

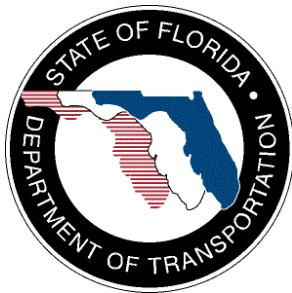
The following *Project Concept Report* is now outdated. It is provided for historical purposes only. To understand the current project scope and requirements for the next-generation Statewide Advanced Traveler Information System, refer to Invitation to Negotiate No. ITN-DOT-06/07-9053-JP, issued on February 28, 2007, by the Florida Department of Transportation.

Technical Memorandum

Statewide Advanced Traveler Information System Project

Project Concept Report

January 9, 2007
Version 3



Prepared for:

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*Technical Memorandum – Statewide ATIS Project
Project Concept Report*

DOCUMENT CONTROL PANEL		
File Name:	<i>Technical Memorandum – Statewide Advanced Traveler Information System Project – Project Concept Report</i>	
File Location:	W:\ITS Program\ITS GC\060305 NEW ITS GC Contract\Assign 8 - STIS Concept\Project Concept Report\070109 ATIS Project Concept Rprt v3.pdf	
Deliverable Number:		
Version Number:	3	
Name		Date
Created By:	Erik Gaarder, PBS&J	April 5, 2006
Reviewed By:	Rick Schuman, PBS&J	April 14, 2006
	Armand Ciccarelli, PBS&J	April 18, 2006
	Erik Gaarder, PBS&J	August 23, 2006
	Erik Gaarder, PBS&J	September 1, 2006
Modified By:	Pam Hoke, PBS&J	April 10, 2006
	Erik Gaarder, PBS&J	April 20, 2006
	Pam Hoke, PBS&J	April 25, 2006
	Pam Hoke, PBS&J	August 30, 2006
Completed By:	Pam Hoke, PBS&J	January 9, 2007 ^a

^a Note that this document is considered a living document. As the Statewide ATIS project progresses, this *Project Concept Report* will be revised accordingly.

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List of Acronyms

ADA	Americans with Disabilities Act
AMBER	America’s Missing: Broadcast Emergency Response
ATIS	Advanced Traveler Information System
CAD	Computer-aided Dispatch
CCTV	Closed-circuit Television
ConOps	Concept of Operations
DMS	Dynamic Message Sign
FDOT	Florida Department of Transportation
FHP	Florida Highway Patrol
FTE	Florida’s Turnpike Enterprise
GIS	Geographic Information System
HAR	Highway Advisory Radio
ISP	Information Service Provider
ITS	Intelligent Transportation System
mph	Miles per Hour
NITSA	National ITS Architecture
O&M	Operations and Maintenance
PSEMP	Project Systems Engineering Management Plan
RTM	Requirements Traceability Matrix
RTMC	Regional Transportation Management Center
SIS	(Florida’s) Strategic Intermodal System
TEOO	(FDOT) Traffic Engineering and Operations Office
VAS	Video Aggregation Subsystem

1. Introduction

1.1 Purpose

This *Technical Memorandum* describes the next-generation statewide advanced traveler information system (ATIS) to be implemented in 2008 through 2013. Along with the project-specific systems engineering management plan (PSEMP) referenced in *Section 1.3* herein, this document provides the foundation for the development of the Statewide ATIS project.

This report builds upon the research documented in the *Stakeholder Input and User Needs* and *Environmental Scan* technical memorandums referenced in *Section 1.3* herein. The initial ConOps detailed herein was approved by the Florida 511 Working Group at the February 1, 2006, Workshop and during the March 6, 2006, teleconference.

1.2 Background

The Florida Department of Transportation (FDOT) currently operates one of the most widely used traveler information programs in the country. Florida 511 services receive roughly 500,000 calls a month from people accessing real-time traveler information. Florida's combined co-branded 511 Web sites also receive roughly 1,000,000 Web hits a month. Hundreds of dynamic messages sign (DMS) devices, and dozens of permanent and portable highway advisory radio (HAR) stations are used throughout the state to inform drivers of congestion, incidents, and construction zones. Millions of travelers rely on static information provided through various means, such as rest areas, welcome centers, the state map, and public service campaigns.

While the FDOT's efforts have proven effective, opportunities remain to improve service to the traveling public. The state's initial regional advanced traveler information projects are scheduled to reach the end of contractual terms in mid-2008. This gives the state both an opportunity to improve and integrate services, and a need to plan and implement follow-up services to ensure continued provision of quality traveler information.

