

# Checklist 911

---

## **10 WAYS TO IMPROVE YOUR PUBLIC SAFETY USING GIS**

# Introduction

## Geographic Technologies Group



**James Kelt**

James Kelt has more than fifteen years of experience in Geographic Information Systems (GIS) and Global Positioning Systems (GPS) technology specific to Government initiatives.

- Senior Manager for Geographic Technologies Group (GTG)
- Specializes in GIS solutions for Local Government agencies
- Project manager for GIS software deployments
- Public Safety GIS Deployment Expert
- GIS for Public Safety sessions and workshops at over 60 international conferences
- Project manager of ESRI International award winning deployments of GIS technology and GIS Services at Huber Heights, OH and Portland, ME
- Hands-on, real world expertise with Over 400 Governmental Agencies
- Fully understands how GIS is used, applied and deployed for Police and Fire Departments



# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security

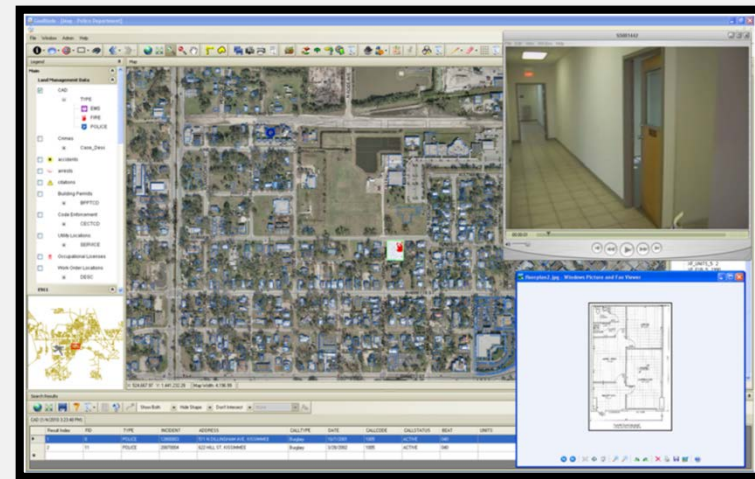
# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security



# Are You Using GIS to its Fullest for Public Safety?

- Does your 911 mapping application incorporate:
  - Displaying the call
  - Aerial photography
  - Oblique imagery
  - Display other critical data such as:
    - Hydrant locations
    - Hazardous materials
    - Pre-plans
    - Live camera feeds
    - Automated Vehicle Location (AVL)
    - Weather data
- Under-deployed and under-utilized
  - A few designated crime analysts
  - All staff should have access
    - Intranet
    - Mobile



# Are You Using GIS to its Fullest for Public Safety?

## Are you providing:

- Mapping of all calls for service
- Mapping and spatial analysis of criminal activity, incidents, and accidents
- Field access to geospatial data
- Mass notification system
- Internet crime mapping, including sex offenders
- Crisis management for schools
- Mapping home-bound citizens
- Reverse 911 integration
- View and query existing infrastructure – water, sewer, gas, stormwater, and facilities
- Predictive incident analysis
- Intranet site for quick PIN mapping
- Weekly PIN map
- Hot spot analysis
- Court case support for detectives
- Logistical support
- Utilizing geo-fencing
- Creation of new response areas
- Staffing analysis – what is happening when
- View aerial imagery for drug raids and traffic accident analysis
- Assisting in evacuation during storm events
- Mobile access with an easy-to-use data browser
- Traffic collision intersection studies
- Crime scene diagrams
- Track average speed of vehicles
- Know location of speed zones, survey zones, etc.
- Regional crime analysis and data sharing
- Automated Vehicle Location (AVL)
- Plume analysis
- Emergency response and recovery
- Access to key data in a geographic context (weather data, building pre-plans, hazardous materials, critical facilities)

# Geo-location

Bedrock of Public Safety

Garbage In Garbage Out

The Problem with Geo-location

Does Good Geo-location Really Matter?

# The Problem with Geo-locating

North Port, FL

## PROBLEM

- **Man called in and reported body on the side of the road**
- **Dispatcher disregarded the call because the road was misidentified**
- **The police were not dispatched until 16 hours later when a second call was placed**



Florida man dies after 20-hour response to 911 call  
By Noah Pransky, WTSP-TV, Tampa



A 911 Call Brought No Police  
Body lay by road overnight  
after 911 call  
By John Davis

# Geo-location

## Does Good Geo-location Really Matter?

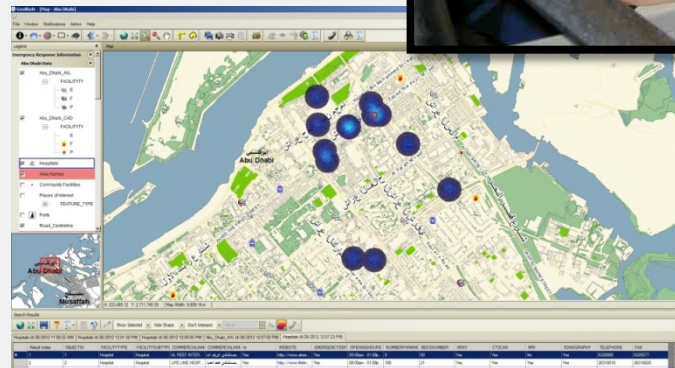
- Safety of Citizens Depends Good Data
- Public Perception of Your Organization is at Stake
- Efficiency of Your Organization – Accurate Data Sets
- Confidence of Your Employees/Organization
- Your Job May Depend on It



# Geo-location Options

## Ways to Geo-Locate Public Safety Data?

- Addresses and Address Points
- Cell Phone Geo-Location
- GeoSMS and Open GeoSMS

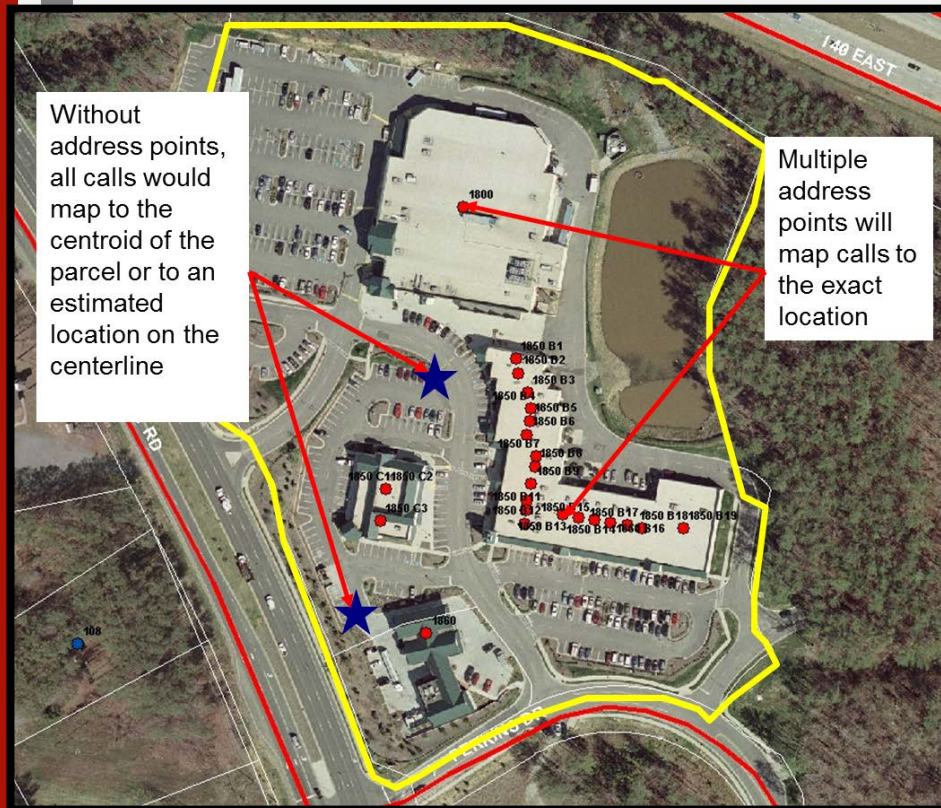


# Why Address Points?

- Locate precise location
- Traditional centerline could be very inaccurate
- Strip malls, apartments, high-rise buildings, address anomalies
- Address points provide a one-to-one relationship



# Address Points

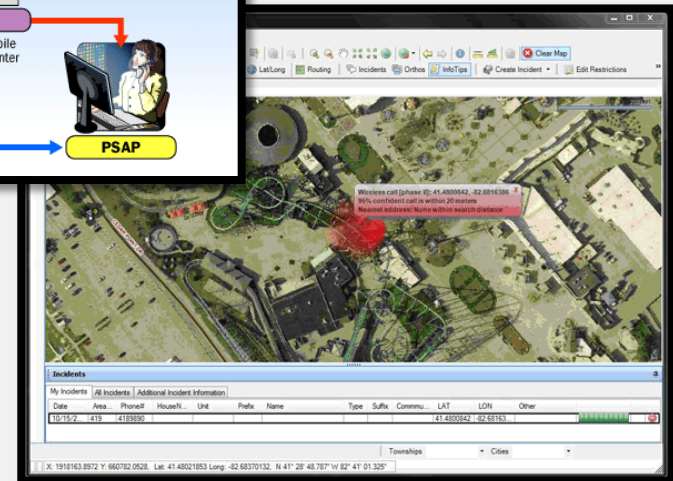
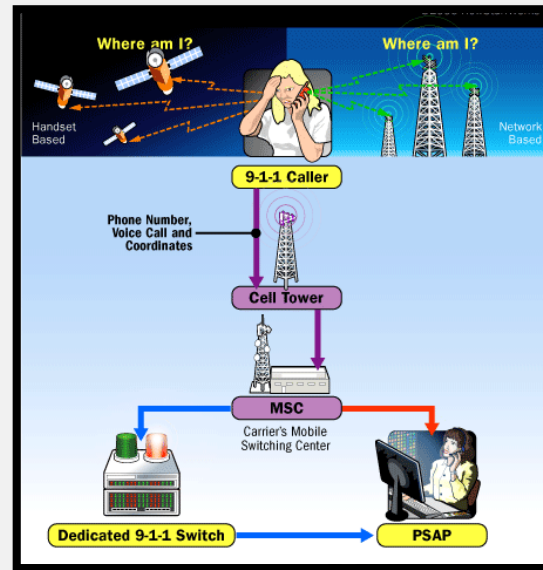


- Public safety mapping to commercial developments, apartment complexes and trailer parks with multiple units on one parcel
- Spatially correct address points will save dispatchers and emergency response personnel valuable time in locating active CAD calls
- No more “guess work” on exactly where a call is located



# Cell Phone Geo-location

- Wireless Carriers Must be Mandated to Transmit 911 call Locations
- 911 Equipment and Software Must be Able to Read and Interpret Location Information

