

Emergency Management Issues Special Interest Group



**APPLIED SCIENCE FOUNDATION
FOR HOMELAND SECURITY**

Public Safety • Research • Economic Development • Education

September 2001 to Present

Celebrating Silver



25
years

Going for Gold

**Professor Richard A Rotanz
Applied Science Foundation
Homeland Security**

9-11-01



7 World Trade

The EOC

An Emergency Operations Center is a facility (preferably target hardened) that provides a working environment for the **coordination** of an emergency response organizational network (ERON) in the performance of critical response and continuity functions.

Such critical functions include, and not limited too:

1. Coordination
2. levels of activations
3. Surveillance management
4. Information management
5. implementation of emergency operation plans
6. collective sense making;
7. operations and mission management;
 - monitoring and management of improvisation,
 - monitoring and managing emerging groups;
8. policy & legal;
9. public information;
10. Facility environment
11. hosting of visitors.

Function 1. Coordination

Coordinating all entities to focus on **response** and **agent** generated demands; on surveillance data; in the utilization of the EOP; in information management; in operations & missions; collective sense making; public information; improvisation and emergent groups.

Agent-generated demands result from the disaster agent.

1. Warning
2. Pre-impact preparation
3. Search n rescue
4. Injury management
5. Fatality management
6. Welfare
7. Restoration of essential services
8. Protection / mitigation against continuing threats
9. Community order

Response-generated demands derive from the response operations:

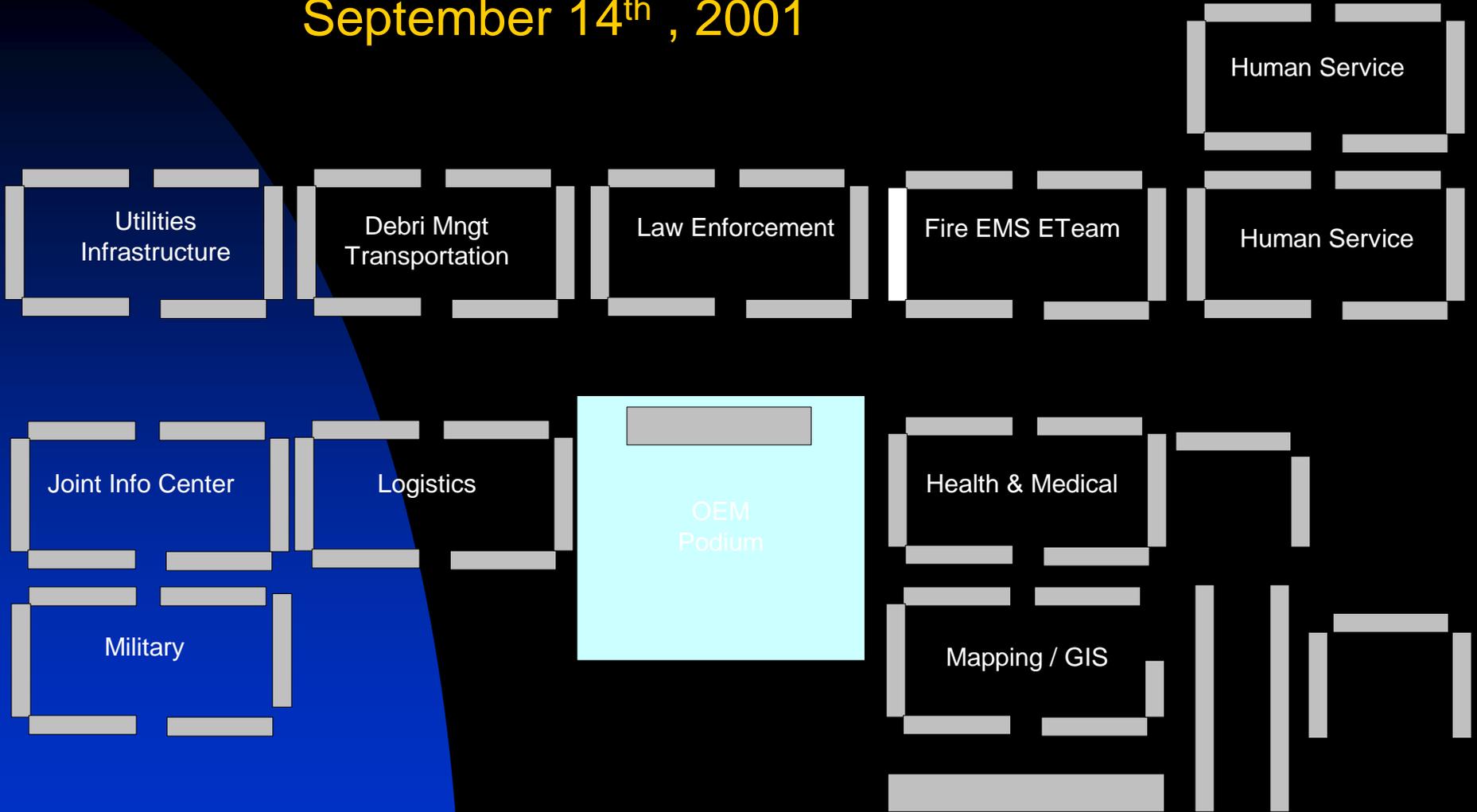
1. Communications
2. Situation assessment
3. Mobilization of resources
4. Coordination
5. Control & authority

Response generated demands that are not created by the agent.

Response generated demands are the activities that occur doing the response to the agent.

The Emergency Operation Center – Pier 92

September 14th , 2001



The Structure / layout of the NYC EOC

- Transportation ESF #1
- Communications ESF #2
- Utilities & Infrastructure ESF #3 #12
- Fire EMS ESF #4 #9 #10
- Emergency MNGT ESF #5
- Human Services / Spl. Needs ESF #6
- Logistics ESF #7
- Health & Medical ESF #8
- Law Enforcement ESF #13
- Joint Information ESF #15

