Checklist 911

10 WAYS TO IMPROVE YOUR PUBLIC SAFETY USING GIS
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
A state-of-the art VISION and GEO-LOCATION for Public Safety and Security

Optimum and Efficient DISPATCH and Routing Emergency Vehicles

ACCESSIBILITY to Mission Critical Data

Operational Awareness and Improved DECISION MAKING

SAFETY Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The MOBILITY of GIS Tool Kit

Emergency NOTIFICATIONS and Crowd Sourcing Solutions – Engaging Citizens

RELIABILITY Structure Maintenance of Digital Data

TRAINING Education and Applied Knowledge

RETURN ON INVESTMENT through sophisticated software Functionality – The Bells and the Whistles of GIS software and the security
A state-of-the art VISION and GEO-LOCATION for Public Safety and Security

Optimum and Efficient DISPATCH and Routing Emergency Vehicles

ACCESSIBILITY to Mission Critical Data

Operational Awareness and Improved DECISION MAKING

SAFETY Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The MOBILITY of GIS Tool Kit

Emergency NOTIFICATIONS and Crowd Sourcing Solutions – Engaging Citizens

RELIABILITY Structure Maintenance of Digital Data

TRAINING Education and Applied Knowledge

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

REAL-LIFE CASE STUDY

LGdispatch saves man from 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 2006. This software is a Computer Aided Dispatch (CAD) mapping interface that provides E-911 dispatch with an interactive map depicting the location of all emergency calls.

The Decatur Police Department’s Emergency Services Coordinator, Ed R. Getthill Reynolds received an alarming 911 call on March 14 around 3:00 p.m. from a concerned citizen, 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 the trunk of his car and took off in the vehicle.

While being 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 E911 Coordinator Reynolds. The Decatur man was able to give Reynolds a description of his vehicle and his license number. Reynolds, using the 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 “called” the cell phone signal to get the most current coordinates and then

Without the LGdispatch software at Reynolds’ fingertips it would have been almost impossible since the victim was not aware of his location. Having access to LGdispatch means that you have the most immediate 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.
How GeoSMS will work
Viewing GeoSMS Within 911 Dispatch
How Do You Get There?

- GIS Master Plan
- Utilize expert services to insure data compliance (need a team with hands on experience)
A state-of-the art VISION and GEO-LOCATION for Public Safety and Security

Optimum and Efficient DISPATCH and Routing Emergency Vehicles

ACCESSIBILITY to Mission Critical Data

Operational Awareness and Improved DECISION MAKING

SAFETY Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The MOBILITY of GIS Tool Kit

Emergency NOTIFICATIONS and Crowd Sourcing Solutions – Engaging Citizens

RELIABILITY Structure Maintenance of Digital Data

TRAINING Education and Applied Knowledge

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

Unit 5 is .5M from call. Car is available. Recommend for dispatch?

YES  NO
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
A state-of-the art VISION and GEO-LOCATION for Public Safety and Security

Optimum and Efficient DISPATCH and Routing Emergency Vehicles

ACCESSIBILITY to Mission Critical Data

Operational Awareness and Improved DECISION MAKING

SAFETY Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The MOBILITY of GIS Tool Kit

Emergency NOTIFICATIONS and Crowd Sourcing Solutions – Engaging Citizens

RELIABILITY Structure Maintenance of Digital Data

TRAINING Education and Applied Knowledge

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
A state-of-the art VISION and GEO-LOCATION for Public Safety and Security

Optimum and Efficient DISPATCH and Routing Emergency Vehicles

ACCESSIBILITY to Mission Critical Data

Operational Awareness and Improved DECISION MAKING

SAFETY Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The MOBILITY of GIS Tool Kit

Emergency NOTIFICATIONS and Crowd Sourcing Solutions – Engaging Citizens

RELIABILITY Structure Maintenance of Digital Data

TRAINING Education and Applied Knowledge

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
A state-of-the art VISION and GEO-LOCATION for Public Safety and Security

Optimum and Efficient DISPATCH and Routing Emergency Vehicles

ACCESSIBILITY to Mission Critical Data

Operational Awareness and Improved DECISION MAKING

SAFETY Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The MOBILITY of GIS Tool Kit

