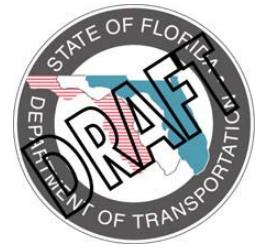
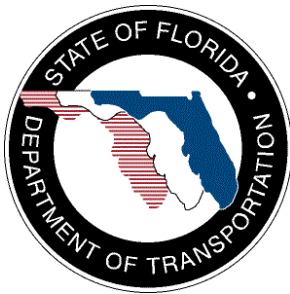


Final Report



The 2005 Update of Florida's Intelligent Transportation System Strategic Plan

**May 12, 2005
Version 1.2**



Prepared for:

Florida Department of Transportation
Traffic Engineering and Operations Office
Intelligent Transportation Systems (ITS) Section
605 Suwannee Street, M.S. 90
Tallahassee, Florida 32399-0450
(850) 410-5600



Document Control Panel		
File Name:	<i>The 2005 Update of Florida's Intelligent Transportation System Strategic Plan</i>	
File Location:	W:\ITS Program\ITS GC\TWO25-StrategicPlanUpdate\Updated Strategic Plan\050408 TWO25 Final Report Finl V1.doc	
Deliverable Number:		
Version Number:	1.2	
	Name	Date
Created By:	Dave Hodges, PBS&J	October 4, 2004
Reviewed By:	Paul Watson, PBS&J	October 21, 2004
	Tahira Faquir, PBS&J	October 21, 2004
	Tahira Faquir, PBS&J	November 4, 2004
	Gene Glotzbach, FDOT	April 5, 2005
Modified By:	Dave Hodges, PBS&J	October 28, 2004
	Dave Hodges, PBS&J	November 8, 2004
	Pamela L. Hoke, PBS&J	November 15, 2004
	Dave Hodges, PBS&J	November 23, 2004
	Pamela L. Hoke, PBS&J	January 6, 2005
	Dave Hodges, PBS&J	April 8, 2005
Completed By:	Pamela L. Hoke, PBS&J	May 12, 2005



Table of Contents

List of Tables	iii
List of Acronyms	iv
Executive Summary	vi
1. Introduction	1
1.1 Meeting a Challenge	2
1.2 The Financial Picture	3
1.3 Florida and Intelligent Transportation Systems	5
2. Florida's Intelligent Transportation Systems Program Vision ...	6
2.1 Primary Intelligent Transportation System Goals	7
2.2 Vision and Mission	7
3. Initial Actions Appraisal	15
4. Strategic Planning Guidelines for the Intelligent Transportation Systems Program	20
5. Business Plan for the Intelligent Transportation Systems Program	22



6.	Ongoing Intelligent Transportation System Activities and Projects	24
6.1	Short-Term Priorities for the Intelligent Transportation Systems Program	255
6.1.1	Intelligent Transportation System Deployments	25
6.1.2	Commercial Vehicle Operations and Electronic Toll Collection	25
6.1.3	Telecommunications	27
6.1.4	The Future of the Intelligent Transportation Systems Program Architecture, Standards, Software, Research, Training & Modeling	28
7.	Final Recommendations – Core Strategies	299
7.1	Long-Term Strategies for Future ITS Strategic Plan Updates	333

List of Tables

Table 7.1 – Core Strategies for the Update of Florida's Intelligent Transportation System Strategic Plan.....	29
---	----

List of Appendices

Appendix A – The Updated *Business Plan* for Florida's Intelligent Transportation Systems Program

Appendix B – Updated *Technical Memoranda* that Support the 2005 Update of Florida's Intelligent Transportation System Strategic Plan:

- Technical Memorandum No. 1 – Initial Actions Appraisal*
- Technical Memorandum No. 2 – Updated ITS Program Mission, Vision, Goals, and Objectives*
- Technical Memorandum No. 3 – New National and Statewide ITS Initiatives*
- Technical Memorandum No. 4.1 – New Strategies for Rural ITS Applications*
- Technical Memorandum No. 5 – Updated Recommended Core Strategies*



List of Acronyms

AASHTO	American Association of State Highway and Transportation Officials
APL	Approved Product List
APTS	Advanced Public Transportation System
ATIS	Advanced Traveler Information System
AVL	Automated Vehicle Location
AVME	Automated Vehicle Monitoring and Enforcement
AVSS	Automated Vehicle Safety Systems
C2C	Center-to-Center
CAD	Computer-Aided Dispatch
CFP	Cost Feasible Plan
CFR	Code of Federal Regulations
CMB	Change Management Board
CORSIM	Corridor Simulation
CTD	Commission for the Transportation Disadvantaged
CUTR	Center for Urban Transportation Research
CVHAS	Cooperative Vehicle Highway Automation System
CVIEW	Commercial Vehicle Information Exchange Window
CVISN	Commercial Vehicle Information Systems and Networks
CVO	Commercial Vehicle Operations
DEM	Division of Emergency Management
DHSMV	Department of Highway Safety and Motor Vehicles
DOT	Department of Transportation
ERN	Everglades Radio Network
ETC	Electronic Toll Collection
FDACS	Florida Department of Agriculture and Consumer Services
FDCA	Florida Department of Community Affairs
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FIHS	Florida Intrastate Highway System
FSDRC	Florida State Rural Development Council
FSRDC	Florida State Research and Development Council
FSU	Florida State University
FTC	Florida Transportation Commission
FTE	Florida's Turnpike Enterprise
FTP	Florida Transportation Plan
HAR	Highway Advisory Radio
HAZMAT	Hazardous Material
HEADS-UP	Hurricane Evacuation Analysis Decision Support Utility Program



HELP	Heavy Vehicle Electronic License Plate
I-75	Interstate 75
IDAS	ITS Deployment Analysis System
ITN	Invitation to Negotiate
ITS	Intelligent Transportation System
LOS	Level of Service
LPR	License Plate Reader
MCCO	Motor Carrier Compliance Office
MPO	Metropolitan Planning Organization
NITSA	National ITS Architecture
O&M	Operations and Maintenance
PCB	Professional Capacity Building
PTO	FDOT Public Transportation Office
QA	Quality Assurance
R&D	Research and Development
RAPTS	CUTR Resource for Advanced Public Transportation Systems
RFP	Request for Proposals
RITE	Research, Integration, Training, and Education
RITSA	Regional ITS Architecture
ROO	Regional Operating Organization
RTMC	Regional Transportation Management Center
RWIS	Road Weather Information System
SITSA	Statewide ITS Architecture
SPO	FDOT Systems Planning Office
SSEP	Standards, Specifications, and Estimates Processor
SUL	Special-Use Lane
TEOO	Traffic Engineering and Operations Office
TMC	Transportation Management Center
TRIP	The Road Information Program
TSP	Traffic Signal Priority
TTI	Texas Transportation Institute
TTMS	Telemetered Traffic Monitoring Station
UAV	Unmanned Aerial Vehicle
USDOT	United States Department of Transportation
VII	Vehicle-Infrastructure Integration
VMT	Vehicle-Miles Traveled
WIM	Weigh-in-Motion



Executive Summary

Since its inception in July 2000, the Florida Department of Transportation (FDOT) Intelligent Transportation Systems (ITS) Section has utilized *Florida's Intelligent Transportation Systems Strategic Plan* (hereinafter, the *ITS Strategic Plan*)¹ as the guide for planning, programming, and implementing integrated, multimodal ITS services throughout the state. The primary purpose of the *ITS Strategic Plan*, which the FDOT adopted in 1999, was to present a 20-year vision for ITS in Florida and to recommend strategies to achieve this vision. The four main ITS goals in the *ITS Strategic Plan* are consistent with the mission and goals of the FDOT's *2020 Florida Transportation Plan (FTP)*.² These four goals are:

- Safe transportation for residents, visitors, and commerce;
- Protection of the public's investment in transportation;
- A statewide, interconnected transportation system that enhances Florida's economic competitiveness; and
- Travel choices to ensure mobility, sustain the quality of the environment, preserve community values, and reduce energy consumption.

Though these goals and the FDOT's overarching vision for ITS have not changed in recent years, the recommended strategies for accomplishing them have. In addition, the United States Department of Transportation (USDOT) and ITS America^{TM3} have published the *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision* (hereinafter the *National ITS Program Plan*).⁴ The update of *Florida's ITS Strategic Plan* mirrors the *National ITS Program Plan*, and recommends strategies to implement new national initiatives that are consistent with those of the FDOT.

This update includes an analysis of the FDOT's ITS Program and District achievements with respect to the original objectives and initial actions recommended in the first *ITS Strategic Plan*. In addition, there is an assessment of the new national and state ITS policies, programs, and technologies – especially those that have bearing on the elements of this update and would help Florida fulfill the state's ITS mission. These subjects are explored in a series of issue papers that summarize the research and weigh the feasibility of implementing these efforts under the ITS Program during the next three years.

¹ PB Farradyne, *Florida's Intelligent Transportation System Strategic Plan – Final Report* (August 1999). Available online at http://www.dot.state.fl.us/trafficoperations/its/its_default.htm.

² Florida Department of Transportation, *2020 Florida Transportation Plan* (December 2000). Available online at <http://www.dot.state.fl.us/planning/policy/default.htm>.

³ ITS America is a trademark of the Intelligent Transportation Society of America.

⁴ Intelligent Transportation Society of America, *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision* (January 2002). Available online at <http://www.itsa.org/research.html>.



Intelligent Transportation System Advances

Meeting the state's current and future transportation needs remains one of the most challenging tasks Florida faces. Together, the advancement of ITS technologies and systems, their successful application to transportation problems, and the experience gained from various deployments represent a critical component of transportation system management. Intelligent transportation systems are proving their value in traffic monitoring, traveler information, commercial vehicle operations (CVO), incident management, and communications. Intelligent transportation systems are also making it possible to apply new technological tools and concepts in the day-to-day task of providing transportation services, while supporting local, state, and national efficiency and safety objectives for the benefit of system users.

The FDOT's accomplishments in recent years have proven that an integrated transportation system – managed and operated more efficiently using ITS – enhances the overall quality of life in Florida by making travel safer, promoting economic growth, and safeguarding environmental resources. ITS supports community and regional providers seeking to operate fiscally viable and sustainable transportation networks. Through cooperation among these providers, the establishment of various partnerships, and working within the existing infrastructure to apply ITS principles, the providers are achieving integrated transportation systems that are better able to meet the demands placed upon them.

Summary of Recommendations

The following summarizes the recommendations presented in this update of *Florida's ITS Strategic Plan*.⁵ Recommendations include:

Evaluation of the ITS Program's 1999 ITS Strategic Plan – The business plan contained in *Section 6* of the original *ITS Strategic Plan* identified 31 Initial Actions for the FDOT to implement to achieve the ITS vision and goals. These Initial Actions recommended core strategies to guide the planning and deployment of the initial ITS statewide system, and to recommend a plan for the ITS Program's operational structure and processes. The ITS Program has completed 14 of the 31 Initial Actions originally recommended. Another five have been partially addressed and six are ongoing. Only six Initial Actions have not been completed. *Section 3* of this document provides more details on this review, which Initial Actions are in progress, and the areas that are pending or being addressed through other means.

⁵ Refer to the ITS General Consultant's project Web site to review all supporting update documentation. Information is available online at http://floridait.com/Strategic_Plan.htm.



Update of Vision, Mission, and Goals – Florida's ITS mission and vision encompass the guiding principles of the national ITS program – safety, efficiency, and mobility – while still ensuring that local and regional ITS needs are considered. However, there are still two important aspects of the *National ITS Program Plan* that should be major focus areas for Florida's ITS Program: security and integration. The revised ITS mission and vision need to be further refined to capture the key initiatives and full foundation of the *National ITS Program Plan* in the areas of security and interoperability. Because of this federal commitment to expand ITS capabilities specifically for homeland security purposes and to ensure ITS interoperability, these two goals are recommended for addition to Florida's ITS Program.

Issue Papers on New National and Statewide ITS Initiatives – *Technical Memorandum No. 3* explores 11 new subject areas and the potential for applying ITS resources and technologies to address them as new initiatives. Each area produced recommendations that were documented in a series of technical memoranda, and the recommendations are provided in the following paragraphs. (Refer to *Appendix B, Technical Memorandum No. 3*, to review the documentation developed in support of these recommendations.)

- *Homeland Security* – Subject to available funding, it is highly recommended that the FDOT adopt a four-phase action plan, as detailed in the *Regional Transportation Management Center (RTMC) Security White Paper*,⁶ but expanded to include a broader range of topics. This will enhance the FDOT's level of preparedness in the event of a homeland security emergency. In addition, lessons learned from *iFlorida* should form a basis for the further development of the FDOT's approach to homeland security in the coming three years, with ITS services and technologies providing a vital element in Florida's effort to meet these critical safety and security objectives.
- *Regional Operating Organizations (ROOs)* – Regional operating organizations offer the advantage of a wider framework for the management and operation of ITS in a region. The FDOT should develop a statewide policy statement calling for the establishment of such interjurisdictional and multimodal partnerships within a region; prepare guidance for establishing ROOs; and coordinate with the Districts to identify the FDOT's own role in defining ROO boundaries for statewide consistency. Incentives are needed to encourage the agencies responsible for transportation system management and performance to work in a cooperative, integrated manner.

⁶ Jasper, Keith (PBS&J), *White Paper: Regional Transportation Management Center (RTMC) Security, Version 3* (June 2003). FDOT Contract No. C-7772.



- *ITS Research and Development (R&D) Program* – Transportation-related R&D is not new to Florida; there are nine active ITS research projects contracted through the FDOT Research Center, totaling more than \$1.76 million.⁷ The ITS Program should devise specific goals and objectives for this activity, and formally establish a focused R&D program across multiple functional areas. The ITS Florida Advisory Council should work to identify ITS R&D needs, then join the FDOT's TEOO to pursue other sources of R&D funding, particularly federal earmarks, joint proposals with other states, and collaborations with the private sector and state universities.
- *ITS Professional Capacity Building (PCB) Program* – The TEOO should lead the effort to broaden continuing professional development, taking guidance from the ITS Florida PCB Committee on implementing a professional training program based on a formal assessment of the appropriate courses for each ITS professional level. Other needs include program funding, course marketing, training logistics, course content, and encouraging the involvement of ITS PCB agency partners. This effort would be the springboard for the development, coordination, and management of a statewide ITS training and education program that fulfills the specific needs of Florida's ITS professionals.
- *Vehicle Probe Studies* – Since 2002, the FDOT has conducted a significant amount of research on utilizing in-vehicle transponders and license plate readers (LPRs) as the foundation for a probe-oriented data collection system. To move beyond the research stage, the FDOT will find it necessary to prepare a concept plan for the development and use of travel-time data collection systems in Florida. The FDOT must decide which facilities travel-time data will be collected for, the density of coverage, and the required data quality parameters, as well as ensure that the data collected is properly computed, stored, shared, and used.
- *Mainstreaming Advanced Public Transportation Systems (APTS) into the ITS Program* – The ITS Program should develop and conduct, through the FDOT Public Transportation Office (PTO) and each District PTO representative, a statewide survey to clearly define statewide APTS needs and priorities. From this, the Department should prioritize the projects identified in the anticipated cost feasible plan (CFP) for nonlimited access systems. The FDOT has already begun efforts to increase awareness of services offered by the Resource for Advanced Public Transportation Systems (RAPTS) Program, and is enhancing RAPTS' planning and project management services with technical engineering expertise provided by the ITS Section.⁸

⁷ More information on the FDOT's active and completed research projects is available online at <http://www.dot.state.fl.us/research-center>.

⁸ The RAPTS Program was established by the Center for Urban Transportation Research (CUTR) under contract to the FDOT's Public Transit Office. More information regarding the RAPTS Program is available online at <http://www.rapts.cutr.usf.edu>.



Also, the FDOT's Central Office PTO staff should complete the identification of signalized intersections that are eligible for traffic signal priority (TSP); review this work thoroughly with District ITS engineers to seek concurrence and program funding; and use this effort to establish a continuous working relationship between the respective District ITS engineers and PTO managers. In addition, the ITS Program should assist with the acquisition of engineering services for the RAPTS Program through an agreement with the FDOT's PTO managers. Types of ITS deployments where engineering support may be provided include computer-aided dispatch (CAD) systems; radio and communication networks; TSP systems; fare and payment systems; and security and surveillance systems.

- *Information Privacy Policy* – Intelligent transportation system projects that demonstrate a respect for travelers' privacy will build confidence and add to the consumer appeal of ITS services. The FDOT should develop a strategic ITS information privacy plan and standards. This strategic plan should specifically address ITS information privacy policy and legislation, and provide a structured outreach approach. There must be a cradle-to-grave policy for ITS data, one that covers data collection, analysis, access, security, archiving, and retention duration. The FDOT must also ensure that the ITS information privacy policy is legally compliant and consumer friendly.
- *Automated Vehicle Monitoring and Enforcement (AVME)* – The legislative and implementation strategy for effective automated enforcement should be driven by a successful outreach program that focuses on safety, not violations. The FDOT should lead the development of a strategic ITS automated enforcement plan and standards that specifically address the identification of best practices, then determine the process for implementing automated enforcement. A structured, effective outreach program is vital; it will inform the general public about automated enforcement and the results of periodic program evaluations of the technology's impact on compliance, public awareness, and safety.
- *Value Pricing* – It is clear that growth in traffic levels and highway congestion will continue, making value pricing a subject the FDOT should monitor closely in terms of policy, technology, design, and public acceptance considerations. The FDOT should initiate a review of value pricing's feasibility across the state in terms of its traffic management benefits under a variety of circumstances. The FDOT should also establish a multiagency task force to develop more detailed value-pricing concepts; highlight potential statewide policy and legislative requirements; and seek input from legislators, local agencies, organizations, and travelers.



The 2005 Update of Florida's ITS Strategic Plan

- *System Monitoring and Performance Measures* – An effective performance monitoring and measurement program will play a crucial role in the FDOT's achievement of its goals for the statewide ITS Program. The FDOT has identified a set of performance measures in the *Ten-Year ITS Cost Feasible Plan*,⁹ (hereinafter, the *ITS CFP*) and the Florida Transportation Commission (FTC) has asked the ITS Florida Advisory Committee to identify performance measures that assess the effectiveness of various ITS technologies. For this effort to succeed there must be consensus on the measures to be implemented. The FDOT should also expand roadway sensor data collection by increasing coverage on the state highway system and arterial roads, then work to ensure that the data collected is archived and readily available for analysis.
- *Systems Integration, Tracking, and Reporting* – The rationale for ITS integration is that separate systems can be more effective when they operate in concert. The USDOT has placed great emphasis on tracking ITS deployments and integration, and encourages the practice through ITS architecture efforts. Likewise, Florida must address the need for similar efforts to integrate ITS across the state, and to track and report such integration activities and their benefits. This can be done through the establishment of ROOs to advance integration at both the physical and institutional levels. With help from ROOs and the various Districts, the FDOT can utilize the USDOT's integration methodology and survey instruments to collect Florida integration information. The existing deployment databases should also be expanded to include integration characteristics, and Florida's integration levels should be assessed based on USDOT metrics.

Update of the 1999 ITS Strategic Plan's Resource Documents and Issue Papers – The resource documents and issue papers developed in support of the *1999 ITS Strategic Plan* have also been revised based on this update. Recommendations include:

- *Updated ITS Section Business Plan* – A new Tier 4 *Business Plan* was developed in 2004 that incorporates the updated vision for the ITS Section, as well as the new mission statement calling for a transportation system that is safe, secure, and efficient. The mission will be carried out and the vision realized by pursuing detailed objectives organized according to the emphasis areas of leadership, strategic planning, customer and market focus; measurement, analysis, and knowledge management; human resource focus, process management, and organizational performance results. The *Business Plan* lists particular objectives under each of these areas, and details supporting activities that are either ongoing or will be completed in 2005. Also provided are the performance indicators that will be utilized, the timeframe for each activity, and the person responsible. The *Business Plan* is based on the FDOT's *ITS CFP* and is consistent with its funding levels and programming recommendations. The *Business Plan's* focus is to map the implementation of key ITS projects and initiatives in the short term, according to budget considerations and program priorities.

⁹ Florida Department of Transportation, *Ten-Year ITS Cost Feasible Plan* (May 2004). FDOT Contract No. C-7772, Task Work Order No. 1023. Available online at http://www.dot.state.fl.us/trafficoperations/its/its_default.htm.



The 2005 Update of Florida's ITS Strategic Plan

- *Recommended New Strategies for Rural/Interurban ITS Applications* – This update of *Florida's ITS Strategic Plan* provides recommended startup actions in support of the FDOT's desire to institute rural ITS deployments in the state. To identify mobility and safety needs, and to build stakeholder support, the ITS Program should conduct outreach workshops in Florida's rural communities. The FDOT should also develop strategic partnerships with various agencies involved in rural community affairs, such as the Florida State Rural Development Council (FSRDC), Native American organizations, and the Florida Commission for the Transportation Disadvantaged. The FDOT's rural Districts (i.e., Districts 1, 2, and 3) should take a leadership role in advocating ITS pilot projects and finding local legislators who will be ITS "champions" in the communities they represent.

New Core Strategies for the ITS Program – This update presents a list of 35 *Core Strategies* that together establish a dynamic framework for Florida's continued development and implementation of ITS in the state transportation system. The *Core Strategies* are organized according to the four primary ITS goals (refer to Page VI), with the addition of two new goals that are presented in this update: deploying an integrated, effective transportation system; and providing a well-prepared and secure transportation system. Where applicable, particular *Core Strategies* are also cross referenced to the *Business Plan* section where that strategy is being implemented through an ITS Section program or activity.

Organization of the 2005 Update of Florida's Intelligent Transportation System Strategic Plan

This update is a summary of findings and recommendations developed based on the research and preparation of various issue papers and resource documents. The sections listed below, the new sections that have been added, and the various technical memoranda attached comprise *The 2005 Update of Florida's Intelligent Transportation System Strategic Plan*.

- **Section 1, Introduction**, describes the role that ITS plays in the operation and management of Florida's transportation system, and how the *ITS Strategic Plan* guides the FDOT, the FDOT Districts, regional agencies, and local governments in ITS planning, programming, and implementation. Like the original document, this update is intended to encompass the FDOT's mission statement and be consistent with the goals outlined in the *2020 FTP* and its *Short-Range Component*.¹⁰

¹⁰ Florida Department of Transportation, *The 2003 Short-Range Component: The Department's Plan for Implementing the 2020 Florida Transportation Plan* (December 2003). Available online at <http://www.dot.state.fl.us/planning/2020ftp>.



Florida's transportation challenge persists. Population growth and the resulting increase in travel demand require a dynamic approach that combines existing talent, skills, and resources with new ideas and technologies. Intelligent transportation system deployments can meet that need by providing a set of tools that, when applied, produce the foundation for a transportation system that is operated and managed more efficiently.

- *Section 2, Florida's Intelligent Transportation Systems Program Vision*, is intended to be flexible enough to accommodate regional differences, yet still conform to the *2020 FTP* and the plans of metropolitan planning organizations (MPOs) and local governments. Because ITS projects must also compete for limited resources and contribute to Florida's overall goals, the ITS vision, guiding principles, *Core Strategies*, and objectives must reflect Florida's unique characteristics and build on program accomplishments to date. As part of this update, *Technical Memorandum No. 2* reviews existing state and national ITS missions, goals, and objectives, and evaluates how these may affect the same components of Florida's ITS Program. While the primary goals of safety; systems management and mobility; economic competitiveness; and quality of life were consistently represented in all program policies, two additional goals should be considered for inclusion in the *ITS Strategic Plan* to reflect national and state efforts to advance the use of ITS applications for homeland security, and to promote integration of ITS services and technologies.
- *Section 3, Initial Actions Appraisal*, presents evaluation results from an appraisal of the 31 Initial Actions recommended in the *1999 ITS Strategic Plan*. The Initial Actions were recommended for FDOT implementation to fulfill the vision and goals identified, and to serve as a short-term component of the *ITS Strategic Plan*. They offered "early winners" to guide ITS planning and deployment over the ITS Program's first five years, and assisted the FDOT in focusing interdepartmental resources and skills in the development of the statewide ITS Program.

The first step in identifying new directions for Florida's ITS Program is to determine where the program is today. By evaluating program accomplishments with respect to the *1999 ITS Strategic Plan*, the FDOT ITS program managers can decide if current courses of action should be maintained, abandoned, or redirected prior to identifying new strategies for the coming years. To gauge the ITS Program's progress in meeting these objectives, an appraisal of the 31 Initial Actions was conducted. This document presents the reviews of those results and attempts to determine if incomplete actions are still relevant to the progress of the ITS Program.



The 2005 Update of Florida's ITS Strategic Plan

- *Section 4, Strategic Planning Guidelines for the Intelligent Transportation Systems Program*, reviews the guidelines that were recommended in addition to the goals and objectives in the *1999 ITS Strategic Plan* to ensure that the ITS Program's policies, goals, and objectives would be integrated in the FDOT's procedures. In this manner, there would be a guide for decision makers in the existing transportation system. These strategies represent actions necessary to ensure that the ITS Program vision is realized over the next 20 years. The guidelines are grouped by five key functions: planning and development; operations and management; finance, and public awareness and involvement; and R&D. As part of this update, the planning guidelines were reevaluated to ensure that they reflect the ITS Program's current vision and goals, as well as stakeholder needs.
- *Section 5, Business Plan for the Intelligent Transportation Systems Program*, presents the FDOT's new mission and vision for ITS. This section functions as a short-term component of the updated *ITS Strategic Plan*, and identifies the resources, processes, and program elements needed to achieve particular objectives through fiscal year 2005. The *Business Plan* covers particular areas of emphasis, each having one or more objectives identified, with clearly defined activities and performance measures to gauge the FDOT's progress. There is also a target or time frame designated; the person responsible is identified; and status is tracked closely. The ITS Section will use the *Business Plan* to define the application of advanced technologies in Florida and the near-term activities needed to implement the updated *ITS Strategic Plan*.
- *Section 6, Ongoing Intelligent Transportation System Activities and Projects*, has been added to provide a compendium of ITS activities and projects likely to affect the future direction and strategies of the ITS Program. Among these endeavors are some of the FDOT's best-known ITS initiatives, including CVO, weigh-in-motion (WIM) projects, the statewide 511 Advanced Traveler Information System (ATIS),¹¹ the Road Ranger service patrols,¹² highway advisory radio (HAR), and the development of the SunGuideSM software¹³ for transportation management center (TMC) use.

¹¹ More information on the FDOT's iFlorida Surface Transportation Security and Reliability Information System Model Deployment project is available online at <http://www.iflorida.net>.

¹² More information on the FDOT's Road Rangers Service Patrols is available online at <http://www.dot.state.fl.us/trafficoperations/rangers/rdranger.htm>.

¹³ More information on the FDOT's SunGuideSM software project is available online at <http://stmcsls.datasys.swri.edu>.



The 2005 Update of Florida's ITS Strategic Plan

- *Section 7, Final Recommendations for the Core Strategies*, contains a list of the final *Core Strategies* that are based on the review and comment of the preliminary strategies presented in *Technical Memorandum No. 2*. Many already have a place in the *Business Plan*, and have been assigned a completion schedule. Others are planned for future years, and will require assessment according to the ITS Program's strategy and needs. Intelligent transportation system needs will be categorized based on a hierarchical format for prioritization purposes.
- The *Appendices* include the *Business Plan* and *Technical Memoranda* that support the recommendations in this document. Additional references are provided in these documents for those seeking more information on particular topics.



1. Introduction

This update of *Florida's Intelligent Transportation System Strategic Plan* redefines the goals and objectives of Florida's ITS Program to provide a new direction for the next phases of ITS deployment in Florida. It highlights the ITS Program's accomplishments since it was launched in July 2000, and outlines the new issues likely to figure prominently in the ITS Program's near-term planning activities. Also included are the updated *Core Strategies* adopted by the FDOT and the revised *Business Plan* with specific activities directed at meeting ITS Program objectives.

Since its adoption, the *1999 ITS Strategic Plan* has been used as the guide to direct the efforts of the FDOT, its Districts, Florida's MPOs, and local governments in the planning, programming, and implementation of integrated, multimodal ITS elements. The former FDOT Traffic Operations Office and the Systems Planning Office (SPO) developed the original *ITS Strategic Plan* as part of a joint effort, with support from a statewide team that included representatives from the FDOT Central Office, the Districts, the Motor Carrier Compliance Office (MCCO), and the MPOs. District representation included staff from the Planning, Design, Construction, and Maintenance offices. During the creation of the *ITS Strategic Plan*, a comprehensive public outreach program was conducted to ensure that stakeholder needs and requirements were also addressed.

In the ensuing five years, the *ITS Strategic Plan* set the stage for rapid growth and numerous accomplishments that have made Florida's ITS Program one of national prominence. At the same time, changes have occurred that have great bearing on the needs that ITS must meet and the way the program elements will be implemented. Some of this was necessitated by events at the federal level. National ITS documents, policies, and programs have been formulated recently that impact the findings and recommendations initially documented in the FDOT's *ITS Strategic Plan*. One example of this is the recently completed *National ITS Program Plan*, which defines a new vision and goals for the national ITS program. The *National ITS Program Plan* includes a new goal for enhancing and encouraging the use of ITS in homeland security applications, which was not considered in Florida's original *ITS Strategic Plan*. Consequently, one of the primary purposes for the update of the *ITS Strategic Plan* is to expand and redirect the efforts and resources of Florida's ITS Program to be consistent with the evolution of national ITS program goals

It is also important to note that in December 2003, the former FDOT ITS Office was combined with the Traffic Operations Office and the two aligned with the District organizational structure of their respective program areas. The ITS Office is now known as the ITS Section, which is part of the renamed Traffic Engineering and Operations Office. This prompted the need for consolidating the two existing business plans in light of the change in the organizational structure first outlined in the *1999 ITS Strategic Plan*.



The 2005 Update of Florida's ITS Strategic Plan

This update of the *ITS Strategic Plan* includes the FDOT's updated ITS vision for Florida, and the guiding principles to be used in the planning and project development process. It recommends goals and objectives that will help the FDOT realize the overall ITS mission. The *Core Strategies* for directing the FDOT's ITS development efforts are accompanied by a revised *Business Plan* that provides specifics on the program activities that will enable the ITS Section to reach objectives in seven key areas:

- Leadership;
- Strategic planning;
- Customer and market focus;
- Measurement, analysis, and knowledge management;
- Human resource focus;
- Process management; and
- Organizational performance results.

The updated *ITS Strategic Plan* builds on the foundation from the original document, which provided an important statewide vision of how the FDOT can employ ITS to maximize the safety and efficiency of Florida's transportation system. In addition, the *ITS Strategic Plan* has had an important secondary benefit – valuable direction at the local or community level to allow for individual professional judgment and latitude in the planning and deployment of ITS services that are consistent with the statewide mission. For example, the *ITS Strategic Plan* strives to incorporate both urban and rural components, so it is able to focus on the unique conditions and needs of each locale. This leads to an integrated transportation approach wherein all users benefit, regardless of their location or type of transportation system usage.

1.1 Meeting a Challenge

More than 17.4 million people now live in our state. Florida's estimated population increases by 897 people per day, or 327,367 annually, based on the population change from 2002 through 2003. By comparison, daily vehicle-miles traveled (VMT) is rising by more than twice the rate of the population's increase, according to FDOT projections. Florida's surface transportation system continues to face rising demand from all sectors and this trend is expected to continue for the foreseeable future, with travel delay rising the fastest of the prime indicators tracked.



Traffic levels on Florida roads are climbing with respect to the number of vehicles per lane mile – or traffic density. This figure has increased by 21 percent in recent years. Congested travel, which is defined as “congested vehicle-miles of travel during the afternoon commute,” is climbing at an even higher rate of 29 percent. In its annual *Urban Mobility Report*,¹⁴ the Texas Transportation Institute (TTI) noted in September 2003 that Florida had the most congested cities – eight – among the states reflected in the nation’s top 58 urban areas. Motorists in Orlando waste more time in traffic than do their counterparts in New York City. The other seven Florida urban areas with the worst traffic congestion are Miami, Fort Lauderdale, Tampa/St. Petersburg, West Palm Beach, Fort Myers, Jacksonville, and Pensacola.

Trends in traffic congestion show a dire situation on several levels. The TTI reports that traffic congestion now extends to more times of day, affects more trips, and involves more roads than in the past. Congestion is creating more extra travel time than ever before, and congestion levels have risen in cities of all sizes since 1982 – a sign that even smaller communities are not able to keep pace with rising travel demand.

Safer travel is a concern, too. A July 2003 report from The Road Information Program (TRIP) in Washington, D.C., indicated that Florida leads the nation in deaths for older drivers.¹⁵ In a state like ours, where nearly one-fifth of our population is over the age of 65, safety for older drivers and for all drivers remains a top priority.

1.2 The Financial Picture

Economic growth in Florida is closely tied to transportation efficiency. A February 2003 FDOT study, *Macroeconomic Impacts of the Florida Department of Transportation Work Program*,¹⁶ concluded that investments the FDOT makes through the adopted Work Program will have a significant impact on Florida’s economy. Business benefits during the next 25 years will result in an increase of \$44 billion in personal income for Florida residents and generate 88,000 new permanent jobs. Direct benefits for personal travel, including reduced travel time, vehicle operating costs, and accidents, are estimated to be \$74 billion. Together, these benefits yield \$5.50 for each dollar invested.

¹⁴ Schrank, David, and Tim Lomax (Texas Transportation Institute), *The 2003 Annual Urban Mobility Report* (September 2003). Available online at http://www.civil.gmu.edu/Course%20outlines/CEIE462_562_TAMU_mobility_report_2003.pdf.

¹⁵ More information regarding The Road Information Program in Washington, D.C., is available online at <http://www.tripnet.org/index.html>.

