

Florida Department of Transportation, District 4 [USA]



Improving traffic safety, congestion and mobility by using state-of-the-art technology

The Florida Department of Transportation, District 4 (FDOT 4) SMART SunGuide Transportation Management Center (TMC) is responsible for the operations and management of Intelligent Transportation Systems (ITS) for the Florida Interstate Highway System in the Fort Lauderdale area, USA. The FDOT 4 TMC is the communication hub for traffic information along I-95, I-595 and I-75 in the District covering five counties.

The Transportation Management Center operates 7 days per week, 24 hours per day. TMC operators coordinate with the Road Rangers, Florida Highway Patrol, and other TMC partners including the FDOT District 6, Florida's Turnpike Enterprise, and the Southeast Florida 511 Advanced Traveler information System (ATIS), to determine incident and congestion locations. Using the camera images displayed on the Barco display wall, the operators continually monitor conditions on the highways. The information collected is then used for a better response and management of incidents and to disseminate appropriate messages to travelers using Dynamic Message Signs, the 511 system, and traveler information websites.

Proactive approach

The control center provides proactive districtwide traffic incident management. With the assistance of the Barco display wall, the operators can anticipate on future problems, needs, or changes. This is primarily achieved by monitoring the images from the closed-circuit television cameras (CCTV) system displayed on the wall in the control center and direct communications with the Road Ranger Service Patrol to anticipate and prevent incidents from occurring or where necessary, to quickly clear them.

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Whether by turning a camera or obtaining information through direct coordination and communication with the Road Ranger Service Patrol, Florida Highway Patrol (FHP), the Roadwatchers, or media, TMC Operators are always monitoring the changes along the roadway in order to detect incidents. When an incident occurs, the camera image is enlarged, and can be placed on any desired location to be viewed by all operators in the control center. With Barco's APOLLO wall management software, the operators can very quickly display and manipulate CCTV cameras, graphical

images and other data from different sensor systems on the display wall simultaneously to fully understand the complete situation and decide on the best course of action to resolve it. Once all the information from various different sources regarding the incident is verified, the details of the event are entered into the SunGuide database system. These details are analyzed to determine the degree of disruption on the roadway and the potential impact on traffic – the motorist - so that response plans can be initiated and communicated to all stakeholders; all in a matter of moments. Of key importance, the current analyzed state of the traffic system is then communicated to the users of the highway system (the motorists) utilizing multiple media such as the Dynamic Message Signs (DMS) placed along the highway itself, via FDOT 4's website, through Advanced Traffic Information Service (ATIS) providers, and to the media.

This allows motorists to plan their travel before hitting the road. By providing warning messages on the Dynamic Message Signs, drivers are alerted when approaching a crash or disabled vehicle. These warnings give motorists the opportunity to divert as well as forewarn of unanticipated back-ups helping to reduce secondary accidents. TMC Operators also work in conjunction with other districts as well as jurisdictions. During events with a regional impact, neighboring centers such as District 6 SunGuide TMC, Palm Beach County Interim Traffic Management System (ITMS), and Florida's Turnpike Enterprise are contacted to affect a coordinated regional response. One of the key tools to achieve this is provided by Barco's visualization system and display wall with its universal decoder that allows the various video signals from other districts to be viewed at FDOT 4's TMC.





Over the years, the FDOT has established itself as a leader in the ITS arena. The SMART SunGuide TMC has adopted a vision that will continue to support the FDOT as a leader by building on previous successes. The vision of FDOT District 4 is for the SMART SunGuide TMC to “become the best transportation management center in the United States by 2010,” their mission is to continuously provide outstanding ITS products and service to their internal and external customers.

With these advanced visualization tools, FDOT 4’s new TMC can detect incidents early to enable shorter response times by emergency agencies that lessens the amount of time drivers sit in traffic.