In late 2003, the FDOT formed the Florida 511 Working Group to support coordination among state traveler information programs.¹ In early 2004, the 511 Working Group determined that Florida's next-generation traveler information services — or what follows when these first-generation projects end in 2008 — should be far more integrated, consistent, statewide, and seamless than current projects. Further, the FDOT Central Office Traffic Engineering and Operations Office (TEOO) Intelligent Transportation Systems (ITS) Section should take the lead in defining and establishing an integrated telephone and Web site infrastructure that supports state traveler information services in 2008 and beyond. The TEOO ITS Section should also continue working with the 511 Working Group to coordinate the creation of that infrastructure, and to define roles for the FDOT Districts and partner agencies in creating and managing the content provided through the statewide ATIS.

1.3 Referenced Documents

The following documentation of the exact issue shown were referenced during the development of this *Technical Memorandum*:

- *Technical Memorandum – Statewide Traveler Information System Concept Development Project – Stakeholder Input and User Needs* (Draft Version 1, February 2006). Available online at http://floridaitis.com/Travel_Info-ConOps_Dev.htm.
- *Technical Memorandum – Statewide Traveler Information System Concept Development Project – Environmental Scan* (Draft Version 1, March 2005). Available online at http://floridaitis.com/Travel_Info-ConOps_Dev.htm
- *Technical Memorandum – Statewide Advanced Traveler Information System Project – Project Systems Engineering Management Plan* (Draft Version 1, April 2005). Available online at http://floridaitis.com/Travel_Info-ConOps_Dev.htm.

¹ More information regarding the Florida 511 Working Group is available online at <http://www.dot.state.fl.us/trafficoperations/its/itsdeployment/deployment.htm> under the Florida 511 Working Group link.

1.4 Content

This *Technical Memorandum* provides an initial baseline of the project's assumptions, boundaries, and constraints. Note that the project management plan is contained in the *PSEMP* referenced in *Section 1.3* herein.

The topics covered in this report include:

- *Section 1 – Introduction*
- *Section 2 – Concept of Operations*
- *Section 3 – Requirements*
- *Section 4 – Schedule*
- *Section 5 – Budget*

