

Casse Study

EMERGENCY SITUATION ASSESSMENT

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What are Emergency Situations?

- Unexpected/untoward events
- Occurrence of a disaster
- Loss of orderliness

Why do we need to Assess Emergencies?

- Monitoring Material / People flows
- Limit the Impact on Life and Property
- Identifying Bottlenecks
 - Physical points of constriction
 - Informational Bottlenecks

Disasters – Scale and Extent Varies



GIS in Office of Emergency Management at WTC, New York following 2001 terrorist attack

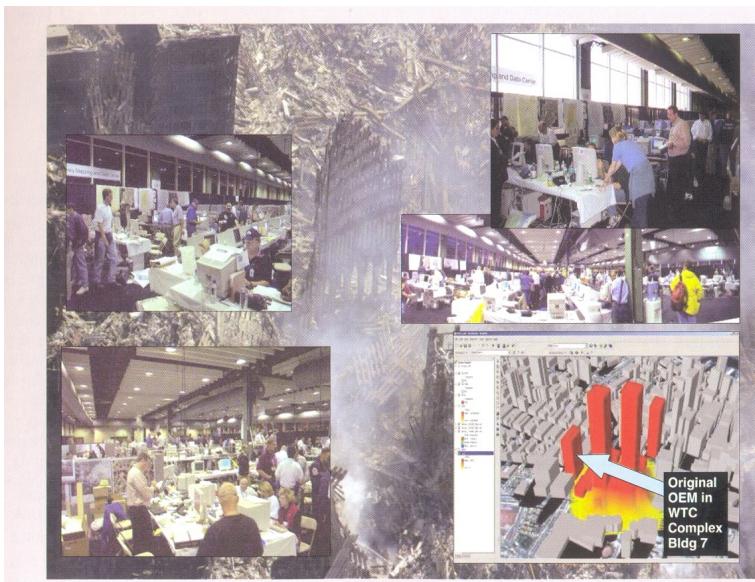


Figure 1.1 GIS in the Office of Emergency Management (OEM), first set up in the World Trade Center (WTC) complex immediately following the 2001 terrorist attacks on New York (Courtesy ESRI)

Use of GIS in Office of Emergency Management at WTC, New York following 2001 terrorist attack

Travel
restrictions



Affected zones - lack of communication lifeline



Figure 1.2 GIS usage in emergency management following the 2001 terrorist attacks on New York: (A) subway, pedestrian and vehicular traffic restrictions; (B) telephone outages; and (C) surface dust monitoring three days after the disaster.
 (Courtesy ESRI)

Dust Monitoring, post 9/11

(C)

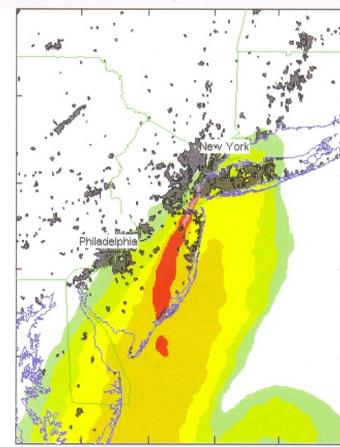
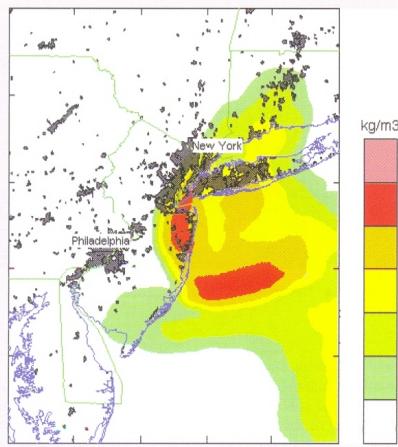


Figure 1.2 (continued)