¹⁶ Cambridge Systematics, Inc., and Glaze Associates, Inc., *Macroeconomic Impacts of the Florida Department of Transportation Work Program* (February 2003). Available online at <http://www.dot.state.fl.us/planning/policy>.



The 2005 Update of Florida's ITS Strategic Plan

Conversely, financial and even physical constraints on the amount of new infrastructure that can be added continue to dictate the level of response to the state's transportation problem. In March 2003, the FDOT delivered the draft *Estimates of Florida's Transportation Needs – 2003-2020* presentation to the FTC,¹⁷ which projected that an additional \$2.7 billion (or \$160 per capita) was needed each year just to maintain current transportation system conditions. An additional \$4.9 billion (\$295 per capita) was needed each year to improve transportation conditions in Florida.

Other factors limit the available alternatives for building new roads or widening existing highways. Both environmental and growth management concerns have led to policies that constrain the number of lanes allowed on the State Highway System. The conclusion one quickly draws is that Florida is unable to build its way out of this problem. The answer lies in part in better and more efficient management and operation of the existing transportation system.

Departments of transportation around the country are rising to this new challenge, realizing that transportation system management and operations must play a greater role in their activities. While transportation facility planning, engineering, and construction will continue to constitute much of the agencies' endeavors, more resources are being applied to new projects that help systems run more efficiently and safely. Incident detection technology is being incorporated on more miles of the nation's freeways, as are coordinated emergency response functions. Traffic management is being applied through travel information systems, electronic toll collection (ETC), and expressway ramp metering, otherwise known as ramp signals. Transit vehicle location technology is being utilized on more fixed-route vehicles.

The degree to which these efforts improve transportation function and efficiency remains an important question, one that transportation professionals must address if they are to demonstrate the validity of applying scarce resources to system operations and management. Most improvements and deployments in this area may escape notice by the typical motorist, so it is incumbent upon transportation providers to increase public awareness of their efforts and communicate the tangible benefits gained to government decision makers.

¹⁷ The presentation is available online at <http://www.bettertransportation.org/pdfs/needs.pdf>.



1.3 Florida and Intelligent Transportation Systems

The FDOT has pursued a policy of active management and operation of the transportation system. With the launch of the ITS Program in July 2000, the FDOT made a concerted effort to apply new technologies and concepts to traffic operations on the Florida Intrastate Highway System (FIHS) and to coordinate the various deployments. The *ITS CFP* that includes these deployments is funded at approximately \$550 million, indicative of the state's strong commitment to ITS solutions and the development of numerous capabilities. The ITS Program works closely with the FDOT Districts, Florida's Turnpike Enterprise (FTE), MPOs, and local governments in a collaborative approach to funding, developing, deploying, and operating an integrated statewide ITS.

Florida's accomplishments are many. The ITS Program has been instrumental in promoting the 511 ATIS in the state, evidenced by more than 7 million calls placed thus far in the Orlando area, Southeast Florida, and the Tampa Bay Area. Milestone demonstrations have begun for the SunGuideSM software that the state's regional transportation management centers (RTMCs) will use in their freeway and incident management efforts. For commercial vehicles, a total of 17 weigh stations have installed HELP/PrePass®, an electronic preclearance program, with the help of the FDOT's MCCO. Other projects have enhanced traffic management and security at Florida's ports, established the Everglades Radio Network (ERN) for motorist information on Interstate 75's (I-75) Alligator Alley, and are in the process of producing detailed equipment specifications for ITS devices that Districts will use in their deployments.

While ITS is solving transportation problems, the information it produces and communication it fosters through various means are themselves important aids in cooperative planning and goal setting. The success of ITS deployments will, in turn, become an incentive to promote more collaborative relationships in which transportation professionals, researchers, institutions, and communities can address their common problems, make decisions, and pursue meaningful solutions.

It is the FDOT's intent that the update of *Florida's ITS Strategic Plan* provide new direction for the next phases of ITS deployments in Florida, supported by program goals that reflect current conditions and anticipated future developments, and inspired by the success that the FDOT's efforts have enjoyed thus far.



2. Florida's Intelligent Transportation Systems Program Vision

The *1999 ITS Strategic Plan* included a vision, four goals, and several objectives designed to assist the FDOT in accomplishing the ITS Program's mission. From the goals and objectives, several strategic planning guidelines were derived to identify immediate actions or activities that could be initiated to advance the desired goals. It is Florida's ITS vision that forms the backdrop for how the state's transportation system will look and function in the years ahead.

Florida's 1999 ITS Vision

Nearly two decades into the 21st century, travelers in Florida are seeing more and more benefits from an integrated and coordinated Intelligent Transportation System within each of its urbanized areas and along all major transportation corridors. ITS provides valuable services to travelers, business, industry and government that were unavailable just a few decades ago. Pedestrian, automobile and transit mobility have benefited from real-time information sharing, route navigation, electronic payment systems and system management activities made possible through ITS. Business and commerce are both partners and benefactors in ITS using the improved information and intermodal linkages provided by the system to improve business operations. The economic vitality of Florida has never been better aided by a statewide transportation system made safer and more efficient by ITS. All stakeholders in Florida's transportation system benefit from improved safety provided by ITS technologies in our vehicles and the network of systems assisting emergency service providers. Florida's ITS Strategic Plan, first adopted in 1999 and updated regularly ever since, assures that Intelligent Transportation Systems are considered at all levels of planning, production, operations and management, providing improvements in safety, mobility and economic vitality to maximize the investment in Florida's multimodal transportation system.

By applying this vision to all ITS planning and development activities, Florida has been able to realize the objective of an ITS that is integrated in all institutional policies, programs, and procedures to develop a seamless, coordinated information infrastructure. This has served to maximize the safety and efficiency of the transportation network while encouraging multimodal and consumer choices.



2.1 Primary Intelligent Transportation System Goals

The goals of the 1999 *ITS Strategic Plan* were designed to parallel the four goals in the 2020 *FTP* – the state's primary transportation system planning document. Each of the four goals is supported by a corresponding group of ITS objectives that can be tracked using a common set of performance measures. These four goals are:

- Safe transportation for residents, visitors, and commerce;
- Preservation and management of Florida's transportation system;
- A transportation system that enhances Florida's economic competitiveness; and
- A transportation system that enhances Florida's quality of life.

These goals are reinforced in the strategies and objectives set forth in the 2003 *Short-Range Component* of the 2020 *FTP*. The 2003 *Short-Range Component* identifies the short-term objectives and strategies needed to implement the long-range goals of the 2020 *FTP*. This document is updated annually to reflect the changing needs and resources of the FDOT, and to continually define strategic objectives and focus areas to manage and maintain Florida's transportation system in accordance with the 2020 *FTP*.

2.2 Vision and Mission

While the Florida ITS Vision from 1999 portrayed a dynamic picture of advances in transportation service and efficiency, a much more succinct vision statement was agreed upon in 2004 during planning sessions the TEOO conducted with the state's traffic operations representatives. Together with the FDOT's mission, this revised ITS vision remains the guiding principle for the Department's continued ITS efforts. The mission and vision also incorporate the guiding principles of the national ITS program – safety, efficiency, and mobility – while still ensuring that the needs of the local, regional, and state ITS agencies and their customers are considered. Changes at the federal level, however, have prompted the need for including two additional guiding principles, as reflected in the *National ITS Program Plan*: security and integration, or interoperability. The revised mission and vision for Florida's ITS Program are provided here, with the text changes in bold.

Revised ITS Mission:

Enhance the safety, **security**, and efficiency of Florida's transportation system through the implementation of **interoperable** ITS technology in support of local, regional, and statewide mobility.

Revised ITS Vision:

Be the national leader in ITS by promoting multijurisdictional coordination for the provision of an efficient, **secure**, reliable, and safe transportation system.



The 2005 Update of Florida's ITS Strategic Plan

With the approval of the FDOT's TEOO, the revised mission and vision will be implemented in the update of the *ITS Strategic Plan* through the application of updated ITS Program goals and objectives. A review and comparison of the national and state ITS transportation system goals revealed that the primary goals of safety; systems management and mobility; economic competitiveness; and quality of life were consistently represented in all program policies. In addition, two more goals should be considered for inclusion in this update to reflect national and state efforts to advance the use of ITS applications for homeland security, and to promote the integration of ITS services and technologies.

The *National ITS Program Plan* was recently supplemented to enhance and revise the security goal in response to the September 11, 2001, terrorist attacks.¹⁸ Those events raised the consciousness of the transportation community and countless others about the need for better critical infrastructure protection and crisis management; disaster planning and prevention; and effective detection and response, particularly in the case of deliberate terrorist attacks. Additionally, *Version 5.0* of the *National ITS Architecture (NITSA)*¹⁹ was updated to provide security coverage enhancement. This involved the inclusion of new user services and market packages for homeland security ITS applications designed to protect surface transportation information and infrastructure.

Recent federal ITS policies, such as *Parts 655 and 940 of Chapter 23 of the Code of Federal Regulations (CFR)*, stress the importance of utilizing a regional ITS architecture (RITSA) and ITS standards to ensure interoperability among ITS services. Interoperability of ITS is crucial for improving interagency communications and data sharing among regional ITS stakeholders. Interoperability benefits for both system users and owners/operators include seamless ITS services from region to region; more accurate and timely travel information; improved incident response times; more coordinated and responsive traffic management systems; and the ability to leverage limited resources.

Because of the federal commitment to expand ITS capabilities specifically for homeland security purposes and to ensure interoperability of ITS services, the following two goals are recommended for addition to Florida's ITS Program goals and objectives:

- Deploy an integrated, effective system; and
- Provide a well-prepared and secure transportation system.

¹⁸ Intelligent Transportation Society of America, *Homeland Security and ITS – Using Intelligent Transportation Systems to Improve and Support Homeland Security – Supplement to the National ITS Program Plan: A Ten-Year Vision* (September 2002). Available online at <http://www.itsa.org/research.html>.

¹⁹ United States Department of Transportation, *National ITS Architecture, Version 5.0*. Available online at <http://www.iteris.com/itsarch>.



The 2005 Update of Florida's ITS Strategic Plan

With these additions, the goals and objectives from the *1999 ITS Strategic Plan* were combined with the goals and objectives of the FDOT's *ITS CFP*, and were modified and updated to reflect recent national and state ITS trends and initiatives.

The updated ITS Program goals and objectives are recommended as follows:

1. Move People and Goods Safely

- 1.1 Reduce accident rates.
 - 1.1.1 Reduce accident rates and severities in construction work zones.
 - 1.1.2 Reduce accident rates at highway-rail grade crossings.
 - 1.1.3 Reduce weather-related traffic incidents.
 - 1.1.4 Reduce commercial vehicle safety violations.
 - 1.1.5 Improve the safety and convenience for pedestrians and bicyclists.
- 1.2 Reduce queuing on mainlines.
 - 1.2.1 Reduce queues on limited-access roadways from highway-rail grade crossings.
 - 1.2.2 Reduce mainline queues at limited access facility exit ramps.
 - 1.2.3 Reduce queues at weigh and inspection stations along the corridors.
 - 1.2.4 Reduce queues at intermodal facilities that impact corridor operations.
- 1.3 Improve safety of commercial vehicle operators at rest areas
- 1.4 Provide evacuation coordination services and emergency management.
 - 1.4.1 Provide pretrip planning information for evacuation conditions.
 - 1.4.2 Provide traffic management during evacuation conditions.
 - 1.4.3 Provide route guidance information and information on traffic/travel conditions and weather, including winds, rainfalls, and storm surges.
 - 1.4.4 Support remote configuration management of highways during evacuation conditions or other emergencies.
 - 1.4.5 Provide accurate and timely traveler information regarding incidents on evacuation routes.
 - 1.4.6 Share emergency information among local and RTMCs and emergency management facilities.
 - 1.4.7 Detect, verify, respond to, and clear incidents and manage traffic around accidents, emergencies, and other incidents.



2. *Preserve and Manage the System*

- 2.1 Enhance mobility and efficiency.
 - 2.1.1 Improve travel time predictability and reliability on the corridors.
 - 2.1.2 Reduce accidents and other incidents during normal flows that result from congestion and delays caused by “rubber-necking” during incidents.
 - 2.1.3 Reduce congestion-related delays by decreasing queues and spillback from other facilities.
 - 2.1.4 Reduce delays caused by congestion in construction work zones.
 - 2.1.5 Manage traffic at interchange entrance ramps to improve mainline throughput and traffic flow.
 - 2.1.6 Reduce delays at tollbooths.
 - 2.1.7 Encourage multijurisdictional and multiagency electronic payment service strategies for transit, parking and tolls.
 - 2.1.8 Reduce delays at the gates of intermodal facilities.
 - 2.1.9 Improve multimodal travel access and connections.
 - 2.1.10 Provide traveler information services with route and mode choice information.
 - 2.1.11 Provide inter and intra regional travel information services that seamlessly deliver information across jurisdictions, agencies and modes.
 - 2.1.12 Encourage the use of transit signal priority to improve transit travel time and reliability.
 - 2.1.13 Promote the use of advance vehicle locations systems to improve transit operations efficiency.
 - 2.1.14 Balance demand throughout a regional network by better coordination of freeway management with arterial signal systems.
- 2.2 System Preservation
 - 2.2.1 Improve enforcement of illegally overweight vehicles.
- 2.3 Incident Management
 - 2.3.1 Improve ability to detect, verify, respond to, and clear incidents through effective communication and coordination between local governments, public safety officials and transportation system operators.
 - 2.3.2 Improve incident-related traveler information.
 - 2.3.2.1. Predict delays and clearance times.
- 2.4 Manage Special-Use Lanes (SULs)



- 2.5 Provide Data Archiving and Warehousing
 - 2.5.1 Conduct system evaluation and alternative analysis.
 - 2.5.2 Support and supplement other statewide data collection programs.
 - 2.5.3 Support highway operational performance reporting, modeling simulation, and other techniques for operations and management of the system.
 - 2.5.4 Develop before and after studies for ITS deployments.

3. *Enhance Economic Competitiveness*

- 3.1 Ensure efficient landside access to intermodal, port, airport, and truck terminal facilities.
- 3.2 Ensure efficient intermodal transfer of people and goods.
- 3.3 Improve predictability of commercial travel and delivery times.
- 3.4 Promote safe and efficient access of vehicles to markets.
- 3.5 Expedite permitting and clearance of commercial vehicles at weigh and agricultural inspection sites to keep commerce moving.
- 3.6 Ensure efficient access to major activity centers such as tourist attractions, state parks, and other areas of interest.
- 3.7 Provide safe and efficient tourist travel and reduce VMT through the provision of accurate and timely traveler information.
- 3.8 Support the designation of corridors as strategic intermodal corridors and funding for ITS deployments.

4. *Enhance Quality of Life and the Environment*

- 4.1 Provide efficient statewide ITS services with autonomy for decision-making to support local needs and regional cooperation to promote efficiency and support regional and statewide goals.
- 4.2 Improve interoperability of ITS services through the development of statewide uniform device standards and specifications.
- 4.3 Support integration of ITS into state and local planning processes, programs, and capacity projects.



- 4.4 Provide name recognition of key ITS-related services through branding that will instill trust and confidence in traveler information services, roadside assistance, electronic payment services, and other strategic services.
 - 4.5 Provide easy access and data mining capabilities for transportation planning and design for all partners to support decision-making.
 - 4.6 Provide accurate real-time data to technology, business and operational users for effective and responsive transportation operations.
 - 4.7 Reduce air-quality emissions from mobile sources.
 - 4.8 Reduce energy consumption.
 - 4.9 Reduce travel demand and promote ridesharing opportunities.
 - 4.10 Reduce the potential for impacts from hazardous materials (HAZMAT) incidents.
 - 4.10.1 Improve HAZMAT response systems.
 - 4.10.2 Provide real-time travel information for safe routes for HAZMAT that avoid densely populated areas.
5. *Deploy an Integrated, Effective System*
- 5.1 Provide research and development for technologies to support deployments.
 - 5.2 Develop statewide standards and specifications for ITS field devices.
 - 5.3 Develop statewide standards for TMC software.
 - 5.4 Add a goal to the *FTP* to support an integrated, effective system.
 - 5.5 Develop regionally accepted system performance standards and measures that will drive transportation resource investment decisions.
 - 5.6 Promote the establishment of regional operating organizations to develop regional collaboration closely linked to the MPO transportation planning and decision process creating stronger links between operations and planning.
 - 5.7 Develop a communications architecture and backbone for statewide deployment.



- 5.8 Develop standard procedures for operations and management.
- 5.9 Develop statewide information exchange network standards and criteria.
- 5.10 Standardize performance measures and archive data to produce a history of trends and establish benchmarks.
- 5.11 Develop statewide procurement guidelines.
- 5.12 Develop a statewide systems engineering process for design, integration, and testing that includes regular updates and enhancements of statewide architecture.
- 5.13 Develop statewide procurement contracts to leverage economies of scale.
- 5.14 Develop an ITS asset management program to track and program replacement parts, migrate legacy systems, and manage the life cycle of deployments.
- 5.15 Establish a statewide managed funding program for ITS with project decision recommendations made by the ITS Program.
- 5.16 Dedicate a percent of all FDOT funds, statewide managed and district allocated, for operations and management of ITS deployments.
- 5.17 Update work program instructions to develop traceability with the *Statewide ITS Architecture (SITSA)*.²⁰
- 5.18 Increase the professional capacity of the public and private sector in Florida to support planned deployments.
- 5.19 Promote public-public partnerships to leverage financial and human resources.
- 5.20 Promote public-private partnerships to leverage financial and human resources.

²⁰ Jaffe Engineering, *Florida Statewide Intelligent Transportation System Architecture and Standards* (June 2000). FDOT Contract No. C-7354. Available online at <http://www.consystem.com/html>.



6. *Provide a Well-Prepared and Secure Transportation System*

- 6.1 Monitor and protect critical infrastructure.
- 6.2 Add a goal to the *FTP* to provide a well-prepared and secure transportation system.
- 6.3 Conduct formal vulnerability and threat assessments, both physical and cyber, of TMCs and field equipment, and their associated functions.
- 6.4 Conduct formal vulnerability and threat assessments of related telecommunications infrastructures.
- 6.5 Develop and implement mitigation plans to address vulnerabilities.
- 6.6 Prepare recovery plan to maximize available resources, traffic capacity, and balance loading during recovery.
- 6.7 Prepare standard operating procedure for information collection, messaging, and dissemination of transportation system status to stakeholders and general public during response.
- 6.8 Screen and monitor commercial vehicles, cargo, and cargo handling facilities.
- 6.9 Establish and test alternative modes/alternative routes in emergency situations.
- 6.10 Provide for hazardous material movement electronic identification, monitoring and tracking to be coordinated by regional traffic management and public safety agencies.
- 6.11 Implement quick response plan for threatening or high-risk transit passengers.
- 6.12 Improve security for transit operators.
- 6.13 Promote the development of a wide-area alert to notify the traveling public in an emergency or disaster.



3. Initial Actions Appraisal

The ITS Program was created based on the Initial Actions and Strategies recommended by the agencies involved in the *ITS Strategic Plan's* development. These short-term strategies were designed to focus interagency resources on the development of the ITS Program. Since the inception of the ITS Program in July 2000, many of these Initial Actions and Strategies have been completed or addressed. The findings and recommendations identified in several of the *ITS Strategic Plan's* resource documents and issue papers have been expanded in detail or developed into projects that have been completed.

The first step in identifying new directions for Florida's ITS Program is to determine the program's current status. By evaluating the accomplishments of the ITS Program with respect to the original *ITS Strategic Plan*, the FDOT's ITS managers can decide whether current courses of action should be maintained, abandoned, or redirected prior to identifying new strategies for the next several years. Justification for these modifications can be documented as well.

The *1999 ITS Strategic Plan* outlined 31 Initial Actions recommended for FDOT implementation to fulfill the vision and goals identified. These 31 Initial Actions served as a short-term component of the original *ITS Strategic Plan*. They offered several "early winners" to guide the planning and deployment of ITS over the program's first five years, and to assist the FDOT in focusing interdepartmental resources and skills on the development of a statewide ITS Program.

To measure the ITS Program's progress in accomplishing these objectives, an appraisal of the Initial Actions was conducted. *Technical Memorandum No. 1* presents the results of the evaluation exercise and attempts to determine if incomplete items are still relevant to the ITS Program's progress. (Refer to *Appendix B, Technical Memorandum No. 1*.)

The ITS Program has completed 14 of the 31 Initial Actions that were recommended. Another five Initial Actions have been partially addressed and six are ongoing. Only six Initial Actions have not been completed. These totals indicate that 81 percent of the Initial Actions have been completed or addressed since the ITS Program began in 2000.

At the time *Technical Memorandum No. 1* was written, the six Initial Actions not completed were:

1. Each District should develop a maintenance plan and annual maintenance cost estimates to be used in the development of budget and staffing needs. This has been completed or is underway in Districts 4, 5, and 6. The FDOT's ITS Program will coordinate and assist in this effort. Some maintenance costs are funded by the FDOT's Maintenance Office.



The 2005 Update of Florida's ITS Strategic Plan

2. The FDOT should develop an ITS operations manual. Each District will adapt the policies and procedures to its requirements.
3. Each District should assess staff resources and capabilities to determine which, if any, operations and maintenance (O&M) functions are appropriate for outsourcing.
4. The FDOT should conduct an in-depth analysis of Florida's Public Records Law²¹ and existing Florida contracting procedures to assess their impact on ITS procurements and private sector response, and to provide recommendations for needed modifications.
5. The FDOT should proactively support the development, coordination, and deployment of ITS technology for use by public transportation. (The ITS Program has since initiated a Task Work Order to provide technical support to transit agencies in the state.)
6. Each District should estimate and budget recurring costs, such as response and preventive maintenance activities; staffing; spare parts inventory; and in-house equipment needed to operate and maintain systems. (The ITS Program now has funding set aside for District operations and replacement of equipment. This funding has been programmed by the Districts.)

The five partially completed Initial Actions were:

1. Each District should develop an ITS infrastructure and initiate development or enhancement of a TMC focusing on interstate highways. The evolving center should have multimodal management capabilities and should operate Monday through Friday for 12 hours per day in urban areas at Level of Service (LOS) 3 within five years. The Districts should develop an implementation plan to achieve this goal and the FDOT's ITS Program will support this effort.
2. Each District should develop ITS staff requirements and a training program that will enable them to provide the ITS services they plan to deliver over the next five years.
3. The FDOT, in cooperation with ITS Florida, should initiate the formation of a Statewide ITS Stakeholder Advisory Committee to provide input on statewide strategic planning and policy issues.
4. The FDOT should develop a program-level budget to fund the staff needed and to support ITS programs. (Completed through the establishment of the ITS Office and adoption of its budget.)

²¹ FLA. STAT. § 119, *Public Records*.



The 2005 Update of Florida's ITS Strategic Plan

5. Each District should develop a budget to staff and implement an ITS program for the District. (Addressed in 2004 through completion of an ITS operations and replacement cost project.)

The partially completed Initial Actions reflect the Districts' status in developing and implementing RTMCs, and the staffing and training needs associated with the operation of the RTMCs and regional ITS services. Districts 2, 4, 5, and 6, and FTE have operational RTMCs that are staffed by trained personnel. The remaining Districts are developing plans for their RTMCs, as funded in the *ITS CFP*, and are currently addressing the issue of staffing these facilities.

In addition, dedicated funding sources for District ITS efforts beyond the *ITS CFP* have been identified in an *Operations CFP*²² produced in July 2004. The funding levels requested by the Districts and the levels proposed to meet their needs are provided. The *Operations CFP* has been accepted and added to the Work Program,²³ along with estimated replacement costs. This action helps resolve issues regarding adequate funding, and resources to implement and maintain ITS services at the District level, which has been an ongoing concern for the ITS Program.

In reviewing the incomplete Initial Actions, three parts of the ITS Program warrant an explanation in light of developments to date:

- Operations and Maintenance – The majority of the incomplete Initial Actions refer to the development of a statewide ITS O&M manual and District ITS O&M plans with statewide assistance. The FDOT was charged with two primary responsibilities:
 - Developing an O&M manual for use by the Districts; and
 - Assisting the Districts in the development of their O&M plans.

To date, neither the ITS Program nor the TEOO has prepared an O&M manual for the Districts, although Districts 4, 5, and 6 have produced their own ITS operations manuals. Additionally, minimal assistance has been provided to the Districts on O&M plans. A statewide O&M study, however, was initiated in 2004 that included a survey of existing ITS O&M costs for comparison with costs the FDOT Maintenance Office utilizes in calculating ITS maintenance funding. The study also evaluated District O&M functions to determine the most feasible activities for privatization.

²² Faquir, Tahira (PBS&J), *White Paper – Funding of Intelligent Transportation System Operations at the District Level, Version 5* (July 2004). Available online at http://www.floridait.com/special_projects.htm.

²³ More information about the FDOT's Work Program is available online at <http://www2.dot.state.fl.us/programdevelopmentoffice/wp>.



The 2005 Update of Florida's ITS Strategic Plan

A survey of District ITS deployments also revealed that several Districts have aggressively dealt with O&M issues, and continue to document and project ITS O&M needs over a two- to three-year period, based on increasing inventory. The remaining Districts tend to review ITS O&M costs on an annual basis.

Although the Districts have shown initiative in addressing statewide O&M needs and requirements, the update of the *ITS Strategic Plan* should continue the promotion and development of a statewide O&M manual. Districts should be encouraged to coordinate with the ITS Program in developing O&M plans that address the increasing costs and funding needs associated with the expansion and deployment of statewide, integrated ITS services. The O&M manual should incorporate and expand on the information being developed by the Districts to:

- Provide a framework for the Districts to use in developing O&M plans;
 - Detail statewide O&M policies and procedures;
 - Project O&M costs and resources over a two- to three-year period;
 - Identify and project potential O&M funding sources;
 - Recommend strategies for streamlining O&M activities; and
 - Identify appropriate O&M activities for privatization.
-
- Intelligent Transportation System Technology for Public Transportation – Although the ITS Program continues to coordinate and collaborate with the FDOT's PTO, it does not actively promote ITS technology for public transportation. However, the effort has begun to incorporate and mainstream public transportation into ITS activities. The ITS Program has initiated a Task Work Order to support transit and is actively working to bring transit information into the ATIS being deployed. Several of the District ITS programs have an excellent working relationship with their District PTOs and have been successful in integrating public transportation projects in District ITS programs. This update recommends the mainstreaming of APTS and other public transportation ITS technologies and programs into ITS activities.



The 2005 Update of Florida's ITS Strategic Plan

- Procurement Assessment and Impacts – This Initial Action will not be carried forward in the update of the *ITS Strategic Plan* because the Districts are utilizing various procurement methods, such as design-build and system integrator/manager, with minimal impediments. The ITS Program has compared the various procurement options for ITS projects and identified the advantages and disadvantages of each method in terms of cost, convenience, schedule, efficiency, and system performance and quality. However, several Districts expressed a need for additional training and information on the system manager approach for procuring ITS hardware and services. A workshop that highlights the necessary steps to implement the system manager approach and details lessons learned from other projects would benefit the District ITS engineers. The Districts would also benefit from the development of statewide ITS procurement contracts and the availability of an ITS Approved Product List (APL) for the procurement of ITS devices.



4. Strategic Planning Guidelines for the Intelligent Transportation Systems Program

In addition to ITS goals and objectives, the *1999 ITS Strategic Plan* introduced strategic planning guidelines to ensure that the ITS Program's policies and objectives are integrated into the FDOT's procedures to guide decision-makers in implementing ITS strategies, and to allocate ITS resources to problems and opportunities in the existing transportation system. These guiding principles describe *how* Florida's ITS vision will be realized as the program unfolds over the next 20 years. These guiding principles are divided into the following categories, each with its own actions or activities:

- Planning and Development
 - Undertake strategic deployments;
 - Provide a common framework for the planning, deployment, and integration of systems through ITS architecture and standards consistency;
 - Promote institutional and interjurisdictional cooperation and coordination in the planning, deployment, operations, management, and maintenance of ITS infrastructures;
 - Provide service on a regional, integrated, and interoperable basis;
 - Integrate ITS planning and ITS-related operations planning with statewide, metropolitan, authority, and local government planning processes;
 - Support concurrency and growth management programs;
 - Emphasize intermodal/multimodal orientation to enhance both passenger and freight connections and transfers at ports, airports, and via all applicable modes; and
 - Utilize proven cost-effective technologies to deliver new and enhanced services to travelers and system users; use a total life-cycle cost analysis to select ITS components and designs.
- Operations and Management
 - Provide performance-driven service, and real-time operations and management of all transportation systems to maximize system performance, safety, and time-reliability performance;
 - Adapt system operations and management strategies to changing conditions;
 - Provide emergency operations support; and
 - Actively pursue interagency operations and management agreements.



The 2005 Update of Florida's ITS Strategic Plan

- Finance
 - Provide ITS funding for architecturally consistent projects;
 - Leverage the value of “conventional” capital investments;
 - Develop ITS funding strategies; and
 - Capitalize on private sector resources.

- Public Awareness and Involvement
 - Include education, training, and outreach;
 - Respond to special user needs; and
 - Identify and support ITS advocates and champions.

- Research and Development
 - Support continued research and operational testing.



5. **Business Plan for the Intelligent Transportation Systems Program**

Following the reorganization of the FDOT ITS Office and its inclusion in the FDOT's TEOO, a new *Business Plan* was developed in 2004 that incorporates the updated vision for the ITS Program, as well as the new mission statement that calls for a transportation system that is safe, secure, and efficient. (Refer to *Appendix A*.)

With its 20-year planning horizon, the *ITS Strategic Plan* is a long-range element that describes the FDOT's vision for ITS in Florida and the principles that will guide the program's development. Whereas this strategic document is broad in scope, the *Business Plan* offers specifics on what day-to-day activities must take place in the near term to ensure that the mission will be carried out and the vision realized. The *Business Plan* consists of detailed objectives organized according to emphasis areas that include leadership, strategic planning, and customer and market focus; measurement, analysis, and knowledge management; and human resource focus, process management, and organizational performance results.

The *Business Plan* lists particular objectives under each of these areas, along with supporting activities that are either ongoing or will be completed in fiscal year 2005. Also provided are the performance indicators that will be utilized, the timeframe for each activity, and the personnel responsible for each. The *Business Plan* supports the FDOT's *ITS CFP* and is consistent with its funding levels and programming recommendations. The *Business Plan's* focus is to map the implementation of key ITS projects and initiatives in the short term, according to budget considerations and program priorities.

Under leadership, for example, the three objectives cited are 1) to establish a statewide ITS mission, vision, and values; 2) to reinforce the mission, vision, and values; and 3) to develop effective working relationships with external customers. Each of these objectives has two or more supporting activities and corresponding means to gauge progress. The leadership activities range from developing mission, vision, and values statements and documenting them in the *ITS Strategic Plan*, to producing a monthly ITS newsletter, identifying all external customers, and taking steps to improve oral and written communications.

Strategic planning's three objectives are 1) to reduce nonrecurring congestion and improve highway safety; 2) to support and champion ITS integration; and 3) to promote the statewide 511 ATIS. These will be accomplished by implementing the ITS Program according to the *ITS CFP*, implementing the new SunGuideSM statewide software, and maintaining and expanding the statewide 511 ATIS.



The 2005 Update of Florida's ITS Strategic Plan

The *Business Plan* lists a number of activities that illustrate the ITS Program's customer-driven characteristics and the priority assigned to verifying performance. The *Business Plan* requires ITS managers to conduct periodic meetings with external customers and devise ways to measure customer satisfaction. There are goals that specify targets for responding to customer inquiries and service requests in a timely manner, the dissemination of ITS information through publications and reports, and developing better ways to share ITS data and video with other stakeholders. The performance measures themselves will be monitored and reported, as recommended by the FTC.

The effort to update the FDOT's *1999 ITS Strategic Plan* included the drafting, review, and submittal of *Core Strategies* for the ITS Program. These *Core Strategies* are presented in Table 7.1 of this document. Where the strategy noted calls for a particular action or activity, there is a notation given that refers back to the applicable *Business Plan* activity.



6. Ongoing Intelligent Transportation System Activities and Projects

From its inception, Florida's ITS Program has been characterized by a mission-focused philosophy in which critical needs are identified and projects developed to produce real solutions for the state's transportation system. The result of this approach is a program that is consistently regarded as a national model for ITS planning, deployment, and public outreach.

Such success is actually the culmination of the FDOT and District efforts that originated in the *1999 ITS Strategic Plan* and continued in the pursuit of the various objectives it contained. The ITS Program's tangible results are evident in the numerous projects completed to date.

The ITS Program and the Florida Department of Community Affairs' (FDCA) Division of Emergency Management (DEM) produced the Hurricane Evacuation Analysis Decision Support Utility Program (HEADS-UP), a prototype graphical user interface funded by a grant from the Federal Highway Administration (FHWA). The HEADS-UP program provides emergency managers with tools to estimate evacuation time and traffic volume information necessary to properly plan an evacuation. The beta version of the program was installed and testing begun by the FDCA staff.

The ITS Program developed draft ITS device specifications to support deployment projects on Florida's limited-access roadways. These draft ITS device specifications are being refined to be included in the Department's *Standard Specifications for Road & Bridge Construction* (Workbook). The information, sample requests for proposal (RFPs), and supporting documents are available online at the *Standards, Specifications, and Estimates Processor (SSEP)* Web site, which project managers and engineers can utilize as appropriate to expedite the planning and procurement phases of their deployments.²⁴ Next, the equipment specifications will set the stage for the review and evaluation of products for approval and addition to the new ITS APL.

A successful center-to-center (C2C) pilot project was initiated that will enable RTMCs to unify their traffic management and incident response activities. The common element will be the SunGuideSM software that is being developed for the centers to use in maintaining critical interfaces between their facilities, achieving system interoperability, sharing traffic information, and responding more effectively to emergencies.

²⁴ More information about the FDOT's draft ITS device specifications and the *SSEP* is available online at <http://myfloridait.com/SSEP/index.html>.



