

SUNGUIDE® DISSEMINATOR

Florida Department of Transportation's Traffic Engineering and Operations Newsletter

I-95 Corridor Coalition Vehicle Probe Project Expands Coverage and Tools Available to FDOT and Partners

By Rick Schuman, INRIX

In 2008, the I-95 Corridor Coalition and its member agencies initiated the Vehicle Probe Project (VPP). The project's objective is to develop and maintain a corridor-wide traffic monitoring system to deliver travel times and speeds on freeways and arterials. Based on global positioning system (GPS) probe technology, this system aids member agencies in monitoring and managing their transportation networks, providing accurate traffic information to their users and assessing network performance.



In a little more than three years, ten states, including Florida, are now receiving and using real-time data to power their 511 systems, provide travel times statewide, and

comply with the forthcoming interstate traffic monitoring requirements of the new federal regulation 23 CFR 511 (termed Real-Time System Management Information Program [RTSMIP] by the Federal Highway Administration). This is the result of a multi-state collaborative effort among the Coalition and its members, the University of Maryland, and INRIX. Currently, Coalition member state contributions now fund more than 70 percent of the total project, with each of the ten active states funding a minimum of 50 percent of the project.

Member agencies have found numerous uses for the data beyond the original purpose of traffic monitoring and travel information, including the use of archive data for performance measures. And, this list of uses keeps growing! Several agencies are using the probe data for their 511, web, and phone services. Other agencies are using the data to calculate and post travel times on changeable message

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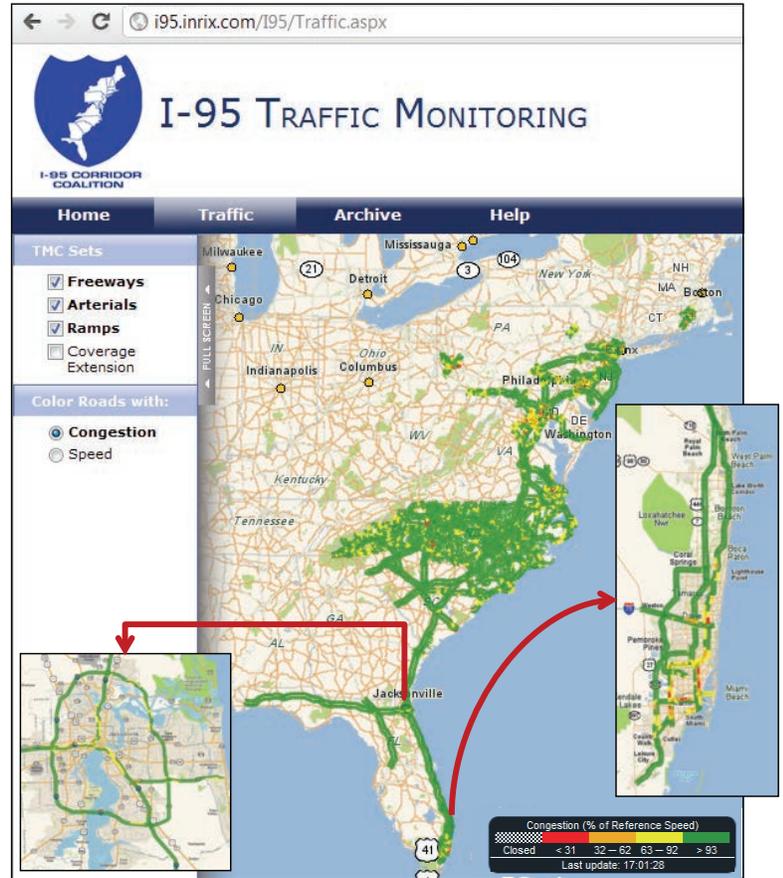
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signs. I-95 Corridor Coalition member agencies use the project-monitoring site to observe traffic patterns within their boundaries and across state lines to anticipate the impact of recurring and non-recurring congestion due to incidents. VPP data is also being used as input to the Coalition's long-distance trip planner web site, www.i95travelinfo.net, as well as displays at welcome centers and regional malls to enhance traveler information. Performance measures and travel time reliability, particularly in congestion prone areas, are being calculated using real-time and archived VPP data. The VPP Suite, a new Coalition product, is a set of state-of-the-art data visualization and analytic tools that uses VPP data as an input (for an overview of the VPP Suite, go to <http://vpp.ritis.org/suite/screencast/>). The suite provides the ability to quickly calculate and graphically display system performance measures. In addition to state department of transportation applications, several metropolitan planning organizations (MPO) – including those in Washington, DC, Philadelphia, Baltimore, Wilmington (DE), and Richmond – are utilizing VPP data and the VPP Suite to support their congestion management and long range planning programs.

