

*EMGT 545/645*

*Project Management in Engineering and  
Technology*

**Emergency Project Management in  
Ground Zero**

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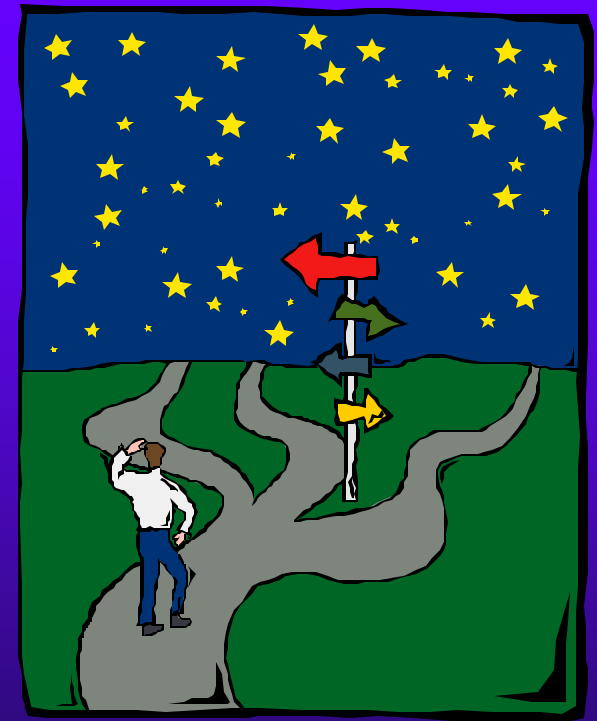


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# Overview

- ◆ Project Objective
- ◆ Approach
- ◆ Emergency Management
- ◆ Ground Zero
- ◆ EM Tools
- ◆ Implications of Technology
- ◆ Lessons Learned



# Project Objective

Emergency Management

Organization      Tech & Tools



Ground Zero



Technology

# Approach

Emergency Management

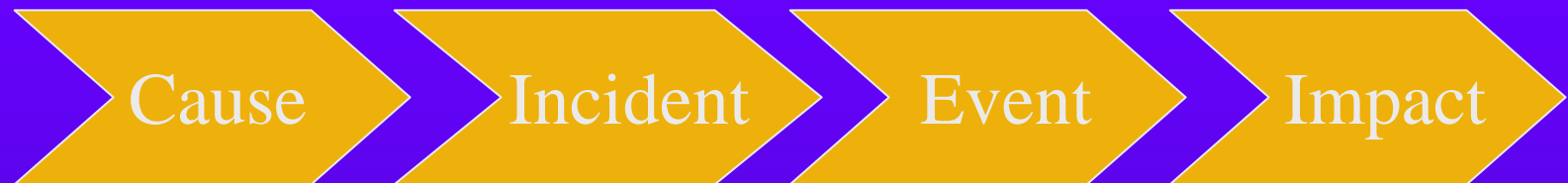
Ground Zero



RIM



# Phases of Emergency Management



Pre event

Well-defined emergency  
response plans

Post event

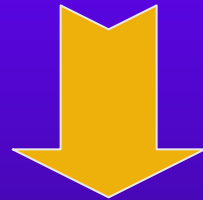
Response, recovery,  
continuity



# Emergency Management

## GOAL

survival with minimal losses  
and  
prompt recovery to normal operations



top-level commitment  
teamwork  
thoughtful analysis  
effective usage of technology

# RIM in Emergency Project Management



	Chief Executive Official	Fire Department	Police Department	Health and Medical Coordinator	Public Works	Emergency Program Manager	EOC Manager	Communications Coordinator	Public Information Officer	Evaluation Coordinator	Mass Care Manager	Education Department	Animal Care and Control Agency	Warning Coordinator	Comptroller/ Chief Financial Officer	Volunteer Organization	Other Organization
Direction and Control	P	P/S	P/S	P/S	P/S	S	S	S	S	S	S	S	S	S	S	S	S
Communications	S	S	S	S	S	S	S	P	S	S	S	S	S	S	S	S	S
Warning	S	S	S	S	S	S	S	S	S	S	S	S	S	P	S	S	S
Emergency Public Information	S	S	S	S	S	S	S	S	P	S	S	S	S	S	S	S	S
Evacuation	S	S	S	S	S	S	S	S	S	P	S	S	S	S	S	S	S
Mass Care	S	S	S	S	S	S	S	S	S	S	P	S	S	S	S	S	S
Health and Medical	S	S	S	P	S	S	S	S	S	S	S	S	S	S	S	S	S
Resource Management	S	S	S	S	S	S	S	S	S	S	S	P	S	S	S	S	S



