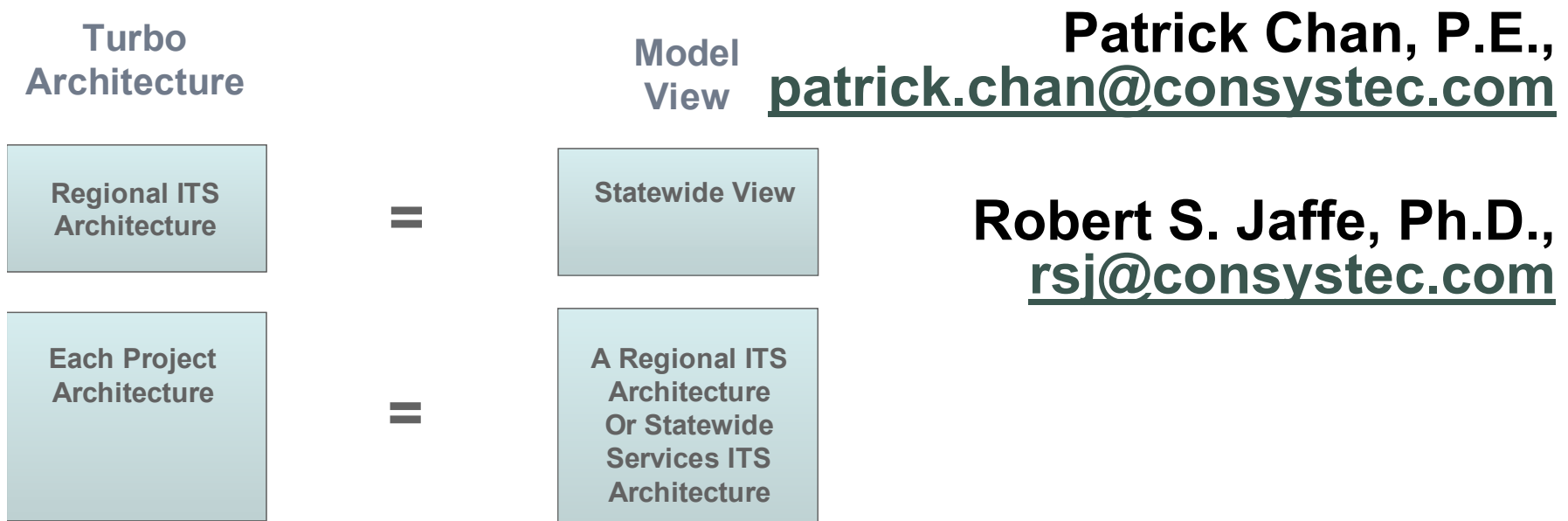


Multiple Regional ITS Architectures in a Single Turbo Architecture Database

