

Geo-information for Disaster Management: 9/11 Lessons & Developments Since

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Introduction

- World Trade Center perspective on Geo-information in Disaster Management
- Describe key role of Geo-information in 9/11 response
- Explore lessons learned
- Review activities and developments since 9/11/01

Background

- Location most critical element in disaster management & response
- Geo-information/GIS is the location based technology
- Value of GIS proven in World Trade Center response & many other emergencies
- More than making maps
- Design based on both technology & emergency operations

World Trade Center Attack



The 9/11 Event

- OEM GIS Emergency Plan
- Re-establish EOC following destruction of original
- Employ NYC GIS Utility data resources
- Provided wide range of geo-information to Mayor, emergency responders & the public
- Employed numerous geo-information technologies

Lessons from the World Trade Center

- General Lessons
- Operational Lessons
- Organizational Lessons
- Data Lessons
- Technical Lessons
- Customer Lessons
- Logistical Lessons

Highlights of Lessons

- Life & death urgency
- Immediate decisions
- Products available & useful in the field
- Build in flexibility
- Support real-time operations
- Provide back-up and redundancy

Highlights of Lessons

- Preparation is critical
- Include technology in emergency plans & operations
- Database of general, emergency & event data
- Use location to integrate varied data sources
- Establish logistical support procedures for all locations & levels of users

Highlights of Lessons

- Provide for direct use by emergency personnel-tools, training, procedures
- Provide 24 hour support
- Design products to support emergency operations specifically
- Recognize range of requirements & capabilities of customers
- Incorporate new technologies prior to event

Solutions Developed from 9/11 Lessons

- Methodologies & Business Processes
- Interoperability & the Information Access Portal
- Mobile Computing
- Disaster Management Geo-Information Applications
- Disaster Management Geo-Information Data Solutions

Interoperability/Portal

- Unified access to a variety of data sources
- Visualized through single portal
- Meta data mechanisms for navigation
- Access non-GIS systems & data
- Easily used by non-expert
- Web-based technology

Overview Window



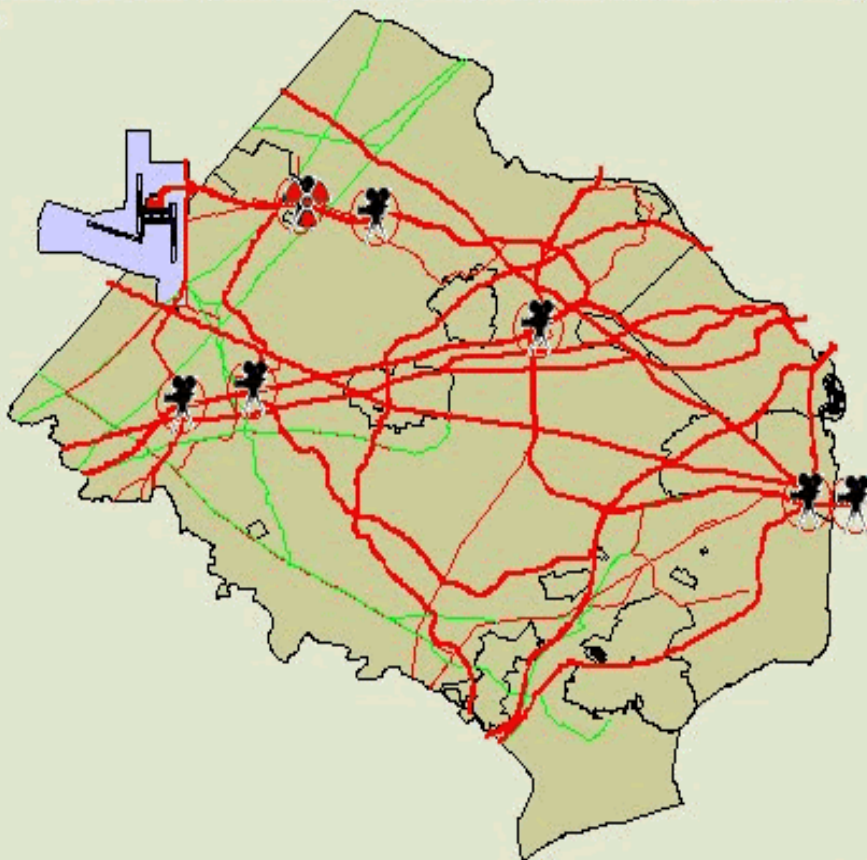
MAP CAD Video Phone Dir Documents FEMA Census Geocode Weather Evacuate



Tabs

Toolbar

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Map Window

Ready.

(-76.9313,38.6434)

Status Bar

Docs .

