



# GIS for Internal Security

Col (Retd) Richard Sundharam  
ESRI- India

# What is Internal Security?

Internal Security is protecting and sustaining a nation's:

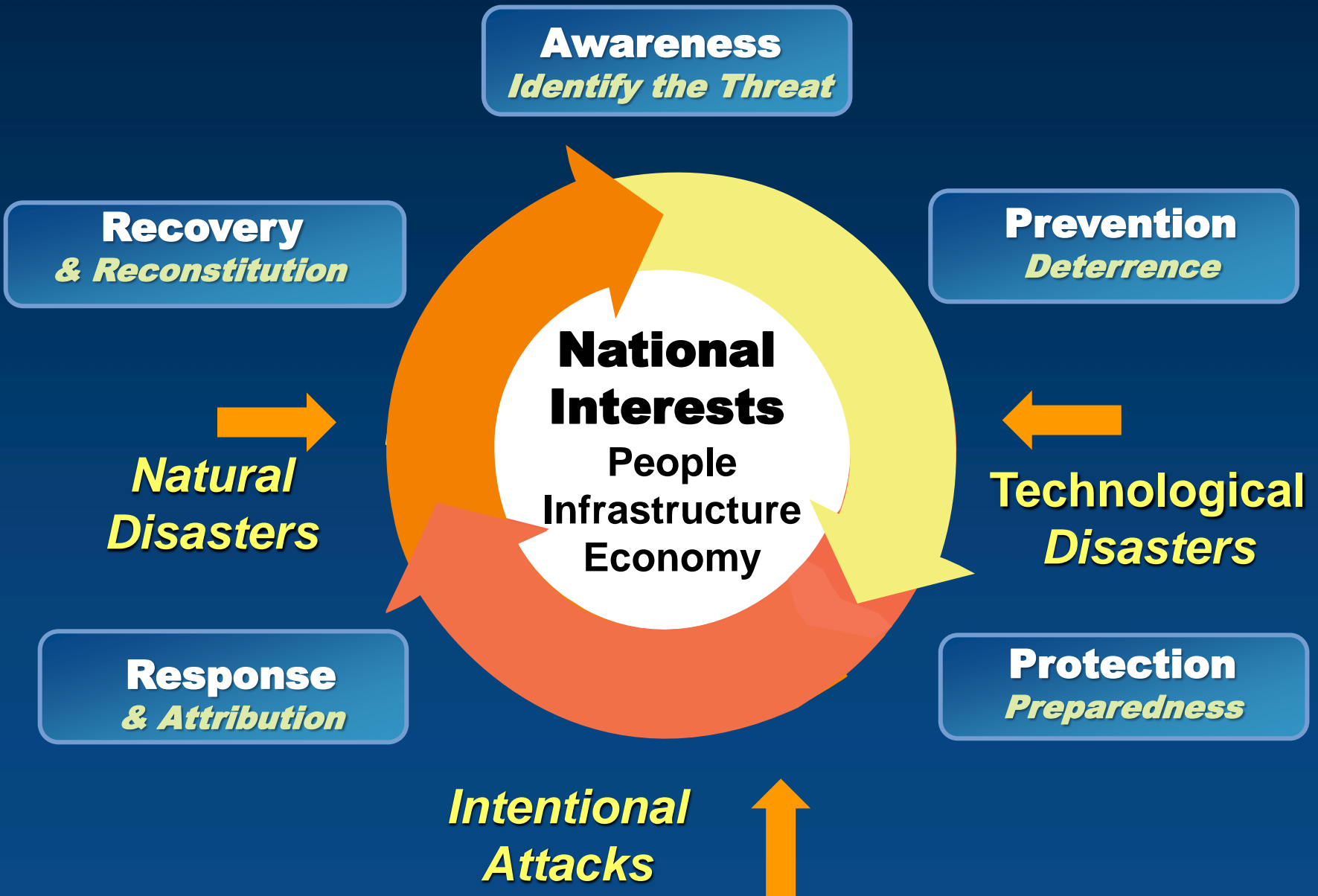
- Population
- Economy
- Infrastructure
- Borders
- Overall Prosperity

*.....Preserving our way of Life*



**26/11, Mumbai Attack**

# Internal Security Model



# Who is Challenged with the Internal Security Mission?

- Intelligence Agencies
- Law Enforcement Agencies
- Disaster Management Authority
- Health Services
- Emergency Services (Fire and Medical)
- Armed Forces

*.....Unity of Action!*

# Requirements for Effective Internal Security Execution?

- *Shared Vision and Objectives*
- *Comprehensive Understanding of Vulnerabilities*
- *Effective Resource Management*
- *Coordination and Communications*
- *Situational Awareness*

.....*Need for an Integrating Framework*

# Internal Security - Critical Infrastructure Data

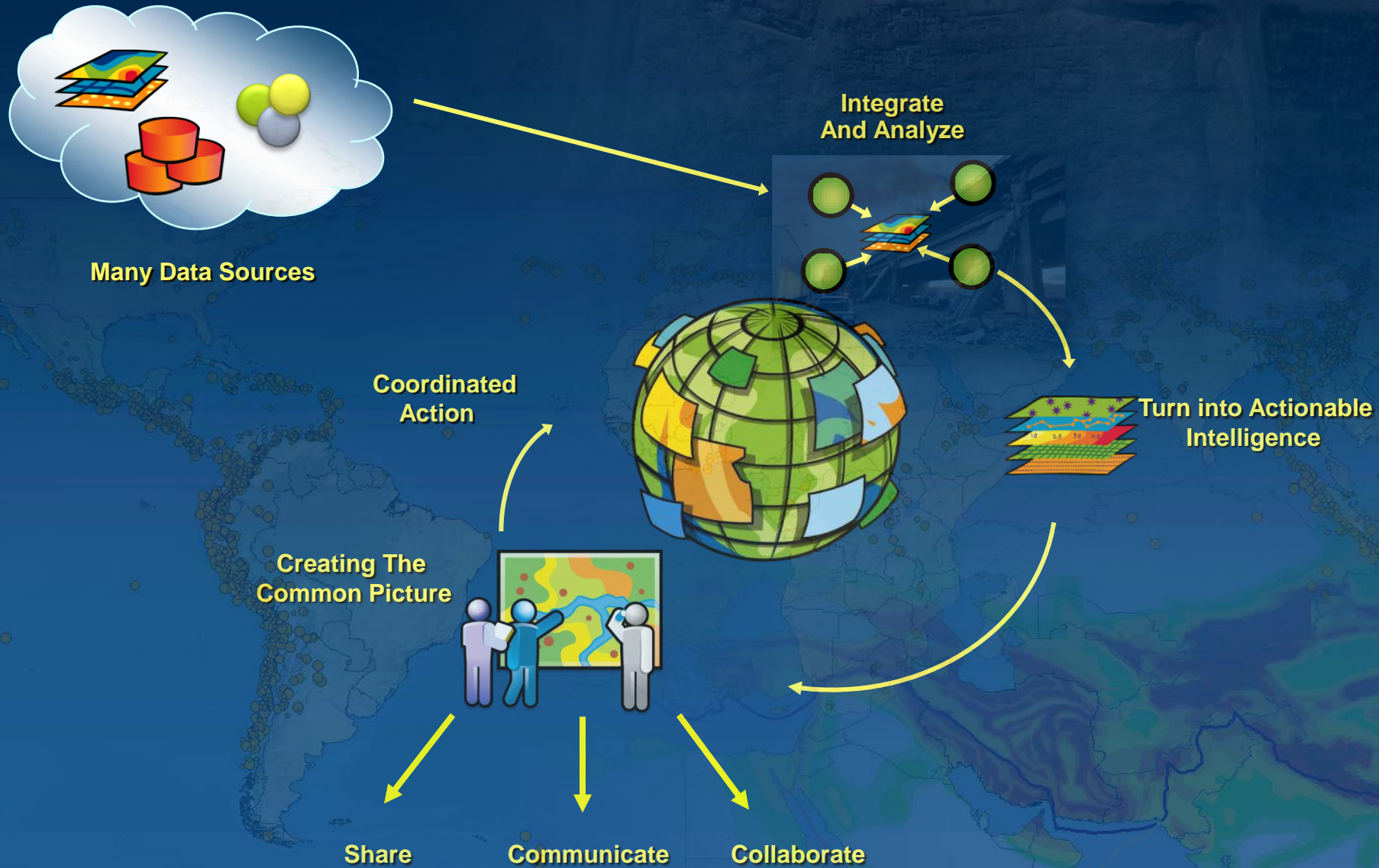


*Government*  
*Transportation*  
*Agriculture*  
*Banking and Finance*  
*Defence*  
*Chemical Industry*  
*Energy*  
*Services*  
*Public Health*  
*Information and Telco*  
*Water*  
*Emergency Services*  
*Food*  
*Postal and Shipping*

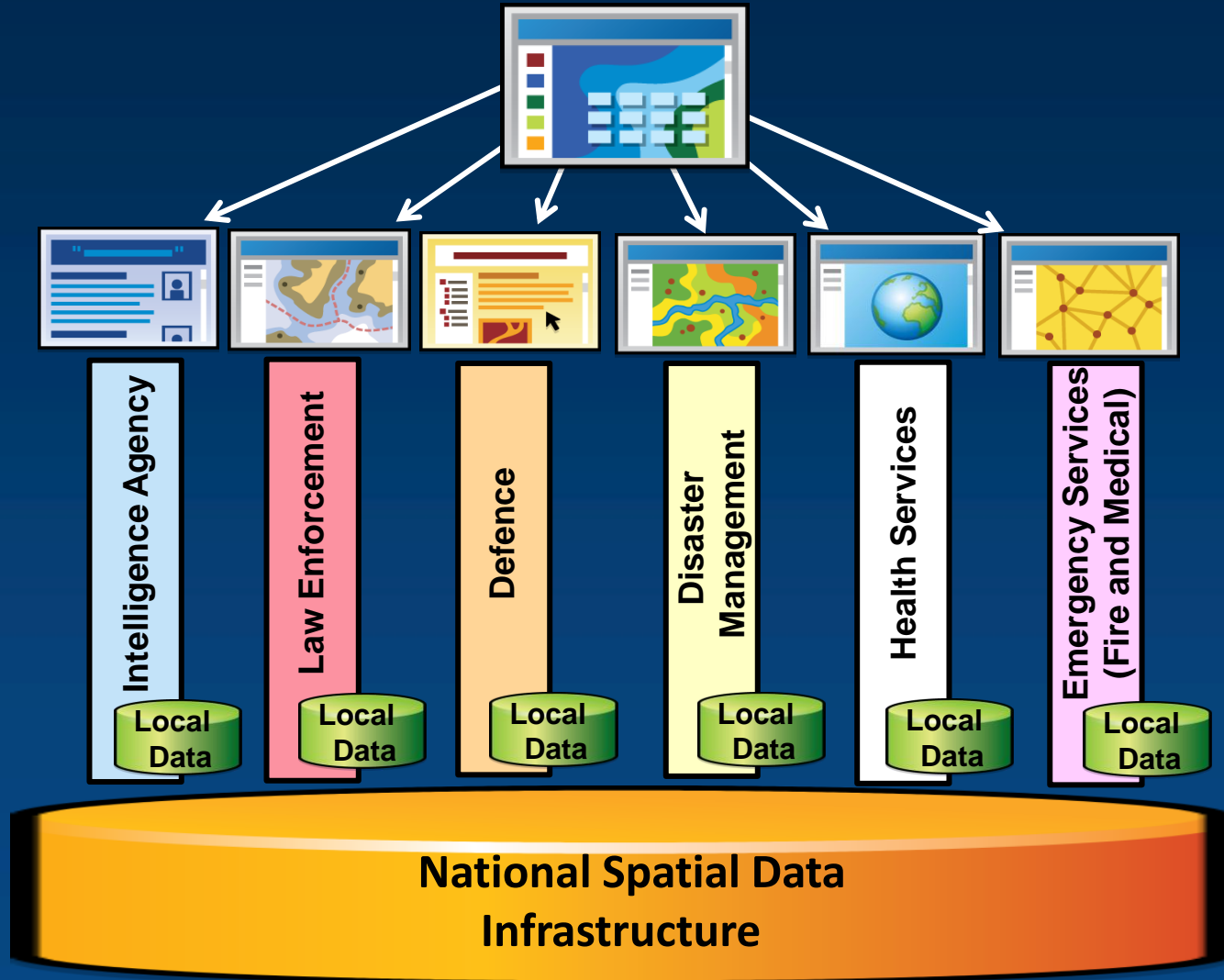
***Making  
non-explicit  
relationships  
and patterns  
clearer***