Emergency NOTIFICATIONS and Crowd Sourcing Solutions – Engaging Citizens

RELIABILITY Structure Maintenance of Digital Data

TRAINING Education and Applied Knowledge

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
Border Security

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

Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles

**ACCESSIBILITY** to Mission Critical Data

Operational Awareness and Improved **DECISION MAKING**

**SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The **MOBILITY** of GIS Tool Kit

**Emergency NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens

**RELIABILITY** Structure Maintenance of Digital Data

**TRAINING** Education and Applied Knowledge

**RETURN ON INVESTMENT** through sophisticated software Functionality – The Bells and the Whistles of GIS software and the security
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
A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security

Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles

**ACCESSIBILITY** to Mission Critical Data

Operational Awareness and Improved **DECISION MAKING**

**SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The **MOBILITY** of GIS Tool Kit

Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens

**RELIABILITY** Structure Maintenance of Digital Data

**TRAINING** Education and Applied Knowledge

**RETURN ON INVESTMENT** through sophisticated software Functionality – The Bells and the Whistles of GIS software and the security
### Road Centerline Mapping Exception Report

#### MSAG Database

<table>
<thead>
<tr>
<th>Road Centerline</th>
<th>Road Name</th>
<th>Road Type</th>
<th>Mother Road</th>
<th>Mother Road Code</th>
<th>Mother Road Offset</th>
<th>Mother Road Direction</th>
<th>Mother Road End</th>
<th>Mother Road End Code</th>
<th>Mother Road End Offset</th>
<th>Mother Road End Direction</th>
<th>Mother Road End End</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1206</td>
<td>Fredrick Ct</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td>Check if last add.</td>
</tr>
<tr>
<td>1207</td>
<td>First St</td>
<td>1001</td>
<td>Durham</td>
<td>NC</td>
<td>3146</td>
<td>471</td>
<td>Durham</td>
<td>Durham</td>
<td>NC</td>
<td>Durham Line</td>
<td>Durham End</td>
<td></td>
</tr>
<tr>
<td>1208</td>
<td>Five Points Rd</td>
<td>1007</td>
<td>Hillsborough</td>
<td>NC</td>
<td>2758</td>
<td>471</td>
<td>Hillsborough</td>
<td>Hillsborough</td>
<td>NC</td>
<td>Hillsborough Line</td>
<td>Hillsborough End</td>
<td></td>
</tr>
<tr>
<td>1209</td>
<td>Fletcher Rd</td>
<td>1001</td>
<td>Hillsborough</td>
<td>NC</td>
<td>2758</td>
<td>471</td>
<td>Hillsborough</td>
<td>Hillsborough</td>
<td>NC</td>
<td>Hillsborough Line</td>
<td>Hillsborough End</td>
<td></td>
</tr>
<tr>
<td>1210</td>
<td>Flemming Rd</td>
<td>1001</td>
<td>Hillsborough</td>
<td>NC</td>
<td>2758</td>
<td>471</td>
<td>Hillsborough</td>
<td>Hillsborough</td>
<td>NC</td>
<td>Hillsborough Line</td>
<td>Hillsborough End</td>
<td></td>
</tr>
<tr>
<td>1211</td>
<td>Fleming Rd</td>
<td>1001</td>
<td>Hillsborough</td>
<td>NC</td>
<td>2758</td>
<td>471</td>
<td>Hillsborough</td>
<td>Hillsborough</td>
<td>NC</td>
<td>Hillsborough Line</td>
<td>Hillsborough End</td>
<td></td>
</tr>
<tr>
<td>1212</td>
<td>Flanders Rd</td>
<td>1001</td>
<td>Hillsborough</td>
<td>NC</td>
<td>2758</td>
<td>471</td>
<td>Hillsborough</td>
<td>Hillsborough</td>
<td>NC</td>
<td>Hillsborough Line</td>
<td>Hillsborough End</td>
<td></td>
</tr>
<tr>
<td>1213</td>
<td>Forest Hill Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1214</td>
<td>Forest Oaks Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1215</td>
<td>Forest Oaks Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1216</td>
<td>Forest Oaks Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1217</td>
<td>Forest Ridge Dr</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1218</td>
<td>Forest Ridge Dr</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1219</td>
<td>Forest Ridge Dr</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1220</td>
<td>Forest Ridge Dr</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1221</td>
<td>Forsyth Dr</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1222</td>
<td>Four Points Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1223</td>
<td>Fox Run Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1224</td>
<td>Ford Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1225</td>
<td>Fordham Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1226</td>
<td>Forest St</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1227</td>
<td>Forest Trail Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1228</td>
<td>Forest View Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1229</td>
<td>Forest View Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1230</td>
<td>Forestview Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
<tr>
<td>1231</td>
<td>Forrester Rd</td>
<td>1001</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>2543</td>
<td>0</td>
<td>Chapel Hill</td>
<td>Chapel Hill</td>
<td>NC</td>
<td>Chapel Hill Line</td>
<td>Chapel Hill End</td>
<td></td>
</tr>
</tbody>
</table>