2. Concept of Operations

2.1 Current Situation

2.1.1 Florida's Current 511 Systems

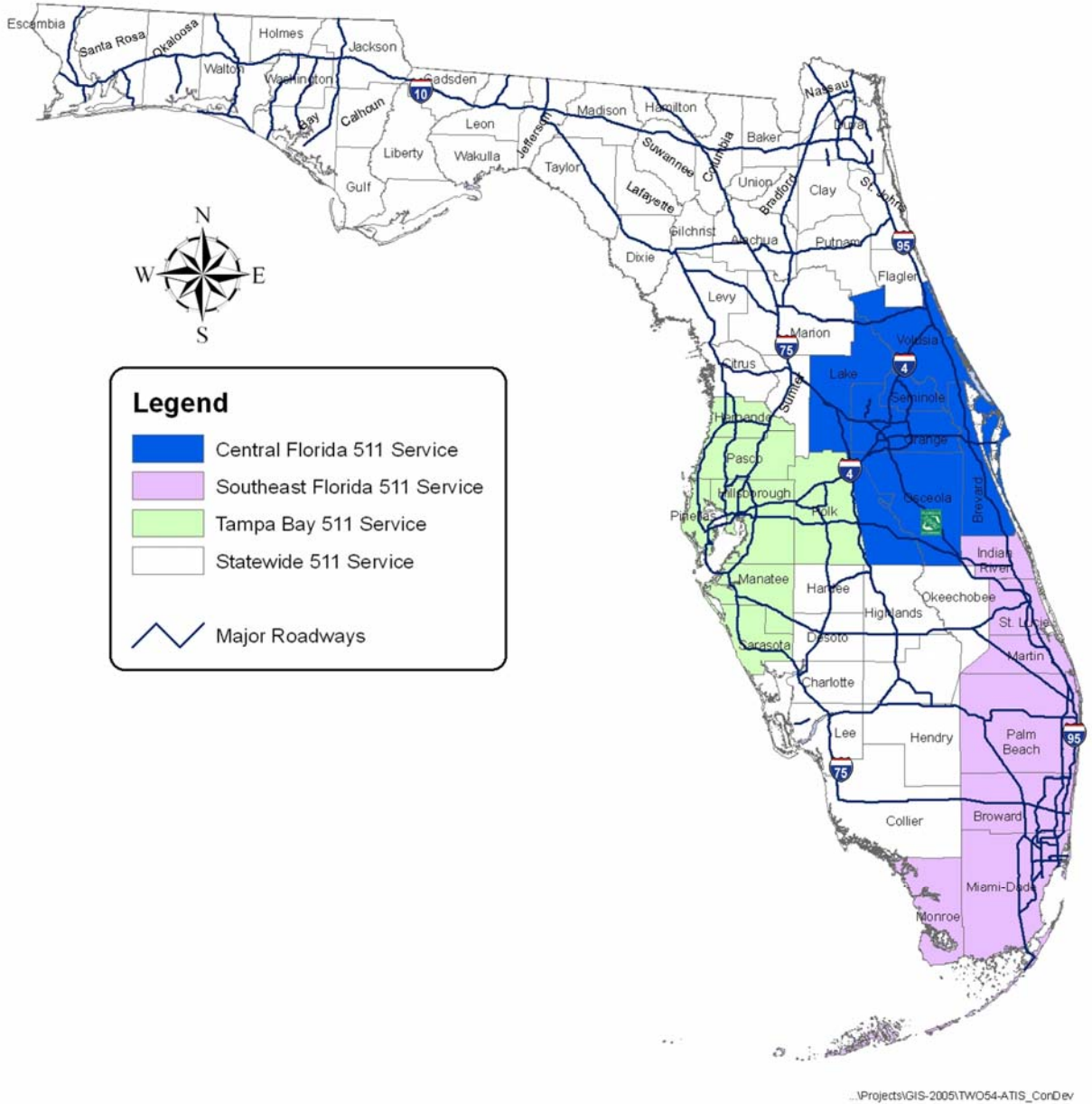
Florida currently has three regional 511 traveler information systems — the Central Florida 511 Traveler Information Service, the Southeast Florida SunGuideSM 511 Service, and the 511 Tampa Bay Traveler Information Service — as well as one statewide 511 traveler information system that overlays the regional systems as shown in Figure 2.1. The central Florida 511 regional system is a partition within the statewide system, while the southeast Florida and Tampa Bay 511 services are separate systems.

Florida's 511 systems:

- Received a combined total of 5 million calls and 10 million Web hits in 2005
- All adhere to national 511 guidelines, and include voice activation with touchtone backup and shortcuts
- All provide transfers between all services (i.e., telephone and Web services are interlinked)
- All provide severe weather, evacuation, and child abduction alerts
- All have corresponding co-branded 511 Web sites
- Most have multimodal information, such as transit and airport information, and some seaport and event venue information²

² For a more in depth coverage of each 511 service, including the history of 511 in Florida, refer to *Section 2, Florida's Public Traveler Information Systems*, contained in the *Environmental Scan Technical Memorandum* referenced in *Section 1.3* herein.