Response Modelling

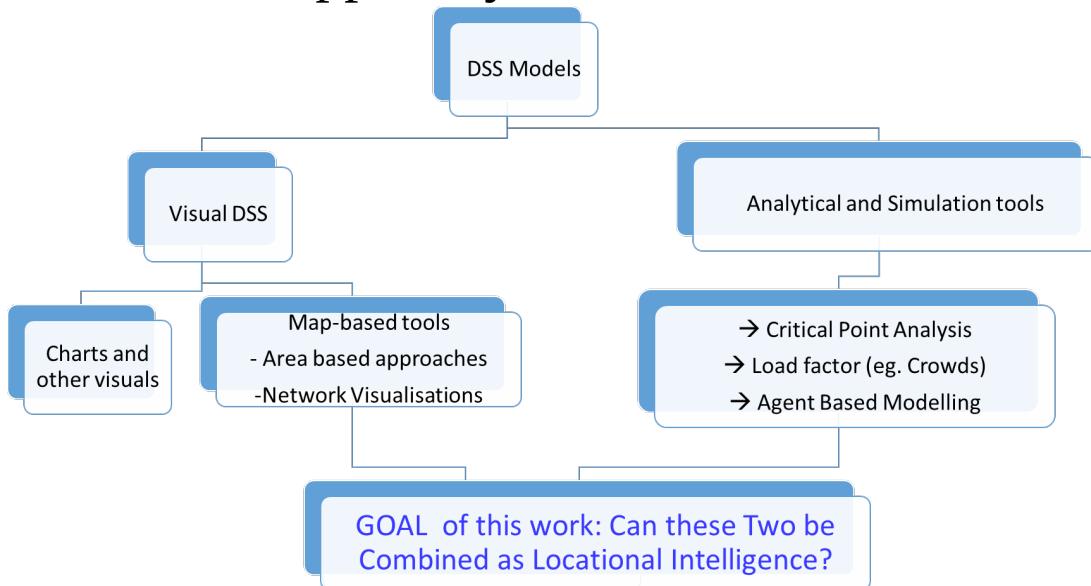
- Current focus is on Evacuation
 - Best / Shortest Path to Exit
 - Alternative Paths

What is Needed?

- Information Amalgamation / Integration
→ Leading to a Decision Support System
- Coordination and Collaboration between Agencies and Civil Society
 - All have access to similar information in near-real time
 - How does one information affect the response of the other

← **SPATIAL INFO**

Decision Support Systems



Research Questions

- At Data level:
 - How to achieve Seamless data & information flows across Scales of interaction
 - Building interiors to Landscape-level □ Integration of BIM models & GIS
 - Is it a Cartographic (visualization) challenge or more than that?
- At Geospatial and other technologies level:
 - can the system help in Multi-agency Coordination & Collaboration ?
 - Geospatial Medium as Integrators, but these can be passive
 - Use of Disruptive technologies like Web2.0 with Mobile devices
- What are the Interoperability constraints, if any
- Central Command and Control model vs. Field-level Implementations

