

# ***FDOT's Enterprise Geographic Information System (GIS)***



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**FDOT GIS Coordinator**

# *Enterprise GIS Agenda*

- ◆ Background
  - GIS Strategic Plan
- ◆ Application Development
  - FDOT Enterprise GIS Framework
  - Applications using the Framework
  - Next Steps for the Framework
- ◆ What's Next
  - GIS resources and initiatives

# Background

- ◆ **GIS Strategic Plan (2008-2011)**
  
- ◆ **GOAL 1:** Increase the use of GIS to improve business processes, increase productivity, enhance decision support, and reduce costs.
  - **Objective 1:** Increase the integration of GIS technology into enterprise business and engineering applications.
    - Embedded framework available for Aps.
    - Safety Office using for crash analysis on framework.
    - OIS has included geospatial question into the project scope methodology (MACS).

# Background

- ◆ **GIS Strategic Plan (2008-2011)**
  
- ◆ **GOAL 2:** Extend the use of maps and other GIS tools/data to improve communication and the quality of services provided within the Department and to DOT partners, governmental entities, and citizens.
  - **Objective 1:** Increase the integration of GIS technology into enterprise business and engineering applications.
    - All districts have a GIS coordinator.
  
  - **Objective 3:** Establish standardized base maps and other core GIS tools that support comprehensive transportation needs.
    - Base maps part of framework.
    - S&MO finalizing aerial base map.
    - Framework supports library of tools and widgets.

# Background

- ◆ **GIS Strategic Plan (2008-2011)**
  
- ◆ **GOAL 3:** Identify and implement the appropriate technical architecture to best support office-level, district, and enterprise GIS needs of the Department.
  - **Objective 1:** Research and recommend cost-effective technical infrastructure options to increase access to standard supported GIS tools and decrease total cost of ownership. Base maps part of framework.
    - Enterprise framework implemented.
    - Central Office server consolidation complete
  
  - **Objective 2:** Research and recommend GIS software licensing options that provide access to GIS tools at the right level to those who need it, in the most cost-effective manner.
    - No valid savings with pooled licensing. Could be some savings by pooling ArcGIS Advance due to cost between primary & secondary license.

# Background

- ◆ **GIS Strategic Plan (2008-2011)**
  
- ◆ **GOAL 4:** Establish and maintain consistent standards and guidelines that leverage department and external geospatial resources to drive efficiencies.
  - **Objective 1:** Adopt Metadata Standards (i.e. description, projection/scale, source, update frequency, format, etc).
    - GIS Functional Steering Committee adopted metadata standards
    - <http://cosharepoint.dot.state.fl.us/sites/gis/Standards/FDOT%20Geospatial%20Data%20and%20Metadata%20Standards%20Sept%202010.docx>
  
  - **Objective 5:** Adopt interoperability standards for GIS data to be imported/exported to other spatial data formats (ie CADD).
    - Various purposeful areas are being researched. Bentley and Autodesk are integrating “Feature Attribution” within CAD environment which are being tested as we speak.

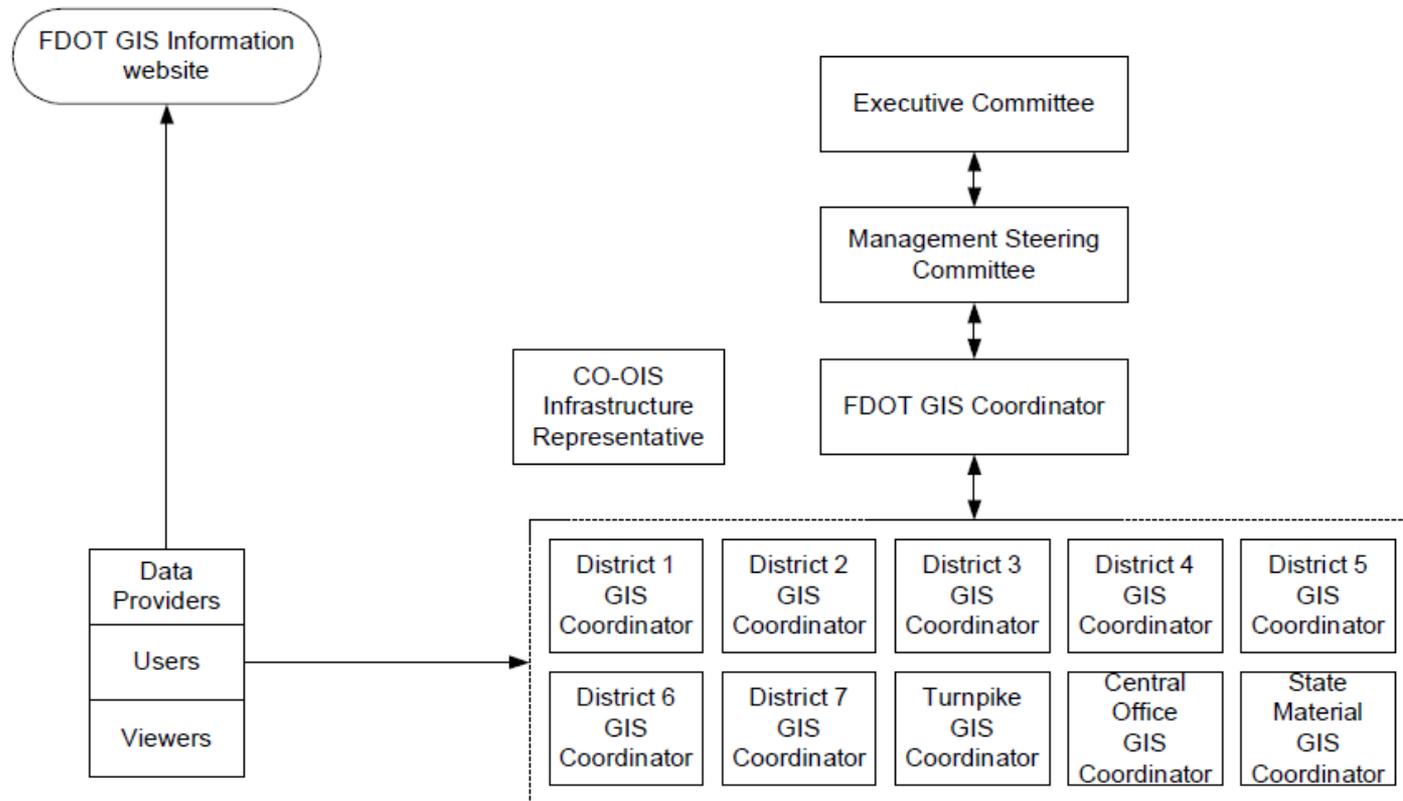
# Background

- ◆ **GIS Strategic Plan (2008-2011)**
  
- ◆ **GOAL 5:** Establish a cohesive governance model that supports organization-wide management and utilization of geospatial information.
  - **Objective 1:** Establish department policies and procedures that define both strategic and operational governance structures. GIS Functional Steering Committee adopted metadata standards
    - Policy 000-010-002 Geographic Information Systems is completed.
  
