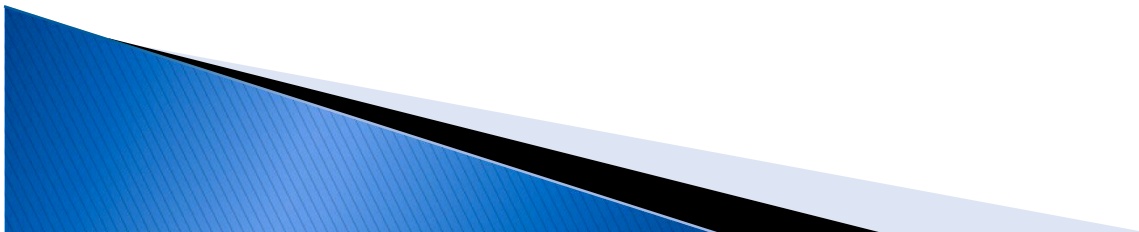
# Technology and Emergency Management



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# Overview

- ▶ Catastrophic events have proven that technology can greatly assist in the planning, response, and recovery in emergency planning.
- ▶ Technology assists in personal and organizational planning.

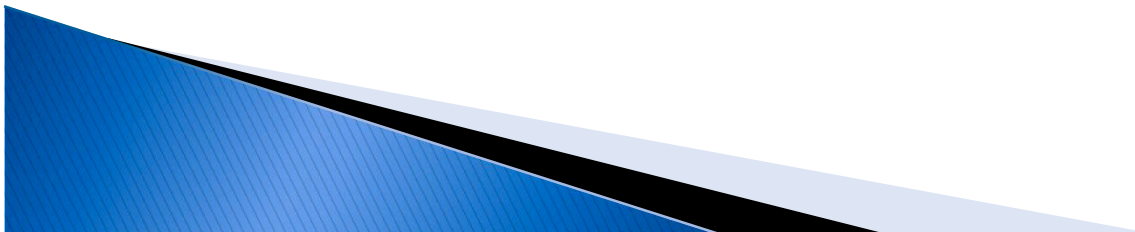


# Organizational Planning: Geographic Information System (GIS)

*“Although it is nearly impossible for total planning in emergencies, GIS can greatly aid in this process...”*

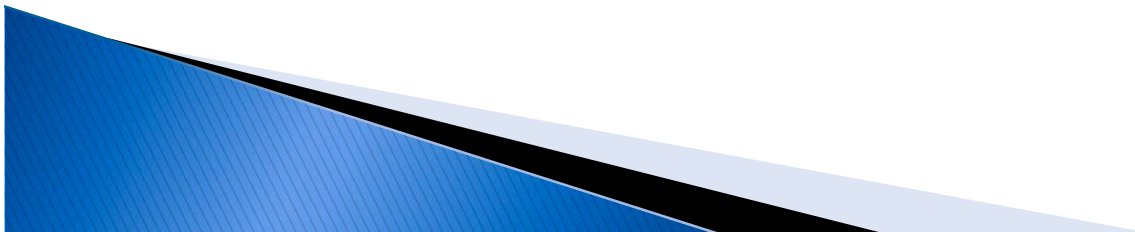
## Why GIS?

- ▶ GIS technology integrates hardware, software, and data for capturing, managing, analyzing, geographic information to assist in Emergency Management.
- ▶ GIS enhances the usefulness of data for decision making.
- ▶ GIS can assist in mitigation, planning/preparation, response and recovery.



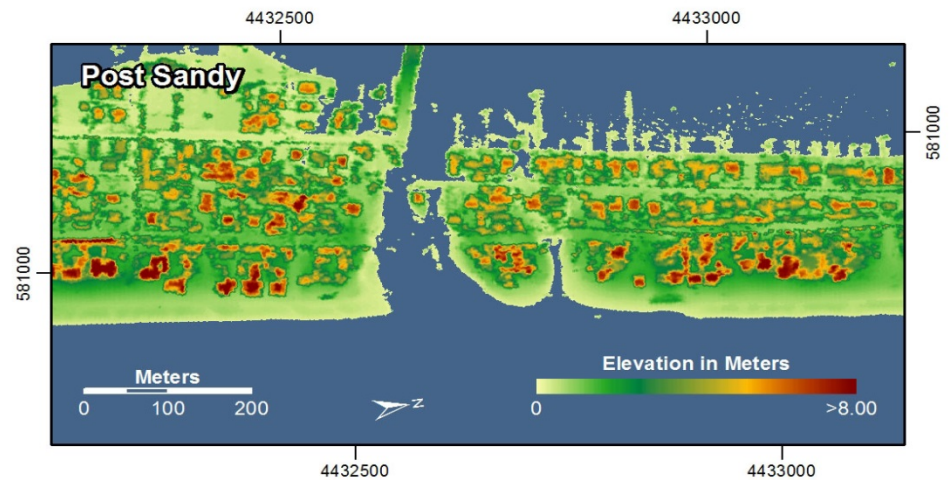
# Why GIS?