Current project coverage is more than 20,000 centerline miles, including over 7,000 freeway miles (over 1,200 freeway miles in Florida). The network (right) includes full coverage of freeways and major arterials in North Carolina and the Tidewater region of Virginia, full or nearly full coverage of limited-access roads in New Jersey, Maryland, and South Carolina and the northern and eastern portions of Florida. In addition, coverage now includes ramps at 160 major highway-to-highway interchanges, including 18 in Florida (six in Duval, four in Broward, and eight in Miami-Dade Counties).

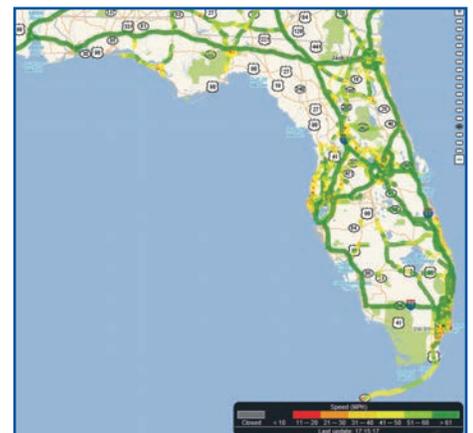


The ongoing VPP validation program has set the standard for quality control for outsourced traffic data. This comprehensive validation program, conducted by the University of Maryland using portable Bluetooth® readers, was initiated in 2008 and continues to monitor data quality on a monthly basis. Various types of facilities have been analyzed, under a wide variety of operating conditions, including light to severe congestion, holidays, snowstorms, overnight work zones, all seasons, daytime and nighttime, weekdays and weekends. Through June 2011, data were collected on an almost monthly basis at 30 test sites in seven states, producing a total of nearly 35,000 hours of data across more than 650 miles. On average, VPP data is accurate on freeways to 2 miles per hour (MPH), including under 5 MPH in all-important congested conditions (right). Contract payment is linked to satisfaction of the specifications and validation results. To date, the data have fully satisfied the contract specifications. All methods used, data and analysis, are made available to the transportation community for review at the Coalition's VPP web site.

Speed Range	Absolute Speed Error	Hours of Data
Requirement	< 10 mph	
<45 MPH	4.4	2,185
>45 MPH	1.9	30,981
All Speeds	2.0	33,166

VPP in Florida

The Florida Department of Transportation (DOT) has been an active participant in the VPP since a Request for Proposal development in 2007, with Gene Glotzbach serving on the member agency team guiding the project. In spring 2010, FDOT officially joined the project by signing the project's Data Use Agreement and contracting for more than 500 miles of I-10 and I-75, principally to fill in coverage gaps in support of FL-511, Florida's advanced traveler information system.



Currently, over 1,200 miles of limited-access roads in Florida, including the entire I-95 corridor, are integrated into the SunGuide® software, Florida's advance traffic management software, and are available for analysis using the VPP Suite, and used in FL 511 services. The initial validation tests in Florida are planned for late 2011, with results likely to be available in early 2012.

Through the VPP monitoring site, (<http://i95.inrix.com>), over 6,000 centerline miles of roads are available for detailed viewing by any FDOT employee or contractor; the additional 4,800 miles not contractually included in the VPP are donated by INRIX, including freeways (and interchanges where covered), state highways, and major arterials in several cities (right). The site automatically refreshes every minute and provides a seamless look at real-time traffic flows across FDOT's Districts and even into Georgia and Alabama, providing the same detailed data integrated into the project's data feed on a mouse click. An account to monitor the site can be set up at <http://i95.inrix.com> or VPP Suite account can be set up at <http://www.ritis.org>. Additionally, if you are from an agency other than FDOT and are interested in VPP data for real-time or planning applications, Gene Glotzbach can provide the steps to join the coalition and the project.