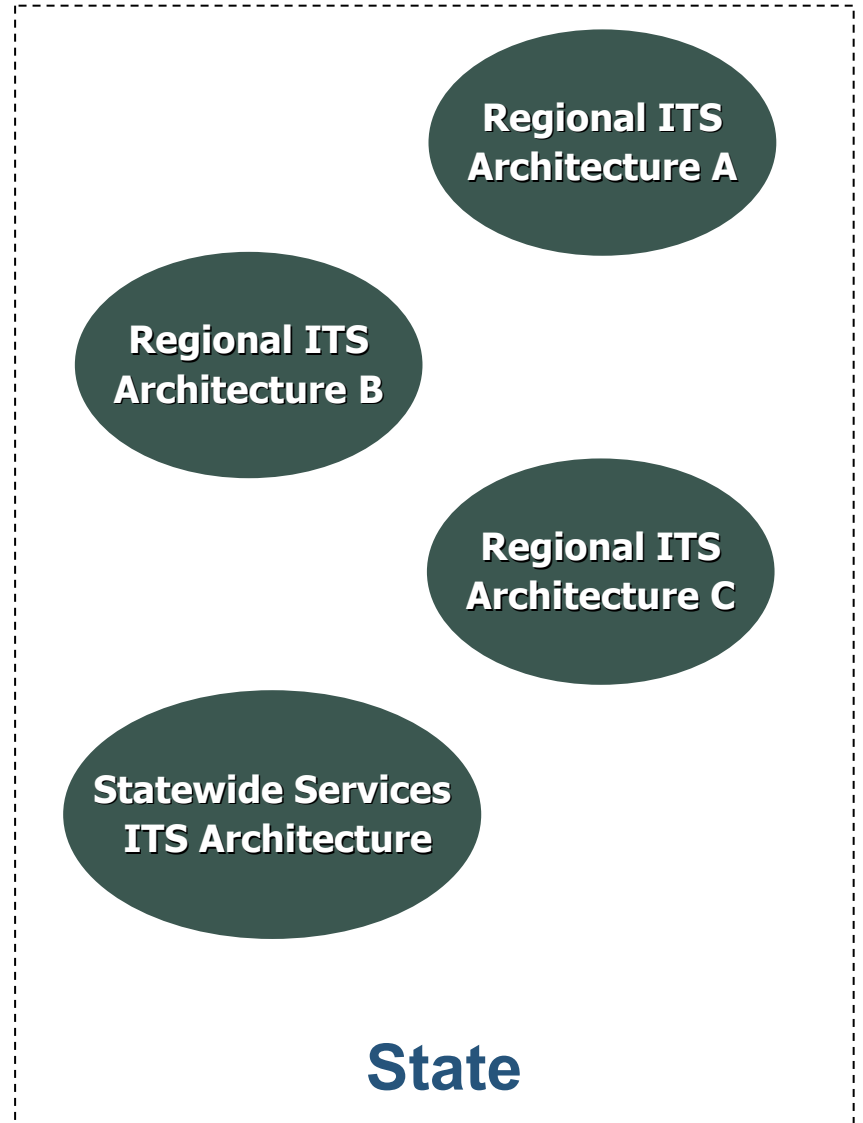


Robert S. Jaffe, Ph.D.,
rsj@consystec.com

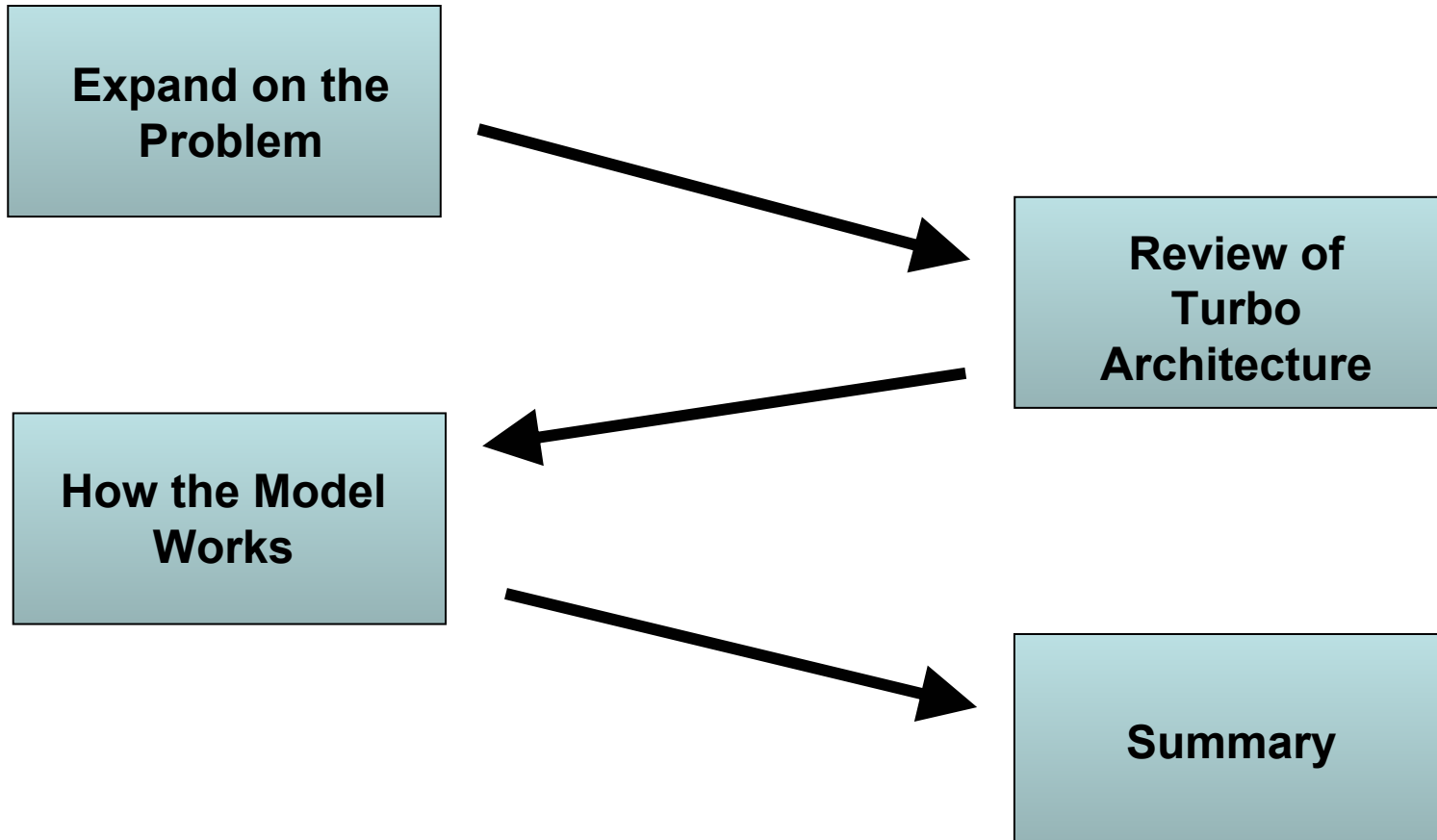
The Problem:



- Where am I in the architectures?
- What are my systems called?



Presentation Outline

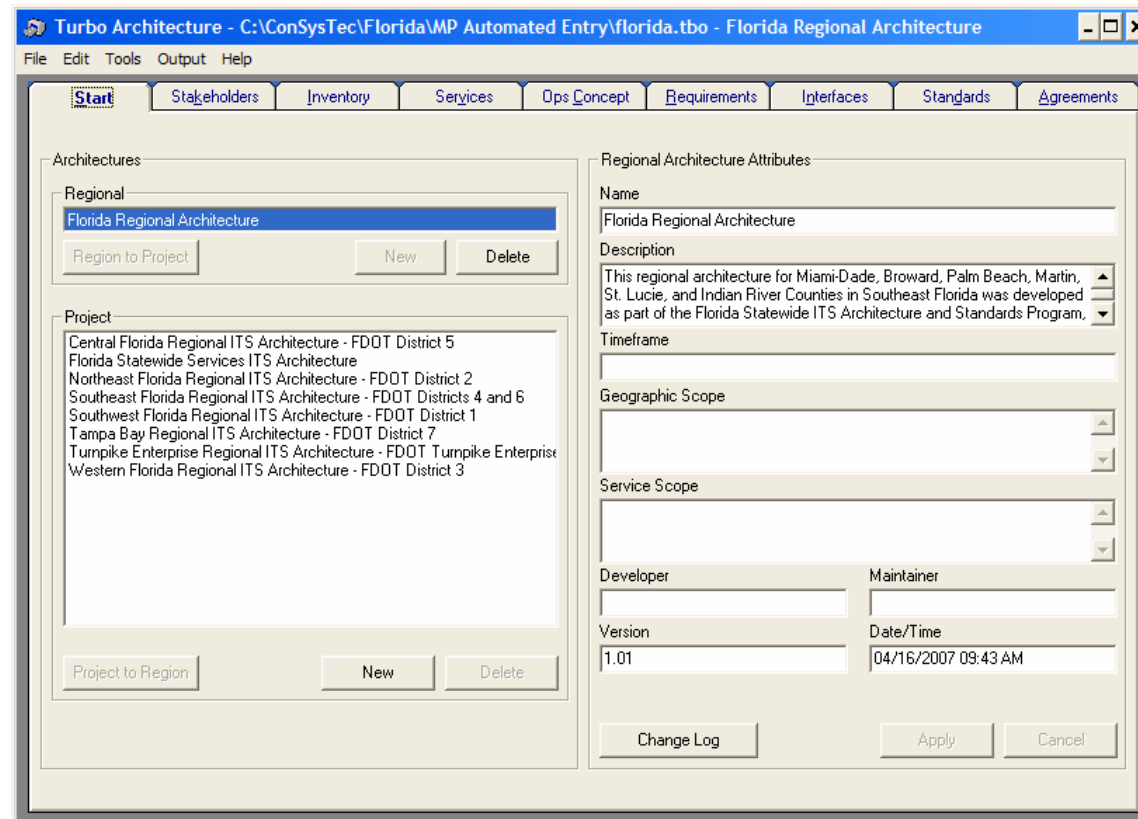


Expand the Problem

- **Each ITS Architecture is generally documented in its own Turbo Architecture Database**
 - Incomplete - A stakeholder may need to open multiple Turbo Architecture databases to get a complete view of its role in ITS within the State.
 - Ambiguity – Differences in how ITS systems are named may lead to confusion.
 - Inconsistent – Interfaces between adjacent architectures may appear in one but not the other
 - Timeframe - Needs are documented at different points in time and may have changed.