  - **Objective 2:** Establish clear and formal lines of communication throughout the GIS Community.
    - All districts are actively participating in GIS functional steering committee.

# Background

## FDOT GIS Community

All existing and potential spatial data providers, users and viewers within FDOT to include FDOT consultants



# Background

## ◆ GIS Strategic Plan (2013-2015)

### ■ Vision

- GIS will be a standard tool commonly used throughout the Department to support transportation decision making.

### ■ Mission

- Support an organization-wide framework for the governance of GIS technology that will facilitate effective management, communication and collaboration of shared geospatial data and resources.

# Background

## ◆ GIS Strategic Plan (2013-2015)

### ▪ Goals

- Increase the use of GIS to improve business processes, increase productivity, enhance decision support, and reduce costs.
- Extend the use of maps and other GIS tools/data to improve communication and the quality of services provided within the Department and to DOT partners, governmental entities, and citizens.
- Identify and implement the appropriate technical architecture to best support the local and enterprise GIS needs of the Department.
- Establish and maintain standards and guidelines that leverage department and external geospatial resources to drive efficiencies.
- Establish a cohesive governance model that supports organization-wide management and utilization of geospatial information.

# Background

## ◆ GIS Strategic Plan (2013-2015)

### Goals and Objectives

- **GOAL 1:** Increase the use of GIS to improve business processes, increase productivity, enhance decision support, and reduce costs.
  - **Objective 1:** Continue with the integration of GIS technology into enterprise business and engineering applications via the utilization of the GIS Enterprise Framework.
  - **Objective 2:** Reduce time and overhead costs associated with locating and accessing important geospatial information by leveraging existing resources such as the FDOT GIS Clearinghouse and/or other resources.
  - **Objective 3:** Promote awareness of the DOT clearinghouse and encourage participation within the GIS community to contribute datasets and applications that can be shared.

# Background

- ◆ GIS Strategic Plan (2013-2015)

## Goals and Objectives (cont')

- **GOAL 2:** Extend the use of maps and other GIS tools/data to improve communication and the quality of services provided within the Department and to DOT partners, governmental entities, and citizens.
  - **Objective 1:** Increase our presence on the internet by creating and maintaining a public facing portal for Department GIS resources
  - **Objective 2:** Support GIS partnerships with external entities for sharing of GIS data and resources.
  - **Objective 3:** Establish standardized base maps and other core GIS tools that support comprehensive transportation needs.

# Background

- ◆ GIS Strategic Plan (2013-2015)

## Goals and Objectives (cont')

- **GOAL 3:** Identify and implement the appropriate technical architecture to best support office-level, district, and enterprise GIS needs of the Department.
  - **Objective 1:** Increase access to standard GIS tools.
  - **Objective 2:** Research and recommend GIS software licensing options that provide access to GIS tools at the right level to those who need it, in the most cost-effective manner.
  - **Objective 3:** Explore requirements needed to implement internet technologies such as ESRI's ArcGIS Online
  - **Objective 4:** Explore and adopt mobile devices or mobile mapping capabilities

# Background

## ◆ GIS Strategic Plan (2013-2015)

### Goals and Objectives (cont')

- **GOAL 4:** Establish and maintain consistent standards and guidelines that leverage department and external geospatial resources to drive efficiencies.
  - **Objective 1:** Adopt a standard GIS procedure that supports previously adopted standards for Metadata and Enterprise GIS data.
  - **Objective 2:** Adopt interoperability standards for GIS data to be imported/ exported to other spatial data formats (ie CADD).
  - **Objective 3:** Research and recommend a financial alternatives to support enterprise, district, and office-level GIS initiatives.
  - **Objective 4:** Create documentation and/or procedures for consultant development on GIS web applications via the GIS Enterprise Framework

# Background

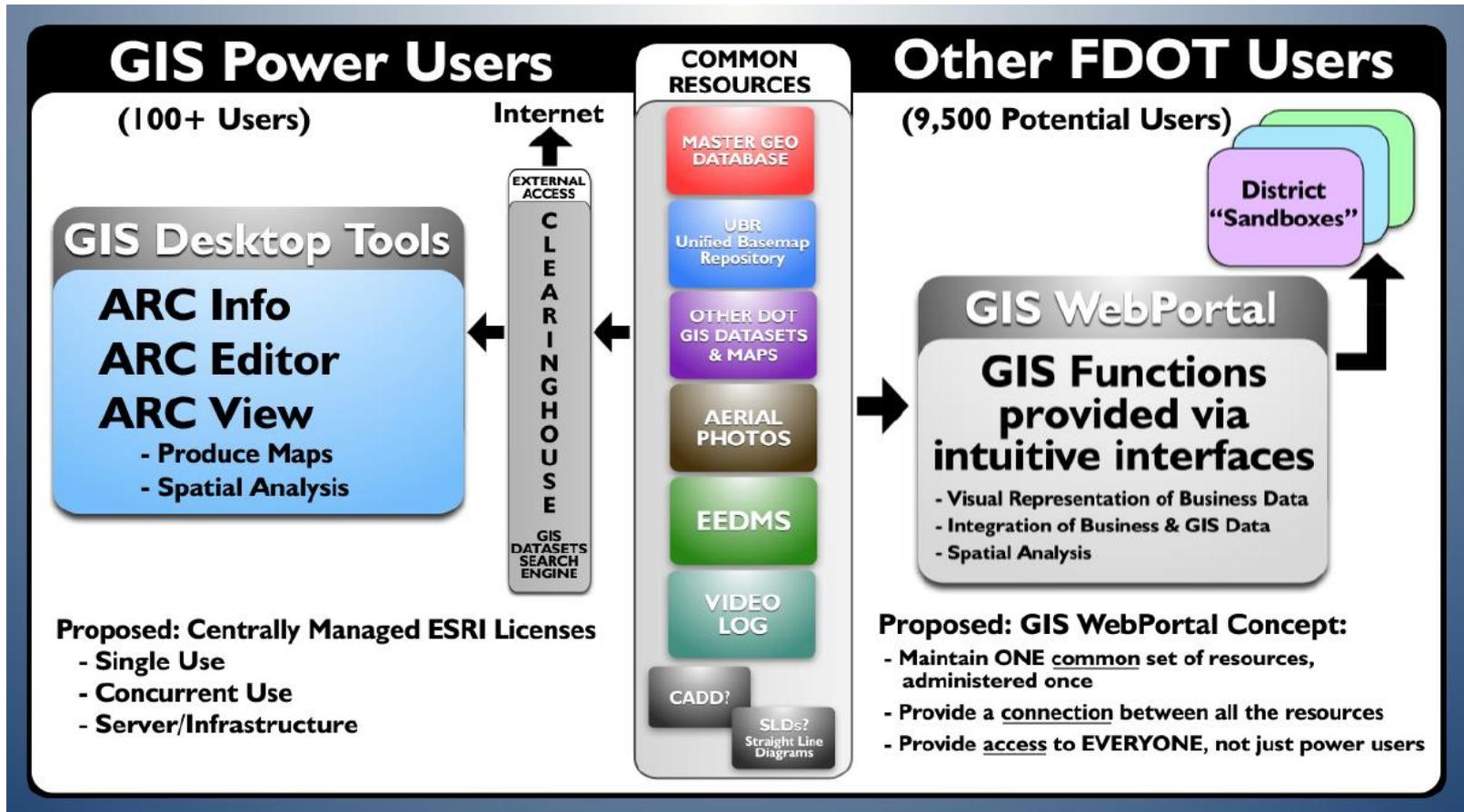
## ◆ GIS Strategic Plan (2013-2015)

