

Technological Advances In Emergency Management

Closing the gap between Preparation and Recovery

Will Fontan, P.E.

Regional Director, ONRG

Americas Office



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Priorities of Technology Application

- ***Government-led policies in the application of EM technologies***
- ***Interoperable communications systems***
- ***Integrated information management systems***
- ***Evaluation of new technologies in scenario-based training and exercises***

Goals of Technology in EM

- Shorten response time
- Increase response reach
- Enable interagency coordination
- Reduce costs
- Enhance responder safety
- Construct the bridge of response-related information and data



Response Time and Reach

- Response time is shortened thru flexible and integrated communications systems
 - Multiplexing/frequency trunking
 - WiFi and IP based systems
 - Mobile Smart Phone Applications
 - Flexible power options
 - Automatic alerting and notifications
 - Wide Area Alerting
 - Computer aided dispatch systems
 - Mobile assessment tools

Get everyone on the same sheet of music!

Interagency Coordination in Response

- Common Operational Picture
 - Geocoded data layering
 - Alerting
 - Critical Infrastructures
 - Evacuation Routes
 - Shelter data
 - Response assets
 - Link to resource databases
 - Notices
- Role-based architecture must be applied
 - Business rules and best practices

*Build Global Support to local
response thru Situational
Awareness*

Cost Reduction

- Predictive Modeling during Preparation
 - Modeling software is used to predict:
 - Disease outbreaks
 - Debris from storms
 - Building damage
 - Helps to identify:
 - Equipment needed
 - Availability and location
 - Human response assets
 - Specialized needs

Eliminate surprises and added costs

Enhancing Responder Safety

- Software toolsets provide knowledge
 - Hazardous materials
 - Atmospheric modeling
 - Safety information
 - Incident Management Systems
- Information provided off-scene to the responder
 - Operation Centers build the information backbone and link to responders
 - Systems MUST be integrated

**Deliver rapid, appropriate
information to the Responders**

Technology Application in the EM Cycle

Predictive Modeling
Incident Mgt System
Mobile Assessments

Preparation

Model-based planning
Pre-staged resources

Mitigation

Assessments
Cost tools

Recovery

Response

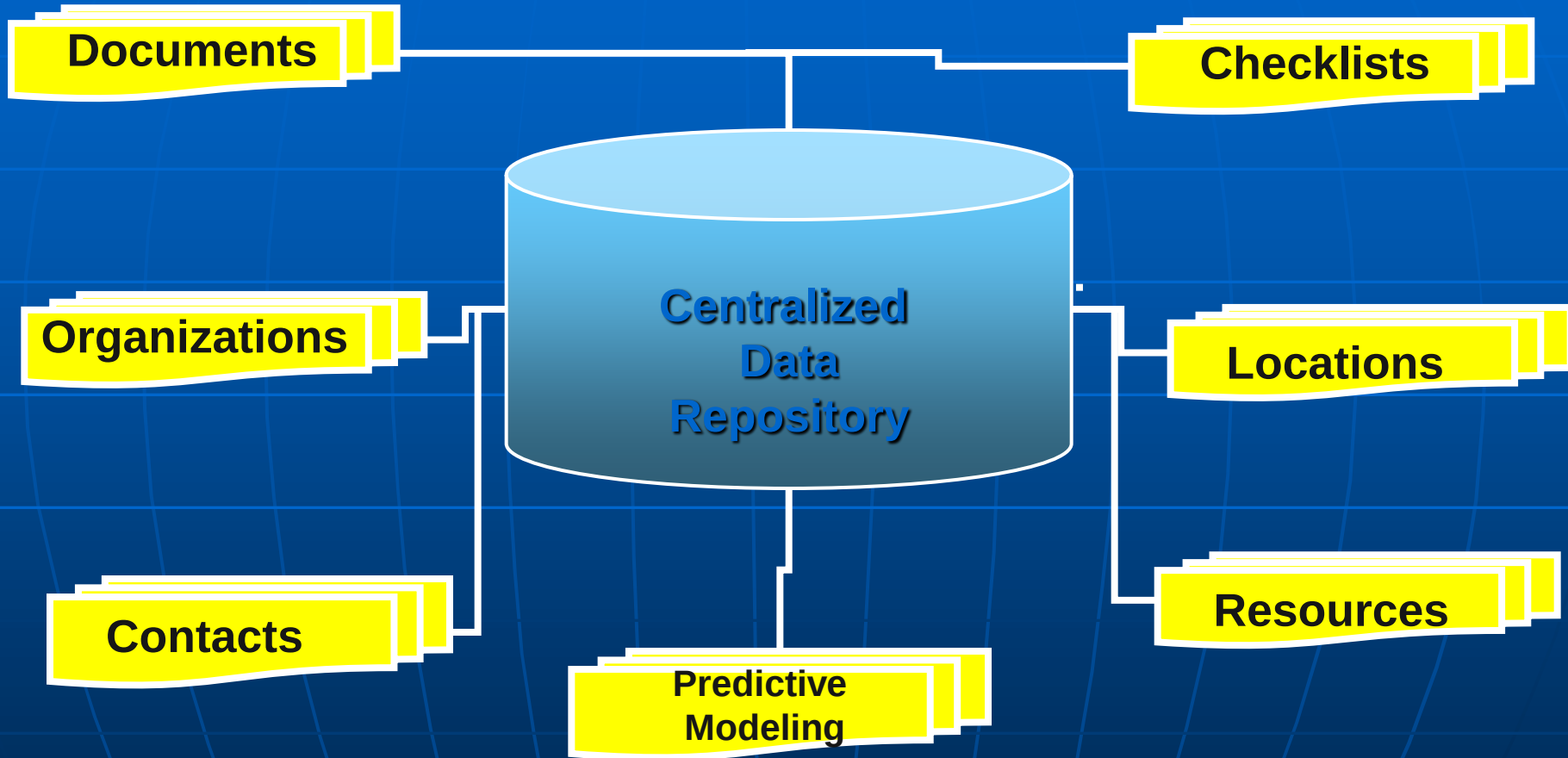
Response Toolsets
Communications
COP
Wide Area Alert