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

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Florida's ITS World Congress Weigh Station and 3-D Image Inspection Tour

By Richard B. Easley, E-Squared Engineering

The Florida Department of Transportation (FDOT), in partnership with the Florida Department of Agriculture and Consumer Services (DACs) and the Florida Highway Patrol Office of Motor Carrier Compliance (FHP OMCC) Division hosted two tours of the ultra-modern I-4 weigh station during the 18th World Congress of Intelligent Transport Systems, held in Orlando, Florida. The World Congress had many tours, but the weigh station tour was so popular that a second tour was scheduled to keep pace with the demand. Two international tour groups took 60-mile chartered bus trips out to the I-4 Plant City Weigh Station.



The US92 Virtual Weigh Site shown is an approximate location. It is strategically located to identify and/or cite those vehicles that are avoiding the I-4 weigh station.

World Congress attendees were introduced to several commercial vehicle technologies, both mobile and fixed, that are deployed at the weigh station to increase the safety of commercial vehicles and identify those carriers that are operating illegally on Florida's roadways. The technologies examined included the state-of-the-art 3-dimensional (3-D) imaging system, vehicle and cargo inspection system (VACIS), license plate readers, US DOT motor carrier number readers, brake testing technology, weigh-in-motion technology, radio frequency identification (RFID), electronic screening systems, and virtual weigh site technologies.

3-D Imaging System

3-D imaging is used to measure the height, width, and length of each commercial vehicle as it travels along the sorting ramp to determine if the truck is operating within the legal size limits required by Florida statutes. If a truck is measured and is not within these requirements, it is directed to enter the weigh station and produce the oversize/overdimensional permit or is fined and a permit can then be purchased. Attendees were able to see just how accurate and useful this technology can be.

License Plate Readers

License plate readers are used to capture a digital image of the license plate on each truck. This digital image is converted to alpha numeric characters and checked against various state and federal databases to check for 'out of service' violations, stolen equipment, Amber alerts, etc. This technology has been used to recover stolen equipment on numerous occasions, and is also very helpful in identifying and correcting database information that is no longer current – e.g., a recovered vehicle that is placed back in operation may still be identified as stolen in the federal database. Attendees were able to see this technology in action.

US DOT Motor Carrier Number Readers

Interstate motor carriers are required by law to display their company's unique motor carrier identification number on the side of the trucks (tractors) operating under the company's name. Unfortunately, some trucking companies operating in Florida are doing so with delinquent fines owed to the state. The total dollar value of these fines approaches \$7 million. The US DOT number readers are proving to be a very valuable tool in identifying those carriers and allowing

corrective action to be taken by law enforcement.

On the day of the World Congress tour, the US DOT number reader identified a motor carrier that owed Florida \$11,000 in fines. That truck was detained at the weigh station. The owner of the trucking company was contacted and informed that the truck would not be released until all fines were paid. The DOT numbers are also used to identify those carriers that have been placed 'out of service' (but continue to operate illegally) either within Florida or in other jurisdictions. The tour participants were able to see firsthand just how effective ITS commercial vehicle operations (CVO) technologies can be in identifying noncompliant carriers in Florida.



Electronic Screening RFID Technology and Weigh-In-Motion

Attendees were introduced to the PrePass® program which allows trucks to be identified (using RFID) on the I-4 mainlanes and electronically conducts various safety checks. Trucks are then notified via red light or green light on the PrePass transponder in the truck whether they can bypass the weigh station or need to pull in for weight, inspection, or paperwork checks. Trucks also drive over electronic weighing technology embedded in the roadway (weigh-in-motion [WIM]) to determine if the truck is operating overweight or within legal parameters. If overweight, the truck is instructed via message signs to pull into the weigh station and stop on the static scales.

Brake Testing Technology and VACIS

Two demonstrations in the weigh station tour were the performance-based brake testing (PBBT) technology machine and the VACIS machine. The PBBT demonstration included very instructive and thorough 'live' brake inspections on trucks to identify the fitness of their braking systems. Likewise, the DACS officers conducted live cargo inspections on trucks and allowed the attendees to enter the VACIS-equipped truck and view the screens to understand what the officers look for when conducting these quick, but in-depth, cargo and tractor inspections.