### Goals and Objectives (cont')

- **GOAL 5:** Establish a cohesive governance model that supports organization-wide management and utilization of geospatial information.
  - **Objective 1:** Ensure department policies and procedures that support both the strategic and operational governance are followed.
  - **Objective 2:** Continue with clear and formal lines of communication throughout the GIS Community.
  - **Objective 3:** Promote the awareness, education and marketing of FDOT GIS resources through Department GIS user groups.

# Enterprise GIS Framework

## ◆ Vision



# Enterprise GIS Framework

## ◆ Key Terms

### ■ Framework

- A collection of software components structured into three layers that provide foundation, support, and application services. The framework is one website and is driven by a configuration model that allows for flexibility in exposing functionality and creating unique user interfaces

### ■ Architecture

- The structure(s) of the system, which comprise software components, the externally visible properties of those components and the relationships between them.

### ■ Core data layers

- Collection of enterprise data layers maintained by Database Administration (DBA). These data layers are utilized by FDOT personnel throughout the organization.

# Enterprise GIS Framework

## ◆ Key Terms (*cont.*)

### ■ Web Services

- Web Services represent an extension of the concept of off-the-shelf software to that of software delivered as a service. They are building blocks that enable developers to build and aggregate applications and services from local and remote resources for a range of clients.

### ■ Services Oriented Approach

- An approach to architecture design which separates functions into distinct units, or services, that developers make accessible over a network in order to allow users to combine and reuse them in the production of applications

# Enterprise GIS Framework

## ◆ Enterprise GIS Framework

- The application architecture upon which all Enterprise GIS applications will be built.

## ◆ GIS Embeddable Framework

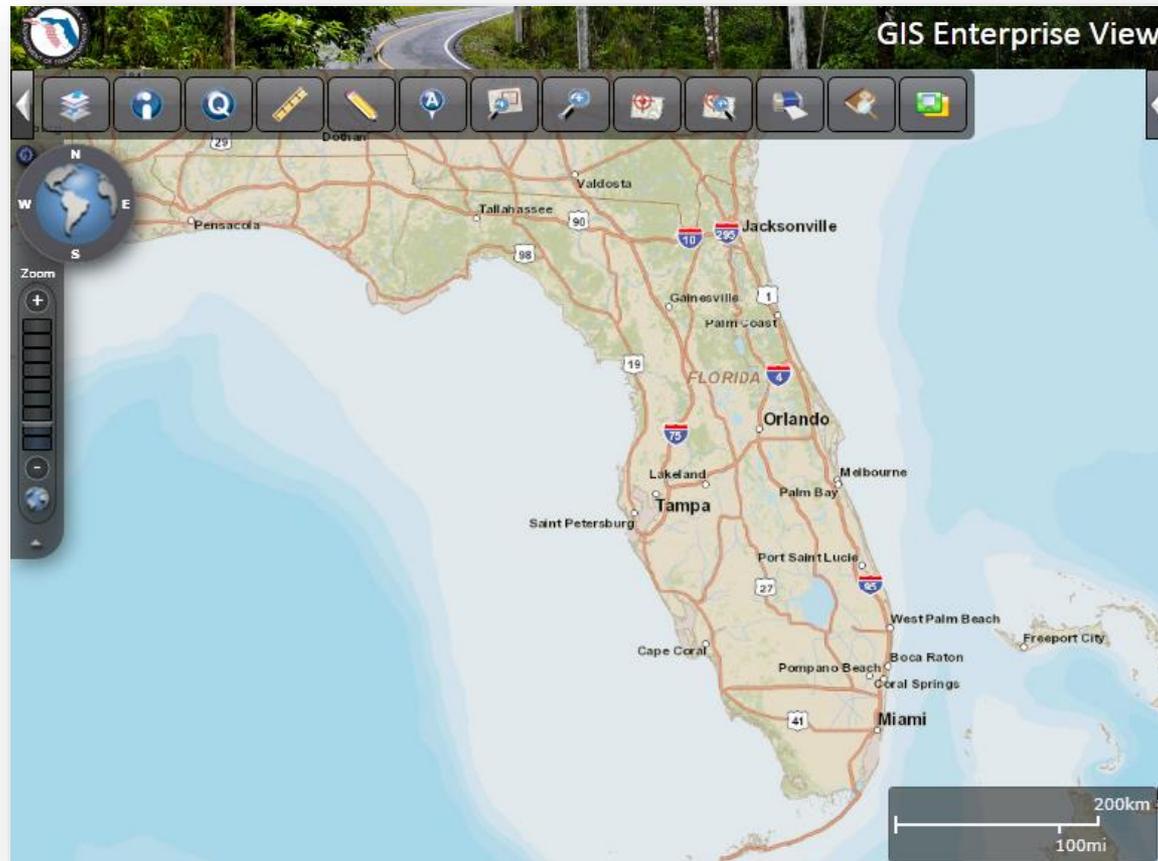
- The application architecture which enables a GIS application built on the Enterprise GIS Framework to be embedded within a business web application (examples later in presentation).

## ◆ GIS District Framework

- District implementation of the Enterprise GIS Framework.

