SUNGUIDE®
DISSEMINATOR
Florida Department of Transportation's Traffic Engineering and Operations Newsletter

Miami Drivers Reported Travel Benefits from Using 511, Dynamic Message Signs

By Javier Rodriguez, FDOT District Six

A 2012 statewide survey conducted by the Florida Department of Transportation (FDOT) revealed that in District Six more drivers are familiar with its traveler information and roadside assistance services than ever before. The study sampled 300 frequent drivers of Miami's major highways, including Interstate 95, Florida's Turnpike, and Dolphin Expressway, among others. Drivers reported these tools are helping them avoid traffic congestion and are saving them time and stress on their commute.

The survey revealed that most drivers (92 percent) read the highway's dynamic messages signs at least once per week to get traffic information. A large majority (97 percent) believed these signs provide accurate traffic alerts and 78 percent

Dynamic message signs alert drivers of real-time traffic conditions.

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reported being willing to change their routes based on the information posted. Driver awareness surrounding the 511 traveler information system also increased this year, compared to 2010. As a result, 511 users were more willing to change their traffic routes and 22 percent reported changing their departure times based on the information published by the system.

In addition to these improvements in traveler information, 72 percent of those surveyed reported knowing about the Road Ranger Service Patrol Program. The survey revealed that one in five drivers had been helped by a Road Ranger and, of those assisted, 75 percent believed it is a "very helpful" service.

Drivers' awareness surrounding these services is critical to providing a sound transportation system in this region. Traffic conditions are improved when drivers avoid congested routes or when stalled vehicles are cleared quicker because a Road Ranger was called to assist in a timely manner. This is why FDOT, Florida's Turnpike Enterprise, and Miami-Dade Expressway Authority remain committed to providing these services that are helping reduce highway congestion and increasing safety levels in southeast Florida.

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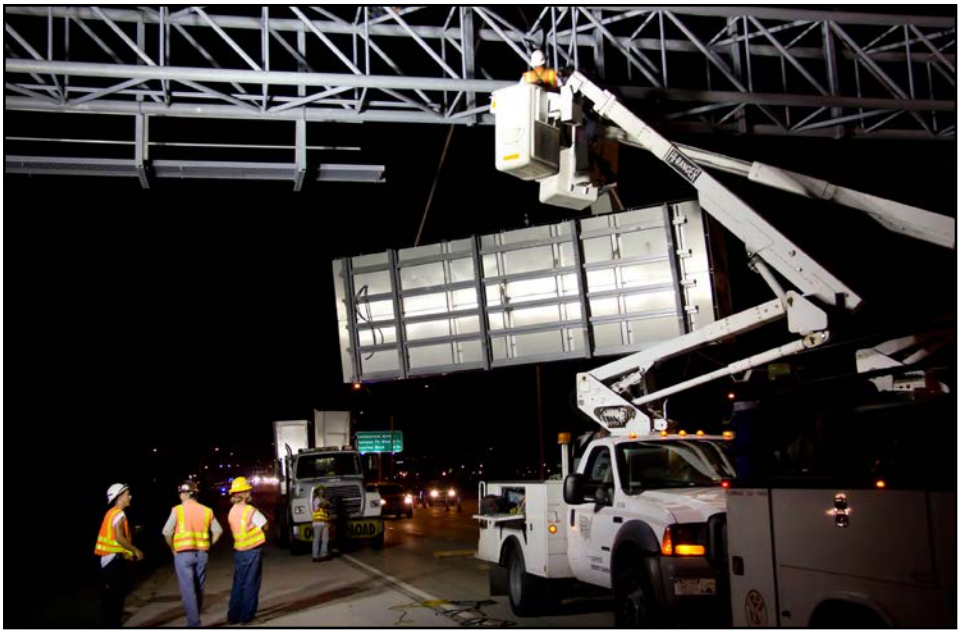
A Brighter Future for District Four Dynamic Message Signs

By Daniel Smith, FDOT District Four

The Florida Department of Transportation (FDOT) District Four Intelligent Transportation Systems (ITS) Program is approaching completion of its dynamic message sign (DMS) replacement project. The $3 million project is replacing 18 DMSs, including 16 on I-95, and one each on I-595 and I-75. These improved signs are connected directly to FDOT's SMART SunGuide® Regional Transportation Management Center (RTMC) in Fort Lauderdale.



