



SUNGUIDE® DISSEMINATOR

Florida Department of Transportation's Traffic Engineering and Operations Newsletter

How Reliable is Cloud Computing?

By Clay Packard, Atkins

How well can you trust the Cloud?

Reliability, availability, and serviceability, or RAS, was originally termed by IBM to describe the robustness of their mainframe computers. These terms refer to a system providing correct output, staying operational, and being repairable in a timely fashion. Achieving a system that is highly reliable must take into account all of the system components, how they are connected together, and their dependencies. However, getting into the weeds of reliability engineering is not necessary to understand that to increase the reliability means to increase the cost.



Working in the cloud.

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Currently, most Florida Department of Transportation District SunGuide® software deployments employ several industry standard techniques and practices to increase reliability. Included are:

- Clustering with multiple servers,
- Redundant array of independent disks storage,
- Multiple fiber channels and brocade switches to access the storage area network from each server,
- Extra operator consoles,
- Fiber rings that can tolerate a fiber cut and continue full connectivity, and
- Off-site complete transportation management center (TMC) failover facilities.

These redundant features are typical for regional TMCs, serving them well with sufficient reliability. However, calculating SunGuide software deployment's reliability would be a tedious and somewhat of an academic exercise. What must be considered, however, in deploying a part of the SunGuide software operations into the cloud, are the components that moved to the cloud as well as the network communications links that connect them back to the TMC and the intelligent transportation systems (ITS) network.

The server and storage hardware reliability is one of the key advantages of the cloud. Whether leasing the platform as a service, infrastructure as a service, or hosting the entire cloud privately, the cloud-deployed hardware could use the same, if not better, reliability strategies as the currently deployed SunGuide software server systems in the Districts. Furthermore, the cloud could be shared among multiple TMCs, greatly reducing costs of purchasing multiple data centers for each TMC. For the same amount of funding, having SunGuide software deployed in the cloud could greatly increase reliability over what resources the same amount of funding could get for a local deployment.

The other important component would be the network connectivity between the TMC and the cloud. There are a few options for connecting to the cloud, including one or more of the following: the ITS wide area network (WAN), a dedicated circuit, and the internet. The ITS WAN was designed with an objective of having 99.999 percent (5-9s) availability. Furthermore, there are vendors offering internet connections with 5-9s availability as well. Thus, there are options for highly reliable network connectivity to the cloud, and additional reliability could be achieved by having redundant connections to the cloud.

More TMCs, including those in counties and cities, want to take advantage of the benefits of SunGuide software, depend only on highly reliable hardware, and provide value to motorists through a rich set of ITS devices, software, and 511 traffic information. Cloud computing offers an alternative to housing an expensive, private data center only serving one TMC. A shared cloud infrastructure delivers the same great operational value with excellent reliability at a shared cost, making it possible for smaller TMCs wanting to participate in a rich ITS program to get it in there!

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District Four Advanced Traffic Management Systems

By Melissa Ackert, FDOT District Four

Central Broward County ATMS Project

The deployment of an advanced traffic management system (ATMS) is underway along several arterial roadways in central Broward County. This ATMS project is part of Florida Department of Transportation's (FDOT) District Four Transportation Systems Management and Operations (TSM&O) Program and will be managed from the SMART SunGuide® Regional Transportation Management Center (RTMC). Among the expected benefits are a 30 percent reduction in incident duration and a three percent decrease in crashes.

The \$8.9 million project includes the installation of 22 miles of fiber optic communications infrastructure, closed-circuit television cameras, arterial dynamic message signs (ADMS), microwave vehicle detection systems, travel time system readers, and devices for emergency traffic signal pre-emption and transit signal priority. The arterial intelligent transportation systems (ITS) devices installed through this project will be operated within a new SunGuide software license enabling center-to-center connection of Broward County's ATMS to the Freeway Management System's SunGuide software system. Scheduled completion is the fall of 2013.

RTMC operators will monitor the ITS devices to detect and verify crashes and other congestion-causing incidents, and coordinate emergency response with local law enforcement and fire rescue agencies. The ADMSs will be used to post warnings about delays due to traffic incidents. Travel times and motorist safety messages will also be displayed on the ADMSs. The RTMC operators will also work closely with Broward County Traffic Engineering and Broward County Transit to identify and implement signal timing (in real-time) to benefit all users of the transportation system.