# RIM / Work Packages

- ◆ **Direction and Control**
- ◆ **Information Management**
- ◆ **Communications**
- ◆ **Warning**
- ◆ **Emergency Public Information**
- ◆ **Evacuation**
- ◆ **Mass Care**
- ◆ **Health and Medical**
- ◆ **Resource Management**



# September 11



- 2,830 people lost their lives
- 10 major buildings experienced partial or total collapse
- approximately 30 million square feet (12 million belonged to the WTC) of commercial office space was removed from service

# Emergency Response

- Federal Emergency Management Agency (FEMA)
- Army Corp of Engineers

**Federal  
Response**

- The National Urban Search and Rescue (US&R)
- Office of Emergency Management
- DOITT

**State  
Response**

**Ground Zero**

**Local  
Response**

- New York City Fire Department
- New York Police Department  
Emergency Service Unit

- Structural Engineering Team
- Public Service Health Disaster  
Medical Teams

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# RIM / Ground Zero

I	Federal Agencies			State Agencies		Local Agencies			
	FEMA	USACE	USAR	OEM	EM&DC	NYFD	NYPD	Structure Engineers	Public Health ...
Direction and Control	P	S	P	S	S	I	I	R	I
Information Management	R	R	S	R	P/R	S	S	I	I
Communications	I	I	I	I	PI	S	S	I	I
Warning	R	R	I	S	P	I	S	R	S
Emergency Public Information	P	R	I	S	I	S	S	R	S
Evacuation	S	S	P	R	S	S	S	S	S
Mass Care	S	S	S	R	S	S	S	S	P
Health and Medical	S	S	S	R	S	S	S	R	P
Resource Management	P	S	S	P	S	S	S	I	S
P = PRIMARY Responsibility									
I = INPUT									
S = SUPPORT									
R = REVIEW									
PS: Support (S) includes the input (I) activities									
Primary (P) includes the input (I) activities									

# Emergency Mapping & Data Center



Data Integrator  
Technology & staff assembler

What area was affected???

What it looked like??????

How big was the debris field?

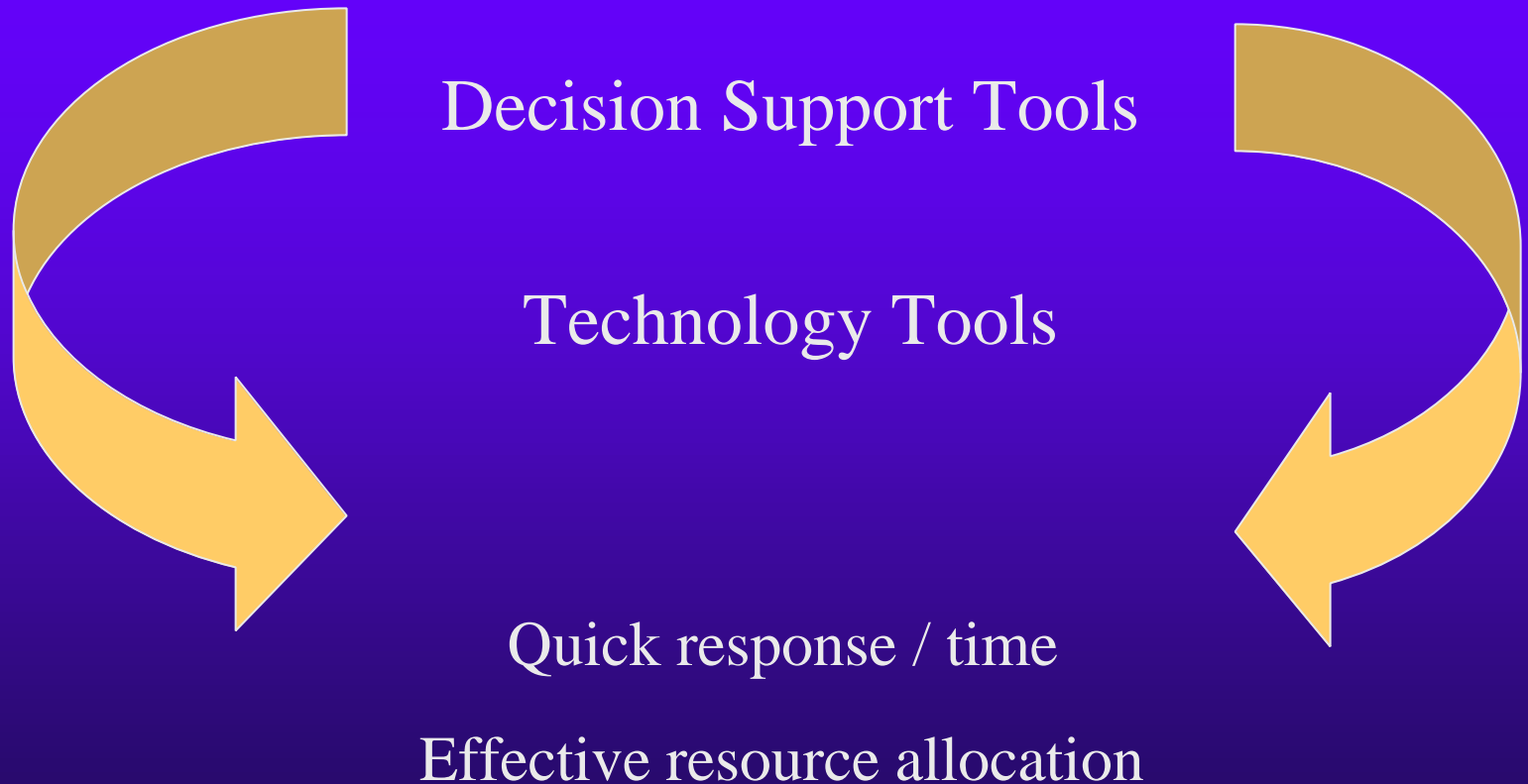
What was the shape of the debris field?

