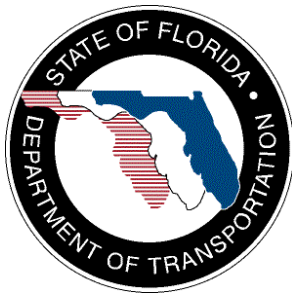


Technical Memorandum

Statewide Advanced Traveler Information System (ATIS) Project

Statewide ATIS Concept of Operations

August 4, 2006
Version 2



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*Technical Memorandum
Statewide ATIS Concept of Operations*

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

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List of Acronyms

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
HAR Highway Advisory Radio
ISP.....Information Service Provider
ITS.....Intelligent Transportation System
ITS America™..... Intelligent Transportation Society of America
PIO (FDOT) Public Information Office
RTMC Regional Transportation Management Center
TEOO (FDOT) Traffic Engineering and Operations Office

1. Introduction

1.1 Purpose

This *Technical Memorandum* describes the next-generation statewide advanced traveler information system (ATIS) to be implemented in the 2008 to 2013 timeframe and serves as the initial statewide concept of operations (ConOps).

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.

A ConOps will be created for each FDOT District and the Florida Turnpike Enterprise. These ConOps will expand upon the information contained in this report.¹

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.

¹ A District-specific ConOps will be created for each FDOT District and FTE. These documents have not been developed at this time. For further information, contact the FDOT's ITS General Consultant Project Manager, Erik Gaarder, at (407) 647-7275.

In late 2003, the FDOT formed the Florida 511 Working Group to support coordination among state traveler information programs.² 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

1.4 Content

This *Technical Memorandum* contains the initial ConOps for the statewide ATIS, and provides an initial baseline of the project's assumptions, boundaries, and constraints.

The topics covered in this report include:

- *Section 1 – Introduction*
- *Section 2 – Concept of Operations*

² 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.

2. Concept of Operations

2.1 Current Situation

2.1.1 Florida's Current 511 Systems

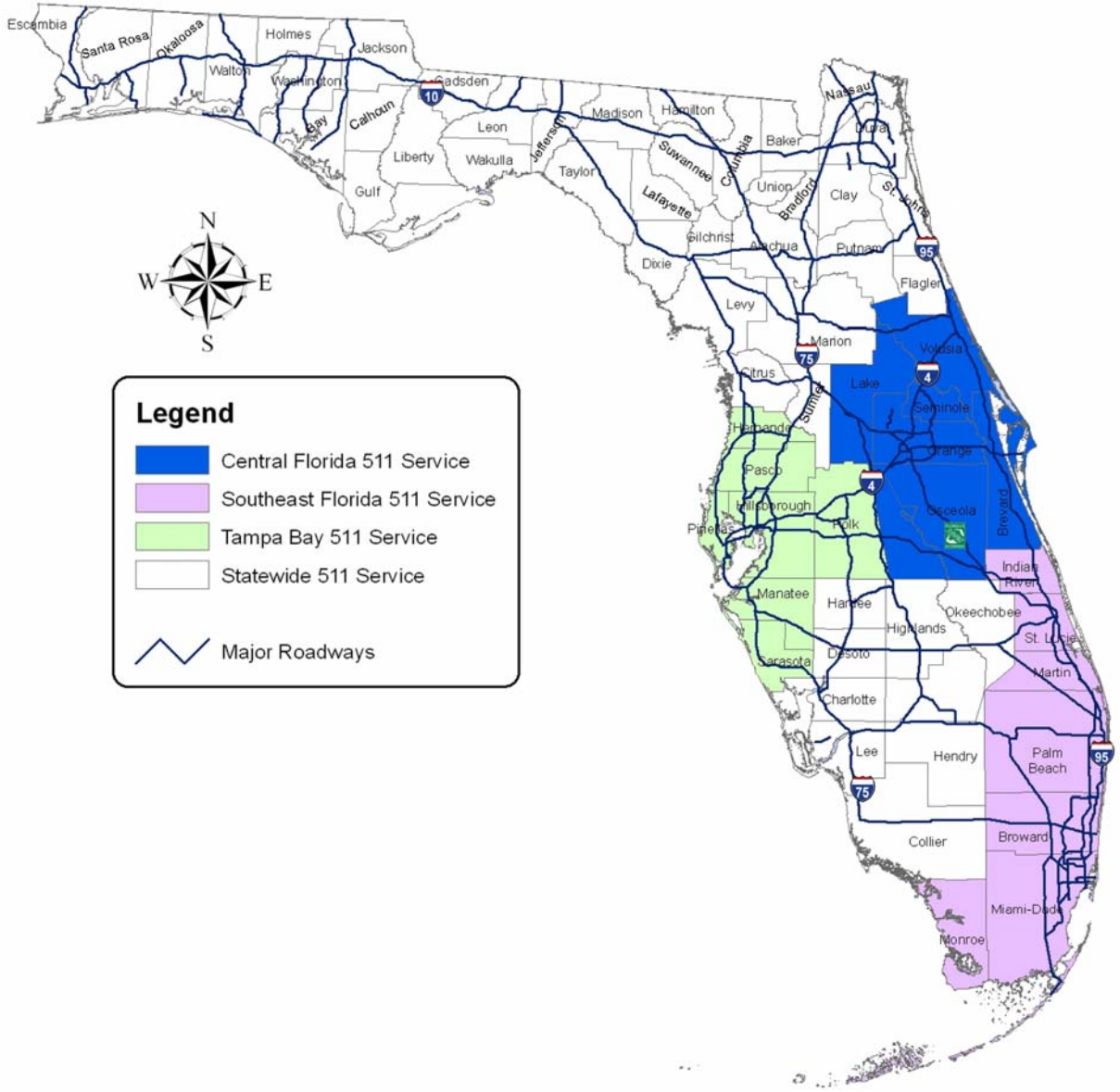
Florida currently has three regional 511 traveler information systems — the Central Florida 511 Traveler Information Service, the Southeast Florida SunGuideSM 511 Service, and the 511 Tampa Bay Traveler Information Service — as well as one statewide 511 traveler information system that overlays the regional 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 information³