# Framework Applications

- ◆ GIS Enterprise View (GEV)
  - The **FIRST** GIS web application built on the Enterprise GIS Framework.
  - The GEV is NOT the Enterprise GIS Framework  
*(big time misconception!)*
  - The GIS Enterprise View (GEV) application lets you view, query, and analyze the department's spatial data. The application contains Safety, Work Program, RCI and more enterprise systems data.
  - The application also links to other enterprise wide systems such as PSEE, EIP, and Video Log based spatial data.



## *GIS Enterprise View (GEV)*

GIS Enterprise View (GEV) can enhance day to day business decision-making by providing access to a wide array of transportation related data, easy to use GIS tools, and an intuitive application interface.

The screenshot displays the APLUS web application interface. At the top, the FDOT logo and 'A+PLUS' branding are visible, along with navigation links: [FAQ](#), [Aerials Home](#), [Log In](#), [Request Photography](#), and [Help](#). The interface is divided into a left sidebar and a main map area. The sidebar contains several sections: 'Statewide Selection', 'County-Wide Selection', and 'Area Of Interest'. Under 'Area Of Interest', there is a 'Zoom To Area (Optional)' section with a 'Select Zoom Type:' dropdown menu. Below that is a 'Select An Area' section with three icons representing different selection shapes. A note states: 'Note: Selecting a new area will clear the old area.' The 'Additional Conditions' section includes a 'Year Range:' dropdown set to '1950' to '2014'. At the bottom of the sidebar is a 'Search Archive' button. The main map area shows a map of Florida with various cities and highways labeled. A scale bar at the bottom right indicates 200km and 100mi. The map also shows a 'Base Map: Streets' dropdown menu and a 'PLSS' checkbox.

Florida Department of Transportation, Office of Surveying and Mapping.  
 For technical help, contact the [Service Desk](#) or call 1-866-955-4357(HELP).  
[MyFlorida.com](#) - [Web Policies and Notices](#) - [Accessibility Statement](#)

## Aerial Photography Look Up System (APLUS)

APLUS guides you through the steps needed to search, request and download aerial photography from the Department's Aerial Photography Archive Collection

The screenshot displays the SSOGis web application interface. At the top, there is a navigation bar with the title 'SSOGis' and an 'About' link. Below the navigation bar is a search bar and a toolbar with various map interaction icons. The main area features a map of a road network with a red dot indicating a specific intersection. Below the map is a data table titled 'Intersections (2011) - [1 of 1]'. The table has a header row with columns: OBJECTID, XID, YEAR\_MAP\_ID, Year, MAP\_ID, Road Type, District, County Name, County, Roadway, Mile Post, and NODE. A single data row is visible below the header.

OBJECTID	XID	YEAR_MAP_ID	Year	MAP_ID	Road Type	District	County Name	County	Roadway	Mile Post	NODE
> 1651	1437	2011SI101-001	2011	SI101-001	SI		Charlotte	01	01010000	21.044	

## State Safety Office GIS (SSOGIS)

SSOGIS is included in the Florida Traffic Safety Portal and services as a central location for the exchange and sharing of tools, data, information, and ideas among the traffic safety professionals in Florida.

The screenshot shows the FDOT ONE-STOP PERMITTING website. At the top, there is a banner with the FDOT logo and the text "ONE-STOP PERMITTING" in large, bold letters. Below the banner is a navigation menu with links for Home, Permits, Permit Offices, GIS Permit Search, and Reports. On the right side of the menu, there are links for Log In, FAQ, and Help. A note below the menu states: "Note: The GIS search only returns OSP Permits with locations entered using the GIS Map and not Permits with manually entered locations." On the left side, there is a "Search Permits" section with three options: "Search by Permit Number", "Search by Region", and "Search by County". The "Search by Permit Number" option is selected, and there is a text input field for the permit number and a "Search" button. On the right side, there is a map of Florida with a "Base Map" dropdown menu set to "Streets". The map shows various cities and counties in Florida, including Jacksonville, Orlando, Tampa, and Miami. At the bottom of the page, there is a footer with the FDOT logo, the text "Florida Department of Transportation, Office of Information Systems", and several links: "Report Technical Problems to the Service Desk 1-866-955-4357", "Internet Privacy Policy, Disclaimers & Credits - Accessibility Statement - Get Adobe PDF Reader", and "Web Policies and Notices - Supported Browsers". There is also a "myFlorida.com" logo in the bottom right corner.

## ONE-STOP PERMITTING

Apply for utility permits, check the status of permits, download approved permit packages, utility maintenance notifications, access GIS map location feature and more online.

ProjectSuite Enterprise Edition User: Jared Causseaux

Dashboard - Project - Search - Scheduling - Create Project - Assignments - Reports - Help

Go To Project [ ] - [ ]

View

- Contracts
- Documents
- ERC
- Financial
- GIS
- Item Segment Change History
- Local Agency Program
- Project Impacts
- Project Scheduling (PSM)
- Related Projects
- Video Log

Manage

- Address Book
- Commitments
- Design Approval Requests
- Environment
- External Agency
- Final Plans Processing
- Permits
- Phase Review
- Project Fact Sheet
- Project Status
- Resolution Tracking
- Survey Work Order

Change Requests

- Critical Schedule
- Estimates
- Project Change Package
- Scheduling
- Scope
- Work Program (Includes Phases)
- WP Phase 52
- Journal

Project Info [410981-1] (Click to expand)

GIS (Click to collapse)

Zoom to Project 410981-1 Zoom to Roadway Click here to open the GIS Enterprise View in new window

51000000

GIS Enterprise View

## Project Suite Enterprise Edition (PSEE)

The GIS module provides geographical information about the selected Project on an **embedded** interactive map. This module leverages the FDOT Enterprise GIS Framework to display the interactive map and its features.

# Embedded Framework Application

## FDOT Tracker

FDOTTracker is used throughout FDOT to log and track correspondence with the general public and FDOT employees

The screenshot displays the FDOTTracker web application interface. At the top right, the user is identified as JARED CAUSSEALX, with a 'Work As:' dropdown menu. The main header includes the FDOTTracker logo and the text 'Correspondence Tracking System'. A navigation bar contains links for 'MyTracker', 'Search', 'Add Issue', 'Profile', 'Reports', 'News', and 'Help'. The current view is for 'Issue 10-04117 (COMPLETE)'. The issue details include: Resolution Date: 4/21/2010 4:55 PM; Issue Owner: JARED CAUSSEALX; Customer: Gator John; Summary: Complaint regarding finding maps on the website. On the right side, it shows 'Issue District: CO', 'Related Customer Issues: 0', and 'Linked Issues: 0'. A secondary navigation bar includes 'Main', 'Customer', 'Supplemental', 'Documents', 'Staff', 'Contacts', 'Extensions', 'Manage', 'History', and 'Maps'. The 'Reference Points' section is active, showing instructions for adding a reference point on a map of Florida. The instructions state: 'INSTRUCTIONS: Start by selecting a county from the drop down menu below. The map window will zoom to the county highlighted. Begin by finding your location on the map (Zoom more by using your mouse scroll wheel) and click the "Select Point" button. This will allow you to Select a Reference Point by clicking anywhere on the map screen. The flashing red dot signifies a correctly identified point. If you accidentally click in the wrong location, you can click the "Select Point" button again to make a new selection. After you are satisfied with the point's location, provide a name for the Reference Point and click "Save" to complete the process.' Below the instructions is a 'Starting County:' dropdown menu and a 'Select Point' button. The map shows Florida with various counties labeled. A 'Base Map: Streets' dropdown is visible in the top right corner of the map area. A 'Cancel' button is located at the bottom left of the map frame. Below the map, there is a 'View Reference Points:' section.