TMC background

During the mid-1990s, the Florida Department of Transportation (FDOT) commenced a program to deploy a freeway management system within Southeast Florida. These systems include Dynamic Message Signs (DMS), Closed Circuit Television (CCTV) cameras, vehicle detectors and fiber optic communications to manage traffic incidents and congestion more efficiently. Over 1000 miles of roadways are managed by the 5 traffic management facilities in Florida. During the late-1990s, FDOT developed a master plan for a new Transportation Management Center (TMC) to monitor and control the Intelligent Transportation System (ITS)

Mr. Steven Corbin, District ITS Operations Manager:

With Barco’s advanced visualization tools, the FDOT 4 TMC can detect incidents early to enable shorter response times by emergency agencies. “

infrastructure being deployed in the field. The SMART SunGuide TMC in Broward was conceived as a facility that would enable the primary transportation partners to manage the surface transportation system from a common facility. These partners include FDOT District 4 ITS Staff to monitor and control the freeway management system; Broward County Traffic Engineering Division (BCTED) to manage the computerized traffic control system; Florida Highway Patrol (FHP) in taking a lead role in incident management; and Broward County Transit (BCT) to monitor and control its transit bus, rail, automated people mover, and water bus systems.

The SMART SunGuide TMC was designed and built during a 4-year period, 2000–2004. The SMART SunGuide TMC officially moved in to begin full operation on September 20, 2004. At that time, the TMC included twelve operator consoles to be shared by FDOT, BCTED, BCT and FHP staff; a large Barco display wall; conference, media and training rooms; computer/communications room; and general office space to accommodate multi-agency staff. The display wall consisted of 9 DLP 67” projection cubes in a 3 x 3 matrix. Because of the growing number of cameras deployed throughout District 4, and consequently because of the increased complexity of

By doing it "The SMART Way" (System Management for Advanced Roadway Technologies), the TMC programs will make significant contributions in incident, traffic and emergency management while improving traffic safety, congestion and mobility.



inputs to be monitored, in 2005, it was decided to expand the curved display wall to an 11 x 3 matrix. Again, Barco was chosen to provide the 67" DLP projection cubes with SXGA resolution, 2 graphical controllers, 29 streaming video cards and Barco's wall management software. The project was completed in May 2006. Barco was chosen after a lot of research and visits to events and other traffic management centers all over the world. There were several reasons for the SMART SunGuide TMC's choice. Since the installation of the 3x3 video wall, it worked exactly as the TMC had

expected. Because operators need the video wall constantly, a lamp failure in the projector can have serious consequences. The dual redundant lamp system allows the TMC to rely 100% on its video wall, thus saving on 24/7 maintenance costs. Barco's high quality products turned out to be very reliable, and there was a good balance of quality and costs in the new project. Also, Barco was able to train the staff and offers good customer service. Barco's graphical controller supports an integrated universal decoder that is capable of decoding digital video streams from multiple manufacturers

and across multiple standards. This not only reduces the cost of hardware (manufacturer specific decoders) but also enables cross jurisdiction co-operation in sharing video signals to enhance the response plan for a county or even state-wide events. In addition, Barco also offers the highest capacity decoding in the market. The display wall can visualize 116 video streams simultaneously and has further room to expand. Moreover, with Barco's integrated universal decoder solution, FDOT 4 has a complete end to end digital solution. This means that the digital video streams from the various CCTV cameras deployed along the highways need not be re-converted to analog at the TMC before it is viewed on the display wall as is the case with more traditional solutions. This saves space and money (by removing the external decoders), as well as maintains the best picture quality while minimizing processing delays (critical in CCTV camera pan-tilt and zoom operations).

The Road Rangers

The SMART SunGuide TMC and the Road Ranger Service Patrol work together to keep the highways open. The video wall empowers the operators to oversee all CCTV spotting incidents and dispatching service patrol vehicles to accidents, road debris, and disabled motorists. Road Rangers communicate incident details back to the TMC. The information is used to notify the proper authorities and for posting messages on the Dynamic Message Signs.

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