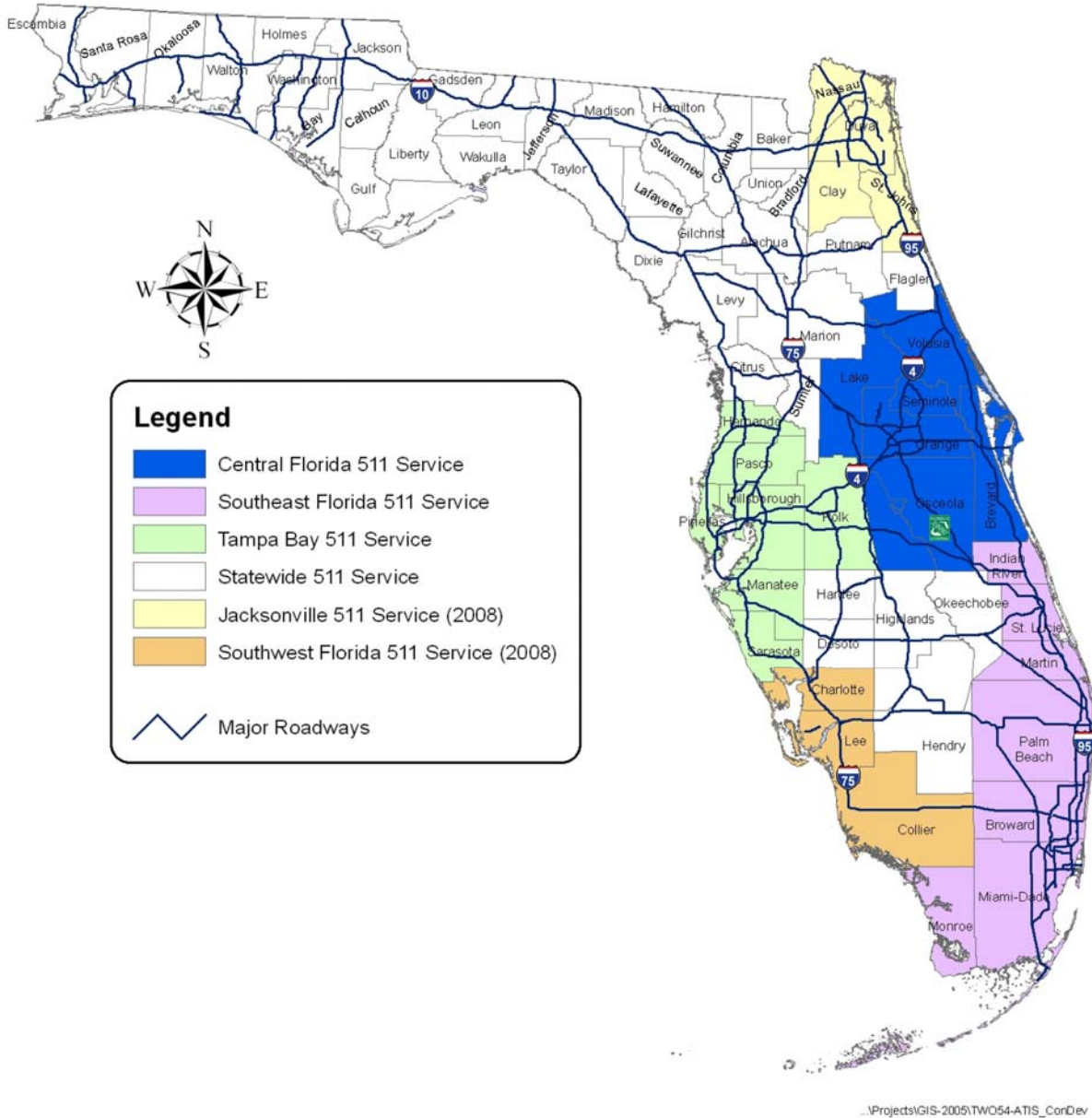
Figure 2.1 – Current 511 Service in Florida



2.1.2 511 Expansions that Occur Before 2008

There are two planned expansions to the current 511 services that are expected to occur by 2008. These new 511 services will be partitions within the statewide service. The southwest Florida expansion is planned for the end of the third quarter of 2006, and will cover Collier, Lee, and Charlotte counties. The Jacksonville expansion is also planned for the third quarter of 2006, and will cover Nassau, Duval, Clay, and St. Johns counties.

Figure 2.2 – 511 Service in Florida by 2008³



³ For more in depth coverage regarding future developments in Florida and future trends that may impact the next-generation traveler information system in 2008, refer to the *Environmental Scan Technical Memorandum* referenced in *Section 1.3* herein.

2.2 Justification for and Nature of Changes

2.2.1 Improves Current Operations

Distinct traveler information systems currently exist within Florida, each differing slightly in what, where, when, and how they provide traveler information. As noted previously, the Florida 511 Working Group determined in early 2004 that the next generation of Florida's traveler information services should be far more integrated, consistent, statewide, and seamless than current projects.

The *Stakeholder Input and User Needs Technical Memorandum* referenced in *Section 1.3* herein confirmed this assessment. Stakeholders want, and users expect, a future Florida ATIS that improves the current situation and provides high-quality information (i.e., accurate, timely, reliable, complete, accessible, and relevant) in a manner that is quick and easy to understand and use. Stakeholders also desire a future ATIS that is both consistent and accountable, while built on a common platform.

Creating a next-generation traveler information system that satisfies the various stakeholders will provide the following benefits:

- Leverage ITS investments statewide
- Establish service consistency across the state
- Improve the current user interface experience
- Reduce/Eliminate call routing issues and costs
- Minimize ATIS infrastructure costs through economies of scale and maximize resources for content management
- Significantly enhance video availability through the ATIS Web site
- Provide conditions (i.e., easy access to data and video) for the emerging private traveler information service markets in Florida to thrive, thus providing travelers with more services

2.2.2 Aligns with Stated Goals

Creating a next-generation traveler information system that is statewide, integrated, consistent, and seamless is aligned with both Florida's Strategic Intermodal System Plan and also aligned with Florida's ITS mission to:

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.