**FOR SALE OR LEASE**  
**RIGHT OF WAY PROPERTIES**

This site provides information about properties that may be available for purchase or lease from the Florida Department of Transportation. Select a County from the dropdown to list properties for that county. Property is not available in all counties. Contact the District Office at the phone number indicated for the property for additional information.

County:

**E/O INTSECF OF SE HAWTHORNE RD & SE CR 234 N/S/O RD**

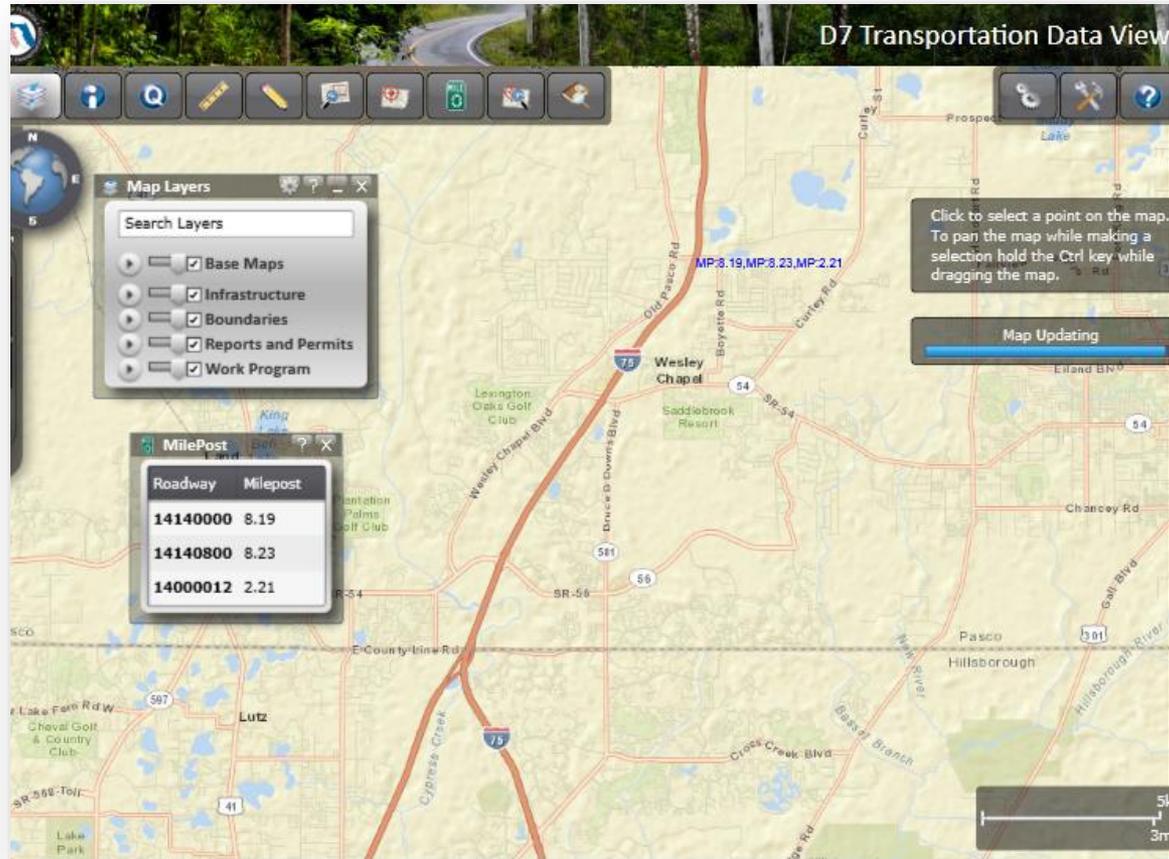
Property #:200  
 Size: 4353 SF  
 Contact #: Julie Bassett - (386) 961-7476

[Zoom To Location](#)  
[Open in Google Streetview/Maps](#)  
[Open in Bing Birdseye](#)

## *Right of Way Properties*

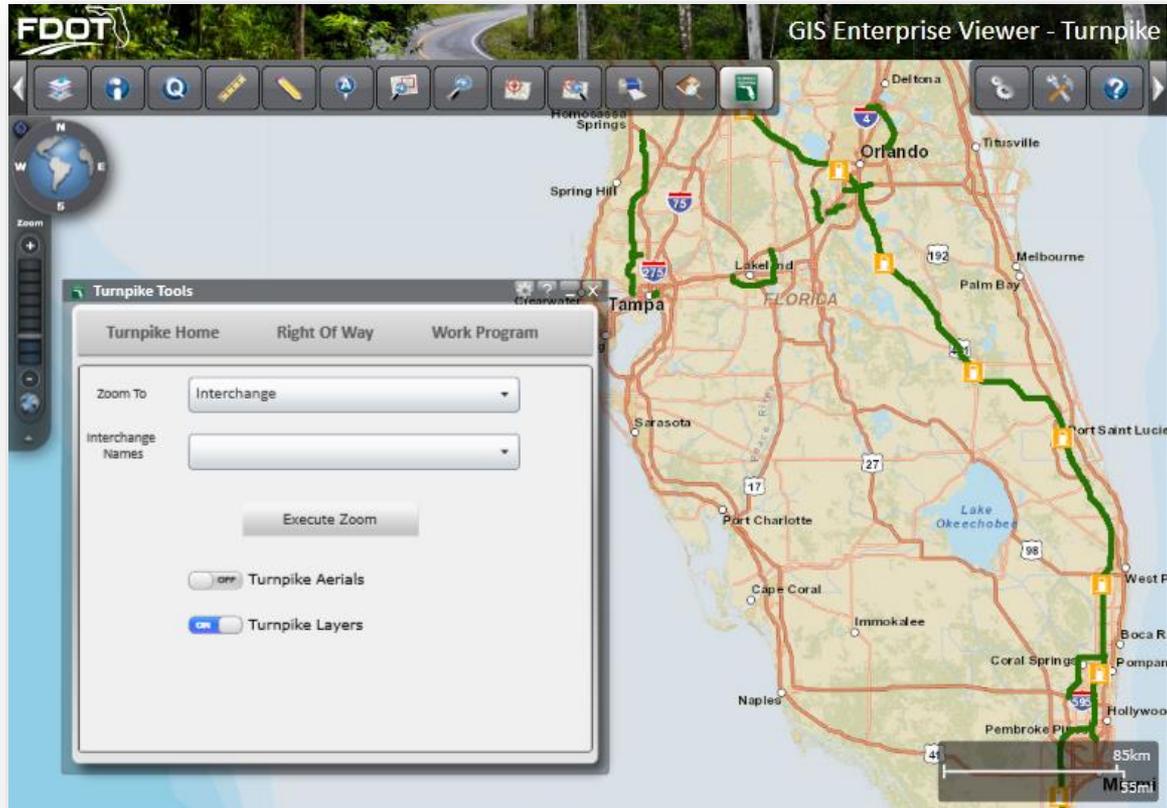
This site provides information about properties that may be available for purchase or lease from the Florida Department of Transportation