During fiscal year 2004, another 418 commercial carriers joined AgPass®,²⁵ part of Florida's Commercial Vehicle Information Systems and Networks (CVISN) program.²⁶ AgPass allows carriers that do not transport agricultural products to bypass the Florida Department of Agriculture and Consumer Services (FDACS) inspection stations. This has enabled the FDOT to keep pace with increased carrier volume without having to hire additional staff for the stations.

A fiber optic/microwave connection was designed and constructed between District 5 in Orlando and District 2 in Jacksonville to link their respective RTMCs and create the capacity for more integrated and effective transportation management in the region. The connection uses District-installed fiber optic infrastructure and the state's microwave system bandwidth to allow sharing of traffic data and video.

The ITS Program provides support to District 5 for the *i*Florida Surface Transportation Security and Reliability Information System Model Deployment Initiative. This project, funded through an FHWA grant, is now in its second phase with deployment and implementation of the various systems and components, including vehicle detection devices, closed-circuit television systems, communication networks, weather stations, and security monitoring capability at key locations. The project goal is to demonstrate the variety of operational functions in surface transportation that are enabled or enhanced through such a security and reliability system.

The ITS Program continues research projects leading to the development of road weather information systems in a cooperative effort with the University of North Florida and Florida State University. Design of a road-specific weather prediction system is also being investigated as part of this research.

6.1 Short-Term Priorities for the Intelligent Transportation Systems Program

Through the ITS Section's update of the *ITS Strategic Plan*, the FDOT has determined the goals, objectives, and strategies for the statewide ITS Program over the next three to five years. Important projects are planned for each ITS program area as follows.

6.1.1 Intelligent Transportation System Deployments

The ITS Program will focus on strengthening homeland security by determining possible applications of information, telecommunications, and technologies to support emergency preparedness, response, and recovery. Policies are being developed to utilize ITS technologies to enhance the security of our critical infrastructure, including seaports and airports.

²⁵ More information about AgPass is available online at <http://www.cvo.com/agpass.htm>.

²⁶ More information about the FDOT's CVISN program is available online at <http://www.dot.state.fl.us/trafficoperations/its/cvo/cvisn.htm>.



The 2005 Update of Florida's ITS Strategic Plan

The ITS Program has organized a Change Management Board (CMB) composed of District and Central Office ITS representatives to oversee and manage ITS deployments at a statewide level.

Working in conjunction with the FDOT's SPO and ITS Florida, the ITS Program is developing ITS performance measures to assess the effectiveness of ITS technologies in addressing the safety and capacity needs of the state transportation system.

The goal of the ITS Program over the next year is to standardize the deployment of ITS services, subsystems, and processes through the development of ITS equipment standards and specifications for projects funded in the *ITS CFP*. Ultimately, these specifications will be incorporated in the FDOT's *Standard Specifications for Road and Bridge Construction (Workbook)*.²⁷

The ITS Program, in conjunction with the Districts, is developing a statewide traveler information system that utilizes the statewide 511 telephone system, Web sites, and innovative marketing strategies to provide real-time travel information to motorists.

In the coming year, the ITS Program will develop an ITS quality assurance (QA) program to review and assess statewide ITS interoperability through harmonization of ITS standards and specifications, implementation of procedures for acceptance testing, and long-term systems management.

The ITS Program has completed the development and begun implementation of the statewide *Systems Engineering Management Plan (SEMP)* to guide the management and deployment of ITS services in Florida. The *SEMP* serves as a tool for maximizing project success, ensuring interoperability and integration of regional ITS services, and improving system reliability. In early 2005 the ITS Program sponsored *SEMP* training for FDOT and District personnel, public agency representatives, and their transportation consultants.

6.1.2 Commercial Vehicle Operations and Electronic Toll Collection

Future objectives include the completion of the CVISN program by assisting the Florida Department of Highway Safety and Motor Vehicles (DHSMV) with the automated credentialing program.

The ITS Program will facilitate the growth of ITS applications at Florida ports and assist them in the development of just-in-time pickup and delivery through automated appointment systems. Additionally, the CVISN program will be the intermediary between such groups as the Interstate

²⁷ Florida Department of Transportation, *Standard Specifications for Road and Bridge Construction 2004*. More information is available online at <http://www.dot.state.fl.us/specificationoffice>.



95 Corridor Coalition, the Port Authority of New York and New Jersey, and Florida's ports to build a database that maintains exact pickup times and assigned drivers for inbound shipments.

Further, the ITS Program will attempt to connect data from Florida's ports to the CVISN program by feeding data through the Commercial Vehicle Information Exchange Window (CVIEW) and sharing that data with all CVO enforcement agencies in the state. The program will attempt to provide probe data collection systems for rural interstates and traveler information to those traveling on the sections of highway in near real time.

The ITS Program will continue to grow valuable working relationships with adjoining states and corridor coalitions to enhance the movement of commercial traffic and aid in Florida's economic development.

The ITS Program will also be a leader in the development and implementation of the new Vehicle-Infrastructure Integration (VII) initiative led by the FHWA and the American Association of State Highway and Transportation Officials (AASHTO).

6.1.3 Telecommunications

The ITS Program will continue development of a statewide fiber optic network in support of District ITS initiatives.

The ITS Program is developing a strategy to connect RTMCs through a C2C network as the various facilities are deployed.

The existing statewide Motorist Aid Microwave System will be integrated with the developing statewide fiber optic network to provide enhanced security through redundancy and diversity. The statewide Microwave System will be extended to cover new areas where motorist aid call boxes may be required. The motorist aid call boxes will be integrated with the Road Rangers program to enhance emergency services to motorists and reduce incident response times.

Telecommunication service enhancements will improve availability of the Road Rangers to reduce incident response times. This will be accomplished through the use of an interoperable, two-way radio system.

The ITS Program will continue the rollout of a statewide maintenance repeater radio system with networking capability.



6.1.4 The Future of the Intelligent Transportation Systems Program Architecture, Standards, Software, Research, Training, and Modeling

The ITS Program is developing the SunGuideSM software for a statewide transportation management center software library system at a cost of \$8.9 million. Version 1.1 of the software is scheduled for release in June 2005 at the District 4 RTMC.

The ITS Program, in coordination with the District ITS stakeholders, will be updating the *SITSA* for ITS deployment, maintenance, operation, and homeland security.

The ITS Program is currently conducting statewide ITS research on:

- Road weather information systems; and
- A central data warehouse for ITS.

The ITS Program, in coordination with ITS Florida and the FHWA, sponsors statewide ITS training in the following areas:

- Intelligent transportation system communication with fiber optics;
- *Version 5.0* of the *NITSA*;
- Intelligent transportation system standards; and
- Intelligent transportation system modeling using the ITS Deployment Analysis System (IDAS),²⁸ the Corridor Simulation (CORSIM) model,²⁹ and the VisSimTM simulation software.³⁰

The ITS Program will develop its statewide ITS modeling program to incorporate IDAS, CORSIM, VisSim, DynaMIT,³¹ and DynaSMART³² operational modeling tools.

²⁸ More information about the IDAS software is available online at <http://idas.camsys.com/default.htm>.

²⁹ More information about Version 5.1 of the CORSIM interface is available online at http://www.fhwa-tsis.com/corsim_page.htm.

³⁰ © 2004 – VisSim is a trademark of Visual Solutions, Incorporated. More information about the VisSim software is available online at <http://www.vissim.com>.

³¹ More information about DynaMIT is available online at <http://web.mit.edu/its/dynamit.html>.

³² More information about DynaSMART is available online at <http://www.dynasmart.umd.edu>.



7. Final Recommendations – Core Strategies

Based on review and comment regarding the recommended preliminary *Core Strategies* documented in Appendix B, *Technical Memorandum No. 2*, a final list of *Core Strategies* has been developed for the ITS Program. These 35 recommended strategies are reasonable, achievable actions that can be implemented over the short term, and many are cross-referenced to the pertinent sections of the *Business Plan*. As indicated in Table 7.1, the *Core Strategies* are listed according to the primary ITS Program goals covered in *Section 2* of this update.

Table 7.1 – Core Strategies for the Update of Florida's ITS Strategic Plan

Strategy Number	In 2004 Business Plan? (Section No.)	Core Strategy
Goal 1: Move People and Goods Safely		
1		Develop diversion routes, arterial trailblazer signage, and adjustment plans for local signal system timings during an interstate diversion. Also document impacts and develop procedural guidelines.
2		Develop a concept of operations plan or procedures for evacuation coordination and management utilizing ITS.
3		Develop an emergency evacuation module under the SunGuide SM software development effort.
Goal 2: Preserve and Manage the System		
4	2.3.2	Develop a statewide 511 system that standardizes messages across regions and jurisdictions, and provides a central call intake and transfer system.
5		Expand statewide 511 marketing and outreach.
6	4.2.1 and 4.2.3	Prepare a statewide concept plan for the development and use of travel-time data collection systems in Florida that includes: <ul style="list-style-type: none"> • Establishing a vision and purpose for data collection and determining how it will be used to support planning and operations functions; • Determining the corridors for which travel-time data will be collected, the density coverage and frequency, and appropriate technology; and • Developing project architectures to ensure proper computing, storing, sharing, and usage of collected data.
7		Implement the findings of the iFlorida project statewide to enhance traffic detection, data collection, quality, and reporting, and to establish a data archiving and warehousing system.



Strategy Number	In 2004 Business Plan? (Section No.)	Core Strategy
8	4.2.1	Conduct concept testing for probe data collection techniques such as using cell phones as probes, the Heavy Vehicle Electronic License Plate (HELP) transponders, and LPRs in appropriate geographic areas.
9	7.1.2, 6.2.1, and 4.1.1	<p>Based on funding availability, annually update the <i>ITS CFP</i> by adding a new tenth year each year, and by:</p> <ul style="list-style-type: none"> • Focusing on completion of FIHS ITS infrastructure in rural areas; • Including funding for arterial projects that enhance and are interoperable with the FIHS ITS infrastructure; and • Maintaining and enhancing the ITS device database for configuration management, maintenance, and upgrade purposes.
10	4.2.2	Establish regular reporting of usage statistics for the motorist aid call box system.
11	4.1.2	Establish statewide microwave network management system reporting.
12	7.1.1	<p>Implement and monitor ITS performance measures</p> <ul style="list-style-type: none"> • Develop a data collection process to support ITS performance measures.
Goal 3: Enhance Economic Competitiveness		
13		Build on the iFlorida project to integrate key telemetered traffic monitoring stations (TTMS) with adjacent video detection locations to improve real-time travel data collection in rural areas.
Goal 4: Enhance Quality of Life and the Environment		
14		<p>Develop a strategic ITS information privacy plan and standards that address privacy issues and legislation, and recommends a structured outreach approach through:</p> <ul style="list-style-type: none"> • Developing privacy and security-related templates for inclusion in Requests for Proposal and Invitations to Negotiate; • Developing a structured public outreach program to inform the public about the uses of ITS data and the efforts to protect public privacy; and • Developing a formal policy for the FDOT Districts and local agencies on the use of all ITS components including CCTV video, probe data, etc. that may be viewed as intrusive.



Strategy Number	In 2004 Business Plan? (Section No.)	Core Strategy
15	2.2.7	Integrate ITS activities and processes into FDOT's planning, design, and production processes. Define the roles and responsibilities of other offices and programs in implementing ITS. <ul style="list-style-type: none"> • Develop and implement a standardized systems engineering approach that can be customized by deployment agencies.
Goal 5: Deploy an Integrated, Effective System		
16		Provide a review and evaluation of available detection technologies, and recommend applications for each.
17		Develop a plan to complete the telecommunication network for FIHS facilities not programmed in the <i>ITS CFP</i> .
18		Develop an operations and maintenance (O&M) manual that can be tailored to each District's needs, and that identifies guidelines and procedures for operating and maintaining ITS for each type of deployment. Activities include: <ul style="list-style-type: none"> • Identifying in-house roles and responsibilities, and recommending activities for outsourcing; • Identifying minimum reporting requirements and frequencies; • Recommending long-term strategies for service expansion and developing a methodology for determining labor needs and costs; • Identifying existing maintenance funding sources, as was done for operations costs. Recommending additional funding sources and the methodology for programming maintenance projects into the FDOT's Work Program.
19	3.2.5	Include state and local transit agencies in ITS forums, such as the ITS Working Group Meetings, training workshops, and ROOs.
20	2.2.2	Update the <i>SITSA</i> and applicable standards for consistency with <i>Part 940</i> of <i>Chapter 23</i> of the <i>CFR</i> , and provide technical assistance to the Districts regarding completion of those requirements.
21	2.2.3	Encourage MPOs and local agencies to acknowledge a <i>RITSA</i> and track agency documentation of acknowledgement.
22		Develop an ITS APL.
23		Explore the possibility of developing a statewide contract for procurement of ITS devices.



Strategy Number	In 2004 Business Plan? (Section No.)	Core Strategy
24	5.1.2	Provide guidance and training for the implementation of various ITS procurement strategies, including lessons learned from other ITS programs. Develop guidelines for each procurement method that consider project cost estimation, phasing, programming, requirements, selection, and purchasing.
25	2.2.5	Foster and support the development of ROOs around the state: <ul style="list-style-type: none"> • Define the ITS Section's role in ROOs, and determine how ROOs will coordinate and share data with the CMB and other ROOs; and • Prepare guidelines for the establishment of ROOs and modify the <i>Florida Statutes</i> to address regionalization of transportation operations.
26	2.2.5 and 2.2.6	Develop a plan to manage and maintain transportation operations within the region, and formalize the process in a regional concept of operations.
27		Explore the feasibility of broadband wireless communications and document lessons learned from other Districts or Florida projects.
28		Develop a policy to promote the development of before and after studies to assess the impacts and benefits of ITS.
29	5.1.1	Conduct a formal assessment of ITS training courses for each ITS professional level and recommend a business plan for implementing a structured training program. <ul style="list-style-type: none"> • Address funding needs and sources, course marketing, training logistics, course content, roles and responsibilities of the partnering agencies, and new course development; • Explore opportunities for tapping into national ITS training resources; • Evaluate the benefits of an ITS professional certification or qualification process; and • Improve and expand the training program to include more courses for professional development hours.
30	6.4.1	Develop and distribute the mission, vision, objectives, and guidelines for ITS research paper submittals and the selection criteria.
31	4.1.3	Evaluate the use of the statewide microwave network for telecommunication needs in upcoming projects and inform the Districts of possible applications.
32		Develop and implement ITS standards.



Strategy Number	In 2004 Business Plan? (Section No.)	Core Strategy
33		Populate the centralized repository on the Traffic Engineering & Operations Office Web site with ITS agreements, scopes, and contracts.
Goal 6: Provide a Well-Prepared and Secure Transportation System		
34		Prepare vulnerability assessment, response, recovery, and implementation plans for all critical infrastructures, including bridges, tunnels, and state RTMCs. Prepare assessments for multimodal systems and facilities, such as transit, rail, airports, and seaports.
35		Prepare vulnerability assessment, response, recovery, and implementation plans for RTMC cyber systems and field equipment.

7.1 Long-Term Strategies for Future ITS Strategic Plan Updates

The following strategies were proposed as short-term strategies for the implementation and update of *Florida's ITS Strategic Plan*. However, after review and input by the Districts and participating FDOT offices, these strategies were considered for implementation over the long-term horizon of the *ITS Strategic Plan*:

- Develop a formal policy, procedures, and public outreach program for implementation of AVME to reduce accidents and collisions. Focus on high-accident locations and construction locations for priority implementation. Strategy activities include:
 - Conducting a pilot program for testing of AVME in Florida; and
 - Preparing and implementing legislation to support AVME in Florida.
- Implement recommendations from the FTE's Cooperative Vehicle Highway Automation System (CVHAS) study on a statewide level.
- Pursue further research and development for the implementation of value pricing to alleviate congestion in major urban areas. Strategy activities include:
 - Developing a statewide policy on value pricing that recommends a uniform approach encompassing state and local jurisdictional policies, and identifies legal and enforcement issues that may be encountered;
 - Preparing an outreach program to gain acceptance and inform the public as to the purpose, need for, and operation of a value pricing program; and



- Organizing a small consortium of value pricing experts to serve as a technical resource for local and state policy groups.
- Assist Districts in implementing detection and monitoring systems in the rural areas, in addition to incident management, emergency response services, and rural tourism information systems. Strategy activities include:
 - Developing a rural marketing and funding plan that would leverage funding from corridor coalitions, tourism, public safety, transit, and federal lands;
 - Identifying rural “hotspot” locations for immediate deployment;
 - Establishing a partnership with nontransportation agencies, including the FSRDC, the Florida Commission for the Transportation Disadvantaged (CTD), VISIT FLORIDA, Native American organizations, and the National Park Service; and
 - Implementing a rural community outreach program to quantify mobility and safety needs, build ITS awareness, and broaden stakeholder support.
- Build on the *i*Florida project to integrate key TTMS with adjacent video detection locations to improve real-time travel data collection in rural areas.
- Identify early winners for APTS projects in a region, and recommend strategies and opportunities for coordination with regional ITS operations. Strategy activities include:
 - Promoting the use of automated vehicle location (AVL) systems to improve the efficiency of transit operations; and
 - Integrating proposed high-speed rail and existing commuter rail with regional ITS operations.
- Ensure interoperability between APTS and regional communication systems.
- Explore technologies and opportunities for enhancement of the transportation and communication infrastructure to support automated vehicle safety systems (AVSS). The *SITSA* should be updated to include AVSS market packages for the long term.
- Utilize the USDOT integration methodology and survey instruments to collect Florida ITS integration information. Strategy activities include:
 - Expanding existing database to include USDOT integration characteristics; and
 - Annually assessing Florida's integration levels based on USDOT metrics and including integration as a new ITS performance measure.



The 2005 Update of Florida's ITS Strategic Plan

- Develop an R&D program, managed by the FDOT, to elicit, evaluate, and fund ITS research proposals that support the state and national ITS programs. Strategy activities include:
 - Evaluating the feasibility of a state research center to be developed through public-private partnerships;
 - Pursuing additional funding sources for ITS R&D including federal earmarks, joint proposals with other states, and partnerships with private sector agencies and universities;
 - Participating in ITS America's Research, Integration, Training and Education (RITE) Forum³³ for research information and idea exchange;
 - Annually publishing and disseminating a Florida ITS R&D report; and
 - Coordinating the R&D program with the PCB program and recognizing successful efforts through the ITS Florida annual awards program.
- Develop an architectural framework and the tools and technologies necessary to enhance operational response to a variety of recurrent and other situations.
- Prepare a statewide APTS concept plan to guide the development, deployment, and integration of APTS around the state.
- Coordinate transit operations with RTMC operations.
- Assess the feasibility of using buses as probe vehicles.

³³ More information about ITS America's RITE program is available online at <http://www.itsa.org/rite.html>.



Appendix A

The Updated *Business Plan* for Florida's Intelligent Transportation Systems Program

BUSINESS PLAN OFFICE/UNIT: TRAFFIC ENGINEERING AND OPERATIONS/ITS SECTION TIER: 4						
	Objectives	Activities	Performance Indicators (Measures)	Targets (% , #, Score, Timeframe, etc.)	Progress (Current Status)	Person (s) Responsible
Vision	Be the national leader in ITS by promoting multijurisdictional coordination for the provision of an efficient, secure, reliable, and safe transportation system.					
Mission	Enhance the safety, security and efficiency of Florida's transportation system through the implementation of interoperable ITS technology in support of local, regional, and statewide mobility.					
1. Leadership	1. Establish Mission, Vision, Values for ITS statewide <i>T2-TO-1.1</i>	1. Develop M/V/V statements for ITS	Surveys to DTOEs and ITS Engineers		Ongoing	Lap Hoang
		2. Document M/V/V in Updated ITS Strategic Plan	Documentation Ongoing		Ongoing	
	2. Reinforce Mission, Vision and Values <i>T2-TO-1.2</i>	1. Frequent reference in presentations and staff meetings	Surveys to DTOEs and ITS Engineers		Ongoing	Elizabeth Birriel
		2. Monthly newsletter	Customer Feedback		Ongoing	
	3. Develop effective working relations with external customers <i>T2-TO-1.3</i>	1. Identify all external customers	Customers Identified	Jan. 2005	FDOT has guidelines regarding timely responses to requests from customers	Elizabeth Birriel
		2. Develop action plan to improve oral and written communications	Meeting FDOT Communications Guidelines	Jan. 2005	FDOT has guidelines regarding timely responses to requests from customers	
		3. Develop action plan for periodic meetings with external customers	Measures of customer satisfaction developed	Jan. 2005	Apply to all customers	

	Objectives	Activities	Performance Indicators (Measures)	Targets (% , #, Score, Timeframe, etc.)	Progress (Current Status)	Person (s) Responsible
2. Strategic Planning	1. Reduce Non-Recurring Congestion and Improve Highway Safety <i>T2-TO-2.1</i>	1. Implement ITS Program (Plan, Deploy, Operate and Maintain)	Track ITS Deployments through CFP		Ongoing	Gene Glotzbach
	2. Support and Champion ITS Integration	1. Develop and implement ITS standards and specifications	Accept standards	July 2005	Requesting comments	District ITS Engineers
		2. Approve FDOT Guidelines for the Implementation of Rule 940 in Florida	Executive Committee approval of Guidelines	Nov. 2004	Final Revisions	Liang Hsia
		3. Update and utilize the Statewide ITS Architecture	Modify existing architecture to meet Rule 940 requirements	April 2005		Liang Hsia
		4. Implement statewide SunGuide software	Number of districts deploying software		Ongoing	Liang Hsia
		5. Develop a statewide model for the establishment of Regional Operating Organizations in Florida	Model developed	Aug. 2005		Gene Glotzbach
		6. Coordinate RTMC operations with Traffic Incident Management Partners	Modify Computer Aided Dispatch (CAD) software	Aug. 2005	Developing Task Work Order	Mike Akridge
		7. Integrate ITS activities and processes into the FDOT planning, design and production processes.	Implement Systems Engineering Management Plan, Standards and ITS Architecture	Aug. 2005	Ongoing	Gene Glotzbach
		8. Develop ITS Center-to-Center network connections between RTMCs and other partner TMCs.	Establish district connections		Ongoing	Nick Adams
	3. Promote statewide 511 system	1. Continue 511 Working Group Meetings	Quarterly Meetings		Ongoing	Gene Glotzbach
		2. Maintain and expand 511 statewide system	Deployment of statewide 511 system	May 2005	Ongoing	District ITS Engineers

	Objectives	Activities	Performance Indicators (Measures)	Targets (% , #, Score, Timeframe, etc.)	Progress (Current Status)	Person (s) Responsible
3. Customer & Market Focus	1. Improve / maintain high level of customer satisfaction T2-TO-3.1	1. Establish goals for length of time to reply	Goals satisfied	Jan. 2005	Ongoing	Ingrid Birenbaum
		2. Develop process maps for replying to customers	Completion of Process maps	July 2005		
		3. Acknowledge 100% of all customer service requests	Time from receipt of inquiry to time of response to customers	Phone requests answered with in 48 hours. 5 working days if written		
		4. Reduce time to acknowledge customer service requests	Time from receipt of inquiry to time of response to customers (reduce from 48 hours/5 days to 24 hours/3days)	Phone requests answered within 24 hours. 3 working days if written		
	2. Improve / maintain communication between internal and external customers T2-TO-3.2	1. Maintain/Expand ITS Section Internet and Intranet Web sites	Web sites updated biweekly		Ongoing	Nick Adams
		2. Maintain/Expand ITS General Consultant Internet Web site	Web site updated on a project basis		Ongoing	Gene Glotzbach
		3. Create a centralized repository on a web site for district and statewide documents, agreements, scopes and contracts.	Develop site and maintenance process	Feb. 2005		Elizabeth Birriel
		4. Continue monthly "Disseminator" newsletters and periodic District Status Reports	Publish newsletters monthly and district status reports three times a year		Ongoing	Elizabeth Birriel
		5. Maintain/Improve ITS Working Group Meetings	Conduct survey	March 2005	Ongoing	Elizabeth Birriel
		6. Continue to produce the ITS Annual Report	Produce Report	June 2005		Elizabeth Birriel
		7. Continue to exhibit at national and statewide meetings and conferences	Participation in nation and statewide meetings and conferences		Ongoing	Elizabeth Birriel
		8. Maintain the Statewide Microwave Network	Network reliability and uptime	99.99% uptime annually	Ongoing	Nick Adams

	Objectives	Activities	Performance Indicators (Measures)	Targets (% , #, Score, Timeframe, etc.)	Progress (Current Status)	Person (s) Responsible
4. Measurement, Analysis, Knowledge Management	1. Maintain and expand ITS CFP and configuration management database	1. Enhance database to track ITS devices and information for integration tracking and software configuration management	Populate database	Sept. 2005	Ongoing	Gene Glotzbach
		2. Establish Statewide Microwave Network management systems reporting for analysis	Generate reports	Dec. 2004	Ongoing	Nick Adams
		3. Maintain mapping and a database for statewide telecom networks and evaluate the use of the Statewide Microwave System for the telecommunication needs of upcoming projects	Complete and present maps and database	March 2005	Ongoing	Nick Adams
	2. Enhance data collection, sharing, and reporting	1. Continue to explore the feasibility and use of probe data collection	Probe data collection for CVO	February 2004	Developing Task Work Order	Mike Akridge
		2. Establish regular reporting of usage statistics for the Motorist Aid call box system	Complete negotiations for delivery of data from FHP CAD system	Nov. 2004	Negotiation Ongoing	Nick Adams
		3. Improve standard distribution of ITS data including, at a minimum, video snapshots	Develop video and data sharing agreement form		Ongoing	Gene Glotzbach
5. Human Resource Focus	1. Ensure a well trained and motivated work force T2-TO-5.1	1. Continue to support a training program for ITS professionals in conjunction with ITS Florida	Determine district and transit systems ITS training needs	Jan. 2005		Elizabeth Birriel
		2. Develop and conduct a training session for ITS procurement strategies programming and contracting	Develop and conduct training session	April 2005		Elizabeth Birriel

	Objectives	Activities	Performance Indicators (Measures)	Targets (% , #, Score, Timeframe, etc.)	Progress (Current Status)	Person (s) Responsible
6. Process Management	1. Improve efficiency and reduce cost of ITS projects T2-TO-6.3	1. Manage statewide system changes through the Change Management Board	Documented changes		Ongoing	Gene Glotzbach
		2. Develop a statewide Quality Assurance Plan	FHWA approval of the SEMP and accompanying QA Plan	Dec. 2004	Ongoing	Gene Glotzbach
	2. Improve identification and programming of District ITS needs for CFP	1. Develop and implement annual CFP update process and schedule	Identify ITS needs from Districts	Jan. 2005	Update process has been initiated	Gene Glotzbach
	3. Provide technical assistance to the districts and other state agencies	1. Provide District 3 Bay County ATMS project support	Develop 100% Plans	April 2005	Project initiated	Gene Glotzbach
		2. Provide District 2 CEI Support	Reviews and reports	Nov. 2004	Ongoing	Gene Glotzbach
		3. Provide District 1 TMC Systems Integration Support	Develop Request for Proposals	Dec. 2004	Developing Task Work Order	Gene Glotzbach
		4. Provide ITS Center-to Center Network development support to Districts as RTMCs are constructed and the SunGuide Software is deployed	Districts become online		Ongoing	Nick Adams
		5. District 3 Tallahassee Amber Alert Grant	Design Plans	Aug. 2005	Ongoing	Nick Adams
		6. District 1 I-75 Freeway Management System Design Build Criteria Package	Design Build Criteria Package including 60% Plans	Nov. 2004	Ongoing	Gene Glotzbach
		7. District 5 iFlorida Support	Design Plans, Reports, and Evaluation	May 2005	Ongoing	Nick Adams and Gene Glotzbach
		8. Develop an APTS communication systems primer to guide transit systems in the planning and deployment of APTS communication systems	Develop primer	Dec. 2004	Ongoing	Nick Adams
		9. Continue to provide APTS technical assistance and support to Florida transit systems through the Resource for Advanced Public Transportation System (RAPTS) program	Prepare transit Rule 940 guidelines	Dec. 2004	Ongoing	Gene Glotzbach
	4. Promote and enhance ITS Research Program	1. Develop and distribute mission, vision, and objectives for ITS research paper submittals and identify selection criteria	Develop mission, vision, objectives and selection criteria	Nov. 2004		Elizabeth Birriel

	Objectives	Activities	Performance Indicators (Measures)	Targets (% , #, Score, Timeframe, etc.)	Progress (Current Status)	Person (s) Responsible
7. Organizational Performance Results	1. Maximize performance of the statewide transportation system <i>T2-TO-7.2</i>	1. Implement and monitor ITS Performance Measures as recommended by the Florida Transportation Commission	Monitor and report performance measures	Jan. 2005	Ongoing	Elizabeth Birriel
		2. Implement ITS Cost Feasible Plan projects	Projects deployed		Ongoing	District ITS Engineers

Notes: T2-TO-1.1 Represents link to objectives and activities identified in the Traffic Operations (Tier 2) Business Plan



Appendix B

Updated *Technical Memoranda* that Support the 2005 Update of Florida's Intelligent Transportation System Strategic Plan



***Technical Memorandum No. 1 –
Initial Actions Appraisal***

Technical Memorandum No. 1

Florida's Intelligent Transportation Systems Strategic Plan Update

Initial Actions Appraisal

April 19, 2004
Version 3



Prepared for:

Florida Department of Transportation
Traffic Engineering and Operations Office
Intelligent Transportation Systems (ITS) Section
605 Suwannee Street, M.S. 90
Tallahassee, Florida 32399-0450
(850) 410-5600

DOCUMENT CONTROL PANEL		
File Name:	<i>Technical Memorandum No. 1 – Florida's Intelligent Transportation Systems Strategic Plan Update: Initial Actions Appraisal</i>	
File Location:	F:\New Briefcase\040416 TWO25 TM1 V1 (resp from DQ).doc	
Deliverable Number:		
Version Number:	3	
Name		Date
Created By:	Diane Quigley	January 20, 2004
Reviewed By:	Gene Glotzbach	
	Lap Hoang	
	District ITS Engineers	
	Dave Hodges	
	Diane Quigley	April 16, 2004
Modified By:	Dave Hodges	
	Pamela L. Hoke	April 15, 2004
	Pamela L. Hoke	April 19, 2004
Completed By:	Pamela L. Hoke	April 19, 2004

Table of Contents

1.	Introduction	1
1.1	<i>Florida's ITS Strategic Plan Content.....</i>	1
1.2	<i>Need for Update.....</i>	3
2.	Purpose	5
3.	Document Organization.....	6
4.	Review and Appraisal of Initial Actions	7
5.	Summary and Recommendations	17

List of Tables

Table 4.1 – Appraisal of the ITS Program's Initial Actions	8
--	---

List of Acronyms

APTS.....	Advanced Public Transportation System
APL	Approved Products List
ATIS.....	Advanced Traveler Information System
CFP	<i>Ten-Year ITS Cost Feasible Plan</i>
CMB.....	Change Management Board
CVISN.....	Commercial Vehicle Information Systems and Networks
CVO	Commercial Vehicle Operations
FDOT	Florida Department of Transportation
FIHS.....	Florida Intrastate Highway System
FMS.....	Freeway Management System
FTA.....	Federal Transit Agency
FTP	<i>2020 Florida Transportation Plan</i>
GC.....	General Consultant
I-4.....	Interstate 4
I-95.....	Interstate 95
IMS	Incident Management System
ITN.....	Invitation to Negotiate
ITS.....	Intelligent Transportation Systems
LOS	Level of Service
MCCO.....	Motor Carrier Compliance Office
MPO.....	Metropolitan Planning Organization
NITSA	<i>National ITS Architecture</i>
O&M.....	Operations and Maintenance
PTO.....	Public Transportation Office

RAITS	Rural Area ITS
RTMC	Regional Transportation Management Center
RWIS	Road Weather Information System
<i>SEMP</i>	<i>Systems Engineering Management Plan</i>
SPO	Systems Planning Office
<i>SITSA</i>	<i>Statewide ITS Architecture</i>
TERL	Traffic Engineering Research Laboratory
TMC	Transportation Management Center
TPE	Turnpike Enterprise
UAV	Unmanned Aerial Vehicle
WIM	Weigh-in-Motion

1. Introduction

1.1 Florida's ITS Strategic Plan Content

Florida's Intelligent Transportation System (ITS) Strategic Plan – Final Report, hereinafter the *Plan*, completed in August 1999, was designed to guide the Florida Department of Transportation (FDOT), Florida's metropolitan planning organizations (MPO), and local governments in the planning, programming, and deployment of integrated, multimodal ITS services. 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 FDOT Traffic Operations Office and the Systems Planning Office (SPO) developed the *Plan* as part of a joint effort, with support from a statewide task team that included representatives from the Central Office, the Districts, the Motor Carrier Compliance Office (MCCO), and the MPOs. District representation included staff from the Planning, Design, Construction, and Maintenance Offices. During the creation of the *Plan*, a comprehensive public outreach program was conducted to ensure that stakeholder needs and requirements were also addressed.

Florida's ITS Strategic Plan is composed of six major sections:

- *Section 1: Purpose and Need* – This section identifies the purpose and application of the *Plan* from a statewide, multimodal perspective.
- *Section 2: The Challenge* – This section discusses the status of transportation in Florida, and presents the barriers and constraints that agencies may face in providing expanded transportation services. The document concludes that improved management and operation of the transportation system is necessary to improve mobility.
- *Section 3: What is ITS?* – This section presents an overview of ITS applications and the benefits associated with the implementation of ITS. It describes components of the *National ITS Architecture (NITSA)* and recommends the development of a statewide ITS architecture with regional and corridor architecture components.
- *Section 4: ITS Vision for Florida* – This section provides a 20-year vision for ITS in Florida as a guide in developing statewide ITS services that are consistent with FDOT transportation policy. The section presents the goals and objectives for the *Plan* as they relate to the *2020 Florida Transportation Plan (FTP)* goals.
- *Section 5: ITS Strategic Planning Guidelines* – This section identifies guiding principles to characterize the ITS Program and to describe how Florida's ITS vision will be realized over the next 20 years.

