ALLHAZ Field level Emergency Operations Concept

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Overview

- What is ALLHAZ?
- How did we get here?
- Inputs
- Users
- Pulling it all together
- A vision for the future
ALLHAZ provides all field operations personnel with a standardized, scalable, geospatially enabled tool that they can use to assist in planning for, mitigating, responding to and recovering from All Hazards of all sizes.

What is ALLHAZ?
How did we get here?

• Traditional GIS systems target technical end users.
  – Complicated to use
  – Inconsistent format
  – Diverse, disconnected data.
• Different solutions for each type of event
  – User interface
  – No standard Data Model
  – No standard data sharing environments
• Lack of Scalability
  – Systems break when the event gets too big
Landscape Assessment

Historical approach
- Different system for different disasters
- Systems designed to be run by technician
- Different data bases – little or no sharing
- Limited mobile capabilities
- Limited scalability
- Limited data sharing across jurisdictions (Local ↔ State ↔ Regional ↔ Federal)
ALLHAZ provides:

- Single user interface for all hazards
- Scalable to grow with event
- Handheld, Tablet, Desktop, Server, Internet
- DHS National Data Model (Fusion Centers & Project Homeland)
- Shareable data at all jurisdiction levels
- NIMS forms integration
- NRP ESF compliant reporting
ALLHAZ Scenarios

- HAZMAT Spill – demo
- Logistics resource Management
  - Check in/ Dispatch trucks
  - Log load & destination
  - Near real time advisory to receiving point
  - Reporting
- Shelter Management
  - Resources management /requests / receipt
  - Arrivals / Departures of evacuees
  - Beds & services available
ALLHAZ Scenarios

- Fire Mitigation & Planning
  - Property assessment / inspections
  - Mitigation plan monitoring
  - CCC / FS /DOW / Board of Realtors / Schools / Ski Corp / Banks / Investors
- Boarder Patrol
  - Situational Awareness
  - Sightings / trails / tunnels / signs of crossings
- USAR
  - Locate survivors & victims
  - Track search areas and coverage
ALLHAZ Scenarios

- Disease outbreak (Avian Flu)
  - Locations / quarantine zones
  - Evacuation area / routes
  - Hospital / triage locations / decon

- Dam Break & Flooding
  - Locations / impact areas (models)
  - Evacuation area / routes / shelter locations / shelter availability (animal & human)

- Damage Assessment (general)
  - Location / type / immediate needs / repetitive loss
  - Evacuation area / routes / shelter locations, etc.
ALLHAZ Scenarios

- Hurricane / Tornado / Earth Quake
  - Evacuation area / routes
  - Resource logistics
  - Shelter locations (Animal and Human)
  - Damage assessment
  - Search and Rescue
Inputs

• Common Ground
  – User Interface
  – Data models
  – Common Symbology

• Sensors, Information Feeds
  – Weather
  – Flood
  – Chemical

• Models
  – Plume
  – Buffer
  – Hydro
  – Fire
Common Ground

- Common Ground
  - User Interface
  - Data models
  - Common Symbology
Information Feeds and Sensors

- Sensors, Information Feeds
  - Weather
  - Flood
  - Chemical

Daily Streamflow Conditions
Information Feeds and Sensors

GEORSS Feeds

- AirTrak Ambulance
- AirTrak Fire Truck
- AirTrak Rescue Airship
- CALTRANS Highway Traffic
- CURE Mobile GIS
- LLUMC Telemedicine
- CURE Map Viewer
- CURE Web User
- Other GeoRSS Feeds
- GeoRSS Feed
- CURE Feed Server
- Traffic Accident
- REDNET Diversion Status
- Facility Data
- Other Online Map Services
- ArcGIS Online
- Weather map
Models

- Models
  - Plume
  - Buffer
  - Hydro
  - Fire
User Communities

- Primary user community
  - Command Post
  - Field Operations
- Secondary user community
  - Dispatch
  - EOC
    - Local
    - State
    - Federal
  - JFO
- Public
  - Warning
  - Evacuation
  - Sheltering
Pulling it all together