Improvements are being installed in areas of Fort Lauderdale, Oakland Park, Wilton Manors, Lauderdale, Lauderdale Lakes, Sunrise, and Plantation on:

- Oakland Park Boulevard from U.S. 1 to University Drive
- Sunrise Boulevard from U.S. 1 to U.S. 441
- Broward Boulevard from U.S. 1 to University Drive
- U.S. 441/State Road 7 from Broward Boulevard to Commercial Boulevard
- University Drive from Broward Boulevard to Oakland Park Boulevard
- U.S. 1 from Broward Boulevard to Oakland Park Boulevard

A second phase of the ATMS project will expand the improvements to Hallandale Beach and Hollywood along sections of Hallandale Beach Boulevard, Pembroke Road, U.S. 1 and Hollywood Boulevard. Phase Three is planned along sections of SR 7, University Drive, and Griffin Road.

Palm Beach County Living Lab

The Palm Beach County Living Lab is a pilot program under FDOT's District Four TSM&O Program. This pilot project is a stepping stone for active arterial management strategies and procedures. The initiative involves the active management of traffic conditions along three east/west roadways (Okeechobee Boulevard, Belvedere Road, and Southern Boulevard) and three north/south roadways (State Road 7, Military Trail, I-95) – critical corridors in central Palm Beach County.

Operators actively scan approximately 30 miles of the project limits utilizing cameras, vehicle detection devices (BlueTOAD), and ATMS.now software in search of incidents (disabled vehicles, vehicle accidents, malfunctioning traffic signals, etc.) that could potentially disrupt traffic conditions or create a safety hazard. Additionally, various traffic management software tools, such as the Regional Integrated Transportation Information System (known as RITIS), INRIX, and the SunGuide® software



District Four arterial dynamic message sign.

FL511 are utilized to identify incidents on arterial roadways as well as the freeway system, which, when significant, can affect flow on the arterial roadways due to detouring by the traveling public, either through choice or necessity.

Upon detection of a significant event (incident or congestion based), RTMC operators work in conjunction with Palm Beach County traffic engineers and technicians to take the necessary actions to alleviate the problem. Strategies can include signal and ITS maintenance and/or alteration of traffic signal timing plans in response to increasing congestion levels. Continued monitoring provides the necessary congestion information for additional changes to the signal timing plans, including a return to the normal plan when the congestion abates. Coordinated efforts in response to significant events have been documented as avoiding as much as an additional ten minutes worth of delay per driver along a given span of roadway.

Numerous performance measures have been identified as an accurate means of determining the program's success. RTMC Operators generate and develop reports that document traffic conditions along the project limits, such as average travel time, travel time reliability, incident duration and response, lane blockage duration, incident frequency, and delays incurred by travelers due to detected incidents, among others. Efficient as well as inefficient strategies and practices are documented and further developed in the hopes of applying the most effective methods for arterial management throughout District Four. The lessons learned from this initiative will ultimately serve as a foundation for determining acceptable values for these aspects of an arterial network and the standard operating guidelines of active arterial ATMS in District Four and ultimately throughout the state of Florida.

For more information, please contact Melissa Ackert at (954)777-4156 or e-mail to Melissa.Ackert@dot.state.fl.us.

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District Six: District Six Annual Report – Now Available

By *Javier Rodriguez, FDOT District Six*

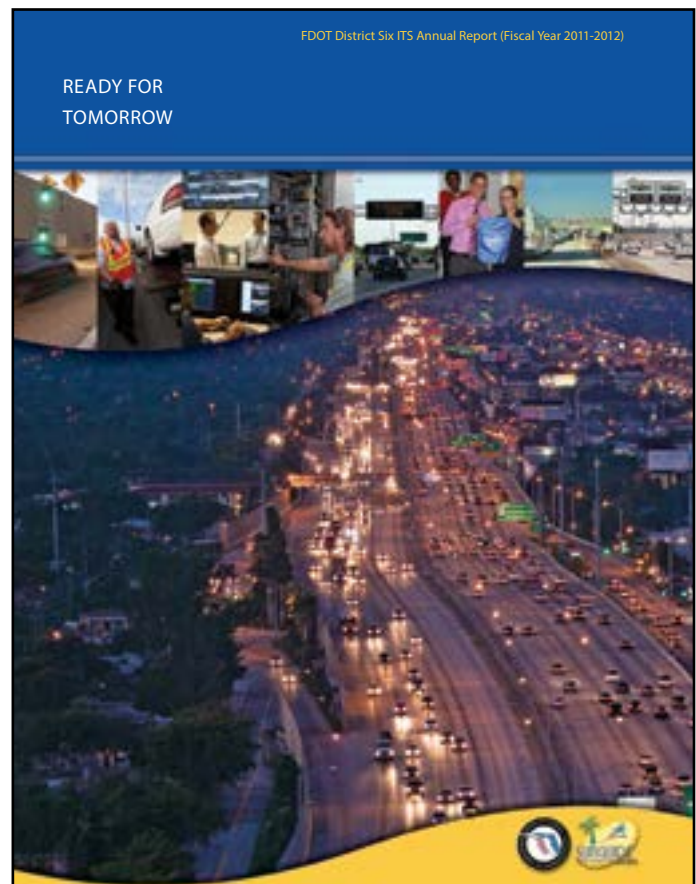
The Florida Department of Transportation District Six Intelligent Transportation Systems Program recently published its annual report; an electronic version is available at http://sunguide.org/sunguide/index.php/tmc_reports.

