Georgia Department of Transportation

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Title: WebEOC
(Emergency Operations Center)

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EXECUTIVE SUMMARY

The state of Georgia is "the Gateway to the Southeast," thanks to its transportation system, which includes the world's busiest airport, the country's second busiest container terminal and an outstanding network of interstate highways and state roads.

Substantial investments in the state's transportation infrastructure are among Governor Nathan Deal's top priorities, and the support of the Georgia Department of Transportation (GDOT) is reflected in its vision of "Enhancing Georgia's competitiveness through leadership in transportation."

The innovative use of leading-edge technologies is the foundation of GDOT's transportation leadership. GDOT relies on a range of technology tools and solutions to keep traffic of all kinds moving throughout the state, especially in its densely populated urban areas.

GDOT's WebEOC (Emergency Operations Center) application provides real-time information to support daily operations and enables fast, effective responses to emergencies, including accidents and extreme weather. Its SouthernLINC Wireless iDEN (Integrated Digital Enhanced Network) radio system ensures connectivity and facilitates collaboration among government agencies at all levels. Transportation telematics identify and assess various road hazards, including road temperatures, to help determine whether snow or ice is present.

But these are only three examples of information-gathering and monitoring technologies to support day-to-day decision-making and response as well as long-term planning. Other technologies make it possible to manage resources such as personnel, trucks and supplies more effectively. Much of the information from these tools is fed into public-facing communication channels like a website with interactive GIS mapping and message boards on interstates and major roads.

GDOT has extended components of its communications platform to other local and state agencies involved in responding to recent emergencies, thereby making up-to-the-minute situational awareness available statewide and across agencies for the first time. After experiencing the benefits of GDOT's communications platform firsthand, several state agencies are following GDOT's lead and adopting many of the same technologies.

The importance of GDOT's technologies to public safety and the state's economic competitiveness cannot be overstated. They complement other local, state and even federal response systems, and they ensure the seamless sharing of critical information in real-time during any type of emergency.

CONCEPT

Wrecks. Road closures. Highway construction. Maintenance activities. Severe weather. They can all lead to traffic gridlock and transportation nightmares with serious implications for personal safety and significant economic impacts.

Transportation problems certainly aren't limited to emergencies. The quality of life in traffic-choked communities is degraded, and economic vitality may suffer because of the reluctance of companies to establish offices, distribution centers or manufacturing facilities in places with long, painful commutes and other transportation challenges.

Efficient transportation networks and effective traffic management are essential to safety, high living standards and economic development. Innovative technology is at the center of the GDOT's strategy to keep traffic moving smoothly throughout the state – especially in densely populated metropolitan areas – regardless of whatever situation arises.

GDOT has deployed an array of impressive technologies that enable its teams to:

- Quickly identify and respond to routine, daily problems and life-threatening emergencies.

- Prepare for and respond to weather emergencies such as snow and ice storms, hurricanes and tornadoes.

- Easily share real-time information with other responders at the local, state and federal levels, and even in news media.

- Pro-actively collect and analyze data to support decisions for improving daily operations and strategic planning for future enhancements.

The **WebEOC (Emergency Operations Center) application** provides real-time information to support daily operations and emergency management, and it has become GDOT's cornerstone during inclement weather and other emergency situations. WebEOC makes it quick and easy to share documents, upload photographs and view maps and other GIS information. The result is comprehensive, up-to-the-minute situational awareness.

GDOT coupled WebEOC with the **SouthernLINC Wireless iDEN (Integrated Digital Enhanced Network)** radio system to add statewide voice communications capabilities among multiple state agencies and to connect state agencies with local and federal agencies when necessary. In addition, the establishment of talk groups enables all appropriate personnel to easily connect and seamlessly take part in discussions about specific situations. The result is a coordinated response across agencies and teams.

Transportation telematics is the third component of GDOT's technological response to transportation management. A suite of tools helps identify and assess road hazards and determine appropriate responses. For example, the Road Weather Information System monitors road temperatures to detect the presence of rain, snow, ice and wind. In addition, all GDOT emergency-response vehicles are equipped with GPS tracking software, which allows managers to dispatch the closest and most appropriate vehicle to the scene of an incident.

Taken together, GDOT's technology solutions ensure a level of situational awareness that was previously unattainable. Its solutions connect with and complement other state information systems to facilitate communications, information sharing and response coordination across all involved local, state and federal agencies.