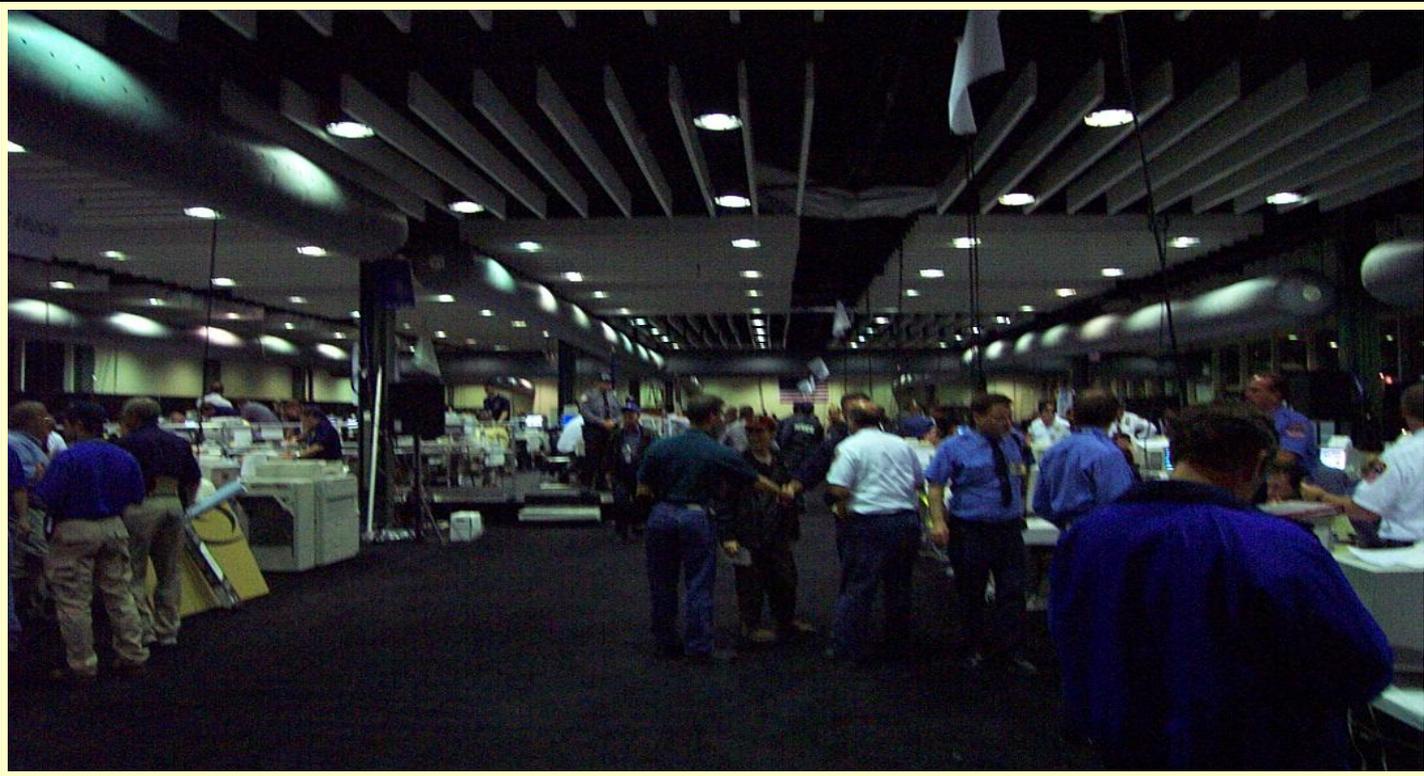
ESF # 11 Agriculture / Natural Resources & ESF14 Long Term Community Recovery were not in place

Special sections – military / JIC / Mapping / Comm. support

The Podium

Podium Manager
Logistics Team
Health & Medical
Human Services &
People with Special
Needs
Recovery
Infrastructure
FEMA
SEMO





Pier 92 housed 150 agency representatives in the twelve weeks after the attack: Federal, State, City, private and non-profit organizations operated side by side at Pier 92.

- Federal Emergency Management Agency
- NY State Emergency Management Office
- New York City Agencies
- Non-Government Agencies

Over 300 representatives per shift worked within the EOC.

Human Services

American Red Cross
Salvation Army
City Harvest
Animal Control / Rescue
ASCPA
Community Assist Unit
Board of Education
City University NY
Human Resource Admin.
New York Cares
Catholic Charities
World Church Services



- Coordinated with the Disaster Assistance Services Center for families of WTC victims and others displaced by the attacks.

- Volunteer and donations management
- Respite centers for relief workers including

- Special events
- Meals (more than 1.3 million served!)
- Mental health services

Function 2 Activation Levels

Alert

Level 1

Level 2

Level 3

Homeland Security Threat Levels

Maritime Security Threat Levels

Function 3 Surveillance

To survey and manage the immense flow of communications and data regarding:

Weather

Seismic Activity

Syndromic Surveillance

Intel - Terrorist Threats

Traffic (air/rail/marine/road)

Infrastructure

Debris Assessment

Damage Assessment

Resource Assessment

Injury Management

Fatality Management

Donations Management

Volunteer Management

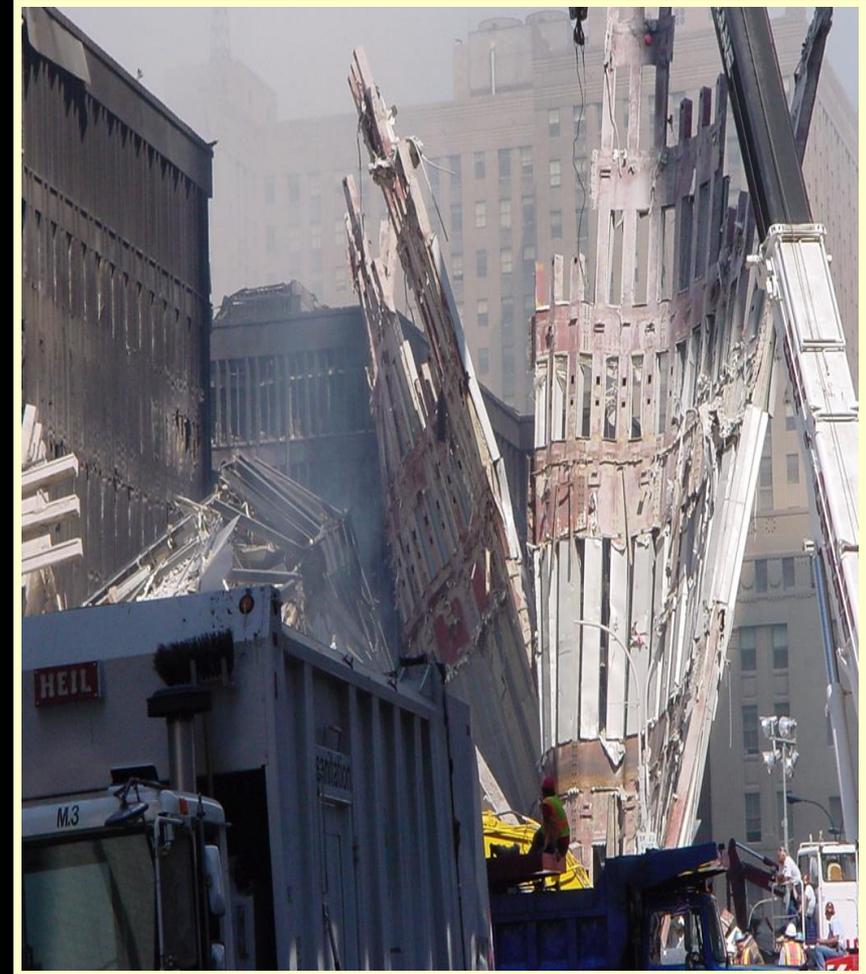
Access Management

Debris Assessment Management

Organize the removal of building and natural (trees, sand, rock) debris. The WTC attack resulted in the removal of an estimated **1.4 million** tons of debris from site to five collection sites:

- Staten Island landfill
- Hamilton
- 59th Street
- Pier #6
- Pier #25

This was accomplished through various stages: 1. Crane/tool/manual removal to trucks at sites. 2. Debris removed to collection areas (parks, piers, etc) 3. To designated landfills.