- *Section 6: ITS Business Plan* – This section serves as a short-term component of *Florida's ITS Strategic Plan* and identifies the resources, processes, and program elements necessary to implement Florida's ITS vision. It is recommended that this short-term business plan be accomplished through the implementation of several initial processes and ITS operational strategies presented in the form of "Initial Actions".

A series of resource documents and issue papers also support the *Plan*. These documents provide the data, analysis, research, and documentation necessary to support the conclusions and recommendations contained in the *Plan*. Resource documents and issue papers include:

- **Resource Documents** –
 - *Florida's Statewide ITS Strategic Plan – Summary of Survey Results* – This document presents the findings from a survey of ITS activities and programs of other state agencies.
 - *Florida's Statewide ITS Strategic Plan – Vision, Guiding Principles, Goals and Objectives* – This document details the development of *Florida's ITS Strategic Plan* vision, guiding principles, goals, and objectives.
 - *Florida's Statewide ITS Strategic Plan – ITS Project Cost Comparison* – This document compares similar freeway management system (FMS) costs in the State of Florida.
 - *The Business Plan of the Florida Statewide ITS Strategic Plan, 1999: An Implementation Program for the Next Five Years* – This document identifies the resources, arrangements, and program elements necessary to implement *Florida's ITS Strategic Plan* over the initial five years. These elements are summarized in 31 Initial Actions and Strategies; and
 - *Florida Statewide ITS Strategic Plan – Department Organizational Structure Alternatives to Implement ITS* – This document recommends an organizational structure for the establishment of a statewide FDOT ITS Office and Program.
- **Issue Papers** – These documents present information regarding advanced technologies, policies, and applications designed to guide the focus and implementation of the ITS Initial Strategies. The recommendations contained in these issue papers are based on practical applications and research from various ITS programs across the nation. They include:
 - *Florida Statewide ITS Strategic Plan – ITS Cost Analysis Issue Paper*;
 - *Economic Impacts of Intelligent Transportation Systems in Florida – An Issue Paper – Final Report*;

- *Florida Statewide ITS Strategic Plan – Integration of ITS into the MPO Transportation Planning Process Issue Paper;*
- *Operations, Management and Maintenance Issues Paper;*
- *Florida Statewide ITS Strategic Plan – Procurement Issue Paper – Final;*
- *Rural / Inter-Urban ITS Applications Issue Paper;* and
- *Florida Statewide ITS Strategic Plan – Implementation Authority Review and Recommendations Issue Paper.*

These resource documents and issue papers explore the various components of a successful ITS program, and recommend the best strategies and actions for establishing Florida's ITS Program. These documents, in addition to the *Plan* documentation, comprise *Florida's ITS Strategic Plan*. Therefore, subsequent updates to the *Plan* must also consider updates to the appropriate supporting resource documents and issue papers.

1.2 Need for Update

The primary purpose for the update of *Florida's ITS Strategic Plan* is to expand and redirect the efforts and responsibilities of the statewide ITS Program in a manner consistent with the evolution of national ITS goals and the FDOT organizational structure.

Since the *Plan's* completion in 1999, the FDOT has developed and implemented a statewide ITS Program to oversee and guide the development of ITS on Florida's highway system. This Program, initiated in July 2000, consists of a state ITS Office, District ITS programs, and other FDOT offices. Together, these offices and programs form a collaborative effort in funding, developing, and deploying an integrated statewide ITS. Recently, however, the Central ITS Office has merged with the Central Traffic Operations Office, thus requiring a consolidation of business plans and a revision of the organizational structure outlined in the original *Florida's ITS Strategic Plan*.

Additionally, the ITS Program was created based on the Initial Actions and Strategies recommended by the agencies involved in the *Plan's* development. These short-term strategies were designed to focus interagency resources in the development of the statewide ITS Program. Since the ITS Office's inception in July 2000, many of these Initial Actions and Strategies have been completed or addressed. The findings and recommendations identified in several of the *Plan's* resource documents and issue papers have been expanded in detail or developed into projects that have been or currently are being completed.

Additionally, recent national ITS documents, policies, and programs have been formulated that impact the findings and recommendations initially documented in the *Plan*. Many of the strategies and actions contained in the current *Plan* require updating based on new national policies, programs, and technologies. One example of this new documentation is the recently completed *National Intelligent Transportation Systems Program Plan*.¹ This document defines a new vision and goals for the national ITS program. The *National ITS Program Plan* includes a new goal for enhancing and encouraging the use of ITS in homeland security, which was not considered in the original *Florida's ITS Strategic Plan*.

The update of *Florida's ITS Strategic Plan* will redefine the goals and objective of Florida's ITS Program; reflect ITS Program accomplishments over the last several years; revise the organizational structure and business plan; and provide new direction for the next phases of ITS deployment in Florida.

¹ *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision*, Intelligent Transportation Society of America (January 2002).

2. Purpose

The first step in identifying new directions for Florida's ITS Program is to determine where the ITS Program is today. By evaluating the accomplishments of the ITS Program with respect to the original *Plan*, the FDOT ITS Program's managers can decide if current courses of action should be maintained, abandoned, or redirected prior to identifying new strategies for the next several years. Additionally, justification for these modifications can be documented for posterity.

As part of *Section 6 of Florida's ITS Strategic Plan*, 31 Initial Actions were recommended for FDOT implementation to fulfill the vision and goals identified in the *Plan*. These 31 Initial Actions served as a "short-term" component of *Florida's ITS Strategic Plan*. They offered several "early winners" to guide the planning and deployment of ITS over the program's first five years, and assist the FDOT in focusing interdepartmental resources and skills in the development of a statewide ITS Program.

To measure the ITS Program's progress in accomplishing these objectives, an appraisal of the Initial Actions was conducted. This *Technical Memorandum* presents the results of the evaluation exercise and attempts to determine if incomplete Actions are still relevant to the progress of the ITS Program.

3. Document Organization

This document is organized in the following sections:

- *Section 1: Introduction* – This section presents the background information regarding *Florida's ITS Strategic Plan*, and documents project goals and objectives;
- *Section 2: Purpose* – This section documents the purpose of this *Technical Memorandum*;
- *Section 3: Document Organization* – This section identifies the contents and organization of this *Technical Memorandum*;
- *Section 4: Review and Appraisal of Initial Actions* – This section evaluates the ITS Program with respect to the Initial Actions, identifies the disposition of the Actions, and provides justification for the determination; and
- *Section 5: Evaluation Summary and Recommendations* – This section presents a summary of the ITS Program's progress with respect to the Initial Actions and identifies those Initial Actions that should be carried forward into *Florida's ITS Strategic Plan* update process.

4. Review and Appraisal of Initial Actions

As stated previously, *The Business Plan* contained in *Florida's ITS Strategic Plan* identified 31 Initial Actions for implementation by the FDOT to fulfill the vision and goals identified in the *Plan*. These 31 Initial Actions recommended core implementation strategies to guide the planning and deployment of the initial ITS statewide system, and to recommend a plan for the operational structure and processes of the ITS Program.

It should be noted that the ITS Program consists of several agencies, including the FDOT Traffic Operations Office, ITS Office, SPO, District ITS programs, and the MPOs. The status and appraisals of the Initial Actions represent the actions of the ITS Program as a whole. It does not assign agency responsibility for complete or incomplete Actions.

Table 4.1 presents a verbatim copy of the 31 Initial Actions contained in the *Plan* and identifies the disposition of the Actions to date. The status column indicates the current status of the Action, providing details on whether the Action is complete, ongoing, partially complete, or incomplete. The legend identifying the Initial Action's status is included with the Table. The justification column provides a more detailed explanation of each Initial Action's status. *Section 5* of this *Technical Memorandum* discusses the summary of the Initial Actions appraisal.

Table 4.1 – Appraisal of the ITS Program's Initial Actions

No.	Initial Action	Status	Comments
1.	The Department should add a goal or expand an existing goal in the <i>FTP</i> that addresses the management and operation of the state's transportation system in real time. This new (or enhanced) goal should be in third priority order after the Safety and Preservation goals.	●	The <i>2002 Short-Range Component of the FTP</i> identifies objectives for each of the <i>FTP</i> goals. For the strategic goal "Preserve and Manage a Safe, Efficient Transportation System," a short-range objective for ITS is included that states, "By 2011, improve system efficiency by deploying ITS technology on critical state corridors."
2.	The Department should establish an <i>Intelligent Transportation Systems Program</i> as a part of the Program Resource Plan process under the Assistant Secretary for Transportation Policy, to be responsible for all ITS activities of the Department and for the Department's role in incident management programs.	●	The ITS Office and Program was established in July 2000 under the Assistant Secretary for Transportation Policy. However, this organizational structure was modified on December 1, 2003. The ITS Office is currently the ITS Program and is part of the FDOT Traffic Operations Office. The ITS Program Manager now reports directly to the State Traffic Operations Engineer.
3.	The Department should establish a position of statewide ITS <i>Program Manager</i> with a responsibility to manage the ITS budget, staff, and resources and to ensure coordination of all ITS and incident management activities.	●	Chester Chandler, III, P.E., was selected to serve as the FDOT's ITS Program Manager. An ITS budget was established; however, it is scheduled to be merged with the Traffic Operations' budget in July 2004.
4.	The Department should develop ITS Program performance measures that conform to the State's performance-based budgeting requirements.	☀	Draft performance measures were identified as part of the <i>Ten-Year ITS Cost Feasible Plan (CFP)</i> , but were never adopted. Recently, at the direction of the Florida Transportation Commission, the ITS Program is coordinating with ITS Florida to establish ITS performance measures that include agency performance measures.

Status Legend:

- - Complete
- - Partially Complete
- ☀ - Ongoing
- - Incomplete

Florida's ITS Strategic Plan Update – Initial Actions Appraisal

No.	Initial Action	Status	Comments
5.	Each District should create a District ITS Program and designate a District ITS Program Manager who will be responsible for District ITS and incident management activities, and will ensure full integration with the urban regions in that District.	●	All Districts have established an ITS program and have designated ITS program managers or ITS engineers who are responsible for incident management and ITS activities within the Districts.
6.	Each District should develop an ITS infrastructure and initiate development or enhancement of a transportation management center focusing on the interstate highways. Consideration should be given to the center evolving to have multimodal management capabilities and to be operated in urban areas at Level-of-Service (LOS) 3 within five years (M-F 12 hours per day). The Districts will develop an implementation plan to achieve this goal and the Department's ITS Program will support this effort.	■	<p>The following has been planned or deployed the following regarding Initial Action No. 6:</p> <ul style="list-style-type: none"> • District 1 has an incident management system (IMS) and a regional transportation management center (RTMC) programmed; • District 2 deployed an IMS and a RTMC that is operational at a LOS 3 (i.e., operated Monday through Friday for 12 hours per day); • District 3 has a FMS and RTMC programmed; • District 4 has a FMS and RTMC under construction; • District 5 has a FMS and RTMC operational at LOS 3; • District 6 has a FMS and RTMC operational at LOS 5; • District 7 has a FMS and RTMC programmed; • Florida's Turnpike Enterprise has one FMS and two RTMCs operational at LOS 5; and • All Districts have developed implementation plans to guide the long-term development and deployment of ITS.

Status Legend:

- - Complete
- - Partially Complete
- ☀ - Ongoing
- - Incomplete

Florida's ITS Strategic Plan Update – Initial Actions Appraisal

No.	Initial Action	Status	Comments
7.	Each District should develop a maintenance plan and annual maintenance cost estimate in order to develop budget and staffing needs. The Department's ITS Program will coordinate and assist in this effort.	○	A few Districts have developed operational and maintenance plans for ITS deployments over the next several years. However, statewide guidance and consensus regarding the establishment of operational and maintenance plans in addition to operational and maintenance cost and funding has not been achieved.
8.	The Department should develop an ITS Operations Manual. Each District will adapt the manual's policies and procedures to their requirements.	○	A statewide operations manual has not been developed to date.
9.	Each District should develop ITS staff requirements and a training program that will enable them to meet the ITS services they plan to deliver over the next five years.	■	As part of the <i>CFP</i> , a staffing and operations plan was recommended for each District to operate and maintain the ITS Florida Intrastate Highway System (FIHS) improvements. A few Districts have met staffing needs as required, not only to support the <i>CFP</i> and other ITS deployments, but also requirements beyond the <i>CFP</i> .
10.	Each District should assess staff resources and capabilities to determine which, if any, operations and maintenance functions are appropriate for outsourcing.	○	Several Districts have determined the ITS functions best suited for outsourcing; however, a few Districts are still requesting guidance. The operations and maintenance (O&M) study should contain lessons learned and recommend functions for outsourcing.

Status Legend:

- - Complete
- - Partially Complete
- ☀ - Ongoing
- - Incomplete


Florida's ITS Strategic Plan Update – Initial Actions Appraisal

No.	Initial Action	Status	Comments
11.	The Department should conduct an <u>in-depth</u> analysis of the Florida Public Records Law and existing Florida contracting procedures to assess their impact on ITS procurements and private sector response, and to provide recommendations for needed modifications.	○	This Initial Action is no longer applicable because many Districts are employing the design-build procurement method, and several Districts are employing a systems manager procurement method. All are consistent with the Florida <i>Public Records Law</i> . However, additional training is required for the systems manager approach and best methods for procuring ITS components.
12.	The Department should develop and maintain a statewide ITS architecture and supporting standards. This architecture should utilize the National ITS Architecture and be adapted as needed to meet Florida's needs.	●	The <i>Florida Statewide Intelligent Transportation Systems Architecture (SITSA) and Standards</i> project was completed in February 2001. The <i>SITSA</i> was customized based on the <i>NITSA</i> .
13.	Each District, in consultation with the appropriate local governments and MPOs, should develop an architecture or framework for short- and long-term comprehensive ITS deployment for each urban region.	☀	The <i>FDOT Draft Rule 940 Procedures in Florida</i> recommend the acknowledgement and use of the <i>SITSA</i> regional component as a regional ITS architecture to be used consistently with the <i>SITSA</i> . Several MPOs and Districts have acknowledged the appropriate regional component of the <i>SITSA</i> for their use, although not all MPOs or Districts have done so.
14.	The Department should develop ITS project implementation procedures. The procedures should cover both the planning and project design phases.	☀	This effort is being completed as part of the <i>Systems Engineering Management Plan (SEMP)</i> , which is scheduled for completion in the summer of 2004. The <i>Draft Rule 940 Procedures</i> define roles and responsibilities for the implementation of ITS in the planning agencies.


Status Legend:

- - Complete
- - Partially Complete
- ☀ - Ongoing
- - Incomplete

Florida's ITS Strategic Plan Update – Initial Actions Appraisal

No.	Initial Action	Status	Comments
15.	The Department should develop ITS project standards and specifications.		The ITS Office has developed draft statewide ITS device standards and specifications for application by the Districts and are currently awaiting final approval or adoption. This process will be a continuous effort, as the standards must reflect new and updated technologies.
16.	The Department should coordinate with and provide technical assistance, education, and training to the MPOs as they integrate ITS into their long-range transportation planning process.	●	The <i>Draft Rule 940 Procedures</i> identify a process for integrating ITS into the long-range transportation planning process. The strategy includes an outreach process for the MPOs and transit agencies.
17.	The Department, working in cooperation with the MPOs and local governments, should ensure the development of an ITS architecture for each urban area, consistent with National ITS Architecture guidelines. This should include development of an ITS task in the unified planning work program and an ITS element in the long-range transportation plan, as well as definition of the MPO and operating agencies' roles in ITS deployment.	●	The <i>Draft Rule 940 Procedures</i> identify a process for integrating ITS with the long-range transportation planning process and recommend the adoption of the <i>SITSA</i> regional components for MPO and District use.
18.	The Department should initiate the development and support of a rural/interurban ITS element.	●	The ITS Office cosponsored the Rural Area ITS (RAITS) Conference in Florida during the summer of 2003. Additionally, the <i>CFP</i> includes several rural ITS applications for designated reverse-lane evacuation corridors. Outside of the <i>CFP</i> , several Districts are deploying rural ITS applications.

Status Legend:

- - Complete
- - Partially Complete
-  - Ongoing
- - Incomplete

Florida's ITS Strategic Plan Update – Initial Actions Appraisal

No.	Initial Action	Status	Comments
19.	The Department should establish a Commercial Vehicle Operations (CVO) element to coordinate all CVO activities in Florida and to achieve a goal of implementing a safety based pre-clearance system on I-4 and I-95 within five years. A CVO Business Plan to achieve this goal and to address other CVO issues should be developed.	●	The ITS Office developed the <i>Florida Commercial Vehicle Information Systems and Networks (CVISN) Business Plan</i> in March 2001 and is currently implementing a HELP/PREPASS preclearance system at all weigh-in-motion (WIM) stations.
20.	The Department should continue and enhance the coordination and funding of ITS product testing and applied research. The research program should be used in the development of statewide ITS standards and specifications.	☀	The ITS Office coordinates with the Traffic Engineering Research Laboratory (TERL) in the development of the ITS device standards and specifications, and the creation of an ITS Approved Products List (APL). The ITS Office is also conducting research projects on the application of unmanned aerial vehicles (UAV) and road weather information systems (RWIS) for use in forecasting surface weather conditions for state highways and centralized data warehousing. The ITS Office continues to support its research grant program, annually selecting ITS projects for funding.

Status Legend:

- - Complete
- - Partially Complete
- ☀ - Ongoing
- - Incomplete

Florida's ITS Strategic Plan Update – Initial Actions Appraisal

No.	Initial Action	Status	Comments
21.	The Department should define a model and process for stakeholder involvement at three levels: <i>Statewide</i> for strategic planning and policy issues; <i>Regional</i> for integration and local issues and directions; and <i>Project</i> for specific projects, such as the I-4 ITS Corridor Study, or program elements, such as CVO. The Department should then take the initial steps to implement the process.	●	The ITS Working Group was assembled prior to 2001, and is composed of ITS engineers and planners from the private and public sectors. It encompasses all aspects and levels of ITS practice, and provides an opportunity for input and feedback on statewide strategic planning, policy, and deployment issues. As part of Florida's <i>SITSA</i> , regional stakeholder workshops were held in each District to guide architecture development to meet local requirements. Additionally, the ITS Office has established a Change Management Board (CMB) to manage and implement change for statewide ITS services.
22.	The Department, in cooperation with ITS Florida, should initiate the formation of a Statewide ITS Stakeholder Advisory Committee to provide input into statewide strategic planning and policy issues.	■	The ITS Working Group meets three times a year in conjunction with the ITS Florida Advisory Committee to provide input on statewide strategic planning, policy, and deployment issues. The Advisory Committee will provide feedback on the update of <i>Florida's ITS Strategic Plan</i> . The ITS Office is working towards providing more forums for open discussion among the Districts.
23.	The Department should develop a private sector outreach element within the ITS Program to actively encourage private sector participation in ITS and to solicit private sector proposals to the proper District(s) or program element.	☀	The ITS Office has issued several invitations to negotiate (ITNs) for private sector participation in telecommunications, TMC software, deployment, and 511 projects. More partnerships are continuing to be developed as part of the central and south Florida advanced traveler information system (ATIS) initiatives and with local expressway authorities in sharing of ITS data.

Status Legend:

- - Complete
- - Partially Complete
- ☀ - Ongoing
- - Incomplete

Florida's ITS Strategic Plan Update – Initial Actions Appraisal

No.	Initial Action	Status	Comments
24.	The Department should develop, operate, and maintain a statewide ITS Web page that will provide coordination of District ITS Web sites and public information.	●	The ITS Office has developed the ITS Office Web page as part of the www.myflorida.com site, in addition to an ITS General Consultant (GC) project Web site. These sites are maintained monthly.
25.	The Department should identify training needs, both internal and external to the Department, and in conjunction with ITS Florida, establish priorities, implement and maintain an ITS training program.	●	In conjunction with ITS Florida, the ITS Office has developed and implemented an ITS training program for all levels of ITS practitioners. The training program is coordinated through ITS Florida and is posted on their Web site.
26.	The Department should pro-actively support the development, coordination, and deployment of public transportation ITS technology.	○	The ITS Office currently coordinates with the FDOT Public Transportation Office (PTO) regarding a select few advanced public transportation system (APTS) projects, and several Districts have provided assistance and funding to the Federal Transit Agency (FTA) for ITS projects. This Initial Action will continue to be emphasized and recommended in the update of <i>Florida's ITS Strategic Plan</i> .
27.	The Department should develop a program-level budget to fund needed staff and to carry out ITS programs.	■	A program-level budget was developed to staff and implement ITS projects at the state level. However, this budget is scheduled to be merged with the Traffic Operation Office's budget in July 2004. Additionally, program-level funding for the District ITS programs has not been established.
28.	Each District should develop a budget to staff and implement the ITS Program for the District.	■	With the approval of the <i>CFP</i> , the FDOT management recommended that the Districts establish a budget to staff and implement the <i>CFP</i> projects. However, outside the <i>CFP</i> , no additional funding has been set aside for District ITS programs.

Status Legend:

- - Complete
- - Partially Complete
- ☼ - Ongoing
- - Incomplete

Florida's ITS Strategic Plan Update – Initial Actions Appraisal

No.	Initial Action	Status	Comments
29.	The Department should examine available funding sources for both capital projects and operations and maintenance, the role of public/private partnerships, and ITS project mainstreaming to determine the best method of funding the ITS Program over the next several years.	●	The <i>CFP</i> identifies ITS projects for deployment on the FIHS over a 10-year period, and provides estimated annual O&M costs for each project.
30.	Each District should estimate and budget recurring costs, such as response and preventative maintenance activities, staffing, spare parts inventory, and in-house equipment needed to operate and maintain systems.	●	Several Districts have inventoried their equipment and determined the maintenance requirements for the purpose of hiring contractors to serve as maintenance staff. However, statewide guidance for O&M has not been provided.
31.	Each District should produce and update annually an ITS Implementation Plan that defines policies, staff needs, training needs, budgets, and projects to be implemented over the next five years.	●	With the development of the <i>CFP</i> , the Districts will coordinate annually with the ITS Office in developing an ITS program for their District that implements the <i>CFP</i> projects, in addition to identifying local ITS projects and needs.

Status Legend:

- - Complete
- - Partially Complete
- ☀ - Ongoing
- - Incomplete

5. Summary and Recommendations

Table 4.1 indicates that 14 of the 31 Initial Actions recommended for the ITS Program have been completed. Another five Initial Actions have been partially addressed and six are ongoing. Only six Initial Actions have not been completed. These totals indicate that 81 percent of the Initial Actions have been completed or addressed by the ITS Program since its inception approximately three years ago.

The six Initial Actions not completed are:

1. Each District should develop a maintenance plan and annual maintenance cost estimates to be used in the development of budget and staffing needs. The FDOT's ITS Program will coordinate and assist in this effort;
2. The FDOT should develop an ITS operations manual. Each District will adapt the policies and procedures to its requirements;
3. Each District should assess staff resources and capabilities to determine which, if any, O&M functions are appropriate for outsourcing;
4. The FDOT should conduct an in-depth analysis of Florida's *Public Records Law* and existing Florida contracting procedures to assess their impact on ITS procurements and private sector response, and provide recommendations for needed modifications.
5. The FDOT should proactively support the development, coordination, and deployment of ITS technology for use by public transportation.
6. Each District should estimate and budget recurring costs, such as response and preventive maintenance activities, staffing, spare parts inventory, and in-house equipment needed to operate and maintain systems.

The five partially completed actions include:

1. Each District should develop an ITS infrastructure and initiate development or enhancement of a transportation management center (TMC) focusing on the interstate highways. Consideration should be given to the center evolving to have multimodal management capabilities and to operate Monday through Friday for 12 hours per day in urban areas at LOS 3 within five years. The Districts will develop an implementation plan to achieve this goal and the FDOT's ITS Program will support this effort.
2. Each District should develop ITS staff requirements and a training program that will enable them to meet the ITS services they plan to deliver over the next five years.

3. The FDOT, in cooperation with ITS Florida, should initiate the formation of a Statewide ITS Stakeholder Advisory Committee to provide input into statewide strategic planning and policy issues.
4. The FDOT should develop a program-level budget to fund needed staff and to support ITS programs.
5. Each District should develop a budget to staff and implement an ITS program for the District.

The partially completed items reflect the Districts' status in developing and implementing a RTMC, and the staffing and training needs associated with the operation of the RTMCs and regional ITS services. Districts 2, 5, and 6, and Florida's Turnpike have operational RTMCs that are staffed by trained personnel. The remaining Districts are developing plans for their RTMCs, as funded in the *CFP*, and are currently addressing the issue of staffing the RTMCs.

Additionally, dedicated funding sources for the District ITS programs, beyond the *CFP*, have not been identified. Additional revenue would assist in the hiring and training of staff for the RTMCs. The lack of adequate funding and resources to implement and maintain ITS services at the District level has been an ongoing concern for the ITS Program. Based on requests from the Districts, the ITS and Traffic Operations Offices are currently working with the Districts and appropriate Central Office representatives to identify and increase dedicated funding for both the O&M of ITS deployments.

In reviewing the incomplete Initial Actions, the ITS Program has been deficient in addressing three areas:

- Operations and Maintenance (O&M) – The majority of the incomplete Initial Actions refer to the development of a statewide ITS O&M manual and District ITS O&M plans with statewide assistance. The FDOT was charged with two primary responsibilities:
 - Developing the O&M manual for use by the Districts, and
 - Assisting the Districts in development of their O&M plans.

To date, neither the ITS Office nor the Traffic Operations Office has prepared an O&M manual for the Districts. Additionally, they have provided minimal assistance to the Districts regarding O&M plans. The Districts are collaboratively developing a statewide O&M study. This study includes a survey of existing ITS O&M costs for comparison with the maintenance costs the FDOT Maintenance Office utilizes in calculating ITS maintenance funding. The study will also evaluate the O&M functions of the Districts to determine the most feasible activities for privatization. The ITS Office is providing assistance to the Districts in preparing the study.

Additionally, a survey of District ITS deployments revealed that several Districts have aggressively dealt with O&M issues, and continue to document and project ITS O&M needs over a two- to three-year period, based on increasing inventory. The remaining Districts tend to review ITS O&M costs on an annual basis.

Although the Districts have shown initiative in addressing statewide O&M needs and requirements, *Florida's ITS Strategic Plan* should continue to promote the development of a statewide O&M manual. The *Plan* should encourage the Districts to coordinate with the ITS Office in developing District O&M plans that address the increasing O&M costs and funding needs associated with the expansion and deployment of statewide, integrated ITS services. The O&M manual should incorporate and expand on the information being developed by the Districts to:

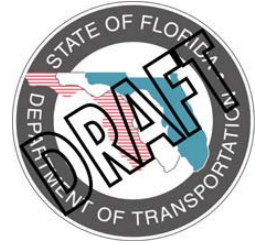
- Provide a framework for the Districts to use in developing O&M plans;
 - Detail statewide O&M policies and procedures;
 - Project O&M costs and resources over a two- to three-year period;
 - Identify and project potential O&M funding sources;
 - Recommend strategies for streamlining O&M activities; and
 - Identify appropriate activities for privatization.
- ITS Technology for Public Transportation – Although the ITS Office continues to coordinate and collaborate with the FDOT PTO, it does not actively promote ITS technology for public transportation. More effort is required to incorporate and mainstream public transportation into ITS Office activities. Several of the District ITS programs have an excellent working relationship with their District PTOs and have been successful in integrating public transportation projects into the District ITS programs. The Central Office can learn from these Districts' experiences. *Florida's ITS Strategic Plan* should continue to promote the mainstreaming of APTS and other public transportation ITS technologies and programs into ITS activities. This Strategy should be reflected in new core strategies developed as part of the *Plan* update.

- Procurement Assessment and Impacts – This Initial Action will not be carried forward into the *Plan* update, as the Districts are currently utilizing various procurement methods such as design-build and systems integrator/manager, with minimal impediments. Several issue papers and reports have been prepared by the ITS Office that compare the various procurement options for ITS projects and identify the advantages and disadvantages of each method in terms of cost, convenience, schedule, efficiency, and system performance and quality. However, several districts have expressed a need for additional training and information regarding the initiation and implementation of the systems manager approach for procuring ITS hardware and services. A workshop that highlights the necessary steps and processes to implement the systems manager approach and details lessons learned from other District experiences would be beneficial to the district ITS engineers. The Districts would also benefit from the development of statewide ITS procurement contracts and the development of an APL for the procurement of ITS devices.



**Technical Memorandum No. 2 –
Updated ITS Program
Mission, Vision, Goals, and Objectives**

Technical Memorandum No. 2



Florida's 2003 Intelligent Transportation Systems Strategic Plan Update –

Draft Updated Intelligent Transportation Systems Program Vision, Goals, and Objectives

**July 23, 2004
Version 1**



Prepared for:

Florida Department of Transportation
Traffic Engineering and Operations Office
Intelligent Transportation Systems (ITS) Section
605 Suwannee Street, M.S. 90
Tallahassee, Florida 32399-0450
(850) 410-5600

*Technical Memorandum No. 2
 Florida's 2003 ITS Strategic Plan Update
 Draft Updated ITS Vision, Goals, and Objectives*



DOCUMENT CONTROL PANEL		
File Name:	<i>Technical Memorandum No. 2: Florida's 2003 Intelligent Transportation Systems Strategic Plan Update – Draft Updated Intelligent Transportation Systems Vision, Goals, and Objectives</i>	
File Location:	W:\ITS Program\ITS GC\TWO25-StrategicPlanUpdate\TM2 - Mission and Vision\040723 TWO25 TM2 V1.pdf	
Deliverable Number:	2	
Version Number:	1	
	Name	Date
Created By:	Diane E. Quigley	April 25, 2004
Reviewed By:	Diane E. Quigley	June 22, 2004
	Diane E. Quigley	July 21, 2004
Modified By:	Dave Hodges	May 7, 2004
	Pamela L. Hoke	June 4, 2004
	Pamela L. Hoke	July 8, 2004
Completed By:	Pamela L. Hoke	July 23, 2004



Table of Contents

List of Tables	iii
List of Acronyms.....	iv
1. Introduction	1
1.1 The Need for Update	3
2. Purpose.....	4
3. Document Organization	5
4. Vision, Goals, and Objectives of Florida's Existing Intelligent Transportation Systems Program	6
4.1 The Intelligent Transportation Systems Program Vision.....	6
4.2 The Intelligent Transportation Systems Program Goals and Objectives	7
4.2.1 2020 Florida Transportation Plan – Goal No. 1	7
4.2.2 2020 Florida Transportation Plan – Goal No. 2	8
4.2.3 2020 Florida Transportation Plan – Goal No. 3	8
4.2.4 2020 Florida Transportation Plan – Goal No. 4	9
4.3 Planning Guidelines from Florida's Intelligent Transportation System Strategic Plan.....	10



5.	National and State Missions, Visions, Goals, and Objectives that Impact Florida's Intelligent Transportation Systems Program	12
5.1	<i>The National Intelligent Transportation Systems Program Plan ...</i>	12
5.1.1	Goals	13
5.1.2	Programmatic Themes	14
5.1.3	Enabling Themes	14
5.2	<i>The 2020 Florida Transportation Plan</i>	15
5.2.1	<i>The 2003 Short-Range Component of the 2020 Florida Transportation Plan</i>	15
5.3	<i>Florida's Intelligent Transportation Systems Plan</i>	16
5.3.1	Mission.....	16
5.3.2	Vision.....	17
5.3.3	Goals	18
5.3.4	Themes and Strategies	18
6.	The Updated Mission, Vision, Goals, and Objectives for Florida's Intelligent Transportation Systems Program	19
6.1	<i>The Updated Mission and Vision for Florida's Intelligent Transportation Systems</i>	19
6.2	<i>Revised Goals and Objectives</i>	20
7.	References.....	29

List of Appendices

Appendix A – *Intelligent Transportation Systems Plan* Goals and Objectives



List of Tables

Table 6.1 – Comparison of State and National Transportation System and Intelligent Transportation System Goals	21
--	----

List of Acronyms

AVL	Automatic Vehicle Location
CAD	Computer-Aided Dispatch
CFR	Code of Federal Regulations
CVO	Commercial Vehicle Operations
ETC	Electronic Toll Collection
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FIHS	Florida Intrastate Highway System
FMS	Freeway Management System
FTP	2020 Florida Transportation Plan
HAZMAT	Hazardous Materials
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
ITS	Intelligent Transportation System
IVR	Interactive Voice Response
MPO	Metropolitan Planning Organization
NITSA	National ITS Architecture
RITSA	Regional ITS Architecture
RTMC	Regional Transportation Management Center
RWIS	Road Weather Information System
SITSA	Statewide ITS Architecture
SPO	Systems Planning Office
SUL	Special-Use Lane
TDM	Transportation Demand Management
TEOO	Traffic Engineering and Operations Office
TMC	Transportation Management Center
USDOT	United States Department of Transportation
VMT	Vehicle-Miles Traveled



1. Introduction

Florida's *Intelligent Transportation System Strategic Plan*, hereinafter the *Plan*,¹ was designed to guide the Florida Department of Transportation (FDOT), Florida's metropolitan planning organizations (MPOs), and local governments in the planning, programming, and deployment of integrated multimodal intelligent transportation systems (ITS). 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 FDOT Traffic Engineering and Operations Office (TEOO) and the Systems Planning Office (SPO) developed the *Plan* as part of a joint effort with support from a statewide task team that included both Central Office and District staff representing planning, design, construction, maintenance, public transportation, motor carrier compliance, and the MPOs. In addition, the team conducted a comprehensive public outreach program during the creation of the *Plan* to ensure that the needs and requirements of various stakeholders were also addressed.