SIGNIFICANCE

Anyone in Georgia can dial 511 on their mobile phone to report an accident, road closure or other incident to GDOT's Traffic Management Center (TMC). GDOT dispatches a responder to the scene, and the WebEOC application on the responder's smartphone begins automatically populating geolocation information so it's instantly available to the TMC, GDOT's District Office EOCs, GDOT personnel with WebEOC access, the Georgia Emergency Management Agency/Department of Homeland Security (GEMA/HS) and others. The geolocation information is taken from the smartphone's GPS application, and more precise measures of the incident's location are derived from GDOT's data warehouse, including the name and number of the road or the number of the interstate highway. A responder is not distracted by having to manually enter information.

The location of an incident is identified by a small icon on a GIS map of the state, which can be viewed on a smartphone, tablet or computer. A responder updates the status of the incident as the situation changes. By clicking on the incident icon on a GIS map, traffic managers and others can view a responder's updated status reports.

Similarly, and for the first time in the state's history, maintenance and construction workers can submit status reports from the site of normal daily operations using their mobile device and IMX Connect, an application connecting to WebEOC. Once again, the geolocation information is automatically captured.

While these capabilities and others are used every day as part of GDOT's routine operations, they are most prominently on display when managing the state's response to a weather-related emergency, which demands the resources of multiple local and state agencies, and calls for activating the State Operations Center at GEMA/HS.

GDOT's WebEOC environment is integrated with the GEMA/HS WebEOC environment, which gives GEMA/HS the ability to see all GDOT incidents statewide 24 hours a day, seven days a week. It also gives GDOT the ability to see all GEMA/HS incidents and those of other agencies and partners utilizing the GEMA/HS WebEOC environment. The resulting real-time, inter-agency situational awareness is a major asset for the state. Sharing situational awareness among agencies and response partners enables rapid support to incident commanders in the field and the efficient deployment of appropriate resources.

When they need to redeploy resources from one part of the state to another, GDOT managers depend on WebEOC, which also includes resource-management capabilities. Each response vehicle is represented by an icon on a GIS map, and by clicking on the vehicle icon, managers know who is in the vehicle, the skill set (certifications) of the driver and the types and volumes of supplies onboard. They can watch in real time on a GIS map as the vehicle travels across Georgia. Personnel and resource information available through WebEOC makes it easier for GDOT managers to plan more accurately for such logistics as hotel accommodations and meals for responders and to ensure appropriate levels of additional supplies once responders are in place.

Affected counties are colored red on GDOT's GIS map, and clicking on the county displays details about the conditions in the county. The map also identifies the location of important buildings and services, including government buildings, hospitals, nursing homes, pharmacies, day care centers, state salt barns and hurricane evacuation routes.

SouthernLINC Wireless radios on responding vehicles along with the use of designated talk groups enable crews to easily communicate with each other and GDOT's TMC. A remote speaker and microphone are also installed in each vehicle to enable hands-free operation. GDOT-created talk groups often include personnel from agencies other than GDOT, such as GEMA/HS, the Department of Natural Resources and the Georgia State Patrol. Strike teams comprised of personnel from different agencies or personnel stationed in different locations previously could not seamlessly talk with each other.

During an ice or snow storm, GDOT's Road Weather Information System provides critical information about the temperature of road surfaces that guides decisions about deploying resources, such as snow plows and brine trucks. GDOT shares the information with news media so they can help alert the public about icy road conditions.

A computerized system onboard GDOT's snow plows lets GDOT's TMC know if a blade is up or down, and the system automatically adjusts the position of the blade as the road height changes.

Other technology solutions play a central role in monitoring brine trucks as they leave brine-pumping stations and treat roads in affected areas. A tracking device and a sensor on each brine truck connect to GDOT's web-based GIS mapping application, and each truck can be viewed in real time on a GIS map on any web-enabled device. The truck is represented by an icon that starts green, but the icon turns yellow when the truck is dispensing brine. By following the icon, GDOT managers know the truck's exact location. During a snow and ice storm in North Georgia last winter, the system made it possible for GDOT to reroute brine trucks to alternative brine-pumping stations to avoid bottlenecks. By clicking on the icon, GDOT managers know the rate at which brine is being dispensed and the amount of brine remaining on the truck. To ensure the optimal amount of brine is sprayed on roadways, the flow is automatically calibrated as the speed of the vehicle changes.