Investigative and legal Issues

Function 4 Information Management

Situation Reports indicating current actions (vital / ongoing), resources available, requests for material and/or personnel assets.

At the EOC, information is gathered, analyzed, and disseminated.

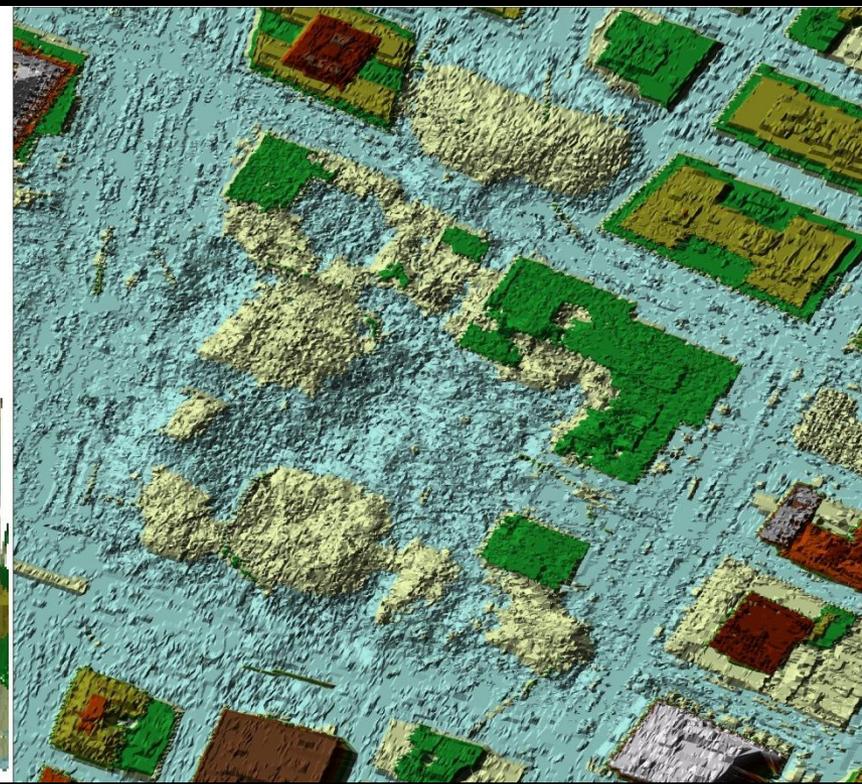
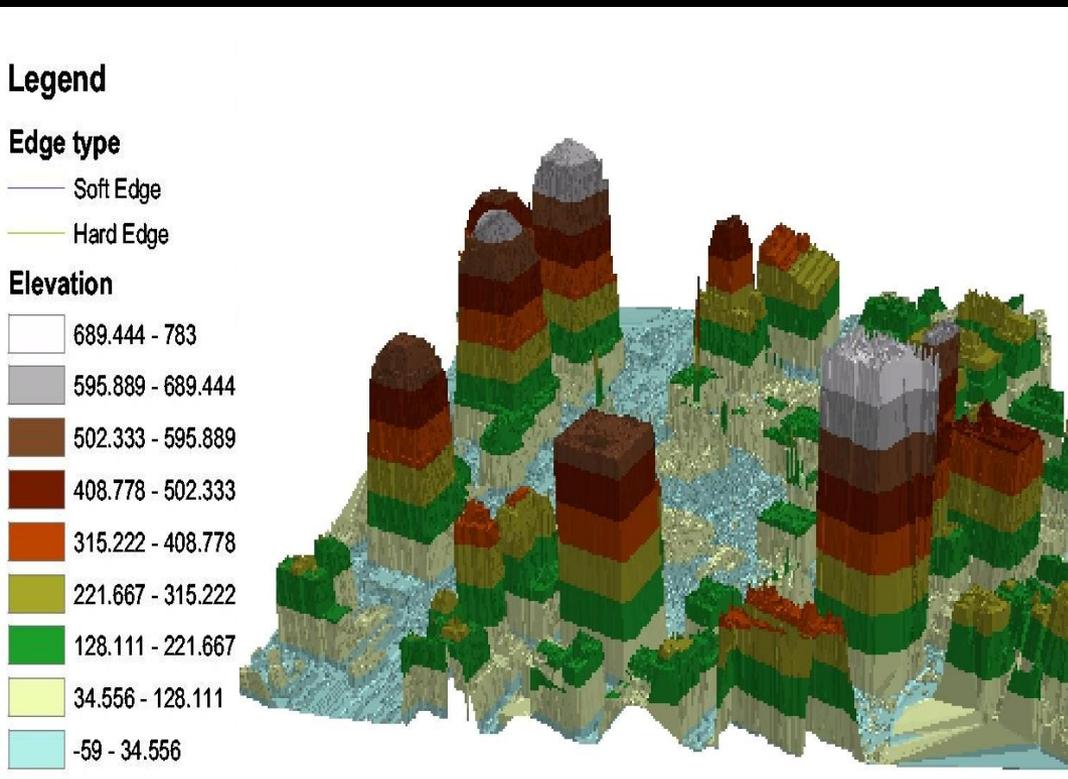
Record keeping and accountability

Damage and threat assessments

Security analysis.