Where were the fires????

What was the mass of the mounds???

Where were underground fuel tanks located????

# Emergency Project Management Tools





# Decision Support Tools

- ◆ Geographic Information Systems (GIS)
- ◆ Decision Support Systems (DSS)
- ◆ Simulation Modeling
- ◆ Integrated Emergency Management Information System (IEMIS)
- ◆ Integrated Baseline System (IBS)

# Technology Tools

- ◆ **Networking Technology**  
Emergency Broadcast System,  
Internet System.
- ◆ **Communication Technology**  
Wire and Wireless  
Communication System
- ◆ **Remote Sensing Technology**  
Terrestrial Remote  
Sensing/Satellite Sensors,  
Imaging Radar, Geo-positioning  
system, Satellite Image System





# Emergency Management Tools Ground Zero



**Global Positioning System (GPS)**

**Digital Ortho-photography**



**Geographic Information  
Systems (GIS)**

**Light Detection  
&  
Ranging (LIDAR)**

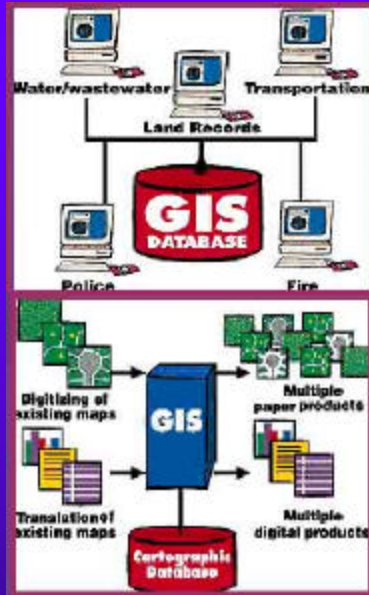


**Thermal image**

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# Geographic Information Systems GIS



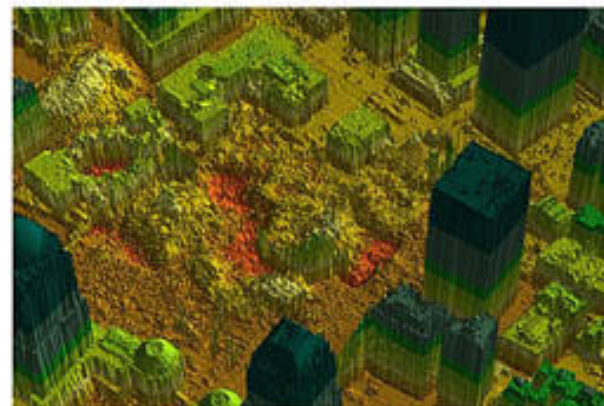
Where?

Which?

How?

