An Incident Management Preparedness and Coordination Toolkit

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Introduction

- Part 1 – Using a Geographic Information System (GIS) for planning and response
- Part 2 – Demo of the Incident Management Preparedness and Coordination Toolkit (IMPACT)
- Part 3 – Interactive discussion and wrap-up
Disaster Preparedness and Exercises

Guidelines for effective exercises
- Homeland Security Exercise and Evaluation Program (HSEEP)
- National Incident Management System (NIMS)
- DHS, FEMA, OSHA, CDC, AMA guides

Tailoring for individual needs to:
- Familiarize personnel with emergency plans
- Allow different agencies to practice working together
- Identify gaps and shortcomings in emergency planning
Benefits of GIS-supported Planning

• Visualize and analyze large amounts of information
  – Combine many layers of different information
  – See spatial relationships and dependencies

• Information for decision-making
  – Location of schools, medical centers, staging areas, and evacuation routes
  – Identify critical infrastructures such as water storage/treatment facilities, communications networks, electric generation facilities, refineries
Benefits... (cont)

- Quick organization of information related to a place
  - Floor plans, interior photo views, call lists
  - Businesses, chemical inventory, population, transportation

- Situational awareness/Common operating picture
  - Street/highway closures
  - Perimeter security, access checkpoints, staging areas
Examples of GIS Information

Distribution of languages spoken in Brooklyn

Examples... (cont)

- Joplin, MO Tornado Lessons Learned Study

Examples... (cont)

- West, TX fertilizer plant explosion


GIS Tools

A variety of GIS tools are available to planners

- OpenStreetMap
- ESRI ArcGIS
- Google Maps/GoogleEarth
- Bing
- DHS GeoCONOPS, OneView
- FEMA HazUS
- Web EOC
Barriers to GIS Deployment

In the field, utilization of GIS is mixed due to:
- Cost
- Complexity
- Connectivity

IMPACT attempts to address some of these issues
- Free
- Simple interface, standard formats
- Works with or without a network
Part 2

IMPACT Demo
Motivation

Several projects needed a simple geospatial application for use by non-GIS professionals.

Commercial offerings deemed too complicated and/or costly.

Browser-based offerings had restrictive terms of use and/or copyrighted data.

Needed the ability to customize the code for each project at a very low level.
Requirements

- Simple to learn (avoid jargon, feature bloat)
- Allow custom map making and data capture
- Support hardware devices (GPS receiver)
- Run on laptop/tablet PC for mobile operations
- Integrate existing apps
- Liberal license terms
- No per-copy cost
Operational Needs

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- Pre-mission: Download maps and data from networked sites
- Field-use: Standalone operation with data capture and viewing
- Post-mission: Editing and report generation
Challenges

- Network connection not always available in the field especially after a disaster
- Laptop must carry the data it needs
- User may need to store unstructured or unanticipated data (photos, reports, scanned maps, floor plans, etc.)
- Operation on Windows, Mac, and Linux
Tasks Panel

Geographic Information Science and Technology

Tasks

Incident Management Preparedness and Coordination Toolkit

Backpack IED
Contagion Spread
Evacuation
Metro Rail

Stadium Plan
Transport
Vehicle IED
Applications Panel

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Incident Management Preparedness and Coordination Toolkit

Applications

- EBC
- Google Earth
- GPS Babel
Documents Panel

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Documents

Bomb Card  CAMEO  CDC Guidance  CDC Surge
Commercial Facilities...  DHS  Doeherty Slides  GIPSE
HSEEP  HSIN  ICAV  LENS
LLIS  MIEDSP  NCAD Web  NCS4
Application Example – EBC (USACE)
CAMEO Chemicals

Database of Hazardous Materials

Search
Find response information for thousands of hazardous materials, including fire and explosion hazards, health hazards, firefighting techniques, cleanup procedures, protective clothing, and chemical properties.

MyChemicals
Build a list of chemicals. For example, substances involved in an incident response (such as a train derailment) or chemicals stored in your community.

Reactivity
See what hazards might occur if chemicals in your MyChemicals collection are mixed together.

Get started by finding a substance of interest with a search.

Learn more by checking the help for background information, a glossary of terms, and guidance on using this database.
Map Example – Brazzaville Explosion

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ORNL Geospatial Viewer

Database layers pane can be shown or hidden

Button bar

Mouse controls pan (drag) and zoom (wheel)

Cursor lat/long/elev
Situational Awareness

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Real-time alerts

Weather warning polygons
Tornado Track

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Information Message
The enclosed population is: 7,066

OK
Earthquake Analysis

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Information Message
The total enclosed population is: 2,047,344

- Ring 1 (inner) = 390,389
- Ring 2 = 628,326
- Ring 3 (outer) = 1,028,629

Lat: 17.7048°  Long: -99.29646°  Elev: 1,484 m
Evacuation Simulation

Casualties

Each dot is an agent

Animation showing a suicide bomber incident
Future Efforts

- GUI improvements
- More simulation capabilities
- 3D viewing
- Hardware drivers for other devices
- Animation scripting by end-user
Part 3

Interactive Discussion and Wrap-up
Daily Use Suggestions

Geographic Information Science and Technology

- Weather
- Traffic
- Asset/personnel tracking
- Hazard monitoring (earthquakes, wildfires, accidents, etc.)
- Power outages
- Webcams
GIS for Response

- Situational awareness
- Collecting damage information
- Tracking assets/personnel
- Publish/Subscribe for common operating picture
- After-action reports
IMPACT Distribution

- **Availability**
  - June 1, 2013

- **System requirements**
  - Windows XP, Vista, 7
  - MacOS 10.6+
  - Linux

- **Eligibility**
  - Federal, state, or local government
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