Archiving

LIDAR Images

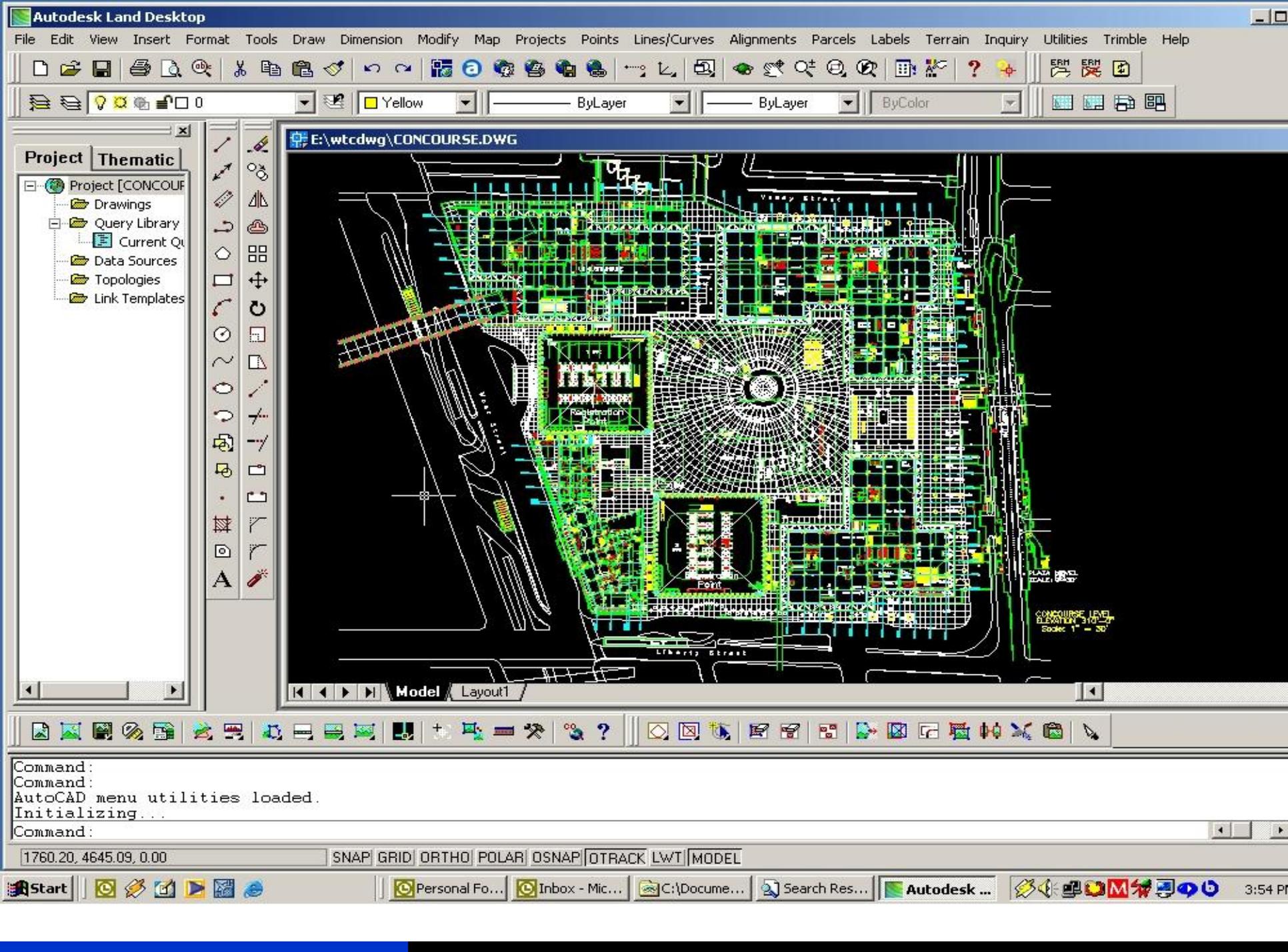


Light Detection And Ranging = optical remote sensing technology
= measures properties of scattered light to find range and/or other data of a distant target.
= laser pulses

Special Section Geographical Information Systems







Toolbar with icons for file operations, editing, and viewing. Includes dropdown menus for color (Yellow) and layer (ByLayer).

Project Thematic sidebar with a tree view showing Project [CONCOLIF], Drawings, Query Library, Current Q, Data Sources, Topologies, and Link Templates. Includes a vertical toolbar with various drawing tools.

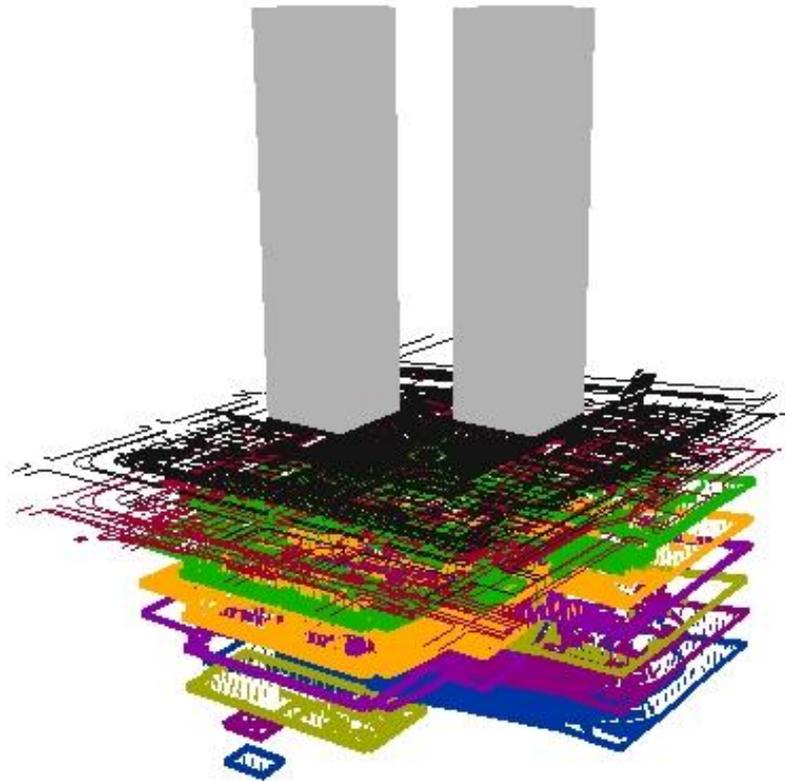
Main drawing area showing a site plan for a concourse. The drawing is on a black background with a white grid. It features a central circular structure, several rectangular buildings, and a network of streets. Labels include 'Vernoy Street' at the top, 'Liberty Street' at the bottom, and 'CONCOURSE LEVEL ELEVATION 310.0' in the bottom right. A scale of 1" = 30' is also present. The drawing area has a status bar at the bottom with 'Model' and 'Layout1' tabs.