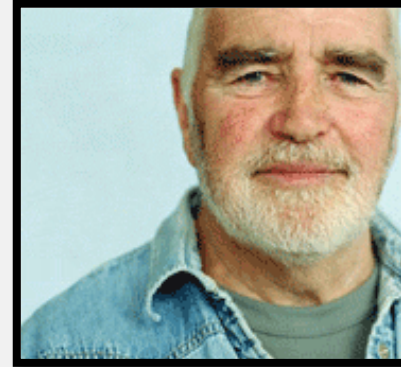


# Return on Investment

## City of Decatur/Macon County, IL

### PROBLEM

- Call came into E911 at 3:30 PM
- 62 year-old man brutally attacked in his own driveway
- Man was thrown into his own trunk and the assailants drove off in the same vehicle



# Return on Investment

## City of Decatur/Macon County, IL

### SOLUTION

- The operator was able to determine the man's location based on Phase II wireless compliance
- Police had no problem locating the vehicle within minutes
- After a short high speed pursuit, the assailants were apprehended



# Return on Investment

## City of Decatur/Macon County, IL

### SAVE LIVES

- Saved a 62 year-old man's life and potentially others
- Provides reassurance to the residents that they are much safer

GEOGRAPHIC TECHNOLOGIES GROUP  
648 North Speece Avenue  
Goldboro, NC 27834  
1.888.757.4222      [www.geotg.com](http://www.geotg.com)

**SUNGARD**<sup>®</sup>  
HITE INC.

## REAL-LIFE CASE STUDY


### LGdispatch botches kidnappers joyride City of Decatur, IL

**LGdispatch saves lives!**

The Decatur Police Department recently utilized LGdispatch to help save a 62-year-old man's life. The City of Decatur Police Department purchased LGdispatch in 2004. This software is a Computer Aided Dispatch (CAD) mapping interface that provides E-911 dispatchers with an interactive map displaying the location of all emergency calls.

The Decatur Police Department's Emergency Services Coordinator (ESC) Gretchen Reynolds received an alarming 911 call on Monday, March 14 around 3:00 p.m. from a distressed victim. Apparently a 62-year-old man was violently attacked while sitting in his vehicle in his own driveway. The assailants beat him, robbed him, threw him in his trunk of his car and took off in the vehicle.

While lying in the trunk of his car, not knowing what the assailants were going to do, he dialed 911. His call was received by Decatur's ESC Gretchen Reynolds. The Decatur man was able to give Reynolds a description of his vehicle and his license number. Reynolds, using her LGdispatch mapping software's Phase II capability was quickly able to determine the location of the vehicle and pass the information on to the city officers and the Macon County deputies. Reynolds "re-bid" the cell phone signal to get the most current coordinates and then



Decatur Police Department, Emergency Communications Coordinator using LGdispatch software

entered the latitude and longitude information into the map in the E911 software. At that point she was able to display where the caller was located. The officers had no problem locating the vehicle and after a high speed chase the assailants crashed the vehicle and took off on foot. The officers apprehended the two assailants and were able to free the Decatur man from the trunk of the vehicle.

Without the LGdispatch software at Reynolds' fingertips it would have made locating the victim utterly impossible since the victim was not aware of his location. Having access to LGdispatch insures that you have the most recent and reliable data at your fingertips to track E-911 calls.

# Next Generation 911, GeoSMS and Open GeoSMS

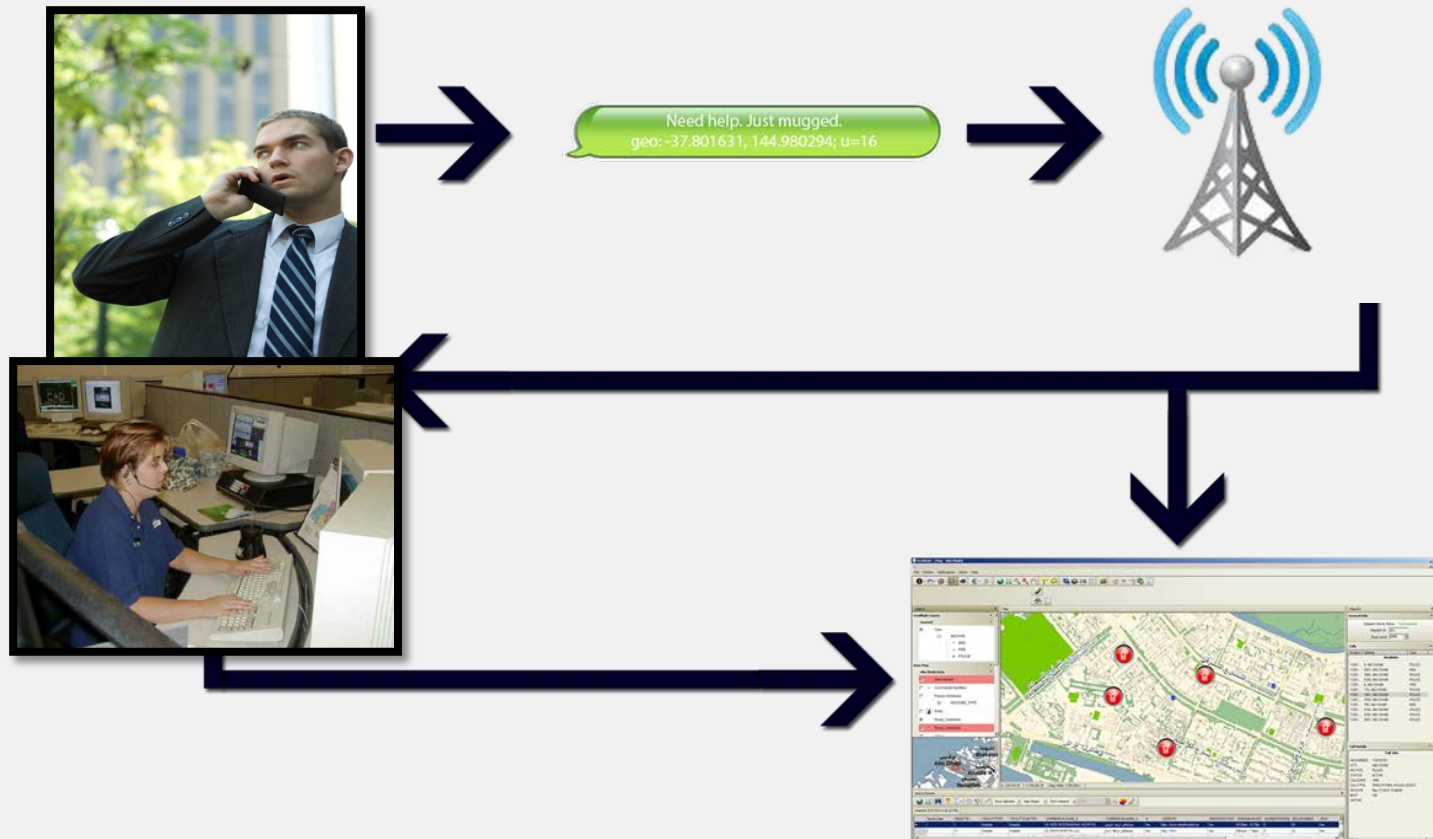
- Wireless Providers Must Provide this Service. 911 Answering Point Software Must be Able to Accept and Interpret.
- Text to 911 – Next Generation 911 - Provide non-GeoSMS but Address must be sent – Durham, NC
- GeoSMS –relay SMS with coordinates & uncertainty. I'm at the pub  
geo:-37.801631,144.980294;u=16
- Open GeoSMS – OGC standard for providing SMS and Location Based Service (LBS) data. Broadly implemented in Asia.



Durham 911 Center  
Text-to-911



# How GeoSMS will work





# Viewing GeoSMS Within 911 Dispatch

The screenshot displays the GeoBlade software interface for viewing GeoSMS within a 911 dispatch system. The main map shows a street grid in Abu Dhabi with several red fire icons indicating emergency locations. The interface includes a legend on the left, a dispatch information panel on the right, and a search results table at the bottom.

**Legend:**

- GeoBlade Layers
  - General
    - Type
      - INC TYPE
        - EMS
        - FIRE
        - POLICE

**Base Map:**

- Abu Dhabi Data
  - Area Names
  - Community Facilities
  - Places of Interest
  - FEATURE\_TYPE
  - Ports
  - Road\_Centline
  - Road\_Centline

**Dispatch Information Panel:**

**General Info**

Dispatch Server Status: **Connected**

Dispatch ID: **ALL**

Zoom Level: **2500**

**Calls**

Incident	Address	Type
11201...	8, ABU DHABI	POLICE
11201...	2401, ABU DHABI	EMS
11201...	1800, ABU DHABI	POLICE
11201...	2100, ABU DHABI	POLICE
11201...	8, ABU DHABI	FIRE
11201...	719, ABU DHABI	POLICE
11201...	1901, ABU DHABI	POLICE
11201...	1500, ABU DHABI	POLICE
11201...	700, ABU DHABI	EMS
11201...	3104, ABU DHABI	POLICE
11201...	4100, ABU DHABI	POLICE
11201...	2507, ABU DHABI	POLICE

**Call Details**

**Call Info**

INCNUMBER: 112010167

CITY: ABU DHABI

INC TYPE: POLICE

STATUS: ACTIVE

CALLCODE: 1456

CALLTYPE: FREQ PATROL POLICE ASSIST

INC DATE: May 13 2012 12:00AM

BEAT: 142

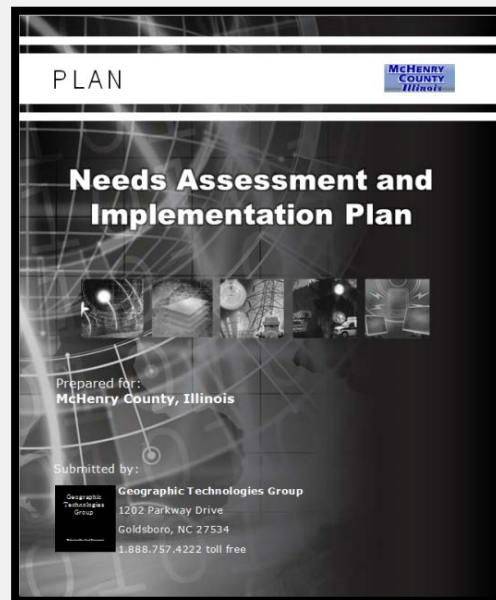
UNITNO: 142

**Search Results:**

Result Index	OBJECTID	FACILITYTYPE	FACILITYSUBTYPE	COMMERCIALNAME_E	COMMERCIALNAME_A	hr	WEBSITE	EMERGENCYDEP	OPENINGHOURS	NUMBERPARKING	BEDSNUMBER	XRAY
1	1	Hospital	Hospital	AL REEF INTERNATIONAL HOSPITAL	مستشفى لريف الدولي	Yes	<a href="http://www.alreefhospital.ae">http://www.alreefhospital.ae</a>	Yes	09:00am - 01:00p	0	50	Yes
2	11	Hospital	Hospital	AL RAHA HOSPITAL LLC	مستشفى لراحة ذموم	Yes	<a href="http://Non">http://Non</a>	Yes	24hours - 7 days	0	12	Yes