Tools for making traffic information readily available to the general public are yet another component of GDOT's technology solutions. As previously mentioned, dialing 511 on a mobile phone enables callers to report traffic problems, but they can also access real-time information to help plan their driving routes.

GDOT publishes traffic information for the public through Waze, Google Maps, INRIX, and GDOT's 511 website at www.511ga.org, which features a GIS map of the state with icons for traffic cameras and message signs over interstate highways and major roads. Before leaving home for your morning commute into downtown Atlanta, for example, you can click on camera icons to see live video feeds from specific locations. Hundreds of cameras are strategically placed throughout Georgia with the densest concentration in metropolitan Atlanta. Website users can create personal accounts and designate favorite cameras for quick access.

Hundreds of message signs display information to drivers about travel times, road closures, congestion, accidents, travel delays and other traffic-related issues. Users of the 511 Navigator website can click on icons for specific message signs to read the message currently displayed on the sign. The color-coding of roads on the website's GIS map indicates traffic speeds:

- For interstates, green for 50 mph and higher, yellow for 40-50 mph, red for 30-40 mph and purple for less than 30 mph.

- For non-interstates, green for 35 mph and higher, yellow for 25-35 mph, red for 15-25 mph and purple for less than 15 mph.

Additional icons identify construction sites and traffic incidents. Users can also easily access weather information, links to Twitter feeds for traffic alerts and alerts about special events, such as a major league baseball game, that might impact traffic.

GDOT's public-facing, information-rich resources mean drivers – whether a Georgia resident, a vacationer or someone passing through on the way to a destination in another state – can easily know about traffic conditions anywhere in the state before leaving home.

IMPACT

GDOT extended its radio system to all responding state agencies when Hurricane Matthew hit Georgia in October 2016. About 200 people used GDOT's platform, marking the first time all responding state agencies were able to communicate seamlessly with each other during any type of emergency. Following Hurricane Matthew, several state agencies are following GDOT's lead and installing radios in every response vehicle, including the Department of Defense, the Department of Revenue and the State Forestry Commission. The Georgia State Patrol is implementing a statewide radio system modeled after GDOT's system.

Agencies are also adopting WebEOC, which GDOT pioneered. As a result, all agencies using WebEOC have access to the same real-time data including geolocation services, and up-to-the-minute situational awareness is available statewide and across agencies for the first time.

Deadly tornadoes recently struck Albany in southwest Georgia, and GDOT adapted its communications plan as soon as meteorologists predicted dangerous weather conditions. Working from a command center in nearby Tifton, state agencies involved in preparing for and responding to the weather emergency relied on WebEOC to coordinate their actions. In addition, GDOT issued 150 radios to multiple state agencies and the National Guard, and it set up talk groups. Using GDOT's communications architecture, everyone involved in the response could simultaneously receive real-time data from helicopters flying over the storm-ravaged areas to assess damage.

GDOT's technology solutions provide "a window on the state" that's indispensable to a coordinated and comprehensive response to any emergency.

The benefits include:

- Better management of resources, including personnel and equipment

- Improved communications among teams and partner agencies

- Precise real-time vehicle tracking

- Timelier road maintenance

- Faster assistance when responding to weather events

- More effective planning for weather events based on historical information

- Real-time, easily accessible information for drivers

Before implementing WebEOC, 30 workers were assigned to maintain paper records and spreadsheets. Those workers have since been reassigned to other duties, demonstrating that WebEOC has enabled GDOT to function more efficiently without increasing its workforce.

WebEOC's ability to automatically populate geolocation information and make it immediately available statewide significantly enhances the personal safety of responders on the scene of an emergency since they are not distracted by manually entering data and can focus all their attention on the situation before them. Because GDOT's TMC and District Office EOCs can also access WebEOC and enter updates, the volume of telephone calls and the potential for reporting errors are reduced while situational awareness and resource preparedness are enhanced in real time. WebEOC users can log on from any location and with any device connected to the Internet. They do not need to be physically present in the TMC or an EOC.

GDOT's iDEN radio system enhances operational efficiencies and the ability to rapidly and effectively respond to any situation. Implementing the radio system allowed GDOT to reduce its cellular costs from $48 to $18 per device.

GDOT's people and technology investments are ensuring a safer and more efficient transportation network that supports the state's dynamic and growing economy, and they help enhance the quality of life for Georgia's residents.