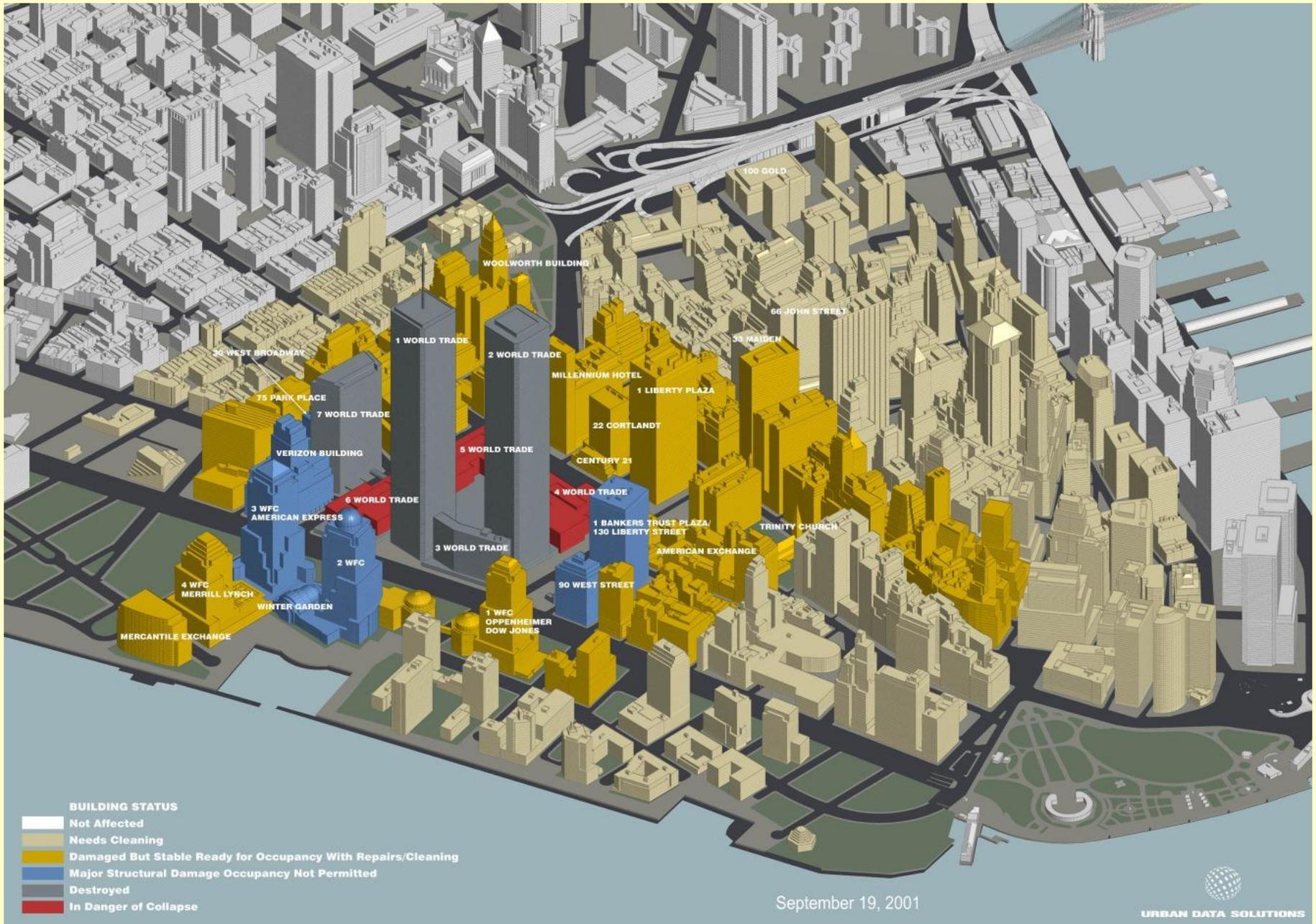
Secondary toolbar with icons for navigation and editing.

Command:
Command:
AutoCAD menu utilities loaded.
Initializing...
Command:

1760.20, 4645.09, 0.00 SNAP GRID ORTHO POLAR OSNAP OTRACK LWT MODEL

Deep Mapping & Imaging





Labels for buildings and streets shown in the image:

- 100 GOLD
- 66 JOHN STREET
- 35 MAIDEN
- Woolworth Building
- 1 WORLD TRADE
- 2 WORLD TRADE
- MILLENNIUM HOTEL
- 1 LIBERTY PLAZA
- 22 CORTLANDT
- CENTURY 21
- 4 WORLD TRADE
- 1 BANKERS TRUST PLAZA / 130 LIBERTY STREET
- TRINITY CHURCH
- AMERICAN EXCHANGE
- 90 WEST STREET
- 1 WFC OPPENHEIMER DOW JONES
- 30 WEST BROADWAY
- 75 PARK PLACE
- 7 WORLD TRADE
- VERIZON BUILDING
- 3 WFC AMERICAN EXPRESS
- 6 WORLD TRADE
- 3 WORLD TRADE
- 4 WFC MERRILL LYONCH
- WINTER GARDEN
- MERCANTILE EXCHANGE

Function 5 Planning

Emergency Operation Plans [County – City – State – NRP]

Incident Action Planning

- Assessments
- Organization & Assignments
- Objectives to suppress the event.
- Operational Location(s) / Facility(s)
- Operational resources

6

**SITUATIONAL ASSESSMENT
COLLECTIVE SENSE MAKING
SITUATIONAL AWARENESS**

Function 7. Operations & Missions Management

A constellation of agent-generated demands vary from agency to agency, dependant upon that agencies mission and responsibility.

As the event's time-line lengthens, the change in demands either diminish or alter, dependant upon that agencies mission and responsibility.

It is the responsibility of the Podium Manager, through the Logistics team, to facilitate proper resource management. Resources are identified, catalogued and disseminated via priority.

Function 8 Policy & Legal functions

Situation Reports [OEM, SEMO, FEMA, Special]

- Current Situation of the Incident
- Current Incident Objectives
- Projected Objectives, Strategies, and Tactics
- Problems, Concerns
- Organizational Profile of the event

- Legal authorities.
- Investigations
- Emergency declarations
- Review of the Robert T Stafford Act
- Obtained required permits for emergency relief efforts
- Obtain buildings / area(s) to facilitate emergency functions (POD s', Reception Centers, Shelters)
- Reception of Pharmaceuticals from the National Pharmaceutical Stockpile or Vendor Management Inventory.

Health & Medical Policies

- Environmental testing
- Worker and worksite safety
- Coordination of on site medical teams. The WTC event required five Federal Disaster Medical Assistance Teams (DMAT s) in operation.



Function 9. Public Information

-PIO ... public information officer is the person responsible to manage all public information related to the event and subsequent events.

- may be at a location other than the EOC
- responsibility for effective warnings, evacuations, shelters, etc.
- controlled the flow of information for a consistent message especially for the public at risk.