# How Do You Get There?

- GIS Master Plan
- Utilize expert services to insure data compliance (need a team with hands on experience)





# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security

# Effective Dispatching Critical Component for Success

## The Good

- “Woman abducted police track her cell during rescue” – Portland Press
- “Police response times cut in half with new dispatch system” – Missouri City, TX
- “Quick police response nabs child kidnapper” – St. Louis Post Dispatch

## The Bad

- “Unable to locate 911 call leads to death of child” – Los Angeles Times
- “Police have difficulty identifying caller location in manhunt” – New York Times
- “Cell call plea for help unidentifiable – man dies” – London Times

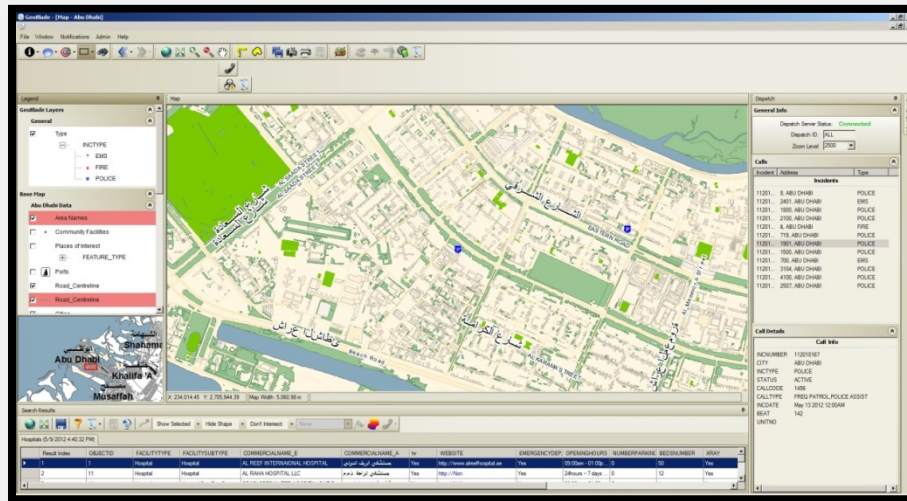
## The Ugly

- “Police take over two hours to respond to 911 call – Police Chief and Mayor fired.”  
Charleston Post and Courier



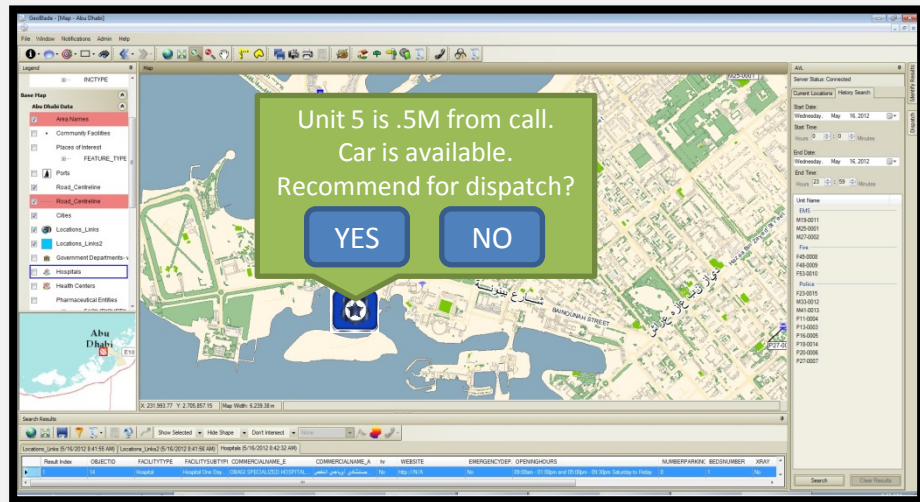
# Dispatch Center Mapping

- A majority of implementations fall short
- Need optimal routing
- Closest unit recommendations
- Access to a host of pertinent data layers
- Live camera feeds
- Automated Vehicle Location (AVL)
- Hazardous Materials
- Dispatch Center Mapping Demonstration



# Routing and Street Centerlines

- All centerline layers are not created equal
- Routing requires fully routable street centerlines
  - One way streets
  - Overpasses
  - Turn impedances
- Centerlines were the original method for tracking addresses in local government
- All address matching and address locations were done via the street centerline
- Still has a significant role
  - Routing
  - Closest Unit Recommendations
  - Address matching
    - Still primary method for many organizations
    - Other alternatives are much more expensive

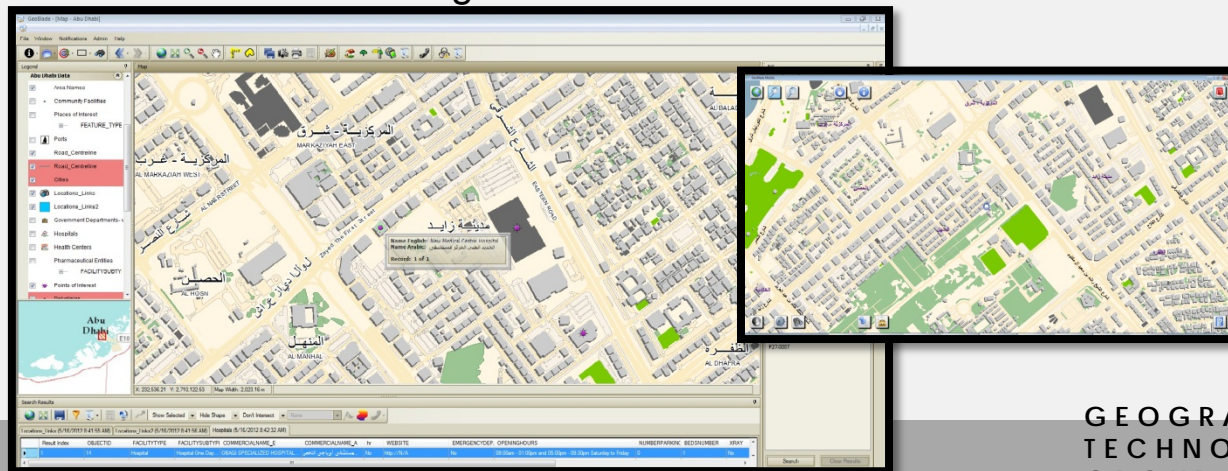


# How Do We Guarantee Good Centerlines?

# Fully Attributed and Routable Street Centerline

The collection of all necessary road information for the development of a routable road centerline file. This will include but not limited to:

- One-way Streets
- Speed Limits
- Number of Lanes
- Road Width (transportation of haz mat)
- School Zones
- Proximity to critical facilities (police station, hospital)
- Overpasses
- Adjustment of existing road centerlines to aerial photography
- Centerline attribution
- Location of missing roads in centerline file



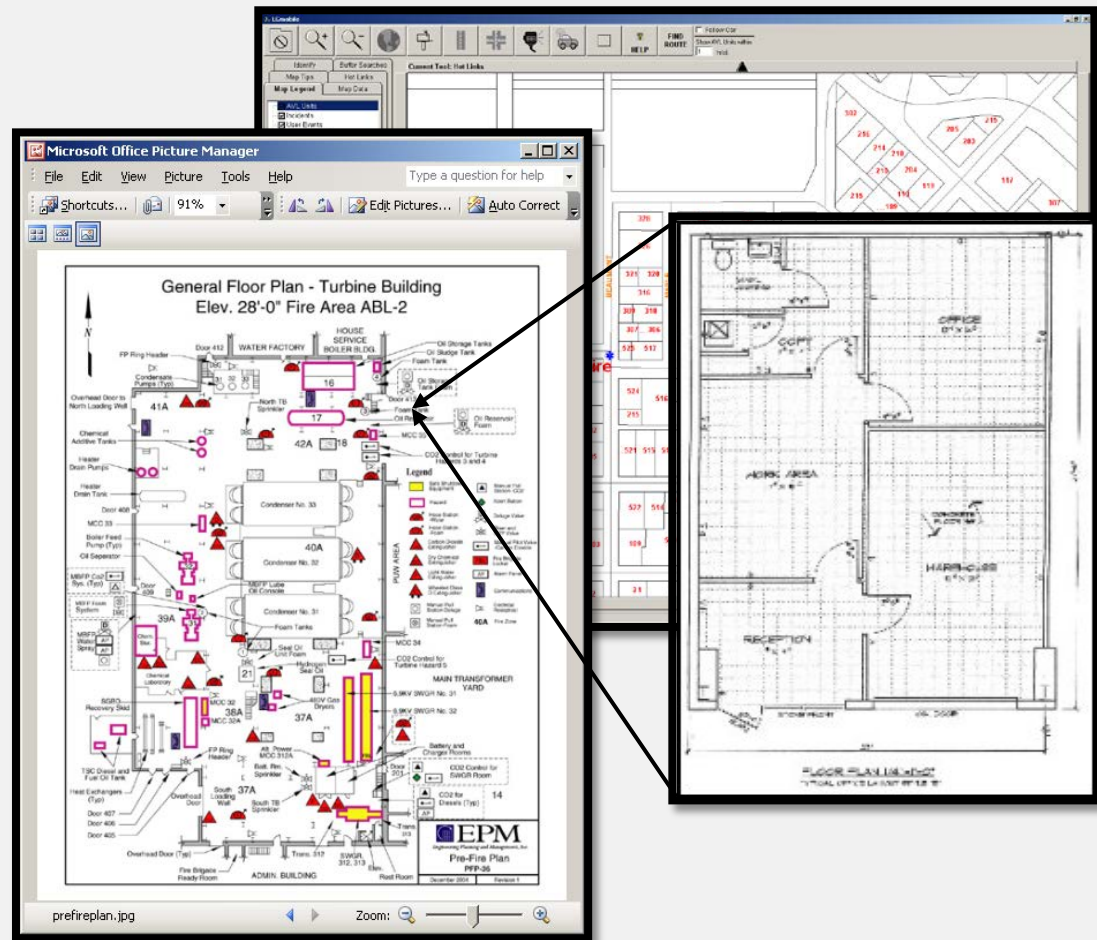
# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security



# Mobile Mapping and Dispatch with Building Floor Plans

- Emergency response vehicles can now leverage digital floor plans while en-route to CAD calls
- Eliminate the need for multiple, bulky floor plan books
- Helps save time, money and lives