2.2.3 Nature of Changes

Due to the great diversity among current 511 services (e.g., private/public business models, systems, coverage, existing ITS levels, etc.), a future system will need to:

- Create new systems to fuse data and video, as well as interface with the user
- Integrate and build on the best aspects of each regional system to create a telephone and Web site infrastructure
- Leverage the growing ITS infrastructure
- Leverage regional transportation management centers (RTMCs)

Detailed requirements analysis and interface definition is needed, particularly at the District level, to determine/quantify all the changes that will occur.

2.3 Proposed System

Florida's next-generation traveler information system will be implemented in 2008 as a successor to the current first-generation 511 systems ending in 2008. The goal for this system is to combine the best aspects of the first generation 511 systems, creating a telephone and Web infrastructure that takes advantage of economies of scale, and to provide a more integrated, consistent, statewide, and seamless interface for the user.

2.3.1 Assumptions

Assumptions for Florida’s statewide next-generation ATIS include the following:

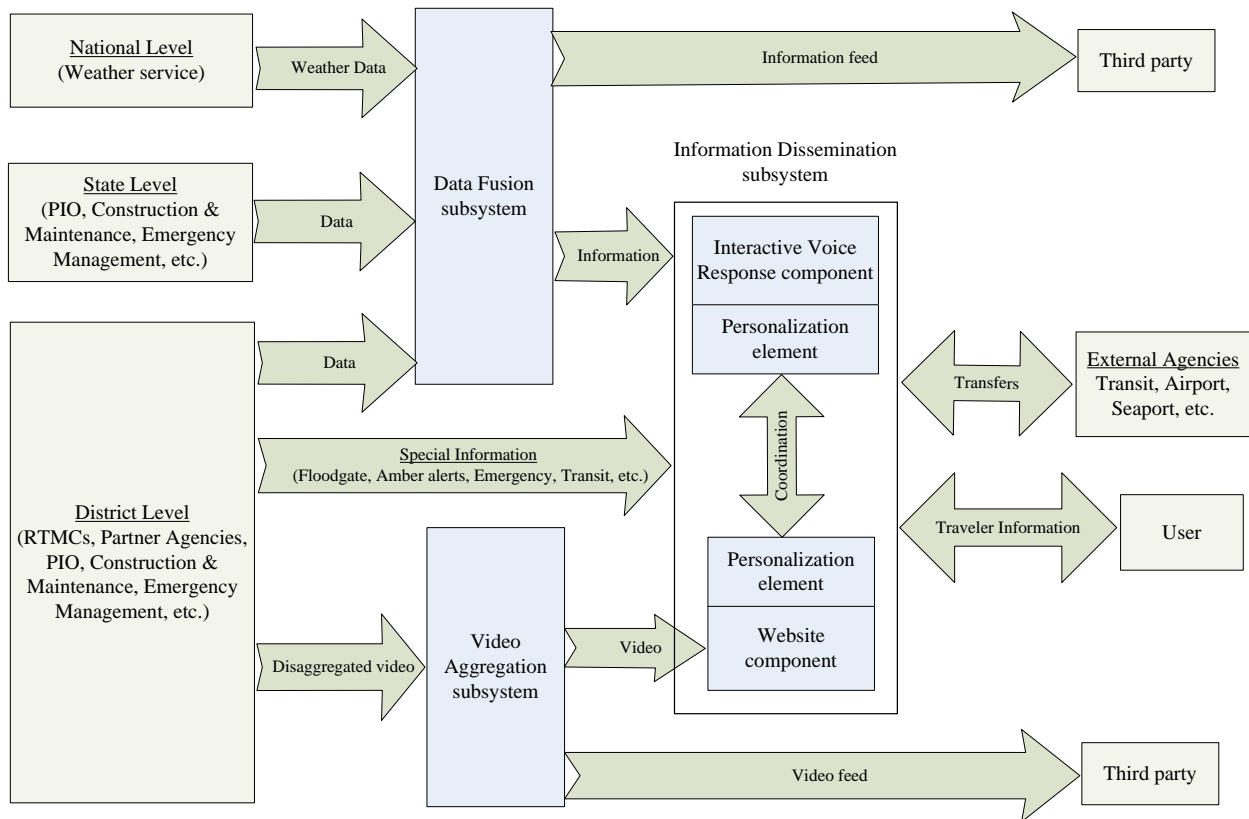
- A new system will be created. (Note that this system will build upon the existing infrastructure and resources, particularly with respect to data collection.)
- The system will be deployed during a one-year initial implementation phase (2007-2008) and a five-year operations phase (2008-2013). (Note that these are actual years and not fiscal years.)
- There will be a phased implementation of the system throughout the state.
- The new system will be expected to handle double the 2005 usage numbers for the 511 telephone and Web services.
 - The new 511 telephone service will be expected to handle 10 million calls per year during the first year of service, with an expected increase to 20 million calls per year by the fifth year of the operations phase. (Note that in 2005, Florida’s combined 511 services received 5 million calls.)
 - The new 511 co-branded Web site service will be expected to handle 20 million Web hits during the first year of service, with an expected increase to 40 million hits by the fifth year. (Note that in 2005, Florida’s combined 511 co-branded Web sites had 10.2 million Web hits.)
- The new system shall consist of an integrated IVR menu from which one can call 511 anywhere in the state.