Thu Apr 17, 2003 14:52:04

Results Table

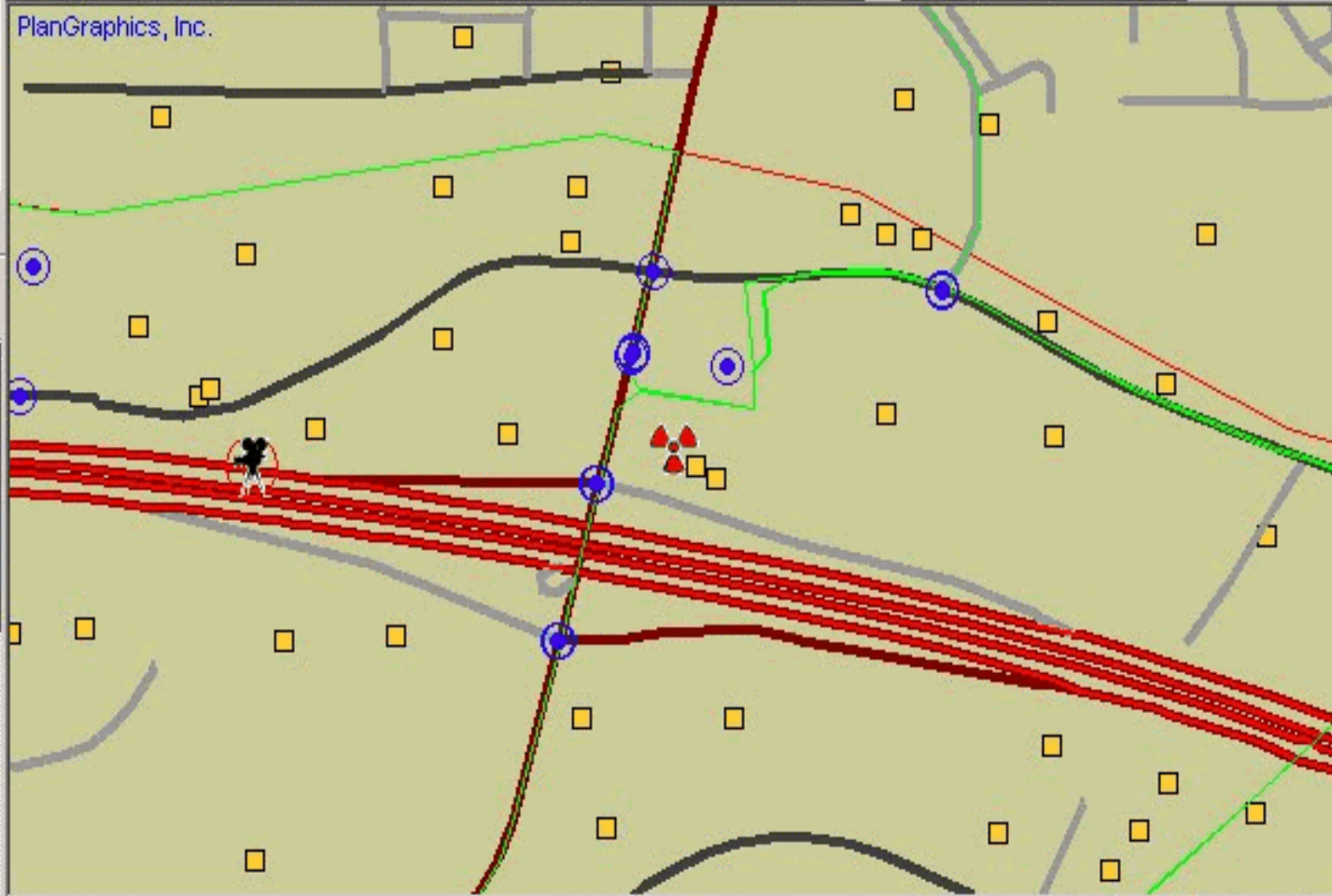
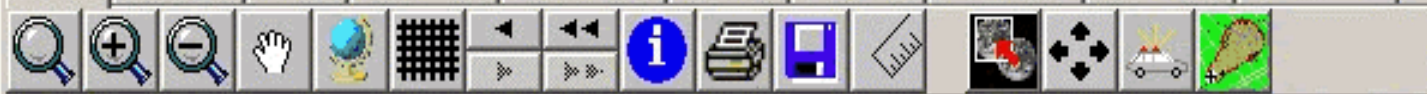


Legend Select Info

Tree List

- Flood
- HAZMAT
- Power Failure
- Terrorism
- Traffic Light
- GAS VALVES
- WATER VALVES
- ELECTRIC ENTRY
- Traffic Cams
- WATER LINE
- ELECTRIC LINE
- GAS LINE
- MAJOR ROADS
- SCHOOLS
- UTILITIES
- Electric line
- Gas line
- Telephone line
- Layer Management
- Auto Refresh

Legend Window



Ready. (-77.35,38.9486)