Submitted by: Geographic Technologies Group
648 North Spence Avenue
Goldsboro, NC 27534
1.888.757.4222 toll free
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
Compare address points to ALI Database – Goal to attain a 98% match rate
A state-of-the art VISION and GEO-LOCATION for Public Safety and Security

Optimum and Efficient DISPATCH and Routing Emergency Vehicles

ACCESSIBILITY to Mission Critical Data

Operational Awareness and Improved DECISION MAKING

SAFETY Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The MOBILITY of GIS Tool Kit

Emergency NOTIFICATIONS and Crowd Sourcing Solutions – Engaging Citizens

RELIABILITY Structure Maintenance of Digital Data

TRAINING Education and Applied Knowledge

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

Tiers of GIS Users

<table>
<thead>
<tr>
<th>Group</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>GIS Administration, Data maintenance, Data conversion, creation, Spatial Data Management, Technical support, Coordination</td>
</tr>
<tr>
<td>Tier 2</td>
<td>Data Maintenance, Analytical functions/Geoprocessing, Complex queries, Modeling, Use of desktop extensions, High quality map production</td>
</tr>
<tr>
<td>Tier 3</td>
<td>Browsing/Look-up, Standard reports, Simple query, Map production</td>
</tr>
</tbody>
</table>

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

RETURN ON INVESTMENT
A state-of-the art **VISION** and **GEO-LOCATION** for Public Safety and Security

Optimum and Efficient **DISPATCH** and Routing Emergency Vehicles

**ACCESSIBILITY** to Mission Critical Data

Operational Awareness and Improved **DECISION MAKING**

**SAFETY** Hazard Mitigation Protection (Preparedness, Response, & Recovery)

The **MOBILITY** of GIS Tool Kit

Emergency **NOTIFICATIONS** and Crowd Sourcing Solutions – Engaging Citizens

**RELIABILITY** Structure Maintenance of Digital Data

**TRAINING** Education and Applied Knowledge

**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
Return on Investment
Cabell County, WV

SOLUTION

• The caller had his GPS unit with him to find their way back at the end of the day

• The dispatcher then asked for the coordinates of their location, entered them into the system, and found the location instantly

• FlightCare was sent to the ATV accident location immediately
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)

GIS Return on Investment

Increase Productivity
GIS puts accurate, current information at your staff's fingertips when they need it, eliminating the need to waste time searching for key data or trying to correct inaccurate data. Accurate digital and electronic GIS mapping can be easily accessed by and shared among all departments. Because information can be accessed so quickly and accurately, productivity will improve in all departments.

Save Time
Having the information when you need it 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.

Save Money
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.

Make Better Quality and More Effective Decisions
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.

Improve Data Accuracy
GIS creates maps from data. Paper maps can be digitized and translated into GIS. Maps can be created at any location, at any scale, and showing specific characteristics. Precise GIS data enables users to generate accurate reports and produce quality maps instantly.

Automate Workflow Procedures
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.

Save Lives
In an emergency, GIS can help resources 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.

Improve Information Processing
Enterprise-wide GIS streamlines the flow of information throughout the organization, leading to better accuracy, faster access, and increased efficiency in every aspect of the organization.

Comply with State and Federal Mandates
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 replacements.

Protect Your Community
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 trends, 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.

Improve Communication, Coordination, and Collaboration
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.

Provide Data to Regulators, Developers, and Other Interested Parties
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.

Respond More Quickly to Citizen Requests
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 graphics clearly and easily.

Improve Citizen Access to Government
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.

Effective Management of Assets and Resources
Effective management starts with analyzing tracking, managing, accounting, and conserving assets. GIS technologies make production and delivery quick and efficient with maximum benefits.
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.