***.....Managing Data For Internal Security Decision Support***

# GIS for Internal Security



# GIS – Supporting Unity of Action





# Internal Security Mission Challenges

- **Collect and Manage Data**
- **Model, Analyze and Assess Vulnerabilities**
- **Develop integrated security, protection and mitigation plans**
- **Support prevention, response, interdiction and incident management**
- **Track and manage resources**
- **Establish and maintain shared situational awareness with updates and changes**

*.....A Complex Multi-Agency Problem*

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# GIS Provides - Essential Capabilities for Internal Security

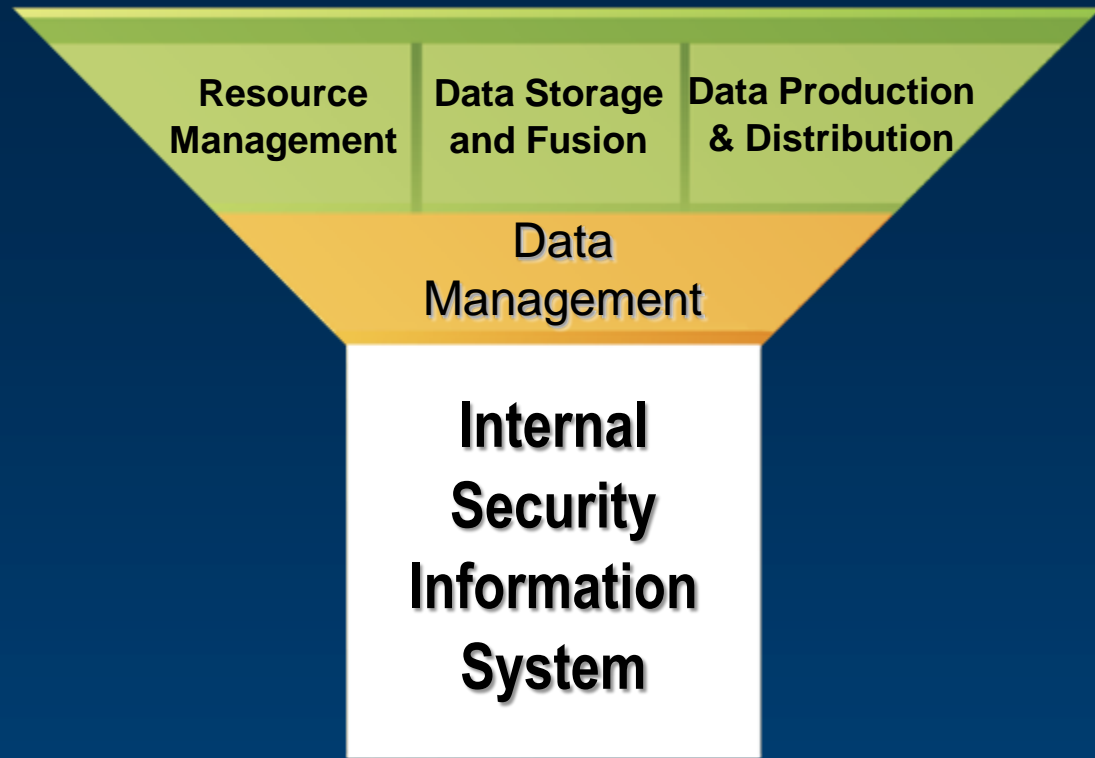


*.....Timely, And Efficient Collaboration, Problem Solving, and Decision-making*

# Information System for Internal Security

**Internal  
Security  
Information  
System**

# Information System for Internal Security





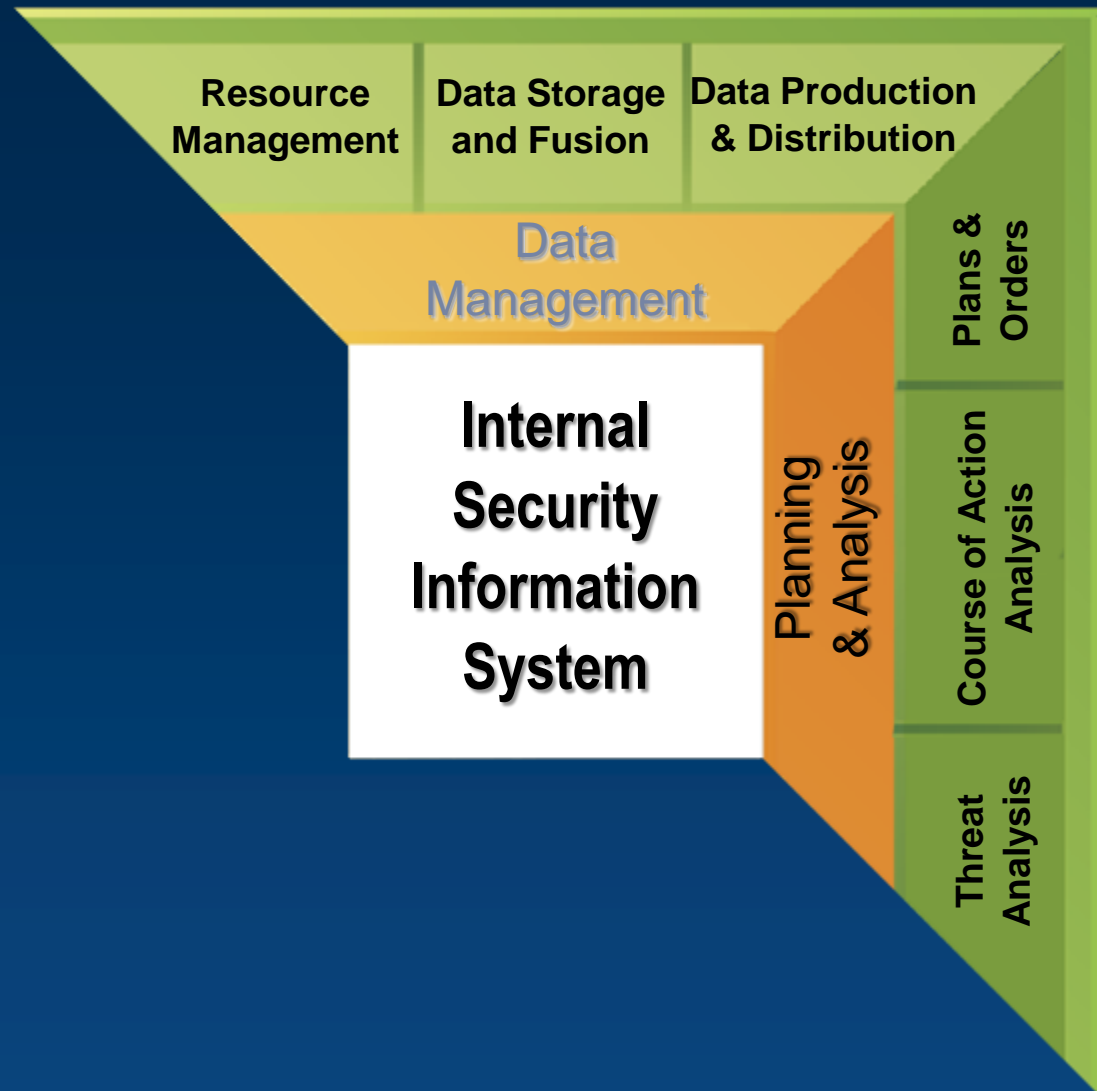
# GIS for Data Management

Creating a Stronger Platform...