Replacing DMSs in District Four.

The previous signs, which were installed over nine years ago, were approaching the end of their useful life and replacement components were not attainable. The new signs include numerous communications network enhancements to improve the sign's dependability, such as color capabilities that will make the signs brighter and more visible to drivers. Improvements also include enhancing the letters in larger and clearer fonts to make the messages more readable.

The DMSs help FDOT provide real-time information about traffic delays, incidents, emergency operations, and construction, allowing drivers to make better-informed travel decisions. During major incidents, the first priority of the RTMC, which operates the signs 24-hours per day, 7-days a week, is to provide drivers with accurate information as quickly as possible.

This replacement project is a result of the District Four ITS Program's vision "to be the best ITS program, by maximizing roadway efficiency, using technology, innovation, and continuous improvement." Construction began in March 2012 and the estimated completion date is early 2013.

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TSM&O Shines During Workshop

By Elizabeth Birriel, FDOT Traffic Engineering and Operations

On December 12, 2012, the Federal Highway Administration (FHWA), consulting firm ICF, and the Florida Department of Transportation (FDOT) partnered to conduct a workshop titled Statewide Opportunities for Integrating Operations, Safety, and Multimodal Planning in Tallahassee, Florida. As the title implies, the workshop's purpose was to bring together staff from across FDOT and its partners to identify opportunities to integrate the three functional areas of operations, safety, and multimodal planning. These three areas are closely linked, as an example, safety enhancements that reduce crashes address nonrecurring congestion, which in turn improves the system's operation. From a different perspective, efforts to improve system operations through better incident management, improves the safety of our roadways by reducing the number of secondary crashes.

A key part of this workshop was capturing District participation through videoconferencing. A brainstorming session, which sought every District's participation, provided several excellent examples of potential integration opportunities.

Short-listing of all ideas suggested provided three key areas for additional consideration. These were creation of multidisciplinary teams; improved data collection, data sharing, and analysis; and further integration of Transportation Systems Management and Operations (TSM&O) within FDOT.

Workshop participants further narrowed these three options to focus the remainder of the workshop on the topic of

TSM&O - Managing and operating for an efficient transportation system.

After providing highlights of the benefits of integrating and identifying opportunities at the statewide and regional level, we reviewed several key national examples found in the FHWA reference manual also titled Statewide Opportunities for integrating Operations, Safety, and Multimodal Planning.

Elizabeth Birriel representing Operations, Joe Santos representing Safety, and Jennifer Fortunas representing Planning presented on key activities in each area. John Moore from District Five and Omar Meitin from District Six also provided excellent presentations on District efforts to integrate operations, safety, and planning.

TSM&O. Several recommendations were discussed to further TSM&O's mainstreaming within FDOT, including expanding both the TSM&O Task Team and the TSM&O Leadership Team to include additional members from other functional areas. As a result of this workshop and other efforts, FDOT will continue ongoing efforts in TSM&O, although significant efforts will also address the data needs identified as well as the need to create multidisciplinary teams to solve other issues impacting FDOT.

For information, please contact Ms. Birriel at (850) 410-5606 or e-mail to Elizabeth.Birriel@dot.state.fl.us.