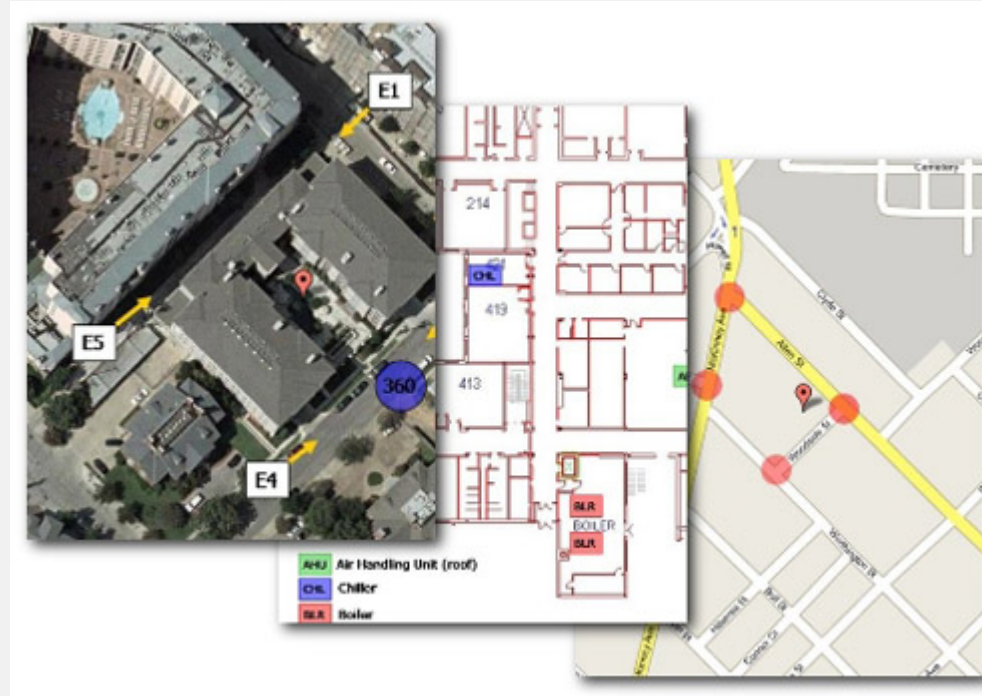




# Critical Facilities, Building Pre-Plans

## Where and What are They?

- Fire Departments maintain them
  - Paper
  - Visio
  - Within existing apps like Firehouse
- Critical Facilities
  - Schools
  - Daycares
  - Assisted Living
  - Industries



# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 **Operational Awareness and Improved DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security

# Operational Awareness

- Most organizations do not have access to mission critical data
- Need to have a common operation picture (COP)
- Must be easy to use or people will not use it
- Must integrate data from disparate sources



# Return on Investment

## City of Wilson, NC

### PROBLEM

- The Defense challenged the witness's creditability
- The Defense argued that the witness could not have identified the defendant clearly because there was not enough light in the area to make a positive ID



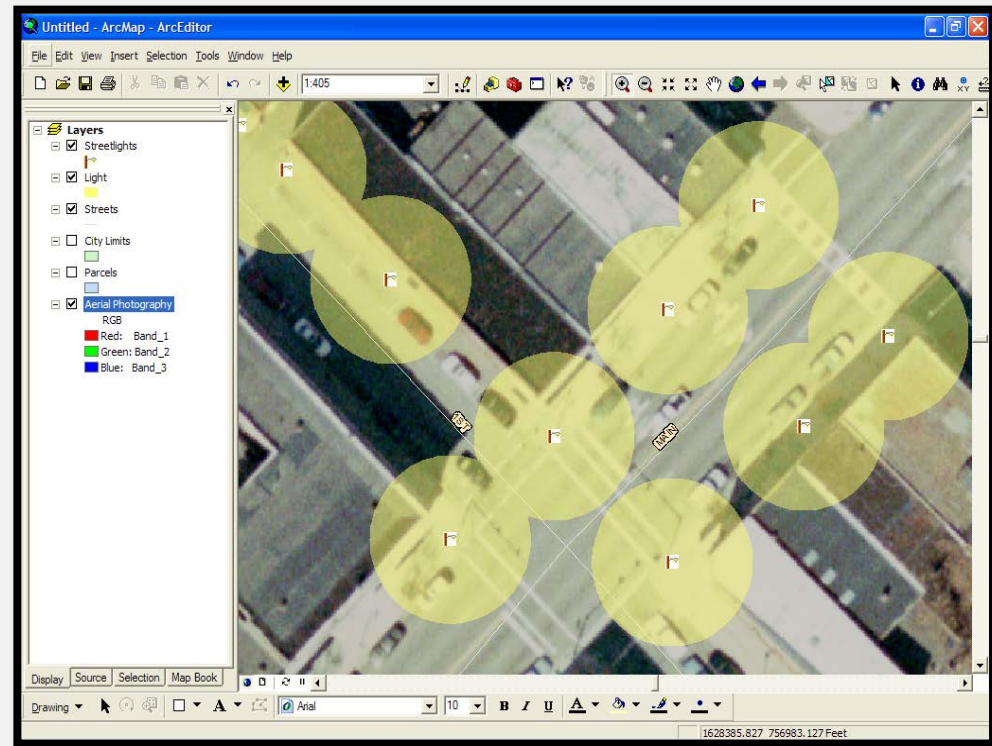


# Return on Investment

## City of Wilson, NC

### SOLUTION

- Prosecution was able to use GIS to buffer the street lights in the area where the crime occurred
- The buffered area proved that there was enough illumination for the witness to make a positive ID on the alleged attacker



# Return on Investment

## City of Wilson, NC

### RETURN ON INVESTMENT

#### Save Lives

- A convicted murderer was taken off the streets
- Provides reassurance to citizens that they are much safer with GIS