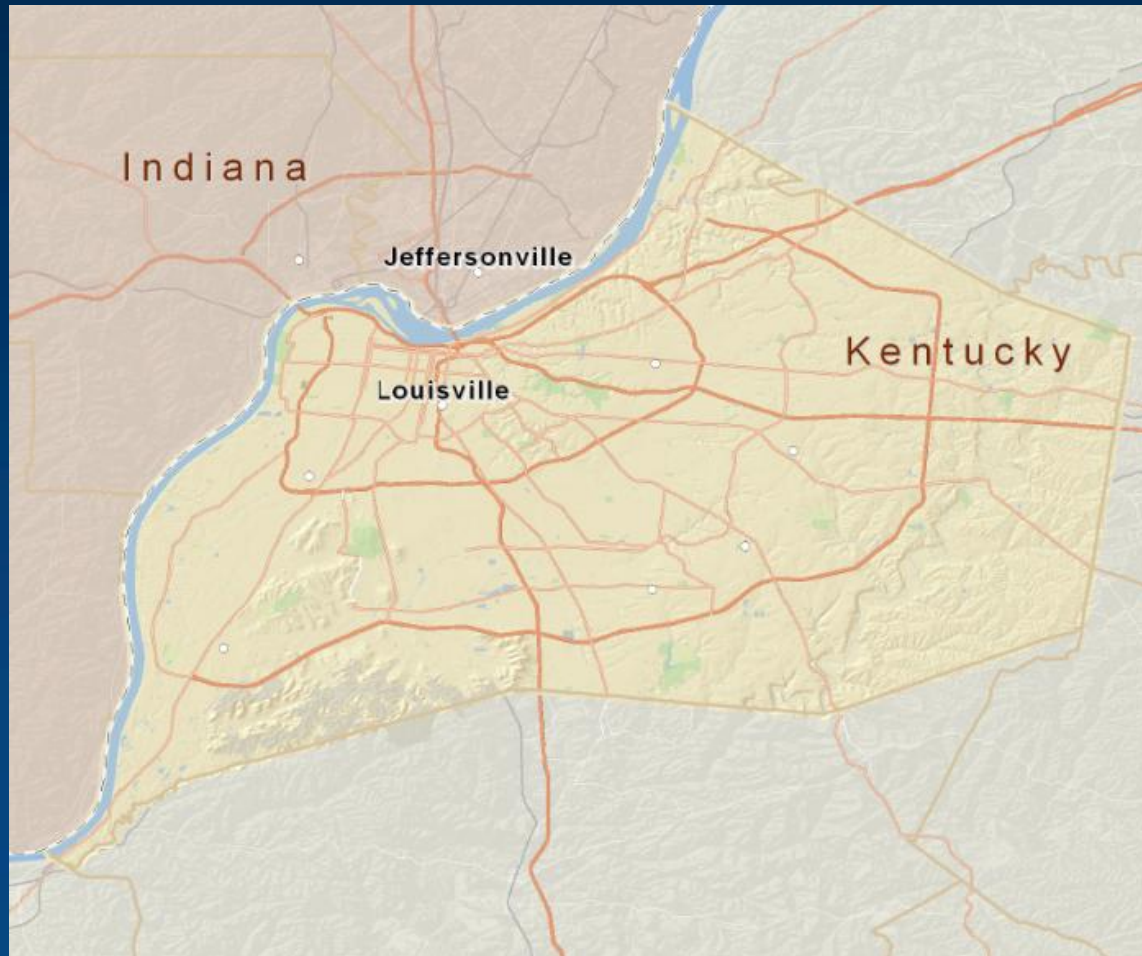


*...Efficiency through an Integrated System.*

# Information System for Internal Security



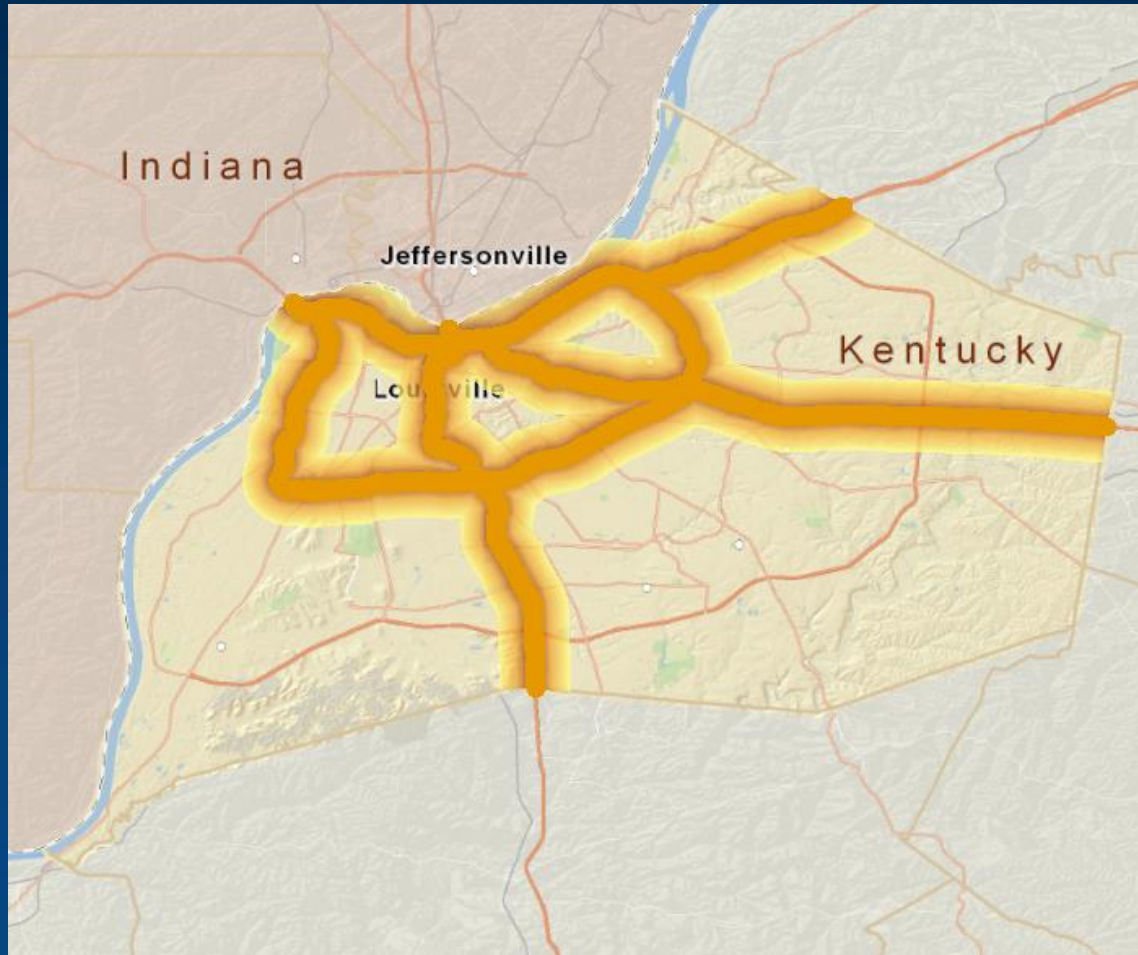
# Risk and Hazard Analysis



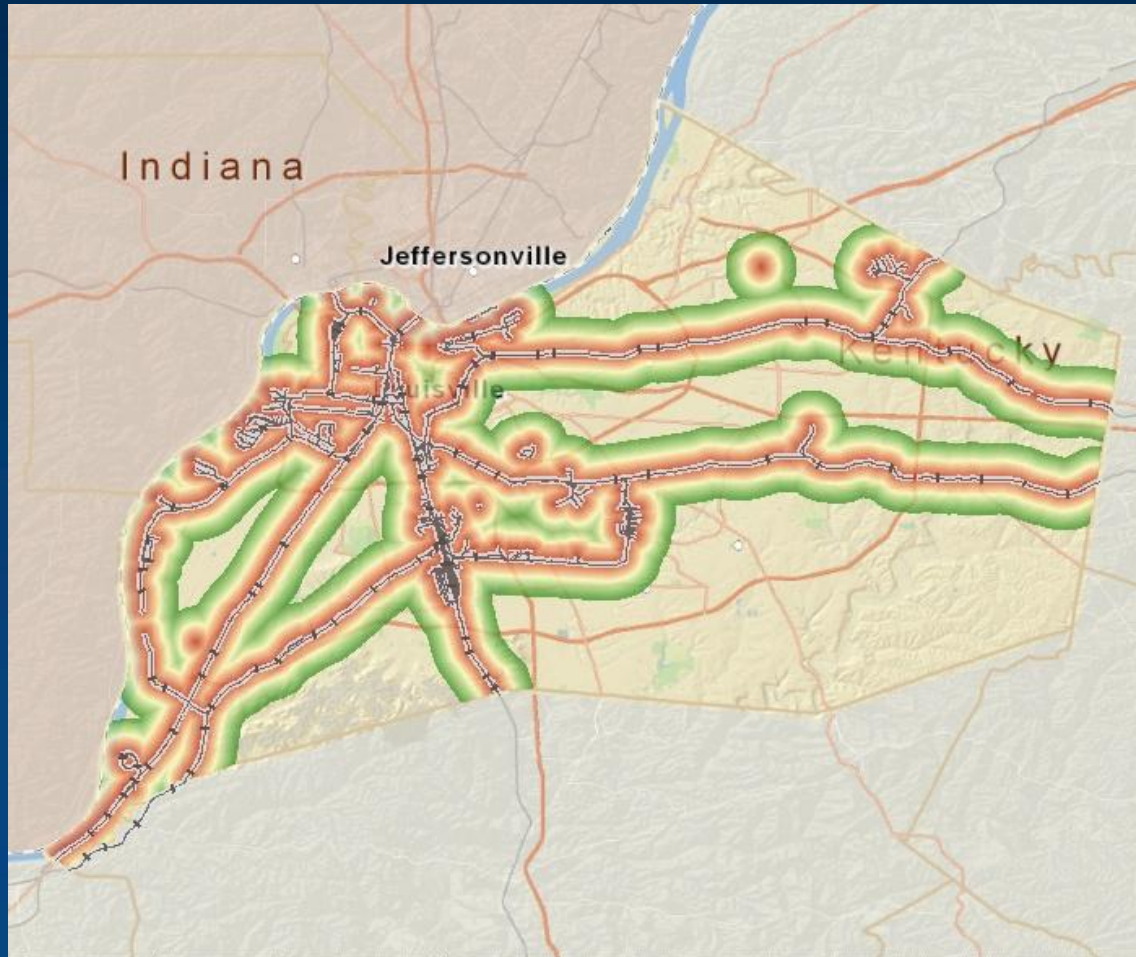
# Natural Hazards



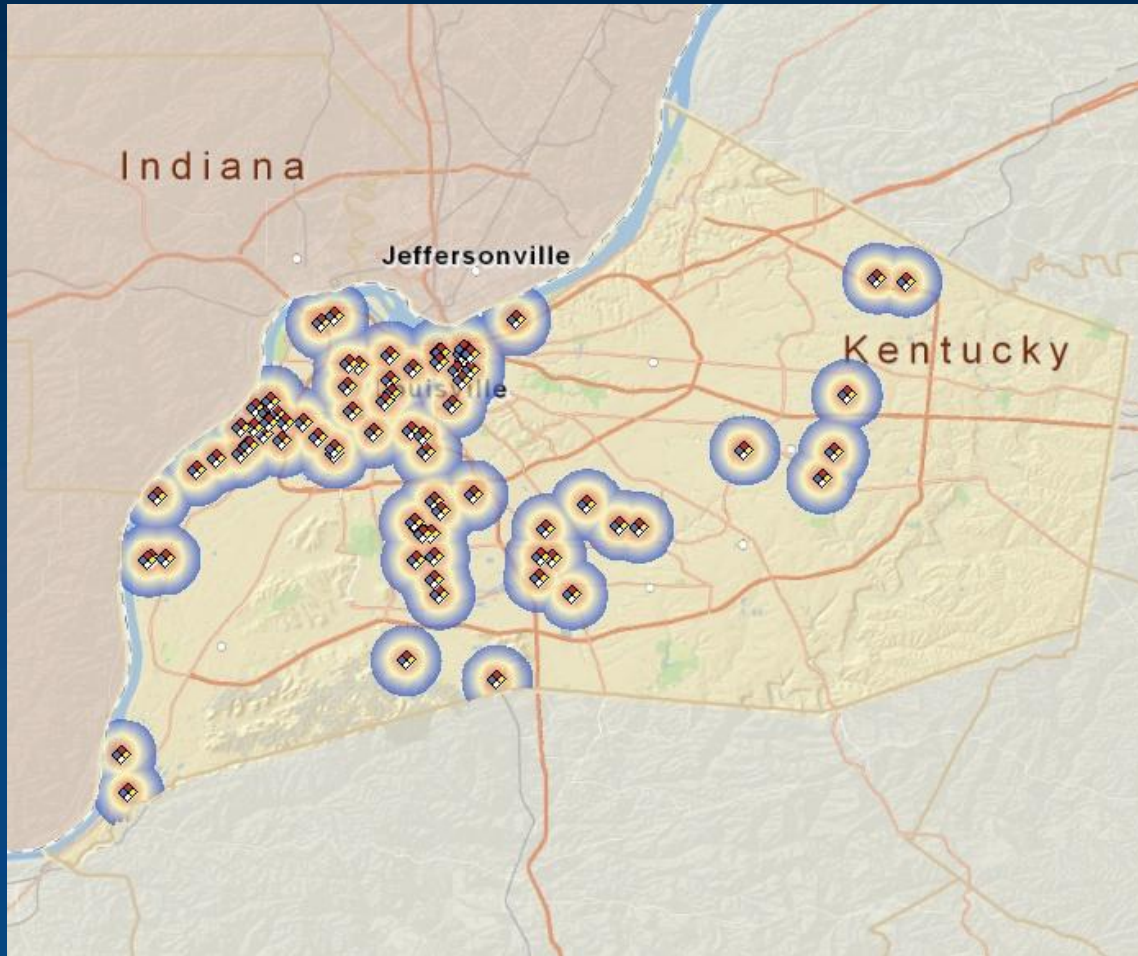
# Technological Hazards – HazMat Routes



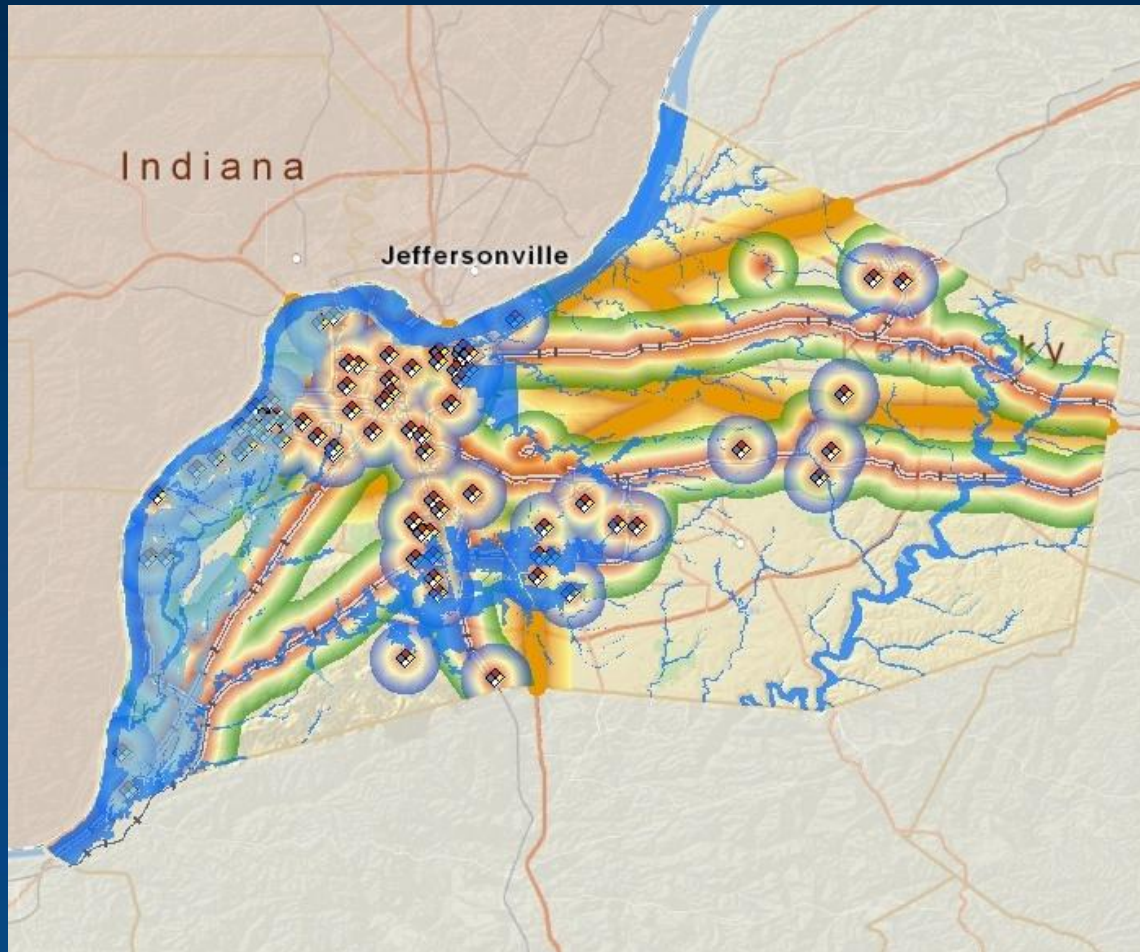