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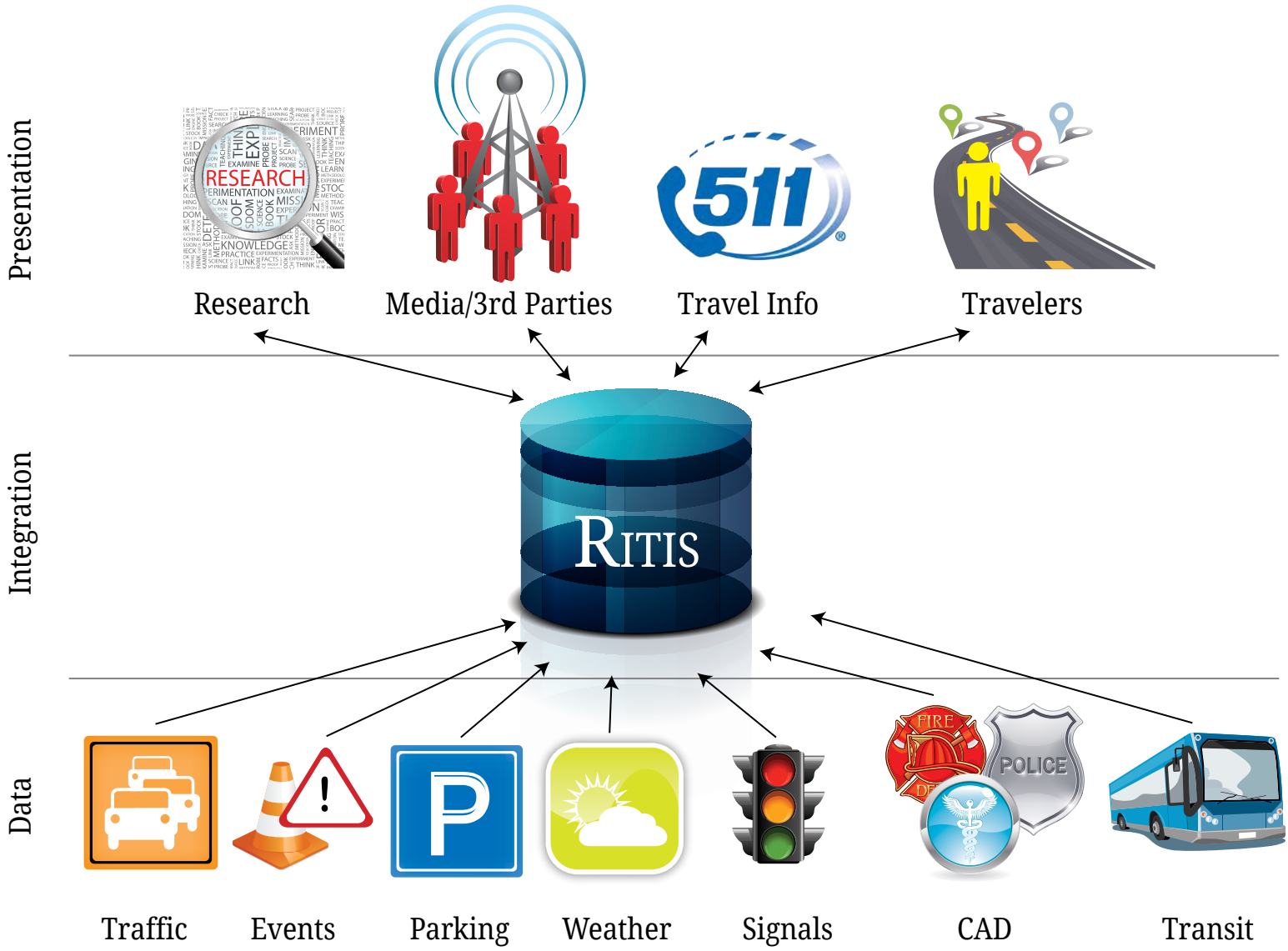
FDOT's New Central Data Warehouse Solution Delivers Value to TMC Operations and Beyond

By Arun Krishnamurth, FDOT Traffic Engineering and Operations

With over 12,000 miles of instrumented roadway and over 3,000 transportation sensors deployed, the Florida Department of Transportation (FDOT) utilizes a wealth of data to help fulfill the mission of traffic operations. The data collected can be used to achieve so much more than live, traffic operations alone, such as:

- The Traffic Engineering and Operations Office can use performance measures and travel time reliability reports to show how well the transportation system is operating and how much it has improved.
- The Planning Office can use the volume data to determine capacity usage and forecast capacity needs.
- The SunGuide® software testing team can use the data as input for testing to ensure the quality of the transportation management software.
- The university teams can perform analysis, conduct simulation, and construct models of traffic flow for research projects to solve new transportation problems.
- Other possible usages include work-zone analysis, congestion modeling, and diversion plan investigation.



RITIS uses standardized data obtained from multiple agencies to provide an enhanced overall view of the transportation network.

The initial challenge is finding a way to make all of this rich data available for these entities and to encourage them to take full advantage of the data. Having a one-stop shop for all traffic data for the state of Florida has always been part of the vision for the Intelligent Transportation Systems (ITS) Program.

