Florida

Department of Transportation

Intelligent Transportation Systems Program

Annual Report

Fiscal Year 2010-2011

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General

Program Highlights

Florida Department of Transportation

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GOVERNOR

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ANANTH PRASAD, P.E.
SECRETARY

Dear Reader:

On behalf of the Florida Department of Transportation Intelligent Transportation Systems Program (ITS), we are pleased to present this Annual Report for fiscal year 2010-2011. As with last year, the economy was still a factor to contend with during this fiscal year; however, we experienced a year that showed progress and much promise towards Florida's future.

Florida's urban areas are well developed with ITS components, which are instrumental in reducing congestion and making these areas safer places to drive. Our rural areas, however, are less developed and over the past years we have been looking for other resources to assess traffic flow in these rural areas. Turn to page 12 to read about our "tools."

Once again, the SunGuide® software is producing a return on our investment. Articles throughout this report cover highlights of these endeavors. Some of the enhancements to the software this year include:

- Integration of data to provide current travel times on rural limited-access facilities along I-10 and I-75;
- Providing an application for smart phones to assist Road Rangers in communicating with transportation management centers; and
- Integration of SunGuide with connected vehicle technology to use vehicle probe information and to issue traveler advisory messages.

We are continuing with a promising initiative this year—connected vehicles. This futuristic technology will empower travelers by providing travel information pertinent to their location directly to their vehicle. We are demonstrating this initiative at the 18th World Congress on Intelligent Transport Systems in Orlando. The connected vehicle infrastructure will remain after the World Congress. Read about this at page 22.

Florida's mobile communications trailer, with WiFi® capabilities, has been in use for the past three years. It is a proven asset in its role as a resource for public safety, mission critical infrastructure. This year, it was enhanced with a short-wave infrared camera providing the ability to see through haze, fog, and smoke. You can read all about it at page 26.

The Florida Traffic Incident Management and Commercial Vehicle Operations Program, along with news from the Traffic Engineering Research Lab, are also highlighted in this report.

This is only a quick look at the information provided in this report, and we hope you will take time to read about our accomplishments. We are proud of our program and hope that you will be as excited as we are!

Elizabeth Birriel

Elizabeth Birriel, PE
Deputy State Traffic Operations Engineer
Florida Department of Transportation
ITS Program Manager

VISION & MISSION

FDOT's Vision

Serving the people of Florida by delivering a transportation system that is fatality and congestion free.

FDOT's Mission

Provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities.

FDOT's ITS Program

The ITS Program endeavors to provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities.

FDOT's Commitment to ITS

FDOT maintains a State Highway System of more than 12,000 centerline miles and 42,633 lane miles. According to the FDOT *Five-Year Work Program*, $8.8 billion was budgeted in this fiscal year to support Florida's transportation needs. As part of its annual program, FDOT made significant investments in ITS and is committed to investing approximately $975 million between 2002 and 2022.

ITS PROGRAM OVERVIEW

FDOT's ITS Program Area Descriptions and Major Accomplishments

The Florida Department of Transportation's (FDOT) Traffic Engineering and Operations Office coordinates and promotes the deployment of intelligent transportation systems (ITS) throughout Florida. The ITS staff are led by Elizabeth Birriel, P.E., Deputy State Traffic Engineer—ITS Program Manager.

Florida's ITS is organized into the following program areas:

- ITS Management/Deployments—*Gene Glotzbach, P.E.*
- ITS Software, Architecture, and Standards—*Arun Krishnamurthy, P.E.*
- Telecommunications Program Management—*Randy Pierce*

Two other program areas within the Traffic Engineering and Operations Office have a very close relationship with ITS and are represented in this annual report:

- Commercial Vehicle Operations and Traffic Incident Management—*Paul Clark*
- Traffic Systems—*Trey Tillander, P.E.*

Traffic Engineering & Operations Team

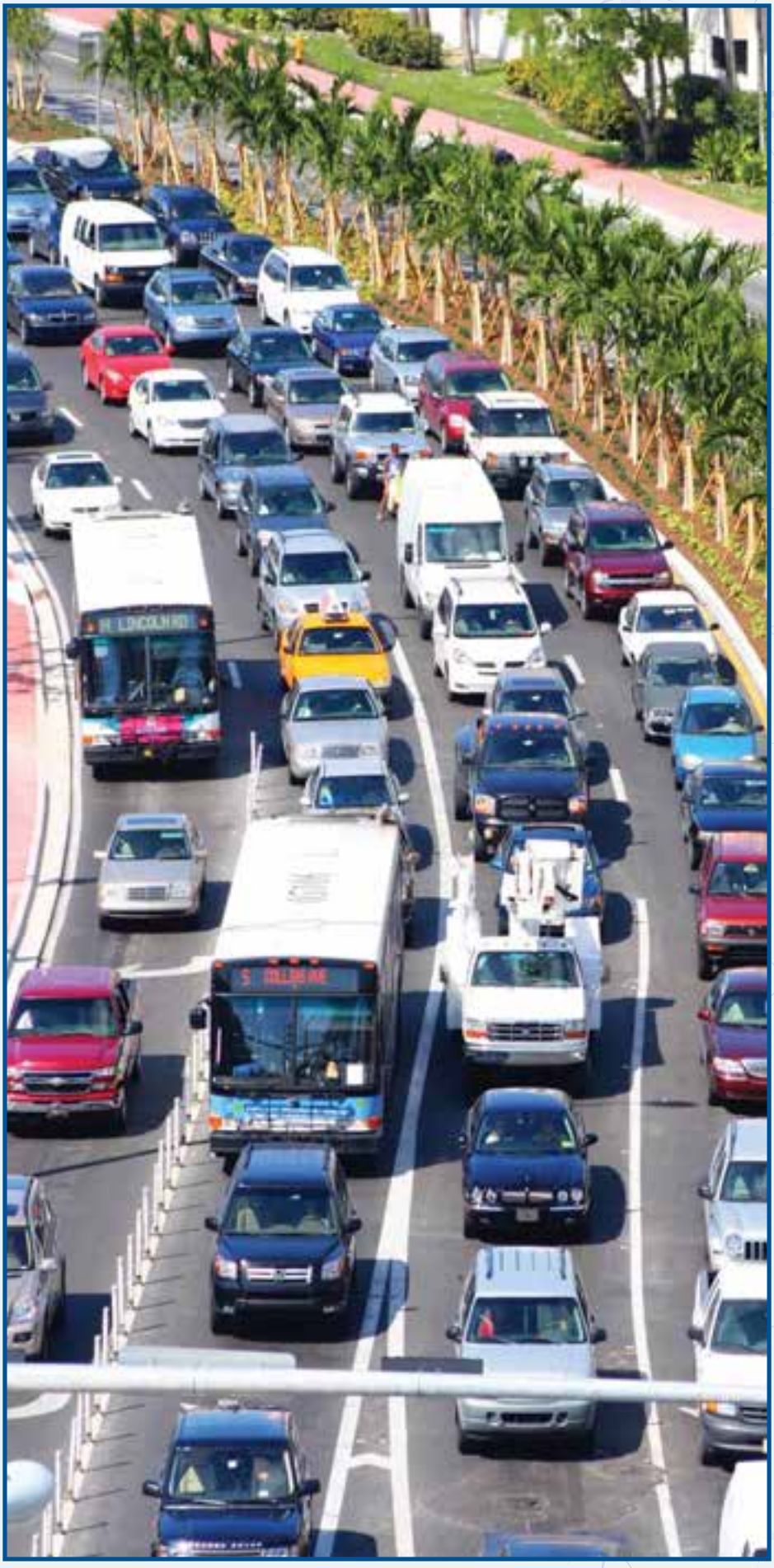
Program Description

- Promote ITS deployments on Florida's roadways, develop standards, maintain the *ITS Strategic Plan*, and implement a systems engineering process to support procurement and deployment of ITS.
- Deploy advanced traveler information systems and 511.
- Manage the *Ten-Year ITS Cost Feasible Plan* and develop the Arterial ITS Plan.
- Develop a probe-based data collection program to supplement data collection in areas of the state that are not instrument with ITS devices.
- Support the I-95 Corridor Coalition through membership on the Travel Information Services Program Track Committee.
- Support the National 511 Coalition Working Group as an active member.
- Support the FDOT Transit Office by providing expertise to various transit projects.
- Develop and update standards and specifications for ITS devices.
- Manage the ITS General Consultant Contract.
- Manage the marketing effort for FDOT's traveler information system.
- Support development of the *511 Annual Progress Report* and the *ITS Program Annual Report*.

Major Program Accomplishments

- Updated the Ten-Year ITS Cost Feasible Plan.
- Updated the operations and equipment replacement information to allocate funds to the Districts for the operation of their transportation management centers and replacement of ageing equipment.
- Provided information on funding programmed for the ITS Program for the next five year work cycle to support development of the Florida Transportation Commission's annual report.
- Monitored and improved operation of the Next Generation 511 System based on user input and testing by FDOT and contractors.
- Implemented enhancements to the Next Generation 511 System to provide for a better user experience. Implemented major enhancements, including development of an iPhone application to disseminate traveler information and provision of travel times/speeds through the use of probe data provide by INRIX, Inc.
- Executed a contract with IBI Group to provide streaming video on the FL511.com web site.
- Managed the Global-5 Communications marketing efforts for the Next Generation 511 System.
- Developed solicitation documents to procure a new traveler information system that will allow for revenue generation to offset the cost of the system. The advertisement for the new system went out in April 2011.
- Produced Florida's 511 Progress Report—The People's Network…511, The First Decade, an annual report for 2010.
- Extended the contract for traffic flow data on I-10 and the northern portion of I-75 with the University of Maryland for the use of INRIX data for six months. The extension also included the addition of data for the I-95 Corridor through a cost sharing arrangement with the I-95 Corridor Coalition.
- Continued to provide support to District Traffic Operations and Work Program staffs to update the Districts' portions of the Ten-Year ITS Cost Feasible Plan.
- Continued to support and provide quality assurance to the Traffic Engineering and Research Lab (TERL) and the ITS lab to test ITS equipment operability using the SunGuide® software.

- Continued to support the Change Management Board and process engineering change proposals.
- Continued to produce the *SunGuide® Disseminator* (FDOT's Traffic Engineering and Operation's monthly newsletter).
- Continued to produce the ITS Program's Annual report.
- Continued to provide support to FDOT's Public Transportation Office for their Resource for Advanced Public Transportation System Program.
- Continued work on developing ITS performance measures.
- Continued to develop ITS specifications and maintain existing specifications based on field experience with deploying various ITS devices (Sections 780 through 785); modified Section 781 to support the deployment of arterial dynamic message signs.
- Preformed technical reviews and provided support for project-specific requests related to specification modifications (modified special provisions).
- Executed a new contract with the ITS General Consultant through a competitive selection process.



ITS Software & Architecture

Program Description

- Manage the SunGuide® software, including support of the software at transportation management centers (TMC).
- Manage the FDOT ramp metering software system for ramp meter control and monitoring.
- Develop and maintain the Statewide ITS Architecture (SITSA) to promote an integrated ITS; assist in development of District, regional, and corridor ITS architectures to ensure SITSA conformance.
- Develop and promote the use of the systems engineering management and configuration management processes to the FDOT Districts.
- Coordinate ITS training to enhance the quality of the state's ITS workforce.
- Coordinate ITS research with the Districts to identify the needs, priorities, and applicability of emerging ITS concepts.
- Coordinate traffic operations and ITS support for public-private partnerships and managed lanes projects.

Major Program Accomplishments

- Conducted kick-off meeting for the new SunGuide software contract (BDQ69, SunGuide Software Support, Maintenance, and Development) in July 2010.
- Conducted SunGuide software release 5.0.4 independent verification and validation (IV&V) at the FDOT Traffic Engineering Research Lab (TERL) in November 29, 2010. This release included integration of INRIX data to provide current travel times on the rural limited-access facilities along I-10 and I-75.
- Deployed the SunGuide software at two new locations: the Orlando-Orange County Expressway Authority (OOCEA) facility in January 2011; and Pensacola (District Three) regional TMC in December 2010.
- Coordinated with Florida International University and University of Florida to assist with FDOT-sponsored research projects using SunGuide software.
- Conducted SunGuide software release 5.0.5 IV&V at Jacksonville in February 2011. This release included application for smart phones to assist Road Rangers in communicating with TMCs.
- Updated incident duration performance measures reports for the Florida Transportation Commission.
- Supported the Districts with the creation and updates of various SunGuide software report templates.
- Developed and provided SunGuide software operator and administrator training at all Districts.
- Developed concept and requirements for SunGuide software release 5.1. This release includes integration of SunGuide with connected vehicle technology.
- Managed the legal protection of the SunGuide logo and the SunGuide software source code by registering it as a registered trademark with federal copyright.
- Provided technical support to the I-595 Express Public-Private Partnership by reviewing their toll pricing system and the SunGuide reversible lane module concept of operations.
- Provided technical support to the I-95 Express Lanes project team by reviewing the SunGuide express lane module concept of operations.
- Maintained the SITSA and regional ITS architectures to promote integrated ITS.
- Coordinated with SunGuide users/members of the Change Management Board to ensure SunGuide continues to meet their needs through ongoing enhancement.
- Developed concept of operations for a production central data warehouse system and conducted stakeholder outreach.

Telecommunications Program Management

Program Description

- Guide deployment of a communications backbone to serve ITS deployments on major corridors.
- Implement and manage the Statewide ITS Wide Area Network (WAN) to support ITS deployments.
- Manage the operations and maintenance program for the statewide ITS telecommunications network to support ITS deployments, motorist aid call boxes, and various ITS research and development initiatives.
- Manage all FDOT Federal Communications Commission radio licenses (over 600 licenses).
- Manage the Wireless General Manager Agreement, a resource-sharing public/private partnership, which places commercial wireless carriers on FDOT rights-of-way with Lodestar/American Tower.
- Develop operations standards and equipment specifications to support District telecommunications initiatives in their ITS, Maintenance, and Traffic Incident Management programs.