# Information Gathering Tools

- ◆ Global Positioning System (GPS)
- ◆ Digital Orthophotography
- ◆ Light Detection and Ranging (LIDAR)
- ◆ Thermal image

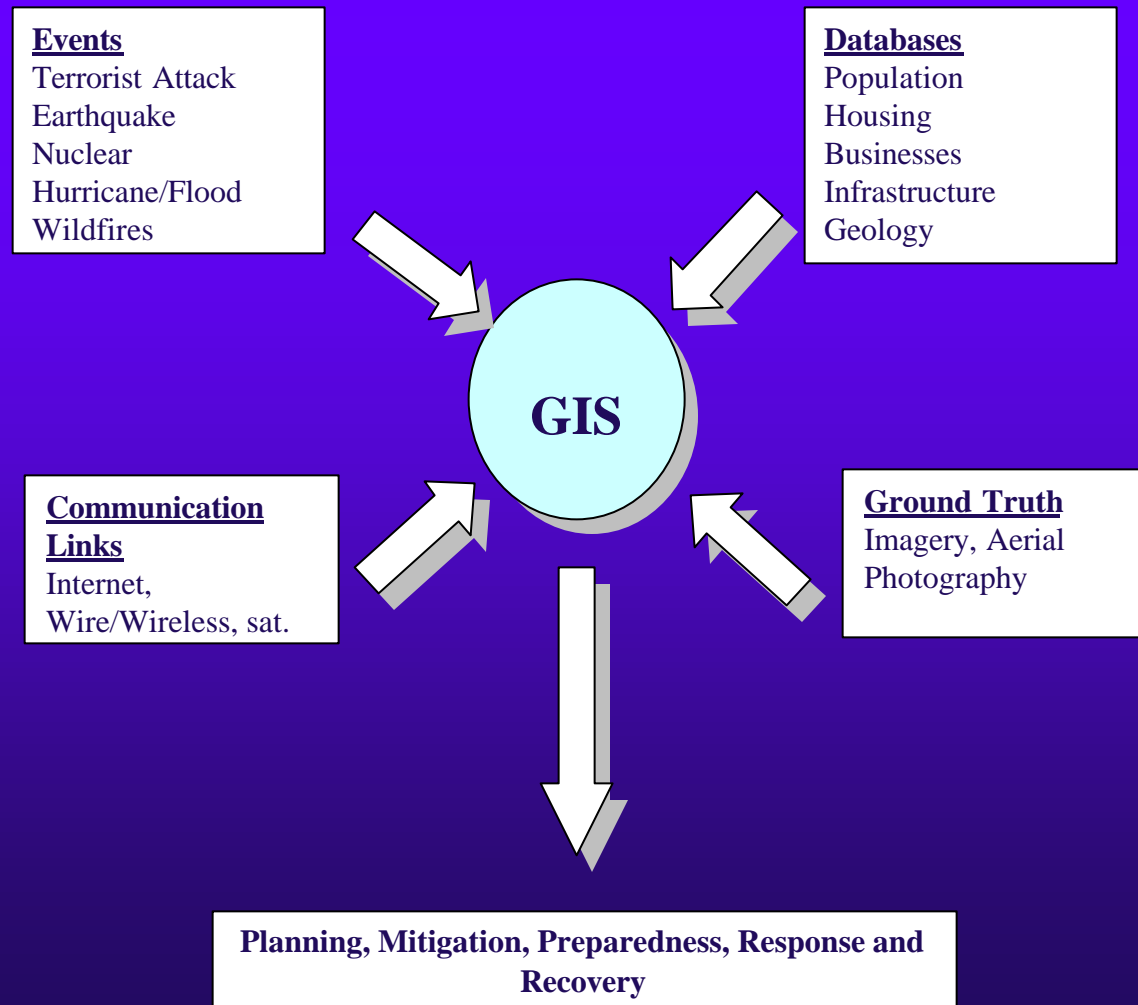




# Ground Zero / EMDC/ Facts

- ◆ First two months EMDC responded more than 2,000 requests / plotted 10,000 maps
  - Street maps
  - Transportation status maps
  - Utility outage maps
  - Fuel tank mapping
- ◆ Web publishing
- ◆ Interactive internet mapping

# Implications of Technology Emergency Project Management



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# Lessons Learned

- ◆ Importance of central repository
- ◆ Need for centralized GIS operations
- ◆ Protocols for GIS
- ◆ Importance of aerial photography





# Conclusions

- ◆ Spatial technologies played critical role in Ground Zero
- ◆ Emergency Project Managers utilize technologies
- ◆ Technology, decision support tools enable managing emergencies
- ◆ Minimized response time, effective resource allocation

# Q & A



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