Quick view of Hi-Tech City, Madhapur, Hyderabad

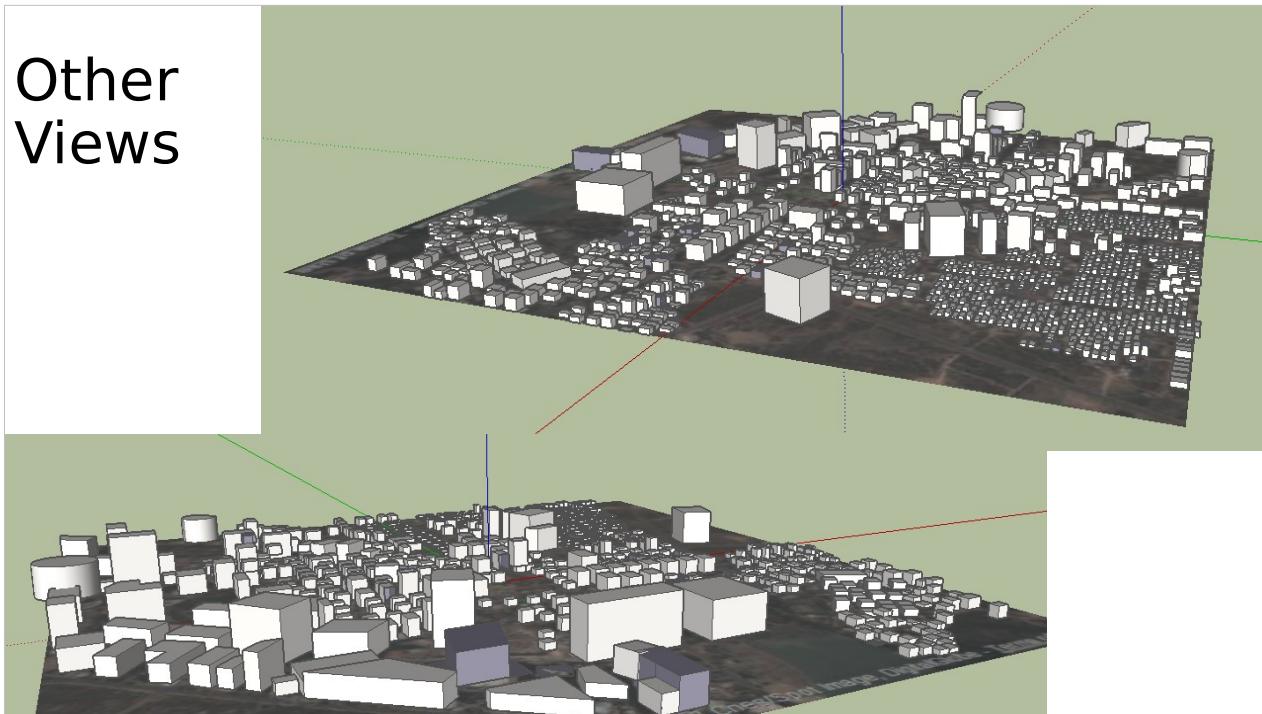


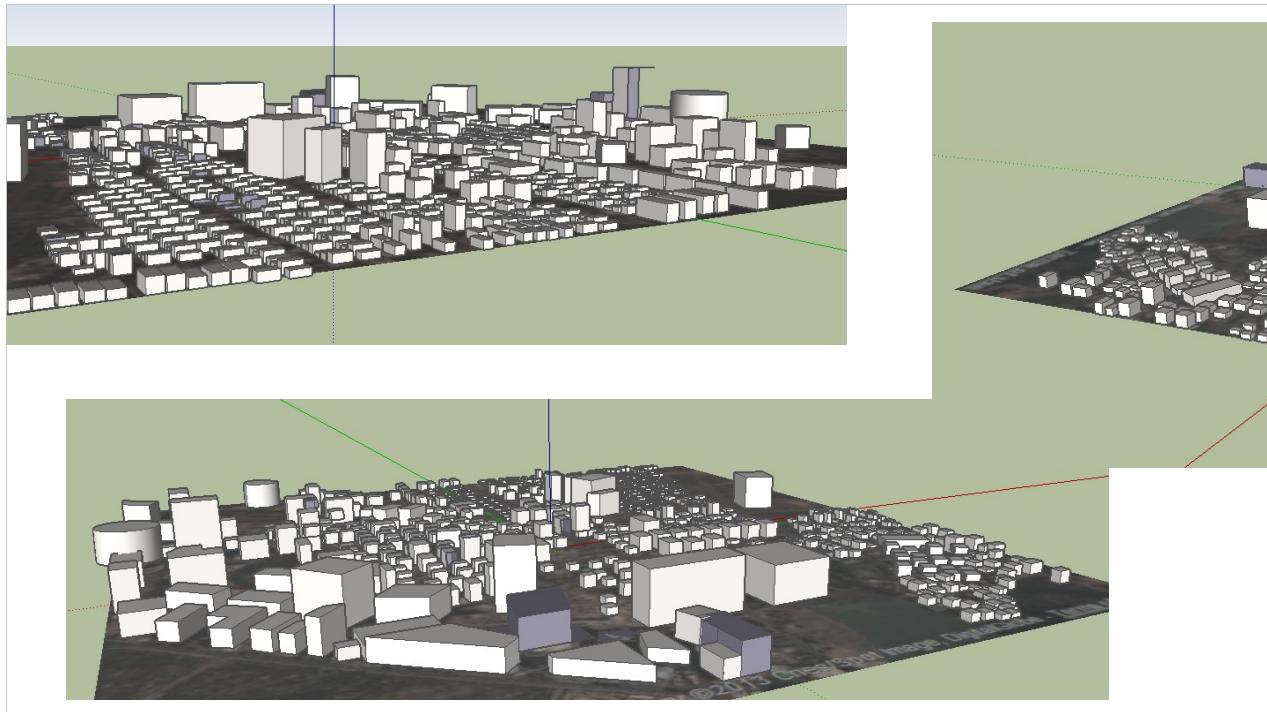
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Target:

- Hi-Tech City, Madhapur, Hyderabad
 - Location is an open area with dense population and multiple high value establishments
 - Location provides challenges of dense traffic movement, traffic choke points, availability of emergency responders
 - Enables validation of multiple aspects that would be seen in the real-time scenario

Other Views





Example of Agency level Data Exchange

Stakeholder	Data	Frequency	Data Location
Police 	Location of traffic police personnel	Real time	GPS on Vehicles or smart phones
	Traffic signals, police stations, contact persons	Semi static	DB Server
Hospital 	Hospital location, specialities, Total beds	Semi static	DB Server
	Doctors, medicine availability, bed availability	Real time	DB Server
Commercial establishments 	Building location, Floor plan with details like assembly points	Semi static	DB Server
	Location of people inside building	Real time	Smart phones, swipe in details
NDMA 	City/Area master plan	Semi static	DB Server
	Location of fire engines, ambulances and other disaster related equipment	Real time	DB Server

Overall System Architecture