Major Program Accomplishments

- Expanded the ITS WAN with a gigabit Ethernet connection between the FDOT Traffic Engineering Research Laboratory (TERL) in Tallahassee and the District Six regional transportation management center (RTMC) in Miami.
- Began a project to expand the ITS WAN with a gigabit Ethernet connection between the FDOT Traffic Engineering Research Laboratory (TERL) in Tallahassee and the State Emergency Operations Center (SEOC) in Tallahassee. The connection will support the SEOC with streaming video and data from the District RTMCs during emergency operations as needed over our private networks. The fiber optic connection will be provided by the City of Tallahassee traffic systems fiber infrastructure.
- Continued work to install the ITS WAN in Districts One and Seven. Optical path tests and performance parameter measurements are being made to assure reliable long-distance communications. Equipment installation and circuit activation are scheduled for early FY 2011/2012.
- Continued implementation support of the ITS Facility Management System (ITS-FM) to better enable the Districts to manage their overall telecommunications networks, field system configuration, and components. Conducted data collection training sessions with Districts One, Two, and Seven.
- Supported District Six in collecting and populating all ITS facilities within the ITS-FM. This includes approximately 70 miles of fiber optic cable and conduit system, 70 miles of power distribution system, 75 wireless radio sites, and 500 ITS equipment sites. This work will fully implement the ITSFM district-wide. This effort was made possible through the use of District Six funds.
- Experienced a reduction of one wireless collocation sublease under the Lodestar/American Tower Wireless General Manager Agreement as a result of expansion of the Turnpike Enterprise Ft. Drum Service Plaza. One new wireless collocation sublease was added as a result of expansion of the wireless industry.
- Completed a contract for deployment of permanent emergency generator power systems at the Pensacola statewide ITS telecommunications network locations to provide continuity during power outages.
- Awarded a contract for deployment of an additional permanent emergency generator power system at the Caryville statewide ITS telecommunications network location to provide continuity during power outages.
- Continued contract work for multicast repeater deployments for the FDOT radio system in Districts One, Five, and Seven.
- Procured 514 mobile radios in the first year of five-year program to replace up to 2,570 mobile radios in the FDOT radio system. Districts are completing the installation of these mobile radios.
- Trained Districts One, Five, and Seven trainers in the operation of the FDOT radio system and its operation in the new repeater network.

- Optimized two District wide area radio systems with microwave technology, eliminating four dedicated telephone lines for an annual savings of $48,600.
- Reported weather data from eight field weather stations in continued support of the Federal Highway Administration's (FHWA) Clarus Initiative, a program to provide information to all transportation managers and users to alleviate the effects of adverse weather (e.g., fatalities, injuries, and delays).
- Procured equipment on a grant from the FHWA for participating in the Clarus Connection Incentive Program to provide weather observations and metadata to the Clarus system. Installation is scheduled for early FY 2011/2012.
- Continued design work on a ground station for use in conjunction with the National Oceanic and Atmospheric Administration (NOAA) satellite-based "data collection service" to deliver bridge sensor data. Installation of the ground station is scheduled for early FY 2011/2012. District Two has awarded a contract for bridge wind speed sensor installation at various field locations..
- Upgraded and maintained WiFi® internet access in four welcome centers and the Turkey Lake Service Plaza, which has served over 92,000 users to date with an average daily rate of 17 users per site.
- Reconfigured the WiFi® internet access mobile trailer with a short-range infrared camera in support of emergency management operations.

Program Description

- Develop, maintain, update, and publish minimum specifications for traffic control signals and devices; evaluate and certify/approve these devices for use in Florida.
- Develop, implement, and maintain vendor quality assurance and product approval programs. These programs are used to list equipment on the FDOT Approved Product List (APL) to ensure a uniform system of traffic control devices in Florida.
- Develop, update, and support standard specifications, standard drawings, and payment methods for traffic control device installations.
- Provide testing, verification, and validation services for ongoing development of the FDOT SunGuide® software, Florida's advanced traveler information system, and other statewide transportation software and system applications.
- Provide support services and infrastructure for intelligent transportation systems (ITS) telecommunications and central data warehouse functions.
- Provide technical assistance and training relating to the design, implementation, and operation of traffic control signals and devices used in Florida.
- Conduct the Traffic Engineering Research Laboratory (TERL) testing, research, and development programs.
- Provide statewide specifications and standards support for red light running camera equipment and testing.
- Represent Florida on national technical advisory groups that develop traffic control and ITS device standards.
- Maintain and update traffic operations asset inventory.

Major Program Accomplishments

- Maintained the statewide APL vendor qualification program to evaluate and qualify traffic control signal and device manufacturers requesting listing of their products on the APL – qualified 17 and re-qualified 26 manufacturers.
- Maintained a statewide APL product approval program to certify/approve traffic control signals and devices used in Florida – reviewed 119 request for product consideration forms, reviewed 83 product applications and approved 39 products.
- Transitioned portable maintenance of traffic devices from the FDOT Qualified Products List to the APL. Qualified six associated manufacturers.
- Integrated work zone devices into the web-searchable APL.
- Developed and updated multiple FDOT contract documents, including updates to nine installation and equipment specifications for the FDOT Standard Specifications for Road and Bridge Construction.
- Performed content review, updated, and published hardcopy Minimum Specifications for Traffic Control Signals and Devices, July 2010.
- Completed and published compliance matrices for all traffic control devices evaluated by the TERL. There are 58 compliance matrices currently posted on the web site.
- Updated FDOT Design Standards, including the consolidation, reorganization, and content update for dynamic message signs (DMS) and closed-circuit television (CCTV) cameras.
- Streamlined APL vendor qualification process to reduce effort on applicants and application review time. Decreased expected response time from 45 to 30 calendar days.
- Implemented SharePoint document control system to improve version control, routing, approval, and publication of documents.

- Implemented systematic tracking system for nonconformance reports received from end-users and corrective actions issued to APL vendors.
- Developed and published minimum requirements for red light running cameras and coordinated statewide submittal reviews and structural approvals.
- Evaluated and approved three traffic signal controllers and associated hardware for recently allowed flashing yellow arrow operation.
- Completed construction on additional and enhanced testing facilities, including detection systems, rapid rectangular flashing beacon test sites, and an ITS CCTV pole that provides surveillance of the TERL campus intersections and outdoor test areas.
- Expanded and advertised an updated statewide APL contract to provide an efficient method for users to acquire devices listed on the APL.
- Performed end-to-end system testing of various SunGuide® software components, interfaces, and field devices, including independent verification and validation testing.
- Represented the American Association of State Highway and Transportation Officials on the Joint Committee on the National Transportation Communications for ITS Protocol (NTCIP) and the NTCIP DMS Working Group regarding the development and deployment of NTCIP requirements for traffic control signals and devices.
- Developed and implemented operational processes and procedures to increase the TERL efficiency, using the International Organization for Standardization guidelines for product certification bodies. Developed a quality management system manual for the TERL product certification operations.
- Managed and/or supported research projects for the following subjects:
  - Development of automated testing tools for traffic control signals and devices;
  - Impact of detection and communication degradation on traffic management systems operation;
  - Managed lanes operations, including time-of-day versus dynamic pricing;
  - Human factors research, regarding pedestrian buttons, illuminated street name signs, DMS character sizes, and additional traffic signal heads; and
  - Hurricane survivability of traffic signal attachment hardware.

Program Description — Commercial Vehicle Operations

- Promote commercial motor vehicle safety as it relates to commercial vehicle operators as well as the traveling public.
- Manage Florida's Commercial Vehicle Information Systems and Networks (CVISN) program, a nationwide program under the direction of the Federal Motor Carrier Safety Administration, by focusing on safety enforcement resources on high-risk commercial operators; integrating federal and state regulatory systems to improve access to, and verification of, operating credentials; improving efficiency through electronic screening of commercial motor vehicles; and enabling online application and issuance of operating credentials.
- Support the Office of Motor Carrier Compliance.

Major Program Accomplishments — Commercial Vehicle Operations

- Under went Federal Motor Carrier Safety Administration and Government Accountability Office audit of the CVISN Program.
- Started research project for truck parking in rest areas and weigh stations throughout the state.
- Started working with the FDOT Maintenance office on Florida's Automated Permit System Enhancements.
- Started working with the Florida Highway Patrol to modify Florida's Electronic Freight Theft Management System.

Program Description — Traffic Incident Management

- Provide technical support and assistance to FDOT's District Offices and other partners in regards to traffic incident management.
- Develop policies and procedure for FDOT's Road Ranger and Rapid Incident Scene Clearance (RISC) Programs.
- Support the I-95 Corridor Coalition's Incident Management track.
- Assist the State Emergency Operations Center (SEOC) with evacuation management.
- Collect traffic incident management (TIM) related data to determine areas of improvement for future planning.

Major Program Accomplishments — Traffic Incident Management

- Prepared and published the *Rapid Incident Scene Clearance Annual Report* – September 2010.
- Prepared and published the *Road Ranger Comment Card Annual Report* - September 2010.
- Facilitated/participated in the Federal Highway Administration/I-95 Corridor Coalition Statewide Advanced Traffic Incident Management workshop in Orlando, Florida, on October 28-29, 2010.
- Deployed computer-based training for Maintenance of Traffic for Incident Responders in December 2010.
- Initiated the District Three Escambia/Santa Rosa TIM Team in January 2011.
- Revised the *Guidelines for the Mitigation of Accidental Discharges of Motor Vehicle Fluids (Non Cargo)* in January 2011.
- Developed and coordinated the updated Road Ranger cost benefit analysis research project.
- Supported deployment of District Two smart phone Road Ranger application in April 2011.
- Prepared the second *Annual Road Ranger Responder Survey*.
- Developed and released the www.FloridaTIM.com web site in June 2011.
- Enhanced outreach to District TIM programs – ongoing, bi-monthly video conferences.
- Continued deployment of the Statewide Law Enforcement Radio System with ongoing training and support to the Districts.

PROGRAM HIGHLIGHTS

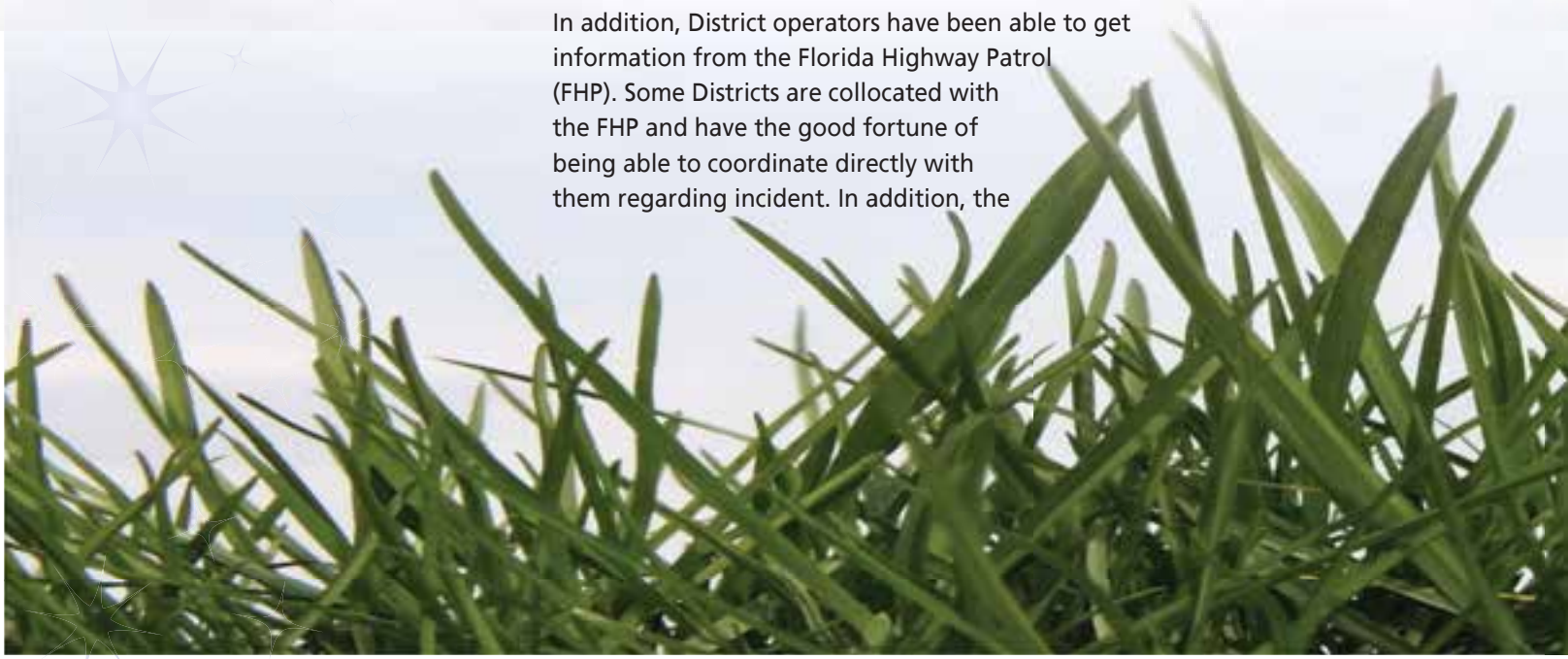
Rural ITS in Florida—
Developing the Right Tools

By Gene Glotzbach, FDOT

The Florida Department of Transportation (FDOT) has been very active in deploying intelligent transportation systems (ITS) in the urban areas of the state. The major urban areas have either been built out or have significant ITS deployments to manage their limited-access facilities. The construction of transportation management centers and deployment of ITS field devices, such as closed-circuit television cameras, roadside sensors, and dynamic message signs have been instrumental in reducing congestion and making Florida's urban areas safer places to drive. Since the bulk of the state's congestion can be found in the urban areas, it makes sense for FDOT to concentrate ITS deployments in these areas.

Although FDOT has provided for only limited ITS deployments in rural areas, FDOT has managed to develop other resources to determine what is happening in these areas. The FDOT's 511 traveler information system is a good tool in determining what is happening in rural areas. The 511 system has a feedback function that allows callers to report traffic that may not yet be reported on the 511 system. Callers are not shy in letting District operators know that a problem exists that may not have been reported by the 511 system. Their feedback message is recorded and converted to a WAV file and sent out to FDOT District operators within a few minutes. District operators then begin the process of verifying the problem to get that information on the 511 system. In most cases, District operators have already begun to verify the problem when they receive the feedback.

In addition, District operators have been able to get information from the Florida Highway Patrol (FHP). Some Districts are collocated with the FHP and have the good fortune of being able to coordinate directly with them regarding incident. In addition, the



SunGuide® software, Florida's statewide advanced traffic management software, allows District operators to have access to the FHP computer aided dispatch (CAD) information, providing awareness of an incident as responding FHP troopers and dispatchers populate the CAD system. This helps to alert operators to issues that they may need to address and provides data to support the data needs of FDOT's 511 system. The FHP also has a web site they utilize to provide information to the public regarding incidents that they have responded to; this can also be utilized as a source of information in rural areas.

The Florida Panhandle and northern portion of the state are the primary rural areas that do not have ITS coverage. I-10 and the northern portion of I-75 have little to no ITS deployed. In order to supplement information coming from the 511 system traffic reports and the FHP CAD system, FDOT utilizes data collected by INRIX, Inc. FDOT has contracted with INRIX, Inc. to provide speed data that is displayed on the FL511.com web site for motorists to gauge how well traffic is flowing. District operators can utilize the same information to determine traffic flow problems to be reported by the 511 system. INRIX, Inc. also provides a web site that District operators use, which provides a different graphical representation of how well traffic is flowing for all limited-access facilities in the state and most of the major non-limited-access facilities in the state.

Even though FDOT does not have active ITS deployments in rural areas, the FDOT has been able to provide alternate means of assessing traffic flow in these rural areas. This has been a big help in providing information to support the 511 system. FDOT will continue to look for alternate means of providing this information. Although a large scale deployment of ITS in the rural areas is not practical, limited deployments may be implemented in the future.

