FDOT's Traffic Engineering and Operations Monthly Newsletter

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Link to Florida's Statewide ITS General Consultant

Florida's Turnpike Enterprise Takes Proactive 'RISC' In Incident Clearance

In February 2004, the Florida's Turnpike Enterprise (FTE) implemented the nation's first Roadway Incident Scene Clearance, (RISC), program in an effort to meet Florida's Open Roads Policy of clearing incidents from roadways in 90 minutes or less.

FTE's RISC program is incentive leveraged, providing qualified tow and clearance contractors the opportunity to earn bonuses for clearing major lane blockages within specific time limits.

The FTE has contracted with four towing organizations that presently provide coverage on 75 percent of the FTE's statewide roadway system. The contractors respond to major incidents involving tractor trailers or other large vehicles on the Florida Turnpike mainline, from milepost 30 in Miami-Dade County to milepost 309 in Wildwood, the Sawgrass Expressway (Toll 869), the Southern Connector Extension and the Seminole Expressway (Toll 417), the Bee Line Expressway West (Toll 528), and a portion of the Holland East-West Expressway (Toll 408).

RISC contractors are required to respond to major incidents with two certified 50-ton and 30-ton heavy duty wreckers, plus a support vehicle carrying clean-up and maintenance of traffic equipment. Contractors earn a $2,500 bonus if they respond to the incident site within 60 minutes and clear the roadway to traffic within 90 minutes of the Florida Highway Patrol's (FHP) notice to proceed for clearance work. If the contractor fails to open the roadway within three hours, they are penalized $10 for each minute over.

The FTE's RISC program has been activated 15 times in its first nine months. Each time the RISC program has been activated, the tow contractor has successfully re-opened the roadway to Turnpike customers within 90 minutes of FHP's notice to begin work. The RISC tow contractors have averaged 41 minutes to respond to the incident scene and they have averaged 55 minutes to clear the roadway. It is important to note that these incidents primarily involved large size (DOT Class 8) trucks, sometimes overturned with debris/cargo spilled across the roadway.

“The RISC program is the single most important thing which can be done to prevent and relieve traffic backups due to crashes or other incidents,” said FHP’s Troop K Commander Chief Jim Lee. “While some delays are inevitable, having a mechanism in place to rapidly respond and remove obstacles to free traffic flow yields benefits to the public which is far beyond its cost. Major incidents are being resolved quicker and reducing delays on our roads.”

Prior to the RISC program, the FTE did not have a standardized procedure for responding to major traffic incidents. Often incident responders were dispatched to an accident without the proper equipment to clear the roads in a timely manner, resulting in lengthy delays to Turnpike customers. As a result of the RISC program, major incidents are cleared more quickly, resulting in less delay to our customers.

An integral part of the RISC program is the post-incident debriefing session. Following each RISC activation, the FTE reviews, debriefs, and prepares a detailed incident report. All of the parties involved in responding to the incident are brought together to openly discuss the event. The incident report describes the incident, the actions of the involved parties, and the lessons learned from the incident.

“Through our debriefings, we continue to learn about the program’s strengths and weaknesses,” Lee said. “We will build upon our strengths and work to minimize our weaknesses. The Turnpike Enterprise is an innovator and we are constantly trying to improve our services to our customers.”

This article was provided by Ingrid Birenbaum, Florida’s Turnpike Enterprise. For information, please contact Ms. Birenbaum at (954) 975-4855 ext. 1290 or email to Ingrid.Birenbaum@dot.state.fl.us.

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Microwave Update

FDOT maintains and operates a statewide microwave communications system that was installed to support the motorist aid call box system. The microwave system currently consists of 68 active sites providing communications to call boxes along I-10, I-75, and portions of I-4 and I-95. Many of the sites are located on the Interstate while others are located at FDOT maintenance yards, District offices, or Florida Highway Patrol stations. A typical microwave site located on the Interstate consists of a tower (200-foot tall on average), an equipment shelter (typically 12’ x 14’), microwave radios and associated communications equipment, a motorist aid call box base station, and -48VDC battery backup system.

In addition to supporting the motorist aid call box system, the microwave communications system is also used to carry IP-based data from the road weather information system (RWIS) to relay weather conditions from microwave tower sites in District 2 to the University of North Florida for processing by the National Weather Service. The microwave communications system also provides a center-to-center (C2C) connection between District 2's Jacksonville regional transportation management center (RTMC) and District 5's Orlando RTMC. This C2C connection supports video surveillance camera sharing between the RTMCs as well as various ITS applications such as the I-4 Management Information System for Transportation (MIST).

Over the past eight years, the communications microwave system capacity has been upgraded through various phases of a multi-year project to support additional ITS traffic. Improvements have also been made to the facilities, including emergency power generators, battery back-up systems, lightning protection, and network management systems. These upgrades have established communications loops to provide alternate routing of traffic in the event of failures, greatly increasing system reliability. FDOT has also installed new digital access cross-connects, digital channel banks, IP routers, alarm and control remote terminal units, and GPS-based timing and synchronization equipment throughout the network.