- All Hazards can play in the same application
- Information flows between all user communities
- Fosters coordination and collaboration
  - Real time information
  - Multi-agency
  - Multi-incident
- Sharing
  - Data
  - Models
  - Responsibility
  - Resources
ALLHAZ Architecture

Overall

Clients can access any server any client

Mobile clients

Desktop clients

Data Sync

Data / tasks available to all clients

Mobile Command Center

State Servers

Federal Servers

Regional Servers
ALLHAZ
HAZMAT Scenario

Servers in California

Spill location entered

Plume distributed

Road Blocks Set

Command Center, Triage, Decon Set

Demographic report of plume area generated

Road Blocks Set

Mobile Phone with Cingular Service in Field

Road Blocks Set

Mobile Phone with Verizon Service in Field

Spill location distributed

Plume distributed to all clients

Road Blocks Set

Laptop with wireless service in EOC

Road Blocks Distributed

Servers in California

Mobile Phone with Verizon Service in Field
ALLHAZ Architecture

Client Applications

- Mobile devices work in connected or disconnected mode

Web Services Platform

- Geo-processing Services
- Open Web Services
- Tracking Services
- GIS Data
- Data Services

Enterprise GeoPortal

- Catalog Services
- Catalog
- GeoPortal
  - Channels
  - Link Browser Map
  - Download:
    - ArcGIS Explorer
    - Toolbar for ArcMap
  - Collaboration
    - State Clearing
    - Houses
    - CI and Data Fusion
    - Data warehouses

GEORSS

- External Feeds
- 2-D Base Map (Cache)
- 3-D Base Map (Cache)

Data Warehouse

Mobile Desktop GIS

- Geo-processing Services
- Tracking Services
- Link Browser Map
- Download:
  - ArcGIS Explorer
  - Toolbar for ArcMap
  - Collaboration
  - State Clearing
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- Data pulled and pushed to and from all clients
ArcGIS Mobile Mapping and Field Data Forms – OFFLINE Mode

Provides Current Location

GPS

Background Map
Map Cache

ALLHAZ Field Data

Base Map Display

ALLHAZ Incident Data Cache

Field Data Menu & Question Definitions

ALLHAZ map & Form data In USB memory/Secure Disk media

Build Collection Forms

Store Field Data

ArcGIS Mobile Mapping and Field Data Forms – ONLINE Mode

Handheld Device (with GPS)

Refresh Form Data

ALLHAZ Form Data

ALLHAZ Geodatabase

Refresh Map

ArcGIS Server and ALLHAZ Geodatabase

Map Service
Mobile Service
Editing Service
Geocoding Service
Routing Service
ArcGIS Server 
Geodatabase & Geoprocessing Models
SQL Server 2005

Web Browser-Based Mapping & Integrated Workflow Application

Web Browser

Input Forms And Reports

Show Map

Web Server

Background Map Map Cache
(on SD Card)

Automatically Synchronizes Data

Build Mobile Cache

Build Form Questions And Lookups

Map files Geodatabase models Geoprocessing models

Publish Services and Models
Formbuilder
Servers

- Perform hazard specific analysis, data management, data access
- Replicate data between servers
- Data streamed via webservice (or cached locally on mobile client)
Mobile clients

- Support for Windows Mobile 5, CE 2.0, Mobile for Pocket PC 2003, 2003 CE and XP operating systems (smart phones, tablets, laptops)
- “Sometimes Connected” environment
  - map data stored locally
  - continuous data collection and use
  - Bi-directional data flow when connected or synced
- Initiate geoprocessing tasks from field and receive results
Desktop Clients

- Viewers including browser based and free 2D and 3D desktop applications.
- Viewers customized with hazard-specific tasks and functions.
- Existing COTS professional GIS applications access data via webservice
A Vision for the future

• The Public is our greatest and least utilized asset

• Follow the technology. Where is it going?

• All disasters are local. Lead from the bottom not the top. (Local vs. Federal guidance and direction setting)