# Technological Hazards – Rail Lines



# Technological Hazards – HazMat Locations

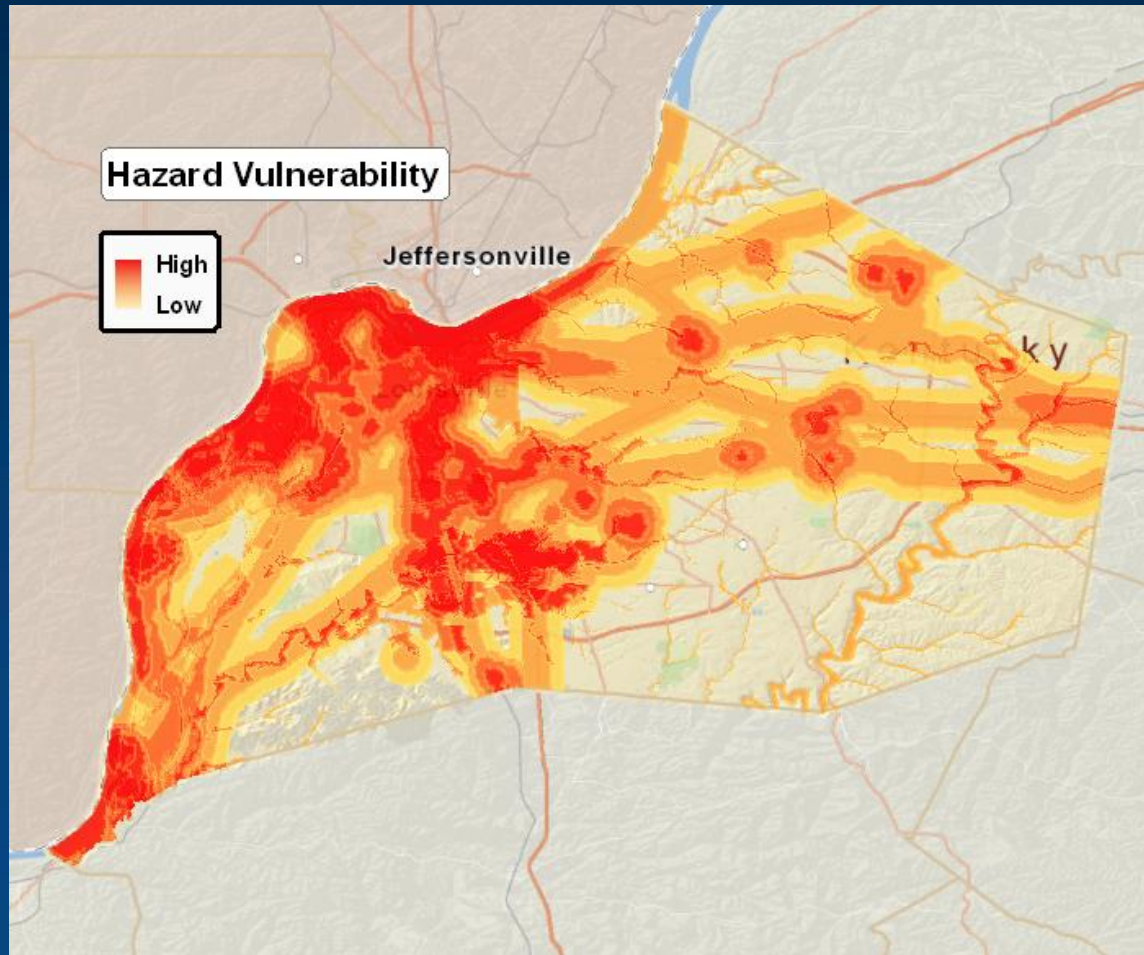


# All Hazards

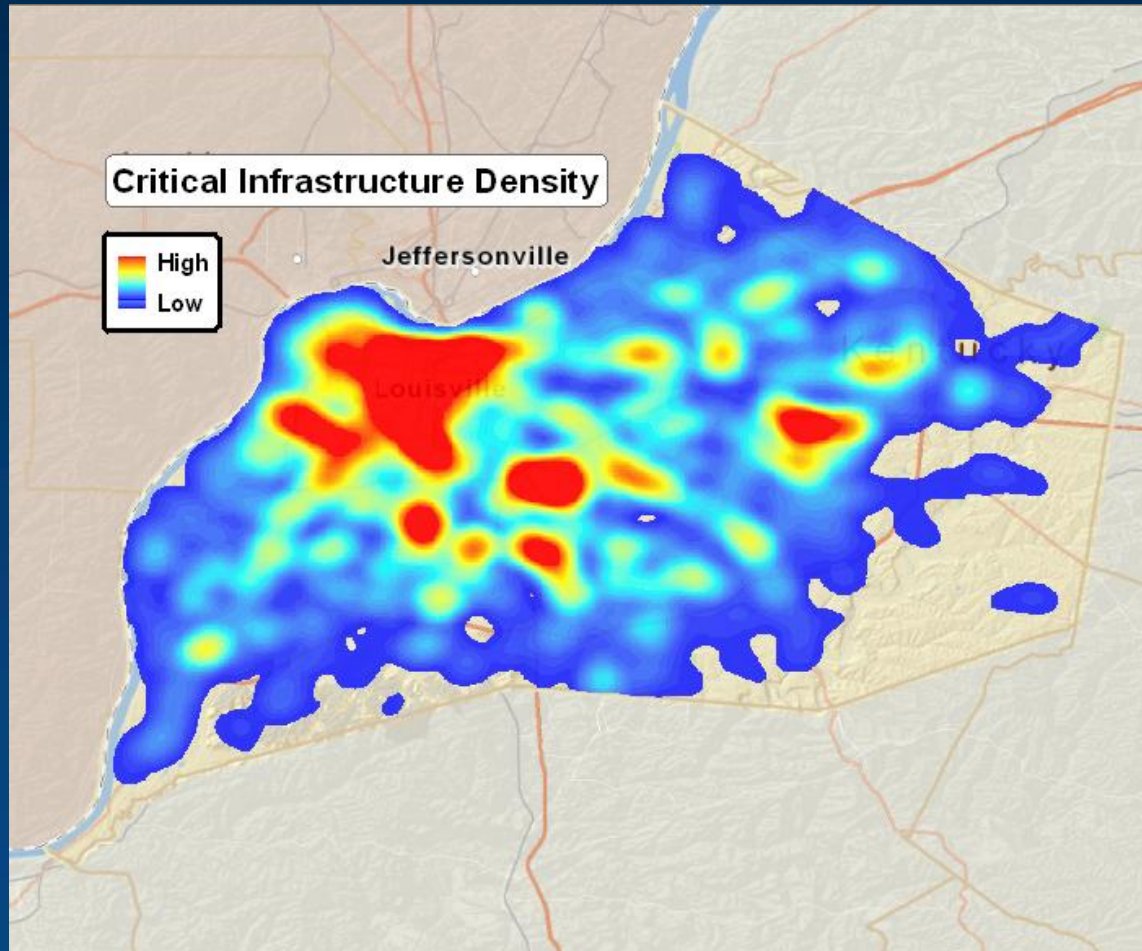




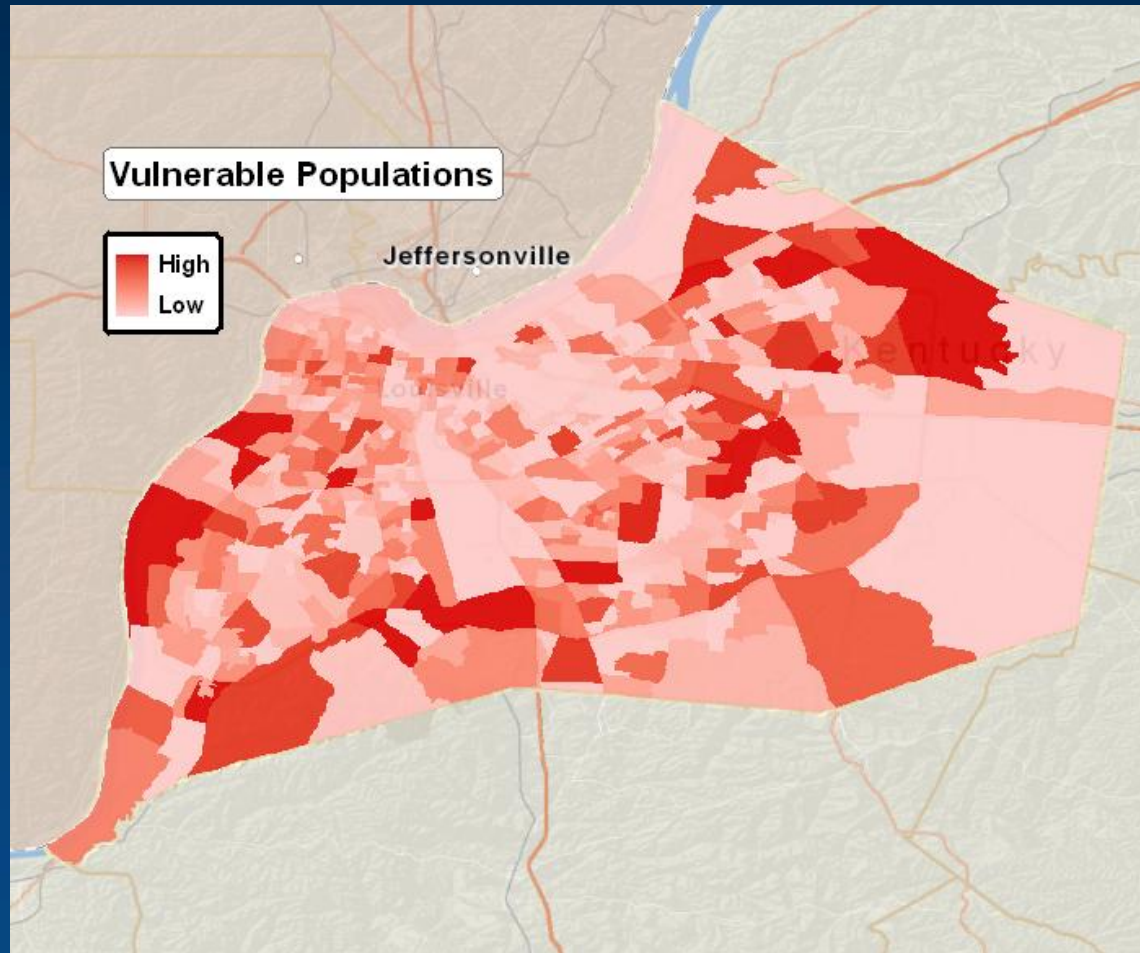
# All Hazards Combined



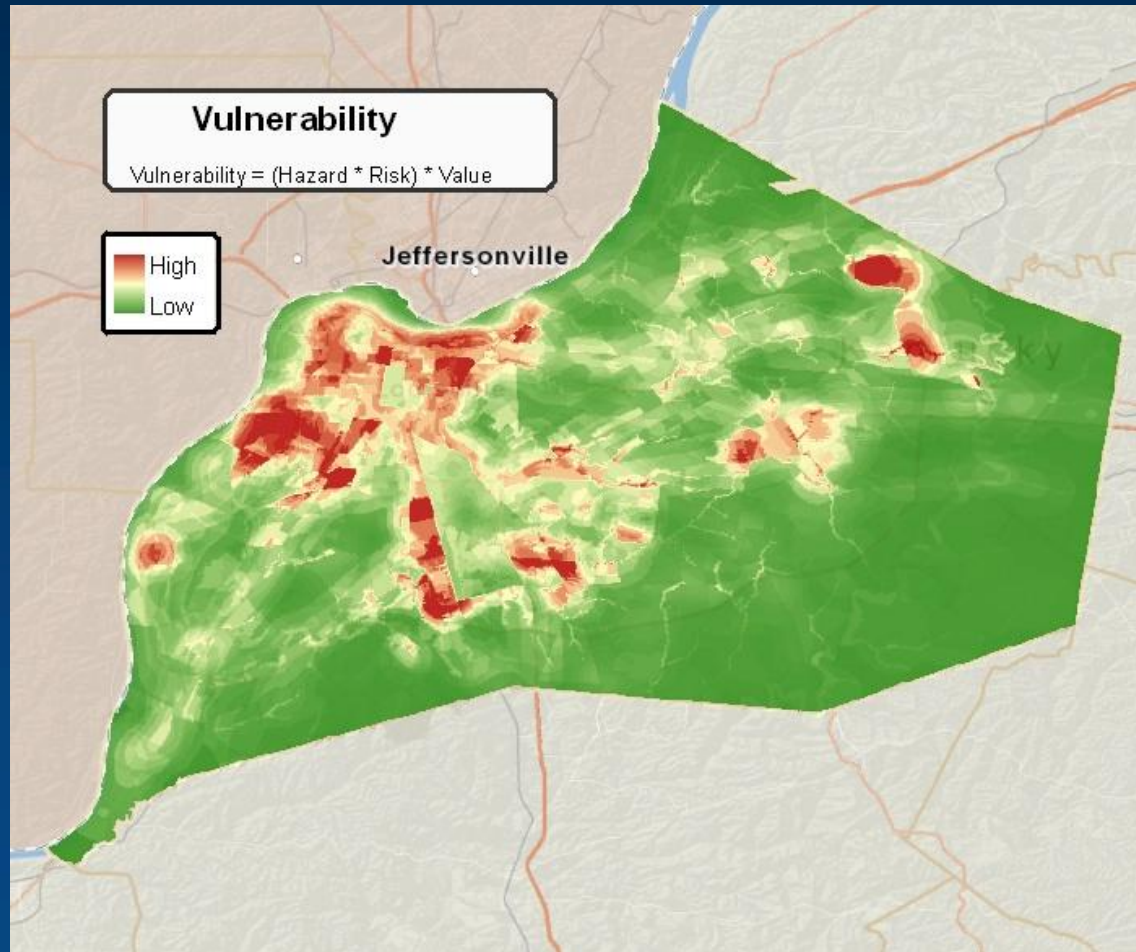