## *District 7's Transportation Data Viewer (TDV)*

A web-based application that serves a wide array of GIS data to all users that are "inside" the FDOT firewall.



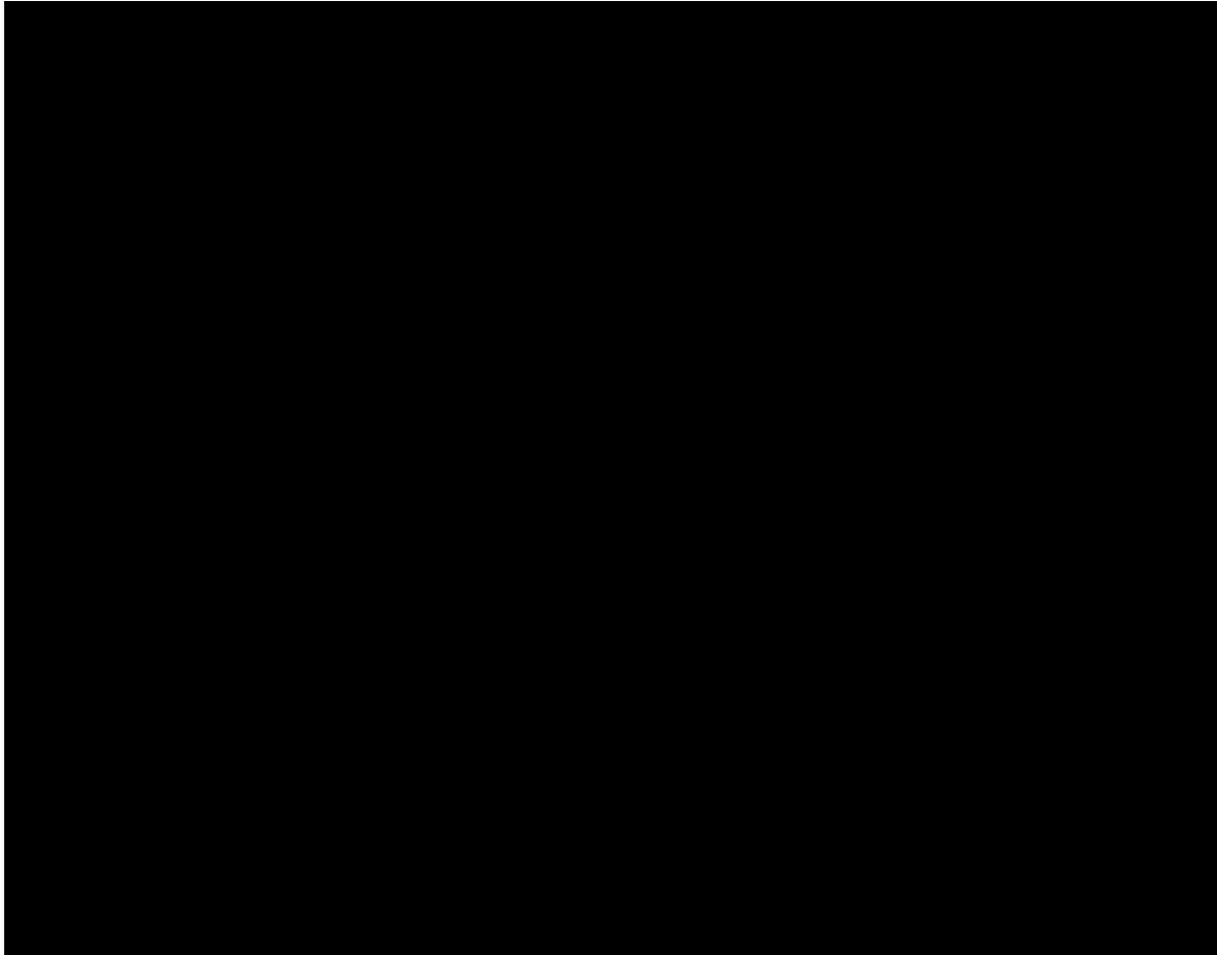
## Turnpike - GEV

The Turnpike Enterprise has implemented a unique query tool specifically related to Turnpike data.

# *Demonstration*



# *Demonstration*



# What's Next

- ◆ **GOAL 1:** Increase the use of GIS to improve business processes, increase productivity, enhance decision support, and reduce costs.
  - **Objective 1:** Continue with the integration of GIS technology into enterprise business and engineering applications via the utilization of the GIS Enterprise Framework.
    - *Many applications are being developed and migrated into the enterprise framework.*

# What's Next

- ◆ **GOAL 2:** Extend the use of maps and other GIS tools/data to improve communication and the quality of services provided within the Department and to DOT partners, governmental entities, and citizens.
  - **Objective 1:** Increase our presence on the internet by creating and maintaining a public facing portal for Department GIS resources
  - **Objective 2:** Support GIS partnerships with external entities for sharing of GIS data and resources.
    - *The implementation of ArcGIS Online will assist with this objective.*

# What's Next

[HOME](#) [GALLERY](#) [MAP](#) [GROUPS](#) [MY CONTENT](#) [MY ORGANIZATION](#)

Jared



**FDOT** Florida Department of Transportation



State Materials Office - All Aggregate Sources



FDOT Public Meetings



FDOT Bridges



Traffic Volume Summary Viewer

[Esri.com](#) | [ArcGIS Marketplace](#) | [Help](#) | [Terms of Use](#) | [Privacy](#) | [Contact Esri](#) | [Report Abuse](#)