In 2003, the University of Florida, under Ken Courage, developed a prototype central data warehouse (CDW), the Statewide Transportation Engineering Warehouse for Archived Regional Data (STEWARD). STEWARD proved the concept to be very useful, as evidenced by the support received from FDOT's Planning Office. As more and more users were becoming dependent upon FDOT's CDW system, the need for a production system with higher reliability was identified and FDOT began its search for a production CDW solution.

In 2012, FDOT contracted with the University of Maryland to host FDOT's data and provide their existing and enhanced tools. The Regional Integrated Transportation Information System (RITIS) has at least three sites establishing redundancy and high reliability. Their fleet of server and storage systems provides the necessary horsepower for delivering performance through a rich graphical user interface (GUI) showcasing impressive visual analytics.

RITIS has all of the standard features that would be expected from a CDW for real-time and archived traffic data. The RITIS GUI facilitates user interaction so intuitive that a separate user manual is unnecessary. RITIS comes equipped with a traffic map with detector and incident locations, heat maps of traffic flow and congestion, incident timelines, and a web query system for archived data. FDOT also had a few unique requirements that were met by enhancements to RITIS. RITIS achieved FDOT's travel time reliability and roadway performance measures by developing new tools specifically for these needs. There is even an application programming interface for FDOT-developed tools to access data and process from within external software.

More and more, FDOT roadways are coming online within RITIS as the current SunGuide software release is being deployed. Soon, the entire state's transportation sensor and incident data will be available from RITIS. All of the performance measures reporting, travel time reliability reporting, volume counts, and other analysis will soon be performed from FDOT's single, production CDW system.

For information, please contact Mr. Krishnamurthy at (850) 410-5615 or e-mail to Arun.Krishnamurthy@dot.state.fl.us.

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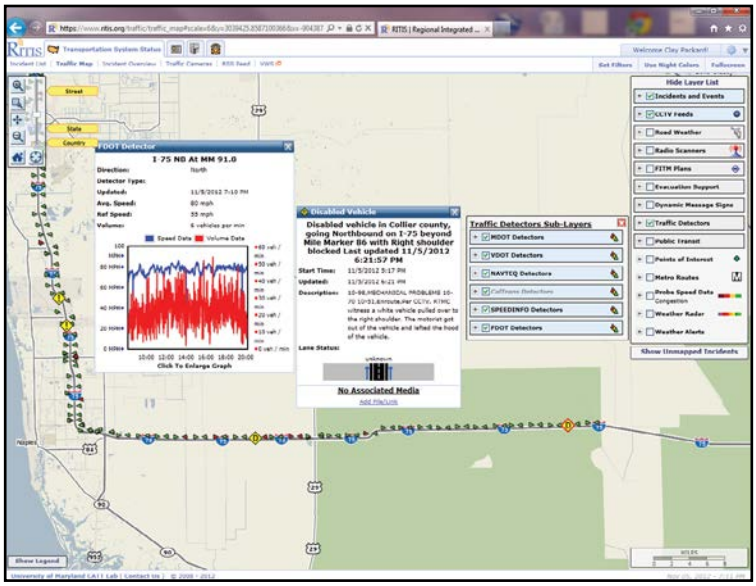
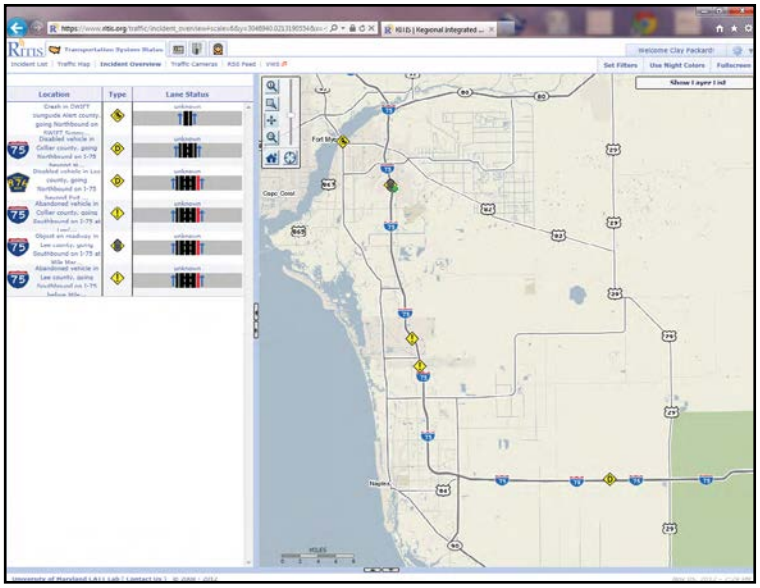
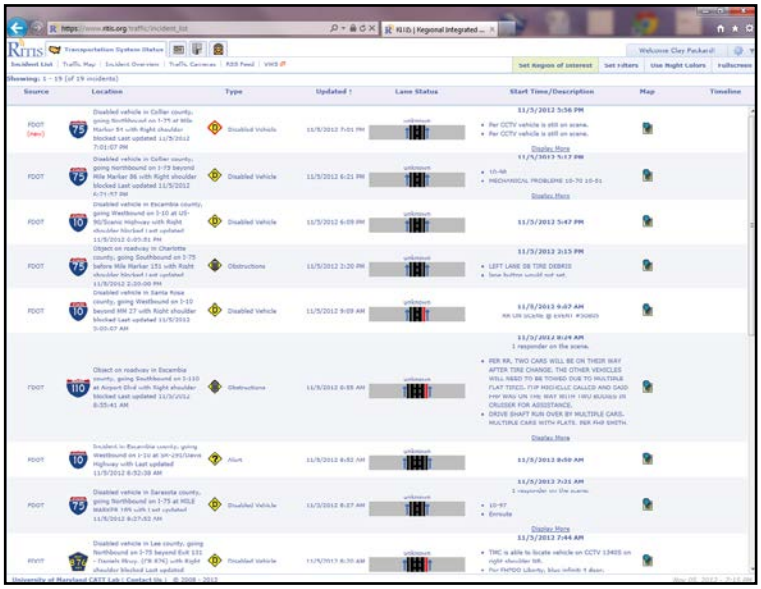