Office of Emergency Management

New York City



Emergency Management

Online Locator System

Hurricane Evacuation

**Input Your
Residence or Location**

To find out whether your address falls within one of New York City's hurricane evacuation zones, enter your address location and click on the "Find Location" button.

Bldg Number :

2600

Street Name :

Surf Avenue

Cross Street :

Borough:

Brooklyn

Find Your Location

Please select the correct address from the list or reset the locator to enter a new address if you believe these candidates are not accurate.

1: 2600 SURF AVE , Brooklyn

*New York City Office of Emergency Management
(646) 756-3001*

Go to || [NYC.gov Home Page](#) || [OEM Home Page](#) || [EMOLS Home Page](#) ||
[Mayor's Office](#) || [City Agencies](#) || [Services](#) || [News and Features](#) || [City Life](#) || [Contact Us](#) || [Search](#)



Hurricane Evacuation Your Reception Center Destination

For different views click buttons below, and then map.

[zoom in](#) [zoom out](#) [recenter](#)



NO ZONE ZONE A ZONE B ZONE C



Information about your designated Reception Center:

Name	Sun Yat Sen Intermediate School 131
Address	100 Hester St
Cross Street	Eldridge St
Board Bus	M15 or M9

For the next steps you should take before evacuating your home, review your Hurricane Preparedness Plan.

- [View Hurricane Preparedness Plan](#)
- [Start Over](#)
- [Return to OEM](#)

New York City Office of Emergency Management
(646) 756-3001



Function 10 Facility Environment

Square footage considerations for:

- 1) the number of agency stations;
- 2) desks, chairs, filing cabinets per station or grouping of stations;
- 3) phone and computers per station or the grouping of stations;
- 4) secured IT room;
- 5) conference room (s);
- 6) policy room for high ranking government officials;
- 7) secure communications room for classified discussions ;

8) sleeping accommodations;

9) radio and TV broadcasting for public relations and outreach;

10) security personnel;

11) kitchens and/or cafeterias;

12) parking of vehicles, berthing of marine units, landing zones for helicopters;

Personnel: anticipated staff load per shifts for all entities involved with additional considerations for press, visitors and political leaders;

Communication systems regarding phone-lines; computer and IT servers; satellite equipment; radio and TV broadcasting equipment;

Redundancies in generation, water, food, toiletries;

Function 11: Hosting Visitors

VIP's such as the President of the United States, the governor, a senator, foreign dignitaries, celebrities, out-of-town emergency managers.



USNS Comfort



What was not available then

- = social network technology
- = backup emergency operation center
- = robust EOC software
- = common operating environment
- = interoperable radio communications
- = interoperable equipment
- = Nationwide recognition of EMAC
- = National Incident Management System
- = full understanding of ESF's
- = regional catastrophic planning

*** A new awareness towards preparedness

- higher education
- emergency management agencies
- Homeland Security (Federal / State / Corporate)
- National Strategies

The Foundation

- 90,000 sq. ft. Facility including a Command & Control (C4-I) Facility
- Main computer/ communications consisting of satellite (CBand, VSAT), all band terrestrial (for first responders), dedicated cell network, fiber & WIFI connections to fixed and mobile platforms
- Broadband satellite connections to CONUS (Continental US)
- Modeling / simulation lab and digital theater, with touch tables for use as an ultra flexible and agile command center
- Auditorium for user conferences, broadband capabilities to link with other enabling organizations as part of a call center; back up EOC; COOG; AFO; JFO

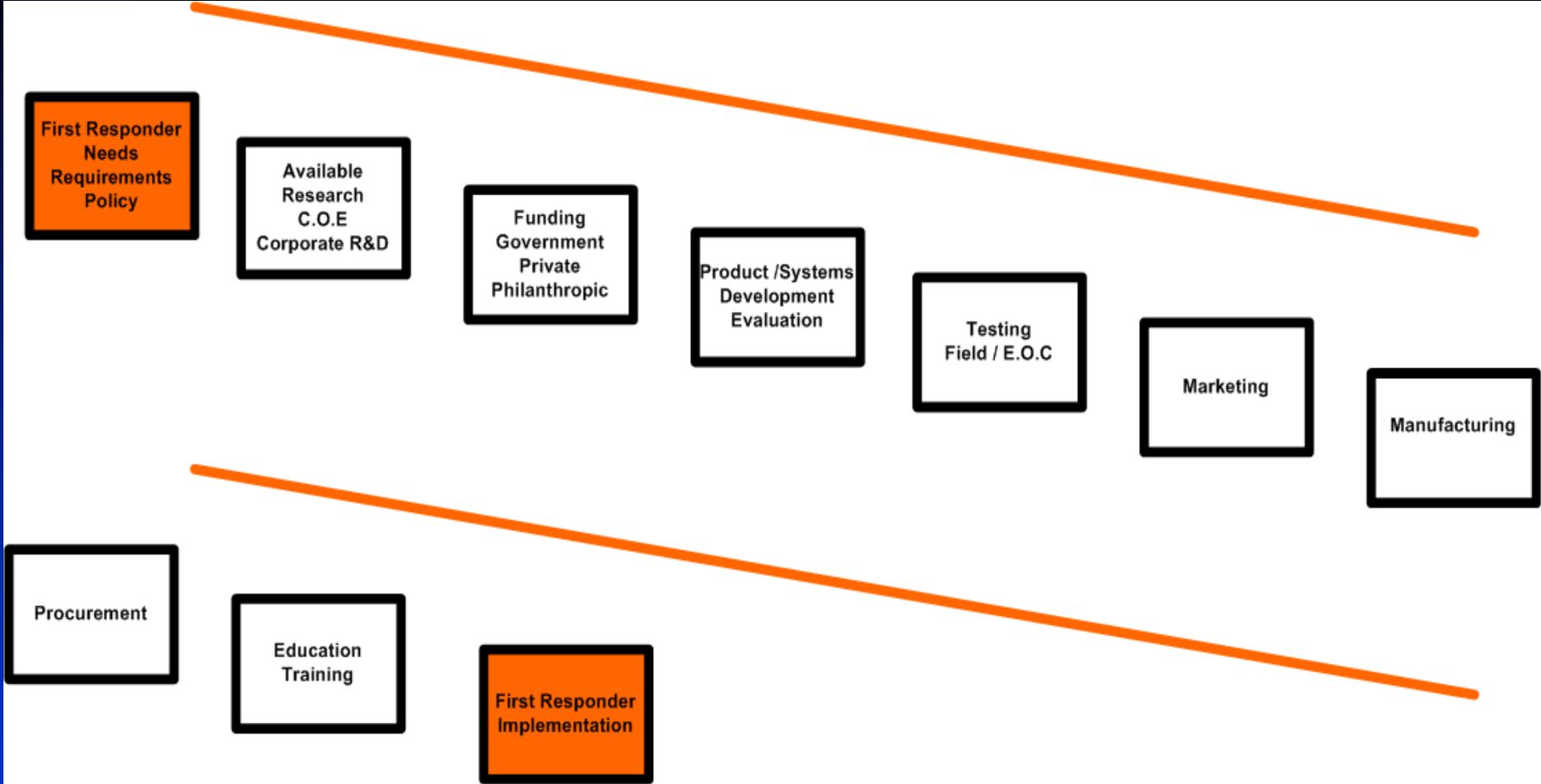
The Foundation

- Research cells (20)
- Conference rooms (4)
- Administrative area
- Secured conference area and network elements for handling classified data integration, display and policy decisions
- Integration and demo center(s)