- ▶ Mitigation-GIS can help by mapping out critical assets, and determines best practices to respond.
- ▶ Planning and Preparation-GIS can map the likely outcome of disasters (i.e., best evacuations sites, key facilities, hospitals)
- ▶ Response-Aid in the notification by pinpointing addresses.
- ▶ Recovery-Provides a centralized location to store information needed to assess damage.



# Examples of GIS information

- ▶ CDC data
- ▶ TIGER (Topographical Integrated Geographic Encoding and Referencing System) files.
- ▶ Zip code data
- ▶ Census
- ▶ NYC example (borough language mapping)



# Personal Planning: Social Media

“76 percent of adults expect help to arrive in less than three hours if they post an emergency-related request on social media.” -2012 American Red Cross Survey

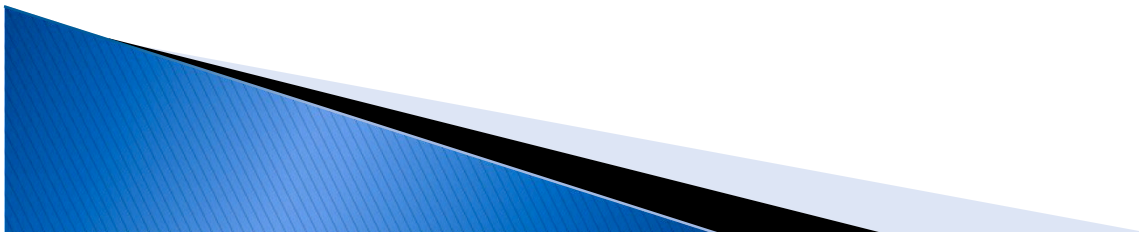
- ▶ Social media and emergency management are still in the ad-hoc stages.
- ▶ Its not just Facebook and Twitter (although they are excellent breaking news sources)
- ▶ FEMA smartphone app with a “disaster reporter” feature.



# Maryland GIS

## ▶ Emergency Management Mapping Application (EMMA)

- Software that provides the ability to create dynamic maps using a data from multiple sources including real-time.
- Can be accessed from any Web or secure network accessible device.
- “Thin Client” that only needs a network connection and a browser (Internet Explorer)





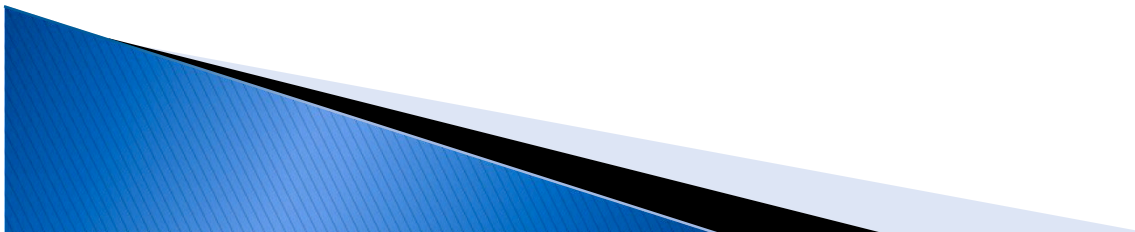
# Incident Management

## ▶ **WebEOC**

- A virtual incident management system collaboration tool that creates a common operating picture.

## ▶ **CoBRA Collaborative**

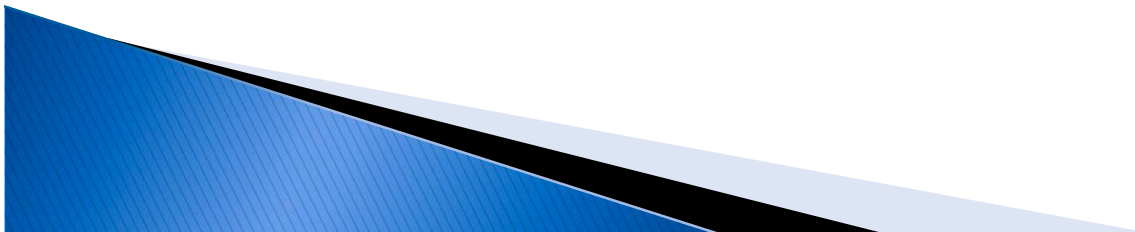
- A locally-configurable incident and event management system





# Incident Management

- ▶ **Disaster Management Information System (DMIS)**
  - DMIS is a virtual incident management system collaboration made accessible only to Red Cross and Red Crescent staff working in National Societies, delegations and Geneva headquarters.



# Decision Support

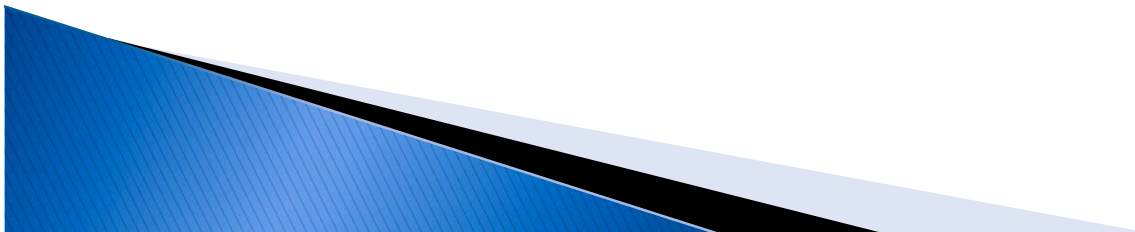
- ▶ **CoBRA (Chemical & Biological Response Aid)**
  - Provides responders with interactive tools, guides, SOPs, NIMS/ICS forms, checklists and incident reporting capabilities.
- ▶ **HazMasterG3**
  - Identifies unknown chemical agents, radiological isotopes, IED/HME threats, detonators, intermodal containers, road and rail hazards, dual-use precursors, precursor outcomes and chemical reactions.