The final phase of the project, expected to be fully operational in March 2005, will implement a high-speed data network capable of transmitting up to 33 Mbps between hub sites and up to 3 Mbps from remote sites to hub sites. This data network will support the transmission of multiple streams of IP-based traffic information from remote field devices to RTMCs which are connected to the microwave system data network. Until the high-speed data network is operational, an interim low-speed data network (1.5 Mbps statewide) is being used to support the FDOT iFlorida projects consisting of RWIS and corridor monitoring sites to monitor weather conditions as well as transmit traffic counts and surveillance video to the Orlando RTMC.

A presentation on the microwave system will be provided at the March 2005 Annual FDOT ITS Working Group Meeting. We look forward to talking with you about this incredible resource!

This article was provided by Nick Adams, FDOT Traffic Engineering and Operations Office, ITS Section. For more information, please contact Mr. Adams at (850) 410-5608 or email Nick.Adams@dot.state.fl.us.

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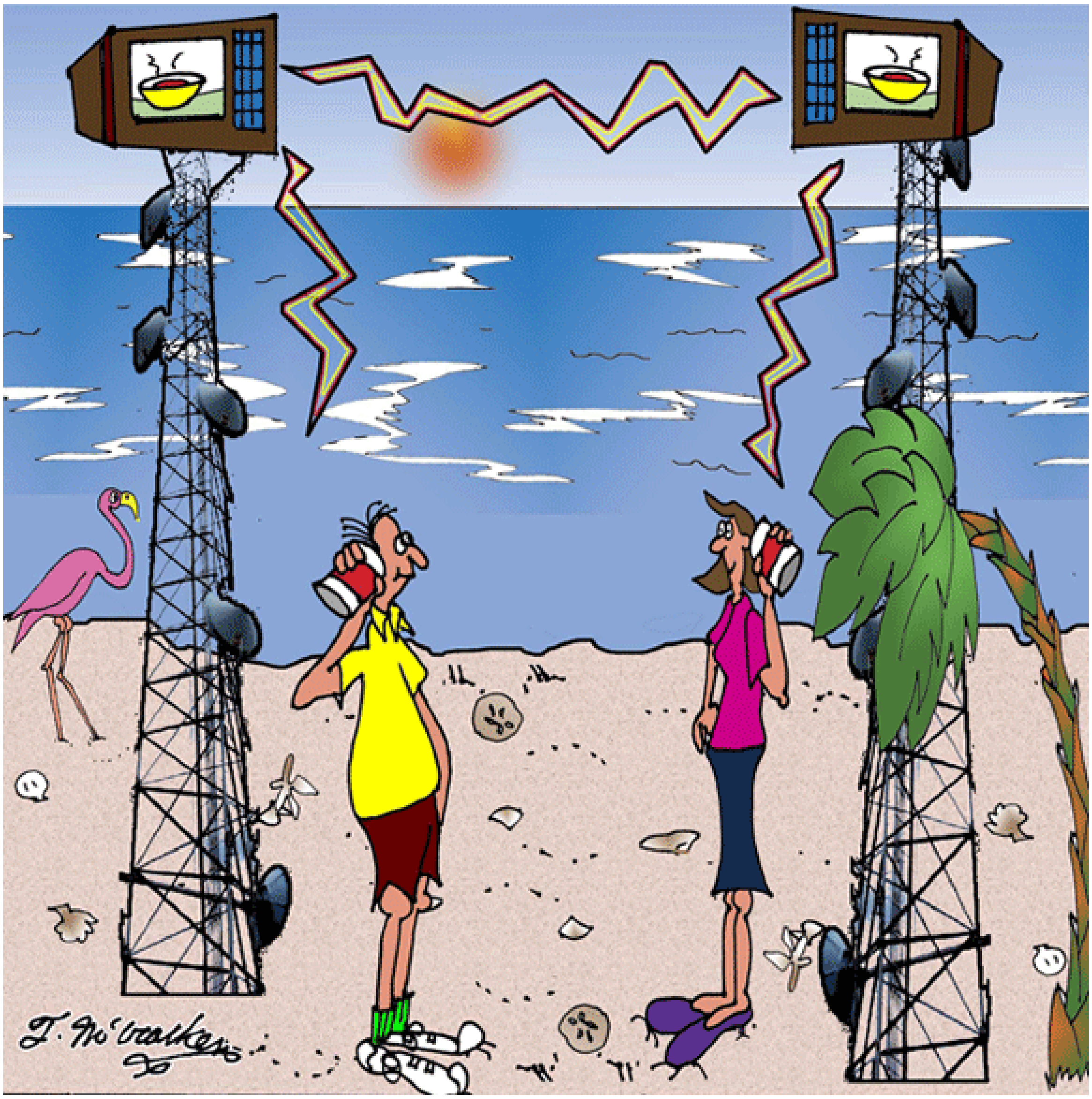
Moment of Humor!