The *Plan* is composed of six major sections:

- 1) *Section 1, Purpose and Need*, identifies the purpose and application of the *Plan* from a statewide, multimodal perspective;
- 2) *Section 2, The Challenge*, discusses the status of transportation in Florida, and presents the barriers and constraints that agencies may face in providing expanded transportation services. The document concludes that improved management and operation of the transportation system is necessary to improve mobility;
- 3) *Section 3, What is ITS?*, presents an overview of ITS applications and the benefits associated with the implementation of ITS. It describes components of the *National ITS Architecture (NITSA)*,² and recommends the development of a statewide ITS architecture with regional and corridor architecture components;
- 4) *Section 4, ITS Vision for Florida*, provides a 20-year vision for ITS in Florida as a guide in developing a statewide ITS consistent with the FDOT's transportation policy. Goals and objectives for the *Plan* are presented as they relate to the *2020 Florida Transportation Plan (FTP)*³ goals;
- 5) *Section 5, ITS Strategic Planning Guidelines*, identifies guiding principles to characterize Florida's ITS Program and describe how Florida's ITS vision will be realized over the next 20 years; and



- 6) *Section 6, ITS Business Plan*, serves as a short-term component of the *Plan* and identifies the resources, processes, and program elements necessary to implement Florida's ITS vision. It is recommended that this short-term plan be accomplished through the implementation of several initial processes and ITS operational strategies presented in the form of Initial Actions.

The *Plan* is also supported by a series of resource documents and issue papers. These documents provide data, analysis, research, and documentation necessary to support the conclusions and recommendations contained in the *Plan*. Supporting resource documents include the:

- *Summary of Survey Results*,⁴ which presents the findings from a survey of ITS activities and programs of other state agencies;
- *Vision, Guiding Principles, Goals and Objectives*,⁵ which details the development of the *Plan's* vision, guiding principles, goals, and objectives;
- *ITS Project Cost Comparison*,⁶ which compares similar freeway management system (FMS) costs in the State of Florida;
- *The Business Plan*,⁷ which identifies the resources, arrangements, and program elements necessary to implement the *Plan* over the initial five years. These elements are summarized in the 31 Initial Actions or Strategies.
- *Department Organizational Structure Alternatives to Implement ITS*,⁸ which recommends an organizational structure for the establishment of a statewide FDOT ITS program and office.

The supporting issue papers present information regarding the advanced technologies, policies, and applications designed to guide the focus and implementation of the ITS initial strategies. The recommendations contained in these issue papers are based on practical applications and research from various ITS programs across the nation. They include the:

- *ITS Project Cost Analysis Issue Paper*,⁹
- *Economic Impacts of ITS Issue Paper*,¹⁰
- *Integration of ITS into the MPO Planning Process Issue Paper*,¹¹
- *Operations, Management, and Maintenance Issues Paper*,¹²
- *Florida Statewide ITS Strategic Plan Procurement Issue Paper*,¹³
- *Rural/Inter-Urban ITS Applications Issue Paper*,¹⁴ and
- *Implementation Authority Review and Recommendations Issue Paper*.¹⁵



These resource documents and issue papers explore the various components of a successful ITS program, and recommend the best strategies and actions that are needed to establish an ITS program in Florida. These documents, in addition to the *Plan*, comprise *Florida's Intelligent Transportation System Strategic Plan*. Therefore, subsequent updates to the *Plan* must also consider updates to the supporting resource documents and issue papers.

1.1 The Need for Update

The primary purpose for the update of the *Plan* is to expand and redirect the efforts and resources of Florida's ITS Program to be consistent with the evolution of the national ITS program goals and the FDOT organizational structure.

Since the *Plan's* completion in 1999, the FDOT has developed and implemented its ITS Program to oversee and guide the development of ITS on the State's highway system. This Program, initiated in July 2000, consists of a state ITS Office, District ITS programs, and other FDOT offices. Together, these offices and programs form a collaborative effort in funding, developing, deploying, and operating an integrated statewide ITS. Recently, however, the ITS Office was merged with the FDOT TEOO, thus requiring a consolidation of business plans and a revision of the organizational structure outlined in the original *Plan*.

The ITS Program was created based on the Initial Actions and Strategies recommended by the agencies involved in the *Plan's* development. These short-term strategies were designed to focus interagency resources on the development of the ITS Program. Since the inception of the ITS Section in July 2000, many of these Initial Actions and Strategies have been completed or addressed. The findings and recommendations identified in several of the *Plan's* resource documents and issue papers have been expanded in detail or developed into projects that have been or are currently being completed.

Additionally, recent national ITS documents, policies, and programs have been formulated that impact the findings and recommendations initially documented in the *Plan*. Many of the strategies and actions contained in the current *Plan* require updating based on new national policies, programs, and technologies. One example of this new documentation is the recently completed *National Intelligent Transportation Systems Program Plan*.¹⁶ This document defines a new vision and goals for the national ITS program. The *National Intelligent Transportation Systems Program Plan* includes a new goal for enhancing and encouraging the use of ITS in homeland security applications, which was not considered in Florida's original *Plan*.



The update of *Florida's Intelligent Transportation System Strategic Plan* will redefine the goals and objectives of Florida's ITS Program; reflect Program accomplishments over the last several years; revise the organizational structure and business plan; and provide new direction for the next phases of ITS deployment in Florida.

2. Purpose

The purpose of this *Technical Memorandum* is to review existing state and national ITS missions, visions, goals, and objectives, and to determine how these may impact the currently adopted mission, vision, and goals of Florida's ITS Program. Additionally, the TEOO, with assistance from District traffic operations staff, is crafting a new business plan that presents an updated mission and vision, and identifies the major focus areas and functions for the service areas. Based on the national and state guiding principles and the new business plan, modifications to the existing ITS mission, vision, goals, and objectives will be recommended to guide Florida's ITS Program over the next several years.



3. Document Organization

This document is organized in the following sections:

- *Section 1, Introduction*, presents the background information regarding the *Plan*, and documents project goals and objectives;
- *Section 2, Purpose*, documents the purpose of this *Technical Memorandum*;
- *Section 3, Document Organization*, identifies the contents and organization of this *Technical Memorandum*;
- *Section 4, Vision, Goals, and Objectives of Florida's Existing Intelligent Transportation Systems Program*, presents the existing ITS mission, vision, and goals from the *Plan*;
- *Section 5, National and State Missions, Visions, Goals, and Objectives that Impact Florida's Intelligent Transportation Systems Program*, details ITS guiding principles from the *National Intelligent Transportation Systems Program Plan*, in addition to goals and objectives from the *2020 FTP* that will be considered for inclusion in the *Plan's* update;
- *Section 6, The Updated Mission, Vision, Goals, and Objectives of Florida's Intelligent Transportation Systems Program*, compares the national and state transportation and ITS policy frameworks and strategies with the existing Florida ITS Program tenets, and recommends modifications to the existing ITS mission, vision, goals, and objectives; and
- *Section 7, References*, identifies the documents and programs cited to support the findings of this *Technical Memorandum*.



4. Vision, Goals, and Objectives of Florida's Existing Intelligent Transportation Systems Program

Florida's Intelligent Transportation System Strategic Plan, which was completed in 1999, included a vision, four goals, and several objectives designed to assist the FDOT in accomplishing the ITS Program's goals. From the goals and objectives, several strategic planning guidelines were derived to identify immediate actions or activities that could be initiated to advance the Program's goals. This section presents Florida's existing ITS Program's vision, goals, objectives, and strategic guidelines.

4.1 The Intelligent Transportation Systems Program Vision

The ITS Program's vision was composed by combining statewide ITS requirements with similar states' ITS program visions. It was designed to reflect the goals and strategies of the ITS stakeholder agencies, and to relate to the goals and objectives of the *2020 FTP*. This vision presents an ideal concept of the ITS Program in 20 years, assuming the goals and recommendations of the *Plan* are implemented.

Florida's ITS Vision

Nearly two decades into the 21st century, travelers in Florida are seeing more and more benefits from an integrated and coordinated Intelligent Transportation System within each of its urbanized areas and along all major transportation corridors. ITS provides valuable services to travelers, business, industry and government that were unavailable just a few decades ago. Pedestrian, automobile and transit mobility have benefited from real-time information sharing, route navigation, electronic payment systems and system management activities made possible through ITS. Business and commerce are both partners and benefactors in ITS using the improved information and intermodal linkages provided by the system to improve business operations. The economic vitality of Florida has never been better aided by a statewide transportation system made safer and more efficient by ITS. All stakeholders in Florida's transportation system benefit from improved safety provided by ITS technologies in our vehicles and the network of systems assisting emergency service providers. Florida's ITS Strategic Plan, first adopted in 1999 and updated regularly ever since, assures that Intelligent Transportation Systems are considered at all levels of planning, production, operations and management, providing improvements in safety, mobility and economic vitality to maximize the investment in Florida's multimodal transportation system.¹⁷



Through this vision, Florida's ITS Program will ensure that ITS is integrated in all institutional policies, programs, and procedures to develop a seamless, coordinated information infrastructure that maximizes the safety and efficiency of the transportation network while encouraging multimodal and consumer choices.

4.2 The Intelligent Transportation Systems Program Goals and Objectives

The goals of the *Plan* were designed to parallel the four *2020 FTP* goals. Corresponding ITS objectives identify ITS Program strategies for implementing the goals of the *2020 FTP* that can be measured through a common set of performance measures. Information contained in parentheses identifies the potential ITS applications that relate to the objectives. The goals are outlined below.¹⁸

4.2.1 2020 Florida Transportation Plan – Goal No. 1

The *2020 FTP's* first goal is to provide safe transportation for residents, visitors, and commerce. The ITS objectives associated with this goal include:

- Minimizing the response time for incidents and accidents using incident management programs;
- Reducing commercial vehicle safety violations using commercial vehicle operations (CVO) safety programs;
- Reducing weather-related traffic incidents using road weather information systems (RWIS);
- Minimizing grade crossing accidents using highway-rail interface safety systems;
- Improving emergency management communications by coordinating the communication frequencies, and using real-time traveler information systems for evacuation and major route closings, reroutings, or restrictions;
- Improving security for highway and transit users using surveillance cameras, call boxes, and emergency services support; and
- Improving the security, safety, and convenience of pedestrians and bicyclists using improved interfaces at pedestrian crossings, signalized intersections, kiosks, and surveillance systems.



4.2.2 2020 Florida Transportation Plan – Goal No. 2

The second goal of the 2020 FTP is the protection of the public's investment in transportation. The ITS objectives associated with this goal include:

- Reducing vehicular delays from incidents using incident response programs;
- Improving peak period flow and throughput using traffic control systems and operations;
- Reducing the cost of commercial vehicle fleet operations using CVO and intermodal systems; and
- Assisting with the provision of safe and efficient maintenance of traffic during project construction using work zone monitoring systems and real-time traveler information systems.

4.2.3 2020 Florida Transportation Plan – Goal No. 3

The 2020 FTP's third goal is the development and deployment of a statewide, interconnected transportation system that enhances Florida's economic competitiveness. The ITS objectives associated with this goal include:

- Reducing the cost and delay of intermodal connections using CVO information systems;
- Minimizing shipping and delivery delays to improve freight operations using real-time system management programs;
- Improving the predictability of travel and delivery times using incident management systems;
- Improving the efficiency of fleet operations using CVO information systems;
- Improving tourist access and convenience using special traveler information systems; and
- Increasing employment through the development of new ITS industries in Florida.



4.2.4 2020 Florida Transportation Plan – Goal No. 4

The development of travel choices to ensure mobility, sustain the quality of the environment, reserve community values, and reduce energy consumption is the fourth goal of the *2020 FTP*. The ITS objectives associated with this goal include:

- Improving mobility and choices for highway and transit users with traveler information systems for conditions and modal/route options;
- Improving tourist access using specialized traveler information systems;
- Reducing the need to travel using a communications infrastructure that supports telecommuting, teleconferencing, teleshopping, etc.;
- Reducing energy use and environmental degradation using ITS management services to reduce vehicle trips, and vehicle miles of travel;
- Improving service for special traveler needs with the use of smart cards, computer-aided dispatch (CAD), and automatic vehicle location (AVL) systems to enable true demand-responsive transit systems;
- Improving multimodal travel using smart cards, traveler information, and transit management systems to reduce transit travel times;
- Reducing the energy use and delays associated with major incidents using ITS management services and route diversions;
- Improving the efficiency of toll operations using electronic toll collection (ETC) systems; and
- Enhancing and supporting ride-sharing opportunities using high occupancy vehicle (HOV) and high occupancy toll (HOT) systems.

These goals and objectives represent strategies for implementing an ITS program that fulfills the goals of the *2020 FTP*.



4.3 Planning Guidelines from Florida's Intelligent Transportation System Strategic Plan

In addition to the goals and objectives, strategic planning guidelines were recommended to ensure that the ITS Program's policies, goals, and objectives are integrated into the FDOT's procedures to guide decision makers in implementing ITS strategies, and to allocate ITS resources to problems and opportunities in the existing transportation system. These strategies represent actions necessary to ensure that the ITS Program's vision is realized over the next 20 years. These guiding principles are divided into categories and include:¹⁹

- Planning and Development –
 - Undertake strategic deployments;
 - Provide a common framework for the planning, deployment, and integration of systems through ITS architecture and standards consistency;
 - Promote institutional and interjurisdictional cooperation and coordination in the planning, deployment, operations, management, and maintenance of ITS infrastructures;
 - Provide service on a regional, integrated, and interoperable basis;
 - Integrate ITS planning and ITS-related operations planning with statewide, metropolitan, authority, and local government planning processes;
 - Support concurrency/growth management programs;
 - Emphasize intermodal/multimodal orientation to enhance both passenger and freight connections and transfers at ports, airports, and via all applicable modes; and
 - Utilize proven cost-effective technologies to deliver new and enhanced services to travelers and system users; use a total life-cycle cost analysis to select ITS components and designs;

- Operations and Management –
 - Provide performance-driven service, and real-time operations and management of all transportation systems to maximize system performance, safety, and time reliability performance;
 - Adapt system operations and management strategies to changing conditions;
 - Provide emergency operations support; and
 - Actively pursue interagency operations and management agreements;

*Technical Memorandum No. 2
Florida's 2003 ITS Strategic Plan Update
Draft Updated ITS Vision, Goals, and Objectives*



- Finance –
 - Provide ITS funding for architecturally consistent projects;
 - Leverage the value of “conventional” capital investments;
 - Develop ITS funding strategies; and
 - Capitalize on private sector resources;

- Public Awareness / Involvement –
 - Include education, training, and outreach;
 - Respond to special user needs; and
 - Identify and support ITS advocates and champions; and

- Research and Development –
 - Support continued research and operational testing.

As part of the *Plan's* update, the original ITS Program's vision, goals, objectives, and strategies will be reevaluated to ensure that they continue to reflect the current vision and goals of the ITS Program and the ITS stakeholders.



5. National and State Missions, Visions, Goals, and Objectives that Impact Florida's Intelligent Transportation Systems Program

This section identifies national and state prescribed ITS visions, goals, and strategies for consideration in the update of the Florida ITS Program's guiding principles.

5.1 The National Intelligent Transportation Systems Program Plan

The *National Intelligent Transportation Systems Program Plan* prescribes a vision, goals, and programmatic and enabling themes that set forth the development policy for an efficient, effective, integrated transportation system.

The objective of the national plan is to "advance the safety, efficiency and security of the surface transportation system, provide increased access to transportation services and reduce fuel consumption and environmental impact."²⁰ This objective can be realized by utilizing ITS to improve the management, operations, and maintenance of the surface transportation system.

The ITS vision is to ensure that:

- *Future transportation systems will be managed and operated to provide seamless, end-to-end intermodal passenger travel regardless of traveler age, disability, or location and efficient, seamless, end-to-end intermodal freight movement.*
- *Public policy and private sector decision-makers will seize the opportunity to make ITS a vital driver in achieving the vision of the transportation system for the 21st century.*
- *Future transportation systems will be secure, customer oriented, performance driven and institutionally innovative, enabled by information from a fully integrated spectrum of computing, communications and sensor technologies.²¹*

This vision is further supported by goals and themes that identify measurable guidelines for full ITS integration to further the realization of the national transportation system vision. The goals and themes are identified in the following sections.



5.1.1 Goals

The *National Intelligent Transportation Systems Program Plan* goals include:

- *Safety* – The goal is to reduce annual transportation-related fatalities by 15% overall by 2011, saving 5,000-7,000 lives per year.
- *Security* – The goal is a transportation system which is well-protected against attacks and responds effectively to natural and manmade threats and disasters, enabling the continued movement of people and goods even in times of crisis.ⁱ
- *Efficiency/Economy* – The goal is to save at least \$20 billion per year by enhancing through-put and capacity through better information, better system management and the containment of congestion by providing for the efficient end-to-end movement of people and goods, including quick, seamless intermodal transitions.
- *Mobility/Access* – The goal is universally available information that supports seamless, end-to-end travel choices for all users of the transportation system.
- *Energy/Environment* – The goal is to save a minimum of one billion gallons of gasoline each year and to reduce emissions at least in proportion to this fuel saving.²²

These goals are further enhanced by the development of programmatic and enabling themes to identify future activities, benefits, and challenges in achieving these national ITS goals.

ⁱ It should be noted that this goal was modified from the original security goal identified in the *National Intelligent Transportation Systems Program Plan*. The modified goal is presented in the *Homeland Security and ITS Supplement*,²³ which was developed in response to the September 11, 2001, events.



5.1.2 Programmatic Themes

Programmatic themes were designed to identify opportunities where ITS may be applied at a program level to alleviate transportation system problems or address critical issues. These themes include:

- An integrated network of transportation information;
- Advanced crash avoidance technologies;
- Automatic crash and incident detection, notification, and response; and
- Advanced transportation management.²⁴

5.1.3 Enabling Themes

Enabling themes were created to identify opportunities where ITS can enable the provision of a safe, secure, seamless, and efficient surface transportation system. These themes include the:

- Culture of transportation system management and operations;
- Public sector roles, relationships, and funding;
- Federal policies and initiatives to achieve extensive private sector product deployments; and
- Human factors.²⁵



5.2 The 2020 Florida Transportation Plan

The *2020 FTP* is the policy framework that guides the development of Florida's multimodal transportation system. The goals identified in the *2020 FTP* should be reflected in the long-range and strategic plans for each service unit or function within the FDOT. As discussed previously, the *2020 FTP* goals parallel the *Plan's* goals. These four goals are:

- Safe transportation for residents, visitors, and commerce;
- Preservation and management of Florida's transportation system;
- A transportation system that enhances Florida's economic competitiveness; and
- A transportation system that enhances Florida's quality of life.

These goals are reinforced in the strategies and objectives set forth in the *2003 Short-Range Component* of the *2020 FTP*.²⁶

5.2.1 The 2003 Short-Range Component of the 2020 Florida Transportation Plan

The *2003 Short-Range Component* identifies the short-term objectives and strategies needed to implement the long-range goals of the *2020 FTP*. This document is updated annually to reflect the changing needs and resources of the FDOT, and to continually define strategic objectives and focus areas to manage and maintain Florida's transportation system in accordance with the *2020 FTP*. Strategic goals include:

- Strategic Goal No. 1 – Preserve and Manage a Safe, Efficient Transportation System – This goal combines several strategic focus areas identified in the *2020 FTP* goals regarding system preservation and system efficiency. The strategic objectives identified for use in achieving this goal include the efficiency and safety of the transportation system through ITS deployments, and increasing the use of the applications available with incident and emergency management, transportation demand management (TDM), and the access management initiatives and program;
- Strategic Goal No. 2 – Enhance Florida's Economic Competitiveness, Quality of Life, and Transportation Safety – This goal combines the strategic focus areas of mobility, economic competitiveness, and quality of life and safety. Strategic objectives for this goal include the implementation of ITS to maximize system capabilities, reduce vehicle delays, improve safety, and provide more efficient intermodal connectivity with minimal impact to the physical environment; and



- Strategic Goal No. 3 – Organizational Excellence – Organizational excellence is identified as a strategy to assist the FDOT in achieving these important goals. The objectives for this goal include the implementation of the Sterling Business Model for organizational performance excellence and ensuring that this model is incorporated in all aspects of the FDOT business processes. Additionally, the FDOT will continue to measure and improve on its performance through customer surveys, and the development of business plans and performance measures for the delivery of core functions.

5.3 Florida's Intelligent Transportation Systems Plan

The *Intelligent Transportation Systems Plan*²⁷ was developed to guide the deployment of statewide, integrated ITS along the five Florida Intrastate Highway System (FIHS) limited-access corridors. The *Intelligent Transportation Systems Plan* was prepared to provide the policy and program guidelines for the development of the *Ten-Year ITS Cost Feasible Plan*.²⁸ *Technical Memorandum No. 2, ITS Needs Model*,²⁹ developed as part of the FIHS corridors' project, identified a mission, vision, and goals and objectives for achieving a 20-year vision of ITS along the FIHS corridors. The following text presents the mission, vision, goals, and strategies for the FIHS' *Intelligent Transportation System Plan* as identified in *Technical Memorandum No. 2*.

5.3.1 Mission

*Provide effective ITS services for the five principal FIHS corridors that enhance the safety and mobility of people and goods, economic competitiveness, and the quality of our environment and communities.*³⁰



5.3.2 Vision

Two decades into the 21st century, travelers and shippers of goods along Florida's limited-access transportation corridors are benefiting from infrastructure, and information and communications technologies that improve the safety, mobility, economic competitiveness, and livability of communities in Florida. Information is available that assists travelers and shippers in route planning, predicting travel times, and scheduling their trips/shipments to reduce delays and arrive at scheduled times. When congestion is severe along specific facilities, alternate routes and modes of travel will be suggested that may be more reliable or cost-effective. During their trip, information of travel conditions is provided in real-time so that scheduling and diversions can be planned if needed as a result of an incident. If an incident occurs, automated information technologies are capable of verifying the location and assessing the appropriate response to incidents. If necessary, emergency personnel or roadside assistance is dispatched, arriving in a short period of time. Traffic flow is restored quickly and delays minimized.

During normal operations, traffic flow is managed within the corridor to keep traffic moving. Information on weather conditions is provided to an in-vehicle information service that alerts the driver when visibilities are compromised and advises a safe travel speed. If a natural disaster is impending, information is provided on appropriate local shelter locations, routes for travelers choosing to drive to another area, and other modes of travel that are available instead of driving.

The economy is thriving as a result of world-class access to international markets at ports, airports, and railheads from our agricultural, mining, and manufacturing industries and efficient deliveries of goods and services at the local level. Decisions on the operations, management, and future improvements to the corridors are made through a number of key partners. These decisions are based on measured benefits and a record of the performance of various technologies and elements are customized for communities to reflect their unique values and priorities. However, similar services are available statewide and on related arterial systems and are easily recognized by elderly drivers or visitors since strong name recognition exists for traveler information, roadside assistance, electronic tolls, and other essential services. FDOT is viewed as an ITS powerhouse and a model for how to cost-effectively deploy ITS services and partner with other public agencies and the private sector to create win-win agreements for the benefit of the citizens of Florida.³¹



5.3.3 Goals

The goals identified in the *Intelligent Transportation Systems Plan*, again, parallel the four goals of the *Plan* and the *2020 FTP*, as presented previously. However, the *Intelligent Transportation Systems Plan* did include the following additional ITS goal:

- Deploy an integrated, effective system.³²

This goal was added for consistency with national ITS policies that encourage ITS integration, and the deployment of ITS based on a common framework to achieve interoperability. Similarly, this goal reflects the FDOT's efforts to provide an interoperable statewide system through the development of statewide standards for ITS field devices, a common communication infrastructure, and a synthesized transportation management center (TMC) software library.

A copy of the *Intelligent Transportation Systems Plan's* goals and objectives are contained in *Appendix A*.

5.3.4 Themes and Strategies

Also as part of the *Intelligent Transportation Systems Plan*, themes and strategies were developed to summarize the intended outcome of the ITS deployments along the five major FIHS corridors. These include:

- Coordinated operations;
- Active facilities management; and
- Information sharing.

The mission, vision, and ITS goals presented in the *Intelligent Transportation Systems Plan* will be compared with the *National Intelligent Transportation Systems Program Plan's* mission, vision, and goals, and will be considered in the *Plan's* update.



6. The Updated Mission, Vision, Goals, and Objectives for Florida's Intelligent Transportation Systems Program

This section recommends revised mission, vision, goals, and objectives for the *Plan's* update. These strategic guidelines will provide a framework for the identification of new core strategies for the ITS Program, and will reflect national and state strategic guidelines.

6.1 The Updated Mission and Vision for Florida's Intelligent Transportation Systems

The FDOT is in the process of developing the *Statewide FDOT Business Plan* to further the objectives of the FDOT Business Model. The *Statewide FDOT Business Plan* consists of three tiers of business plans:

- The Tier 1 *Statewide FDOT Business Plan* contains elements of the 2020 FTP, the 2003 Short-Range Component of the 2020 FTP, the annual strategic objectives, and the Executive Board's initiatives;
- The Tier 2 Statewide Function Plan, which is used by all FDOT functional units, outlines their primary functions and provides links to the *Statewide FDOT Business Plan*; and
- The Tier 3 Functional Unit Plan is used by all units or divisions that support the Statewide Function Plan.

The TEOO, of which ITS is a unit, is preparing its Tier 2 Statewide Function Plan as a cooperative effort between the Central Office, its various units, and the District traffic operations offices. During the Tier 2 planning process, the traffic operations representatives defined the following revised mission and vision for the ITS Program:

- ITS Mission – Enhance the safety and efficiency of Florida's transportation system through the implementation of ITS technology in support of local, regional, and statewide mobility.
- ITS Vision – Be the national leader in ITS by providing the most efficient, reliable, and safe transportation system.



The recently created ITS mission and vision encompass the guiding principles of the national ITS program – safety, efficiency, and mobility – while still ensuring that the ITS needs of the local, regional, and state ITS agencies are considered (i.e., customer orientation). However, there are still two important aspects of the *National Intelligent Transportation Systems Program Plan* that should remain as major focus areas for Florida's ITS Program: security and integration, or interoperability.

It is recommended that the revised ITS mission and vision be further refined to capture the key initiatives and full foundation of the *National Intelligent Transportation Systems Program Plan*. The revised policy statements are identified below with the revised text in bold.

Revised ITS Mission:

Enhance the safety, **security**, and efficiency of Florida's transportation system through the implementation of **interoperable** ITS technology in support of local, regional, and statewide mobility.

Revised ITS Vision:

Be the national leader in ITS by promoting multijurisdictional coordination for the provision of an efficient, **secure**, reliable, and safe transportation system.

Upon further review and approval by the TEOO, the revised mission and vision will be implemented in the *Plan's* update through the creation of new ITS Program goals and objectives that are designed to support the mission and vision.

Additionally, as part of this update process, a Tier 3 Business Plan for the statewide ITS business unit will be compiled with links to the Tier 2 Plan to further define and detail the core functions of Florida's ITS Program.

6.2 Revised Goals and Objectives

A review and comparison of the national and state ITS and transportation system goals revealed that the primary goals of safety, systems management/mobility, economic competitiveness, and quality of life were consistently represented in all program policies. Table 6.1 illustrates the comparison of state and national transportation system and ITS goals.



However, two additional goals should be considered for inclusion in the *Plan* to reflect national and state efforts to advance the use of ITS applications for homeland security, and to promote integration of ITS services and technologies.

The *National Intelligent Transportation Systems Program Plan* was recently supplemented to enhance and revise the security goal in response to the September 11, 2001, events. The *Supplement to the National ITS Plan*:

*... raised the consciousness of the transportation community along with countless others, about the need for better critical infrastructure protection and crisis management, disaster planning and prevention, as well as effective detection and response, particularly in the case of deliberate terrorist attacks.*³³

Table 6.1 – Comparison of State and National Transportation System and Intelligent Transportation System Goals

ITS Goal	Florida's Intelligent Transportation Systems Strategic Plan	National Intelligent Transportation Systems Program Plan	2020 FTP	2003 Short Range Component of the 2020 FTP	Florida's Intelligent Transportation Systems Plan
Safety	✓	✓	✓	✓	✓
Systems Management/Mobility	✓	✓	✓	✓	✓
Economic Competitiveness	✓	✓	✓	✓	✓
Quality of Life/Environment	✓	✓	✓	✓	✓
Integrated, Effective System		✓			✓
Security		✓			

Additionally, *Version 5.0* of the *NITSA* was updated to provide security coverage enhancement in the *NITSA*. This update involved the inclusion of new user services and market packages for homeland security ITS applications designed to protect surface transportation information and infrastructure.



Recent federal ITS policies, such as *Parts 655 and 940 of Chapter 23 of the Code of Federal Regulations (CFR)*,³⁴ stress the importance of utilizing a regional ITS architecture (RITSA) and ITS standards to ensure interoperability among ITS services. Interoperability of ITS is important for improving interagency communications and data sharing among regional ITS stakeholders. Among the interoperability benefits for both system users and owners/operators are seamless ITS services from region to region; more accurate and timely travel information; improved incident response times; more coordinated and responsive traffic management systems; and the leveraging of limited resources (i.e., more bang for the buck).

Because of this commitment by the United States Department of Transportation (USDOT) and the Federal Highway Administration (FHWA) to expand ITS capabilities specifically for homeland security purposes and to ensure interoperability of ITS, these two goals are recommended for addition to the Florida ITS Program goals and objectives.

With these additions, the goals and objectives from the previous version of the *Plan* were combined with the goals and objectives of the FDOT's *Ten-Year ITS Cost Feasible Plan*, and were modified and updated to reflect recent national and state ITS trends and initiatives.

The updated ITS Program goals and objectives are recommended as follows:

1. *Move People and Goods Safely*

- 1.1 Reduce accident rates.
 - 1.1.1 Reduce accident rates and severities in construction work zones.
 - 1.1.2 Reduce accident rates at highway-rail grade crossings.
 - 1.1.3 Reduce weather-related traffic incidents.
 - 1.1.4 Reduce commercial vehicle safety violations.
 - 1.1.5 Improve the safety and convenience for pedestrians and bicyclists.
- 1.2 Reduce queuing on mainlines.
 - 1.2.1 Reduce queues on limited-access roadways from highway-rail grade crossings.
 - 1.2.2 Reduce mainline queues at limited access facility exit ramps.
 - 1.2.3 Reduce queues at weigh and inspection stations along the corridors.
 - 1.2.4 Reduce queues at intermodal facilities that impact corridor operations.
- 1.3 Improve safety of commercial vehicle operators at rest areas



- 1.4 Provide evacuation coordination services and emergency management.
 - 1.4.1 Provide pre-trip planning information for evacuation conditions.
 - 1.4.2 Provide traffic management during evacuation conditions.
 - 1.4.3 Provide route guidance information and information on traffic/travel conditions and weather, including winds, rainfalls, and storm surges.
 - 1.4.4 Support remote configuration management of highways during evacuation conditions or other emergencies.
 - 1.4.5 Provide accurate and timely traveler information regarding incidents on evacuation routes.
 - 1.4.6 Share emergency information among local and regional traffic management centers (RTMCs) and emergency management facilities.
 - 1.4.7 Detect, verify, respond to, and clear incidents and manage traffic around accidents, emergencies, and other incidents.

2. Preserve and Manage the System

- 2.1 Enhance mobility and efficiency.
 - 2.1.1 Improve travel time predictability and reliability on the corridors.
 - 2.1.2 Reduce accidents and other incidents during normal flows that result from congestion and delays caused by “rubber-necking” during incidents.
 - 2.1.3 Reduce congestion-related delays by decreasing queues and spillback from other facilities.
 - 2.1.4 Reduce delays caused by congestion in construction work zones.
 - 2.1.5 Manage traffic at interchange entrance ramps to improve mainline throughput and traffic flow.
 - 2.1.6 Reduce delays at tollbooths.
 - 2.1.7 Encourage multi-jurisdictional and multi-agency electronic payment service strategies for transit, parking and tolls.
 - 2.1.8 Reduce delays at the gates of intermodal facilities.
 - 2.1.9 Improve multimodal travel access and connections.
 - 2.1.10 Provide traveler information services with route and mode choice information.
 - 2.1.11 Provide inter and intra regional travel information services that seamlessly deliver information across jurisdictions, agencies and modes.
 - 2.1.12 Encourage the use of transit signal priority to improve transit travel time and reliability



- 2.1.13 Promote the use of advance vehicle locations systems to improve transit operations efficiency.
- 2.1.14 Balance demand throughout a regional network by better coordination of freeway management with arterial signal systems.
- 2.2 System Preservation
 - 2.2.1 Improve enforcement of illegally overweight vehicles.
- 2.3 Incident Management
 - 2.3.1 Improve ability to detect, verify, respond to, and clear incidents through effective communication and coordination between local governments, public safety officials and transportation system operators.
 - 2.3.2 Improve incident-related traveler information.
 - 2.3.2.1. Predict delays and clearance times.
- 2.4 Manage Special-Use Lanes (SULs)
- 2.5 Provide Data Archiving and Warehousing
 - 2.5.1 Conduct system evaluation and alternative analysis.
 - 2.5.2 Support and supplement other statewide data collection programs.
 - 2.5.3 Support highway operational performance reporting, modeling simulation, and other techniques for operations and management of the system.
 - 2.5.4 Develop before and after studies for ITS deployments.
- 3. *Enhance Economic Competitiveness*
 - 3.1 Ensure efficient landside access to intermodal, port, airport, and truck terminal facilities.
 - 3.2 Ensure efficient intermodal transfer of people and goods.
 - 3.3 Improve predictability of commercial travel and delivery times.
 - 3.4 Promote safe and efficient access of vehicles to markets.
 - 3.5 Expedite permitting and clearance of commercial vehicles at weigh and agricultural inspection sites to keep commerce moving.