2.3.2 Scope

Figure 2.3 provides a graphical overview of the proposed next-generation traveler information system. As indicated in the figure, Florida’s next-generation ATIS include the following subsystems:

- Data fusion subsystem
- Information dissemination subsystem
 - Interactive voice response component
 - Personalization element
 - Web Site component
 - Personalization element
- Video aggregation subsystem (VAS)

Figure 2.3 – Florida Statewide Next-generation ATIS Context Diagram



An overview of each subsystem is provided below. Note that these subsystems are still in the conceptual design stage and more research is needed to finalize their scope. For example:

- The inputs from the FDOT Districts, and state and national levels need to be further defined.
- Whether other traveler information systems, such as work zone Web sites, will be integrated into this system needs to be defined.
- The amount of coordination between the IVR and Web site components needs to be further defined.
- The extent of the VAS has to be further defined.

2.3.3 Data Fusion Subsystem

The data fusion subsystem integrates data, acting as a statewide incident reporting system. This subsystem integrates data from the national, state, and district levels, as follows:

- National data consists of weather data provided by national weather services or private information service providers (ISPs).
- State data comes from state agencies and programs, including the FDOT Central Public Information Office (PIO), FDOT State Construction Office, FDOT State Maintenance Office, FDOT State Safety Office’s Emergency Management Program, etc.
- District data comes from the seven FDOT Districts, Florida’s Turnpike Enterprise (FTE), and partner agencies. The Districts, FTE, and the partners manage content. The RTMCs will act as hubs for most of this information and will receive input from the District PIOs; District construction and maintenance offices; District emergency management offices, such as the Florida Highway Patrol (FHP) computer-aided dispatch (CAD) services, etc. While RTMCs will act as information hubs, they will probably not be the sole source of District-level information.

It is important to note that the entities providing data and information need to verify and validate the data/information provided. For example, the Districts, FTE, and their partners manage the content and must coordinate with each other to ensure that the data/information being supplied is consistent, timely, and at a “good” quality level as defined in *Closing the Data Gap: Guidelines for Quality ATIS Data* developed by the Intelligent Transportation Society of America (ITS America™).^{4, 5}

After integrating national, state, and District data, the ATIS data fusion subsystem sends information to the user interfaces and to a third party feed. The third party feed will have a published interface, and will support both public- and private-sector services (e.g., archive historical information in a statewide database, location aware displays, etc.)

⁴ ITS America, *Closing the Data Gap: Guidelines for Quality Advanced Traveler Information System (ATIS) Data* (Version 1.0, September 2000), Electronic Document Library (EDL) No. 13580. Available online at http://www.itsdocs.fhwa.dot.gov/JPODOCS/REPT_MIS/13580.html.

⁵ ITS America is a trademark of the Intelligent Transportation Society of America.

2.3.4 Information Dissemination Subsystem

The information dissemination subsystem has two principal user interfaces that provide users access to traveler information via the telephone and the Internet. These interfaces are the:

- Interactive voice response component for telephone access
- Web site component for Internet access

The intent is for these two interfaces to be supplied with the same information, and to provide consistent, relevant, and complementary information to the user (i.e., one voice/one visual). Under special situations, such as during evacuations, more detailed information, such as evacuation route information (or links to said information), could be provided on the Web site.