Virtual Weigh Site Technology

Upon returning from the tour at the weigh station, the attendees were taken along US 92, a weigh station bypass route, to see the virtual weigh site (VWS) technology in operation. This consists of license plate readers, closed-circuit television cameras, weigh-in-motion technology, and communications which transmit images of trucks, their license plate numbers, and their weights to the weigh station on I-4. For those overweight trucks attempting to bypass the weigh station by taking the US 92 'scenic route,' the VWS information is ultimately transmitted to the laptop in the roadside enforcement vehicle, which can stop overweight vehicles and issue fines if the vehicle does not have the proper permit.

A Successful Tour

Interviews with a sampling of tour attendees revealed that many wanted to see the state-of-the-art technologies in action and identify which technologies could best fit their needs back in their home countries and states. Included in those interviewed were members of the Singapore Defense Department Transportation Logistics Division. While they quickly saw the regulatory benefits of the ITS CVO technologies, they were also able to see freight management and operations applications. All attendees interviewed felt that the tour was very beneficial and were grateful to FDOT, DACS, and the FHP OMCC personnel that hosted the visit. While many were involved in making this tour a success, both Craig Wilson and Charlie Wallace served in leadership roles in the organizing process.

For information, please contact Paul Clark at (850) 410-5606 or email to Paul.Clark@dot.state.fl.us or Richard Easley at REasley@e-squared.org.



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Projectors Expand District Four Video Wall at a Fraction of the Price

By Sarah Stanley, FDOT District Four

For years, the video wall has been the centerpiece of the Florida Department of Transportation's (FDOT) District Four Transportation Management Center (TMC) control room. Manufactured by Barco, it is 3 cubes tall by 11 cubes wide and displays a number of cameras from both FDOT and Broward County's Transportation Engineering Department.

Now that the Broward TMC has expanded beyond just monitoring Broward County, management started to consider how to better use space on the video wall. As an outcome of brainstorming, the management identified available wall space that could be used to post additional operations data for operators, such as speed data, weather conditions, and web site status. Video walls do not come cheaply though, so retrofitting the control room for additional Barco cubes was not an option.

The solution? Using off-the-shelf projectors mounted to the ceiling of the control room to project images along empty wall space. The cost of the projectors was a fraction of the cost compared to a traditional video wall. Projectors allow the same level of customization as a video wall, are easy to maintain, and don't take up any additional space in the room.



District Four has a total of ten projectors in operation. Eight are dedicated to displaying speed data for I-95 and I-75; one displays the local weather radar; and one displays the SMART SunGuide web site. "RTMC operators, supervisors, managers and even anyone walking by the control room can see, at a glance, the entire speed profile of the full length of I-95 and I-75 within District Four. This has become a very valuable and cost-effective tool to provide a big picture view of the entire freeway network," said Daniel Smith, FDOT District Four ITS Operations Manager.

For information, please contact Daniel Smith at (954) 847-2785 or email to Daniel.Smith@dot.state.fl.us.

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ITS Florida: Annual Award Recipients

By *Sandy Beck, ITS Florida*

ITS Florida presented its Annual Awards on October 18th in the 18th World Congress Exhibit Hall. ITS Florida honored the following well-deserving individuals and projects.

ITS Florida President's Award for 2010

The ITS Florida President's Award is ITS Florida's highest award and is not always given out. This award recognizes superior career achievements in ITS and extraordinary contributions to ITS Florida.

This award went to **Charlie Wallace**, the co-founder and one of ITS Florida's longest active members. He is unselfishly dedicated to ITS Florida and intelligent transportation systems (ITS). Charlie is a Past President of ITS Florida and in May 2005, as the current ITS Florida President, accepted the ITS America Best of ITS award for Outstanding State Chapter. Charlie has provided training sessions to our members; has chaired task forces when asked; serves as the liaison to Floridians for Better Transportation, Florida's Transportation Builders Association, and ITS America and the State Chapters Council. He has been involved with the organization and coordination of the biennial TRANSPO conferences since the beginning. He has been a guiding hand to board members, officers, and numerous presidents in complying with Chapter Bylaws, providing best practices, and providing the benefit of his experience and intelligence when dealing with numerous challenges that this organization has faced.