- 3.6 Ensure efficient access to major activity centers such as tourist attractions, state parks, and other areas of interest.
 - 3.7 Provide safe and efficient tourist travel and reduce vehicle-miles traveled (VMT) through the provision of accurate and timely traveler information.
 - 3.8 Support the designation of corridors as strategic intermodal corridors and funding for ITS deployments.
4. *Enhance Quality of Life and the Environment*
- 4.1 Provide efficient statewide ITS services with autonomy for decision-making to support local needs and regional cooperation to promote efficiency and support regional and statewide goals.
 - 4.2 Improve interoperability of ITS services through the development of statewide uniform device standards and specifications.
 - 4.3 Support integration of ITS into state and local planning processes, programs, and capacity projects.
 - 4.4 Provide name recognition of key ITS-related services through branding that will instill trust and confidence in traveler information services, roadside assistance, electronic payment services, and other strategic services.
 - 4.5 Provide easy access and data mining capabilities for transportation planning and design for all partners to support decision-making.
 - 4.6 Provide accurate real-time data to technology, business and operational users for effective and responsive transportation operations.
 - 4.7 Reduce air-quality emissions from mobile sources.
 - 4.8 Reduce energy consumption.
 - 4.9 Reduce travel demand and promote ridesharing opportunities.



- 4.10 Reduce the potential for impacts from hazardous materials' (HAZMAT) incidents.
 - 4.10.1 Improve HAZMAT response systems.
 - 4.10.2 Provide real-time travel information for safe routes for HAZMAT that avoid densely populated areas.

5. *Deploy an Integrated, Effective System*

- 5.1 Provide research and development for technologies to support deployments.
- 5.2 Develop statewide standards and specifications for ITS field devices.
- 5.3 Develop statewide standards for TMC software.
- 5.4 Add a goal to the FTP to support an integrated, effective system.
- 5.5 Develop regionally accepted system performance standards and measures that will drive transportation resource investment decisions.
- 5.6 Promote the establishment of regional operating organizations to develop regional collaboration closely linked to the MPO transportation planning and decision process creating stronger links between operations and planning.
- 5.7 Develop a communications architecture and backbone for statewide deployment.
- 5.8 Develop standard procedures for operations and management.
- 5.9 Develop statewide information exchange network standards and criteria.
- 5.10 Standardize performance measures and archive data to produce a history of trends and establish benchmarks.
- 5.11 Develop statewide procurement guidelines.
- 5.12 Develop a statewide systems engineering process for design, integration, and testing that includes regular updates and enhancements of statewide architecture.



- 5.13 Develop statewide procurement contracts to leverage economies of scale.
 - 5.14 Develop an ITS asset management program to track and program replacement parts, migrate legacy systems, and manage the life cycle of deployments.
 - 5.15 Establish a statewide-managed funding program for ITS with project decision recommendations made by the ITS Office.
 - 5.16 Dedicate a percent of all FDOT funds, statewide-managed and district-allocated, for operations and management of ITS deployments.
 - 5.17 Update work program instructions to develop traceability with the *Statewide ITS Architecture (SITSA)*.³⁵
 - 5.18 Increase the professional capacity of the public and private sector in Florida to support planned deployments.
 - 5.19 Promote public-public partnerships to leverage financial and human resources.
 - 5.20 Promote public-private partnerships to leverage financial and human resources.
6. *Provide A Well-Prepared and Secure Transportation System*
- 6.1 Monitor and protect critical infrastructure.
 - 6.2 Add a goal to the FTP to provide a well-prepared and secure transportation system.
 - 6.3 Conduct formal vulnerability and threat assessments, both physical and cyber, of TMCs and field equipment, and their associated functions.
 - 6.4 Conduct formal vulnerability and threat assessments of related telecommunications infrastructures.
 - 6.5 Develop and implement mitigation plans to address vulnerabilities.
 - 6.6 Prepare recovery plan to maximize available resources, traffic capacity, and balance loading during recovery.



- 6.7 Prepare standard operating procedure for information collection, messaging, and dissemination of transportation system status to stakeholders and general public during response.
- 6.8 Screen and monitor commercial vehicles, cargo, and cargo handling facilities.
- 6.9 Establish and test alternative modes/alternative routes in emergency situations.
- 6.10 Provide for hazardous material movement electronic identification, monitoring and tracking to be coordinated by regional traffic management and public safety agencies.
- 6.11 Implement quick response plan for threatening or high-risk transit passengers.
- 6.12 Improve security for transit operators.
- 6.13 Promote the development of a wide-area alert to notify the traveling public in an emergency or disaster.



7. References

- ¹ Florida Department of Transportation, *Florida's Intelligent Transportation System Strategic Plan – Final Report* (August 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ² United States Department of Transportation, *National ITS Architecture, Version 5.0*. Available online at <http://itsarch.iteris.com/itsarch/index.htm>
- ³ Florida Department of Transportation, *2020 Florida Transportation Plan* (December 2000). Available online at www.dot.state.fl.us/planning/policy/default.htm
- ⁴ Florida Department of Transportation, *Florida Statewide ITS Strategic Plan – Summary of Survey Results* (August 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ⁵ Florida Department of Transportation, *Florida Statewide ITS Strategic Plan – Vision, Guiding Principles, Goals and Objectives* (August 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ⁶ Florida Department of Transportation, *Florida Statewide ITS Strategic Plan – ITS Project Cost Comparison* (August 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ⁷ Florida Department of Transportation, *The Business Plan of the Florida Statewide ITS Strategic Plan, 1999: An Implementation Program for the Next Five Years* (August 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ⁸ Florida Department of Transportation, *Florida Statewide ITS Strategic Plan – Department Organizational Structure Alternatives to Implement ITS* (August 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ⁹ Florida Department of Transportation, *Florida Statewide ITS Strategic Plan – ITS Cost Analysis Issue Paper* (August 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ¹⁰ KPMG, *Economic Impacts of Intelligent Transportation Systems in Florida – An Issue Paper – Final Report* (April 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems

Technical Memorandum No. 2
Florida's 2003 ITS Strategic Plan Update
Draft Updated ITS Vision, Goals, and Objectives



- ¹¹ Florida Department of Transportation, *Florida Statewide ITS Strategic Plan – Integration of ITS into the MPO Transportation Planning Process Issue Paper* (June 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ¹² Florida Department of Transportation, *Operations, Management and Maintenance Issues Paper* (June 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ¹³ Florida Department of Transportation, *Florida Statewide ITS Strategic Plan Procurement Issue Paper – Final* (January 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ¹⁴ Florida Department of Transportation, *Rural/Inter-Urban ITS Applications Issue Paper* (March 1999). Available online at www.dot.state.fl.us/IntelligentTransportationSystems
- ¹⁵ Florida Department of Transportation, *Florida Statewide ITS Strategic Plan – Implementation Authority Review and Recommendations Issue Paper* (August 1999). Available online at www.dot.state.fl.us/planning/systems/sm/its/NewITS.htm
- ¹⁶ Intelligent Transportation Society of America in cooperation with the United States Department of Transportation, *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision* (January 2002). Available online at www.itsa.org/research.html
- ¹⁷ Florida Department of Transportation, *Florida's Intelligent Transportation System Strategic Plan – Final Report: 9.*
- ¹⁸ Florida Department of Transportation, *Florida's Intelligent Transportation System Strategic Plan – Final Report: 10-11.*
- ¹⁹ Florida Department of Transportation, *Florida's Intelligent Transportation System Strategic Plan – Final Report: 12-14.*
- ²⁰ Intelligent Transportation Society of America in cooperation with the United States Department of Transportation, *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision: 1.*
- ²¹ Intelligent Transportation Society of America in cooperation with the United States Department of Transportation, *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision: 3.*



-
- ²² Intelligent Transportation Society of America in cooperation with the United States Department of Transportation, *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision*: 4.
- ²³ Intelligent Transportation Society of America in cooperation with the United States Department of Transportation, *Homeland Security and ITS: Using Intelligent Transportation Systems to Improve and Support Homeland Security – Supplement to the National ITS Plan: A Ten-Year Vision* (September 2002). Available online at www.itsa.org/research.html
- ²⁴ Intelligent Transportation Society of America in cooperation with the United States Department of Transportation, *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision*: 4-5.
- ²⁵ Intelligent Transportation Society of America in cooperation with the United States Department of Transportation, *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision*: 5-7.
- ²⁶ Florida Department of Transportation, *The 2003 Short-Range Component: The Department's Plan for Implementing the 2020 Florida Transportation Plan* (December 2003). Available online at www.dot.state.fl.us/planning/2020ftp
- ²⁷ PBS&J, *Intelligent Transportation Systems Plan: Saving Lives, Time, and Money*, FDOT Contract No. C-7772 (January 2003). Available online at www.dot.state.fl.us/IntelligentTransportationSystems/ITSDeployment/
- ²⁸ Florida Department of Transportation, *Ten-Year ITS Cost Feasible Plan*. Available online at www.dot.state.fl.us/IntelligentTransportationSystems/ITSDeployment/
- ²⁹ Florida Department of Transportation, *Technical Memorandum No. 2 – ITS Needs Model: ITS Corridor Master Plans for Florida's Principal FIHS Limited-Access Corridors*, Contract No. C-7772 (June 2002). Available online at www.dot.state.fl.us/IntelligentTransportationSystems/ITSDeployment/
- ³⁰ Florida Department of Transportation, *Technical Memorandum No. 2*: 12.
- ³¹ Florida Department of Transportation, *Technical Memorandum No. 2*: 12.
- ³² PBS&J, *Intelligent Transportation Systems Plan: Saving Lives, Time, and Money*: 341.

Technical Memorandum No. 2
Florida's 2003 ITS Strategic Plan Update
Draft Updated ITS Vision, Goals, and Objectives



- ³³ Intelligent Transportation Society of America in cooperation with the United States Department of Transportation, *Homeland Security and ITS: Using Intelligent Transportation Systems to Improve and Support Homeland Security – Supplement to the National ITS Plan: A Ten-Year Vision*: 1.
- ³⁴ United States Department of Transportation, *23 Code of Federal Regulations, Parts 655 and 940, Intelligent Transportation System Architecture and Standards, Final Rule*, Washington, D.C. (January 2001).
- ³⁵ Ice, Ron (Jaffe Engineering), *Florida Statewide Intelligent Transportation System Architecture and Standards* (June 2000). Kimley-Horn and Associates, Inc., FDOT Contract No. C-7354. Available online at www.consystem.com/html/florida/



Appendix A

Intelligent Transportation Systems Plan Goals and Objectives



Florida ITS Plan Goals and Objectives

1. Move People and Goods Safely

- 1.1. Reduce accident rates.
 - 1.1.1. Reduce accident rates caused by driver errors and the severity of accidents.
 - 1.1.2. Reduce accident rates and severities in construction work zones.
 - 1.1.3. Reduce accident rates at highway-rail grade crossings.
- 1.2. Reduce queuing on mainlines.
 - 1.2.1. Reduce queues on limited-access roadways from highway-rail grade crossings.
 - 1.2.2. Reduce queues at weigh and inspection stations along the corridors.
 - 1.2.3. Reduce queues at intermodal facilities that impact corridor operations.
- 1.3. Improve the safety of commercial vehicle operators in rest areas.
- 1.4. Provide evacuation coordination services and emergency management.
 - 1.4.1. Provide pre-trip planning information for evacuation conditions.
 - 1.4.2. Provide traffic management during evacuation conditions.
 - 1.4.3. Manage demand through communication with shelters and other safe harbors.
 - 1.4.4. Provide route guidance information and information on traffic/travel conditions and weather including winds, rainfalls, and storm surges.
 - 1.4.5. Support remote configuration management of highways during evacuation conditions or other emergencies.
 - 1.4.6. Provide accurate and timely traveler information regarding incidents on evacuation routes and updated weather information.
 - 1.4.7. Share emergency information among local and regional traffic management centers (TMCs) and emergency management facilities.
 - 1.4.8. Detect, verify, respond to, and clear incidents and manage traffic around accidents, emergencies, and other incidents.
 - 1.4.9. Support infrastructure security through surveillance at critical structures and interchanges.



2. *Preserve and Manage the System*

- 2.1. Enhance mobility and efficiency.
 - 2.1.1. Improve travel times along the corridors.
 - 2.1.2. Improve predictability and reliability of travel times.
 - 2.1.3. Reduce accidents and other incidents during normal flows that result from congestion and delays that are caused by “rubber-necking” during incidents.
 - 2.1.4. Reduce congestion-related delays by decreasing queues and spillback from other facilities.
 - 2.1.5. Reduce delays caused by congestion in construction work zones.
 - 2.1.6. Manage traffic accessing these major corridors at interchanges to improve mainline throughput and traffic flow.
 - 2.1.7. Reduce unnecessary delays at tollbooths.
 - 2.1.8. Reduce unnecessary delays at the gates of intermodal facilities.
 - 2.1.9. Provide traveler information services with route and mode choice information.

- 2.2. System Preservation
 - 2.2.1. Improve enforcement of illegally overweight vehicles.

- 2.3. Incident Management
 - 2.3.1. Improve ability to detect, verify, respond to, and clear incidents.
 - 2.3.2. Improve incident-related traveler information.
 - 2.3.2.1. Predict delays and clearance times.

- 2.4. Manage Special-Use Lanes (SULs)

- 2.5. Provide Data Archiving and Warehousing
 - 2.5.1. Conduct system evaluation and alternative analysis
 - 2.5.2. Support and supplement other statewide data collection programs
 - 2.5.3. Support highway operational performance reporting, modeling simulation and other techniques for operations and management of the system.
 - 2.5.4. Develop before and after studies for ITS deployments.



3. *Enhance Economic Competitiveness*

- 3.1. Ensure efficient landside access to intermodal, port, airport, and truck terminal facilities.
- 3.2. Ensure efficient intermodal transfer of people and goods.
- 3.3. Promote safe and efficient access of vehicles to markets.
- 3.4. Expedite permitting and clearance of commercial vehicles at weigh and agricultural inspection sites to keep commerce moving.
- 3.5. Ensure efficient access to major activity centers such as tourist attractions, state parks, and other areas of interest.
- 3.6. Provide safe and efficient tourist travel and reduce vehicle-miles traveled (VMT) through the provision of accurate and timely traveler information.
- 3.7. Support the designation of corridors as strategic intermodal corridors and funding for ITS deployments.

4. *Enhance Quality of Life and the Environment*

- 4.1. Provide efficient statewide ITS services with autonomy for decision-making to support local needs and regional cooperation to promote efficiency and support regional and statewide goals.
- 4.2. Improve interoperability of ITS services through the development of statewide uniform device standards and specifications.
- 4.3. Support integration of ITS into local planning processes, programs, and capacity projects.
- 4.4. Provide name recognition of key ITS-related services through branding that will instill trust and confidence in traveler information services, roadside assistance, electronic payment services, and other strategic services.
- 4.5. Provide easy access and data mining capabilities for transportation planning and design for all partners to support decision-making.



- 4.6. Provide accurate real-time data to technology, business and operational users for effective and responsive transportation operations.
 - 4.7. Reduce air-quality emissions from mobile sources.
 - 4.8. Reduce the potential for impacts from hazardous materials' (HAZMAT) incidents.
 - 4.8.1. Improve HAZMAT response systems.
 - 4.8.2. Improve the availability of traveler, weather, and shelter information during man-made and natural disasters.
 - 4.8.3. Provide safe routes for HAZMAT that avoid densely populated areas.
5. *Deploy an Integrated, Effective System*
- 5.1. Provide research and development for technologies to support deployments.
 - 5.2. Develop statewide standards and specifications for ITS field devices.
 - 5.3. Develop statewide standards for TMC software.
 - 5.4. Develop a communications architecture and backbone for statewide deployment.
 - 5.5. Develop standard procedures for operations and management.
 - 5.6. Develop statewide information exchange network standards and criteria.
 - 5.7. Brand all critical statewide services such as traveler information, interactive voice response (IVR) systems (511 or 1-800 services), Road Ranger (RR) Service Patrols, **SunPass**®, Pre-Pass, etc.
 - 5.8. Standardize performance measures and archive data to produce a history of trends and establish benchmarks.
 - 5.9. Develop statewide procurement guidelines.
 - 5.10. Develop a statewide systems engineering process for design, integration, and testing that includes regular updates and enhancements of statewide architecture.

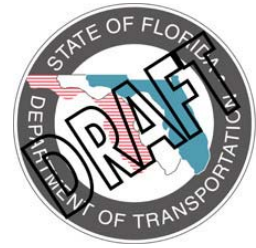


- 5.11. Develop statewide procurement contracts to leverage economies of scale.
- 5.12. Develop an ITS asset management program to track and program replacement parts, migrate legacy systems, and manage the life-cycle of deployments.
- 5.13. Establish a statewide-managed funding program for ITS with project decision recommendations made by the ITS Office.
- 5.14. Dedicate a percent of all FDOT funds, statewide-managed and district-allocated, for operations and management of ITS deployments.
- 5.15. Update work program instructions to develop traceability with the *Statewide ITS Architecture (SITSA)*.
- 5.16. Increase the professional capacity of the public and private sector in Florida to support planned deployments.
- 5.17. Promote public-public partnerships to leverage financial and human resources.
- 5.18. Promote public-private partnerships to leverage financial and human resources.



***Technical Memorandum No. 3 –
New National and Statewide ITS Initiatives***

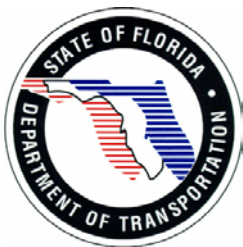
Technical Memorandum No. 3



Florida's Intelligent Transportation Systems Strategic Plan Update

New National and Statewide Intelligent Transportation System Initiatives

January 11, 2005
Version 1



Prepared for:

Florida Department of Transportation
Traffic Engineering and Operations Office
Intelligent Transportation Systems (ITS) Section
605 Suwannee Street, M.S. 90
Tallahassee, Florida 32399-0450
(850) 410-5600



DOCUMENT CONTROL PANEL		
File Name:	<i>Technical Memorandum No. 3 – Florida's Intelligent Transportation Systems Strategic Plan Update – New National and Statewide Intelligent Transportation System Initiatives</i>	
File Location:	W:\ITS Program\ITS GC\TWO25-StrategicPlanUpdate\TM3 - Issue Papers\041211 TWO25 TM3 (redl PLH + DH).doc	
Deliverable Number:		
Version Number:	1	
	Name	Date
Created By:	Dave Hodges, PBS&J	October 28, 2004
Reviewed By:	Paul Watson, PBS&J	December 2, 2004
	Tahira Faquir, PBS&J	December 2, 2004
Modified By:	Dave Hodges, PBS&J	January 6, 2005
	Pamela L. Hoke, PBS&J	December 17, 2004
	Pamela L. Hoke, PBS&J	January 11, 2005
Completed By:	Pamela L. Hoke, PBS&J	January 11, 2005



Table of Contents

List of Acronyms	iii
1. Purpose	1
2. Background	2
3. Homeland Security	3
4. Regional Operating Organizations	7
5. Research and Development Program	10
6. Recommended Initiatives for an ITS Professional Capacity Building Program	13
7. Vehicle Probe Studies	17
8. Recommended Initiatives for Mainstreaming Advanced Public Transportation Systems	19
9. Intelligent Transportation System Information Privacy Policy	21
10. Automated Vehicle Monitoring and Enforcement	24
11. Value Pricing	27
12. System Monitoring and Performance Measures	30
13. Systems Integration, Tracking, and Reporting	33



List of Acronyms

AAA	American Automobile Association
ADUS	Archived Data User Services
APC	Automatic Passenger Counter
APTS	Advanced Public Transportation Systems
ATIS	Advanced Travel Information System
ATMS	Advanced Transportation Management System
ATSS	Airborne Traffic Surveillance Systems
AVL	Automatic Vehicle Location
BRT	Bus Rapid Transit
CBP	Customs and Border Protection
CCTV	Closed-circuit Television
CEI	Construction, Engineering, & Inspection
CEU	Continuing Education Unit
<i>CFP</i>	<i>Cost Feasible Plan</i>
CITE	Consortium for ITS Training and Education
CVO	Commercial Vehicle Operations
DHS	Department of Homeland Security
E-911	Enhanced 911
EFP	Electronic Fare Payment
ETC	Electronic Toll Collection
FDLE	Florida Department of Law Enforcement
FDOT	Florida Department of Transportation
FEEDS	Florida Engineering Education Delivery System
FHP	Florida Highway Patrol
FHWA	Federal Highway Administration
FIHS	Florida Intrastate Highway System
FMS	Fleet Management System
FTC	Florida Transportation Commission
<i>FTP</i>	<i>Florida Transportation Plan</i>
FTPN	Florida Transit Planning Network
FY	Fiscal Year
GPS	Global Positioning System



HOT	High-Occupancy Toll
HOV	High-Occupancy Vehicle
ISTEA	Intermodal Surface Transportation Efficiency Act
ITE	Institute of Transportation Engineers
ITN	Invitation to Negotiate
ITS	Intelligent Transportation System
ITSA	Intelligent Transportation Society of America
LPR	License Plate Reader
MPO	Metropolitan Planning Organizations
NHI	National Highway Institute
ORT	Open Road Tolling
PCB	Professional Capacity Building
PDH	Professional Development Hour
PT	Public Transportation (Forum)
PTO	Public Transit Office
R&D	Research and Development
RAPTS	Resource for Advanced Public Transportation Systems
RD&T	Research, Development, and Testing
RFP	Request for Proposal
RITE	Research, Integration, Training, and Education (Forum)
ROO	Regional Operating Organization
RTE	Florida's Turnpike Enterprise
RTMC	Regional Transportation Management Center
RWIS	Road Weather Information System
SAFETEA	Safe, Accountable, Flexible and Efficient Transportation Equity Act of 2003
SR	State Road
SUL	Special-use Lane
TDM	Transportation Demand Management
TEOO	Traffic Engineering and Operations Office
TOC	Traffic Operations Center
TSP	Traffic Signal Priority
USCG	United States Coast Guard
USDOD	United States Department of Defense
USDOT	United States Department of Transportation
VDOT	Virginia Department of Transportation



1. Purpose

The purpose of this document is to present the findings of the technical memorandums¹ referenced herein and developed to explore new intelligent transportation system (ITS) trends, technologies, and initiatives at the state and national level. Because of their impact on the future of ITS, these topics will have bearing on the Florida Department of Transportation's (FDOT) effort to fulfill the vision, goals, and objectives identified in *Florida's Intelligent Transportation Systems Strategic Plan*, referred to herein as the *ITS Strategic Plan*.

The primary purpose of the *ITS Strategic Plan* was to present a 20-year vision for ITS in Florida and to recommend strategies to achieve this vision. The original document included four main ITS goals, which were consistent with the mission and goals of the FDOT's *2020 Florida Transportation Plan (FTP)*. These four ITS goals were:

- Safe transportation for residents, visitors, and commerce;
- Protection of the public's investment in transportation;
- A statewide, interconnected transportation system that enhances Florida's economic competitiveness; and
- Travel choices to ensure mobility, sustain the quality of the environment, preserve community values, and reduce energy consumption.

First adopted by the FDOT in 1999, the *ITS Strategic Plan* was designed to guide the FDOT, Florida's metropolitan planning organizations (MPOs), and local governments in the planning, development, and deployment of integrated, multimodal ITS services. Although the vision and goals for ITS have not changed significantly since then, the recommended strategies for accomplishing this vision have. These strategies and their supporting documentation form the basis for the update of the *ITS Strategic Plan*.

¹ Refer to the ITS General Consultant's project Web site to review all supporting update documentation. Copies of these issue papers and other pertinent information are available online at http://floridait.com/Strategic_Plan.htm.



2. Background

The documents summarized in this *Technical Memorandum* were developed based on the results of the ITS Section's research on the latest state and national trends, technologies, and initiatives, and the subsequent determinations regarding the feasibility of implementing them in Florida's ITS Program during the next three years. These particular topics were examined for several different reasons. First, they were not recognized in the original *ITS Strategic Plan* and have since gained statewide or national importance as potential ITS deployment areas. Some of these initiatives serve to implement new state or national policies. Others were considered because they required a greater level of detailed review before being developed as future ITS projects.

Each of the initiatives was explored fully in its own individual document, including the latest research and the implications for Florida's ITS vision and strategies. Where technology issues are addressed, the documents describe the advancements that have taken place and how such technology could be applied to solving transportation problems or enhancing an ITS function. Other documents address policy or program topics, and offer guidance on how the FDOT can best implement the initiatives.



3. Homeland Security

With the establishment of the United States Department of Homeland Security (DHS) and the signing of the *Homeland Security Act of 2002*,² one emphasis of national transportation programs is to secure the country's critical infrastructures. *Technical Memorandum No. 3.1, Homeland Security*, identifies ITS applications that may provide security improvements for Florida's critical infrastructures, and reviews existing ITS-related homeland security efforts in Florida. It also discusses funding opportunities that enhance and support homeland security for the planning, deployment, and operation of ITS. The recommendations are consistent with the *National ITS Program Plan's Homeland Security and ITS Supplement*³ and include recommended security guidelines developed as part of the *Regional Transportation Management Center (RTMC) Security White Paper*.⁴

Five broad areas are identified for ITS homeland security application: preparedness, prevention, protection, response, and recovery. In many regards, Florida is leading the nation in its approach to each of these five areas by virtue of the security component of the *iFlorida Model Deployment Project*, which is taking place in the Orlando area.⁵

The Florida Department of Law Enforcement (FDLE) is the lead agency for homeland security in Florida. The FDOT has established lines of communication with the FDLE and works closely with that agency on homeland security matters of common interest. Still, the FDOT's participation in security operations may be limited by legal and budgetary considerations.

In terms of funding sources, additional research is needed to determine whether any new programs are available under the *Safe, Accountable, Flexible and Efficient Transportation Equity Act (SAFETEA) of 2003*, the six-year federal legislation that authorizes \$247.4 billion in transportation expenditures through fiscal year (FY) 2009. Other funding may be available through the DHS and its constituent administrations. To date, much of this funding has been directed toward first responders, aviation, and ports.

² United States Department of Transportation, *Homeland Security Act of 2002*, PUB.L.NO. 107-296, 116 STAT. 2135 (2002).

³ Intelligent Transportation Society of America, *Homeland Security and ITS – Using Intelligent Transportation Systems to Improve and Support Homeland Security – Supplement to the National ITS Program Plan: A Ten-Year Vision* (September 2002). Available online at <http://www.itsa.org/research.html>.

⁴ Jasper, Keith (PBS&J), *White Paper: Regional Transportation Management Center (RTMC) Security, Version 3* (June 2003). FDOT Contract No. C-7772.

⁵ More information regarding the FDOT's *iFlorida Surface Transportation Security and Reliability Information System Model Deployment Project* is available online at <http://www.iflorida.net/>.



The FDOT, like most state departments of transportation, collects a significant volume of real-time information, such as video, vehicle sensor data, traffic counts, and probe information. Generally speaking, this information is not archived. In part, this is to avoid the workload and potential legal implications of third parties seeking access to this information. However, the potential value of such information to law enforcement and security agencies in detecting suspicious behavior is enormous. Consequently, serious consideration should be given to affording legal protection for information archival, perhaps in locations adjacent to sensitive facilities or critical infrastructures.

Whether the transportation system is the target of an attack or the means by which an attack is carried out, it will likely be the same means for conducting evacuations and delivering logistical responses. Most case study analyses following the September 11, 2001, attacks identified communication as an area needing improvement. Since then, improvements in communication have been made both nationally and in Florida. It is an area in which the FDOT and its operational components have much to offer and, consequently, underscores the FDOT's need to be a major player in the homeland security arena. An integral part of this involvement is the need for interagency discussions, security simulations, and real exercises, as well as an ongoing training program for key staff. Not only will this ensure that the FDOT is ready to respond, it will serve as a valuable outreach to nontraditional partners in better understanding the FDOT's resources and capabilities.

The transportation system as a whole includes land, sea, and air components. Each component has its own vulnerabilities and associated threats. In addition, the movement of goods and people frequently occurs in a series of stages involving several modes. This provides multiple opportunities for terrorists to strike at a particular group or commodity, and creates additional targets in the form of intermodal facilities and connectors. From an FDOT perspective, this has several important implications. For example, while a container ship arriving from an international port falls under another agency's jurisdiction, a container from the vessel, when transferred to truck or train, will be of interest to the FDOT if it is attacked or if it contains weapons. This underscores the need for interagency coordination and intelligence sharing in the tracking of sensitive loads throughout the supply chain, in ensuring that coordinated actions will prevent attacks, and in responding to attacks should they occur.

Similarly, the functional interfaces between modes may represent avoidable weaknesses in the operational management of the transportation system, particularly between transportation partners that are not traditionally interoperable. For example, a mass evacuation of trucks from a seaport or of passengers from an airport, or a security incident that results in the temporary closure of an airport or seaport, may require the advance planning of the FDOT's major and immediate operational management personnel. Once again, there is no certainty that any such response will coincide with the operating hours of the FDOT's responding centers, potentially resulting in suboptimal resource availability.



An additional consideration is that many airports and seaports now rely on ITS technologies for security and traffic management functions. Florida leads the nation in the application of security measures at deep-sea ports. While the primary motivation for these measures was initially focused on criminal activity within seaports, their impact has nonetheless resulted in an increased use of ITS technologies in port security operations. Considerable potential exists for port authorities to “reinvent the wheel” when it comes to ITS architectures, and many opportunities for interoperability and resource sharing between these agencies and the FDOT could be overlooked.

Much of the nation’s focus since September 11 has been on the protection of critical infrastructures. Within transportation, the major emphasis continues to be on airports and air travel. At a national level, seaports are seen as the next priority, particularly the possible ease of entry of undesirable people and weapons. International borders have also witnessed a general tightening of entry requirements for both people and goods. Florida, like other states, has its own critical infrastructure in the form of bridges, tunnels, and traffic operation centers (TOCs). Quite apart from the immediate injury and loss of life that would potentially follow an attack on a critical infrastructure, the loss of such an infrastructure for an extended period of time will cause an ongoing disruption that can have an equally devastating impact on Florida’s economy and mobility. This is particularly true in situations where the loss of a bridge interrupts waterborne traffic, as well as vehicular traffic. Given the economic importance of Florida’s tourism industry and the contribution of seaports to local, regional, and national commerce, the FDOT’s most critical infrastructure must be protected for broader reasons than the management of peak commuter flows. Once again, this highlights a need for stronger relationships with nontraditional partners, such as port authorities, the United States Coast Guard (USCG), and United States Customs and Border Protection (CBP).

Regional transportation management centers are the brains of Florida’s highway network, capable of multiple functions for managing day-to-day operations and emergencies. The FDOT’s *RTMC Security White Paper*, referenced previously, identified the characteristics of different types of attacks, both cyber and physical. The *White Paper* recommended a four-phase action plan that focuses primarily on the first of the five areas detailed in *Section 2* for the application of ITS to homeland security, with the objective of improving preparedness.

The four phases outlined in the action plan include research; vulnerability and threat assessments; recovery and business continuity plans; and implementation activities. The potential role of RTMCs in responding to an attack is enormous, as was witnessed by the command-and-control role the Virginia Department of Transportation’s (VDOT) Smart Traffic Center played in the minutes, hours, and days following the September 11 attack on the Pentagon. Protecting these valuable assets in Florida is clearly an important priority.



The Federal Highway Administration (FHWA) public safety and security program is taking many initiatives to enhance the role of transportation agencies in homeland security. Florida is already a leader in the implementation of some of these initiatives, as evident with the *iFlorida* Model Deployment Project. The FHWA's objectives, such as fostering partners, improving interagency communications, and coordinating with the United States Department of Defense (USDOD), certainly command Florida's attention. Current activities include bridge security; a reduction in telecommunication vulnerabilities; cargo security; and the integration of voice, data, and video demonstrations.

The *Homeland Security Technical Memorandum* reviews the status of various transportation security initiatives underway in Florida and nationally. Through the *iFlorida* project, Florida is already at the leading edge of several initiatives of national significance and lessons learned during the coming three years will benefit similar applications in Florida.

Subject to available funding, it is highly recommended that the FDOT adopt the four-phase action plan detailed in the *RTMC Security White Paper*, but expand it to include the broader range of topics noted above. This will enhance the FDOT's preparedness in the event of a homeland security emergency. In addition, lessons learned from the *iFlorida* project should form the basis for further development of a statewide approach to homeland security, with ITS services and technologies providing a vital element in the effort to meet these critical safety and security objectives.



4. Regional Operating Organizations

Effective operation of transportation systems requires functional, organizational, and interjurisdictional coordination and cooperation. With many of today's transportation challenges being regional in nature, solutions to various critical issues involving incident and event management, traveler information, and evacuation management lie in the creation of a partnership among Florida's operating agencies to address these regional concerns.

These types of partnerships, sometimes referred to as regional operating organizations (ROOs), have been created nationally, as well as in Florida. ROOs provide a regional, institutional, and organizational framework for the management and operation of ITS. This framework not only addresses transportation challenges, but provides a mechanism to facilitate interagency cooperation through coordinated solutions. In Florida, the concept of ROOs has emerged as plans for statewide ITS deployments have been developed. Districts 2, 4, and 5 have already implemented successful ROOs. The Districts' ROOs are discussed in *Technical Memorandum No. 3.2*, which was prepared as part of the 2003 update of the *ITS Strategic Plan*.

Metropolitan planning organizations were originally expected to play a major part in ITS deployments because of their existing role and experience in bringing various jurisdictions together for planning purposes. In early 2000, it became evident that the focus of many MPOs did not include transportation operations. As a result, informal organizations began to take shape, later evolving into ROOs. Typically, there are several common factors driving the establishment of ROOs:

- Recognition of a critical regional need;
- Meeting the need only through interagency cooperation;
- Visionary and influential leadership; and
- Availability of funding.

Key benefits of ROOs include the ability to bring together transportation, public safety, and emergency management operators to provide more effective, integrated management of incidents, disasters, and emergency evacuations. ROOs aid in the establishment of new sources for transportation funding, and in the regional control of major roadway and transit assets. Through multiagency coordination and real-time information dissemination, construction and incident-related delays are being reduced.