Turbo Architecture

- De-Facto standard for encoding and documenting ITS architectures
 - Creates regional ITS architectures
 - Creates one or more project architectures
 - Generates architecture reports and diagrams

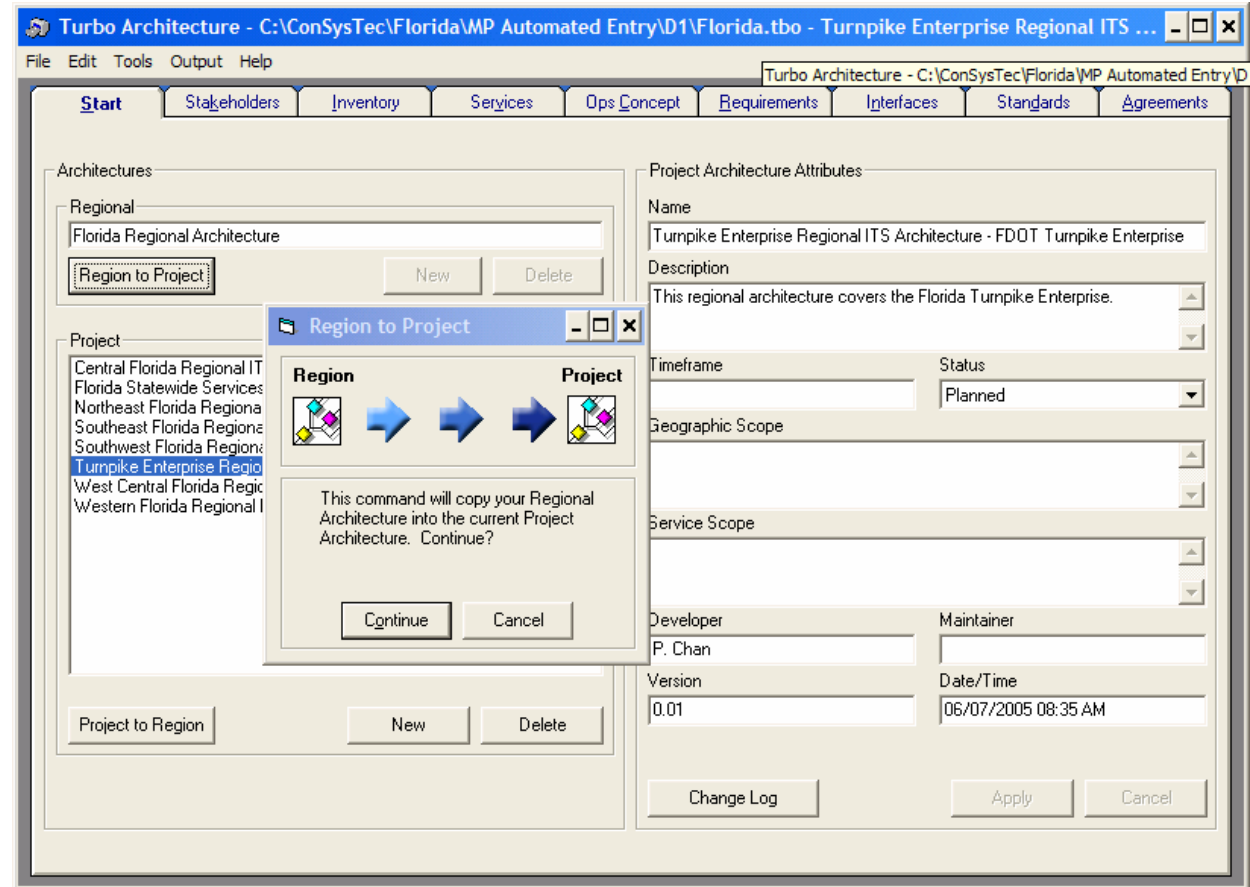


Turbo Architecture

- A Turbo Architecture database can support multiple project architectures.
 - A project architecture contains the elements and information exchange of a single ITS project
 - Is generally a subset of the regional ITS architecture so consistency can be maintained.