The user interfaces will provide transfers/links via telephone or Internet to external agencies. These agencies could include transit agencies, airport services, seaports, tourism agencies, evacuation management agencies, other partners, border state ATIS services, etc. The transfers/links will provide additional information — for example, trip planners — to supplement the multimodal information already provided.

The personalization element is part of both the Web site component and the IVR component. This element will pull information that allows users to configure/customize certain traveler information aspects and then push the data by proactively sending travel information based on a user profile.

Both user interfaces receive input from the data fusion subsystem and the District level. The data fusion subsystem provides integrated traveler information that forms the core of the data conveyed to the user. The District level input provides special information, such as America's Missing: Broadcast Emergency Response (AMBER) Alerts or evacuation information that could be conveyed as floodgate messages on the IVR component and banner alerts on the Web site. The District level inputs would also provide multimodal information from District transit partner agencies.

The Web site component will receive aggregated video information from the VAS, which is described below. This allows users to view closed-circuit television (CCTV) images from District RTMCs.

2.3.5 Video Aggregation Subsystem

The VAS will receive disaggregated video from all seven District RTMCs, the FTE RTMCs, and potentially other partners. There will be almost 1,600 CCTVs available from the FDOT's RTMCs alone in 2008. The number of the FDOT's available RTMC CCTVs will increase to a little over 1,800 in 2012.⁶

The VAS would translate/convert and aggregate selected video streams to a format that can be displayed as video on the Web site component and that is available to third parties through a third party feed. The third party feed would have a published interface and would be used by both the public and private sector (e.g., provide video for state emergency responders, location awareness displays, etc.). Note that the video is not expected to be broadcast quality and that private entities seeking such quality will still need to coordinate with the RTMCs.

⁶ More information regarding the FDOT's RTMC CCTVs is available in the *Environmental Scan Technical Memorandum* referenced in *Section 1.3* herein.

3. Requirements

The initial high-level technical/functional requirements for Florida’s next generation ATIS will be identified in a document that will be provided at a later date. As defined in the *PSEMP*, a requirements traceability matrix (RTM) will also be developed and maintained to manage and verify these requirements.⁷

⁷ The project’s high-level functional requirements and the RTM documentation referenced are currently under development. For more information regarding this documentation, contact Erik Gaarder, FDOT ITS General Consultant Project Manager, at (407) 647-7275.

4. Schedule

This section provides an overview of the Statewide ATIS project's schedule. Figure 4.1 illustrates the preliminary schedule and the main phases are detailed in the following bulleted list.

- Industry and District Research Phase – This phase will finalize the concept development for the statewide ATIS by performing industry and District research.
- Execute Acquisition and Implementation Phase – The acquisition strategy will be implemented, and various suppliers and contractors will be included in the project during this phase. The key milestone for this phase is to have all key contracts in place by the end of the first quarter of 2007.
- System Development and Testing Phase – The system will be developed and tested during this phase. The key milestone for this phase is to acquire system acceptance by the end of the second quarter of 2008.
- Transition Phase – Begin Transition of the regional 511 systems to the new statewide system will begin during this phase. The key milestone for this phase is to be operable by November 2008. (Note that more research regarding how to accomplish the transitions for the Central Florida 511, Southeast Florida 511, and Tampa Bay 511 systems will be required. It should also be noted that the approximate end dates for the existing 511 systems are July 2008 for the Central Florida 511 system; November 2008 for the Southeast Florida 511 system; and July 2008 for the Tampa Bay 511 system.)

Figure 4.1 – Preliminary Statewide ATIS Project Schedule

ID	Task Name	Start	Finish	Duration	2006			2007				2008				
					Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1	Industry & District research	4/17/2006	8/18/2006	18w	■											
2	Executive Board meeting	7/19/2006	7/19/2006	0w	◆											
3	Scope the project/Develop Detailed plan/ Initiate Project Procurement	8/18/2006	4/5/2007	33w	■											
4	Key contracts in place	4/5/2007	4/5/2007	0w	◆											
5	System development	4/5/2007	1/23/2008	42w	■											
6	Testing	1/23/2008	6/3/2008	19w	■											
7	Acceptance	6/3/2008	6/3/2008	0w	◆											
8	Transition	6/3/2008	11/3/2008	22w	■											
9	Operations	11/3/2008	11/3/2008	0w	◆											