New iPhone Application for FL-511— Providing Traffic Information

By Gene Glotzbach, FDOT

Florida is keeping up with the times and technology to improve the dissemination capabilities of the Florida Department of Transportation's (FDOT) 511 system (FL-511).

The FDOT recently launched a mobile application (app) for the iPhone, iPad, and iPod Touch as a new dissemination method for the existing FL-511 system. The app provides the same real-time traffic information a caller would receive by dialing the 511 phone number. The application was built with safety in mind—you don't have to divert attention away from the roadway to make a call to 511 to find out what is happening on the road. LogicTree Corporation, the company providing the FL-511 system, developed the application; an Android app is expected by the end of 2011.

The FL-511 app makes use of the global positioning system (GPS) to provide information pertinent to your location. The app can be set to provide traffic information up to 200 miles around your current location. You can also enter your registered My Florida 511 primary phone number and get information on your customized routes.

The FL-511 app provides traffic information in four ways—through an audible recording of incidents, an on-screen list, a map and traffic camera views. You can also manually search for 511 traffic information.

The traffic window menu provides a number of screens to get traffic information and travel times, provide feedback, and customize the application to meet your needs. A list of events or a pushpin icon on the map allows the user to view traffic information of their choice. Information is presented within a selected range. The FL-511 app user can also enter a city or metro area to find out information

in that area and hear audio of the presented information. The map push pins are color-coded to indicate the type of event—red for incidents, purple for construction. . To view traffic cameras, users can tap the traffic camera image associated with an incident to view traffic near that location.

The travel time screen provides access to travel time information. The app provides travel times within your selected range or along the customized routes created through the My Florida 511 feature of the FL-511 system. The app presents the segment name, average travel time, and average travel speed on each segment through the travel time menu. The app identifies your travel direction to provide information in that direction. A compass icon allows you to change the travel direction to get information in the other direction. A list of roadways on the right side of the screen allows you to jump to other roadways for travel time information.

The FL-511 app also allows users to report traffic or leave general feedback. The user can record up to a two-minute message.

The FL-511 app allows the user to link to their My Florida 511 account through the settings screen, in order to receive information based on their profile and customized routes. The settings screen also allows the user to set the radius from which they want to receive information (200 miles maximum) and whether the events are played automatically when the app is launched.

The FL-511 app provides a safe way to access traffic information utilizing a mobile device.

This new application is another example of how the FDOT Intelligent Transportation Systems Program is succeeding in providing a "safe" transportation system that ensures the mobility of people and goods throughout Florida.

Taking Marketing to the Next Level—Educate.FL511.com

By Gene Glotzbach, FDOT

In 2010, the Florida Department of Transportation (FDOT) launched the Educate.FL511.com web site to promote statewide marketing efforts and inform thousands of motorists about 511. The web site was designed as a clearinghouse to provide partners ease-of-access to all educational outreach materials, including electronic and print materials, awareness items, presentations, and more. The site enables partners to explore and download the best materials to reach their employees, customers, and partners.

During fiscal year 2010-2011, the "Educate" site received nearly 2,000 page views by representatives from key organizations. Educate.FL511.com helped develop valuable partnerships and 511 received more than 227,999,848 impressions.

Major partnerships facilitated through 511 marketing efforts include:

- Airport Public Service Announcements—Florida's major airports throughout the state, including Orlando International Airport, Miami International Airport, Tampa International Airport, and Jacksonville International Airport, placed 47 public service signs. Approximately 112 million travelers passed the 511 public service announcement (PSA) signs during the past year.
- Driver's Education Outreach—The Florida Department of Highway Safety and Motor Vehicles (DHSMV) included 511 content in the English and Spanish editions of the 2010 edition of its driver handbooks. DHSMV printed 1.4 million books and downloadable handbooks were available online.
- Mall PSAs— Major malls in every FDOT District throughout Florida placed bilingual 511 public service signage.
- Transit Advertising—Public transportation agencies in Orlando, Jacksonville, Tampa, and South Florida placed placards and exterior PSAs on buses, reaching an audience of 29 million last year.
- Billboards—More than two dozen 511 billboards were placed alongside major roadways throughout the state.
- Phone Books—511 is currently in phone books provided by AT&T (The Real Yellow Pages), Embarq (Dex Knows/Century Link Phone Books), and Verizon (Super Pages). Total statewide audience for phone books is approximately 19.5 million.
- Commuter Services—Phone system transfers were added from 511 to all commuter service programs in Florida. South Florida Commuter Services placed a 511 image on their web site homepage, sent out a 511 e-mail blast to 40,000 partners, and ordered customized 511 commuter posters to distribute to major employers.

The 511 phone system and web site continued to provide real-time traffic updates to hundreds of thousands of travelers each month during fiscal year 2010-2011. Since the system launch in 2009, 511 has received 5.3 million total calls. From July 2010 to June 2011, the 511 phone system logged 2.3 million calls. Since the system launched, the FL511.com web site received 1.4 million web visitors and 650,000 web visitors from July 2010 to June 2011.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Statewide Operations Performance Measures—Demonstrating Benefits

By Elizabeth Birriel, FDOT, and Kenneth Voorhies, Cambridge Systematics, Inc.

To continue to accommodate Florida's growth in population, tourism, and commerce, the Florida Department of Transportation (FDOT) is committed to implementing statewide, fully integrated intelligent transportation systems (ITS) in a cost-efficient manner. ITS represents the use of real-time information systems and advanced technologies as transportation management tools to improve the movement of people, goods, and services. The net result is the application of technology to resolve mobility and safety problems, rather than sole reliance on building new roads and expanding existing ones.

As ITS evolves in Florida, developing and reporting operations performance measures is a high priority for FDOT to demonstrate and document the benefits of ITS. The FDOT Operations Performance Measures Program includes measures of production and usage (or output) as well as measures of performance and the resulting benefits (or outcome).

The output measures reported are:

- Miles managed by ITS.
- Number of 511 calls, and
- Number of Road Ranger stops.

The outcome measures reported are:

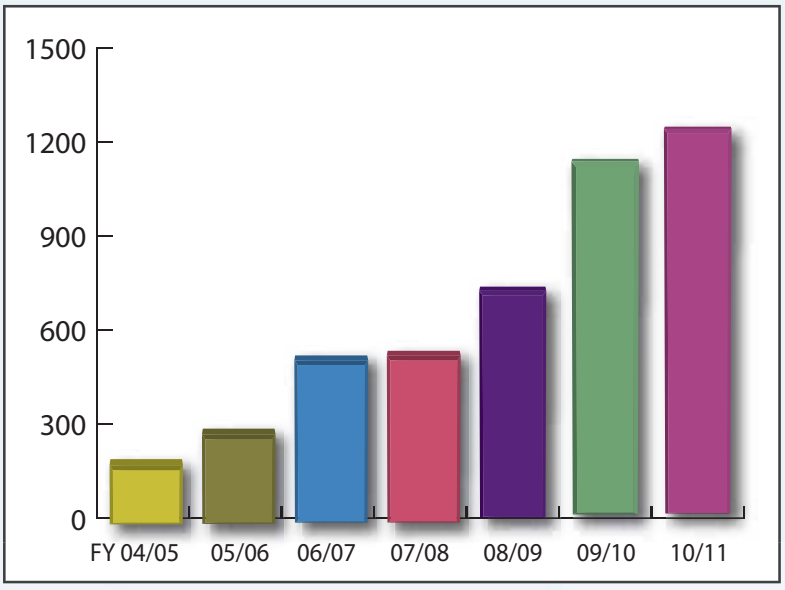
- Incident duration,
- Travel time reliability, and
- Customer satisfaction.

Performance Measures Results

Following are the results for the first three quarters of fiscal year 2011 (July 1, 2010 through March 31, 2011) reporting year. The FDOT ITS Office is currently working on the fiscal year 2011 annual report.

Miles Managed by ITS

As of March 2011, miles managed by ITS on the Florida Intrastate Highway System (FIHS) limited-access facilities were 1,251 miles. This is 59 percent of the total system mileage and an 8 percent increase in the past year.



Number of 511 Calls

Florida's 511 (FL-511) advanced traveler information system provides real-time traffic information to the public in a variety of formats:

- the 511 phone number,
- FL511.com,
- mobile.FL511.com,
- My Florida 511 personalized services,
- Dynamic message signs on FIHS facilities, and
- Through a mobile application.

Additionally, FDOT traffic information is pushed out through third-party data feeds to news media who inform the public of roadway conditions.

The 511 phone number received 2,276,830 calls in this fiscal year and more than five million calls since the Next Generation System launched in June 2009. The FL511.com web site received 656,607 visitors during the year, and a total of 1.4 million visitors since launch. More than 10,000 people subscribe to My Florida 511 personalized services to receive e-mail, text, and phone alerts about incidents on their regularly-traveled routes. More than 450,000 alerts are sent to these subscribers each month.

A new option for travelers is the FL-511 application for iPhone, iPad, and iPod users, which launched in June 2011. This technology pushes traffic information out to the user based on the user's predefined settings. The FL-511 app uses the mobile device's global positioning system to provide users with information based on their location. FDOT plans to launch an FL-511 Android™ app in the coming year.

Calls to 511 decreased slightly this year. This can be attributed to other means of accessing traffic information provided by FDOT. Private information providers often rely on FDOT-generated data that is fused with privately collected data to provide the public with needed information. Tracking the calls to 511 as the sole indicator of the usage of FL-511 may now be an outdated indicator of system usage.

Number of Road Ranger Stops

Road Ranger stops totaled 262,285 during the first three quarters of the fiscal year, an increase of one percent compared to the same time last year.

Incident Duration

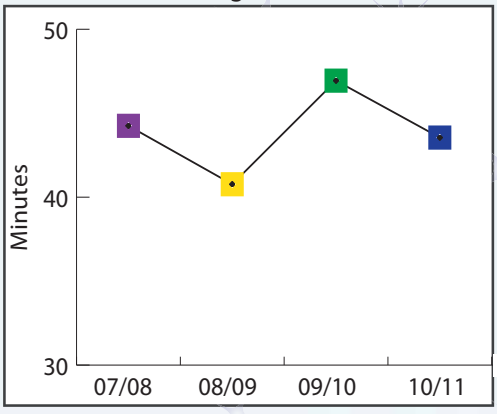
One of the major activities completed for this reporting cycle was the completion of an incident timeline including incident verification, response, and clearance times as well as modification of the SunGuide® software, Florida's statewide advanced transportation management software, to consistently record and report incident duration data.

FDOT roadway clearance time varied from month-to-month, but the FDOT Districts reported an average clearance time of about 45 minutes, ranging from 29 to 77 minutes for monthly averages.

Travel Time Reliability

FDOT has identified two metrics to measure travel time reliability and congestion. The Buffer Index is a measure of the reliability of travel service. A secondary metric is the Travel Time Index (TTI), which is a measure of traffic congestion. Travel time, travel speed, and volume data are the basis of these measures. FDOT obtains travel time and speed data from either speed data collected by roadside detectors communicating in real-time to transportation management center or from probe data gathered from various sources that report travel time directly.

The most congested and most unreliable freeway sectors were reported for seven reporting Districts. The most congested freeway sector reported in this fiscal year was SR-826 northbound from I-75 to SR-836 in District Six (Miami-Dade area) with a travel time index of 1.72 in the afternoon peak (travel times take 72 percent longer in the peak hour). The most unreliable segment was I-10



eastbound in the evening peak in District Two (Jacksonville area) from I-295 to U.S. 17 with a buffer index of 1.004 (drivers need to allow 100 percent more time for that trip to be on time 95 percent of the time).

Customer Satisfaction

Florida conducts a statewide ITS customer satisfaction survey every two years throughout Florida, with the most recent survey (conducted in June and July 2010) reported in October 2010. Significant findings of that survey were:

- The days of radio and television traffic reports dominating traveler market share will eventually come to a close. This was evidenced in previous years by the generational divides in radio and television traffic information consumption. Young drivers—no matter how often, where, or when during the day they drive—were less dependent on these traditional traffic information sources and more inclined to turn to the internet for traffic information. Use of traditional sources is generally down across all subgroups, and in-car navigation systems have already emerged as the second most popular alternative source of traffic information.
- Drivers who use 511 are effusive in their praise of it, are increasingly trusting of it, and are likely to act on the information it provides.
- There is increased interest in receiving traffic information via text message. With an increasing number of 511 users who have customized the service to meet their specific needs, drivers are less likely to call 511, and more likely to want traffic notifications sent to them.
- The Road Ranger Program and the electronic sign message signs continue to receive overwhelmingly positive ratings by customers and these services are highly valued and trusted by the driving public.

Summary

FDOT continues to improve data collection, analysis, and reporting tools related to operations performance measures.

ITS Strategic Plan– Planning Forward

By Elizabeth Birriel, FDOT, and Andy. Phlegars, Atkins North America

The Florida Department of Transportation (FDOT) originally developed the Intelligent Transportation Systems Strategic Plan (ITS Strategic Plan) in 1999 as a guide for planning, programming, and implementing integrated, multimodal ITS services throughout the state. The primary purpose of the plan was to present a 20-year vision for ITS in Florida and to recommend strategies to achieve this vision. The main goals of the ITS Strategic Plan were consistent with the mission and goals of FDOT's 2020 Florida Transportation Plan (FTP). In 2005, the ITS Strategic Plan was updated to include the achievements of Florida's ITS Program and an assessment of new national and state ITS policies, programs, and technologies that would help fulfill Florida's ITS mission.

The FDOT ITS Program is in the process of updating the ITS Strategic Plan. FDOT has completed the initial stages of the update—evaluating the goals, objectives, and core strategies to be included in the plan. FDOT updated the goals and objectives of the ITS Strategic Plan to match the goals and objectives of the recently developed 2025 Florida Transportation Plan. The goals of the ITS Strategic Plan are to:

- Promote a safer and more secure transportation system for residents, businesses, and visitors.
- Promote an enriched quality of life and responsible environmental stewardship.
- Promote adequate and cost-efficient maintenance and preservation of Florida's transportation assets.
- Promote a stronger economy through enhanced mobility for people and freight.
- Promote sustainable transportation investments for Florida's future.