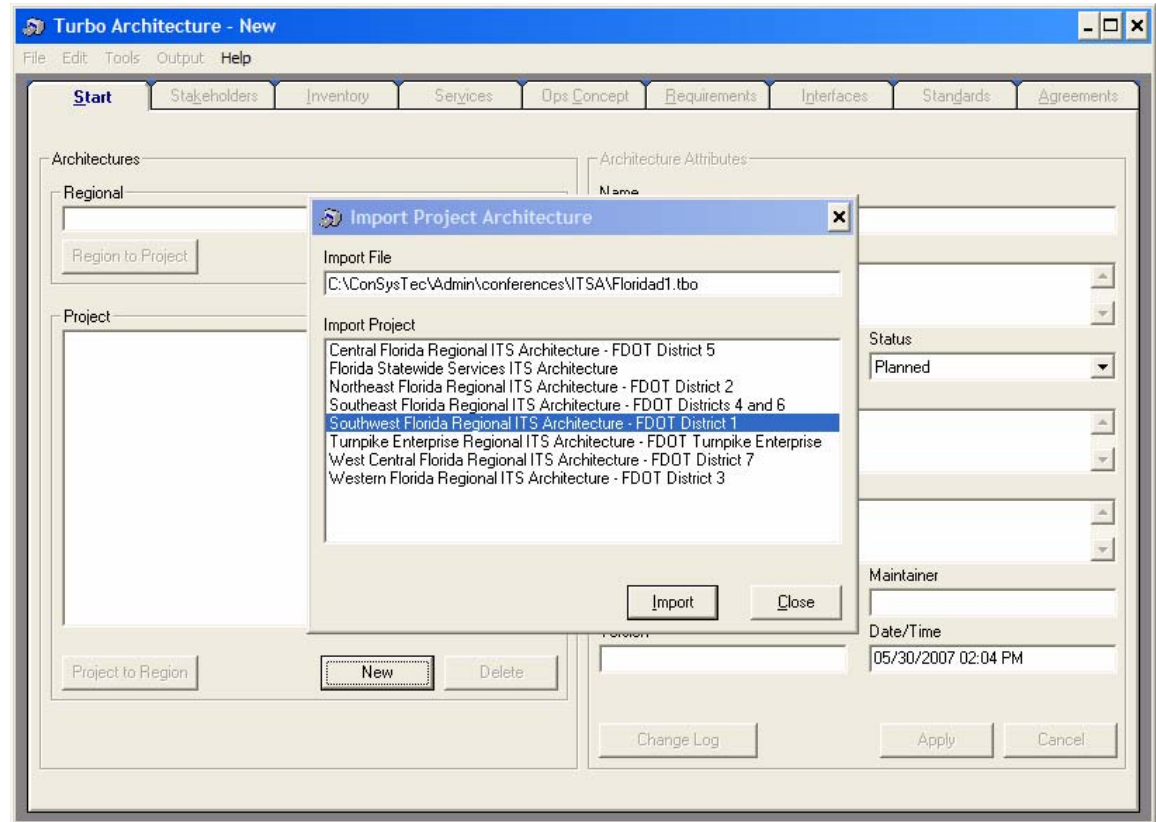
Turbo Architecture

- Allows a regional ITS architecture to be copied to a project architecture



Turbo Architecture

- Allows a project ITS architecture to be imported into a regional ITS architecture



Model

Turbo Architecture

Regional ITS Architecture

=

Model View

Statewide View

Each Project Architecture

=

**A Regional ITS Architecture
Or Statewide
Services ITS
Architecture**

Architectures

Regional

Florida Regional Architecture

Region to Project New Delete

Project

- Central Florida Regional ITS Architecture - FDOT District 5
- Florida Statewide Services ITS Architecture
- Northeast Florida Regional ITS Architecture - FDOT District 2
- Southeast Florida Regional ITS Architecture - FDOT Districts 4 and 6
- Southwest Florida Regional ITS Architecture - FDOT District 1
- Tampa Bay Regional ITS Architecture - FDOT District 7
- Turnpike Enterprise Regional ITS Architecture - FDOT Turnpike Enterprise**
- Western Florida Regional ITS Architecture - FDOT District 3

Project to Region New Delete

Project Architecture Attributes

Name
Turnpike Enterprise Regional ITS Architecture - FDOT Turnpike Enterprise

Description
This regional architecture covers the Florida Turnpike Enterprise.