FDOT's new microwave system is really cooking now!

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ITS Staff Meet With Japanese Trade Delegation

Responding to a request from the Japanese External Trade Organization, headquartered in New York City, members of the Traffic Engineering and Operations Office provided an informational presentation and escorted a group of engineers, managers, and researchers from

Japan through the Orlando regional transportation management center on Monday, November 1, 2004.

Larry Rivera and Brenda Young, from District 5, presented information on the ITS deployments in the Orlando area, along with iFlorida project details, focusing on the use of fiber optic technology. The visitors expressed an interest in public-private partnerships for fiber deployment along roadway corridors as a means to help lower the cost of providing technology delivery to roadway users. Elizabeth Birriel, ITS Program Manager, along with Nick Adams, FDOT ITS Section and Frank Deasy, PB Farradyne, fielded questions in a post-tour meeting to explain FDOT's experiences and current plans for fiber deployment.

The Japanese delegation exchanged information on ITS programs used in Japan and expressed their appreciation for the visit.

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Florida's Turnpike Traffic Management Vehicle Keeps "Eye" On Traffic

The Florida's Turnpike Enterprise (FTE) ITS Operations has initiated a first-of-its-kind traffic management vehicle (TMV) pilot program.

The TMV is a vehicle that can monitor traffic conditions in areas of limited ITS camera and detection deployment. The TMV uses a pan-tilt-zoom closed-circuit television (CCTV) camera mounted on a retractable 45-foot mast from the vehicle's roof, enabling the vehicle to be dispatched to any location along the Turnpike, park in a safe location, and send, via a satellite communications system, live video to the FTE's transportation management center (TMC) for operators to monitor. The video is transmitted at a 15 to 20 frames-per-second rate, and is viewed at the TMC using an Internet IP addressable site.

This pilot project is the result of a unique public/public/private partnership. FTE Traffic Operations has contracted with the University of South Florida/Center for Urban Transportation Research (CUTR) to provide the service. CUTR has contracted with Miami-based Eye In The Sky, Inc.

Officially put into operation July 1, 2004, the TMV has proved its value and effectiveness in deployments to monitor more than 20 major crashes on the Turnpike that resulted in the roadway being closed to traffic. Because of the live video images being relayed to the TMC, the FTE was able to provide updates of the real-time changes in conditions to Turnpike customers via the FTE's overhead dynamic message signs and highway advisory radios.

"Florida's Turnpike Enterprise is privileged to be able to pioneer the use of a traffic management tool that may well become a standard component in the inventory of devices available to most progressive transportation agencies," said Turnpike Director of Highway Operations Bruce Seiler. "When deployed to the general locale of an incident or condition that severely impacts traffic flow, the TMV's real-time video and one-mile range of camera coverage often allows decision makers to better assess the backups and other negative effects of the restrictions or closures."

The TMV was also used as part of the FTE's hurricane preparedness and recovery efforts. Dispatched to several locations along the Turnpike mainline between West Palm Beach and Orlando during August, September, and October, the TMV provided the FTE and Florida Highway Patrol (FHP) management with real-time monitoring of evacuating traffic. The TMV was especially effective monitoring traffic flow through mainline toll plazas where toll collection had been suspended, and in monitoring mainline vehicle speeds near Fort Pierce in support of the FHP, who were responsible for making the potential decision to one-way the Turnpike.

Once the "all clear" had sounded, following the hurricanes' landfalls, the TMV was also one of the first Turnpike vehicles into the damaged areas to survey roadway damage and impacts. The TMV has also been used to monitor wildfires in Miami-Dade County, where smoke and fire repeatedly forced the FHP to close the Turnpike during the July 9 weekend.

The FTE's TMC also relied on the TMV to provide real-time video images of numerous special event traffic in South Florida – from sporting events at Pro Player Stadium, to concerts at the Office Depot Center along the Sawgrass Expressway and the Coral Sky Amphitheater in West Palm Beach.

Applications of the TMV:

- Allow the TMC to monitor traffic conditions in areas where ITS video monitoring has not been deployed;
- Provide live traffic incident video to the TMC, FHP, fire rescue, and responding agencies via a secure Web site;
    - The vehicle is staged away from the incident, but within camera view.
- Special event traffic monitoring; and
    - Sporting events, concerts, or other events that have a significant effect on Turnpike traffic conditions.
- Turnpike Traffic Engineering studies.

The TMV is based at the Eleanor Register Turnpike Operations building in Pompano, and operates daily during peak, rush hour traffic from 6:00 to 10:00 a.m. and from 4:00 to 8:00 p.m. TheTMV is routinely deployed to known recurring congestion and high incident locations. It is also available for 24-hour, on-call emergency response.