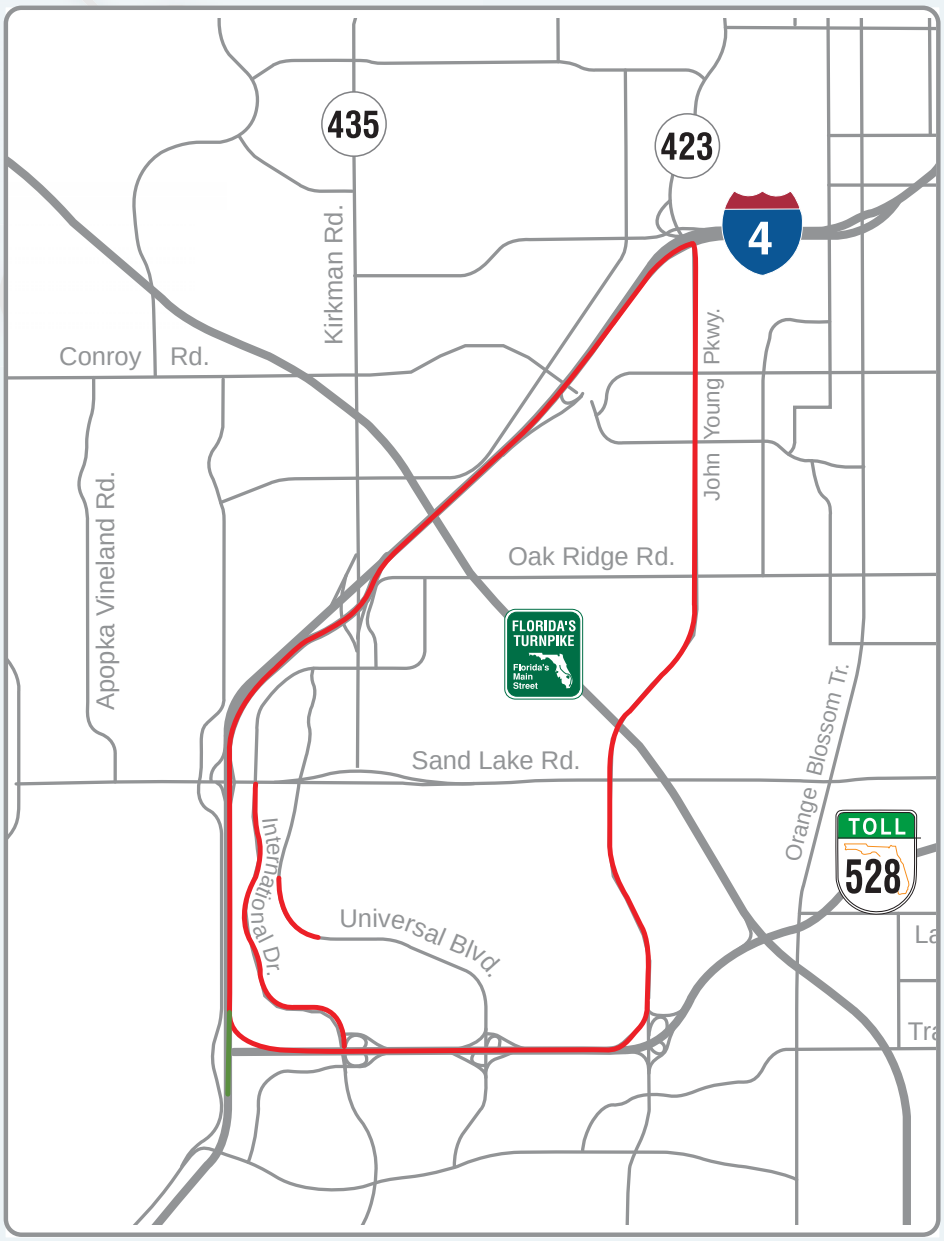
The ITS Program staffs are updating the core strategies that should be pursued to support the goals of the FTP. Once completed, the ITS Program will circulate the plan to ITS personnel in the District offices for additional input and core strategies that support the state's efforts in planning, programming, and implementing integrated, multimodal ITS services throughout the state.

FDOT Connected Vehicle Investments—Taking Advantage of Futuristic Technology

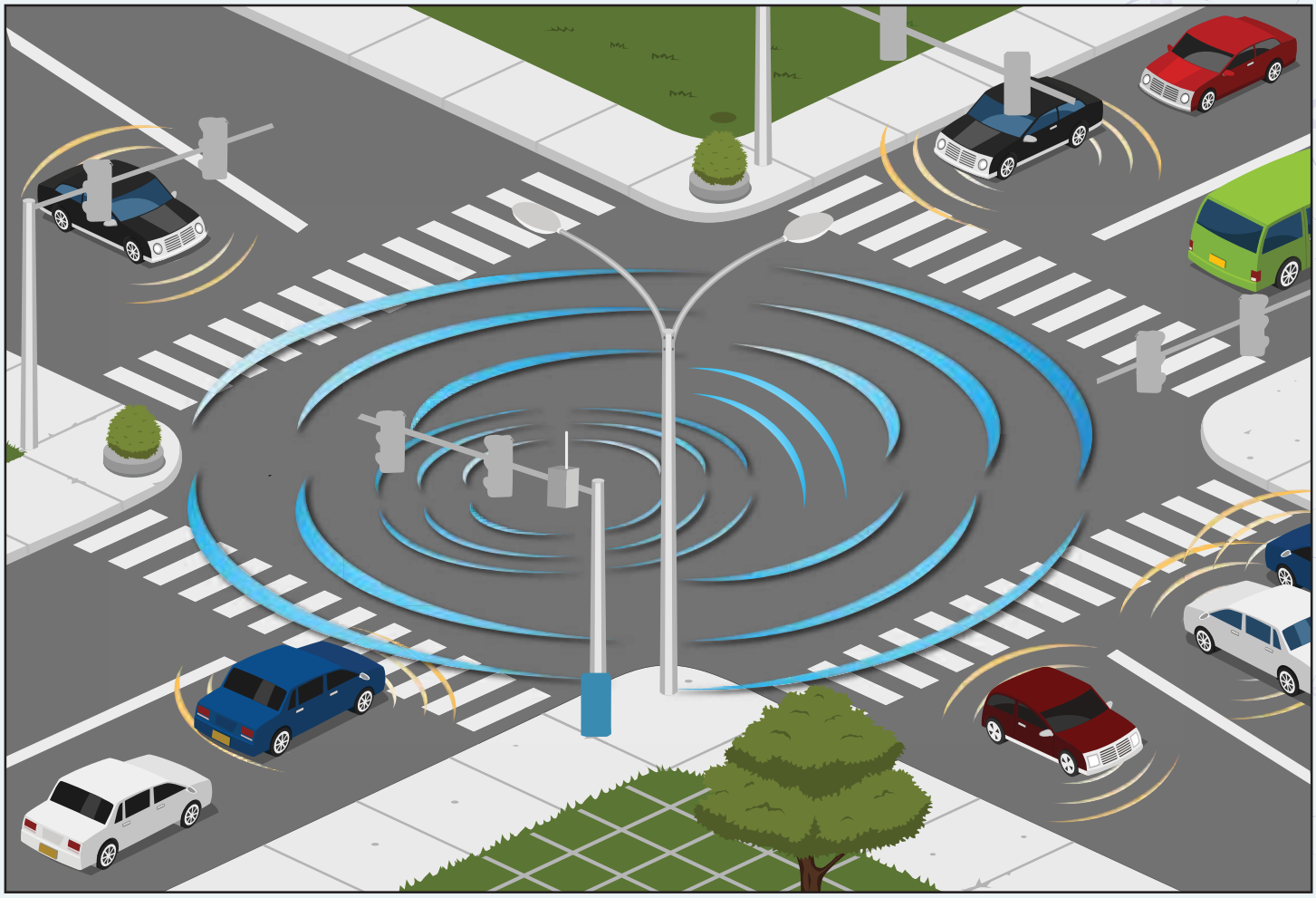
Elizabeth Birriel, FDOT, George Gilhooley, HNTB, and David Chang, Atkins North America

In fiscal year 2010-2011, the Florida Department of Transportation (FDOT) started a new initiative—connected vehicle. The connected vehicle initiative is a futuristic technology that empowers travelers by providing pertinent travel information directly to them in their vehicle. This initiative uses wireless communications, vehicle sensors, and global positioning system navigation.

FDOT is also coordinating infrastructure to support the connected vehicle on-road demonstrations during the 18th World Congress on Intelligent Transport Systems in Orlando on October 16-20, 2011. Various providers are demonstrating applications during the World Congress, including intersection safety, integrated corridor operations, commercial vehicle operations, freeway hazard warning, and congestion management through pricing. The on-road demonstration network includes I-4; International Drive, a low speed minor arterial; and John Young Parkway, a high speed major arterial.



The infrastructure includes 28 roadside equipment (RSE) units, which provide two-way communications links to vehicles using 5.9 dedicated short-range communications (DSRC). The United States Department of Transportation (USDOT) is providing these RSEs for installation. They are the same type RSEs as those used in the Detroit Test Network, New York, and California. They were refurbished before being sent to Orlando. FDOT is installing the RSEs on existing closed-circuit television camera and traffic signal poles; they connect to the District Five regional transportation management center via the existing fiber optic communications network. They are then connected to a USDOT service delivery node (SDN) located at Oak Ridge National Laboratories in Tennessee. This is one of three SDNs developed by the USDOT under the Vehicle Infrastructure Integration Proof



of Concept program. Connection to the SDN allows for the utilization of the many safety and mobility applications already developed under the Proof of Concept. It also allows the vehicle application providers to develop and test their applications in the Detroit Test Network and then bring them to Orlando—the beginning of true nationwide interoperability.

The existing RSEs supplied by USDOT were utilized because the next generation of RSEs will not be available until after the World Congress. The USDOT procurement for the development of these next generation RSEs will result in fully interoperable, multi-vendor-provided RSEs. USDOT is also providing 50 vehicle awareness devices to be installed on various types of vehicles to support the communications with RSEs. FDOT is supporting the vehicle awareness device installation and testing to volunteer vehicle providers for the World Congress.

Included in Florida's infrastructure deployment for the World Congress are enhancements to FDOT's SunGuide® software to utilize vehicle probe information, such as travel times, and to provide the ability to issue traveler advisory messages to OBE-equipped vehicles through the RSE. These SunGuide enhancements will support the demonstration applications at World Congress, while also positioning FDOT's ITS Program for the eventual statewide deployment of connected vehicle infrastructure.

At the national level, the connected vehicle program is focused on obtaining a National Highway Traffic Safety Administration decision in late 2013 that would result in the inclusion of DSRC 5.9 communication capabilities in new vehicles.

FDOT has coordinated with local agencies to maintain the connected vehicle infrastructure after the World Congress. The efforts include procurement of newer generation RSEs to be deployed and tested with SunGuide software.

SunGuide® Software and Connected Vehicle—Ready for Action!

By Arun Krishnamurthy, FDOT, and Clay Packard, Atkins North America

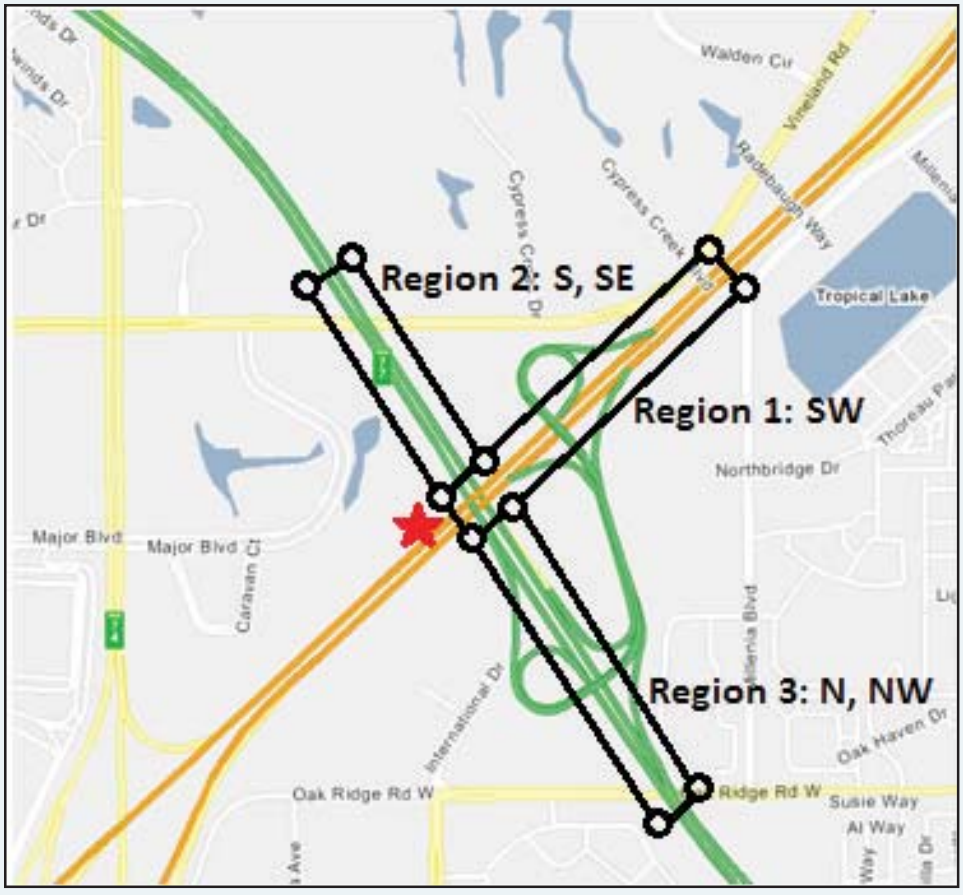
As technology moves forward at a frenzied pace, the demand to communicate in real-time has grown exponentially. Currently, we use smart phones, web sites, 511 traveler information systems, and other means to obtain real-time traffic information. Connected vehicle is the newest breed of emerging intelligent transportation systems (ITS) technology that has the potential to revolutionize how agencies manage and operate traffic systems. It will not only provide travelers with traffic information relevant to them, but the vehicles also act as probes and provide their travel experience back to transportation management centers (TMC) in real-time. It is a two-way communication between the vehicle and the TMCs.

The connected vehicle infrastructure is built on a well-defined digital short-range communications radio communication channel between equipment installed in vehicles and along the roadside. The infrastructure will be composed of roadside equipment (RSE) and on-board equipment (OBE) as elements participating in the communications. This supports a fully connected transportation system that includes safety, mobility, and other applications. This will serve as the foundation upon which many exciting new applications can be integrated into the SunGuide® software, Florida's statewide advanced traffic management system (ATMS) software. FDOT is integrating connected vehicle technology into the SunGuide software. The software will connect to RSEs via a roadside fiber optic network also used for other ITS deployments. RSEs will behave as a collection and dissemination point for OBEs. Data provided by vehicles will include real-time location (lat/long), speed, and travel direction. Vehicles will receive traveler advisory messages (TAMs) developed from the data. TAMs will be similar to a dynamic message sign in application. SunGuide software will be among the few ATMS software in the country that fully integrates connected vehicle with TMC operations.

Following are a few applications that will demonstrate at the 18th World Congress on Intelligent Transport Systems held in Orlando, Florida, in October 2011.

Operator Map View

SunGuide software will aggregate probe data from vehicles on the same roadway segment to determine current traffic conditions. An operator map will present this data so that TMC operators can visually view the traffic status and potential traffic concerns on the roadway. This will leverage the existing functionality of color-coding roadways on the operator map to green, yellow, or red depending on the traffic conditions. It will also utilize the alarm thresholds to call attention to roadway segments when speed or occupancy thresholds are exceeded, indicating a possible traffic incident.



