Advanced Geospatial Technologies for Disaster Risk Management

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Web GIS Organizes Geographic Information

Data Management, Visualization, Spatial Analysis, Geocoding

- Incidents, Resources, Events
- Sensors, Resources, Crowd Data, Infrastructure
- Street Networks
- Geopolitical Boundaries, Precincts, Districts
- Trends, Hot Spots
- Elevation, Land Use, Demographics
- Holistic View
Web GIS Extends GIS Analyst Reach

Expanding GIS Reach Across the PS Organization
**What do you need to do?**

Integrate & Exploit Existing Investments in data & Infrastructure

- **Gather, Fuse, Analyze & Share Intelligence**
- **Incorporate real-time data from many sensors**
- **Maintain & share the Common Operational Picture**
- **Manage the data**
- **Portal**
- **Formulate & Disseminate Plans**
- **Manage deployed Forces**
- **Monitor the situation through real-time tracking, routing & communications**

Collected… Analyse… Share… Act…
Who benefits?

Analysts
Executives
Commanders
Dispatchers
Field Personnel
Briefers
Elected Officials
Community

GEOINT Professional
Nepal Earthquake

Casualty Dashboard

14,528

Social media
Malaysian Airlines flight MH17 departed Amsterdam with 298 people, from 10 countries on board on 17 July 2014 at 1014h (UTC).
Main Op’s - San Diego, USA

Shared Geographic Understanding

In-country Op’s – BGSP, Malaysia

Users (multiple agencies, Malaysia)
Situational Awareness Dashboard

Social Media

Imagery
Types of Data Consumed by Fusion Centers

Static Data
Updated Less Frequently Than Nightly

- Supply Locations
- Demographics
- Critical Infrastructure
- Terrain Models
- Land Base
- Transportation
- Hydrography
- Political Boundaries
- Base Imagery
- Pictures & Video
- Vulnerability Assessments

Event Data
Live Feeds & Transactional Databases

- Mobile Resource Locations
- Security & DOT Cameras
- Real Time Crime data
- Incident or SAR Data
- Tracking
- Traffic
- Road Blocks & Closures
- Weather Data
- RMS, DMV or CAD Data
- Live Web (GeoRSS) Feeds
- Media Feeds

Fusion Center
"Technology must support operations, and GIS is the most operationally relevant platform available" – Fusion Center Director
Real time GIS & Public safety

Event-driven, real-time GIS

- Monitor assets in real time
- Wide range of transfer data protocols – every sensor
- Real time data processing
- Fast reaction to events
Executive dashboard and real time decision management support

Visualization – map, lists, charts, KPI, alarms, analysis, statistics, reports

Real time data acquisition
Geofencing analysis in real time
Field data collection
Analytical capabilities

- Space time analysis
- Space Time Pattern Mining
  - Space Time Cube - 2D/3D/4D
  - "Hot Spot" classifications:
    New, consecutive, emerging, permanent, declining, sporadic or historical hot and cold spots.
Drone Imagery Processing
Drone2Map

- Turn Drones into Enterprise Productivity Tools
- Run on Desktop or Amazon Cloud
Drone2Map for ArcGIS is a desktop application that turns raw, still imagery from drones into orthorectified mosaics, terrain models, point clouds, 3D meshes, & more.
Share Drone Imagery Fast
Get Imagery Products To Your Users When They Need It

3D products

Scene layers

Share as …
ArcGIS Full Motion Video

- “Live stream”
- Draw map objects on the video
- Zoom in/out
- Playback
- Measure distance on the video
- etc.
Current situation

Numerous gauging stations keep close watch on the Flemish watercourses. They continuously register water levels, flows and precipitation.
1. Where are my incidents?
2. Where are my resources?
3. Where are my personnel?
Incident & Resource Map
Incident Tracking
Resources Assignment
Thank you!