The report details the milestones completed in fiscal year 2011-2012. Within its pages you can learn about the enhancements made to internal operations and how these helped District Six reduce lane blockage duration times by 2.5 minutes compared to the previous fiscal year. Additionally you can see how this reduction resulted in \$1.7 billion in cost savings to area drivers and how this improvement yielded a benefit to cost ratio to \$36.05 for every dollar invested in the program - it's highest to date!

The report also mentions the improvements made to traveler information, incident management, and communications efforts completed during the fiscal year. It details the services planned to support the expansion of 95 Express Phase 2 and other innovative efforts as the district prepares to meet the growing demands of tomorrow.

For information, please contact Mr. Rodriguez at (305) 407-5341 or e-mail to Javier.Rodriguez2@dot.state.fl.us.

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*FDOT District Six ITS Annual Report
Fiscal Year 2011-2012*



ITS Florida: Annual President's Message

By John R. Easterling, IV, P.E., PTOE

First off, I would like to thank the members of the Intelligent Transportation Society of Florida (ITS Florida) for entrusting in me the role of President for 2013. Additionally, I want to express gratitude to those members who have been involved in this past year's activities, including the support towards Transpo2012™, the summer's Technology Forum in Orlando, the ITS Florida Annual Workshop, and the Anne Brewer Scholarship Program.

Year 2013 promises to be a year for the intelligent transportation systems (ITS) industry to shine. Our industry's successes will come from delivering ITS-based solutions towards a broader group of customers, linking solutions across multiple agencies with the private sector and to the general public. Florida has invested heavily in ITS infrastructure over the past two decades. In doing so, the Florida public has shown confidence in this industry's ability to produce, resulting in a wealth of real-time information being collected and archived for actively monitoring and managing our transportation systems. It is, however, necessary to integrate the state's various Transportation Systems Management & Operations (TSM&O) programs into the primary role of enabling Florida's transportation agencies to meet the travel demands of the future, and in ways that accomplish our main goals of safety, mobility, and economic competitiveness.

Supporting Florida's approaches is the Federal Highway Administration's Moving Ahead for Progress in the 21st Century, or MAP-21, which places higher importance on measuring the impact from transportation investments, ensuring that expenditures produce system reliability, congestion reduction, better freight movement, and highway safety. The upcoming year includes many visible results of this industry's mobility contributions, such as substantial completion of projects like I-595 Express, Port of Miami Tunnel, I-4 Crosstown Connector, and SunRail, as well as new emphasis on development efforts towards multiple express lane projects in much needed corridors, connected vehicle research, and the Florida Department of Transportation's active arterial management program. The transportation industry must continue to evolve to be a service-oriented culture, where we spend dollars in a way to maximize outcomes and ensure customers are provided with reliable transportation choices.

I mention all the above in order to reinforce how important ITS Florida's mission is to supporting our great state's position of economic vitality and quality of life. Does it not make sense to capitalize upon the strength in numbers and expand the power of this organization? We need each and every one of you to become more involved in supporting ITS Florida's mission tenets. How so, you ask? Here are a few easy ways:

- Join an ITS Florida committee if you have not already done so, and become involved. Ask how that committee could better meet its goals for 2013.
- Find at least one company or public agency that you do business with and ask that they join ITS Florida to support our industry's goals.
- Become better educated and engaged in the issues that impact this industry, and give your input by one of the many avenues available through ITS Florida's web site, or any of our partner associations, such as Floridians for Better Transportation, Institute of Transportation Engineers, Transportation & Expressway Authority Membership of Florida, or Florida Transportation Builders Association.

joinUp SIGN Up

As President, my primary goals will be to expand our membership base and to promote collaboration amongst our membership, which should enable ITS Florida to give greater support to the issues that are important to you. The ITS Florida web site, which was recently reformatted and re-hosted, will shortly provide new tools, like the Technical Forum, to engage members interactively. The new features, once launched, will allow us to communicate more than in the past and help us mobilize as a membership to support idea exchange. This forum will provide perpetual access for members to training materials, event information, technical idea exchange, and other items of interest. There are many challenges ahead; with constrained public sector budgets and competing programs, we only succeed when we work together as a collaborative team.