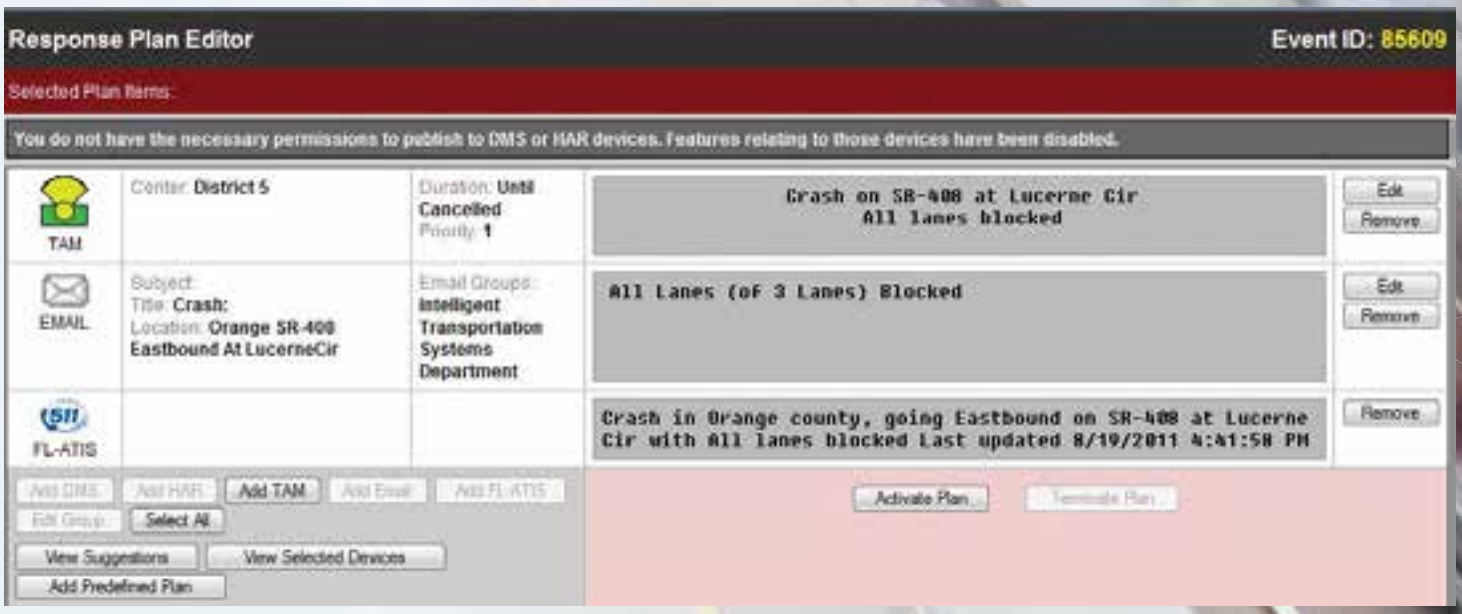
Travel Time Dissemination

This traffic conditions data used by operators will also be provided to

motorists. SunGuide software will calculate the travel times for various segments that can be posted on dynamic message signs or provided via Florida's 511 traveler information system or via third party data feeds.

Incident Detection

When an incident occurs that warrants more than a high travel time update or a red colored roadway segment, a TMC operator will have the ability to broadcast the incident information to vehicles using their incident response procedures. SunGuide software has a comprehensive incident response system that automatically identifies dynamic message signs and highway advisory radios to broadcast this information. The software also has the capability of determining the message text to broadcast on these devices. This same concept will be used to send this information to motorists with connected vehicle equipment. In this way, messages are displayed to motorists with OBE, which receives TAMs generated by data obtained from RSEs.



SunGuide will define a presentation region that indicates when and where a TAM will be displayed by the OBE automatically based on the location and direction of travel affected by the incident. SunGuide will also automatically select the needed RSEs for broadcasting the TAMs to the OBEs. OBEs should only display a TAM when the vehicle is traveling in the defined presentation region.

As the RSEs and OBE-outfitted vehicles are deployed and become more mainstreamed, SunGuide software will effectively leverage this technology to make Florida's roadways more mobile and safe. The current functionalities in the software are just the first round of implemented applications. As more vehicle-to-vehicle and vehicle-to-infrastructure applications are developed, they will complement each other, helping FDOT to achieve their safety and mobility mission.

Mobile Communications—
Pushing the Envelope

By Randy Pierce, FDOT, and Brian Kopp, The Semaphore Group

For the past three years, the Florida Department of Transportation (FDOT) has been operating a unique mobile trailer, which has proven to be a versatile asset to the world of intelligent transportation systems (ITS) in Florida. The trailer has a special set of tools on-board that have proven to be very valuable on all of its deployments. Originally conceived as a mobile WiFi® hot spot for use during the on-going pilot project, the trailer has been adapted to also serve as a public-safety asset.

The WiFi pilot project started in 2008 to determine if WiFi is a worthwhile service to offer travelers at Florida's interstate rest areas and Turnpike service plazas. The WiFi-equipped trailer is a mobile version of the fixed WiFi hot spots installed at Florida's welcome centers. By deploying the trailer temporarily, WiFi internet service was provided at various rest areas and, in all cases, travelers responded very favorably to it.

The original trailer design concept included the WiFi hot spot and a versatile power system to permit battery, solar, and generator operation when commercial power is unavailable. A motorized satellite antenna automatically acquires a satellite connection and establishes an internet link to provide the internet connection. Even before completing construction on the original design concept, FDOT added two enhancements to the trailer—a weather station and a surveillance camera pod. The camera pod uses a video interface that permits FDOT to monitor closed-circuit television cameras remotely and securely over the internet. These enhancements allow the FDOT to push the operational envelope of the trailer, which was quickly proven.

In early 2010, FDOT deployed the trailer for a public safety exercise called Operation Radar at the National Guard facility in Camp Blanding, Florida. The event tested communications interoperability between federal, state, and local agencies. The mobile trailer provided WiFi internet access for several federal and state agencies. The camera pod was also online and FDOT was able to remotely monitor the deployment area and all of the nearby agency vehicles and systems. In addition, FDOT installed a voice radio temporarily that interconnected the trailer to the statewide FDOT voice radio system. One of the most exciting parts of this exercise occurred when nearby Florida Department of Management Services personnel used the trailer's WiFi hotspot and satellite-based internet connection to patch into the State Law Enforcement Radio System (SLERS). This cross connection from a laptop via WiFi and satellite to the SLERS network was one of the first times such a complex connection has ever been established.

In June 2010, the Emergency Operations Center in Bay County, Florida, made a request through the Florida Division of Emergency Management, State Emergency Operations Center, for deployment of the mobile trailer to help the Panama City area respond to the Deepwater Horizon oil spill. The trailer was deployed to the St. Andrews State Park to monitor the inlet, which supports significant government, commercial, and private shipping and boat traffic. Bay County

wanted to build a barrier across the inlet that could be opened or closed to keep floating oil out and they needed some way to monitor the effort. FDOT deployed the mobile trailer within a few days of the request to provide remote surveillance of the St. Andrew's Inlet to the Bay County Traffic Management Center. During this deployment, FDOT made upgrades to the camera pod, replacing two static cameras with pan-tilt-zoom cameras to provide a compliment of three remotely moveable cameras. This improved Bay County's ability to monitor both incoming and outgoing vessels while also monitoring the barrier.

During the response to the Deepwater Horizon oil spill, the trailer was deployed oceanside and its tower was erected fully to improve camera viewing angles. FDOT monitored the weather closely and was prepared to recover the trailer quickly if inclement weather approached the Florida panhandle. While no tropical storms or hurricanes occurred, there were several thunderstorms resulting in the loss of commercial power. During one such event, the trailer sustained damage requiring emergency repairs to reestablish surveillance services for Bay County.

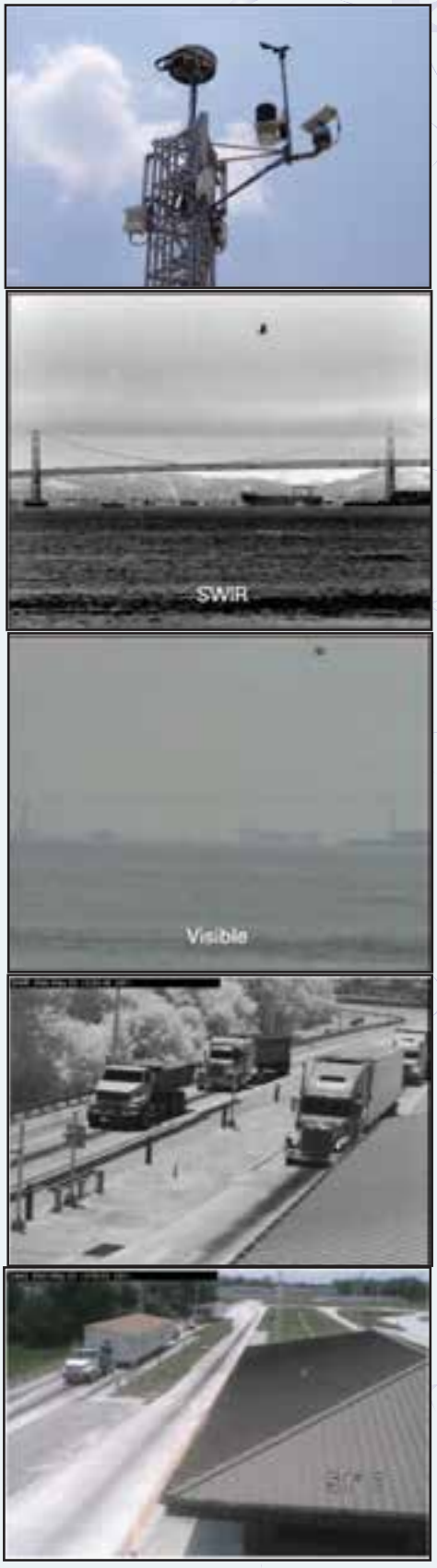
After the Deepwater Horizon deployment was over and the mobile trailer was able to stand-down, complete repairs were made and a special enhancement was added. The Goodrich Corporation loaned the FDOT a special camera called a short-wave infrared (SWIR) camera that has a unique ability to see through haze, fog, and smoke with remarkable detail. The camera and specialized optics were installed on a motorized mount attached to the FDOT mobile trailer. Like the other cameras on the trailer, the SWIR camera can be monitored remotely and securely over the internet.

The first test of the repaired and improved mobile trailer was during a deployment to the Plant City I-4 west-bound weigh station. The trailer WiFi services were available to truck drivers who chose to stop at the weigh station. It is thought that by providing WiFi services at weigh stations, some of the nighttime congestion at nearby rest areas could be relieved. While WiFi services were offered at the weigh station, the camera pod and special SWIR camera offered surveillance of the scales and parking areas to the FDOT and to motor carrier compliance personnel.

Through all of these exercises, the FDOT mobile trailer has become a truly valuable asset resulting in plans to expand its public-safety utilization even further. This year, FDOT will enhance the trailer by permanently installing voice radios similar to those temporarily deployed during Operation Radar. The trailer will then be able to support FDOT voice radio communications during emergency events or even just to fill in where existing voice radio services are temporarily off-line. Through alliances with other state and federal agencies it is hoped the trailer's voice radio capabilities will be expanded to support inter-agency communications during emergency events.

From its simple beginning as a WiFi service investigative resource, to its expanded role in public-safety, mission critical infrastructure, the FDOT mobile trailer has become a proven asset. FDOT continues to receive inquiries about the trailer from other state and federal agencies as well as commercial companies. Most recently, FDOT gave a tour of the mobile trailer to engineers from General Dynamics in Orlando, who build similar vehicles for the federal government. The FDOT mobile trailer is truly a unique asset that will continue to serve the traveling public, the public safety community, and the FDOT.

Short-Wave Infrared Camera



ITS Facility Management—Continuing to Evolve

By Randy Pierce, FDOT, and Tim Sapp, Telvent

The Florida Department of Transportation (FDOT) Intelligent Transportation Systems Facility Management (ITSFM) system continues to evolve as more users embrace the benefits of implementing this tool. The ITSFM is a geographical information system-based web application hosted by Byers Engineering Company and managed by the FDOT Central Office Intelligent Transportation Systems (ITS) Program. The ITSFM is a centralized and collaborative tool designed to manage ITS assets and the connectivity of the communications and electrical subsystems supporting ITS field equipment. This tool allows FDOT to compile information about network assets into a single, accessible database providing FDOT the ability to manage the entire system and ensuring proper planning for future growth and funding availability. Each time the ITSFM is accessed, it provides users with up-to-date and accurate records from a central database.

Implementation Update

The Central Office ITS Program is working with the Districts and regional partners to support statewide implementation. Recent focus has been to provide Districts One, Two, Three, and Seven with hand-on training for the data collection process. This work includes a global positioning system (GPS) survey and cabinet inventory to gather the information needed to populate the database with complete and accurate information. Benefits of the survey include:

- Verification and updating the as-built conditions;
- Sub-meter accurate coordinates of the ITS cabinets, communication and electrical conduit, access points, and support structures;
- Verification of cabinet configuration, inventory, and installed equipment;
- Association of commercial power and leased communication service to equipment sites;
- Fiber connectivity and terminations; and
- Sub-meter accurate electronic ITS as-built computer-aided design and Drafting (CADD) file (Bentley© MicroStation DGN format).

District One began the implementation process and completed the first phase of inventory and data collect along I-75 from the SouthWest Interagency Facility for Transportation (SWIFT) SunGuide® Center to the Collier County line.

District Two continues to expand ITSFM usage by routinely populating facilities installed through new projects into the database. They share the ITS as-built CADD files with designers of new projects, who provided the ITS facility positional information needed to mitigate conflicts or to allow relocations to be funded by the new project.

District Three is scheduled for the next data collection training.

District Six funded the FDOT Telecommunication General Consultant to collect and populate all ITS facilities within the ITSFM. This included approximately 70 miles of fiber optic cable and conduit system; 70 miles of the power distribution system; 75 wireless radio sites, and 500 ITS equipment sites. This project will fully implement the District Six ITSFM.

District Seven has been very active with implementing the ITSFM and is working to define the minimum encoding requirements.

Miami-Dade Expressway Authority (MDX) contracted with Byers Engineering Company to survey, and inventory, capture digital images of ITS cabinet/sites, and digitize and encode their ITS communications and electrical facilities along State Roads 112, 924, 878, and 874 into the ITSFM. This work also included software training for viewer user of the application.

ITSFM Upgrades

Byers Engineering Company plans to release an update to the ITSFM in July 2011. This update (Version 2.4) will include many new features and enhancements recommended by application users, including enhancements for:

- Fiber outage locates,
- Connectivity manager,
- Splice details,
- Fiber span details, and
- Increased performance, including
  - Improved XML download configuration and
  - Download all code-list upon application start-up

In addition, the Central Office ITS Program has identified ITS-specific modifications and enhancements as a result of interaction with the Districts. Software upgrade requirements are being documented and Version 2.4.1 will be released in the last quarter of 2011. Version 2.4.1 will further increase the ITSFM functionality to support additional ITS field and signal control devices and their associated attributes; allow users to easily generate standardized reports; customize the attribute dialog boxes to remove non-related attributes; and improve ease of use.