Screenshot of RITIS showing live detector data.



Screenshot of RITIS incident map.



Screenshot of RITIS incident list.

ITS Florida: 2013 Board of Directors

By Sandy Beck, ITS Florida

ITS Florida held its 2013 Board of Directors election through December 19, 2012. Please welcome the 2013 ITS Florida Board!

Past President: Dale W. Cody, PE, PTOE Metric Engineering, Inc.
President: John R. Easterling, IV, PE, PTOE, Florida's Turnpike Enterprise

Vice President: Gregg Letts, PE, AECOM
Secretary: Erika Birosak, TransCore
Treasurer: Sara Calhoun, PE, Gannett Fleming

Director-at-Large:
Dr. Mohammed Hadi, PE, Florida International University
Corey Quinn, PE, Orlando-Orange County Expressway Authority
Carlton Urban, PE, PTOE, Albeck Gerken, Inc.

Returning Directors:
Connie Braithwaite, Econolite
Don Hicks, Kapsch
Adam Moser, PE, Gresham, Smith and Partners

The following ITS Florida Board members are completing their terms, but will remain active.

- Immediate Past President, Jesus Martinez, PE, PTOE, SouthWest Research Institute, will become an active Ex-Officio member of the board.
- Charles Ramdatt, City of Orlando will continue to be an active member.

We thank both Jesus and Charles for their service to the Board including all of the preparation for the ITS World Congress held in Orlando in 2011.

ITS Florida would like to thank those that took the time to submit nominations for the election and those that agreed to run. ITS Florida looks forward to having everyone involved during 2013.

Next year, 2013, will again be an exciting year! The Board Meeting for January will be held at Florida's Turnpike Enterprise Turkey Lake Headquarters on January 15 at 11:00 a.m. The Board Meeting will begin at 1:00 p.m. The meeting will also be available via teleconference. Please register by January 9th for the luncheon by following the link: http://fs16.formsite.com/ITSFlorida/ITS_FL_JAN_Lunch/index.html.

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Editorial Corner: What is Cloud Computing?

By Clay Packard, Atkins

What do you know about the Cloud?

As far back as 1960, a vision existed that stated, "Computing may someday be organized as a public utility…" Massachusetts Institute of Technology professor John McCarthy's vision has made much progress in what we now call cloud computing. As an emerging field, there are many different interpretations and implementations of cloud computing; however, the general concept of cloud computing is not new. Computer hardware and software resources have been provided over the network, or the internet, for many years.