# Critical Infrastructure



# Population Vulnerability

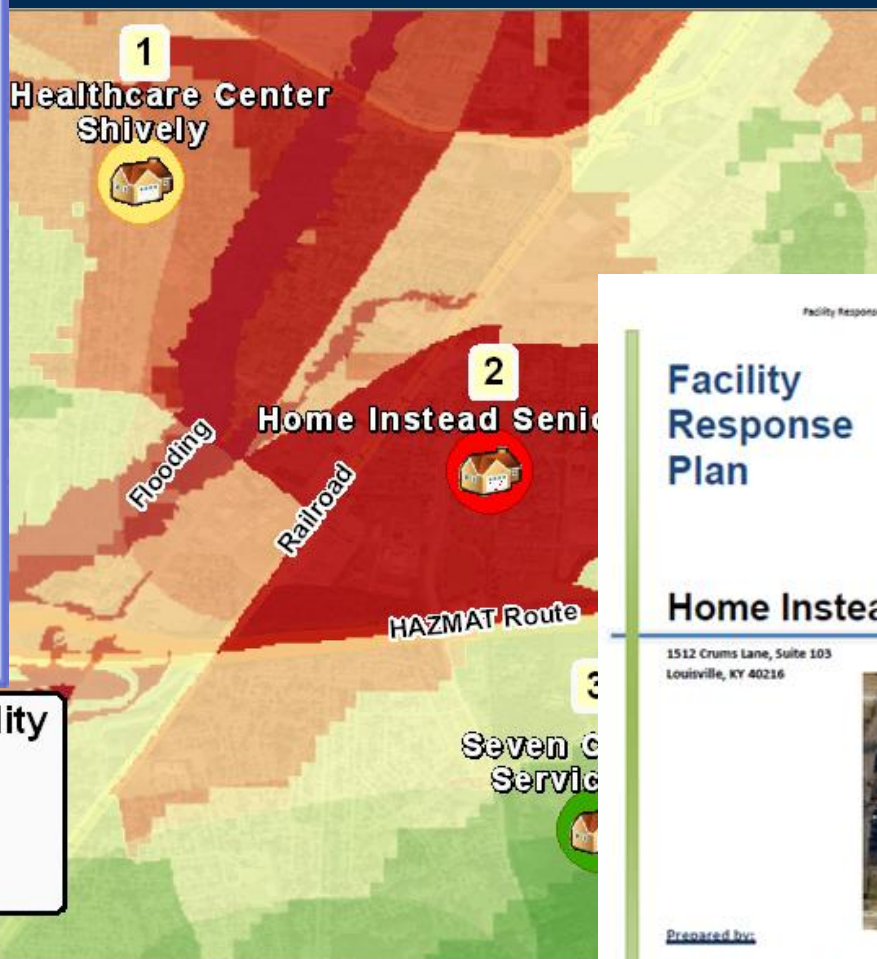


# Overall Assessment



# Operationalizing Plans

Input Hazards	
Flooding	Low
Railroads	High
Hazmat Facility	Medium
Hazmat Routes	High
Model Variables	
Hazard	Medium
Demographics	High
Critical Infrastructure	Low
Model Result	
Vulnerability	High
Site Plan	Available