ROOs enable agencies to share transportation data and software resources. Public agencies and private partners can combine resources to provide quality public and personalized transportation information services. For example, transit services can be improved through the implementation of a common "smart card" fare collection system across multiple transit operators.



A ROO can also become the focal point for addressing the integration and interoperability concerns regarding regional ITS services. A ROO can recommend the adoption of national ITS standards for the regional provision of traveler, incident/event, and toll data. *Florida's ITS Strategic Plan* provides MPOs with guidance in the planning, programming, and implementation of integrated multimodal ITS at the statewide, regional, or local level as appropriate. Although MPOs are provided ITS guidance, their legislated mission is transportation planning, policy, and program development, while a ROO's focus is on transportation operations. The MPOs have a key role in ROO partnerships because their support is needed to secure federal funding, and because they may be helpful in the ITS Section's work to maintain and update regional ITS architectures.

Florida's *Draft Rule 940 Procedures*⁶ suggest that the MPO role regarding ITS remain focused on the architecture, planning, funding, and systems monitoring of ITS, but also suggest that the operational oversight of regional ITS be conducted through the development of ROOs.

The FDOT should take the leadership role in fostering the development of ROOs. It is recommended that the FDOT develop a statewide policy for the establishment of interjurisdictional and multimodal partnerships within a region. The goal would be to have each region's transportation system managed in a seamless, integrated fashion to optimize traveler satisfaction and system performance.

In addition, the FDOT should review national operational and organizational trends, and develop guidelines for the establishment of ROOs. It should coordinate with the Districts to identify its own role in defining ROO boundaries for statewide consistency. Other recommendations are as follows:

- The FDOT should determine the needs, required resources, and level of funding necessary to support this new initiative.
- Each FDOT District, in consultation with the appropriate local governments, agencies, and MPOs, should develop a plan to manage and maintain transportation operations. The operational plan could be further formalized in a regional concept of operations and utilized as an essential element of the regional architecture. This process will serve to further engage regional planning and operational stakeholders in strategic and tactical operational management functions.

⁶ Quigley, Diane E. (PBS&J), *Florida Department of Transportation – Draft Rule 940 Procedures in Florida* (December 2003). FDOT Contract No. C-7772. Available online at http://floridait.com/rule_940_implementation.htm.



- Each District should develop a ROO that will enable them to provide ITS services they plan to deliver over the next five years.
- The FDOT should establish incentives to encourage the agencies responsible for transportation system management and performance to work in a cooperative and integrated manner.
- The FDOT should initiate actions to add appropriate language to the *Florida Statutes* to address the “regionalization” of transportation operations.



5. Research and Development Program

Technical Memorandum No. 3.3, Recommended Initiatives for an Intelligent Transportation System Research and Development Program, contains information and recommendations for the formal establishment and definition of a statewide ITS research and development (R&D) program. This document defines the roles and responsibilities for participating agencies; identifies the R&D program objectives; and outlines funding and staffing requirements.

The FDOT has been involved in transportation research since the 1920s. Early research efforts were mainly highway oriented, but recently the FDOT has broadened its research areas, given the rapid development of new technologies, applications, and processes. To meet these ever-growing research demands and needs, the FDOT Research Center was established in 1989 and since then, more than 600 research projects have been initiated. The most recent R&D annual budget is approximately \$12 million.⁷

The FDOT submits research need statements for 13 functional areas each year. The Research Policy Committee, which consists of the Research Center Director, State Highway Engineer, State Transportation Planner, and State Public Transportation Administrator, reviews the submittals and selects the finalists. FDOT employees may choose to work with university researchers in developing research funding proposals, but due to funding constraints, the Research Center cannot accept unsolicited funding requests from outside sources. The Assistant Secretary for Transportation Policy approves the final list of projects. Most of the research programmed through the Research Center is conducted by state universities. However, research partnerships are also formed with private consultants, other public agencies within Florida, and even other states, as in the case of national pooled-fund studies.

Since ITS was distinguished as a primary functional area in 2001, newly awarded ITS research has averaged about \$500,000 per year. Prior to 2001, ITS projects were typically funded under traffic operations, safety, public transportation, and planning. Currently, there are nine active ITS research projects being contracted through the Research Center, with total funding of just over \$1.76 million. This research covers a fairly wide range of areas, such as commercial vehicle operations (CVO), road weather information systems (RWIS), data warehousing, traffic simulation, and airborne traffic surveillance systems (ATSS).

⁷ More information regarding the FDOT Research Center is available online at <http://www.dot.state.fl.us/research-center>.



One thing is clear: ITS research can cross over into and benefit many other functional areas, including Florida's Turnpike Enterprise (FTE) and the FDOT's Maintenance, Environmental Management, Public Transportation, and Safety offices. Given the ITS R&D activities that have taken place in Florida, coupled with national priorities and other state examples, several initiatives are recommended:

- Specific goals and objectives need to be formally established for ITS R&D in Florida. The ITS Section should develop and conduct a statewide survey with assistance from the ITS Florida Advisory Council to obtain input from state, municipal, industry, service operator, and R&D academia stakeholders. Priorities for ITS R&D that this survey establishes can also be used to identify anticipated future ITS training needs.
- Intelligent transportation systems should remain one of the functional research areas of the FDOT, but joint ITS research should be strongly encouraged within other functional areas as specific applications are identified.
- The ITS Section should establish a focused ITS R&D program across multiple functional areas. This program should be guided by the existing ITS Florida Advisory Council, slightly expanded to include ITS Florida^{TM8} members representing the FDOT Districts on a rotating basis, along with municipal leaders, ITS industry partners, service operators, first responders, and academia. The ITS Florida Advisory Council should convene an annual statewide workshop to report the previous year's research results and identify ITS R&D needs for the coming year. Strong consideration should be given to projects that also address Florida's statewide goals, as well as *National ITS Program Plan*⁹ goals.
- The ITS Florida Advisory Council and the FDOT Traffic Engineering and Operations Office (TEOO) should aggressively pursue other sources of funding for ITS R&D, particularly federal grants, joint proposals with other states, and partnerships with the private sector and state universities. An initial goal should be to establish a \$3-million-per-year program.
- The ITS Florida Advisory Council should revisit and formally evaluate the feasibility of a state research, development, and testing (RD&T) facility.

⁸ ITS Florida is a trademark of the Intelligent Transportation Society of Florida, Inc.

⁹ Intelligent Transportation Society of America, *National Intelligent Transportation Systems Program Plan: A Ten-Year Vision* (January 2002). Available online at <http://www.itsa.org/research.html>.



- The ITS R&D efforts should be coordinated with professional capacity building (PCB) efforts and ITS performance measurement activities. Florida ITS professionals should be challenged to be more innovative and their successful efforts recognized through the ITS Florida annual awards program.
- Florida should actively participate in the ITS America™¹⁰ Research, Integration, Training, and Education (RITE) Forum as a means to share and exchange ideas for improved, more effective, and beneficial ITS R&D.¹¹ This Forum is expected to provide the best leads for those seeking timely, industry-wide ITS research results.
- The ITS Florida Advisory Council, with assistance from the TEOO, should annually publish and widely disseminate a report on the direct benefits gained from ITS R&D in Florida.

¹⁰ ITS America is a trademark of the Intelligent Transportation Society of America.

¹¹ More information regarding ITS America's RITE Forum is available online at <http://www.itsa.org/new.nsf/SiteMap!OpenPage>.



6. Recommended Initiatives for an ITS Professional Capacity Building Program

Technical Memorandum No. 3.4, Recommended Initiatives for an Intelligent Transportation System Professional Capacity Building Program, contains information and recommendations that can be used to develop and promote a structured training curriculum for ITS professionals throughout Florida. The document defines participating agency roles and responsibilities, identifies specific training modules, and outlines opportunities for funding assistance and training logistics support.

A pioneer in providing ITS training for Florida's transportation professionals, ITS Florida was one of only three state ITS chapters in the country during the early 1990s that piloted a state-supported ITS training program under the direction of the United States Department of Transportation's (USDOT) Volpe National Transportation Systems Center.¹² During these early years, the FHWA Florida Division Office provided the seed money to start the training program. The FDOT and the University of Florida also assisted significantly.

Over the last several years, the ITS Florida training mission has intensified with the formation of the ITS Florida PCB Committee and a somewhat regular offering of courses. The ITS Florida PCB Committee has followed the national ITS PCB concept developed by the USDOT and FHWA, and a national survey identified areas of professional development needs. In January 2003, the ITS Florida PCB Committee completed the development of a business plan for the PCB program. The plan's basic components identified 15 training modules that were based on the Florida ITS community's needs and FDOT ITS deployment priorities. The 15 modules are:

- General ITS Introduction;
- Procurement and Funding;
- Management and Operations;
- Telecommunications;
- Construction, Engineering, and Inspection (CEI);
- Performance Measures and Evaluation;
- Traffic Engineering Using ITS;
- Maintenance;
- Contract Management;
- Transportation Planning;

¹² More information regarding the USDOT Volpe National Transportation Systems Center is available online at <http://www.volpe.dot.gov>.



- System Engineering;
- Legal Issues;
- Value and Impacts of ITS;
- Electronic Payment Systems; and
- Traveler Information.

The ITS Florida PCB Committee created module sponsorship opportunities and incentives; outlined a program for training delivery; and developed an operating budget. The proposed training schedule called for three deliveries of each module per year around the state. Sponsorship opportunities were offered at different levels, including program and module sponsorships, and one for the delivery of a single module. If all sponsorships had been picked up, the program would have been capable of generating a modest revenue. The program also incorporated a provision for professional development hours (PDHs) and continuing education units (CEUs).

Unfortunately, sponsorship interest could not be generated. Consequently, the ITS courses now offered are limited in variety because the PCB program has no funding. Atlantic Scientific, Inc., and PBS&J are conducting the only courses being offered. Other providers include the Institute of Transportation Engineers (ITE) and the FHWA's National Highway Institute (NHI). The FDOT has sponsored and conducted several courses, some offered during ITS Working Group meetings.

According to those directly involved with ITS Florida PCB activities to date, program sustainability and growth will require a cooperative effort among all previously participating agencies, including ITS Florida members from academia, and more volunteers from private sector members. The consensus also favors ITS Florida taking the lead in managing and coordinating the PCB program. However, it must be recognized that ITS Florida is *not* an operating agency and, therefore, cannot be the organization responsible for carrying out the program without some source of revenue.

To ensure the sustainability of Florida's ITS PCB program and meet future ITS training demand, the FDOT could assume a leadership role in discussing possible partnerships with other national ITS training organizations, such as the University of Maryland's Consortium for ITS Training and Education (CITE).¹³ Other issues revolve around course marketing, training logistics, offering the right course level, and identifying participation incentives. A reasonable training delivery target would be one PCB event every month at a cost of about \$10,000 per event. One consideration for this recommendation would be whether the ITS PCB program should be revenue-based.

¹³ More information regarding CITE is available online at <http://www.citeconsortium.com/index.html>.



Given the aforementioned history of Florida PCB events and activities, and the availability of ITS training and continuing educational resources nationally, the following initiatives are recommended for Florida's ITS PCB Program:

- ITS training and education should be viewed as an individual responsibility for continuing professional development. However, the FDOT TEOO should assume the leadership in this area, with guidance from the ITS Florida PCB Committee.
- The TEOO's first action should be to request that the ITS Florida PCB Committee conduct and document a formal assessment of the appropriate training courses for each ITS professional level and to make recommendations for Florida's ITS PCB Program. This should include program funding needs; course marketing; training logistics; course content; incentives for developing and conducting new courses; and specific roles and responsibilities for ITS PCB agency partners. The TEOO and ITS Florida members should use this assessment and its findings to develop and support an ITS PCB business plan. The TEOO should then consider funding for the individual courses.
- The newly reorganized ITS Florida PCB Committee should be fully supported and guided by its membership in the development, coordination, and management of a statewide ITS training and education program that fulfills the specific needs of Florida's ITS professionals. In this regard, the Committee should conduct a statewide survey to identify ITS training and educational needs.
- The business model for a successful statewide ITS training and education program should stimulate PCB program enthusiasm, sustain active participation of instructors and attendees, and encourage innovation in ITS training content and delivery and content. The FDOT should view the ITS PCB Program as a "break-even" activity that recovers the costs incurred for course development and delivery.
- The FHWA Florida Division, the FDOT, and ITS Florida academia should all play a much more visible and active role in program marketing and training logistics, such as furnishing training venues, equipment, and course advertising at no cost.
- Such incentives as free ITS Florida membership should be provided to qualified private and public sector volunteers who take leadership roles in course development or delivery. ITS Florida's academia should fully explore the utilization of the Florida Engineering Education Delivery System (FEEDS) as a training delivery medium. Additionally, project managers of current Florida ITS deployments should be identified and invited to share their experiences.



- The spirit of professional volunteerism that PBS&J and Atlantic Scientific exhibit should be formally recognized and eagerly supported by both public and private sector ITS agencies. Besides encouraging member experts to step forward and be course developers or instructors, ITS Florida should identify and recruit nationally recognized experts as trainers to generate even greater enthusiasm and participation.
- To heighten the priority and distinction of ITS training and education, the ITS Florida Advisory Council, with guidance from the ITS Florida PCB Committee, should evaluate the benefits of an ITS qualification or certification process for Florida ITS professionals. This evaluation should be conducted and the findings presented to the FDOT.



7. Vehicle Probe Studies

In December 2001, an FDOT document was developed entitled *Innovative Traffic Data Collection*.¹⁴ It presented an analysis of various innovative methods used to collect traffic sensor data and the potential applications for these methods in Florida. The main focus of the analysis was the application of various data collection methods for the Florida Intrastate Highway System (FIHS). *Technical Memorandum No. 3.5, Vehicle Probe Studies*, represents additional analyses and recommendations regarding that document.

Over the past two years, the FDOT TEOO has conducted research on a number of travel-time data collection techniques, including the use of toll transponders, license plate readers (LPRs), and commercial vehicle transponders as probes. However, with the advent of the Enhanced 911 (E-911) mandate, several new technologies are available that utilize cellular telephones as probes to collect travel-time data. These include global positioning systems (GPS) and other cellular network-based applications. *Technical Memorandum No. 3.5* considers these and other options to determine the feasibility of their application in Florida, and to recommend future strategies for implementation. These core actions will be incorporated in the update of the *ITS Strategic Plan*.

Due to the continually increasing travel demand on Florida's roadway system, traditional infrastructure management programs focusing on roadway expansion are becoming incapable of keeping congestion within tolerable levels. In its place, state, county, and local transportation agencies are being forced to examine alternative techniques for managing and operating existing infrastructures. Among these alternative techniques are advanced traffic management systems (ATMS), advanced traveler information systems (ATIS), and archived data user services (ADUS). However, for these applications to have a noteworthy impact, access to the best available traffic data is required, including both quality and geographic coverage.

Traffic data collection has traditionally been performed by the public agencies responsible for managing traffic flow, responding to incidents, carrying out planning activities, and maintaining roadway surfaces. Technologies traditionally deployed for traffic data collection include inductive loop detectors, closed-circuit television (CCTV) cameras, and other fixed-location surveillance devices. Unfortunately, the high cost of deploying and maintaining this surveillance equipment has precluded most agencies from collecting real-time data on roads other than certain freeway portions and a few important arterials, thereby significantly limiting the equipment's usefulness for operations and management purposes.

¹⁴ Ciccarelli, Armand J. (PBS&J), *Technical Memorandum No. 1 – Innovative Traffic Data Collection: An Analysis of Potential Users in Florida, Version 1* (December 2001). FDOT Contract No. C-7772. Available online at http://www.dot.state.fl.us/trafficoperations/its/its_default.htm.



Recently, there has been an increasing interest in the many types of innovative data collection technology that potentially offers the opportunity to quickly and cost-effectively expand data collection coverage and quality. One technological area of particular interest utilizes location information collected from wireless telephone networks that include a large number of handsets combined with computerized street maps to measure the time it takes to travel from one area to another.

To move beyond the research stage, it will be necessary to develop a concept plan for the development and use of travel-time data collection systems in Florida. This concept plan should:

- Establish a vision and purpose for travel-time data collection, including how it will support operations, planning, and traveler information (e.g., 511) applications.
- Determine the facilities for which travel-time data will be collected, the density of coverage, and the required data quality parameters.
- Utilize existing corridor plans the FDOT has developed to assist in selecting the technology used to collect travel-time data along the corridors involved for each facility and determine the communication method to be used to transfer data to the appropriate location(s) for real-time aggregation and analysis. Technology selection should be based on the extent to which the corridor concept is supported, the technology's cost-effectiveness, and the results of the implementation of risk analysis.
- Utilize a project architecture and concept of operations to ensure that the data collected is properly computed, stored, shared, and used. Identify the modifications to the regional architecture and systems that are needed so travel-time data can be incorporated in local operations as desired.

As the technology underlying the “cell-phones-as-probes” data collection concept becomes increasingly mature, the FDOT should consider conducting concept testing with one or more of the vendors that have demonstrated an ability to make their technology work. Any vendor selected should have existing agreements in place with at least one of the larger wireless carriers. As mentioned earlier, this technology has the potential to be highly disruptive in nature, having a significant impact on the way traffic data is collected in the future. Getting involved in the testing of this technology now will make the FDOT one of only a handful of state DOTs taking a leadership role in the development of this field.



8. Recommended Initiatives for Mainstreaming Advanced Public Transportation Systems

Technical Memorandum No. 3.6 contains information and recommendations that can be used to establish and promote a coordinated and comprehensive effort regarding the use of ITS in transit operations. This paper describes a more active role for the ITS Section in supporting the development and deployment of advanced public transportation systems (APTS) in Florida, including a process for integrating the FDOT Public Transit Office (PTO) APTS efforts with ITS Section efforts.

Some efforts have already begun. The ITS Section will help provide engineering services for the Resource for Advanced Public Transportation Systems (RAPTS) program through an agreement with the FDOT PTO. Types of ITS deployments where engineering support may be provided include computer-aided dispatch systems; radio and communication networks; traffic signal priority (TSP) systems; fare and payment systems; and security and surveillance systems.

There are several factors that necessitate the application of ITS in Florida transit operations. The 25 urban transit systems in the state provide 195 million trips annually. These systems are constantly under pressure to increase ridership and reduce costs. Efficient management of limited resources, effective deployment of services, and safety and security of these systems are inherent goals of all transit agencies. Therefore, a number of APTS technologies become very appropriate for consideration and application, including:

- Electronic payment systems;
- Fleet management systems (FMS);
- Advanced traveler information systems;
- Transportation demand management (TDM) systems; and
- Transit safety and security systems.

Based on the current statewide APTS survey of 31 transit systems, which consisted of 25 urban and six rural systems, six systems have fully operational automatic vehicle location (AVL) systems, 10 have electronic fare payment (EFP) systems, and two have fully operational automatic passenger counter (APC) systems.

One of the most comprehensive APTS projects in Florida involves a joint county and state partnership between Broward and Palm Beach counties and FDOT District 4. A detailed master plan for this program identifies projects to improve transit operations by integrating existing components and priorities with future needs. The master plan also addresses the existing and proposed communication system for future APTS compatibility. A password-protected Web site has been established as a means of continuous communication among all project partners.



Given the APTS activities that have taken place in Florida to date, coupled with the perspectives offered by transit experts, and current APTS activities in the Districts and the FDOT PTO, the following initiatives are recommended to mainstream APTS in Florida's ITS Program:

- The FDOT ITS Section should develop and conduct, through each District PTO representative with assistance from the Florida Transit Planning Network (FTPN) as needed, a statewide survey to clearly define statewide APTS needs and priorities. To the greatest extent possible, the ITS Section must prioritize the Florida needs that are aligned with national APTS priorities, such as EFP systems, FMS, TSP, and bus rapid transit (BRT).
- The FDOT should reevaluate all District ITS architectures to clarify APTS components, then begin to specify and prioritize APTS projects. Local and regional APTS projects can best be identified within the anticipated cost feasible plan (CFP) for nonlimited access systems. Each local ITS committee must include transit representation.
- The FDOT must increase awareness of services the RAPTS program offers and enhance RAPTS' APTS planning and project management services with technical engineering expertise. Also, the FDOT should assist RAPTS in organizing and conducting scanning missions, and publishing Florida APTS case studies.
- The FDOT PTO central office staff should expeditiously complete its work on identifying signalized intersections eligible for TSP; review this work thoroughly with District ITS engineers to seek concurrence and programmed funding; and establish a continuous working relationship in ITS between each respective District ITS engineer and PTO manager.
- The ITS Section should encourage and invite regular APTS information exchange opportunities at ITS Working Group meetings, and include APTS activities in individual District progress reports.
- The FDOT should encourage joint APTS procurements, deployments, and evaluations. To assist with this promotion, consideration should be given to adding a full-time PTO staff person in the TEOO's ITS Section. This person should work closely with central and District PTOs.

The RAPTS program and the FTPN should become active participants in the Intelligent Transportation Society of America (ITSA) Public Transportation (PT) Forum, establishing a leadership role in the coordination and integration of APTS development and deployment between state and local governments.



9. Intelligent Transportation System Information Privacy Policy

The collection, analysis, fusion, and dissemination of information is one of the primary roles of ITS. The accurate and timely dissemination of this information creates value for individuals, the traveling public, and those agencies that manage transportation using ITS components. The primary focus of this information is to improve travelers' safety and security; reduce travel times; and enhance individuals' ability to deal with highway incidents and events. Travel information is collected from many sources, some from the infrastructure and some from vehicles, while other information comes from transactions that involve interaction between an infrastructure and a vehicle, such as electronic toll collection (ETC) transactions. As with all forms of advanced information technologies, the privacy of individuals must be respected at all times.

The purpose of *Technical Memorandum No. 3.7* is to identify and address the key privacy policy issues related to the information collected from ITS components, and to recommend future actions or strategies for ensuring individual privacy while collecting and disseminating data vital to ITS operations in Florida.

There is a direct relationship between privacy laws and privacy policies. Privacy laws govern an activity, while privacy policies dictate a plan of action. Current privacy law is a patchwork of federal and state statutes, as well as federal and state judicial opinions. The "right" to privacy as a matter of law in the context of transportation on public roads and other facilities is limited.

Florida government's privacy policy is clear concerning why information is collected, how it is used, the policies that control public access to the information, and whether it is disseminated to other entities. In contrast, what are not clear are Florida laws and policies that address the appropriate level of privacy protection for individuals whose information is collected from ITS components. This situation may be remedied by creating a strategic plan to address an ITS right-to-privacy policy, as well as developing appropriate legislation and structured outreach programs to improve public awareness about the purpose and function of ITS and the data these systems collect.

ITS technologies utilize numerous field devices for traffic surveillance and vehicle tracking. These devices, their associated technologies, and the information they collect generally raise concerns regarding the motoring public's privacy. Equally great are the concerns associated with CCTV, ETC, and photo enforcement, all of which have the potential for misuse by law enforcement and transportation officials.



If ITS deployments for information collection and dissemination are to continue, operating agencies must directly confront the privacy issue, which is likely to become a greater problem as the installation of these systems becomes more widespread. A strong consideration should be given to the development of well-publicized ITS information privacy policies and standards. For example, privacy standards should require that all probe-based technologies (e.g., cellular geolocation, toll tag tracking, instrumented vehicles, etc.) be designed in a manner that ensures the absolute privacy of the vehicles and passengers being tracked. Standards should also ensure that raw data allowing the “recreation” of an individual vehicle’s route not be archived.

In most cases, individuals are unaware that they are “on camera,” or that the images obtained from CCTV traffic surveillance are neither recorded nor used for law enforcement purposes. Nonetheless, there is a rising concern among the general public that individual privacy is being violated by the increasing use of surveillance technology. To address this issue, the FDOT policy should be to recommend against the archiving of video.

In the long run, public acceptance and use of ITS services will depend on public confidence that the technology is not predatory or harmful. Respecting privacy fosters public support of ITS and adds to the consumer appeal of ITS services. The following recommendations are provided for the implementation of ITS information privacy policies and standards in Florida. The FDOT should:

- Develop a strategic ITS information privacy plan and standards that formally address ITS information privacy policy, legislation, and a structured outreach approach.
- Develop a cradle-to-grave policy for ITS data that specifically addresses data collection, analysis, access, security, archival, and retention duration requirements.
- Ensure that the ITS information privacy policy is legally sound and consumer friendly. One of the greatest obstacles to understanding legislation and policies is the ambiguous way in which these are written. To that end, some agencies provide summaries of the legalese that allow consumers to get a sense of what those collecting data and images do with that information. If they need more details, consumers can access the full policy.
- Write standard privacy and security-related templates for insertion in requests for proposals (RFPs) and invitations to negotiate (ITNs) to ensure consistency across Florida.
- Develop a structured public outreach program to inform the public about the uses of ITS devices on roadways and the actions being taken to protect individual privacy. Outreach programs should explain the safeguards against privacy violations and should include procedures that ensure the safeguards are working.



- Determine performance measures to gauge whether the public outreach program implemented is having the desired effect.
- Prepare a formal policy on the use of all ITS components that may be viewed as intrusive, including CCTV cameras and the *i*Florida variable speed limit signs. The policy should be distributed to and implemented by the FDOT Districts.
- Develop a standardized, comprehensive agreement among ITS agencies regarding the use of information obtained through ITS components.
- Consider requiring the development of a privacy impact statement, similar to the environmental impact statements already required under federal law, before an ITS program is implemented.



10. Automated Vehicle Monitoring and Enforcement

One of the primary roles of ITS is to utilize appropriate technology to help reduce traffic crashes and improve adherence to traffic laws. The use of photographic and electronic technologies as substitutes for traditional traffic law enforcement has become well publicized both inside and outside the United States. The goal of automated enforcement is to apply the technology in areas that have high crash sites and in other high-risk locations. It is also employed in situations where traffic law enforcement personnel cannot be utilized due to other police activities or where inherent onsite safety problems make traditional enforcement difficult.

Most automated enforcement laws apply to red light violations; however, some laws authorize enforcement for speed, and a few authorize enforcement for any offense for which automated detection is suitable. Automated enforcement laws vary significantly from state to state; some authorize enforcement statewide, whereas others permit its use only in specified communities. *Technical Memorandum No. 3.8*, completed during the 2003 update of the *ITS Strategic Plan*, identifies key automated vehicle monitoring and enforcement issues, and the legal and statutory impediments to the implementation of these strategies.

The use of automated enforcement technology can help communities enforce traffic safety laws by photographing the vehicles of drivers who intentionally enter an intersection after the signal has turned red, who illegally cross a railroad gate, speed, or who otherwise violate traffic laws. Specific legislation for automated enforcement has been passed in 15 states; 36 states¹⁵ have chosen not to adopt any automated enforcement measures. Of the 15 states with legislation, two will repeal their laws over the next two years. Bills in Florida during the 2004 legislative session died in committee.

The goal and performance metric of automated enforcement technology is too often measured merely in violations detected. Current FHWA research, however, is focusing on the utilization of automated enforcement technology to decrease the occurrence and severity of crashes. Much of the data being collected references violations and the estimated number of crashes that automated enforcement technology has prevented. What appears to be missing is substantive data on the number of collisions at critical intersections that have been prevented due to the presence of automated enforcement technology. Ideally, data will need to be gathered at key intersections for periods before and after installations. Therefore, one may reasonably assume that the performance metric for automated enforcement eventually will be measured in collision reductions. The FDOT should consider using automated enforcement technology from a safety perspective, as opposed to a violation perspective. Initial actions for the FDOT ITS Program are provided based on this assumption.

¹⁵ The totals include the District of Columbia.



Successful implementation of automated enforcement will require a significant outreach to the traveling public. Motorists are fully aware that there are critical intersections in Florida that have an excessive number of collisions. The addition of automated enforcement using ITS technologies at these intersections can provide the public with the safety and accountability desired by issuing citations to vehicle owners responsible for violations.

What the traveling public does not fully understand is the role of red light cameras and photo radar as safety devices. More often than not, the public sees these devices as surreptitious police tools able to capture and fine speeders and red light runners, who are unable to confront their electronic “accusers.” The goal is to refocus the public’s perception of these technologies from generators of citations and revenue to effective methods of reducing needless injuries and deaths caused by reckless drivers.

The strategy of how best to legislate and implement effective automated enforcement must be driven by a successful outreach program that focuses on “safety” versus “violations.” It is generally accepted that safety is a value worthy of concern in planning ITS services because, in the long run, public acceptance of ITS’ automated enforcement capabilities will depend largely on public confidence.

Technical Memorandum No. 3.8 reviews existing ITS automated enforcement legislation and makes recommendations for further FDOT action. The remainder of the document identifies key actions for the ITS Section to take regarding the implementation of automated traffic enforcement policies and standards in Florida. The FDOT should:

- Lead the research and development of a strategic ITS automated enforcement plan and the required standards. This strategic plan will specifically address the identification of best practices and major tasks to be performed.
- Determine the process for implementing automated enforcement in Florida. The two major alternatives are: (1) to develop automated enforcement legislation first; or (2) to include a strong public outreach program in the strategic plan based on safety concerns, followed by the establishment of demonstration sites at key intersections, the evaluation of the data, sharing the data with the public, and development of automated enforcement legislation last.
- Ensure that a major section in this strategic plan addresses the process of public outreach. A structured, effective outreach program will educate the public about automated enforcement policies, the methods used, and information on periodic evaluations of the technology’s impact on compliance, public awareness, and safety.
- Determine performance measures to ensure that the public outreach program implemented is having the desired effect.



- Focus on applying the technology only at locations with high crash rates due to traffic violations and where it is impractical or unsafe to use traditional enforcement methods, or where traditional enforcement methods have failed to deter high crash rates.
- Consider involving a private partner for the automated enforcement public outreach program, such as the American Automobile Association (AAA), whose corporate headquarters are in Lake Mary, Florida. The AAA's Foundation for Traffic Safety¹⁶ is a national leader in promoting safer streets and highways.
- Expand the FDOT's working relationship with the FHWA to develop an outreach and model deployment of automated enforcement technology. The goal of the deployment should be to reduce collisions at the most dangerous intersections in Florida.
- Develop a formal policy and public outreach plan for using automated enforcement technology to reduce collisions in a county or municipality. This formal policy should include the proper legal wording so that an automated enforcement pilot project can be presented to a county or a municipality for its approval and implementation.
- Withhold the introduction of any new or modified automated enforcement legislation until the technology has been proven to reduce the number of needless injuries and deaths caused by reckless drivers.

¹⁶ More information regarding the AAA Foundation for Traffic Safety is available online at <http://www.aaafoundation.org/home>.



11. Value Pricing

Technical Memorandum No. 3.9, Value Pricing, researches national and statewide efforts in value pricing, and weighs the feasibility of pursuing or implementing these efforts as part of the ITS Program over the next three years. Several areas around the country, including Florida, have deployed or are considering the deployment of value-pricing programs, particularly in the area of dynamic ETC. Several local jurisdictions in Florida are examining the benefits of value-pricing strategies. Of particular interest is Lee County, where variable pricing has been deployed on two toll bridges. This area of ITS will be investigated further to determine its potential short- and long-term applications in Florida, and to recommend actions or strategies that the FDOT can implement over the next several years.

Value pricing, also known as congestion pricing or peak-period pricing, entails road use fees or tolls that vary according to the level of congestion. These fees are typically assessed electronically to eliminate delays associated with manual toll collection facilities. This concept of assessing relatively higher prices for travel during peak periods is the same as that used in many other sectors of the travel industry to respond to peak-use demands. Airlines offer off-peak discounts and hotel rooms cost more during peak tourist seasons. Road use charges that vary with the congestion level provide incentives for motorists to shift some trips to off-peak times, to less congested routes, to alternative modes, or to combine lower-valued trips with other trips. A shift in a relatively small proportion of peak-period trips can lead to substantial reductions in overall congestion. And, even though congestion charges create incentives for more efficient use of existing capacity, they also provide improved indicators of the potential need for future capacity expansion while generating revenues that can be used to further enhance urban mobility.

A number of value-pricing projects have been launched in the United States in recent years. The private sector led the way in 1995 by constructing new tolled express lanes in the median of State Route (SR) 91 in Orange County, California. Tolls there vary by time of day and congestion level to maintain an uncongested alternative along one of the most heavily traveled commuter routes in the country.

Under the Value Pricing Pilot Program and its predecessor, the Congestion Pricing Pilot Program established by the *Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991*, value-pricing projects have been launched in San Diego, California; Houston, Texas; and Lee County, Florida. The California and Texas projects involve tolling on high-occupancy vehicle (HOV) lanes to make better use of available capacity. In San Diego, drivers of single occupant vehicles are allowed to use the HOV lanes on Interstate 15 by paying a toll that varies directly with the congestion level. In Houston, drivers of vehicles with two occupants can pay a fixed toll during rush hour to use an HOV lane on Interstate 10 that is otherwise restricted to vehicles with three or more occupants. This type of initiative has become known as high-occupancy toll (HOT), with shared facilities referred to as HOT lanes.



The Lee County project involves the use of peak and off-peak toll variations to provide motorists an incentive to shift travel out of the most heavily traveled times.

Other cities across the United States are evaluating the feasibility of value pricing to improve traffic flows and to enhance mobility. Several of these are expected to move toward implementation in the near future. Internationally, pricing projects have been implemented recently on a new beltway in Toronto, Canada; in three cities in Norway; on intercity toll roads in France; and in the central area of Singapore. In the United Kingdom, several cities are considering congestion-based projects similar to London's project, which has been in operation since 2003. The London project has successfully reduced the number of vehicle trips into central London, with fees raised by congestion charges used to fund additional bus service as an alternative mode of travel.