# What's Next

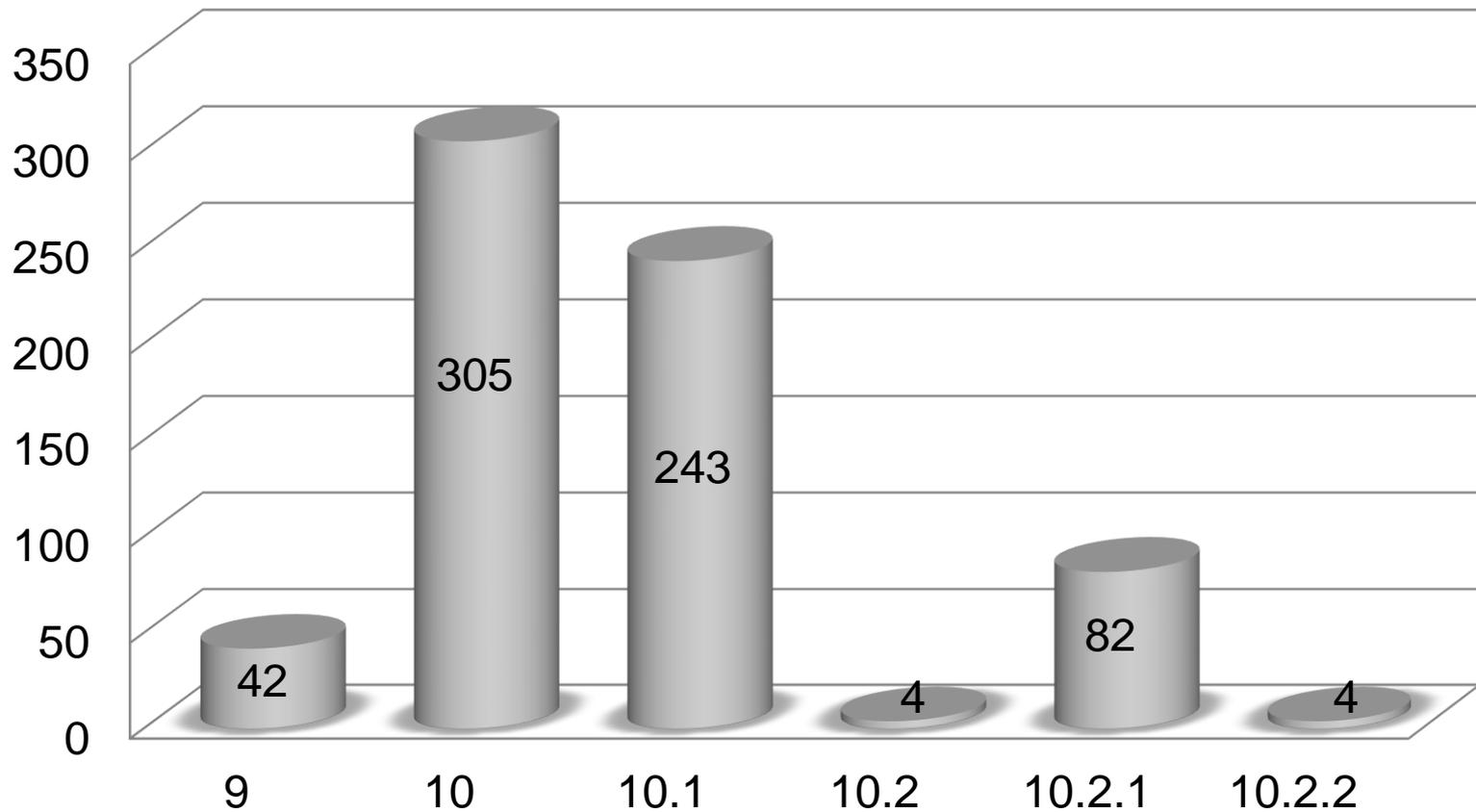
- ◆ **GOAL 3:** Identify and implement the appropriate technical architecture to best support office-level, district, and enterprise GIS needs of the Department.
  - **Objective 1:** Increase access to standard GIS tools.
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  - **Objective 3:** Explore requirements needed to implement internet technologies such as ESRI's ArcGIS Online
  - **Objective 4:** Explore and adopt mobile devices or mobile mapping capabilities

# What's Next

Current Desktop Licenses at FDOT (15 Customer Numbers)		Proposed Desktop Licenses at FDOT (1 Customer Number)	
AcGIS Desktop Advanced:	26	AcGIS Desktop Advanced:	26
Primary:	9	Primary:	3
Secondary:	17	Secondary:	23
ArcGIS Desktop Standard	19	ArcGIS Desktop Standard	19
Primary:	6	Primary:	2
Secondary:	13	Secondary:	17
ArcGIS Desktop Basic (Conc)	73	ArcGIS Desktop Basic (Conc)	73
Primary:	13	Primary:	8
Secondary:	60	Secondary:	65
ArcGIS Desktop Basic (Single Use)	47	ArcGIS Desktop Basic (Single Use)	47
Primary:	15	Primary:	5
Secondary:	32	Secondary:	42
ArcGIS Spatial Analyst	7	ArcGIS Spatial Analyst	7
Primary:	6	Primary:	1
Secondary:	1	Secondary:	6
ArcGIS Network Analyst	5	ArcGIS Network Analyst	5
Primary:	4	Primary:	1
Secondary:	1	Secondary:	4
ArcGIS Publisher	3	ArcGIS Publisher	3
Primary:	3	Primary:	1
Secondary:	0	Secondary:	2
ArcGIS 3D Analyst	2	ArcGIS 3D Analyst	2
Primary:	2	Primary:	1
Secondary:	0	Secondary:	1
ArcGIS Data Interoperability	1	ArcGIS Data Interoperability	1
Primary:	1	Primary:	1
Secondary:	0	Secondary:	0
<b>Current Desktop total:</b>	<b>183</b>	<b>Current Desktop total:</b>	<b>183</b>
Primary:	59	Primary:	23
Secondary:	124	Secondary:	160

# What's Next

## ArcGIS for Desktop



# What's Next

The screenshot shows an ArcGIS web application interface. At the top, there is a navigation bar with 'HOME' and 'USBikeRoutes' on the left, and 'NEW MAP' and the user name 'Jared' on the right. Below this is a toolbar with icons for 'Details', 'Add', 'Basemap', 'Save', 'Share', 'Print', 'Directions', and a search box. The main map area displays a map of Florida with a blue route highlighted. The route starts in the north, goes west to Tallahassee, then east to Jacksonville, then south along the coast through Orlando, Tampa, St. Petersburg, and ends in Miami. A 'Contents' pane on the left lists various layers with checkboxes. A scale bar at the bottom left shows 0, 30, and 60 miles. The Esri logo and copyright information are at the bottom right.