Facility Response - Home Instead Senior Care

2007

**Home Instead SENIOR CARE**

## Facility Response Plan

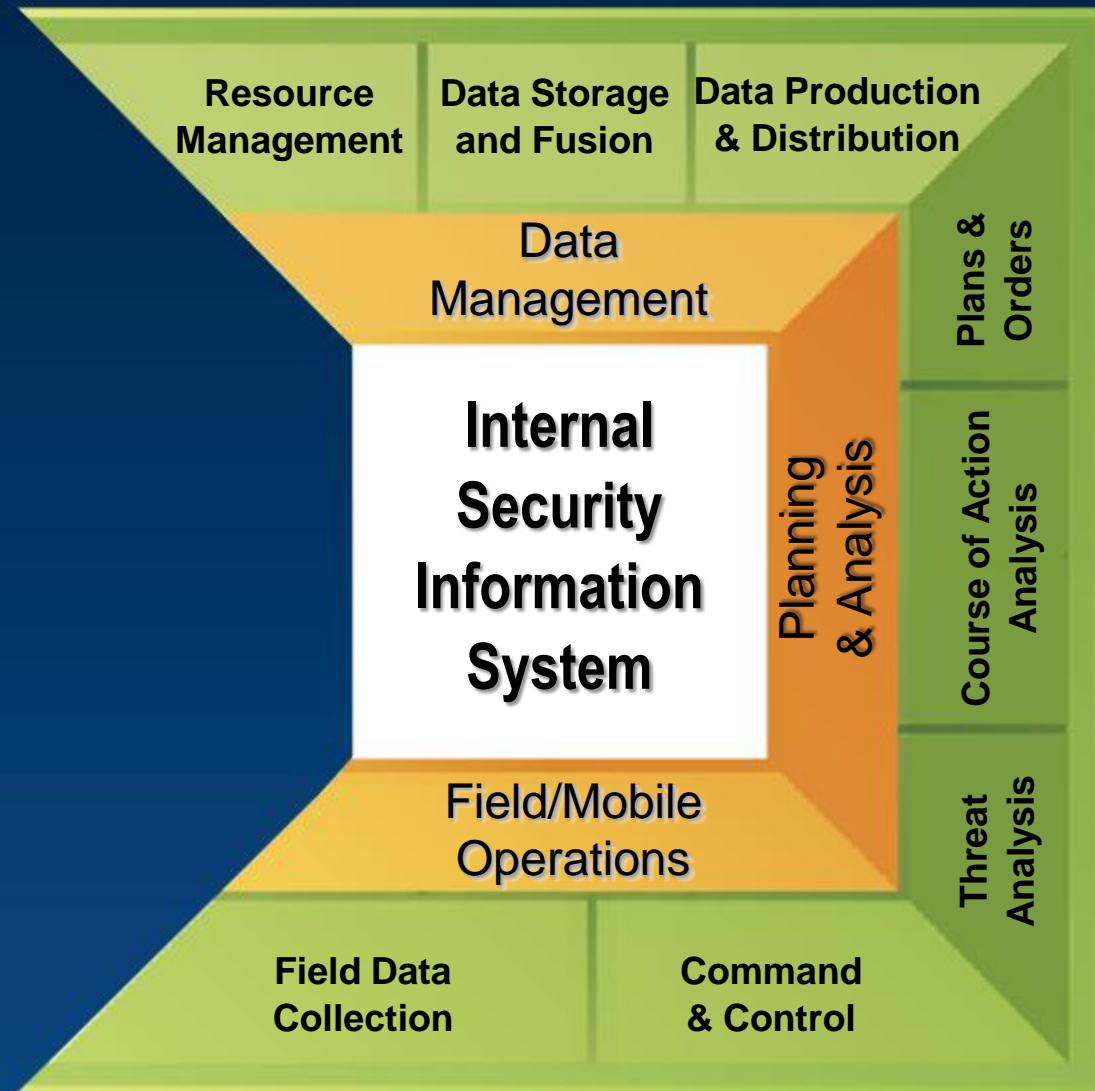
### Home Instead Senior Care

1512 Crums Lane, Suite 103  
Louisville, KY 40216

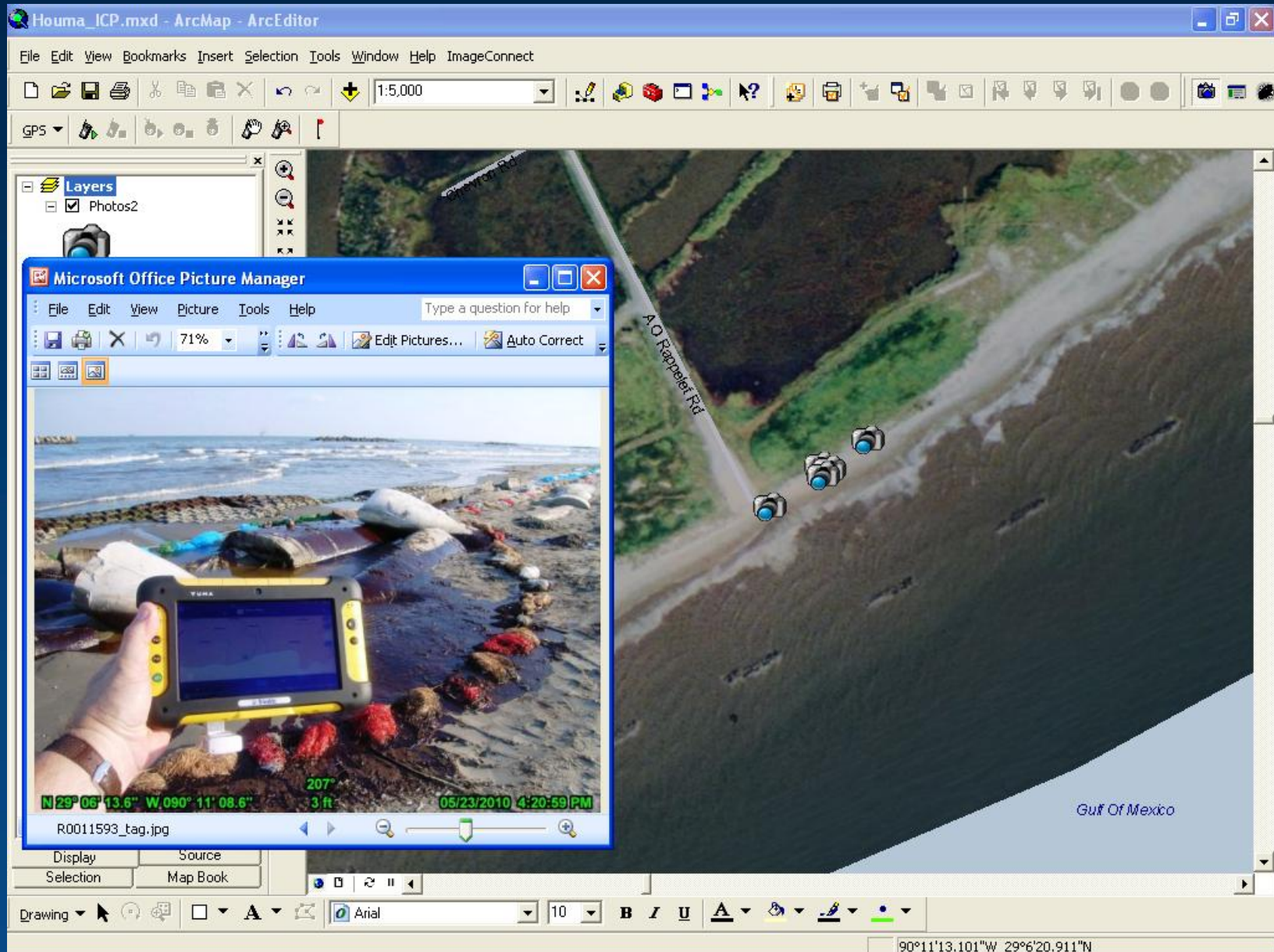
Prepared by:  
City of Louisville, December 2007

1

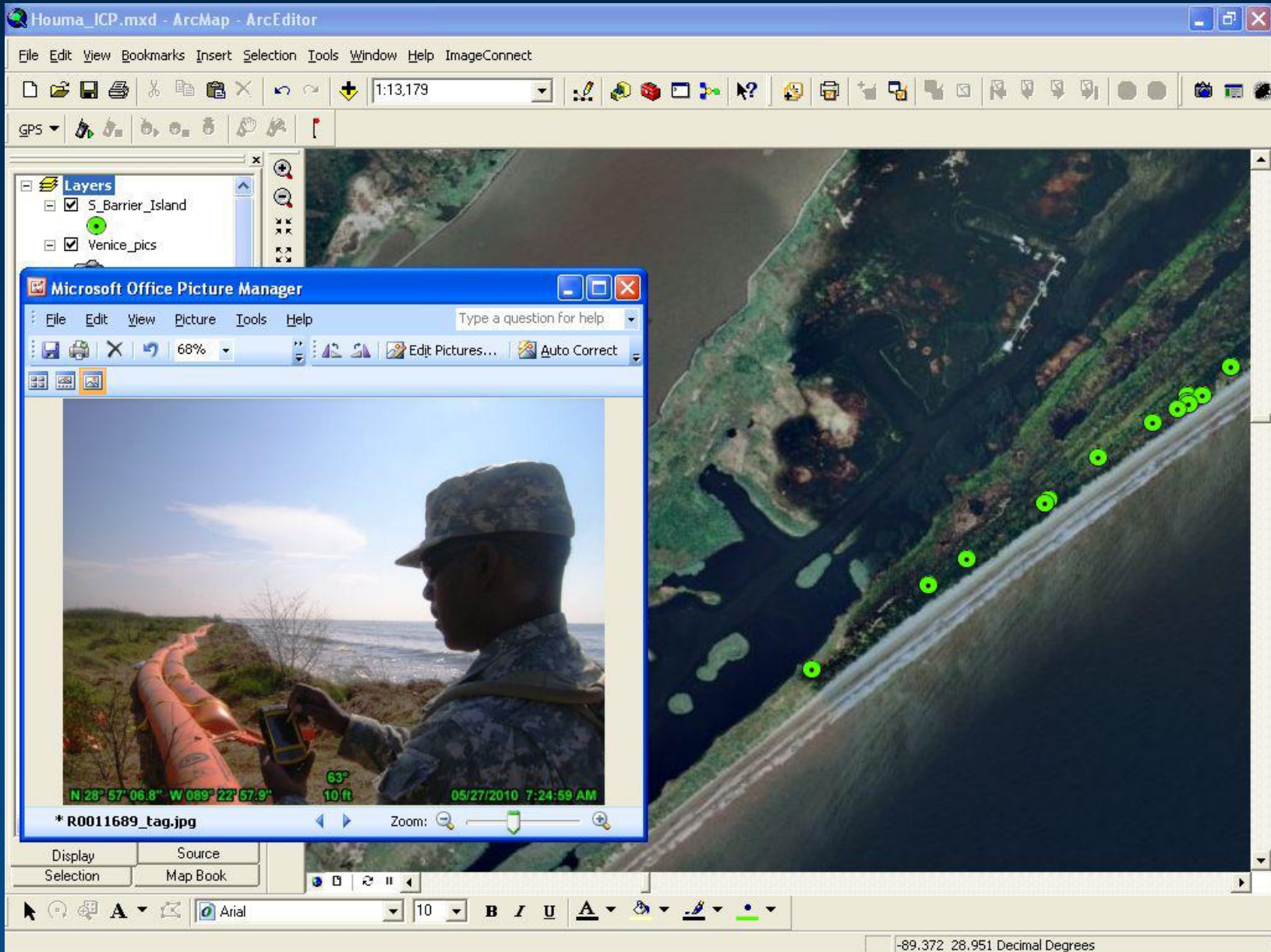
# Information System for Internal Security