Nowadays, both vendors and users of cloud services are already finding many advantages over the traditional site deployment model for all applications. The Institute of Electrical and Electronics Engineers' chief information officer Alexander Pasik bluntly goes so far as to say, "If a business isn't looking into the cloud, it is spending way more on IT (information technology) than it has to." (Source: the institute: "A View Inside the Cloud," by Ania Monaco, June 2012) Thus said, the Florida Department of Transportation Central Office feels compelled to explore the cloud! This month, we will discuss "What is Cloud Computing?" This will set the stage for the next couple of months where we look at the reliability of the cloud and how it can be applied to intelligent transportation systems (ITS).

Cloud computing has become a prominent buzzword due to several factors that make it much more feasible and desirable to organizations. Increased internet bandwidth, web browser and smartphone market penetration, and virtualization technologies have made the delivery of cloud services more feasible for more applications. Computer and data center assets come with high up-front capital investments and operational and maintenance costs. Exchanging these costs for a flexible – or even liquid – pay-per-use pricing model has reduced cost-of-entry barriers for many organizations. Consolidating the computers and data centers needed by multiple organizations has attracted cloud vendors who can leverage the efficiency afforded by the economy of scale.

Several variations of cloud computing exist as three main service models. They contrast in terms of flexibility and value-added features. A user can have full control over an entire set of computers through the internet or simply use a specific software application as a turn-key solution with minimal flexibility of the computer resources involved.

Infrastructure as a Service (IaaS) provides computers for users to install and configure with maximum flexibility. This is very different than paying someone to house your computer remotely. The service typically allows the user to rent computer resources on demand with no need to make the full capital investment; wait through the purchasing, shipping, and installation process; and find space in the building for the computer. Furthermore, after the increased workload demand is over, the excess resources can be relinquished; unlike full ownership where the computer is sitting idle until repurposed for something else.

Platform as a Service (PaaS) adds a layer of abstraction to the infrastructure being provided by including an environment of pre-configured computer resources. A base set of software tools are installed and available for application engineers to both build and test their application and make their application available for their end users. This is prevalent in the web hosting industry, where a webserver, scripting engine, and a database are bundled as the configuration of a platform. Two such popular web hosting platform bundles include Microsoft's IIS, ASP.NET, and SQL Server software products and the open source community's Apache, PHP, and MySQL software products. The cloud application developer can build, test, and deploy their application with no installation and minimal configuration steps throughout the platform. A push of the button could compile from the source code and copy to the target platform in the cloud with, not only no servers to purchase and build, but no operating system and other platform software to maintain and upgrade.

Software as a Service (SaaS) almost turns the platform into a turn-key solution by providing the user with a hosted software product without concern of the underlying computer resources. The SaaS vendor has technical knowledge application and may include technical support as an additional service. The vendor can price the usage of the software rather than the platform or raw computer resources. This makes it easier to match the value of the SaaS provided to the overall business objective. As an example, automatic data processing provides a self-service portal to an organization's managers and employees for data entry, pay stub retrieval, and reporting. Google's Gmail is another example, whereby end users can have a free email account and advertisers can submit ads for end user's to see. One key advantage of SaaS is that the vendor can specialize in supporting the software for many users more efficiently, rather

than each user being responsible for fully supporting the software (along with all other software products in use at the organization). The vendor can also control the consistency of the software and hardware deployment so that all users can benefit from the enhancement, support, maintenance, and operation of the underlying infrastructure, hardware, and software.

Clearly one of the next steps is to dig into the details of cloud computing and determine what pieces of the cloud could be applied to ITS, or some parts of ITS. The two most important questions are: would a cloud-based ITS deployment sufficiently meet the ITS needs and requirements; and would the cloud-based deployment save on cost. Our ITS community likely has many other questions regarding the cloud and we can look into those as well. Finally, as we uncover more details on the cloud and analyze how to apply them, we'll bring you up to speed over the next couple of months.

For information, please contact Mr. Packard at (850) 410-5613 or e-mail to Clay.Packard@dot.state.fl.us.

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FDOT Traffic Engineering and Operations Mission and Vision Statements

Mission:

Provide leadership and serve as a catalyst in becoming the national leader in mobility.

Vision:

Provide support and expertise in the application of Traffic Engineering principles and practices to improve safety and mobility.

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