The vehicle's primary coverage area during the year-long pilot program has been from milepost 20 in Miami-Dade County to milepost 109 in northern Palm Beach County. The TMC staff prepares a weekly deployment schedule; however, the TMV can be dispatched by the TMC from field locations to active incidents.

It is anticipated that the TMV will be deployed in the coming year to other roadway sections of the FTE's system, such as the Orlando area and the Veterans Expressway/Toll 589 in the Tampa area.

This article was provided by Ingrid Birenbaum, Florida's Turnpike Enterprise. For information, please contact Ms. Birenbaum at (954) 975-4855 ext. 1290 or email to Ingrid.Birenbaum@dot.state.fl.us.

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Linking Crash Patterns to ITS-Related Archived Data

In recent years the focus of traffic management seems to have shifted from reactive strategies, such as incident detection, to more proactive ones. Growing concern over traffic safety as well as increased capability to store and process data has contributed toward this shift.

There are considerable amounts of data collected and stored for ITS applications. These data include speed, volume, and lane-occupancy measured through loop detectors. Various traffic safety studies have shown these variables, such as volume, to be related to crashes. However, this volume is measured as Average Daily Traffic, or hourly volumes ,that happens to be a static, average, or aggregate measure of traffic flow.

The uniqueness of the study underway is that instantaneous measures of traffic flow variables obtained from loop detectors would be used to identify crash prone conditions on the freeway so that these crashes may be anticipated in real-time. To achieve this goal, the relationships between these instantaneous variables and crash patterns must be established. With a fully functional, proactive traffic management system, driver information provided by transportation management centers (TMCs) could be tailored to alleviate certain situations that are expected to lead to crashes. The type of information currently provided by TMCs would change to reflect the safety aspect. Currently the information provided addresses delay and congestion issues, without much direct concern to traffic safety. Also, the results would be helpful to the current FDOT efforts to introduce variable speed limits to Florida's freeways.

Study Area and Data

Data from dual loop detectors on I-4 in the Orlando metropolitan area are used in this study. The following data on I-4 are collected every 30 seconds:

- Average vehicle counts,
- Average speed, and
- Lane detector occupancy.

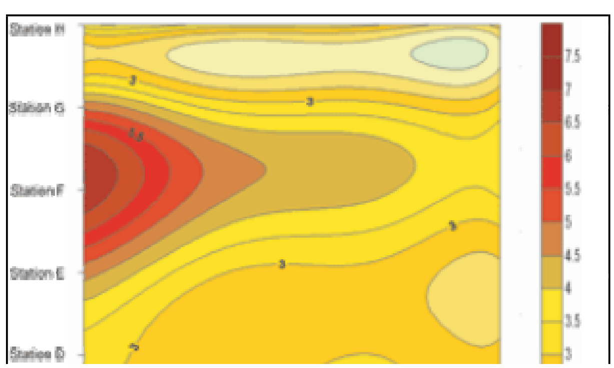
This data was collected on I-4 for three lanes in each direction, and at 69 stations spaced at approximately one-half mile on a 36-mile stretch. A matched case-control analysis was identified as an effective tool for modeling the binary outcome: crash or non-crash. To compare traffic characteristics leading to a crash (measured prior to the crash) with the corresponding normal traffic conditions that did not lead to a crash, traffic data were extracted in a matched format.

Since the 30-second data have random noise and are difficult to work with in a modeling framework, the 30-second data was combined into the 5-minute level in order to obtain averages and standard deviations for the traffic parameters. Thus, for a 5-minute aggregation, a 30-minute period preceding a crash was divided into six time slices. The stations were named as "B" to "H", with "B" being the farthest station upstream, and so on. It should be noted that station "F" is the station closest to the crash location with "G" and "H" being the stations downstream.

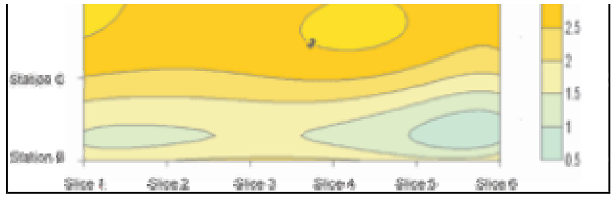
Similarly, the 5-minute intervals were identified as Slices 1 to 6. The interval between the time of the crash and 5 minutes prior to the crash was named as Slice 1; the interval between 5 to 10 minutes prior to the crash was named Slice 2; and so on.

Analysis and Findings

The purpose of the matched case-control analysis is to explore the effects of independent variables of interest on the binary outcome while controlling other confounding variables through the design of the study. In the context of this research, crash or non-crash is the binary outcome with traffic parameters being the independent variables. The matched design of the study allows controlling for external factors, such as location, time of day, day of the week, etc.