Standardized reports include:

- Regional transportation management center and communications hub facilities,
- ITS equipment cabinet (summary and full detail),
- Signal control equipment cabinet (summary and full detail),
- Electrical load center components and distribution,
- Fiber optic cable utilization, patch panel termination, and circuits,
- ITS devices and signals, and
- Utility services and demarcation.

Looking Ahead

The Central Office ITS Program is focused on supporting the statewide ITSFM implementation and has the following activities planned:

- Upgrade the ITSFM application for release later this year,
- Conduct ITSFM data collection training classes with the remaining Districts,
- Develop user training courses focused on the operational needs of the users, and
- Continue on-going support to the Districts and regional partners.

Mission Critical—Covering Florida

Randy Pierce, FDOT, and Nick Adams, Telvent

Florida is famous for its abundant sunshine and a temperate climate. Additionally, Florida has miles of beautiful coastline with white sandy beaches, providing great swimming, fishing, and relaxing. The combination of Florida's theme parks, the natural beauty of the upland panhandle, and the charm of the southern Keys results in a destination sought by tourists and residents alike. With almost 2,000 miles of interstate/turnpike roadways, the Florida Department of Transportation (FDOT) faces a daunting task to carry out its vision of making travel in Florida safe and efficient. The FDOT mission is to provide a safe transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities.

In the 1980s, the FDOT instituted the motorist aid callbox system, using roadside callbox technology for motorists in need of assistance. Located one mile apart, each callbox transmits a radio signal via 72 MHz to a receiver located at microwave tower facilities spaced for reliable communications. The FDOT constructed this statewide microwave network in phases, which today extends from Pensacola to the Florida Keys at almost 90 locations.

FDOT employs lessons learned from experience throughout the communications system, enhancing ongoing reliability and reducing operating costs.

Florida faces a variety of weather problems each year; hurricanes, fog, and tropical rainstorms typically occur on a regular basis. These conditions are often severe and require a very robust communications network for survivability and operation. As a "first-first" responder, clearing and restoring roadway operation to allow first response traffic to move into affected areas with relief and assistance, FDOT uses two-way land mobile radio communications, which have proven to be a vital tool in the emergency response role.

Wide area coverage and long-range communications are important to cover Florida's geography. FDOT is currently upgrading the 47 MHz simplex system to a low-band multicast and linked repeater network. Military-specification, blowing rain-resistant mobile units and handheld portable radios are specified for use, providing more reliable coverage; handheld portable radios will be effective in bridge inspections and inaccessible vehicle locations. All radios will be programmed with statewide frequencies, ensuring that communications will be possible as vehicles and personnel move from one District to another to assist with traffic recovery, control, and operations in times of need.

Strong facilities are the foundation of a highly reliable communications system. If towers collapse or the roof blows off an equipment building, ongoing efforts are hindered. Therefore, FDOT uses design standards much higher than local building codes and historical wind speed levels. Self-supporting towers are used when conditions dictate and budget allows. Towers constructed after 1995 all use solid leg members, giving rust-through protection for long life in the Florida environment.

Hurricanes are not the only challenge experienced by Florida. As the lightning capital of the world, Florida has, on average, more than 100 days with lightning activity each year. Many of the microwave and 47 MHz towers extend above the surrounding tree line, making them prime targets for lightning. FDOT undertakes extensive efforts to build a solid ground system for each tower site by deploying ground radials, exothermic connections, and single point grounding systems. Each facility must have a 5 ohms or less resistance to ground. Many locations achieve a resistance value on the order of 1 ohm.

Personnel safety and reducing equipment loss are prime considerations.

With a solid, well-protected facility in place, a reliable communications system can be constructed. FDOT realizes that single point failure is critical and designs accordingly. Single point ground continues inside the equipment buildings—first as transmission lines enter and continuing from a central ground bus with a halo of protection, either flat strap or round conductor, as appropriate. Equipment racks are grounded using the shortest possible routing. Surge protection devices are installed on incoming power lines at primary and secondary locations. The surrounding fence, transmission waveguide bridge, and all other objects outside the building are solidly grounded and connected to the single point location.

FDOT microwave links are designed for 99.999 percent reliability at 10-6 bit error rate. FDOT maintains a high level of availability (the time equipment is operational and can provide service) by equipping the microwave network with hot-standby transmitters, receivers, and power supplies. One-for-N redundancy was employed in control, modem, and multiplexer cards. The same standard was used for the channel banks and digital access cross-connects that are used in this system.

The complexity of FDOT's statewide communications network is amplified by the long distances involved. Regardless of how well a system is designed and built, equipment will inevitably fail and technicians must be notified quickly. The key to quick restoration is a real-time network management system (NMS). New-generation equipment abandons contact closure alarms, such as those found on door alarms and temperature sensors, for simple network management protocol- (SNMP) based alarms. The NMS must be able to support both types of alarms. FDOT's design deploys alarm remote terminal units at the sites to convert contact closure alarms to SNMP-based alarms. The level of intelligence built into the NMS is critical when SNMP-based alarms are used. If a NMS lacks intelligence to parse the SNMP-based alarm, there will be no distinction made between a major, minor, or informational alarm. To treat all alarms equally would overwhelm paging systems as well as desensitize maintenance staff.

The FDOT NMS is equipped with an expert system in which alarms are parsed and based on a set of rules as action is taken. Critical alarms are immediately paged to maintenance technicians and escalated to management if not responded to within a set period of time. The NMS sends certain minor alarms, such as door open, to technicians; while others, such as diversity receiver switching, are not. Some informational alarms, such as generator run test, are sent to inform the technician that generators are being exercised as programmed.

The NMS must also be reliable. If a single, centralized server is used to monitor the NMS, the failure of that server would render the NMS inoperable. Therefore, the FDOT deploys four NMS servers in separate areas of the state. Each server is synchronized with the others and, in a rather unique configuration, any server can provide backup to any or all other servers. In the event of a major disaster, a single server can support the entire NMS, if needed.

FDOT maintenance contracts require a two-hour response and four-hour restoration time from the maintenance technician. Technician can access any of the four NMS servers and quickly assess the situation through the graphical user interface, facilitating quick restoration. Furthermore, technicians have direct Telnet and web-based access to all communications equipment in the system. If the technician is not at a site, redundant broadband firewalled internet-based virtual private networks are available to provide remote access.

As a result of the one-two punch of Hurricanes Charley and Frances in 2004, the FDOT began planning for the installation of permanent generators at all sites, standardizing on 2,000 gallon buried liquefied petroleum gas tanks to ensure power for an extended period of time. Even in ideal systems, events occur that affect operations. Though the recent hurricane season was relatively uneventful, leading hurricane forecasters are predicting a high and dangerous level of activity in the future. To ready the communications facilities for this, FDOT is completing the ongoing critical land-mobile radio and emergency power system upgrades. FDOT is continuing in the construction phase at a significant number of the affected sites. With the quality of the original infrastructure construction and the renovations already implemented, completion of the upgrade project will meet the current needs for the deployment of their mission critical center-to-center (C2C) wide area network.

The C2C wide area network will connect the District ITS networks to provide a wide-area inter-District ITS connectivity, while preserving District network autonomy. This will enable Districts to view streaming video from other Districts, which is essential when events in one area have large impact on surrounding areas. Routine traffic for large public events or emergency evacuation events alike can be evaluated and adequate provisions can be in place in a short time. The State Emergency Operations Center or the FDOT Central Office also have the ability to view roadway situations for high-level decisions.

The capability to control another District's regional transportation management center is important when hurricanes threaten. Response time can be improved when statewide video information is available. This ambitious project is now in the first stage of deployment and promises much improved abilities to manage traffic congestion and shorten incident clearing times.

FDOT will not spare any effort in continuing to improve resistance to storms, vandalism, and obsolescence. FDOT is using its full range of communications to manage the roadways for today and tomorrow's traffic.

Back to the Future—SunGuide® Software

By Arun Krishnamurthy, FDOT, and Clay Packard, Atkins North America

The SunGuide® software, Florida's statewide advanced traffic management systems software, has matured over the past eight years since its initial development in late 2003. The software provides the ability to control and monitor roadside equipment and manage incidents. The software has been well received throughout the state as it offers robustness and reliability, which are paramount to any transportation management center (TMC). The software usage has grown significantly over the years as all Florida Department of Transportation (FDOT) District TMCs and a few local agencies and expressway authorities are using the software.

As part of the project management team, FDOT tries to ensure that the software meets the user's needs and expectations, which are constantly evolving as agency intelligent transportation systems (ITS) programs evolve and as their experience and familiarity with the software increases. As agencies invest in new roadside equipment or a new project, they want to ensure that the software supports their equipment or projects. Additionally, user's expectations evolve based on their past experiences with the software and experience with other products. FDOT is committed to ensuring that user's needs and expectations are met by focusing on a few key areas.

Software Improvement and Maintenance

One of the key roles of the SunGuide software is to ensure that it can communicate with all the ITS devices. This allows the software to be a one-stop shop, making it convenient for users as they do not have to be concerned with maintaining multiple software systems to manage their facilities. So, FDOT firmly believes that the software needs to continue to support new devices as they become available to the market.

With the advent of new ITS technologies, or shifts in national and/or state ITS focus, there will be a need to add additional functionalities in the software, which could result in software modifications. Additionally, FDOT may wish to improve existing functionalities or expand them to better meet user needs.

Since SunGuide software runs on the Microsoft® platform and as newer platforms are released by Microsoft, SunGuide may migrate to these newer platforms that offer efficiency, robustness, and better support. Similarly, SunGuide utilizes other software packages in order to function. As newer software packages enter the market, the SunGuide software may need modifications to use these newer software packages. All of these factors contribute to the needs to continually improve and maintain the software.

Software User Support

FDOT has placed significant emphasis on user support for the software in the recent years. With mission critical software like this, the user software support is paramount. TMCs run 24 hours-a-day and 7 days-a-week, and FDOT believes the support for TMC software needs to be available 24/7 as well. FDOT has always placed significant emphasis on quick response time for software issues and will continue to maintain our emphasis on the user software support.

Software Training

As technologies change, the SunGuide software will continue to evolve over time. As changes are made in the software, FDOT offers software training to the TMC personnel. Also, if the TMC personnel change over time, FDOT supports the TMCs to train their staff. Currently, FDOT uses conventional methods for training by doing face-to-face training; however, other options are being explored, including web-based training and on-demand training videos that TMC personnel can download and view. Alternative training methods will make it easier for users to receive training and they will not be limited by the software training team's ability to travel.

The SunGuide software has grown substantially since inception and FDOT believes it serves the users better with every modification made to the software. FDOT will continue to evolve the software in a systematic manner as in the past. As with all software, SunGuide software also has its own shortcomings, which FDOT has endeavored to understand and tried to mitigate. Focusing on the three identified areas will help to ensure that the software, support, and training continue to meet user needs and expectations.

I-595 Express—
Brings it on with SunGuide® Software

By Arun Krishnamurthy, Juan Kuthy, and Dong Chen, FDOT; and Clay Packard, Atkins North America

If you have been on I-595 in Fort Lauderdale lately, you would have seen cranes (some pink!) and bull-dozers along the facility. This is because the Florida Department of Transportation (FDOT) is expanding an eight-mile stretch of the facility by adding three reversible express lanes, and is also making significant ramp improvements among several other changes. The facility currently carries over 180,000 vehicles per day, which is already approximately 60,000 vehicles over capacity. FDOT anticipates this traffic to grow to over 300,000 vehicles per day in the next 25 years. It is hard to believe that this is the same facility that was construction in 1989 in a rural area filled with cow pastures and swamps.

FDOT advertised this project as a public private partnership, which allows the selected concessionaire to pay for the services up front while FDOT pays the concessionaire for these services over an extended period of time. The concessionaire, ACS Infrastructure Development, a Spanish company with significant experience in large-scale projects, is performing the work under the umbrella of I-595 Express, LLC.

The concessionaire will operate this facility over the course of the project term of 35 years from the District Four's transportation management center (TMC). The concessionaire will use the SunGuide® software to operate the facility. Per the agreement with District Four, the concessionaire is enhancing the SunGuide software to include reversible lane functionality.

How Will the Software Work?

The software will offer device status pages that allow operators to view the current status of all devices involved in the reversible lanes, which includes the warning gates, barrier gates, lane control signals, status changeable message signs, flashing beacons, and emergency access gates. The status page informs the operator if each of these devices is communicating with the software or if there is a communication error. If a communication error occurs, the software also sends an alert to the operator to ensure the issue receives attention.

The SunGuide map displays roadway system conditions for the entire network. As the flow of traffic will alternate in the reversible express lanes, it is important to know which direction the traffic is flowing at any given time. The SunGuide map will clearly identified the direction of traffic with arrows for the operator's convenience. This offers a visual confirmation for the TMC personnel that the facility is operating as expected.

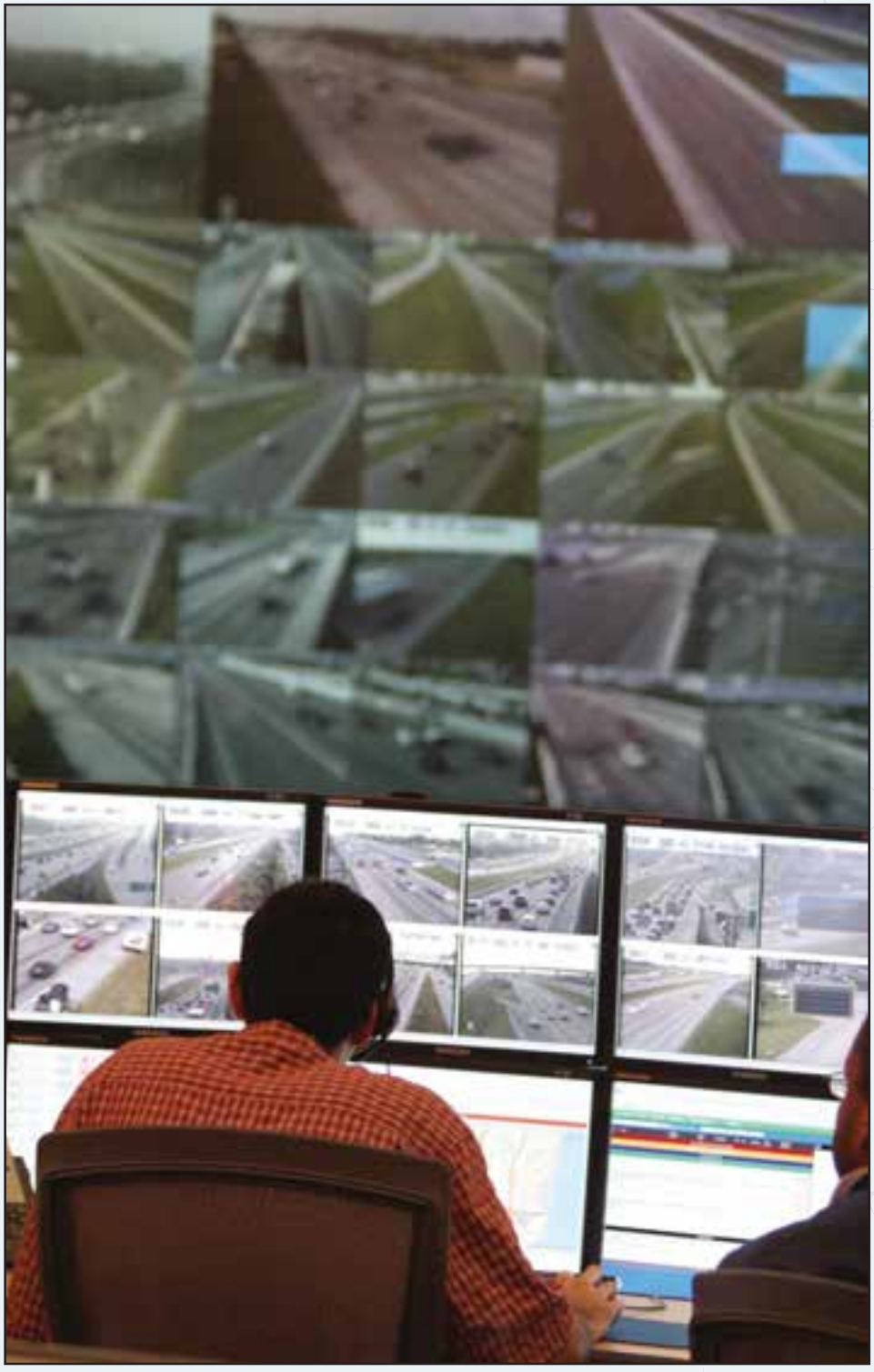
From its inception, SunGuide software was built to be highly configurable. For reversible lanes, the software allows programming of daily schedules for changing roadway direction so it can alert the operator and assist with the lane reversal.