In closing, I look forward to another year where we can grow and innovate together. It will only happen if you get involved in our organization. If you have any ideas or comments on how to make ITS Florida more effective, you can always email me at John.Easterling@dot.state.fl.us or any of our officers.
Let's make this a productive 2013!

For more information on ITS Florida, please check the ITS Florida web site at www.itsflorida.org or contact Sandy Beck, Chapter Administrator at itsflorida@itsflorida.org.

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Editorial Corner: Florida 511 Bowl Outreach Initiative

By Gene Glotzbach, FDOT Traffic Engineering and Operations

College football bowl season in Florida is like nowhere else. In addition to being home to some of the best football programs, fans, and world-class attractions, several college bowl games are hosted within Florida each year. The 2012-2013 bowl season was distinct because Florida hosted the Bowl Championship Series (BCS) National Championship game as well, bringing the total number of bowl games in Florida to seven.



Florida 511 football bowl coverage.

To ensure a safe transportation system during the bowl season, the Florida Department of Transportation (FDOT) partnered with colleges, alumni associations, and the bowl games themselves to inform bowl guests about Florida 511. In all, nearly 70 organizations from 15 schools and seven bowl games were contacted and provided customized Florida 511 toolkits.

The customized Florida 511 toolkits continued traditional outreach methods, such as news releases and video public service announcements. However, this year social marketing outreach was expanded with customized Facebook and Twitter messages to meet the demand of colleges and bowl-game organizers. "Florida Citrus Sports wants the most enjoyable experience possible for Russell Athletic Bowl and Capital One

Bowl guests,” said Shannon Clark, Chief Customer Officer, FCSports. “Providing 511 information through our web sites and social media outlets allows fans traveling to our bowl games to avoid any incidents on the roadways and arrive on time for the game-day festivities; helping to make their experience the best it can be.” Partners took advantage of Florida 511 resources in ways that worked best for them:

- Six of seven bowl games included Florida 511 information on their web sites
- Russell Athletic Bowl and Capital One Bowl included Florida 511 video public service announcement on their web sites
- Dynamic message signs around Sun Life Stadium notified motorists of potential congestion in the days prior to the BCS National Championship game
- Thirteen of 15 schools utilized the Florida 511 toolkits to inform their students, faculty, alumni, and fans about 511
- Eight colleges tweeted or retweeted Florida 511 information

An unexpected benefit was third parties redistributing Florida 511 information to their audiences. For example, Bill Roth, the long-time lead announcer for the Virginia Tech Hokies football team, tweeted “Heading to the @RussellAthBowl? Get free traffic updates by calling 511 or @fl511_central. Wish we had that in '94 in Starke! #stuckon301.”

Roth’s tweet underscores the power of social media today. Facebook and Twitter popularity exploded over the past half-decade, in part because they are quick and easy methods to inform a large, captive audience. Twitter was the most effective method to inform audiences about Florida 511 during the bowl outreach with more than 450,000 followers reached through tweets and retweets. All platforms enjoyed usage growth during the bowl season:

- **158 percent** increase in calls from area codes of out-of-state colleges in bowl games
- **40 percent** increase in new users of the mobile app (compared to first 20 days of December)
- **8 percent** increase in web visits (compared to first 20 days of December)
- **7 percent** increase in FL511 Twitter followers (all 12 feeds)



Checking Florida 511 information.

Just as the bowl season in Florida was successful, so was FDOT’s bowl outreach. We made many new partnerships, rekindled old relationships, and leveraged the power of social networking to reach almost half a million people. However, most importantly, people moved safely throughout the state as they traveled to the games and back home again.

For information, please contact Mr. Glotzbach at (850) 410-5616 or e-mail to Gene.Glotzbach@dot.state.fl.us.

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Announcements

New Faces in the Central Office ITS Program

We are pleased to announce the appointment of **Mr. Matthew DeWitt** to the position of Traffic Control Device Specialist at the Traffic Engineering Research Laboratory. Matthew has nine years of applied experience in Traffic Operations working as a Traffic Control Tech II for the Polk County Board of County Commissioners. Throughout his career, Matthew’s responsibilities included data collection for traffic calming, intersection improvements, and



traffic control devices as well as maintenance of signal equipment, roadway signs, and pavement markings. He is FDOT-Maintenance of Traffic-certified and certified for International Municipal Signal Association signs and markings level III.

Join us in also welcoming **Ms. Aelon Suskey** to the ITS Program (ITS general consultant). Aelon will work as an ITS Administrative Specialist, supporting program management and project assistance. Aelon formerly worked at the Leadership Development Institute, Eckerd College, for the marketing team and financial management.

District Changes

Finally, join us in congratulating **Mr. Lee Smith** and **Mr. Jeremy Dilmore** on their appointments as District ITS Engineers in Districts Three and Five, respectively.

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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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