# Status of Work

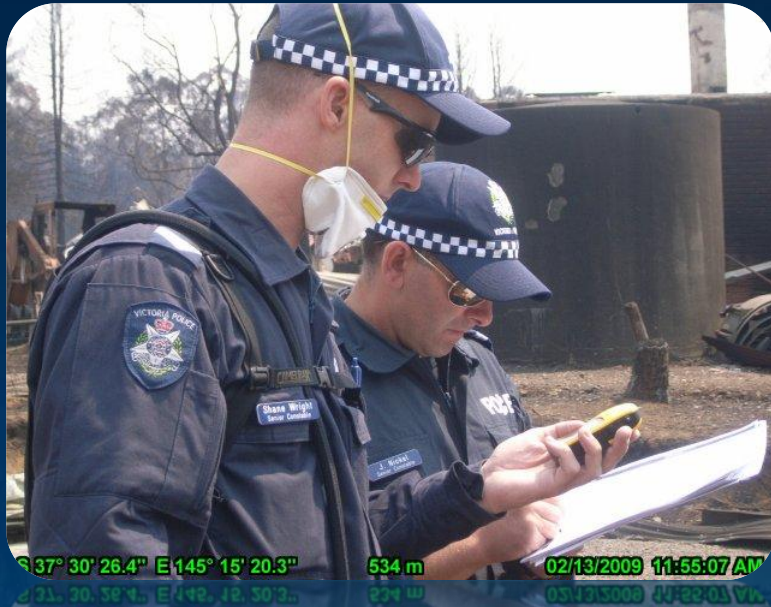


# Field Impact Reporting

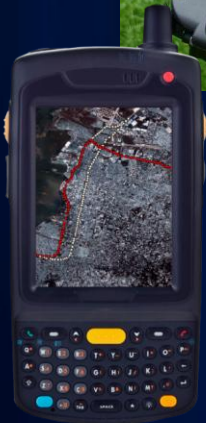
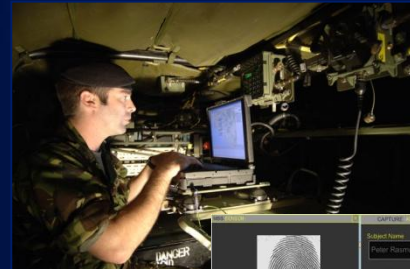




# Mobile Mapping – Damage and Casualties

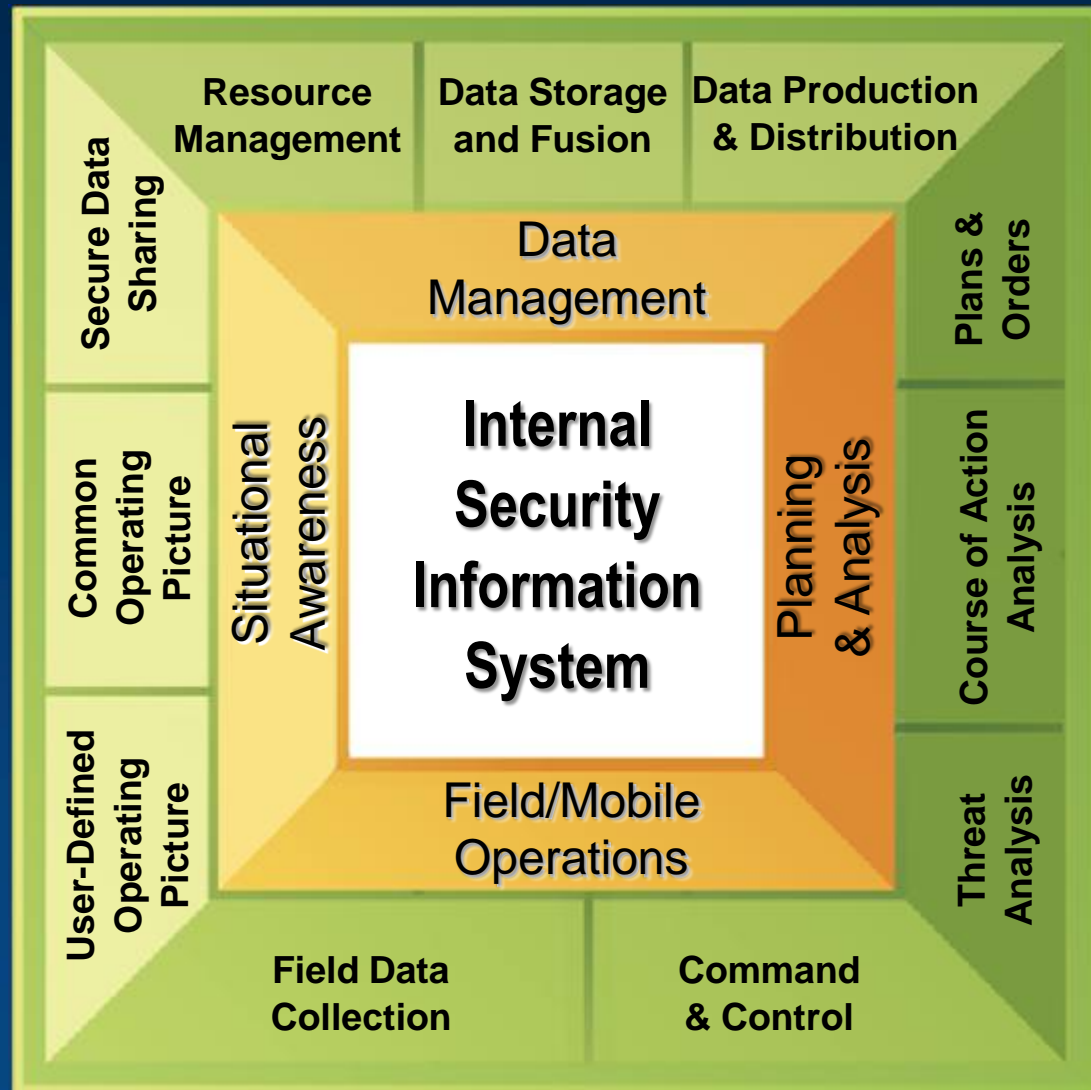


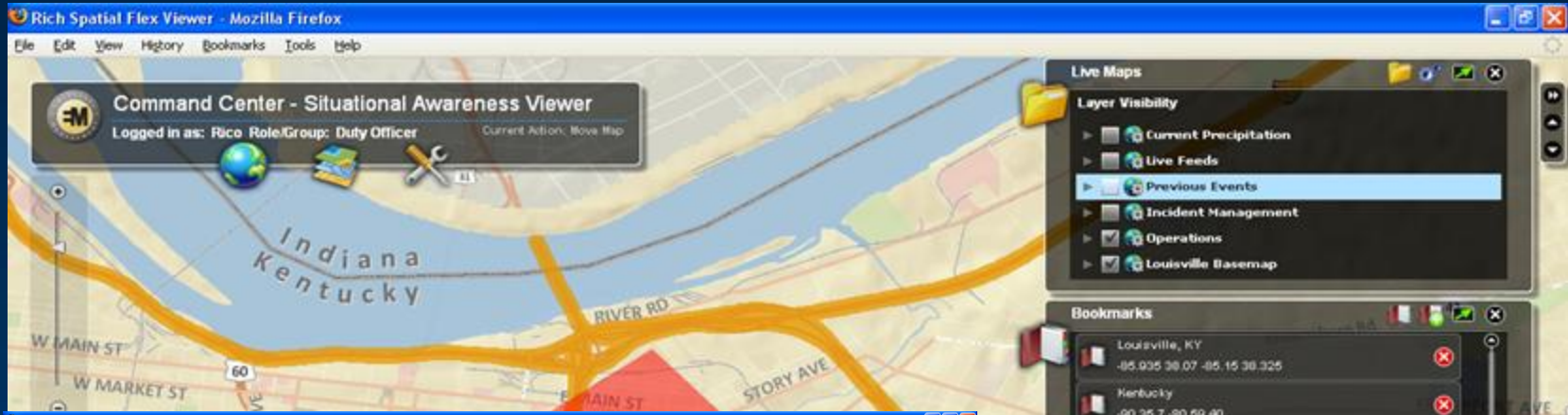
# GIS for Field Operations



... Supporting Soldier as a Sensor

# Information System for Internal Security





### Live Maps

Layer Visibility

- Current Precipitation
- Live Feeds
- Previous Events
- Incident Management
- Operations
- Louisville Basemap