ITS Professional of the Year Award

Awarded to **Dr. Mohammed Hadi**, the ITS Professional of the Year Award recognizes a person who has contributed significantly to the ITS community and to the ITS mission/goals of ITS Florida.

Over the past seven years, Dr. Mohammed Hadi created an ITS Program at Florida International University (FIU) that supports the Florida Department of Transportation (FDOT) Districts Four and Six by training and supplying students in an ITS Lab created by Dr. Hadi. He also led the development of various ITS planning and operations tools for FDOT Central Office for statewide use. These tools allow the assessment and selection of ITS strategies and technologies for planning and operation applications. Dr. Hadi provided cost benefit performance measures that have been very valuable in the growth of the District Four ITS program.



ITS Florida Champion Award

This award went to **Jim LaBatt** as an individual who has made significant contributions to advance the cause of ITS in Florida. Jim worked closely with FDOT Districts and Central Office to improve the quality of ITS, including valuable input for statewide specifications, testing field devices at the FDOT Transportation Engineering Research Laboratory in its early stages, and promoting the creation of equal standards for products. Over his years of involvement in ITS in Florida, he has provided support to ITS in both local and statewide efforts.

ITS Florida Organizational Member of the Year Award

The ITS Florida Organizational Member of the Year Award recognizes an ITS program, project, or other accomplishment that is of significant benefit to the transportation industry and the traveling public. The **FDOT Central Office ITS Program** received this award for its commitment to supporting the connected vehicle on-road demonstrations during the 18th World Congress on Intelligent Transport Systems. The ITS Program planned, designed, and enabled the connected vehicle effort through coordination with the United States Department of Transportation (USDOT) team and local agencies.

The overall program included funding, procurement and installation of equipment and software on several fronts. The enhancements included software modifications to SunGuide® to incorporate new connected vehicle communications and applications, deployment of vehicle to roadside communications units, procurement and allocation of vehicle awareness devices to provide probe data within the system. FDOT also worked hand-in-hand with ITS World Congress demonstrators to incorporate and facilitate new technology demonstrations and worked with USDOT to establish a fully functional test bed within the Orlando area that will stay long after the World Congress is completed.

This effort was comprised of four key individuals:

- **Elizabeth Birriel**, FDOT Central Office ITS Program;
- **Arun Krishnamurthy**, FDOT Central Office ITS Program;
- **Rick Morrow**, FDOT District Five Traffic Operations; and
- **Mike Smith**, FDOT District Five ITS.

ITS Florida Certificates of Outstanding Achievement

ITS Florida recognizes one or more individuals or organizations for their outstanding service and/or achievements each year. This year two Certificates of Outstanding Achievement were awarded:

- **District Six** (accepted by **Rory Santana**) for development and support of public information efforts, which increased the ITS program's profile in the industry on a national scale and improved relations with the local community.
- **District Four** (accepted by **Dong Chen**) created a first-of-its-kind training program for transport professionals. The Transportation Management Academy trains current transportation management center operators on traffic engineering and incident management principles, empowering them to manage events with the utmost confidence in their decisions.

ITS Florida Special Recognition

ITS Florida acknowledged **Carlton Urban**, Albeck Gerken, for his outstanding work on behalf of ITS Florida. In the past three years, difficult economic times negatively impacted ITS Florida's membership, like many other professional organizations. As part of an on-going concerted effort, ITS Florida has been working diligently to recruit new members by demonstrating and explaining the benefits of being a member of this organization. Carlton took on the challenge of spreading the word and seeking out companies. In the past year, ITS Florida's membership grew by 12.5 percent.

Congratulations to all of our winners!



Editorial Corner: Statewide Effort by Florida—Job Well Done!

Orlando Hosts Premier International ITS Event

By Gene Glotzbach, *FDOT Traffic Engineering and Operations*

The Florida Department of Transportation (FDOT) participated in a premier event — the 18th World Congress on Intelligent Transport System, held in Orlando on October 16-20. If you missed it, the next World Congress is in Vienna, Austria, on October 22-26, 2012. Make your plans now.