Following the analysis, a series of crash prediction models were estimated based on the statistical link between crash occurrence and the turbulence in the traffic flow observed through the loop detectors. First, simple models (involving one covariate) were estimated, following the exploratory analysis. The simple models were used to deduce spatio-temporal patterns of the



variation in crash risk. The impact of individual crash precursors, obtained one at a time from a series of loop detectors, on the relative risk of crash occurrences was examined through with-in stratum one-covariate logistic regression models. Hazard ratios (resultant change in log odds of observing a crash by changing the covariate by one unit) have been used as the measure of risk. As an example, the crash risk for multi-vehicle crashes, corresponding to the observed values of 5-minute combined lane logarithm of the coefficient of variation in speed (i.e., log standard deviation/average speed), is shown in Figure 1.

Note that the dark colored region represents high hazard ratios thereby identifying more risk. The region around Station F remains fairly dark (i.e., crash prone) for about a 20-minute period while upstream and downstream sites (Station E and G, respectively) also show high risk for about 15-20 minutes before recording a crash. These results are significant since they allow leverage in terms of time to be able to predict and react to an impending potential crash.

Following up on the results from the simple (one covariate) models, a multivariate logistic regression model was estimated. For the final model, 5-minute average occupancy and 5-minute standard deviation of volume observed at the downstream station during the 5-10 minute slice prior to the crash, along with the 5-minute coefficient of variation in speed at the station closest to the crash location (during the same time slice), were found to significantly affect the crash occurrence. The final model developed was used to calculate the log-odds ratio of observing a crash versus not. A threshold value for this ratio may then be set in order to determine whether the location has to be flagged as a potential "crash location."

Conclusions

This study addressed a strategy to identify locations with high crash potential in real-time. Once a potential crash location is identified in real-time, a countermeasure should be adopted (e.g., measures for reducing the speed variance may be implemented in order to reduce the risk). For example, warning messages could be displayed on dynamic message signs or strategies to calm speed using variable speed limit techniques could be adopted. However, real-time application still needs thorough investigation of how these strategies should be adopted and how drivers would react to such warnings or calming strategies. Data collection needs to be expanded, and the models require further refinement. However, at this point, the approach used in this study is still helpful in having the crash mitigation crew ready so that the impact of a crash on freeway operation can be minimized. Also, if there are some freeway segments where the models trigger the warning more often than other locations, these segments may be closely watched through closed-circuit television cameras. This would improve upon the traditional "black-spot" analysis adopted by traffic safety analysts.

This article was provided by Mohamed Abdel-Aty, Ph.D., PE, Associate Professor, Department of Civil & Environmental Engineering University of Central Florida. For more information, please contact Dr. Abdel-Aty at (407) 823-5657 or email MAbdel@mail.ucf.edu.

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We invite you to have some fun and complete the *SunGuide Disseminator* Word Challenge!
Unscramble the letters to complete the word for the clue found under the boxes.
Use the letters in the red circles to complete the final puzzle.
An answer guide follows the FDOT Equipment Certification.

Enjoy and Good Luck!

L I R E M A T E

☐☐☐☐ - ☐☐☐☐

Type of video provided by TMV.

S P O R T N A T I O N R A T

☐☐☐☐☐☐☐☐☐☐☐☐☐☐

The "T" in TMC.

R E T A W H E

☐☐☐☐☐☐☐

Information relayed by RWIS.

G L A D G E F

☐☐☐☐☐☐☐

Happens to a potential crash location.

R S E K C R E W

☐☐☐☐☐☐☐☐

Vehicle required to respond to major incidents.

Hi Yo Florida! The ☐☐☐☐ ☐☐☐☐☐☐ rides!

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ITSFL—A View From the Capitol

Several years ago, when FDOT first approached the Legislature with a request to substantially increase funding for ITS programs, most of the discussion was centered around traffic management and motorist information message boards. My emerging view of ITS captures this original focus, and also includes a variety of advanced technologies which promise to make all modes of transportation safer and more efficient in the future. As Chairman of the Senate Transportation Committee for the past four years, I have had the opportunity to meet with representatives from technology vendors who are anxious to demonstrate how they think their "gizmos" will make transportation safer or better.

Additionally, I serve as the Vice Chair of the National Conference of State Legislatures' (NCSL) Transportation Committee. As a member of that organization, I have had the opportunity to attend numerous national meetings of the NCSL and the American Legislative Exchange Council. These gatherings of legislators from around the country provide an excellent forum to share ideas and details about transportation programs. This article provides a brief summary of some of the ITS ideas I believe hold promise for increasing both the safety and efficiency of travel. I'll also describe some examples of pro-ITS legislation that I have succeeded in enacting during my tenure in the Senate.

For purposes of this discussion, I'll lump ITS technologies into two major categories: those employed "outside the vehicle," and those employed "inside the vehicle." In this scheme, those ITS elements that monitor traffic (via either cameras or loop detectors), provide motorists with information (via message signs, 511 information systems, or radio broadcasts), and manage the flow of automobiles around potential bottlenecks, all fall into the category of "outside the vehicle." Conversely, those technologies that utilize global positioning system (GPS) information for tracking and routing, cellular or other radio communications, and advanced detection hardware to avoid pedestrians and collisions, all fall within the "inside the vehicle" category. This group is also classified as "vehicle-based" systems by the professionals.