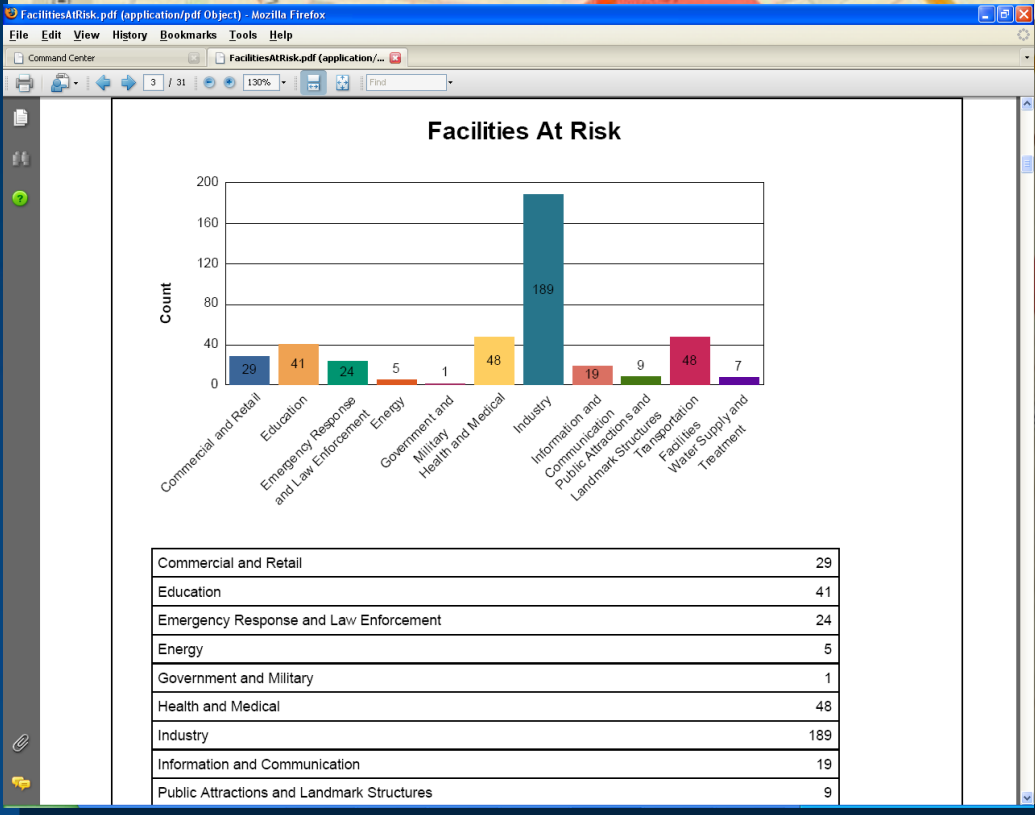
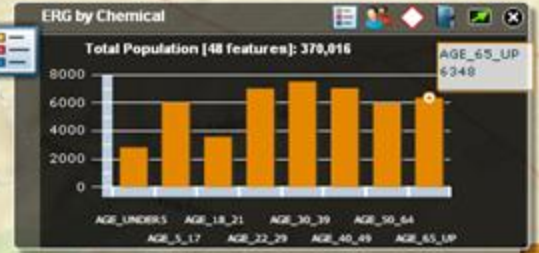
### Bookmarks

- Louisville, KY  
-85.935 38.07 -85.15 38.325
- Kentucky  
-90.35 7 -80.59 40
- Eastern USA  
-100 24.89 -70.59 46.92
- Contiguous USA  
-122.2 24.89 -70.59 46.92

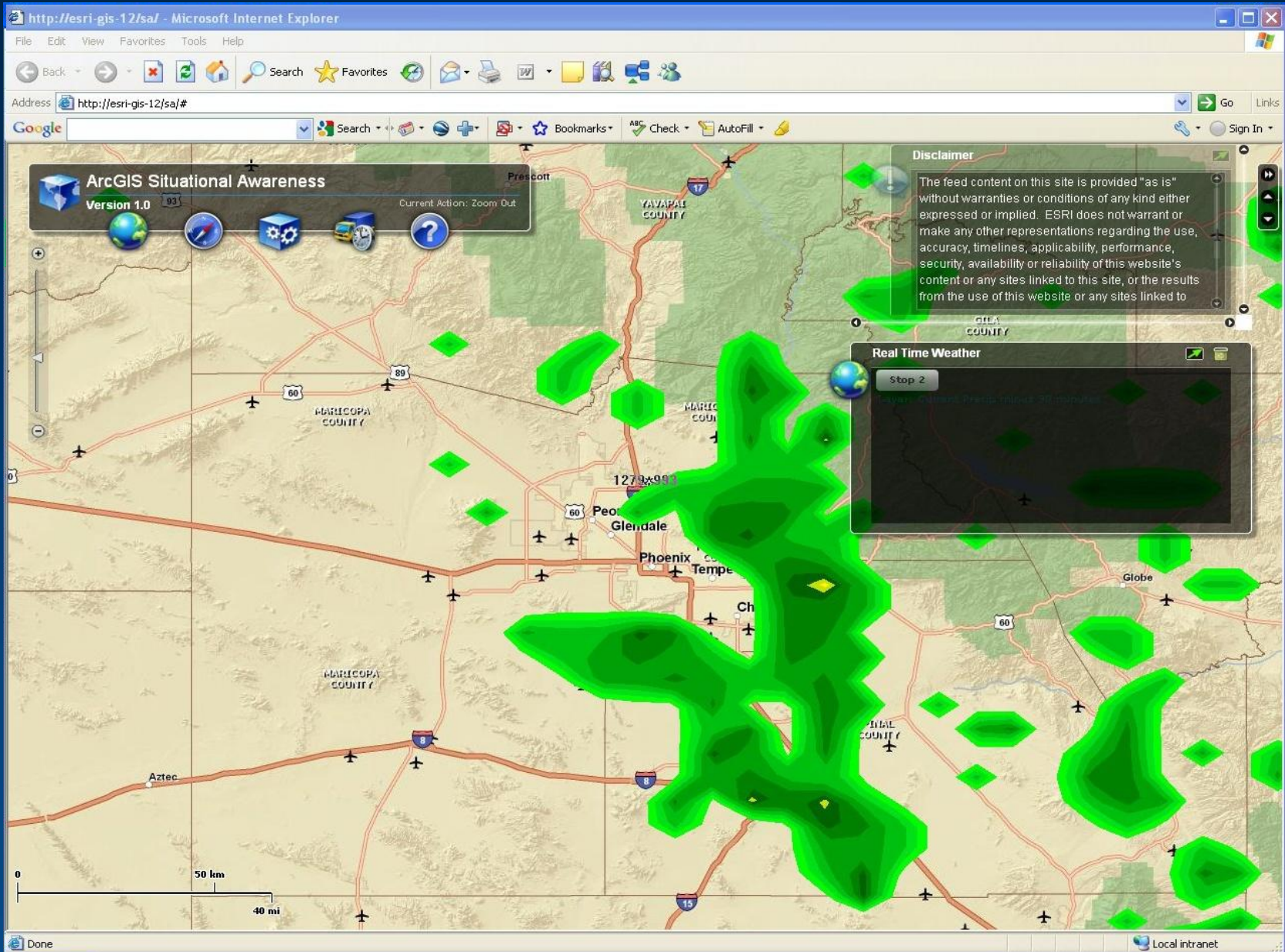
### Traffic Incidents

Disabled Vehicle at Hospital Curve  
 SEVERITY: Low  
 DESCRIPTION: Disabled Vehicle in SB lane of I-65 is causing congestion  
 LOCATION: Hospital Curve

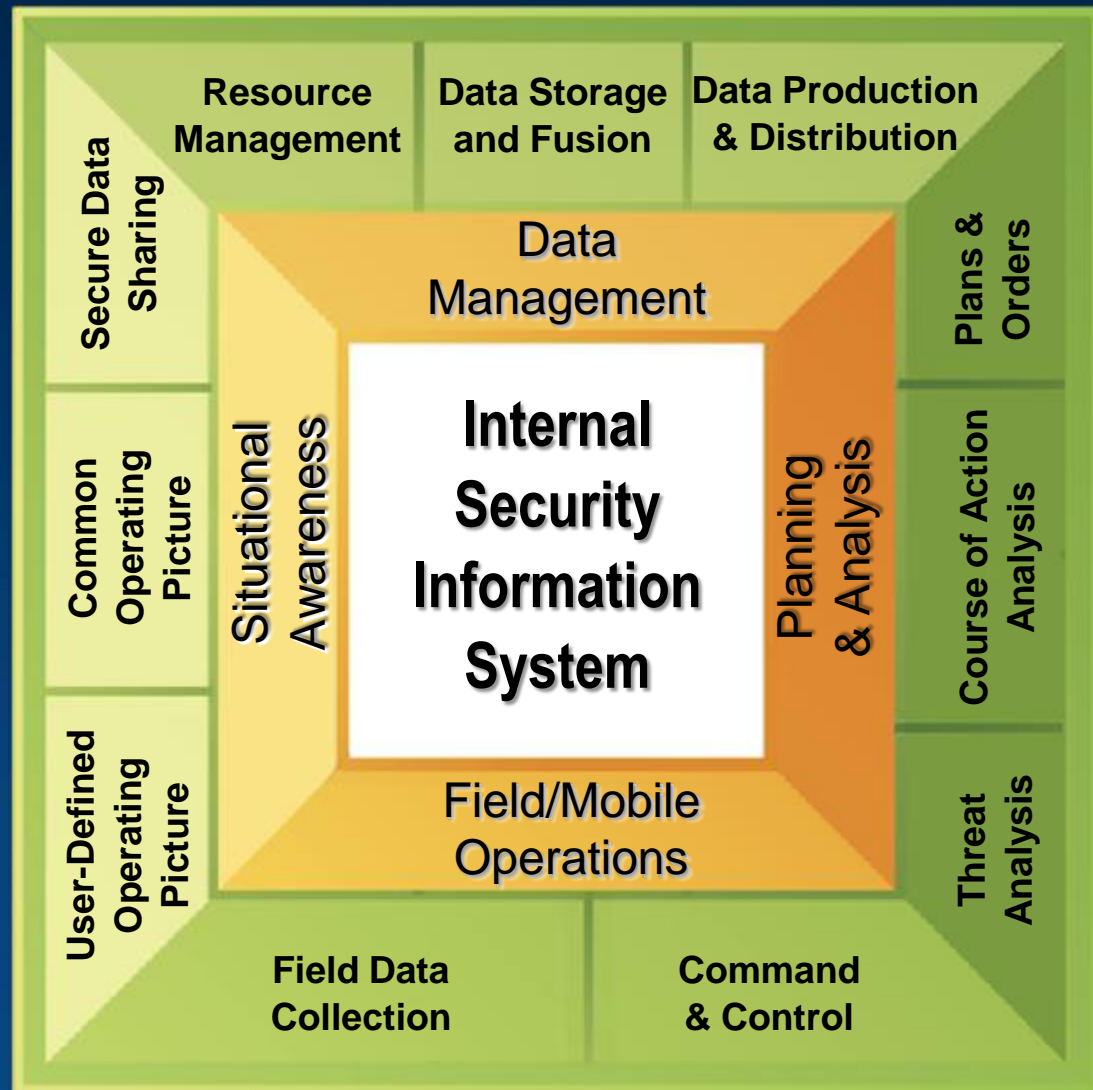
Single Car accident on EB I-265  
 SEVERITY: Medium  
 DESCRIPTION: Single Car accident at EB I-265 and New Cut Rd. Minor injury reported  
 LOCATION: I-265 EB and New Cut Road



# Situational Awareness – Dynamic Data Feeds



# Information System for Internal Security



# Summary : Patterns of GIS Use

Four main ways GIS is used by National Security Organizations



# ArcGIS Enables Internal Security

## A Complete System for Geographic Information





Thank You