Docs. Thu Apr 17, 2003 15:58:05



- Legend Select Info
- Tree List
- EMERGENCY
 - Auto
 - Bridge
 - Disease
 - Extreme Weather
 - Fire
 - Flood
 - HAZMAT
 - Power Failure
 - Terrorism
 - Traffic Light
 - GAS VALVES
 - WATER VALVES
 - ELECTRIC ENTRY
 - Traffic Cams
 - WATER LINE
 - ELECTRIC LINE
 - GAS LINE
- Layer Management
- Auto Refresh

Information

- SDE:MAJOR_ROADS.Lines
- SDE:STATES.polygons
- SDE:CITIES.Points
- Buildings
- US
- Reston
- Oracle way

Map

Zoom in

3D

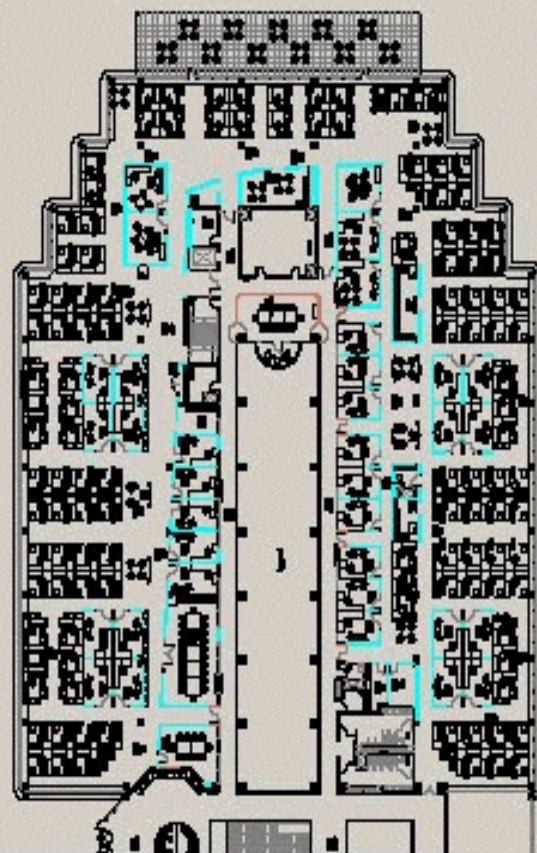
Display Quality 0.0 Kbps

FLIGHT PANEL



Legend Select Info

landsqft	15022
cuowner1	RESTON LAND CORP
cuowner2	*****
wname3	SUITE 300
ownerstnum	11911
ownersufnu	
ownerstnam	FREEDOM
ownersttyp	DR
ownctystna	RESTON VA
ownerzipco	220900000
zonenumber	373
zoneacrefl	S
parnum	0173 01 0015
mapgrid	017
mapsect	3



89% 1 of 2 8.5 x 11 in

Docs : 1900 Oracle Way - 2nd and 3rd Floor Layout

Thu Apr 17, 2003 16:15:46

Empty text input field with a vertical scrollbar on the right side.

Video courtesy of VDOT



Traffic closest to camera is moving:
East Bound

I-66 at Fairfax Co. Pkwy.

[create new account](#)

[close](#)

Dulles Toll Rd/Hunter Mill Rd
28 near I-66
Near Woodrow Wilson Bridge
Woodrow Wilson Bridge
I-66/Capital Beltway
I-66/Fairfax County Parkway
Dulles Toll Rd/Reston Pw

Download REAL Player to
view traffic cams:



Mobile Computing

- Provide Geo-information data & capabilities in the field
- Wireless & download
- Deliver & collect data where practical
- Recognize field demands on devices
- Recognize communications vulnerabilities

Disaster Management Geo-Information Applications

- Definition of emergency impact areas to support resource allocation, evacuation planning, and decision-making
- Support for disaster management resource allocation and logistics
- Emergency routing
- Damage assessment
- Transportation network status tracking
- Forecast evolving disaster situation

Disaster Management Geo-Information Applications

- Emergency planning
- Debris management
- Plume modeling
- Secure Web site for the exchange of geo-information among participating units in a disaster response
- Public emergency information Web site
- Support for emergency warning notification system

Disaster Management Geo-Information Data Solutions

- General-purpose GIS and related tabular data
- Disaster management-specific data
- Real-time spatial data generated and acquired during disaster operations

Concluding Recommendations

- Be prepared
- Disaster personnel must be involved in the design of technology solutions
- Technology must be imbedded in emergency operating procedures
- Disaster personnel must be trained in operation & use of technology & products
- Procedures employing technology must be tested

Sharing Information & Experiences

- Participation in numerous Homeland Security activities
- Sharing information in meetings & conferences
- Cooperative Agreement with Netherlands Council for Geo Information (RAVI)