What Safety Features are Implemented?

One of the safety measures in this system is a sequence checklist that lists very specific and ordered verification steps in order to complete a roadway segment reversal. Before reversing the segment, the operator must make absolutely certain that all criteria are met, including verification that there are no hardware failures and that all vehicles are flushed out of the reversible lane. A combination of software systems, TMC operators, and Road Rangers service patrol all play a role in reversing the lanes each time. This is critical to motorist safety, and District Four and the concessionaire have ensured this through the system design.

If an incident happens on the reversible express lanes, the concessionaire will immediately coordinate with necessary law enforcement personnel. These personnel can enter the facility through a separate set of gates, emergency gates, exclusively designed for emergency personnel. This allows law enforcement personnel to quickly access the incident site, assist any injured motorist, and clear the roadways.

Also, SunGuide software has built in security features to ensure that unauthorized personnel cannot access the software. This feature is critical, especially for the reversible lanes system, as this has safety implications. Therefore, only authorized personnel with the appropriate software security permissions can initiate lane reversing.



The Final Word…

This reversible express lanes project demonstrates how FDOT is aggressively pursuing innovative ways to maximize mobility and safety in a cost-effective manner. Reversing lanes will increase capacity during peak periods without having to build additional lanes for both directions. This reduces the enormous cost of acquiring right-of-way and construction. While this does require additional software development and operational effort, the SunGuide software has always stepped up to the challenge of ITS and operations technology to make it happen.

SunGuide® Software—
Providing Cutting Edge Road Ranger Technology

By Arun Krishnamurthy and Paul Clark, FDOT, and Clay Packard, Atkins North America

The Florida Department of Transportation's (FDOT) Road Ranger service patrols are the unsung heroes supporting traffic incident management along Florida's limited-access facilities. They provide services to stranded motorist along the roadways, help clear travel lanes of debris and damaged vehicles, and support law enforcement agencies clearing incidents. As the Road Rangers and transportation management center (TMC) operators strive to do better, they recognize the need for enhanced collaboration amongst themselves, and the need for Road Rangers to have real-time access to incident information. To address this, FDOT is leveraging on new technologies. We will take a closer look at three systems, but first, we will look at other tools in place for Road Ranger operations.

The primary communications tool currently in place is the radio; this is a standard for any dispatch operation. The radio is extremely simple to use and simple to budget. Once the hardware is in place, there is no complicated software to manage; just push the button and talk—simple, reliable, and effective. The second tool in place is the cell phone. With over 90 percent of Americans having mobile subscriptions, there is really not much of a learning curve for most Road Rangers. Road Rangers use this combination of radios and cell phones to communicate with TMC operator. Another component of Road Ranger current operations is the TMC operators using the SunGuide® software (Florida's statewide advanced traffic management systems software). TMC operators help to coordinate activities with the Road Rangers and record incident activities within the SunGuide software.

Now that we've established the tools common to most Road Rangers operations, let's take a look at how the three systems, introduced over the years, support the Road Rangers, and how they compliment the Road Rangers operation styles in each District.

In the first system, the technology introduced in the Road Rangers vehicles is the global positioning system (GPS) tracking units and the mobile data connection. These GPS units automatically send real-time vehicle location updates to the SunGuide software in the TMC, allowing the operators to know where their vehicles are at any given time. TMC operators are able to use this information to determine which Road Ranger is able to assist with an incident.

Other systems include this concept and simply add information technology applications to the basic service. These add-ons take advantage of the same communications medium used for sending location updates and are typically integrated into the SunGuide software. They also provide a direct interface between Road Rangers and the TMC operator so it is not necessary for them to pass all information back and forth using the radio or cell phone. As a result, the entire operation is not limited to one radio channel or a couple of mobile phone whereby only one person can talk at a time.

In the second system, each Road Ranger vehicle is equipped with a ruggedized tablet with a built-in GPS tracking unit and a mobile data connection. FDOT District Four deployed the first system in Florida three years ago. The tablet communicates in real-time with the SunGuide software in the TMC. This allows the Road Ranger to view their list of assigned incidents and the status information for each of these incidents, and the ability to set their status, arrive and depart to/from an event, and add comments to the event on the tablet. As a result, Road Rangers do not have to communicate with the TMC operator as much over the radio or cell phone. This also reduces the TMC operator's data entry work, as Road Rangers are able to enter information in the tablet that automatically populates the information in the SunGuide software. However, the TMC operators can still dispatch Road Rangers, correct any data entered, and manage the overall operation.

A similar system with a full-featured tablet application was also developed and is being supported by VANUS Group of Gannett Fleming. This system introduced a proxy server to simplify the network configuration, avoid firewall issues, and increase the reliability. This system is supported by an operating style that minimizes the transfer of information between Road Rangers and TMC operators by asking the Road Ranger to enter as much of their data as possible into the system.

The third system, the most recent addition, is a smartphone application for Road Rangers. FDOT developed this application, which is being used in the Jacksonville region. Smartphones are becoming more prevalent as they offer powerful computing capabilities. This system is similar to the full-featured tablets; however, the user interface is built on a smartphone rather than a tablet, and there is a limited set of data entry required by the Road Ranger. This system saves hardware costs of purchasing tablet computers and doubles as the Road Ranger's mobile phone and data device, saving the cost of additional service contracts just for tablets. The Jacksonville region has seen a 70 percent reduction in radio used attributable to this smartphone system, freeing up both TMC operators and Road Rangers to accomplish more tasks, more effectively, and with fewer interruptions.

We have seen how these three systems and the standard tools all work together to support Road Rangers operations. While they all work a little differently and support subtle differences in operating styles, they each help FDOT to accomplish the Open Roads policy, which supports the mission components of ensuring the safety and mobility of people and goods.

FDOT's Traffic Engineering Research Lab— It's all About Safety and Quality

By Jeffrey Morgan, FDOT, and Ron Meyer, Atkins North America

Applying a culture of continuous improvement to efficiently uphold the safety and quality of Florida's traffic control devices!

The Florida Department of Transportation (FDOT) Traffic Engineering Research Laboratory (TERL) strives to ensure that Florida implements a safe and uniform traffic control system. A major part of that mission is the evaluation and certification of traffic control signals and devices. In 1997, FDOT established the TERL to meet the goals and requirements of Florida Statute 316.0745 - Uniform Signals and Devices. This statute requires that FDOT evaluate and certify all official traffic control signals and devices before their purchase and installation in the State of Florida. The TERL supports this mandate by developing and updating specifications, standards, test procedures, and testing capabilities used to evaluate and approve equipment used in traffic control systems.

Streamlining the Approval Process…

For many years, the TERL made considerable strides in advancing specifications, improving its capabilities and facilities for device evaluation, and providing technical assistance and guidance in the application of new technologies. This past year, along with continued work in these areas, the TERL improved the processes and procedures associated with FDOT's product approval program and Approved Product List (APL).

TERL management and staff performed a thorough analysis of policy and procedure with heavy focus on process improvement, paperwork reduction, and general efficiency. Throughout this effort, many internal processes and procedures were simplified, standardized, and aligned with industry best practices (such as those prescribed by the International Organization for Standardization). As a result, TERL implemented new methods this year that reduce the work required of companies seeking product approval, encouraging participation by Florida-based businesses. These process improvements also significantly reduced turnaround times for vendor qualification reviews without sacrificing quality or increasing risk to FDOT.

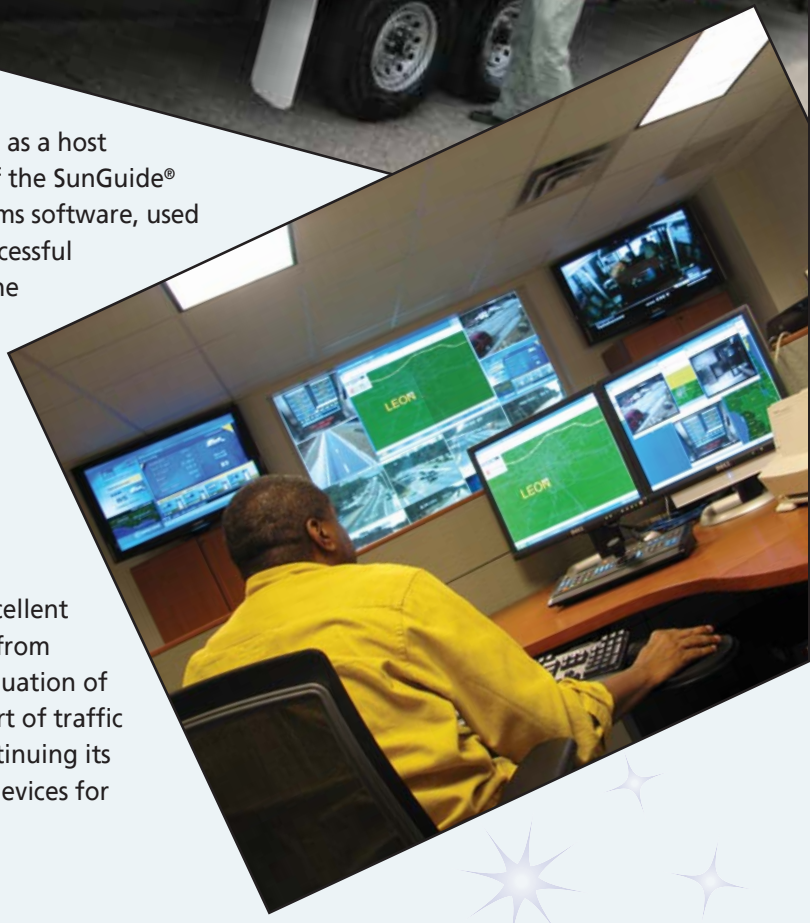
Renovated Facilities in Full Swing…

Improvements made to the TERL campus have allowed installation and thorough evaluation of many devices over the past year. The renovated facilities provide a safe and controlled environment for product evaluation, research, and work with vendors to address technical issues with new products. The TERL

outdoor test areas enable the evaluation and improvement of multiple detection devices, traffic controllers, signal hardware, full-color dynamic message signs and electronic display signs, and pedestrian crosswalk systems along with other intelligent transportation systems equipment and traffic control devices.

It is critical that Florida have the capability to evaluate and test products and systems in a controlled and well-managed environment. If TERL finds a problem during product evaluation, the impact is usually minimal and manufacturers are able to implement corrective actions. This helps prevent problems or errors during deployment or operation in the field, where failures or errors may be catastrophic.

In addition to field device evaluations and operating the APL product approval program, the TERL served again this past year as a host facility for the continuing development, support, and testing of the SunGuide® software, Florida's advanced transportation management systems software, used throughout Florida. Notable among these activities was the successful integration and testing of new video display control systems. The addition of new video display control systems within SunGuide provides greater flexibility and freedom to FDOT in product selection as well as a number of other benefits that coincide with greater choice.



The TERL remains committed to serve FDOT District offices and local transportation agencies with the technical evaluation of transportation devices, standards, specifications, and research. Streamlined processes and good facilities provide the TERL's excellent staff the capability to efficiently manage about 1,000 products from approximately 120 vendors. FDOT is well-positioned for the evaluation of further technology leaps and contributing to the state-of-the-art of traffic management for years to come. The TERL looks forward to continuing its mission of ensuring safe, uniform, and efficient traffic control devices for Florida's traveling public.

FDOT's Traffic Incident Management Program—Striving for Excellence

By Patrick Odom, FDOT

The Florida Department of Transportation's Traffic Incident Management (TIM) Program has been very active in fiscal year 2010-2011. The TIM Program is a cooperative effort between state and local program partners with assistance from the Federal Highway Administration (FHWA) to better manage traffic on Florida's interstates and roadways.

FDOT's TIM Program continued to participate in District-level TIM team meetings. Currently, there are 22 TIM teams, covering 40 Florida counties within each of the FDOT Districts and Florida's Turnpike Enterprise (FTE). District Two, in Northeast Florida, recently upgraded the data collection and reporting capabilities for the District's Road Rangers. Working with their Road Ranger contractor, District Two started using a smart phone application. This application is integrated with Florida's SunGuide® software and enables Road Rangers to more comprehensively and efficiently document specific activities at an incident scene.

District Three conducted their first TIM team meeting for Escambia and Santa Rosa Counties in Pensacola in January 2011 at the Escambia County Emergency Operations Center. Since that first meeting, District Three held a follow-up meeting in Santa Rosa County and opened a transportation management center in Pensacola. Road Rangers started patrolling I-10 and I-110 in Escambia County in July 2011. These are the first additional routes for the Road Ranger program since District Four extended Road Ranger patrols on I-95 in St. Lucie, Indian River, and Martin Counties.

FTE was able to enhance their Road Ranger Safety patrol by adding 900 extra hours of coverage per month on several areas of the Florida Turnpike. One particularly helpful enhancement was the expanded coverage hours along two rural portions of roadway with limited services, stretching from Stuart to near Kissimmee and from Clermont to Wildwood. Additional hours were also provided for night-time patrol along the Sawgrass Expressway and from Jupiter to Stuart. These additional patrol hours provide enhanced incident management capabilities and additional safety resources for responders and motorists alike.