Among the various applications of ITS outside the vehicle, one of my favorites is the use of dynamic message signs (DMSs) to provide travelers with information. Obviously, the primary duty of the DMS is to notify motorists of impending hazards or other traffic problems. Their utility in notifying motorists of hurricane evacuation routes was recently proven (over and over again)! However, one of the most innovative supplementary uses of these signs is in the Amber Alert program. I am a zealous advocate for the Amber Alert program, and several years ago, I hosted a series of discussions with FDOT, Florida's Department of Law Enforcement (FDLE), and the business community for the purpose of expanding this highly effective method of motorist notification. My thinking was that banks, drug stores, and other merchants have hundreds of computerized message boards in communities all over the state that could be used to amplify the effectiveness of FDOT's DMSs in times of Amber Alerts. Working with the FDLE, a Web site was set-up for businesses all over Florida to subscribe to the Amber notification system. Now, in those unfortunate circumstances when a child is abducted, the critical information regarding the suspect's description and vehicle identification are transmitted to thousands of businesses around the state via e-mail. Many of those subscribers post the information on their community-based message boards. Following-up on the effectiveness of this project, I hope to expand it in the near future so that local businesses with message boards can supplement FDOT's efforts to disseminate hurricane evacuation route information.

In this era of heightened security consciousness, I am glad that the closed-circuit television (CCTV) cameras we have in place to monitor traffic on bridges, interstates, and in tunnels, provide us with the opportunity to directly monitor these facilities without having to dedicate on-site security personnel. Cameras can also provide increased security and safety in other ways. In the recent legislative session, I worked with the Florida Transportation Builders Association and sponsored a bill to create a system for video-based speed monitoring at construction sites on our highways. Under that proposed system, motorists who speed through highway construction zones would have their license tags captured on video, and a speeding ticket would be issued to the registered owner of the vehicle. While that bill did not pass, the important lesson is that there are numerous vendors out there who have "off the shelf" speed enforcement systems ready to be deployed.

Switching the focus to vehicle-based technologies ("inside the vehicle"), some of the most powerful emerging ITS applications include the various ways of using GPS information. Fleet managers and dispatchers for emergency responders have long recognized the power of using GPS transponders to directly track vehicles. This is especially important when trying to keep track of hazardous material cargo carriers. Additionally, LoJack systems that track down stolen vehicles have returned thousands of cars to their rightful owners.

Various electronic transponder technologies have enabled open-road tolling, and we have two SunPass® units in our family. The Senate Transportation Committee recently took testimony from various open-road tolling vendors where we learned that an alternative to transponder-based systems is to use video to capture images of license plates. Optical character recognition programs then extract registration data from the license plate and directly bill the vehicle's owner for the tolls due (or deduct the amount from a prepaid account).

Telematic service providers, such as OnStar, provide a variety of benefits to subscribers by combining GPS data with cellular communications. These providers have succeeded in marketing these types of advanced technology services directly through automotive manufacturers. As new automobile-based technologies emerge, one of the challenges will be to make sure that there are no hardware or software barriers to deployment across all auto manufacturers. Towards that goal, the assorted players need to agree to sets of standards, and groups such as the Automotive Multimedia Interface Collaboration have been formed for this purpose. This kind of standardization across communications and computer network providers will enable motorists to tap into the information superhighway while traveling down the asphalt highway.

In September 2004, Ford announced a partnership with Sprint to install Bluetooth hands-free cellular phones that are integrated into the vehicle's sound system. I have had a long-standing interest in cellular telephone use by motorists. A few years ago, I sponsored and enacted legislation that preempted regulation of cell phones and other electronic devices in automobiles to the state. At that time there were numerous municipalities that were considering proposals to ban the use of cell phones (or limit their use to hands-free technology). When this issue emerged, I had two major concerns. First, allowing local governments to regulate these devices would result in a "patch-work quilt" of regulations. A motorist in Pinellas County could easily pass through more than 20 municipalities while traveling through the county. Can you imagine having to keep track of 20 different sets of rules —while simultaneously having to know where you are at all times—so that you could comply? The other problematic issue I recognized at that time was that the cellular service providers and the manufacturers of their phones had not standardized the hands-free technology available to customers. Depending on who your cellular provider was at that time, you may have had several options available for a hands-free phone for your particular car, or you might have only one very expensive option. When we were considering the need for the state to be in charge of regulating cell phone use in automobiles, we were mindful that there is a need for technology to become more affordable and more readily transferable from car to car and from one cellular service provider to another. I'm still waiting for the cellular industry to make hands-free phones more affordable, reliable, and transferable.