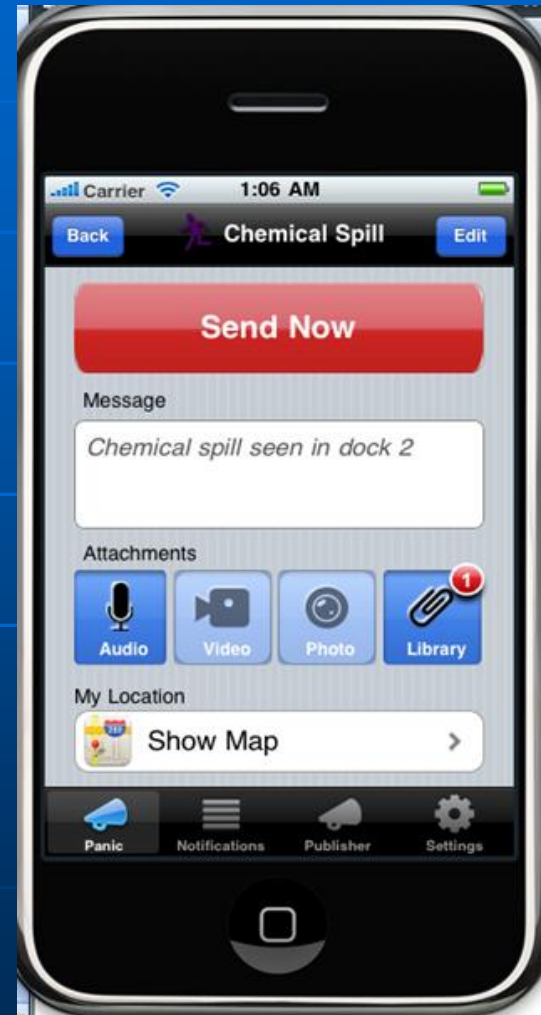
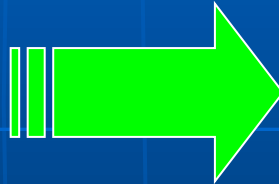
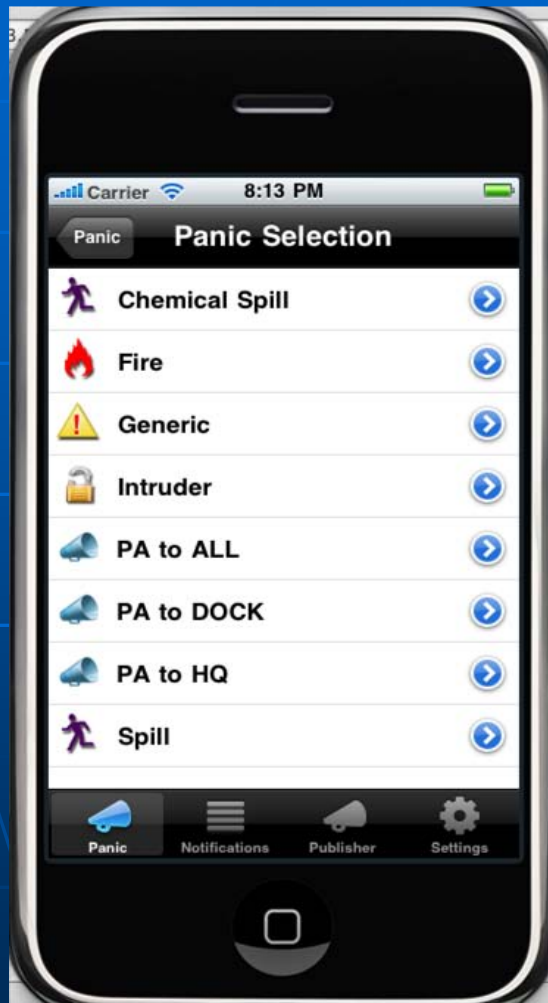
New Technologies