# Decision Support

## ▶ **ADASHI Command Post**

- Incident and resource management system that includes mission-critical tracking, management, communication, logging, and reporting features.



# Restricted Use

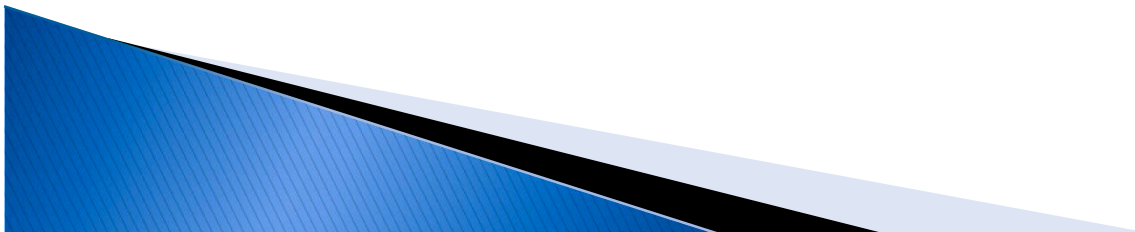
- ▶ **Consequences Assessment Tool Set (CATS)**
  - Capable of calculating the outcome of thousands of possible scenarios involving a variety of weapons and materials.
  - CATS assesses the consequences of technological and natural disasters to population, resources and infrastructure.
  - The models can determine the human medical effects, toxicity levels, contaminated areas, population exposure, hazard areas and casualties should WMD materials be unleashed in an attack or dispersed in a military strike or by accident.
  - Focused on domestic use.



# Restricted Use

## ▶ Hazard Prediction and Assessment Capability (HPAC)

- It models CBRNE collateral effects resulting from incidents.
- It can predict downwind hazard areas resulting from a nuclear weapon strike or reactor accident and has the capability to model nuclear, chemical and biological weapon strikes or accidental releases.
- HPAC's strengths is access to real-time weather data through Meteorological Data Servers (MDS)



# Open Source

## ▶ **Computer Aided Management of Emergency Operations (CAMEO)**

- CAMEO is a system of applications used to plan for and respond to chemical emergencies.
- CAMEO can access, store, and evaluate information critical for developing emergency plans.
- CAMEO helps users meet regulatory compliance/chemical inventory reporting requirements of the Emergency Planning and Community Right-to-Know Act (EPCRA, also known as SARA Title III).



# Open Source

- ▶ **Mapping Applications for Response, Planning and Local Operational Tasks (MARPLOT)**
  - A mapping application that allows users to “see” their data, (e.g. roads, facilities, schools, response assets) display this information on area maps.
  - The areas contaminated by potential or actual chemical release also can be overlaid on the maps to determine potential impacts.





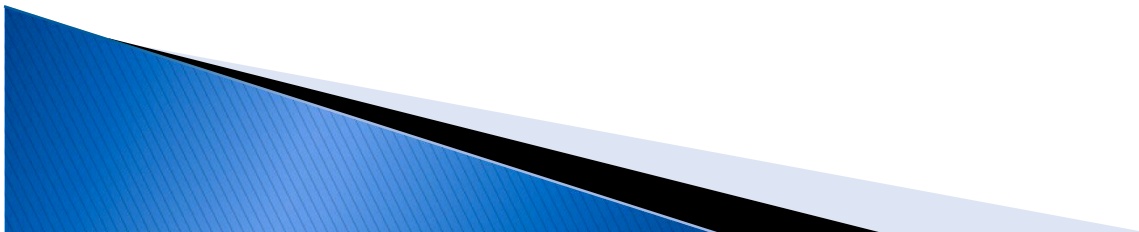
# Open Source

- ▶ **Areal Locations of Hazardous Atmospheres (ALOHA)**
  - ALOHA air dispersion model predicts the downwind dispersion of a chemical cloud.
  - Graphical outputs include estimates of the cloud footprint, the rate and duration of release of the chemical, and chemical concentration over time at locations of particular concern.



# Future Technology Today

- ▶ Remote sensing in order to monitor potential risks.
- ▶ Drone technology to assist in emergency management.
- ▶ Computer systems that can synthesize information from the disaster site for use in the emergency operations center.



# Summary

- ▶ Technology is playing an ever increasing role in Emergency Management.
- ▶ GIS in mitigation, planning, response, and recovery.
- ▶ Incident management and decision support tools
- ▶ Collaborative and modeling tools.
- ▶ Social Media and Emergency Management
- ▶ Future Technology



# What questions do you have?