Safety innovations for autos in the future are likely to include lane maintenance systems that will alert drivers (and perhaps automatically provide corrective action) when an inattentive operator fails to maintain appropriate control. Existing pedestrian detection systems may evolve through integratation with communications technologies to actually notify oncoming drivers that there are people in a crosswalk.

I am looking forward to seeing how the Federal Highway Administration's Clarus Weather Initiative evolves. Theoretically, no technological barrier exists to having the same kind of weather information available in our cars that we get at home on cable television. Just imagine how this kind of service will reduce highway accidents and improve the efficiency of commercial trucking.

On August 30, 2004, the National Transportation Safety Board officially recommended that the National Highway Safety Administration establish standards for event data recorders, and to require that these devices be installed in all newly manufactured light-duty vehicles. Imagine a future when these "black boxes" will enable accident investigators to extract objective information regarding exactly how a driver handled his or her vehicle in the moments leading up to and during an accident.

While I have specifically been referring to these technologies as applied in automobiles, it should be mentioned that all of these vehicle-based technologies are also useful for buses and trains.

Since I've ventured into other modes of transportation, I want to also note that there are some very interesting ITS applications emerging for our seaports. In addition to the Freight

Information Real-Time System being tested in our Southern Atlantic ports, there are some exciting things happening on the west coast.

I've been working with the U.S. Coast Guard (USCG) and the Port of Tampa to deploy a Vessel Traffic Information System for commercial shipping in Tampa Bay. As a consequence of the barge-freighter collision in Tampa Bay in the early 90's, the USCG recognized that there is a need to apply advanced vessel tracking and traffic management technologies to prevent future accidents. Toward that goal, differential GPS data is going to be integrated with state-of-the art communications to provide the USCG, port traffic administrators, and vessel skippers with all the information they need to safely navigate (and direct) traffic in all kinds of weather and at all times of day. As with the event data recorders previously described, this technology possesses an inherent ability to record and play back details about vessel operator actions in the moments leading up to an adverse incident—thereby enabling an accurate dissection of any accident.

In closing, I appreciate this opportunity to share my view of some of the emerging applications of ITS technologies. It is obvious that all modes of transportation will be made safer, more efficient, and more comfortable by applying these technology-based solutions to existing and emerging challenges.

This article was provided by Senator Jim Sebesta, Chairman Senate Transportation Committee. For more information, please contact Senator Sebesta at (850) 487-5075 or email Sebesta.Jim.web@flsenate.gov. *(My thanks to David Winialski, my Chief Legislative Assistant, for his help in assembling the data for this article.)*

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For more information on ITS Florida, please check the ITS Florida Web site at www.itsflorida.org or contact Diana Carsey, Executive Director, at (727) 409-5415 or email CarseyD@verizon.net.

If you wish to contribute an article to the *SunGuide Disseminator* on behalf of ITS Florida, please contact Erika Ridlehoover at (813) 376-0036, or email Erika.Ridlehoover@transcore.com.

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Editorial Corner—A Sign of Things To Come!

SunGuide Software in Action

FDOT has taken a giant leap towards the implementation of a common regional transportation management center (RTMC) software package, the SunGuide Software, with the Milestone Demonstration that occurred this past October. The software was successfully demonstrated to control a dynamic message sign (DMS) in Broward County.

The architecture for the software, with a framework utilizing extensible markup language (XML), is being developed to provide a solution to FDOT's need of a single software repository to support a wide range of deployments in Florida's 12 transportation management centers (TMCs). For long-term cost efficiency, the primary goal is to have a single source code set to support TMCs throughout the state. Additionally, the software architecture provides a data backbone that allows TMCs to share both data and command/control of ITS devices.

Developing an extensible software framework is not a new or novel concept; however, neither is it inexpensive, and an upfront investment must be made so that future software development efforts can be successful. FDOT is developing the new statewide software using existing software from other states. Development of a single statewide software repository will provide significant savings in software development and maintenance because each TMCs will not require a separate software development and maintenance budget.

Milestone Demonstration

A Milestone Demonstration was held on October 12 and 13, 2004, at District 4's regional transportation management center (RTMC). Milestone demonstrations are part of an independent verification and validation program to ensure that the software is being built to FDOT requirements. The objective of this Milestone Demonstration was to show functional threads through the software; this demonstrates the critical capabilities of the software as it is being designed.

For the Milestone Demonstration, the demonstration version of the software was plugged into the new District 4/Broward County RTMC hardware and network, and proved that the software could provide control of the DMS component of freeway management systems. The demonstration was scheduled to check the software's performance under actual field conditions.

The demonstration was conducted by FDOT's Traffic Engineering and Operations Office, ITS Section, District 4, PBS&J, and Southwest Research Institute, FDOT's SunGuide software developer. After the software was installed at the RTMC, remote contact was established with the DMS No. 595EB02, located on Interstate 595 eastbound between Hiatus Road and Nob Hill Road, through the RTMC's communication network. After activation of the DMS on Monday, October 11, 2004, the message "Florida Department of Transportation" was transmitted. Within seconds, the message appeared on the sign, and the display was verified by a team member in the field.