The World Congress is an annual international meeting and exhibition that rotates among three major geographic regions (Americas, Europe, and Asia Pacific). This event is held in the United States once every three years, with Florida hosting the 3rd World Congress 15 years ago and this year the 18th World Congress. The theme for the recently completed World Congress was very timely, “Keeping the Economy Moving.”



Representatives from the international community presented information on intelligent transportation systems (ITS) from around the globe during technical sessions. They also provided information on what is coming up in the near future with the next generation vehicles and mobility environments. With over 300 technical sessions, a participant could not take in all the presentations, as there were just too many good presentations. In addition to the technical sessions and workshops, there were two Plenary Sessions. Plenary I, ITS Strategies: Spurring Economic Growth Through High-Tech Transportation Solutions,

featured political leaders providing their visions of what public agencies can do to deploy ITS to improve performance of existing transportation infrastructure and to promote economic growth. Ananth Prasad, FDOT Secretary, moderated this panel of international political leaders.

Plenary II, Ingredients for Implementing ITS Policies to Keep the Economy Moving, featured private sector leaders providing their visions of what new technologies are on the horizon that will revolutionize transportation and what governments can do to encourage the private sector to get involved in deploying ITS.

The World Congress would not be complete without an assortment of special events, ancillary events, and technical tours. These events and tours provide the opportunity to network with other ITS professionals and to learn about how others in the industry have addressed issues with which you might be struggling. The tours provide an opportunity to see how Florida has integrated ITS into the overall deployment of transportation facilities.



FDOT participated in the World Congress exhibition and Technology Showcase. The exhibit hall booth included a live mini transportation management center (TMC) linked by the District Five fiber optic directly to their TMC; a statewide information kiosk showing ITS videos from around the state; and the FL-511 information center, highlighting Florida's 511 traveler information system.

The Technology Showcase provided live demonstrations to show how ITS technology comes to life in real-time to improve the transportation experience of those using our transportation systems. There were four villages within the Technology Showcase—the Safety Village, Environmental Village, Pricing Village, and Mobility Village. FDOT participated in the Mobility Village, demonstrating connected vehicle features and operational benefits of the SunGuide® software connected vehicle-related enhancements. As part of this showcase, FDOT deployed 26 roadside equipment (RSE) units in an area around the Orange County Convention Center. These RSE units interfaced with demonstrators' onboard equipment (OBE) and connected to the FDOT District Five SunGuide® advanced transportation management system production software through the District's fiber optic network.

Over the past year, FDOT enhanced the SunGuide® software, Florida's statewide advanced transportation management software, enabling it to communicate with RSE units installed on 25 miles of Interstate 4, International Drive, and John Young Parkway. FDOT demonstrated how information is collected from 42 specially equipped vehicles provided by Lynx, I-Ride Trolley, and various FDOT and demonstrator vehicles. These vehicles operated on the test bed route to provide basic safety messages to the SunGuide® software via RSE units, and they received traveler advisory messages back from the SunGuide® software. The RSE units communicate with vehicles through a two-way radio with a global positioning system.

FDOT distinguished itself with its efforts in making this World Congress a huge success. FDOT's support and commitment helped pull the multitude of puzzle pieces together to create an excellent conference and, in the long term, a vision of the future of transportation in the State of Florida. To those who were volunteers, speakers, moderators, or who helped man the exhibits; those who worked to design and deploy equipment to support FDOT's connected vehicle demonstration; and those who helped plan the World Congress, congratulations—you did a great job.

For information, please contact Gene Glotzbach at (850) 410-5606 or email to Gene.Glotzbach@dot.state.fl.us.



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Announcements

Florida's Aging Road User Strategic Safety Plan Now Available

Florida's Safe Mobility for Life Coalition recently completed and released their comprehensive *Aging Road User Strategic Safety Plan*. This plan includes goals, objectives, and strategies covering ten different emphasis areas to assist in reducing crashes involving our 65-year and older population.

This strategic safety plan provides a blueprint for state, regional, and local agencies and organizations that are committed to improving the safety, access, and mobility of Florida's aging population with the added benefit of helping residents of all ages.

The plan can be viewed at http://www.SafeandMobileSeniors.org/FloridaCoalition.htm#Strategic_Plan.

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