Current makeup of the First Responder Steering Committee

- DHS Science & Technology
- FBI
- FEMA
- US Coast Guard
- NY Metropolitan Transportation Authority Police Department
- NY Metropolitan Transportation Authority Communications & Rail
- NY State Office of Emergency Management
- USAF National Guard
- NYC Office of Emergency Management
- Nassau County Office of Emergency Management
- Suffolk County Office of Emergency Management
- New York Police Department
- Fire Department, City of New York
- NYC Bridges and Tunnels
- Center for Technology in Government / Albany SUNY
- John Jay College of Criminal Justice
- Adelphi University
- SEA TOW

TRANSITION PROCESS





1 2ND FLOOR PLAN
1/8" = 1'-0"

NO.	DATE	REVISIONS/DESCRIPTIONS	BY

SWANNE HAYDEN CORNELL ARCHITECTS
 Swanne Hayden Cornell Ltd
 Swanne Hayden Cornell & Partners, LLP
 300 East 42nd Street, New York, New York 10017
 Phone: 212 200 9000, Fax: 212 213 6100

LANDSCAPE ARCHITECTS OF
 AMERICA BY THE DOCUMENTS OF
 A SOCIETY OF ARCHITECTS
 OF THE NEW YORK STATE
 COLLEGE OF
 DESIGN
 STATE EXAMINER FOR CONSTRUCTION
 OF BUILDING THE SEAL OF THE
 BOARD OF ARCHITECTS OF NEW YORK
 FOR THE STATE OF NEW YORK
 PROJECT OR FOR OTHER PROJECTS
 WITHOUT THE WRITTEN CONSENT
 OF THE BOARD



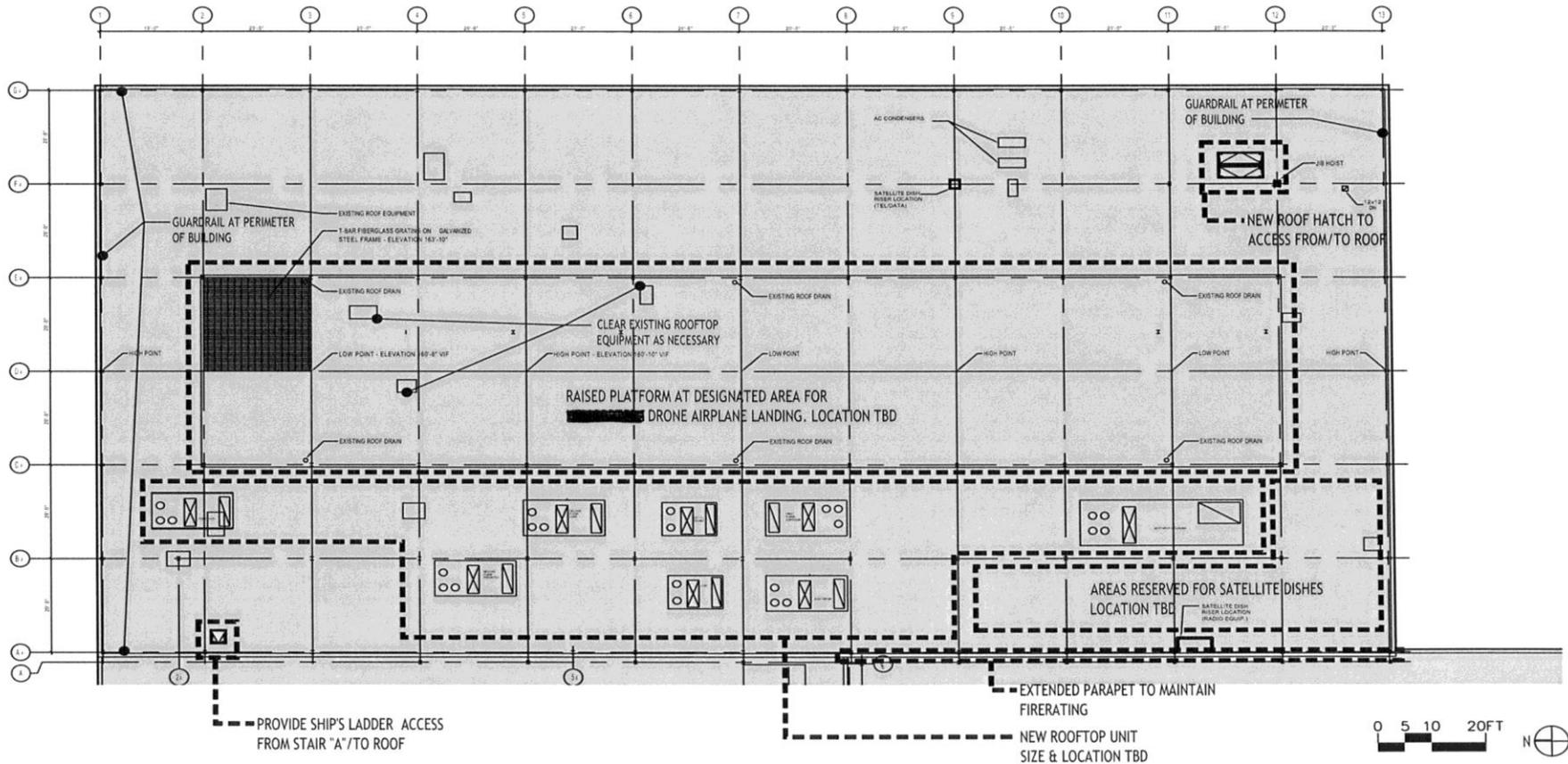
**CAMERON ENGINEERING
& ASSOCIATES, LLP**
 100 West Broadway, New York, NY 10038
 212 200 9000