On Tuesday, October 12, two additional DMSs – No. 95SB31 on I-95 between Oakland Park Boulevard and Sunrise Boulevard and No. 95SB21 on I-95 between Stirling Road and Sheridan Street – were also successfully activated.

The demonstration occurred on a rainy, south Florida day, but the messages were successfully displayed and managed on the DMS devices. This Milestone Demonstration was considered a success because it showed that the software could operate and integrate with FDOT's

hardware, communications network, and field devices.

The cooperative efforts and hard work of all the project team members have paved the way for the successful deployment of the SunGuide Software, Release 1, next January in District 4. Use of the software by the state's RTMCs will enable the centers to have a common software for exchange of traffic data, video, device control commands, and incident management functions.

Although the demonstration did not show the full capabilities of the software, it did prove that the many hours of work developing the software have been successful. The Milestone Demonstration showed that FDOT is successfully on the way to providing a common software package for all the RTMC to utilize. The SunGuide Software will facilitate the interconnection of Florida's RTMCs and provide a truly interoperable system for Florida. The full implementation of the software will cement Florida's position as a leader in the deployment of ITS.

A project Web site is maintained at http://sunguide.datasys.swri.edu. This Web site contains project documents as well as up-to-date status information about the development of the software.

This article was provided by Liang Hsia, FDOT Traffic Engineering and Operations Office, ITS Section. For more information, please contact Mr. Hsia at (850) 410-5615 or email Liang.Hsia@dot.state.fl.us.

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FDOT Equipment Certification

The FDOT Traffic Engineering and Operations Office, through the Traffic Engineering Research Laboratory (TERL), is responsible for approving all traffic control signal devices. Approved devices are kept on the FDOT Approved Products List (APL), a listing of devices that may be relied upon as meeting FDOT specifications, standards, or other criteria.

The APL is a means for the FDOT to meet *Florida Statute 316.0745, Uniform Signals and Devices*, which states, "All official traffic control signals or official traffic control devices purchased and installed in this state by any public body or official shall conform with the manual and specifications published by the Department of Transportation pursuant to subsection (2)."

More information on the FDOT APL may be viewed at www.dot.state.fl.us.TrafficOperations/TERL/APL.htm. Specific approved products in the FDOT APL may be searched at rite.eng.fsu.edu/iapl/page1.php.

For more information, please contact Carl Morse, FDOT Traffic Engineering and Operations Office, at (850) 414-4863 or email Carl. Morse@dot.state.fl.us.

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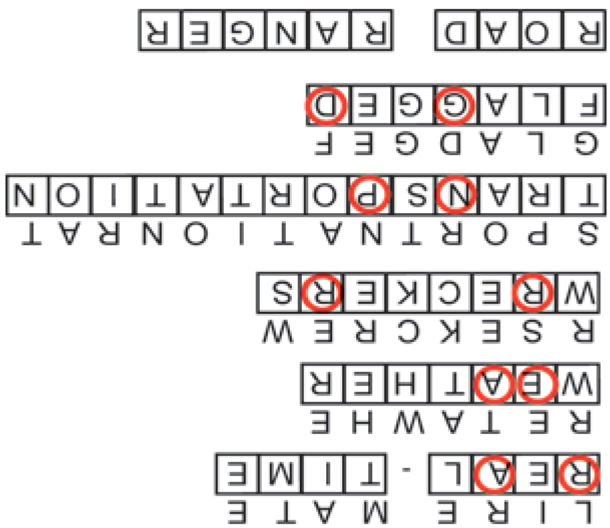
Word Challenge Answers



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Announcements

Elder Road User Program and Research Manager

The FDOT Traffic Engineering and Operations Office is pleased to announce the appointment of Gail Holley to the newly established position of Elder Road User Program and Research Manager. This position requires management of the Elder Road User Program and the overseeing of all research for Traffic Engineering, Operations, and ITS.

Ms. Holley has served as the Highway Signing Program Manager for the past three years. She is a graduate of Florida State University, and she has over 15 years experience with FDOT and a private consultantant firm. Ms. Holley’s education and experience in the area of traffic operations, along with her leadership and people skills, will help us in serving Florida’s elder road users better. *Please join us in congratulating Ms. Holley on her new appointment.*

* * * *

District 4's Transportation Management Center Now Open

The new District 4 Transportation Management Center (TMC) located at 2300 West Commercial Boulevard, Fort Lauderdale, is now in operation. This TMC controls 31 dynamic message signs and one closed-circuit television along I-95 and I-595. The TMC currently has operation hours from 6:00 a.m. to 10:30 p.m. and will operate five days a week, 24 hours a day starting December 13, 2004.

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