HOME ▾ USBikeRoutes NEW MAP Jared

Details Add ▾ Basemap Save Share Print Directions Search

Contents

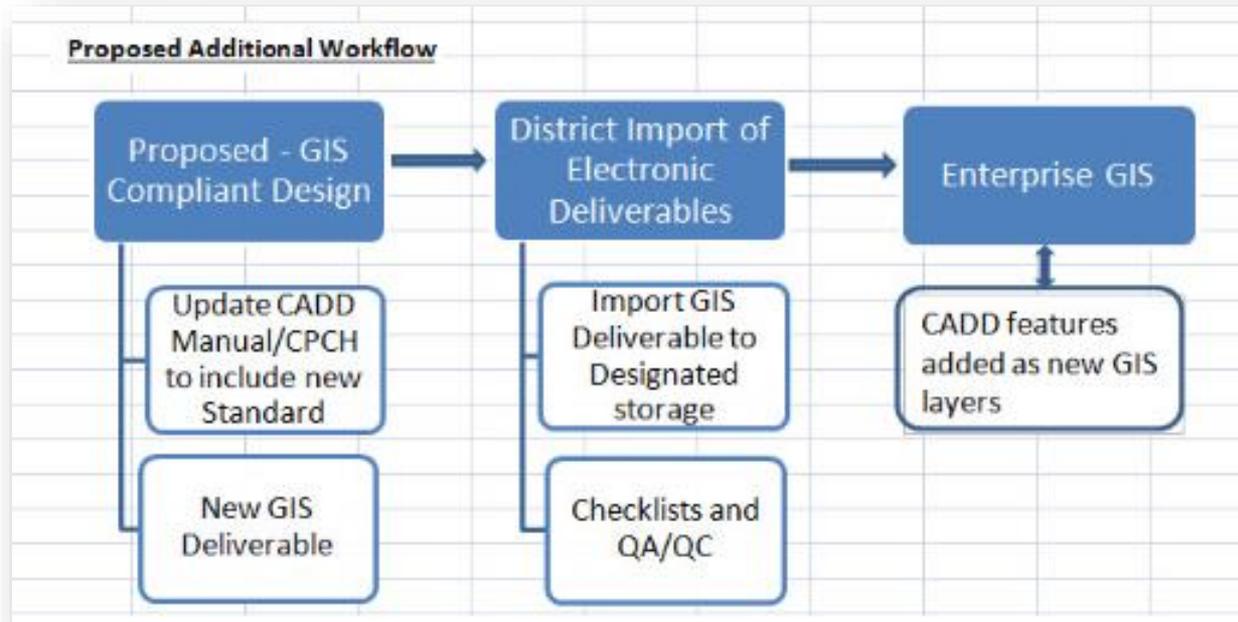
- USBikeRoutes - BikeSlot US1 US90
- USBikeRoutes - BikeLane US1 US90
- USBikeRoutes - Bike slot RCI
- USBikeRoutes - Bike lane RCI
- USBikeRoutes - Shoulder Width Order 1
- USBikeRoutes - Shoulder Width Order 2
- USBikeRoutes - Shoulder Width Order 3
- USBikeRoutes - Shoulder Type 1 Order 1
- USBikeRoutes - Shoulder Type 2 Order 1
- USBikeRoutes - Shoulder Type 1 Order 2
- USBikeRoutes - Shoulder Type 2 Order 2
- USBikeRoutes - Shoulder Type 1 Order 3
- USBikeRoutes - Other Shoulder

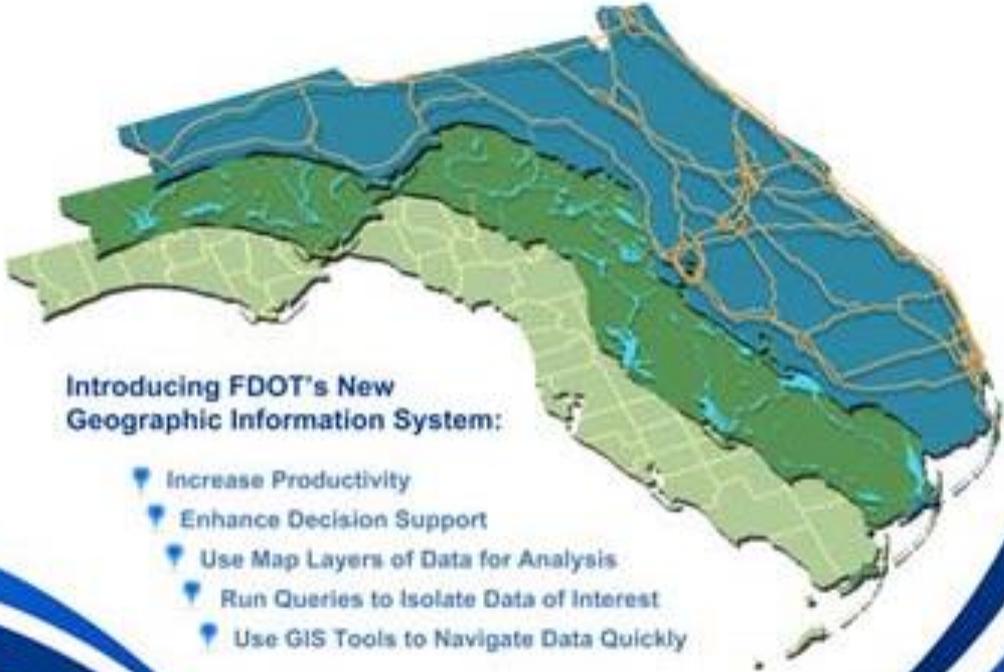
Esri.com ArcGIS Marketplace Help Terms of Use Privacy Contact Esri Report Abuse

Esri, DeLorme, FAO, USGS, NOAA, EPA, NPS

# What's Next

- ◆ **GOAL 3:** Establish and maintain consistent standards and guidelines that leverage department and external geospatial resources to drive efficiencies.
  - **Objective 2:** Adopt interoperability standards for GIS data to be imported/ exported to other spatial data formats (i.e. CADD).





**Introducing FDOT's New  
Geographic Information System:**

- ▶ Increase Productivity
- ▶ Enhance Decision Support
- ▶ Use Map Layers of Data for Analysis
- ▶ Run Queries to Isolate Data of Interest
- ▶ Use GIS Tools to Navigate Data Quickly

## Questions?

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