- Incident Management Systems
 - Central data system for managing resources, response information, costs and automated alerting
- There are several manufacturers and products available
- Require data management by users or administrators

Incident Management Systems



Smart Device Apps

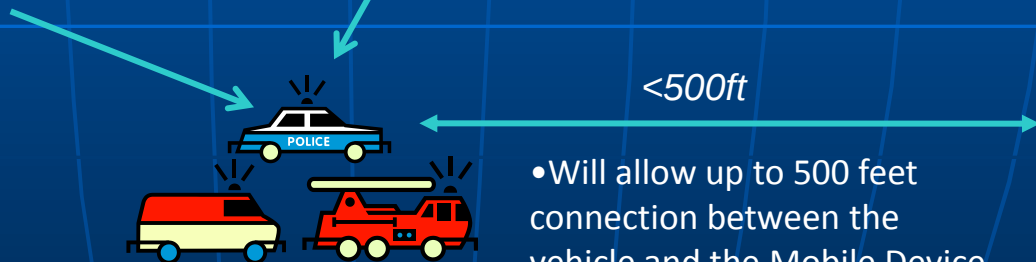


Communications Multiplexing

- A Mobile Router mounted in the trunk of the vehicle.
- The router will allow network connectivity to the foot patrol Mobile Device up to 500 feet.
- The router will multiplex to other communications links, such as wireless, SATCOM, POTS and cell.
- The various COMMS links allow COMMS between the Incident Commander and other units, as well as the operations centers.



- The MDC in the vehicle carries responder toolsets and situational awareness inputs



- Will allow up to 500 feet connection between the vehicle and the Mobile Device.
- The Mobile Device will have the EM-related software on it.



EM GIS Overlays

The screenshot displays an EM GIS application interface. The main map shows the Gulf of Mexico region, with labels for 'MEXICO', 'Gulf of Mexico', 'THE BAHAMAS', 'CUBA', 'DOM. REP.', and 'Caribbean Sea'. The map is overlaid with numerous green square markers and a white diamond marker. The interface includes a 'ROAD AERIAL HYBRID' map style selector at the top left, a 'TOOLS' menu at the top right, and a 'FEEDS' panel on the right side. The 'FEEDS' panel lists various data sources, including 'Visual Fusion Composer Feeds', 'US Headlines', 'World Headlines', 'US Weather WMS', 'DM Open Alerts Kml Feed', 'Neplo Kml Feed', 'Installation Kml Feed', 'Coast Guard Stations', 'Gulf Oilspill', 'Test', and 'Cobra'. A search bar labeled 'Business or category...' is located at the top of the 'FEEDS' panel. The bottom of the interface features a timeline navigation bar with months from September 2009 to August 2010, and a 'Today' button.

Staging

ROAD AERIAL HYBRID

TOOLS

FEEDS DETAILS

Business or category...

Visual Fusion Composer Feeds

US Headlines

World Headlines

US Weather WMS

DM Open Alerts Kml Feed

Neplo Kml Feed

Installation Kml Feed

Coast Guard Stations

Gulf Oilspill

Test

Cobra

Location...

Lat: 38.4 Lon: -97.9 VDURAS

1400mi

bing

Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug

2010

Oct Jan Apr Jul Oct Jan Apr Jul Oct Jan Apr Jul

2009 2010 2011

Today

Critical Infrastructure

Alerts

Evacuation Routes

Deployed Equipment

Mobile Assessment Systems



Many mobile reconnaissance devices available to aid in post event damage assessment



Web Based Response Tool Sets

- Evacuation Route Planning in advance
- Plume Modeling (air and sea)
- Hazardous Chemical Databases
 - Protective Equipment requirements and exposure limits
- Storm Surge Prediction
- Sensor Management and Integration
 - Motion/Alarms/Chemical/Radiological

Summary

- Technology advancement has potential to aid ER/DRO activities
 - Must be approached from a systems interoperability view
 - Must be scaled to mission and budget
- Plan for sustainment and technical refresh
 - Software licensing, server hosting, carrier fees, etc.

Preparation is cheaper than recovery