PROJECT NAME:
 APPLIED SCIENCE CENTER OF INNOVATION & EXCELLENCE
 IN HOMELAND SECURITY RESEARCH FOUNDATION, CORP.
 PROJECT LOCATION:
 500 GRUMMAN ROAD
 BETHPAGE, NEW YORK

TITLE:
 SECOND FLOOR PLAN
 18 TENANT SPACES
 DRAWING NO.:

PROJECT DESIGN:
 SWA
 DESIGNER:
 RW
 CHECKER:
 JCC
 DATE:
 12/03/08
 SCALE:
 NONE

PROJECT NO.
 CE1487E
 SHEET NO.
 2
 DRAWING NO.
 2



Capabilities

- Perform and/or coordinate research for the first Responder Community
 - I.E Social Network Analysis
 - Repository functions
 - Proposed / current / completed research
 - HSEEP [Federal State Local Tribal Private Non Profit]
 - Government Document
 - Archives of Incidents, planned events, disasters, TSSRs
- Visualization lab for research and assisting decision makers
- Modeling and simulation tools to determine sensor layout, cost / performance and operational tradeoffs
- System Engineering Certificate and Degree Programs
- Cyber Security Visualization concepts
- Product evaluation, comparison analysis and writing of test specifications

Capabilities

- Multi-mode (wire, satellite, fiber, wireless, microwave) communication system network designs and cost tradeoff analysis
- Legacy database integration into new platforms
- Field testing of systems, sensor, communication links or new deployment / command scenarios
- Architecture and engineering services for civil design and construction of emergency centers
- Policy Analysis
- Certificate programs
- Degree / curriculum development
- Conferences and seminars
- Demonstrations

Resident & Associate Research Partners



Homeland Security



Agency Residents

- Nassau County Office of Emergency Management
- Nassau County Executive Office
- Nassau County Department of Health
- Nassau County Police Commissioner
- NYSDEC
- MTA Police Department
- US Coast Guard
- Director of Homeland Security, NYS
- FBI
- NYS DEC
- TSA
- USSS
- USFM

Agency & Customer Residents



Gap Analysis – Background

- To investigate and assess developing and emerging technologies in situational awareness/common operating picture, and to identify and report on the gaps and other emerging issues.
- Methodology: Site visits and questionnaires of existing and emerging programs, First Responder workshops with accompanying manuals and questionnaires, followed up with phone and email dialogue, parallel with related literature review.
- Relative DHS Initiatives: (not limited too) National Incident Management System (NIMS); Target Capabilities List (TCL); the National Infrastructure Protection Plan; the National Strategy for Information Sharing; and the National Response Framework.

- Composition: Members of the First Responder community.
- Formulate the construction of the project for the Gap Analysis Team
 - ◆ Task: identify developed and emerging situational awareness technologies
 - ★ visit such sites [Virtual Alabama; Virginia VIPER; Texas A&M Dash-Board; FEMA Region 4 STORM; SeaHawk
 - ★ conduct an assessment as to their geographical locations
 - ★ who is / has developed the technology
 - ★ what is the intended purpose of such developing programs
 - ★ what is the current user base
 - ★ what is the technology platform
 - ★ what data is provided
 - ★ system use

- Gap Analysis Team's assessments of sites were presented to the Steering Committee
- Committee assisted in identifying workshop locations where the assessments would be presented for further discussion with responder organizations of Tier 1, Tier 2, and non-UASI regions [NY; Washington DC; Dallas TX; Fargo ND]
- The workshop presentations:
 - ◆ The baseline of technologies and capabilities used in the New York City (NYC) Emergency Operation Center, during the September 11, 2001 World Trade Center attacks, followed by a presentation of the assessments from the five site visits.
 - ◆ Guided discussions to identify technologies, related policies, and emerging issues occurring in the respected workshop regions. At each workshop, attendees filed an anonymous questionnaire, which also provided areas for comments and recommendations.

Findings of the Analysis were sectioned into the following five categories of assessment and observations

- Technology
- Policy
- Education / Training
- Funding
- Facilities

■ Technology

- ◆ Situational awareness technology development is proceeding forward in various directions and goals, with no central oversight
- ◆ Scalable and adaptable technologies for managing large amounts of information are unavailable
- ◆ Report-by-exception triggers are not uniformly defined or integrated into situational awareness programs
- ◆ Middleware for interoperability is not standardized
- ◆ Standards, such as the Emergency Data Exchange Language (EDXL) and related subset standards are not uniformly considered, or part of development
- ◆ Symbology is not standardized

- Policy

- ◆ A universal definition for situational awareness is not established
- ◆ Perception that data sharing policies are not available or are out of date
- ◆ Situational awareness data language needs to be standardized
- ◆ NIMS is not utilized universally

■ Education

- ◆ Awareness between DHS, the states, and that of local organizations to programs such the First Responder Community of Practice platform and ongoing research is not a regular occurrence
- ◆ Education programs on related technology and policies are not provided or available universally
- ◆ A repository of the technology being developed, technology programs with ongoing funding, and potential considerations of new technology is not available
- ◆ First Responders are not educated/trained in social networking communication
- ◆ Sharing of information between public and private sectors is not mandated

■ Funding

- ◆ DHS funding is not consistent regarding how funds are directed and apply requirements to current and/or developing standards such as those emanating from OASIS
- ◆ Research funding to assess situational awareness needs and standard applications and systems is too low
- ◆ Training and education in situational awareness and decision-making processes is underfunded and not always made available to all

■ Facilities

- ◆ Linked operational backup facilities are not established for all
- ◆ Fully staffed personnel who can interpret and react to incidents for all disciplines are not always staffed 24/7 or available universally

Recommendations

- Situational awareness technologies
 - ◆ Central oversight of situational awareness, and command and control technology development and research.
 - ◆ The development of scalable and adaptable situational awareness technologies.
 - ◆ The need for a situational awareness technology repository.
 - ◆ Training and education of first responders on the use of situational awareness technologies.
- National Incident Management System (NIMS).
 - ◆ Universal application of NIMS.
 - ◆ Situational awareness technology development consistent with NIMS compliances and accountability.

Recommendations

- Social networking analysis technologies
 - ◆ The development of social networking analysis technologies.
 - ◆ Education for first responders on the application and use of social networking communication.
- Emergency Operation Centers and Fusion Centers
 - ◆ Mandated sharing of data between the public and private sectors as indicated from the National Strategy for Information Sharing.
 - ◆ The need for 24/7 personnel to interpret and react to situational awareness data.

Current Activities

Compiling the programs of Virtual USA, NICS, UICDS, RCOP and SIMONS projects

Conferences / Lecture Series / Seminars

Exercises = FBI, USCG, LIPA NG, County / State