The London project is an example of open road tolling (ORT) in which on-street cash toll collection is replaced with the use of off-street tolling methods. ORT is a practice generating considerable interest in the United States due to growing travel demands; traffic congestion at toll plazas; and the physical, environmental, and cost issues of increasing capacity at toll plazas. Today's sophisticated electronic payment systems, such as *SunPass*^{®17} in Florida, provide a technology option that increases throughput without increasing toll lanes, provided that the customer service aspects of ORT (such as considering the needs of occasional users whose vehicles do not have electronic tags or transponders) are addressed. In London, ORT facilitates offering discounts to residents within the central city. Clearly, the flexibility for value pricing strategies in an ORT environment is immense, given the potentially large database of market information that can be assembled on program users.

In summary, typical objectives for value pricing include:

- Reducing congestion for those willing to pay;
- Achieving better use of special-use lanes (SULs);
- Raising revenues for transportation;
- Encouraging modal shifts and ride sharing;
- Encouraging fewer and shorter trips, and shifting trips out of peak periods; and
- Achieving reductions in overall congestion.

¹⁷ *SunPass* is a registered trademark of the Florida Department of Transportation.



Given the relative newness of value pricing in the United States, and the potential challenges that its advocates face, the road map for moving forward over the coming years is emerging slowly. However, it is clear that the growth in traffic levels will continue, creating greater congestion overall and on key facilities in particular. Consequently, value pricing should be closely monitored by the FDOT in terms of legal, policy, technical design, technology, and public acceptance considerations. Specifically, the FDOT should pursue the following two initiatives related to value pricing:

- Review value pricing's feasibility across the state in terms of the traffic management benefits that may be derived under a variety of circumstances, such as estuarial river crossings, HOT lanes in metropolitan areas, and other key facilities. Such a review should investigate potential legal and technical issues related to implementation, as well as law enforcement operational issues related to violations. Much of the source material for this review should probably be derived from previous and ongoing initiatives, both in Florida and across the nation.
- Establish a multiagency task force to develop more detailed value-pricing concepts; highlight potential statewide policy and legislative requirements; and seek input from legislators, local agencies, organizations, and the traveling public. While the previous recommendation addresses the need to gather objective evidence on value pricing, the development of specific value-pricing initiatives will probably require a consistent approach across the state, and the need to engage such potential partners as toll agencies and the Florida Highway Patrol (FHP). If, as a result of the feasibility review, the FDOT believes there may be use for value pricing, it should establish a multiagency task force to develop more detailed concepts that can guide value-pricing projects in Florida.



12. System Monitoring and Performance Measures

Technical Memorandum No. 3.10, also developed during the 2003 update of the *ITS Strategic Plan*, reviews national efforts in developing performance measures. It analyzes the performance measures identified in the *Ten-Year ITS Cost Feasible Plan (CFP)*¹⁸ and recommends actions for the design and implementation of a system monitoring program to measure and assess the performance of ITS deployments. Aside from reviewing Florida's experiences, the document summarizes initiatives documented by the FHWA and other nationally relevant entities concerning operational performance measures.

Transportation experts in Florida are seeking new ways to measure transportation system performance for the purpose of identifying and documenting the best alternatives for enhancing services to the public. Ideally, such performance measures should comprehensively describe the level of ease with which people and goods move throughout the system.

This was the objective of the Mobility Monitoring Program sponsored by the FHWA.¹⁹ The agency sought to analyze and report mobility and reliability trends in urban areas using archived operational data; and to provide incentives and technical assistance for the implementation of data archiving systems to support performance monitoring applications.

The Mobility Monitoring Program highlighted the use of various measurements, such as the Travel Time Index, a ratio of travel conditions in the peak period to a target or acceptable travel condition. The Travel Time Index indicates how much longer a trip will take during a peak period on a given roadway. Another measure, the Percent of Congested Travel, is a system measure that quantifies the extent of congestion. A free-flow speed is used as a congestion "benchmark" and any period of travel on a road section that is less than the free-flow speed is considered congested.

While the FHWA concluded that these important mobility performance measures described an average level of congestion and mobility, other studies and surveys have demonstrated that travelers value not only the time it usually takes to complete a trip, but also the reliability in travel times. For example, many commuters will plan their departure times based on an assumed travel time that is greater than the average to account for this unreliability. Consequently, researchers contend that it is more appropriate to track several different types of reliability performance measurements, as well as the mobility measures described above.

¹⁸ Florida Department of Transportation, *Ten-Year ITS Cost Feasible Plan* (May 2004). FDOT Contract No. C-7772. Available online at http://www.dot.state.fl.us/trafficoperations/its/its_default.htm.

¹⁹ The FHWA Mobility Monitoring Program is a cooperative study by the Texas Transportation Institute and Cambridge Systematics, Inc. More information is available online at <http://mobility.tamu.edu/mmp>.



An effective performance monitoring and measurement program will play a crucial role in the FDOT's achievement of its goals for the statewide ITS Program. Over time, performance measures will become the fundamental tools used to develop policies and allocate limited resources. The FDOT has previously identified a set of performance measures in the *CFP* that were based primarily on objectives identified in the *ITS Strategic Plan* and the FDOT's Mobility Performance Measures Program.²⁰ In addition, the Florida Transportation Commission (FTC) has asked the ITS Florida Advisory Committee to identify performance measures that assess the effectiveness and positive impacts that various ITS technologies are having on Florida's transportation system.

Efforts are underway to develop ITS performance measures for implementation in Florida. The following recommendations identify actions that can be taken to support performance measure design, implementation, and usage:

- Achieve consensus on performance measures to be implemented. A set of proposed performance measures was developed as part of the FDOT's *ITS CFP*. The FTC is also considering another set of ITS performance measures for use in Florida. No matter which measures are implemented, they should subscribe to the following criteria:
 - The level of success achieved pursuing the goals and objectives outlined in *Florida's ITS Strategic Plan* should be evaluated;
 - Metrics used should be based on a consensus of opinion; failure to do so may result in lack of use;
 - A baseline must be established against which future results are compared;
 - Implementation of any plan for ITS performance monitoring and measurement must be systematically organized so as to be consistently repeatable;
 - Implemented measures should not be considered final; their development should be an ongoing process; and
 - Implemented measures must utilize reliable, equivalent data sources.

²⁰ More information regarding the FDOT Mobility Performance Measures Program is available online at <http://www.dot.state.fl.us/planning/statistics/mobilitymeasures>.



- Seek to enlarge roadway sensor data collection coverage. To effectively utilize adopted performance measures for evaluating the statewide transportation network, it is first necessary to have access to sufficient data concerning roadway operations. Although the FDOT and other public agencies are beginning to make inroads pertaining to roadway data collection capability, a more coordinated effort is needed to ensure that sufficient data is available to support the development of a truly comprehensive picture of systemwide performance. In particular, enhancements in data collection capability will be required along both the FHHS and major arterial roads. To achieve this goal, the FDOT should work with its partners to:
 - Assess current data collection capabilities in Florida;
 - Determine where data collection capability is insufficient; and
 - Develop a plan for deploying supplemental infrastructure to fill the gaps; and
 - Standardize the data types collected by such a supplemental infrastructure to the maximum extent possible to establish the groundwork for objectively comparing roadway performance throughout Florida.
- Ensure that data collected from roadway sensors is archived and readily available for analysis. Much of the data collection infrastructure now deployed is not connected to archiving systems, or is not available in formats that can be readily utilized by a wide range of users. Consequently, the FDOT should work with other public stakeholders to expand the archiving of field sensor data, keeping in mind not only the need for storage, but also the need to make such data available in a standardized format. Such standardization will help promote the storage and analysis of data by a wider range of interested parties in both the public and private sectors.
- Improve the maintenance and calibration of data collection equipment and standardize the processes for managing “bad data.” It is common knowledge that much traditional roadway-based data collection infrastructure suffers from significant service outages during which no data is collected or only bad data is generated. Some of the missing or inaccurate data are easy to detect and correct; others less so. In developing performance monitoring and measurement metrics, some consideration should be given to standardizing both the processes through which raw or fused data for performance evaluation is validated (i.e., inspected), as well as what actions are to be taken to manage such data quality problems. This effort should include the development of data quality guidelines to support data analysis.



13. Systems Integration, Tracking, and Reporting

The USDOT has set a goal to deploy integrated ITS infrastructures in 78 of the nation's largest metropolitan areas by the end of 2005. Specifically, the goal is for approximately two-thirds of these areas to achieve a high level of integration, and the remaining one-third to achieve at least a medium level of integration. The USDOT defines "ITS integration" as "the bridging of technical or institutional systems across system or jurisdictional boundaries." Integration may range from a simple agreement to share information between two adjacent agencies to the deployment of linked, interoperable systems across a multistate region. The rationale for ITS integration is that systems can be more effective when they operate in concert than when they operate separately.

Integration offers the potential for a synergistic boost in overall performance and effectiveness. For example, the process of coordinating traffic signals across jurisdictional boundaries can be automated by integrating the systems. Automation may save time for users and save money for public agencies. It may also improve traffic management during incidents, reducing secondary crashes and the costs associated with delays. Overall, ITS integration offers benefits to both the traveling public and participating agencies. In the same way that most travelers do not recognize jurisdictional boundaries, an integrated transportation system takes a network view of travel conditions in which different jurisdictions share infrastructure, information, and control. Such an integrated system can make full use of the interoperability between components to help agencies achieve greater safety and efficiency goals, and to achieve economies of scale.

Technical Memorandum No. 3.11, completed as part of this update of the *ITS Strategic Plan*, proposes a long-term strategy for integrating FIHS ITS deployments with local ITS services so they function as a seamless system. It identifies issues and barriers to ITS integration in Florida, and determines the impact of ROOs on integration. Additionally, the various ITS integration levels are discussed, along with recommended actions for the development of an integration tracking and reporting process to fulfill the national goal for integration of ITS. The FDOT's current FIHS deployment tracking system is being reviewed to determine if this application can be expanded to track existing and proposed ITS projects, and to measure integration at various jurisdictional levels beyond the FIHS, including tolling authorities and local agencies.

The extent to which ITS integration is achieved is more a factor of institutional considerations than technological constraints. The willingness of different public and private entities to work cooperatively determines the degree of integration along a spectrum, from shared information to coordinated control of system components. Integration occurs when those responsible for the management of transportation systems see value in integrating the systems. Those locations where integration has begun to make measurable progress have been able to promote its benefits.



The first step in the recommended integration approach requires utilization of the USDOT's ITS deployment tracking tool – the Turbo Architecture software – and expand it to include more metropolitan and rural areas, toll facilities, and statewide systems. Not only is this a ready-made tool that the largest areas are already familiar with, it will facilitate reporting of ITS deployments through 2005 and beyond if the tracking program is extended.

The second step of the two-part integration approach involves documenting the lessons learned at the regional level and communicating them to a statewide forum of similar regional consortia. (Refer to *Technical Memorandum No. 3.2, Regional Operating Organizations*.) Such a forum should be held to exchange best-practice experiences in the development of integrated ITS deployments. In particular, this forum should bring together those at the forefront of Florida ITS deployments with those who are still developing their respective ITS strategies. The FDOT should have a major role in this forum, both as a statewide agency and as a regional partner.

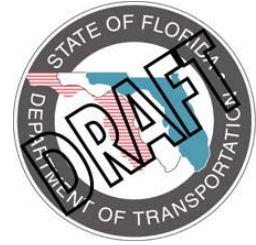
As the level of ITS deployment across the nation approaches the 2005 goals established by the USDOT in 1996, it is recommended that Florida address the need for similar goals to integrate ITS across the state, and to track and report such integration activities and the benefits derived. Therefore, the following recommendations are proposed for the promotion of ITS integration in Florida:

- Promote and facilitate the establishment of ROOs to advance integration at both the physical and institutional levels.
- With assistance from the ROOs and the FDOT District ITS programs, utilize the USDOT integration methodology and survey instruments to collect Florida integration information.
- Expand existing ITS deployment databases to include integration characteristics.
- Annually assess Florida's integration levels based on the USDOT metrics.



***Technical Memorandum No. 4.1 –
Recommended New Strategies for
Rural / Interurban ITS Applications***

Technical Memorandum 4.1



Florida's 2003 Intelligent Transportation System Strategic Plan Update –

Recommended New Strategies for Rural / Interurban Intelligent Transportation System Applications

**July 23, 2004
Version 2**



Prepared for:

Florida Department of Transportation
Traffic Engineering and Operations Office
Intelligent Transportation Systems (ITS) Section
605 Suwannee Street, M.S. 90
Tallahassee, Florida 32399-0450
(850) 410-5600



DOCUMENT CONTROL PANEL		
File Name:	<i>Technical Memorandum No. 4.1: Florida's 2003 Intelligent Transportation System Strategic Plan Update – Recommended New Strategies for Rural / Interurban Intelligent Transportation System Applications</i>	
File Location:	W:\ITS Program\ITS GC\TWO25-StrategicPlanUpdate\TM4 - Resource Documents\TM4-1 - Rural ITS Applications\040723 TWO25 TM4-1 V2.PDF	
Deliverable Number:	4.1	
Version Number:	2	
Name		Date
Created By:	Michael C. Pietrzyk	December 19, 2003
Reviewed By:	Diane E. Quigley	April 8, 2004
	Diane E. Quigley	July 22, 2004
Modified By:	Michael C. Pietrzyk	April 20, 2004
	Dave Hodges	May 6, 2004
	Pamela L. Hoke	June 2, 2004
	Pamela L. Hoke	July 21, 2004
Completed By:	Pamela L. Hoke	July 23, 2004



Table of Contents

List of Figures	ii
List of Acronyms.....	iii
1. Purpose.....	1
2. Background	2
3. Lessons Learned from the 2003 National Rural ITS Conference	4
4. Recommendations	5

List of Figures

Figure 3.1 – Rural Crashes	4
Figure 3.2 – Intelligent Transportation Systems in Emergency Response	4



List of Acronyms

ATSS.....	Airborne Traffic Surveillance System
CCTV.....	Closed-Circuit Television
CTD.....	Commission for the Transportation Disadvantaged
FDOT.....	Florida Department of Transportation
FIHS.....	Florida Intrastate Highway System
FSRDC.....	Florida State Rural Development Council
I-10.....	Interstate 10
I-75.....	Interstate 75
I-95.....	Interstate 95
ITS.....	Intelligent Transportation System
NPS.....	National Park Service
NRITS.....	National Rural ITS (Conference)
REDI.....	Rural Economic Development Initiative
SIS.....	Strategic Intermodal System
SR.....	State Road
TTMS.....	Telemetered Traffic Monitoring Site



1. Purpose

This *Technical Memorandum* contains recommendations that will be used to update the original *Rural/Inter-Urban ITS Applications Issue Paper*.¹ Based on the implications of the Florida Department of Transportation's (FDOT) *Ten-Year ITS Cost Feasible Plan*² and other emerging rural concerns, such as incident detection/response, emergency evacuation, and economic sustainability, new priorities will be identified for deploying rural intelligent transportation systems (ITS) in Florida.

¹ Florida Department of Transportation, *Rural / Inter-Urban ITS Applications Issue Paper* (1999). Available online at <http://www.dot.state.fl.us/planning/systems/sm/its/NewITS.htm>

² PBS&J, *Ten-Year ITS Cost Feasible Plan* (October 2002). FDOT Contract No. C-7772. Available online at <http://www.dot.state.fl.us/IntelligentTransportationSystems/ITSDeployment/>



2. Background

The original *Rural/Inter-Urban ITS Applications Issue Paper* identified four primary areas of focus for rural ITS applications:

- 1) Safety and emergency management services;
- 2) Rural tourist information services;
- 3) Paratransit productivity; and
- 4) Intermodal connectivity.

These transportation-related areas should remain the general focus of rural ITS applications in Florida.

Rural Florida's economy is based on agriculture, citrus, forestry, mining, and tourism. The original *Issue Paper* clearly noted that the overriding objective in any rural ITS application is to stimulate economic redevelopment, in accordance with the legislative mandated rural marketing strategy, *Crossroads Florida*.³ In its efforts to address rural development policy and program issues, the Florida State Rural Development Council (FSRDC) has focused on a wide range of rural development matters, including land and wildlife, leisure time, improving communities, job opportunities, government spending, education, families, diversity, safety, and health. In combination with the Rural Economic Development Initiative (REDI), a multiagency troubleshooting team created by the Florida Lieutenant Governor and the Secretary of Commerce over 10 years ago, a development strategy has been put in place to assist rural communities in Florida.

Areas of geographic focus for rural ITS deployments could be any of Florida's 32 rural counties, or, more specifically, the counties where federally-designated rural enterprise communities are located (e.g., Gadsden, Putnam, DeSoto, Hamilton, Hardee, Madison, and Okeechobee counties).

Rural travel corridors exhibiting the greatest crash numbers provide a particular focus for rural ITS applications. These corridors include State Road (SR) 43 in Hillsborough and Manatee counties, SR 44 in Volusia county, SR 54 in Pasco county, SR 64 in Manatee county, and SR 100 in Union and Putnam counties. Additionally, the rural portions of Interstate 10 (I-10) and Interstate 75 (I-75) that were identified as "high accident" locations in the legacy catalogue from the *Ten-Year ITS Cost Feasible Plan* are already being addressed.

³ Florida State Rural Development Council, *Crossroads Florida: Opportunities for Business Growth in Florida's Heartland*.



To date, the emphasis for Florida ITS deployments has been on the urban Florida Intrastate Highway System (FIHS) corridors at the direction of FDOT management, the Districts, and the Executive Committee. However, the interstate and intrastate systems that link major Florida cities also pass through almost every rural county in the State. All of rural Florida is near a population center. As the *Ten-Year ITS Cost Feasible Plan* is implemented, the basic infrastructure foundation for extension into rural Florida will also be established. The *Cost Feasible Plan* does recognize the need to address the high-incident rural corridors; however, under current FDOT policy, this issue will not be addressed until after most of the urban infrastructure is completed.

Another trend affecting rural Florida is its appeal to visitors. Almost 14 million “eco-tourists” a year are coming to Florida to hunt, fish, camp, hike, or visit national and state parks. Another 11 million “heritage tourists” are coming each year to visit Florida’s historical or cultural/ethnic heritage sites.

In 2003, legislation was signed into law to create the Florida Strategic Intermodal System (SIS).⁴ The goal of the SIS is to provide a seamless transportation network that serves Florida’s residents, visitors, and businesses more efficiently, while enhancing Florida’s economic prosperity, competitiveness, and quality of life as the demand to move more people and goods continues to dramatically increase. Now, in Stage II, the initial strategic plan development stage, existing and emerging SIS hubs and corridors – many of which are located in Florida’s rural areas – are being classified according to their level of interregional and/or statewide significance (e.g., rail-freight terminals handling 4 million bulk tons or 36,000 intermodal tons per year; seaports with 250,000 home-port passengers per year, etc.).⁵

Once this assessment and prioritization process is completed, specific facilities and services appropriate for ITS applications will be clearly identified. These facilities and services can then be linked by various real-time information management and surveillance technologies to provide greater efficiencies in accessibility, mobility, processing, operations, safety, and security.

⁴ FLA. STAT. § 339.61-64

⁵ More information regarding Florida’s SIS is available online at <http://www.dot.state.fl.us/planning/sis/>



3. Lessons Learned from the 2003 National Rural ITS Conference

In August 2003, Florida hosted the National Rural ITS (NRITS) Conference. This provided an excellent and convenient opportunity to learn first-hand how other states have developed their rural ITS programs. Many of the recognized leaders in rural ITS development and deployment were in attendance and their insight was documented. As a result, the summary of “lessons learned” noted below can provide a more focused strategy for Florida to successfully launch a rural ITS program.

- We must clearly identify what Florida’s rural safety and mobility needs are.
- We need to better understand and appreciate the issues that affect rural Florida’s economy, sustainability, and quality of life.
- We need to establish working relationships in rural Florida.
- We need to develop a marketing and funding plan for mainstreaming rural ITS deployments in Florida.
- We need to implement stand-alone ITS projects based on consensus and anticipated effectiveness – find “early winners” and “hot-spot” applications. A rural ITS “program” is too much commitment at this time.
- Fire Chief Carl Plaughter, a guest speaker from Orange County, Florida, identified what he believed was the most appropriate and needed application for ITS in rural areas: automatic crash notification and warning for approaching emergency vehicles (e.g., Opti-Coms at rural intersections).



Figure 3.1

Rural crashes are often difficult to detect.

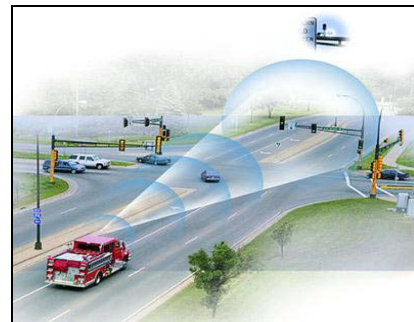


Figure 3.2

Intelligent transportation systems enhance emergency response.



4. Recommendations

In accordance with the aforementioned “lessons learned,” the following new strategies are offered for rural ITS deployments in Florida, and are to be considered as recommended “start-up” actions.

1) Conduct Outreach Workshops

Focus on quantifying mobility and safety needs by conducting multiple outreach workshops or town meetings in various locations to build ITS awareness and broaden stakeholder support.

2) Build a Partnership with the FSRDC

Transportation should not be the only “hook” for rural ITS applications. This multiagency council can help build critical alliances and identify other ITS applications. Other key partners should include the Florida Commission for the Transportation Disadvantaged (CTD), VISIT FLORIDA, Native American organizations, and the National Park Service (NPS).



3) Engage Rural Districts and Rural Legislators as “Champions”

Solicit FDOT Districts 1, 2, or 3 to take the leadership role in providing venues for pilot project deployments, recruitment of legislative “champion(s),” and authorship of Item 4 (below). Also, the FDOT must involve District maintenance and construction personnel for deployment support. Top-down executive support from the FDOT and primary rural industries is imperative.

4) Develop a Marketing and Funding Plan

Local integration is the key for mainstreaming. Emphasis should be placed on leveraging funding from tourism, public safety, transit, and federal lands. Some initial funding could come from the I-95 Corridor Coalition as part of a matching fund demonstration project. (Refer to Item 5 below.) Incentives and economies of scale should be created for private sector involvement, too.



5) **Identify “Hot-Spot” Projects for Immediate Deployment**

Implementing District ideas is the key. Besides improving incident detection and emergency response in rural areas, other ITS project deployments should include detection and monitoring systems for statewide evacuations, and customized rural tourism information systems (e.g., the Everglades Radio Network).

Coordinating the FDOT’s 274 active telemetered traffic monitoring sites (TTMS) – Hardee county is the only county not covered – and unifying an ever-increasing, disaggregated system of hundreds of closed-circuit television (CCTV) cameras into a “shared network” that will provide immediate benefits to the State’s emergency operations center should be the first priority. As part of the *i*Florida project, a pilot project will be developed to integrate 54 key TTMS with 30 adjacent video detection locations to support real-time traffic data collection with images. If this project proves successful, it will likely be recommended for statewide corridor monitoring implementation.

Discussions have recently begun on testing the capability of the FDOT’s airborne traffic surveillance system (ATSS) in improving rural incident detection. A joint Florida-Georgia proposal to the I-95 Corridor Coalition for a dual, customized, rural tourist and evacuation information system is also in the formative stages. Finally, as mentioned previously, SIS facilities are soon to be prioritized and this will further identify specific rural areas for ITS applications in Florida.



***Technical Memorandum No. 5 –
Updated Recommended Core Strategies***

Core Strategies for the Update of Florida's ITS Strategic Plan

Strategy Number	In 2004 Business Plan? (Section No.)	Core Strategy
Goal 1: Move People and Goods Safely		
1		Develop diversion routes, arterial trailblazer signage and adjustment plans for local signal system timings during an interstate diversion. Also document impacts and develop procedural guidelines.
2		Develop a concept of operations plan or procedures for evacuation coordination and management utilizing ITS.
3		Develop an emergency evacuation module under the SunGuide software development effort.
Goal 2: Preserve and Manage the System		
4	2.3.2	Develop a statewide 511 system that standardizes messages across regions and jurisdictions and provides a central call in-take and transfer system.
5		Expand statewide 511 marketing and outreach.
6	4.2.1 and 4.2.3	<p>Prepare a statewide Concept Plan for the development and use of travel-time data collection systems in Florida.</p> <ul style="list-style-type: none"> • Establish a vision and purpose for data collection and determine how it will be used to support planning and operations functions. • Determine the corridors for which travel time will be collected, the density coverage and frequency and appropriate technology. • Develop project architectures to ensure proper computing, storing, sharing and usage of collected data.
7		Implement statewide the findings of the iFlorida project to enhance traffic detection, data collection, quality, and reporting and to establish a data archiving and warehousing system.
8	4.2.1	Conduct concept testing for probe data collection techniques such as cell-phones-as probes, Heavy Vehicle Electronic License Plate (HELP) transponders, and license plate readers (LPRs) in appropriate geographic areas.
9	7.1.2, 6.2.1 and 4.1.1	<p>Based on funding availability, annually update the Ten-Year ITS Cost Feasible Plan (CFP) by adding a new tenth year each year.</p> <ul style="list-style-type: none"> • Focus on completion of FIHS ITS infrastructure in rural areas • Include funding for arterial projects that enhance and are interoperable with the FIHS ITS infrastructure • Maintain and enhance the ITS device database for configuration management, maintenance and upgrade purposes

Strategy Number	In 2004 Business Plan? (Section No.)	Core Strategy
10	4.2.2	Establish regular reporting of usage statistics for Motorist Aid Call Box system
11	4.1.2	Establish statewide Microwave Network management system reporting
12	7.1.1	Implement and monitor ITS Performance Measures <ul style="list-style-type: none"> • Develop data collection process to support ITS performance measures
Goal 3: Enhance Economic Competitiveness		
13		Build on the iFlorida project to integrate key Telemetered Traffic Monitoring Stations (TTMS) with adjacent video detection locations to improve real-time travel data collection in rural areas.
Goal 4: Enhance Quality of Life and the Environment		
14		Develop a Strategic ITS Information Privacy Plan and Standards which addresses privacy issues, legislation and recommends a structured outreach approach. <ul style="list-style-type: none"> • Develop privacy and security-related templates for inclusion in Requests for Proposals and Invitations to Negotiate. • Develop a structured public outreach program to inform the public about the uses of ITS data and efforts to protect public privacy. • Develop a formal policy for the FDOT Districts and local agencies on the use of all ITS components including CCTV video, probe data, etc. that may be viewed as intrusive.
15	2.2.7	Integrate ITS activities and processes into FDOT's planning, design and production processes. Define the roles and responsibilities of other Offices and Programs in implementing ITS. <ul style="list-style-type: none"> • Develop and implement a standardized Systems Engineering Approach which can be customized by deployment agencies
Goal 5: Deploy an Integrated, Effective System		
16		Provide a review and evaluation of available detection technologies and recommend applications for each.
17		Develop a plan to complete the fiber optic communication network for FIHS facilities not programmed in the CFP.

Strategy Number	In 2004 Business Plan? (Section No.)	Core Strategy
18		<p>Develop an operations and maintenance manual that can be tailored for each district which identifies guidelines and procedures for operating and maintaining ITS for each type of deployment.</p> <ul style="list-style-type: none"> • Identify in-house roles and responsibilities and recommend activities for outsourcing. • Identify minimum reporting requirements and frequencies. • Recommend long-term strategies for service expansion and develop a methodology for determining labor needs and costs. • Identify existing funding sources for operations and maintenance and recommend additional funding sources and the methodology for programming O&M projects into the FDOT work program.
19	3.2.5	<p>Include state and local transit agencies in ITS forums such as the ITS Working Group Meetings, training workshops, and ROOs.</p>
20	2.2.2	<p>Update the Statewide ITS Architecture and Standards for consistency with Rule 940 and provide technical assistance to districts regarding completion of Rule 940 requirements.</p>
21	2.2.3	<p>Encourage MPOs and local agencies to acknowledge a regional ITS architecture and track agency documentation of acknowledgement.</p>
22		<p>Develop an ITS Approved Products List.</p>
23		<p>Explore the possibility of developing a statewide contract for procurement of ITS devices.</p>
24	5.1.2	<p>Provide guidance and training for the implementation of various ITS procurement strategies including lessons learned from other ITS programs and develop guidelines for each procurement method which consider project cost estimation, phasing, programming, requirements, selection, and purchasing.</p>
25	2.2.5	<p>Foster and support the development of Regional Operating Organizations (ROOS) around the state.</p> <ul style="list-style-type: none"> • Define the ITS Section's role in the ROOs and determine how the ROOs will coordinate and share data with the Change Management Board and other ROOs. • Prepare guidelines for the establishment of ROOs and modify Florida Statutes to address regionalization of transportation operations.
26	2.2.5 and 2.2.6	<p>Develop a plan to manage and maintain transportation operations within the region and formalize the process in a regional concept of operations.</p>

Strategy Number	In 2004 Business Plan? (Section No.)	Core Strategy
27		Explore the feasibility of broadband wireless communications and document lessons learned from other districts or Florida projects.
28		Develop a policy to promote the development of before and after studies to assess the impacts and benefits of ITS.
29	5.1.1	<p>Conduct a formal assessment of ITS training courses for each ITS professional level and recommend a business plan for implementing a structure training program.</p> <ul style="list-style-type: none"> • Address funding needs and sources, course marketing, training logistics, course content, roles and responsibilities of the partnering agencies, and new course development. • Explore opportunities for tapping into national ITS training resources. • Evaluate the benefits of an ITS professional certification or qualification process. • Improve and expand the training program to include more courses for professional development hours (pdhs).
30	6.4.1	Develop and distribute mission, vision, objectives and guidelines for ITS research paper submittals and selection criteria.
31	4.1.3	Evaluate use of Statewide Microwave Network for telecommunication needs for upcoming projects and inform districts of possible applications.
32		Develop and implement ITS standards.
33		Create a centralized repository on a web site for ITS agreements, scopes and contracts.
Goal 6: Provide a Well-Prepared and Secure Transportation System		
34		Prepare vulnerability assessment, response, recovery and implementation plans for all critical infrastructure including bridge, tunnels and state Regional Traffic Management Centers (RTMC). Prepare and multimodal systems and facilities such as transit, rail, airports, and seaports.
35		Prepare vulnerability assessment, response, recovery and implementation plans for RTMC cyber systems and field equipment.

Long-Term Strategies for Future Strategic Plan Updates

The following strategies were proposed as short-term strategies for the implementation and update of Florida's ITS Strategic Plan. However, after review and input by the Districts and participating FDOT Departments, these strategies were considered for implementation over the long-term horizon of the Strategic Plan.

- Develop a formal policy, procedures, and public outreach program for implementation of Automated Vehicle Monitoring and Enforcement (AVME) to reduce accidents and collisions. Focus on high accident locations and construction locations for priority implementation.
 - Conduct a pilot program for testing of AVME in Florida.
 - Prepare and implement legislation to support AVME in Florida.
- Implement recommendations from Turnpike's Cooperative Vehicle Highway Automation Systems (CVHAS) Study on statewide level.
- Pursue further research and development for the implementation of value pricing to alleviate congestion in major urban areas.
 - Develop a statewide policy on value pricing that recommends a uniform approach encompassing state and local jurisdictional policies and identifies legal and enforcement issues that may be encountered.
 - Prepare an outreach program to gain acceptance and inform the public as to the purpose, need and operations of a value pricing program.
 - Organize a small consortium of value pricing experts to serve as a technical resource for local and state policy groups.
- Assist districts in implementing detection and monitoring systems in the rural areas, in addition to incident management, emergency response services, and rural tourism information systems.
 - Develop a rural marketing and funding plan that would leverage funding from corridor coalitions, tourism, public safety, transit, and federal lands.
 - Identify rural "hotspot" locations for immediate deployment.
 - Establish a partnership with non-transportation agencies, including the Florida State Research and Development Council (FSRDC), Florida Commission for the Transportation Disadvantaged (CTD), VISIT FLORIDA, Native American Organizations, and the National Park Service.
 - Implement a rural community outreach program to quantify mobility and safety needs, build ITS awareness, and broaden stakeholder support.
- Build on the iFlorida project to integrate key Telemetered Traffic Monitoring Stations (TTMS) with adjacent video detection locations to improve real-time travel data collection in rural areas.

- Identify early winners for Advanced Public Transportation Systems (APTS) projects in a region and recommend strategies and opportunities for coordination with regional ITS operations.
 - Promote the use of Automated Vehicle Location (AVL) systems to improve the efficiency of transit operations.
 - Integrate proposed high-speed rail and existing commuter rail with regional ITS operations.
- Ensure interoperability between APTS and regional communication systems.
- Explore technologies, and opportunities for enhancement of the transportation and communication infrastructure to support Automated Vehicle Safety Systems (AVSS).
 - Update Statewide ITS Architecture to include AVSS market packages for long-term duration.
- Utilize the U.S. DOT integration methodology and survey instruments to collect Florida ITS integration information.
 - Expand existing database to include U.S. DOT integration characteristics.
 - Annually assess Florida's integration levels based on U.S. DOT metrics and include integration as a new ITS performance measure.
- Develop an R&D program, managed by FDOT, to elicit, evaluate and fund ITS research proposals that support the state and national ITS programs.
 - Evaluate the feasibility of a state research center to be developed through public-private partnerships.
 - Pursue additional funding sources for ITS R&D including federal earmarks, joint proposals with other states, and partnerships with private sector agencies and universities.
 - Participate in ITS America's Research, Integration, Training and Education (RITE) forum for research information and idea exchange.
 - Annually publish and disseminate a Florida ITS R&D report.
 - Coordinate R&D program with professional capacity building program and recognize successful efforts through the ITS Florida annual awards program.
- Develop architectural framework and tools and technologies necessary to enhance operational response to a variety of recurrent and other situations.
- Prepare a statewide APTS concept plan to guide the development, deployment, and integration of APTS around the state.
- Coordinate transit operations with RTMC operations.
- Assess the feasibility of using buses as probe vehicles.