³ 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



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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.

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* referred to 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 advanced traveler information system include the following:

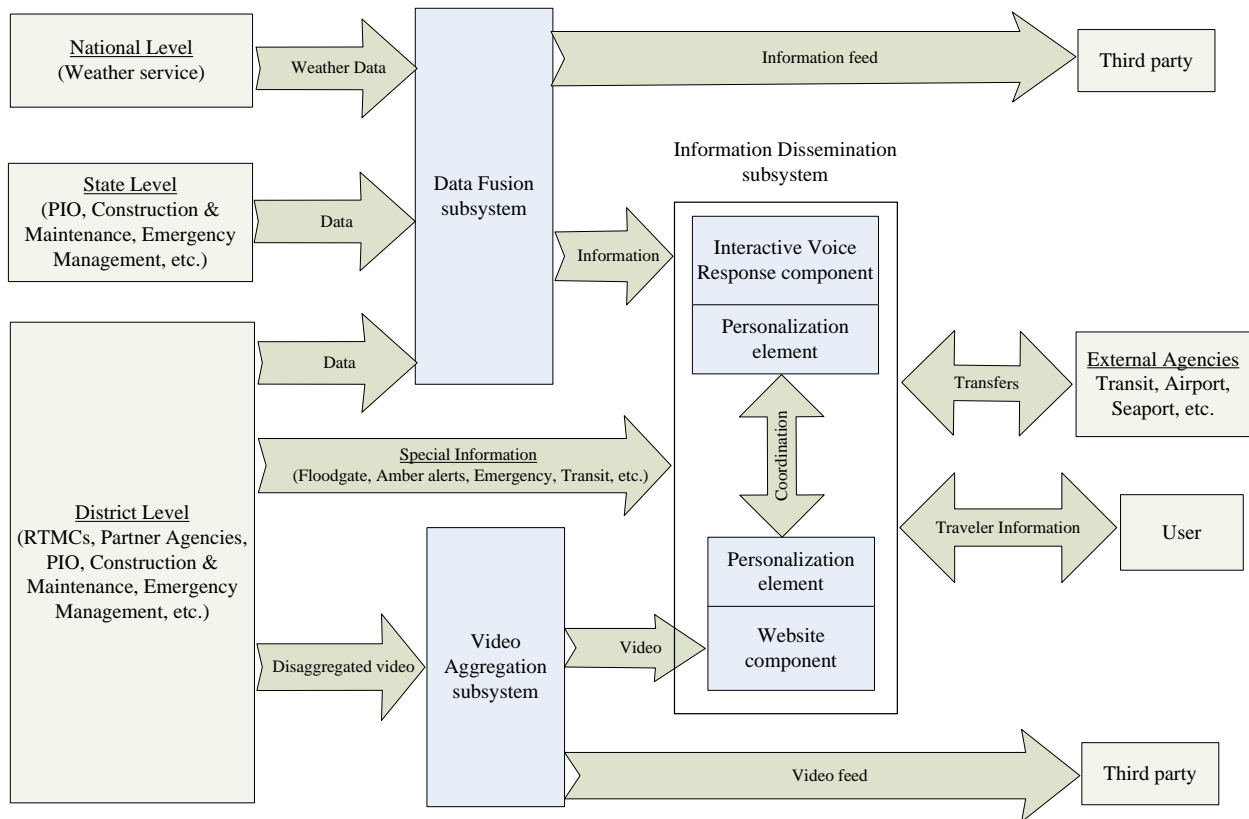
- A new system will be created. (Note that this system will build upon the existing infrastructure and resources, particularly with respect to data collection.)
- The system will be deployed during a one-year initial implementation phase (2007-2008) and a five-year operations phase (2008-2013). (Note 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 2.2 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

Figure 2.2 – 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 video aggregation subsystem 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 video aggregation subsystem, which is described below. This allows users to view closed-circuit television (CCTV) images from District RTMCs.

2.3.5 Video Aggregation Subsystem

The video aggregation subsystem 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 video aggregation subsystem 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.