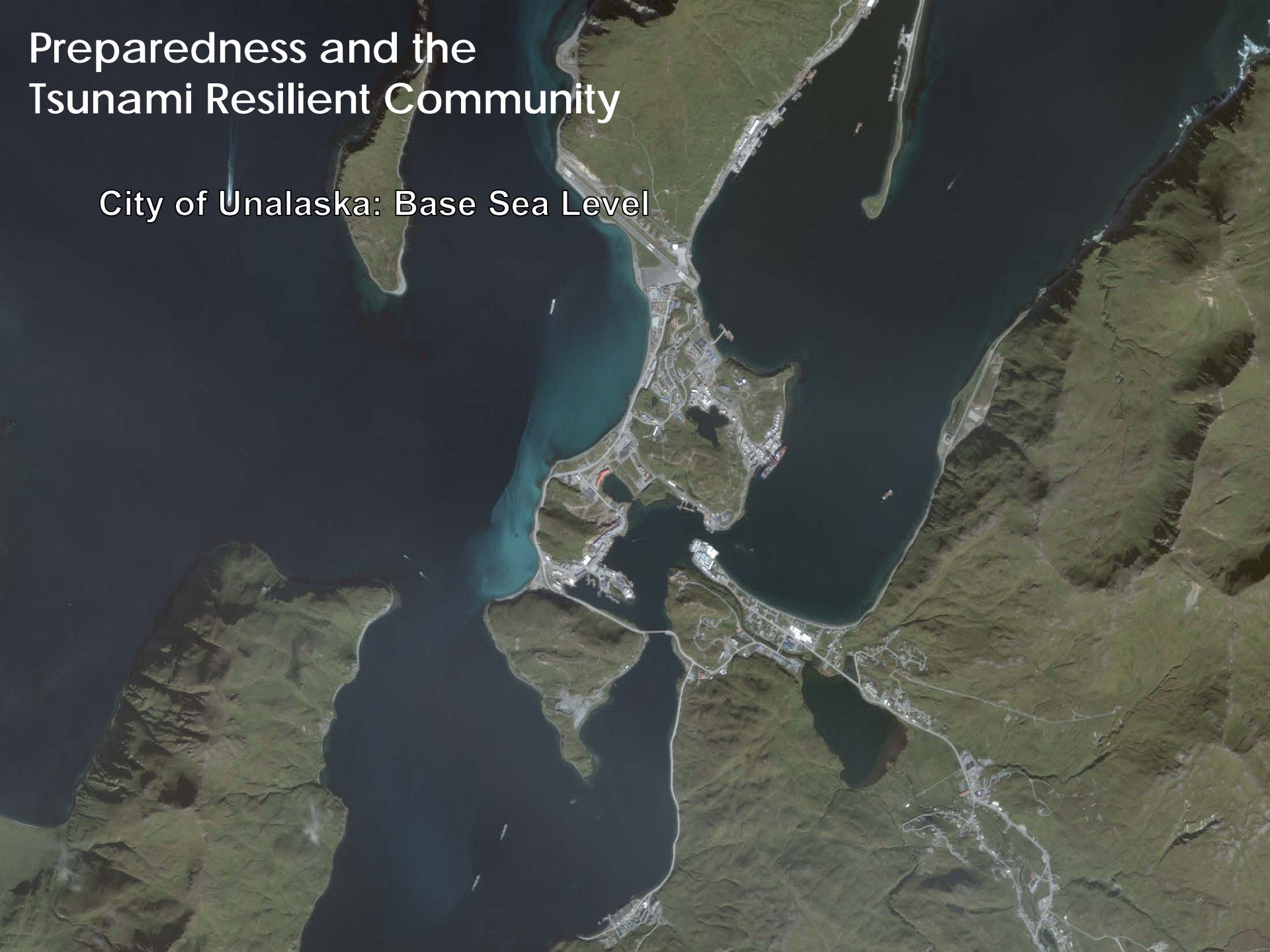


# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security

# Preparedness and the Tsunami Resilient Community

City of Unalaska: Base Sea Level





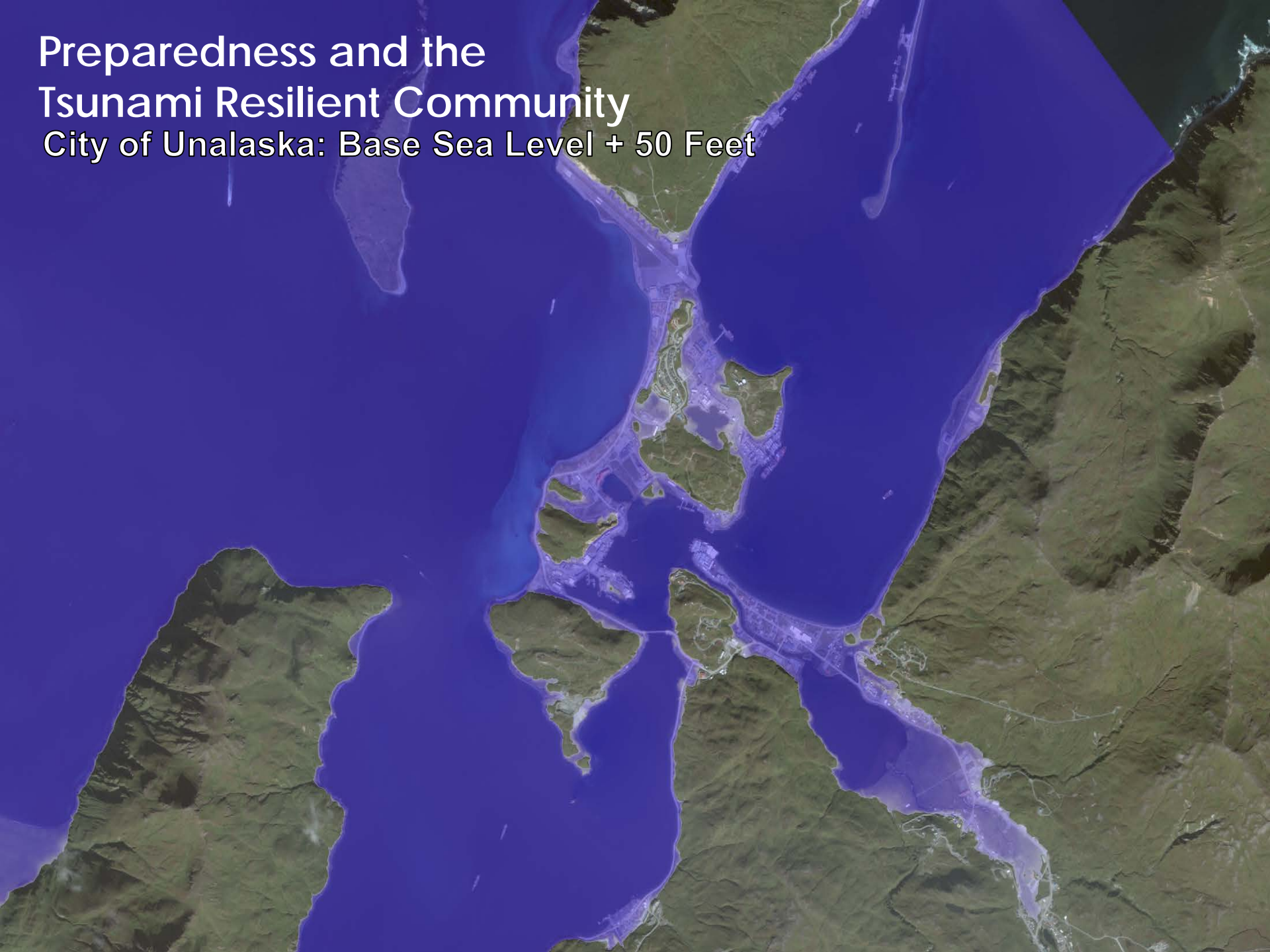
# Preparedness and the Tsunami Resilient Community

City of Unalaska: Base Sea Level + 30 Feet



# Preparedness and the Tsunami Resilient Community

City of Unalaska: Base Sea Level + 50 Feet





# Preparedness and the Tsunami Resilient Community

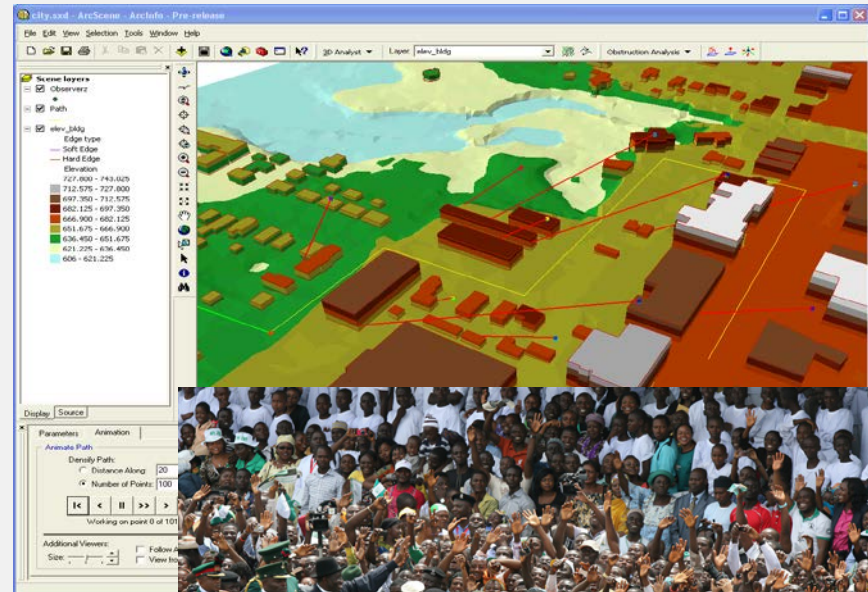
City of Unalaska: Base Sea Level + 100 Feet



# Motorcades and VIP Protection



- Tracking
- Visibility analysis by motorcade/ patrol
- Visibility analysis by security forces monitoring motorcade/patrol
- Threat analysis from snipers to deny firing points

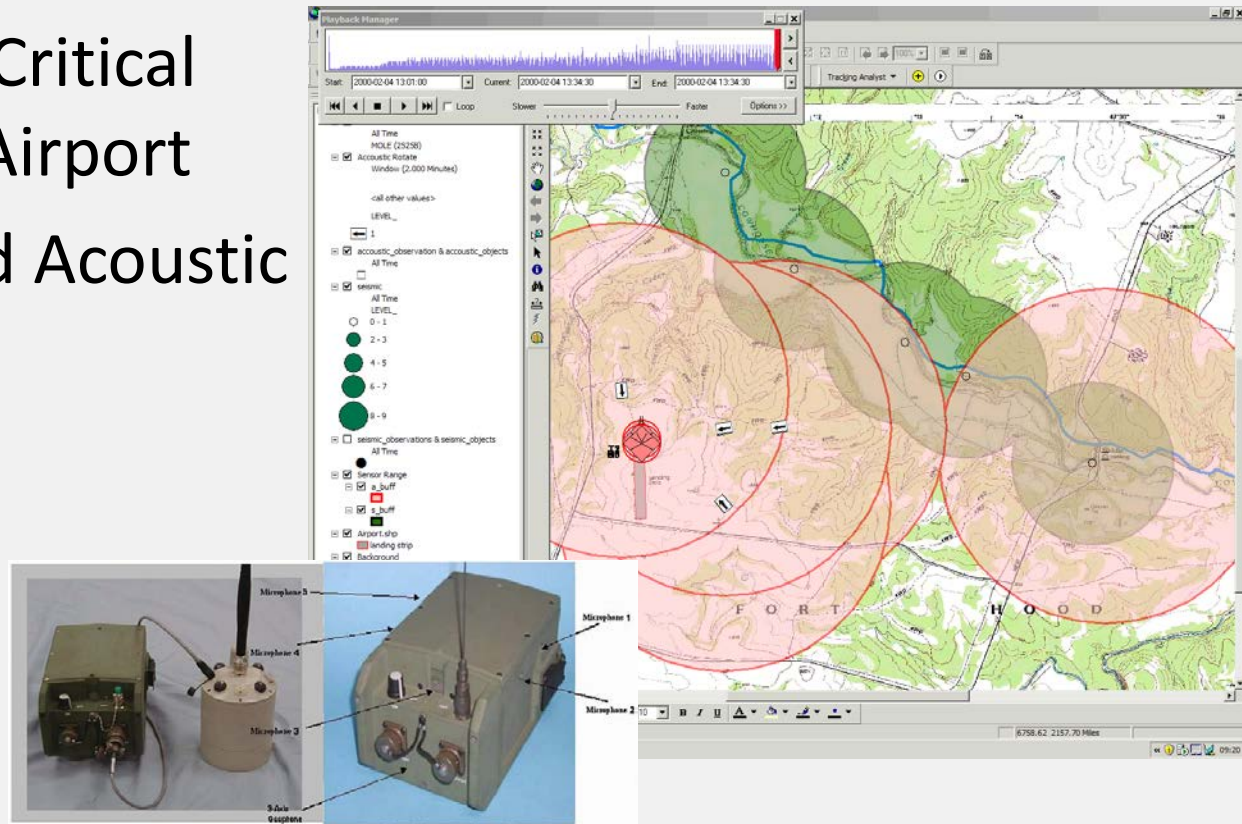


Vis\_Intervis.avi

# Border Security



- Protecting Critical Facilities - Airport
- Seismic and Acoustic Sensors



sensortracking.avi



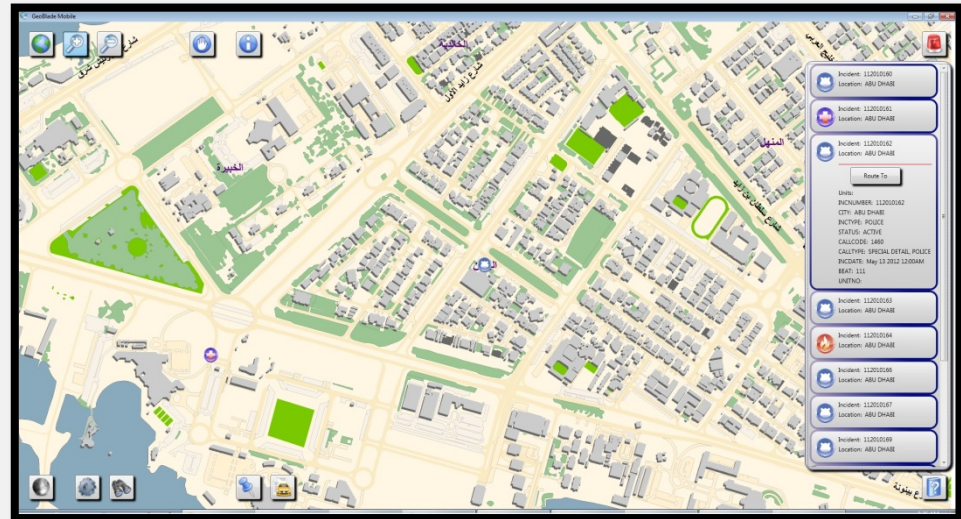
# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security



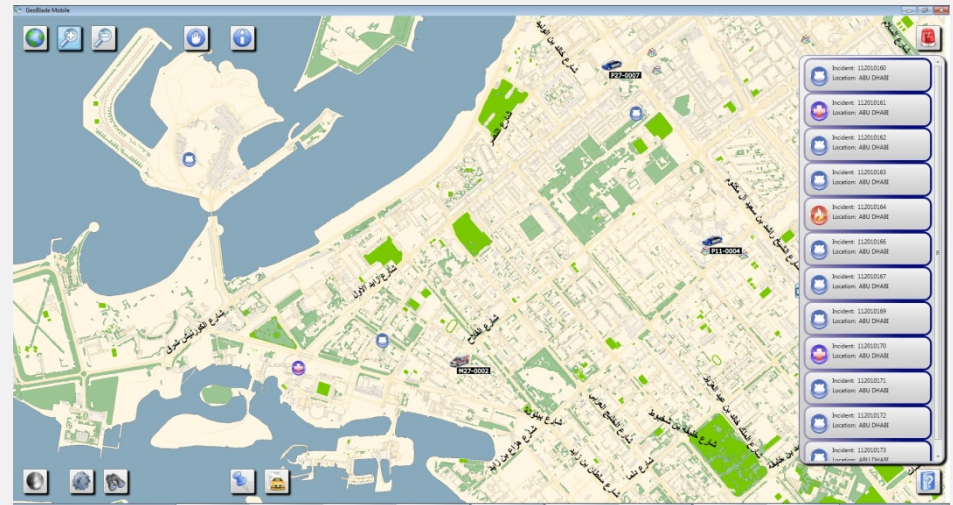
# Automated Vehicle Location (AVL) Support