At the state level, the FDOT TIM Program continued its efforts in expanding and enhancing training for incident responders. The first effort utilized the Maintenance of Traffic (MOT) for Incident Responders course as the foundation for a computer-based training version. FDOT Rapid Technology Solutions personnel developed the course, which was placed online in December 2010. FDOT also developed and published a new web site for incident responders—www.FloridaTIM.com. This web site focuses on providing updated training materials and information for all incident responders.

FDOT also coordinated with the Florida Department of Environmental Protection's (FDEP) Bureau of Emergency Response to update the Guidelines for the Mitigation of Accidental Discharges of Motor Vehicle Fluids (Non-cargo). This document was developed in 2004; during a review in 2010, some minor revisions and updates were performed. The document was vetted through the FDOT

Districts and through FDEP's Bureau of Emergency Response prior to adoption and publication of the revised document in February 2011.

In October 2010, the FHWA, in conjunction with the I-95 Corridor Coalition and FDOT, sponsored a statewide Advanced Traffic Incident Management workshop in Orlando. This workshop provided TIM professionals from multiple response disciplines the opportunity to gain new insight on current initiatives in other states and regions. During the workshop, TIM professionals exchanged ideas and potential solutions for issues regarding communications, training, and operations.

FDOT receives feedback regarding the performance of Road Ranger service patrols; many are delivered on comment cards or via email. This nearly daily arrival of information from Road Ranger customers provides excellent insight on the program; however, gaining information from FDOT's response partners is a bit more difficult. Thus, the Road Ranger Survey for Incident Responders was developed. The initial survey was available in hard copy format only and distributed by the Districts. Incident responders completed the survey and returned it to the TIM Program for review and analysis. The initial survey was a success with nearly 800 responses from all levels of responders. The second Road Ranger survey was an online version, which was completed on March 31, 2011, with the final report published in July 2011.

The TIM Program also began publication of two annual reports: the Rapid Incident Scene Clearance Annual Report and the Road Ranger Comment Card Report. Each report details the yearly activities and accomplishments of these programs and will aid in the ongoing goal of improving these programs.

The FDOT TIM Program is committed to excellence and is using all tools available to meet this end.

Florida's Commercial Vehicle Information Systems and Networks Program— Continuing to Make a Difference

By Paul Clark, FDOT, and Richard Easley, E-Squared Engineering

The Commercial Vehicle Information Systems and Networks (CVISN) is a Federal Motor Carrier Safety Administration (FMCSA) initiative to improve motor carrier safety and enhance the efficiency of administrative processes for industry and government. Florida's CVISN program team is made up of members from each state agency involved in any aspect of commercial vehicle regulation, including:

- Florida Department of Transportation's (FDOT) Permits and Motor Carrier Compliance offices,
- Florida Department of Revenue,
- Florida Department of Highway Safety and Motor Vehicles (DHSMV),
- Florida Department of Agriculture and Consumer Services (DACS),
- FMCSA, responsible for federal regulations, and
- Industry, including representatives from the trucking community as well as the Florida Trucking Association.

The team has been meeting on a monthly or bi-monthly basis since 2001 to implement projects and share/discuss program activities and commercial vehicle operations (CVO) related issues.

The goal of this program is to improve commercial motor vehicle safety as it relates to commercial drivers as well as the traveling public, who share the road throughout Florida and the nation. Florida's CVISN Program supports this goal by focusing safety enforcement resources on high-risk commercial operators; integrating federal and state regulatory systems to improve access to, and verification of, operating credentials; improving efficiency through electronic screening of commercial vehicles; and enabling online application and issuance of operating credentials. Additionally, the program works to accomplish these activities without placing an undue burden on the CVO industry, which is an integral component of Florida's economy.

Over the past year, the Florida CVISN Program has continued to increase safety for the traveling public, increase the capture rate of stolen goods and equipment, educate Florida's peers from across the nation, and streamline regulatory requirements for the freight industry. Specifically, this year's major accomplishments include:

- Creating the container number data entry portal
- Identifying and capturing stolen goods and equipment through the license plate readers (LPR) system
- Bringing the Florida CVISN team to the forefront at the International Fuel Tax Agreement (IFTA) – International Registration Plan (IRP) Audit Workshop in Orlando
- Enhancing the electronic permitting process for FDOT and motor carriers

Container Number Data Entry Portal

This project provides officers with a web browser-based application which allows manual entry of a commercial vehicle's license plate number and container number (if applicable) into the existing LPR/container number database currently maintained by the Florida DACS. The system also queries several law enforcement databases to check for possible criminal activity involving the vehicle and/or container. The databases queried are the DACS Be on the Lookout (BOLO) database

and the Florida Crime Information Center/National Crime Information Center databases. Entered data is also stored in the AgLaw database. This capability was added to 11 DACS interdiction station locations in rural areas where the volume of container traffic is very low. The rural stations with this new capability are Station 2 in Gilchrist County, Stations 3 and 4 in Suwannee County, Station 5 in Lafayette County, Stations 10A, 11, 17, and 18 in Hamilton County, Stations 12 and 13 in Baker County, and Station 15 in Nassau County.

Once the DACS personnel enter data into the manual portal system, it is compared against the databases (listed above) for criminal activity and notifies the DACS personnel if the queries indicate potential criminal activity.

Theft Recovery Through CVISN Efforts at DACS Locations

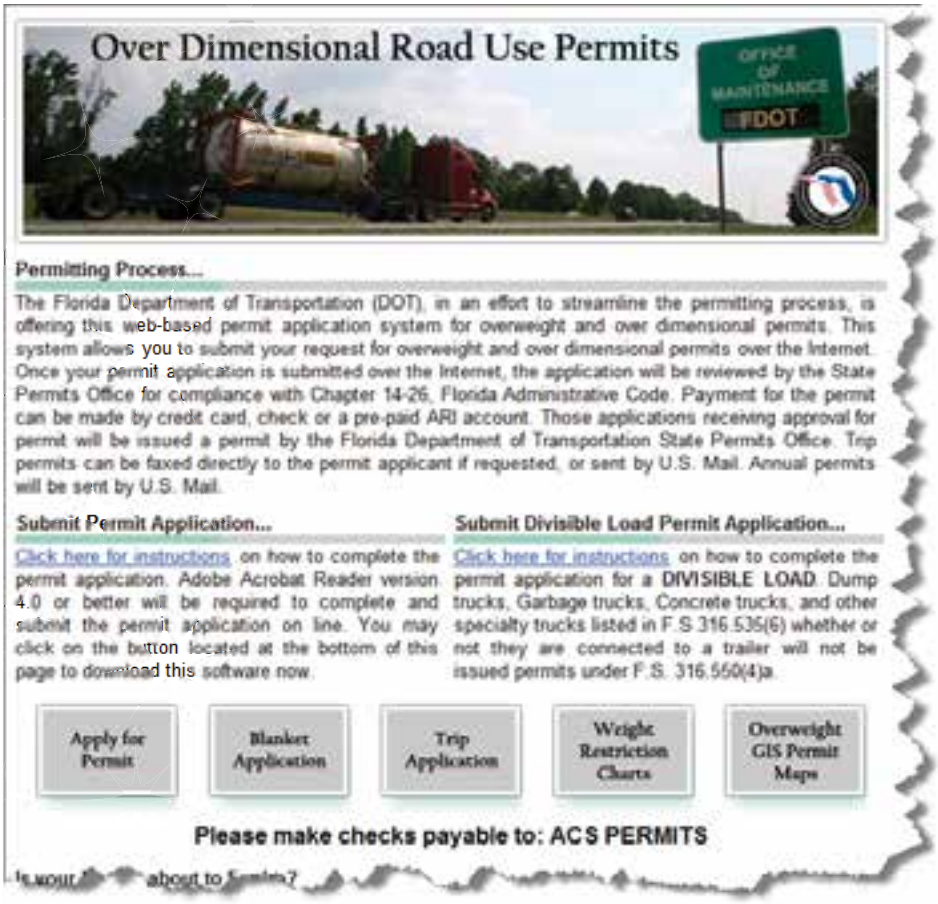
Florida CVISN projects involving LPRs and real-time database checks for violations are proving very beneficial at both FDOT weigh stations and at DACS interdiction sites. The benefits experienced by DACS alone this past year have more than proven their value to the industries and citizens of Florida. The modest investments made with the deployment of LPR technologies and manual entry portals at DACS locations throughout the state have yielded large benefits. Those benefits include the identification and correction of incorrectly entered data for tractors, trailers, and containers that have been listed as stolen or some other major violation. Because the Florida DACS locations were able to 'see' these vehicles through the various CVISN projects, Florida officers were able to stop the vehicles, identify the problems in the state and national criminal databases, and get those problems corrected. This is of tremendous value to the public and the freight industry because this action eliminates any future stops (due to database errors), which cost time and money for the trucking companies; it also allows enforcement officers to focus on their mission. In addition to correcting wrongly coded information in the criminal databases, this system has successfully captured, recovered, and led to the conviction of those responsible for cargo theft, vehicle theft, and other offenses. During this past year, DACS was able to identify 143 'hits' from criminal databases and recover stolen goods valued at approximately $400,000.

IFTA –IRP Audit Workshop Brings Florida CVISN Team to the Forefront

Florida served as the host state for this year's IFTA-IRP Audit Workshop, which brought Florida DHSMV peer agency personnel from states across the nation. The Orlando workshop focused on IFTA and IRP auditing initiatives and procedures and was enhanced by Florida CVISN team demonstrations. These demonstrations served to educate attendees on the latest technologies in use to support the auditing procedures and to improve roadway safety. FDOT Office of Motor Carrier Compliance, DACS, the Florida Trucking Association, CVISN trucking industry members, and the DHSMV provided briefings and demonstrations to CVISN team member. Workshop attendees were briefed on electronic

on-board recorders and their utility to the industry, the key elements examined during a roadside inspection, and a demonstration of the vehicle and cargo inspection system technology truck.

This collaborative effort by the Florida CVISN team was well coordinated and professionally executed. Not only did the workshop attendees learn a great deal and express their gratitude, the president and chief executive officer of IRP, Inc. personally expressed her thanks to the Florida agencies for the great presentation.



Electronic Permitting Application Overhaul

The FDOT Permitting office has made great strides this year with the oversize/overweight electronic permitting system. In past years, a motor carrier had to fill out the appropriate permit application forms and submit them to the FDOT Permit office. Depending upon the permit requested, FDOT personnel potentially had to enter the motor carrier's data into two separate forms to initiate permit processing. This system required data entry up to three separate times (once by the carrier and twice by state personnel). This was not only time consuming, but it also provided three opportunities for data entry errors.

With the new FDOT permitting system enhanced by CVISN resources, customers can enter their truck configuration, route, etc. online and submit the permit application electronically. Enhancements include a new geographical information system (GIS) routing feature, using a bridge database and no longer requires bridge data to be entered manually. This GIS feature allows the FDOT Permit office to more efficiently map routes. The customer is able to route the vehicle and know if the permit will be approved based on the information provided. This will shorten the turn-around time (averaging about three hours) and, in the future, potentially 85 to 95 percent of permit applications could be completed as quickly as the customer logging in, paying for the permit, and printing it out, reducing the process to obtain certain permits to less than an hour, or sometimes minutes. While there are future enhancements to be made to the permitting process, completion of early phases have yielded large benefits for customers.

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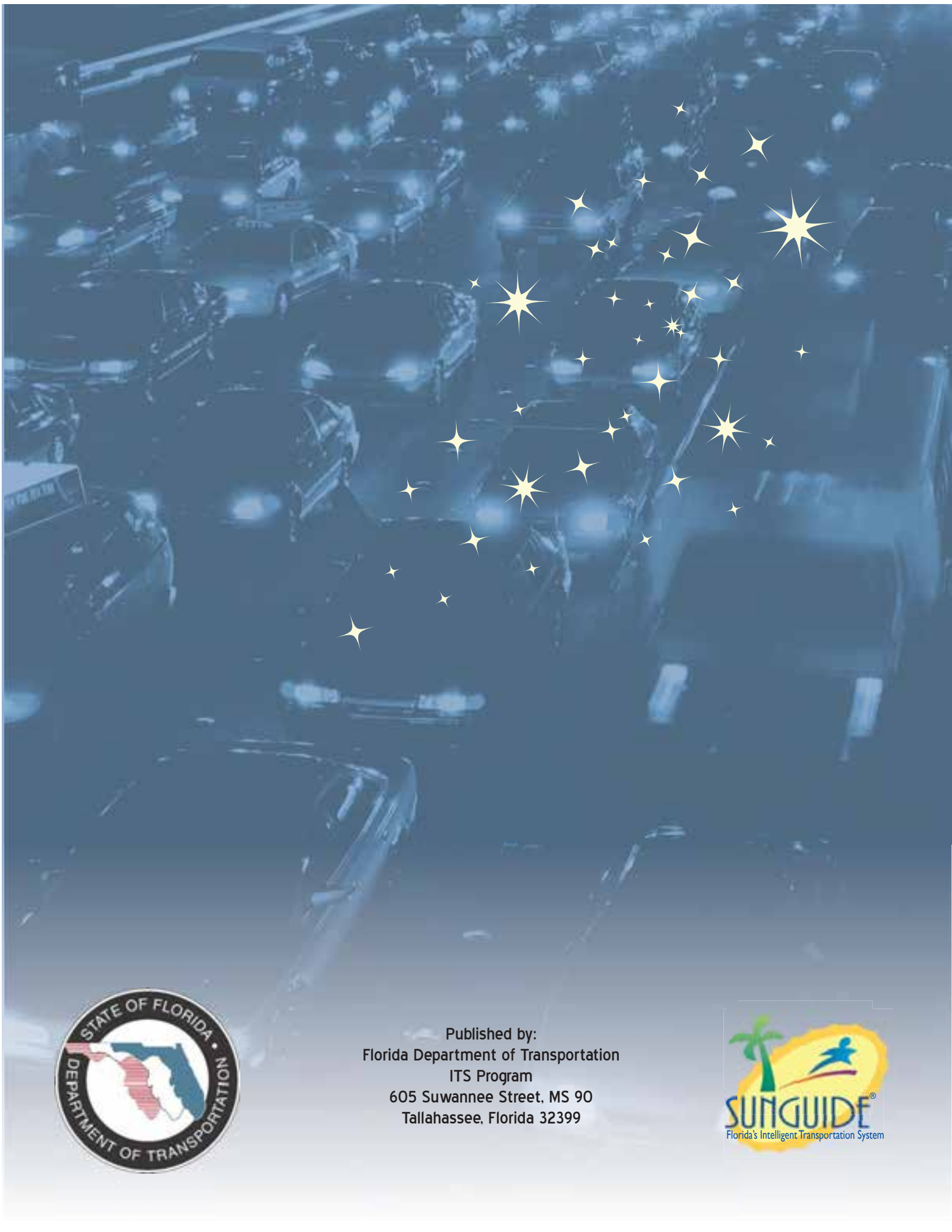

Published by:
Florida Department of Transportation
ITS Program
605 Suwannee Street, MS 90
Tallahassee, Florida 32399