- Plots and stores vehicle location
- Converts Lat/Lon to local coordinate system
- Historic location search/plot
- Point click for Lat/Lon location
- Enter Lat/Lon for plotting



# Mobile Mapping

- In the Car mapping
- AVL Locations
- Call Locations
- Event Locations
- Street/Intersection/Address Lookup
- Wireless TCPIP network
- Server Side Component
- Update procedure to remote vehicle

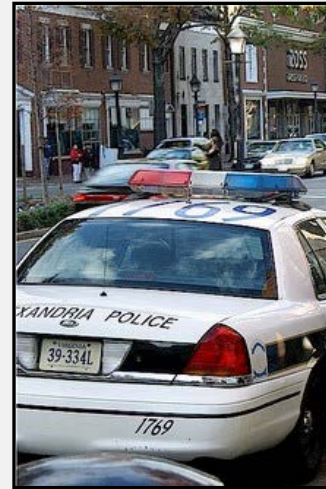


# Return on Investment

## City of Alexandria, VA and City of Portland, ME

### PROBLEM

- The President of the United States was scheduled to visit the Alexandria in July 2006 (George Bush) and Portland April 2012 (Barack Obama)
- Needed to track police vehicles and secret service vehicles
- Had to mesh the two technologies
- Had to plan optimal path
- Had to identify possible vulnerabilities



# Return on Investment

## City of Alexandria, VA and City of Portland, ME

### SOLUTION

- GIS enabled the City of Alexandria and the City of Portland to use GIS mapping to monitor police vehicles during escort of the Secret Service
- They were able to protect the President while using GIS to anticipate safe, logical routes while driving





# Return on Investment

## City of Alexandria, VA and City of Portland, ME

### RETURN ON INVESTMENT

Protect Your Community

- Using the same GIS technology, the City is now able to protect its citizens like it protected the President



# TABLE OF CONTENTS

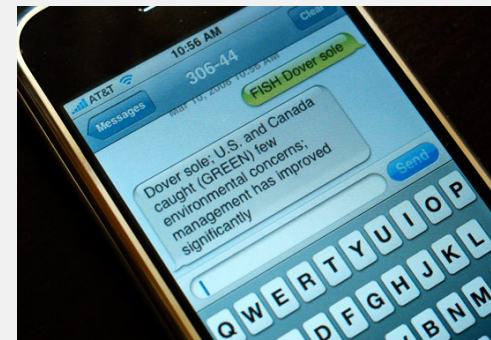
- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security



# Emergency Notifications

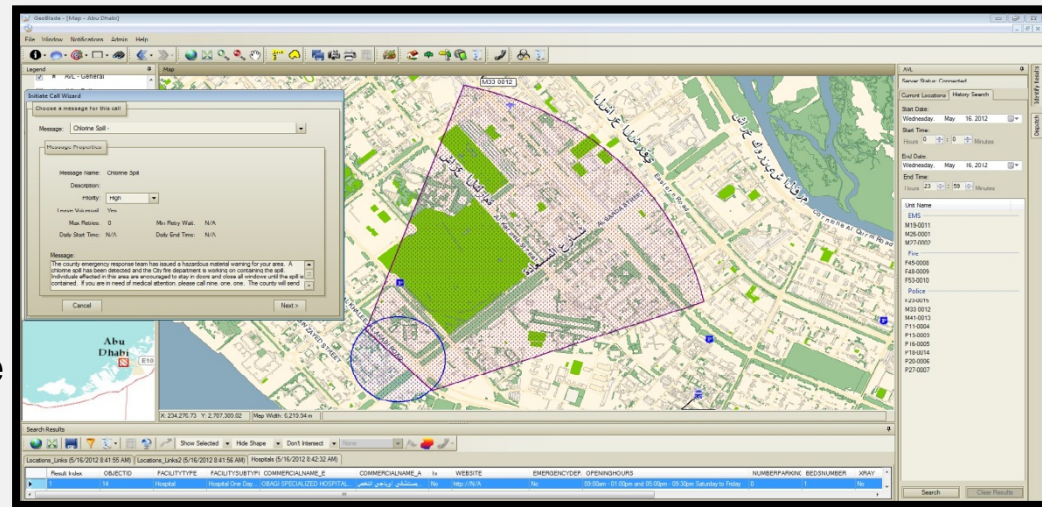
## Citizen Notification

- Public safety has led the way of late in implementing applications that will notify citizens if a crime occurs within a certain distance of their
  - Houses
  - Schools
  - Places of worship
- Citizens are beginning to expect this type of information to be emailed, texted, or automatically phoned to them
- GIS is utilized as the method of geo-enabling an existing database and juxtaposing the event in the database with the citizen's location of concern
- The demand for this type of information will continue to increase
- It will be expected that a local government will notify its citizens when a change of any type is occurring around them
  - Chemical Spill
  - Road Closures
  - Evacuation



# Reverse Dialing Interface – Public Notification

- Reverse Notification
- Web-Based
  - No Phone Line
  - No Hardware
- Subscription Service
- Fastest on the market – 1,000 delivered messages per minute (30 sec message)



# Return on Investment

## St. Mary's County, MD

### PROBLEM

- A 10 year-old male child was presumed kidnapped after being last seen in a park across the street from his home
- Someone at the park remembers a white van parked nearby and was able to give a description

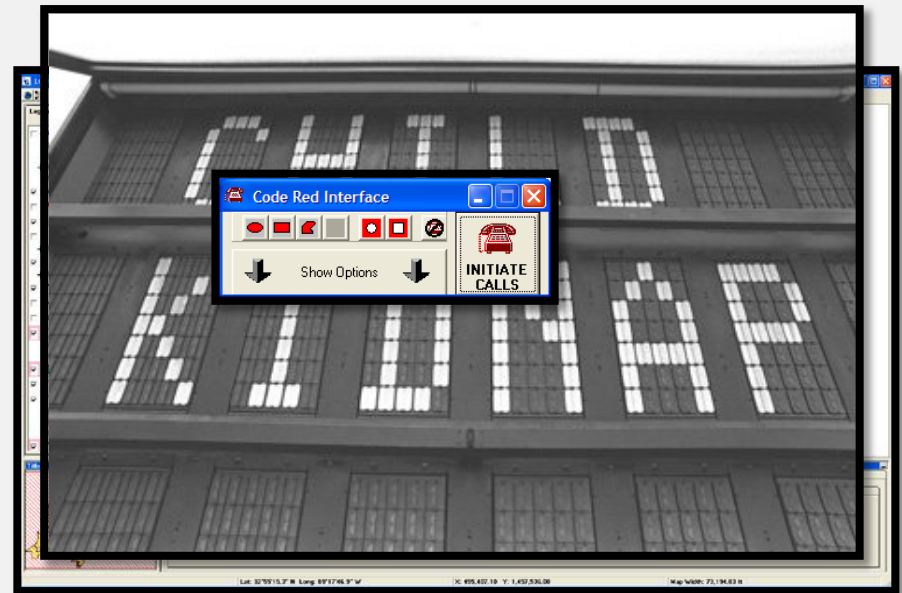


# Return on Investment

## St. Mary's County, MD

### SOLUTION

- A County-wide Amber Alert was issued from the local Sheriff's Department for the little boy
- A reverse notification GIS mapping application enables the dispatchers to select the entire County and place a call to all people within its borders at 60,000 calls per hour
- A full description of the van and the boy are provided through a pre-recorded message and sent to all phones in the County



# Return on Investment

## St. Mary's County, MD

### RETURN ON INVESTMENT

#### Save Lives

- The boy was safely recovered after the van was spotted at a toll booth
- Provides reassurance to people that they are much safer with GIS



# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security



# Road Centerline Mapping Exception Report

## REPORTS



### MSAG DATABASE



Submitted by:

**Geographic Technologies Group**

648 North Spence Avenue

Goldsboro, NC 27534

1.888.757.4222 toll free

Geographic  
Technologies  
Group

Microsoft Excel - GTG N25NCXLS.XLS																
File Edit View Insert Format Tools Data Window Help																
100% Arial																
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1225	FIRESIDE DR	1900	2059	CHAPEL HILL	NC	333	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1226	FIRESIDE DR	2000	2011	DURHAM	NC	333	N25	041697	4334	DRHM	RLGHNCMO85F	Yes				
1227	FIRST ST	1100	1200	HILLSBOROUGH	NC	313	N25	041697	471	HILL	RLGHNCMO85F	Yes				
1228	FIVE FORKS RD	3100	3300	CHAPEL HILL	NC	308	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1229	FIVE FIVE CT	200	414	MEBANE	NC	282	N25	031306	485	CT	MEBN	WNSLNCIF74H	No	Check to see if it was added		
1230	FLAGSTONE CT	100	105	CHAPEL HILL	NC	303	N25	080598	5193	CPHL	RLGHNCMO85F	Yes				
1231	FLEMINGTON RD	1	40	CHAPEL HILL	NC	301	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1232	FLEMINGTON RD	200	299	CHAPEL HILL	NC	301	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1233	FLETCHER RD	500	1000	HILLSBOROUGH	NC	313	N25	041697	471	HILL	RLGHNCMO85F	Yes				
1234	FLORAL DR	100	120	CHAPEL HILL	NC	308	N25	071905	5193	CPHL	RLGHNCMO85F	Yes				
1235	FLORASALINE DR	5900	6100	MEBANE	NC	280	N25	041697	486	MEBN	WNSLNCIF74H	Yes				
1236	FLYNT ROCK LN	1000	1100	HILLSBOROUGH	NC	313	N25	080197	471	HILL	RLGHNCMO85F	Yes				
1237	FOLSOM CT	100	105	DURHAM	NC	312	N25	022306	4334	DRHM	RLGHNCMO85F	No				
1238	FOREBUSH MOUNTAIN DR	200	299	CHAPEL HILL	NC	301	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1239	FORD RD	200	1600	CHAPEL HILL	NC	307	N25	051304	5193	CPHL	RLGHNCMO85F	Yes				
1240	FORDHAM BLVD			CHAPEL HILL	NC	301	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1241	FORDHAM BLVD	100	1799	CHAPEL HILL	NC	301	N25	041697	5193	CPHL	RLGHNCMO85F	Yes	Chapel Hill has no directions			
1242	S FORDHAM BLVD			CHAPEL HILL	NC	325	N25	041697	5193	CPHL	RLGHNCMO85F	Yes	Chapel Hill has no directions			
1243	S FORDHAM BLVD	100	1500	CHAPEL HILL	NC	301	N25	041503	5193	CPHL	RLGHNCMO85F	Yes	Chapel Hill has no directions			
1244	S FORDHAM BLVD	1501	2000	CHAPEL HILL	NC	303	N25	041503	5193	CPHL	RLGHNCMO85F	Yes	Chapel Hill has no directions			
1245	FOREMAN ST	1600	1700	HILLSBOROUGH	NC	313	N25	110200	471	HILL	RLGHNCMO85F	Yes				
1246	FOREST CREEK RD	2700	2800	CHAPEL HILL	NC	310	N25	080800	5193	CPHL	RLGHNCMO85F	Yes				
1247	FOREST CT	100	599	CARRBORO	NC	324	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1248	FOREST HILL DR	200	299	DURHAM	NC	312	N25	041697	4334	DRHM	RLGHNCMO85F	No				
1249	FOREST HILL RD	200	299	CHAPEL HILL	NC	301	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1250	FOREST KNOLLS RD	3100	3200	CHAPEL HILL	NC	308	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1251	FOREST OAKS DR	3400	3600	CHAPEL HILL	NC	310	N25	042899	4334	DRHM	RLGHNCMO85F	Yes				
1252	FOREST RIDGE DR	100	299	CHAPEL HILL	NC	310	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1253	FOREST RIDGE DR	200	299	DURHAM	NC	312	N25	041697	4334	DRHM	RLGHNCMO85F	Yes				
1254	FOREST RIDGE PL	2100	2199	DURHAM	NC	310	N25	041697	4334	DRHM	RLGHNCMO85F	Yes				
1255	FORK DR	4500	4621	ROUGE MONT	NC	320	N25	041697	471	HILL	RLGHNCMO85F	Yes				
1256	FORREST AV	3000	4200	EFLAND	NC	316	N25	041697	471	HILL	RLGHNCMO85F	Yes				
1257	FORREST ST	300	500	HILLSBOROUGH	NC	302	N25	041697	471	HILL	RLGHNCMO85F	Yes				
1258	FORRESTER BEND RD	3200	3400	HILLSBOROUGH	NC	313	N25	041697	471	HILL	RLGHNCMO85F	Yes				
1259	FORST RIDGE PL	2100	2200	DURHAM	NC	312	N25	041697	4334	DRHM	RLGHNCMO85F	No	SHOULD BE FOREST RIDGE PL			
1260	FORSYTH DR	100	299	CHAPEL HILL	NC	301	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1261	FORSYTHA CT	100	199	CHAPEL HILL	NC	301	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1262	FORTE LN	2000	2100	HILLSBOROUGH	NC	313	N25	072897	471	HILL	RLGHNCMO85F	Yes				
1263	FOUNDERS RIDGE DR	100	150	CHAPEL HILL	NC	303	N25	032206	5193	CPHL	RLGHNCMO85F	Yes				
1264	FOUNTAIN RIDGE RD	1500	1939	CHAPEL HILL	NC	301	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1265	FOUNTAIN RIDGE RD	1940	2199	DURHAM	NC	301	N25	041697	4334	DRHM	RLGHNCMO85F	Yes				
1266	FOUST ST	100	299	HILLSBOROUGH	NC	302	N25	041697	471	HILL	RLGHNCMO85F	Yes				
1267	FOVLER ST	100	199	CARRBORO	NC	324	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1268	FOX HILL FARM DR	100	201	HILLSBOROUGH	NC	313	N25	071905	471	HILL	RLGHNCMO85F	Yes				
1269	FOX RUN	99	199	CHAPEL HILL	NC	305	N25	121903	5193	CPHL	RLGHNCMO85F	Yes				
1270	FOX TR	5400	5799	MEBANE	NC	282	N25	041697	486	MEBN	WNSLNCIF74H	Yes				
1271	FOXBORO CT			CHAPEL HILL	NC	307	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1272	FOXBORO CT	1400	1500	CHAPEL HILL	NC	307	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1273	FOXFIRE DR	3500	3900	CHAPEL HILL	NC	307	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
1274	FOYER BLVD	200	1000	CHAPEL HILL	NC	307	N25	041697	5193	CPHL	RLGHNCMO85F	Yes				
MSAG Not in Streets N25NCXLS / GIS Roads Not in MSAG All MSAG Descendency Report																

RELIABILITY

GEOGRAPHIC  
TECHNOLOGIES  
GROUP

# ALI Database Development

- Produce and deliver an Automatic Location Identification (ALI) database
  - The ALI database should be created from address information collected and compiled during the address verification phase
  - The ALI database will be reconciled against existing telephone companies' databases
  - The ALI database will be consistent with published NENA Data Standards
  - Final changes to the ALI database must be made in conjunction with telephone companies
  - Final changes to the ALI database are responsibility to telephone companies

# ALI Database Development

Compare address points to ALI Database – Goal to attain a 98% match rate

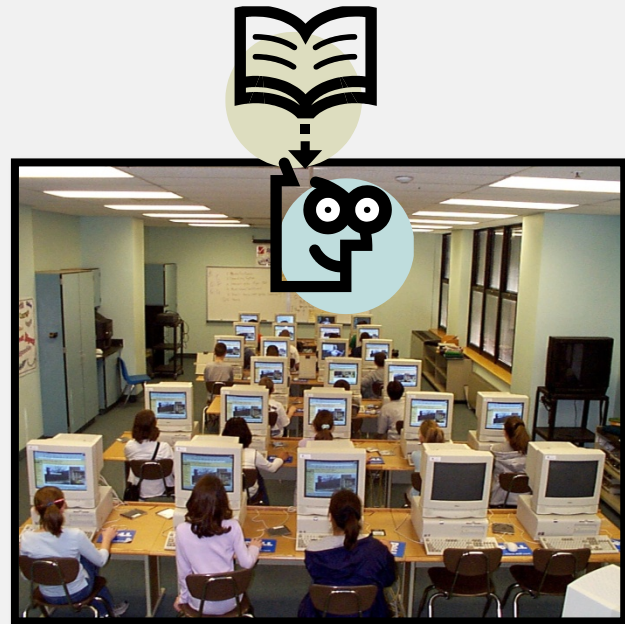
	STREET	TYPE	DIR PRE	DIR SUF	STNUM	UNIT	COMMUNITY	TN	911 ADDR	STATE	LOCATION	CUSTOMER	EXC
ABERDEEN	CT				100		CARRBORO	9199429414	100 ABERDEEN CT	NC		BOARDMAN, MARY	CPHL
ABERDEEN	CT				101		CARRBORO	9199425952	101 ABERDEEN CT	NC		BIGGERS, TRENT	CPHL
ABERDEEN	CT				102		CARRBORO	9199291513	102 ABERDEEN CT	NC		HILL, KENNETH	CPHL
ABERDEEN	CT				103		CARRBORO	9199675649	103 ABERDEEN CT	NC		GERRER, ROGER & BETTY	CPHL
ABERDEEN	CT				104		CARRBORO	9199677932	104 ABERDEEN CT	NC		SMALL, J STEVEN	CPHL
ABERDEEN	CT				105		CARRBORO	9199429478	105 ABERDEEN CT	NC		BOYER, TOM	CPHL
ABERDEEN	CT				105		CARRBORO	9199666324	105 ABERDEEN CT	NC		BOYER, THOMAS & VICKI	CPHL
ABERDEEN	CT				106		CARRBORO	9199679531	106 ABERDEEN CT	NC		BRADSHAW, DENNIS	CPHL
ABERDEEN	CT				106		CARRBORO	9199672853	106 ABERDEEN CT	NC		BRADSHAW, DENNIS	CPHL
ABERDEEN	CT				107		CARRBORO	9199678968	107 ABERDEEN CT	NC		WYNOLST, INGRID	CPHL
ABERDEEN	CT				108		CARRBORO	9199697750	108 ABERDEEN CT	NC		SMITH, JOSEPH	CPHL
ABERDEEN	CT				109		CARRBORO	9199421756	109 ABERDEEN CT	NC		TAYLOR, BECKY & KRISTEN	CPHL
ABERDEEN	DR				100	-A	CHAPEL HILL	9199681885	100 ABERDEEN DR	NC		BLACKBURN, ANGELA	CPHL
ABERDEEN	DR				100	D	CHAPEL HILL	9199425879	100 ABERDEEN DR	NC		BEAUVAIS, ELIZABETH	CPHL
ABERDEEN	DR				101		CHAPEL HILL	9199423167	101 ABERDEEN DR	NC	APT D	GRIBBIN, MATTHEW	CPHL
ABERDEEN	DR				103		CHAPEL HILL	9199288077	103 ABERDEEN DR	NC	BLDG 520	HILLIARD, RYAN A	CPHL
ABERDEEN	DR				402		CHAPEL HILL	9199679787	402 ABERDEEN DR	NC		GOODSON, SUMMER	CPHL
ABERDEEN	DR				406		CHAPEL HILL	9199423373	406 ABERDEEN DR	NC		MAINUDDIN, ROLIN G	CPHL
ABERDEEN	DR				408		CHAPEL HILL	9199689934	408 ABERDEEN DR	NC		WILKEN, STEPHEN	CPHL
ABERDEEN	DR				410		CHAPEL HILL	9199677063	410 ABERDEEN DR	NC		PERLAUTO, MICHAEL	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199681527	520 ABERDEEN DR	NC	APT 203	BST QUICK SERVICE	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199331882	520 ABERDEEN DR	NC	APT 204	NORMAN, MATT	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199288951	520 ABERDEEN DR	NC		LANKFORD CONSTRUCTION	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199289756	520 ABERDEEN DR	NC		LANKFORD CONSTRUCTION	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199697513	520 ABERDEEN DR	NC	APT 201	BST QUICK SERVICE	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199336950	520 ABERDEEN DR	NC	APT 303	COX, CARRIE	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199288252	520 ABERDEEN DR	NC		EDGEWATER PLACE IV	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199288245	520 ABERDEEN DR	NC		EDGEWATER PLACE IV	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199293810	520 ABERDEEN DR	NC	APT 304	GASBARRO, N	CPHL
ABERDEEN	DR				520		CHAPEL HILL	9199672804	520 ABERDEEN DR	NC	UNIT 120	BST QUICK SERVICE	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199295932	522 ABERDEEN DR	NC	APT 209	BROWN, TOSHA	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9193709007	522 ABERDEEN DR	NC		JAMISON, PHILIP	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199670657	522 ABERDEEN DR	NC	APT 205	PENDHARKAR, SIMA	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199420447	522 ABERDEEN DR	NC	APT 106	VANVECHTEN, SHARON FINCH	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199670630	522 ABERDEEN DR	NC	APT 104	BST QUICK SERVICE	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199676941	522 ABERDEEN DR	NC	APT 103	BST QUICK SERVICE	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199677195	522 ABERDEEN DR	NC	UNIT 101	BICKERS, LINDSEY	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199677106	522 ABERDEEN DR	NC	UNIT 108	HADLER, DORIS & JACK	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199326102	522 ABERDEEN DR	NC	APT 104	HUNTER, ELIZABETH	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199288242	522 ABERDEEN DR	NC	UNIT 207	ALLEN, KELLY	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199333161	522 ABERDEEN DR	NC	APT 204	WILSON, CAROLYN	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199332962	522 ABERDEEN DR	NC	APT 201	MCPHAIL, LINDSEY	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199331078	522 ABERDEEN DR	NC	APT 203	BST QUICK SERVICE	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199690953	522 ABERDEEN DR	NC	UNIT 206	BELEDGREN, E	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199294309	522 ABERDEEN DR	NC	APT 102	PARK, SOL	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199293615	522 ABERDEEN DR	NC		EDGEWATER PLACE IV	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199293616	522 ABERDEEN DR	NC		EDGEWATER PLACE IV	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199293618	522 ABERDEEN DR	NC		EDGEWATER PLACE IV	CPHL
ABERDEEN	DR				522		CHAPEL HILL	9199293617	522 ABERDEEN DR	NC		EDGEWATER PLACE IV	CPHL

# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security

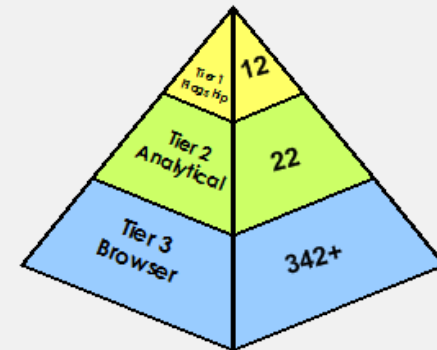
# Training – A Critical Step for Success

- A comprehensive training plan must be created
- Who should receive what training
- Training should be ongoing – every year
- Training should be on specific tools but also seminars on strategic direction
- Must have a continual eye on return-on-investment – why are we doing this and what is it doing for us
- Custom classes – not generic one size fits all classes



# Training

Certification	Qualifications	Recommended Staff
Geographic Information Systems Professional (GISP)	<p>Education – a bachelor's degree, or equivalent higher education, in addition to some specialized GIS education</p> <p>Professional Experience – a minimum of 4 years professional GIS experience</p> <p>Contributions to the Profession – substantial contributions to the GIS profession, such as volunteer service, presentations or publications</p> <p>Professional Ethics – affirmed compliance with GISCI's Code of Ethics and Rules of Conduct</p>	<p>GIS Analyst, Associate Analyst, GIS Administrator, GIS Manager</p>
ArcGIS Desktop Associate	<p>Construct a map using available datasets</p> <p>Select the datasets necessary to publish a map or perform a specific analysis</p> <p>Create new map datasets from analysis of existing datasets</p> <p>Perform basic data editing</p> <p>Select and perform spatial data analysis using standard tools</p> <p>Apply basic map visualization and cartography skills</p> <p>Use ArcGIS Explorer, ArcGIS Online, and desktop extensions</p>	<p>Tier II users GIS Analyst, Associate Analyst, GIS Technician</p>



Tiers of GIS Users	
Group	Activity
Tier 1 Flagship	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> GIS Administration</li> <li><input checked="" type="checkbox"/> Data maintenance</li> <li><input checked="" type="checkbox"/> Data conversion, creation</li> <li><input checked="" type="checkbox"/> Spatial Data Management</li> <li><input checked="" type="checkbox"/> Technical support</li> <li><input checked="" type="checkbox"/> Coordination</li> </ul>
Tier 2 Analytical	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Data Maintenance</li> <li><input checked="" type="checkbox"/> Analytical functions/Geoprocessing</li> <li><input checked="" type="checkbox"/> Complex queries</li> <li><input checked="" type="checkbox"/> Modeling</li> <li><input checked="" type="checkbox"/> Use of desktop extensions</li> <li><input checked="" type="checkbox"/> High quality map production</li> </ul>
Tier 3 Browser	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Browsing/Look-up</li> <li><input checked="" type="checkbox"/> Standard reports</li> <li><input checked="" type="checkbox"/> Simple query</li> <li><input checked="" type="checkbox"/> Map production</li> </ul>



# Public Safety Software

## Award Winning Public Safety

- Incident Mapping
  - Police, Fire, and EMS
- Dispatch
  - CAD
  - AVL
  - Cell Phone Location
  - GeoSMS
- Mobile
  - CAD
  - AVL
  - In the field mapping solution
- Emergency Operations Center
  - EOC and Field
- Routing
  - Route from any location on the map
  - Provide driving directions from point A to point B
- Addressing Applications
  - CAD
  - Interactive Geofile Management
- Notification Applications
  - Emergency Public Notification
- Community Watch

# TABLE OF CONTENTS

- 1 A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security
- 2 Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles
- 3 **ACCESSIBILITY** to Mission Critical Data
- 4 Operational Awareness and Improved **DECISION MAKING**
- 5 **SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)
- 6 The **MOBILITY** of GIS Tool Kit
- 7 Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens
- 8 **RELIABILITY** Structure Maintenance of Digital Data
- 9 **TRAINING** Education and Applied Knowledge
- 10 **RETURN ON INVESTMENT** through sophisticated software  
Functionality – The Bells and the Whistles of GIS software and the  
security

# Return on Investment

## Cabell County, WV

### PROBLEM

- Call came into E911 at 11:00 AM
- 18 year-old male had flipped his ATV over and was now unconscious, bleeding
- The other male did not see any familiar landmarks around



## SOLUTION

-

# Return on Investment

## Cabell County, WV

### RETURN ON INVESTMENT

Save Lives

- Saved an 18 year-old man from bleeding to death
- Provides reassurance to people that they are much safer with GIS





# Return On Investment (ROI)

Geographic Technologies Group

## GIS RETURN ON INVESTMENT

 <p><b>IMPROVE EFFICIENCY</b></p> <p>GIS helps organizations reduce and eliminate redundant steps in workflow processes. By implementing GIS programs you can reduce workloads for your staff and you can develop new procedures, resulting in increased productivity and ultimately efficiency.</p>	 <p><b>INCREASE PRODUCTIVITY</b></p> <p>GIS puts accurate, current information at your staff's fingertips when they need it, eliminating the need to waste time searching for lost data or trying to correct inaccurate data. Accurate digital and electronic GIS mapping can be easily accessed by and shared among all departments. And because information can be accessed so quickly and accurately, productivity will improve in all departments.</p>	 <p><b>SAVE TIME</b></p> <p>Having the information when you need and want it saves time, staff resources, and ultimately money. Information can be made available to the public through a Web site or touch screen kiosks in convenient locations, reducing the demands on your staff.</p>	 <p><b>SAVE MONEY</b></p> <p>GIS helps control spending through cost savings and cost avoidance. Immediate savings can be seen through better decisions and increased productivity. Cost avoidance becomes apparent over time, as GIS helps organizations reduce and eliminate costs.</p>	 <p><b>MAKE BETTER QUALITY AND MORE EFFECTIVE DECISIONS</b></p> <p>A GIS is a critical tool to query, analyze and map data in decision support. GIS can, for example, be used to choose a location for a development that has minimal environmental impact, is located in a low risk area, and is close to a population center.</p>	 <p><b>IMPROVE DATA ACCURACY</b></p> <p>GIS creates maps from data. Paper maps can be digitized and translated into GIS. Maps can be created on any location, at any scale, and showing selected information to highlight specific characteristics. Precise GIS data enables users to generate accurate reports and produce quality maps instantly.</p>	 <p><b>AUTOMATE WORKFLOW PROCEDURES</b></p> <p>GIS helps automate tasks that expedite workflow and enhance your ability to react efficiently during a crisis. GIS can automate routine analysis, map production, data creation and maintenance, reporting, and statistical analysis.</p>	 <p><b>SAVE LIVES</b></p> <p>In an emergency, GIS can lead rescuers quickly and accurately to the scene. In an emergency, every second counts. The time saved in locating a citizen can be the difference between life and death.</p>
 <p><b>IMPROVE INFORMATION PROCESSING</b></p> <p>Enterprise-wide GIS streamlines the flow of information throughout the organization, leading to better accuracy, better access, and increased efficiency in every aspect of the organization.</p>	 <p><b>COMPLY WITH STATE AND FEDERAL MANDATES</b></p> <p>Digital inventories of water, sewer, and storm water infrastructure are becoming increasingly important in local governments. A complete GIS program includes asset management, inventory control, and depreciation based on accurate and timely data including age, size, and construction materials; this allows managers to predict and schedule repairs and replacement.</p>	 <p><b>PROTECT YOUR COMMUNITY</b></p> <p>GIS helps public safety officials develop emergency plans and respond to disasters more effectively than ever before. GIS offers the tools to monitor conditions, recognize threats, predict consequences, and respond effectively and efficiently to man-made or natural disasters. GIS can also help officials deliver information to citizens during an emergency, through emergency notification systems and the Internet.</p>	 <p><b>IMPROVE COMMUNICATION, COORDINATION, AND COLLABORATION</b></p> <p>Good communication is the key to running an effective organization. GIS helps staff members and elected officials convey complex information in easy-to-understand formats.</p>	 <p><b>PROVIDE DATA TO REGULATORS, DEVELOPERS, AND OTHER INTERESTED PARTIES</b></p> <p>GIS makes it easy to deliver information for complex political and regulatory requirements. GIS allows regulators and developers to consider all pertinent data, which results in informed decisions and better results.</p>	 <p><b>RESPOND MORE QUICKLY TO CITIZEN REQUESTS</b></p> <p>With GIS data at hand, staff members can easily respond to citizen requests for information with maps. Maps are inherently easy to understand; they convey complex statistics and graphs clearly and easily.</p>	 <p><b>IMPROVE CITIZEN ACCESS TO GOVERNMENT</b></p> <p>Internet access to GIS information is the ultimate convenience for citizens: 24/7/365, from their home or office. Staff is then free to help citizens with more complicated requests, resulting in increased customer satisfaction.</p>	 <p><b>EFFECTIVE MANAGEMENT OF ASSETS AND RESOURCES</b></p> <p>Effective management starts with analyzing, tracking, managing, allocating, and conserving assets. GIS technologies make production and delivery quick and efficient with maximum benefits.</p>



# Your Organization – World Leader in Public Safety Solutions



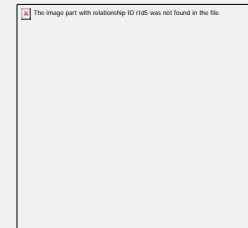
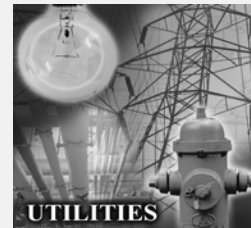


**DEMONSTRATION**

# *Thank you!*

**www.geotg.com — 888.757.4222**

**Proprietary Rights and Copyright:** Attendees acknowledge that the Checklist 911: 10 Ways to Improve Your Public Safety GIS Workshop is proprietary and confidential of Geographic Technologies Group (GTG) and is protected by the United States copyright laws and applicable international copyright treaties and/or conventions.



---

UNDERSTANDING LOCAL GOVERNMENT