Timeframe Status
Planned

Geographic Scope

Service Scope

Developer Maintainer
P. Chan

Version Date/Time
1.00 01/31/2006 10:32 AM

Change Log Apply Cancel

Elements

Project Elements | All Elements

- 911 Emergency Call Centers
- Archived Data User Systems
- Central Florida TMC Information Network
- Central Florida Traveler Information System
- CHEMTREC
- Commercial Vehicle
- County and City Roadway Maintenance and Construction Systems
- County Court System
- County EOCs/Warning Points
- County Fire EMS/Rescue Dispatch
- County Fire EMS/Rescue Vehicles
- County Sheriff Dispatch
- County Sheriffs Vehicles
- E-Pass Service Center
- FDLE Headquarters
- FDOT CVO Parking Facilities
- FDOT Safety and Crash Data Collection System
- FDOT Statewide ATIS
- FDOT Statewide C2C Information Network
- FDOT Statewide OIS Enterprise Databases
- FHP Regional Dispatch

Sort By: Element Stakeholder Subsystem/Terminator

New

Delete

Element Attributes

Name

511 Tampa Bay

Description

The system that provides near real-time advanced traveler information in the West Central Florida region around Tampa Bay. This includes the

Stakeholder

FDOT District 7

Selected Subsystems/Terminators | All Subsystems/Terminators

- Information Service Provider (Subsystem)

Selected Projects | All Projects

- Florida Statewide Services ITS Architecture
- Southwest Florida Regional ITS Architecture - FDOT District 1
- Tampa Bay Regional ITS Architecture - FDOT District 7
- Turnpike Enterprise Regional ITS Architecture - FDOT Turnpike Enterprise

Status

Existing

Apply

Cancel

File Edit Tools Output Help

Start Stakeholders Inventory **Services** Ops Concept Requirements Interfaces Standards Agreements

Market Packages

Selected Market Packages | All Market Packages

- ATMS01: Network Surveillance
 - MP ATMS01-1_D8
- ATMS02: Probe Surveillance
 - MP ATMS02-1_D8
- ATMS04: Freeway Control
 - MP ATMS04-1_D8
 - MP ATMS04-2_D8
- ATMS06: Traffic Information Dissemination
 - MP ATMS06-1_D8
- ATMS07: Regional Traffic Control
 - MP ATMS07-1_D8
 - MP ATMS07-2_D8
- ATMS08: Traffic Incident Management System
 - MP ATMS08-1_D8
 - MP ATMS08-2_D8
 - MP ATMS08-3_D8
 - MP ATMS08-4_D8
- ATMS09: Traffic Forecast and Demand Management
 - MP ATMS09-1_D8
- ATMS10: Electronic Toll Collection
 - MP ATMS10-1_D8

New Delete

Market Package Attributes

ID: ATMS01 Status: Planned

Name: Network Surveillance

Description: This market package includes traffic detectors, other surveillance equipment, the supporting field equipment, and fixed-point to fixed-point communications to transmit the collected data back to the Traffic

Selected Elements | All Related Elements

- 511 Tampa Bay
- Broward County Field Equipment
- Broward County ITS Operations Facility
- Central Florida Traveler Information System





















Selected Projects | All Projects

- Central Florida Regional ITS Architecture - FDOT District 5
- Florida Statewide Services ITS Architecture
- Northeast Florida Regional ITS Architecture - FDOT District 2

Comment: FDOT provides monitoring on freeways. Information also collected by Dade County traffic signal system.

Apply Cancel

Project Elements

- Elements | Functional Areas
-  Florida Statewide EOC/Warning Point (SEOC)
 -  FTE Data Collection Field Equipment
 -  FTE Data Dissemination Field Equipment
 -  FTE EOC
 -  FTE Infrastructure Monitoring Equipment
 -  FTE Maintenance and Construction Dispatches
 -  FTE Maintenance and Construction Vehicles
 -  FTE Motorist Aid Call Boxes
 -  FTE DIS Enterprise Database
 -  FTE Operations Center (Pompano)
 -  FTE Operations Center (Turkey Lake)
 -  FTE Portable Workzone Field Equipment
 -  FTE Public Information Office Systems
 -  FTE Road Rangers Safety Patrol Vehicles
 -  FTE Suncoast Motorist Aid Call Boxes
 -  FTE Sunpass Toll Collection System
 -  FTE Sunwatch Center (Turkey Lake)
 -  FTE TEAMS
 -  FTE Traffic Control Field Equipment
 -  FTE Traffic Count Database

Functionality

Specify Functionality



Selected Functional Areas | Related Functional Areas

- Vehicle Location Determination
- Vehicle Toll/Parking Interface
- Vehicle Probe Support

Entity

Autoselect Requirements Type

Apply

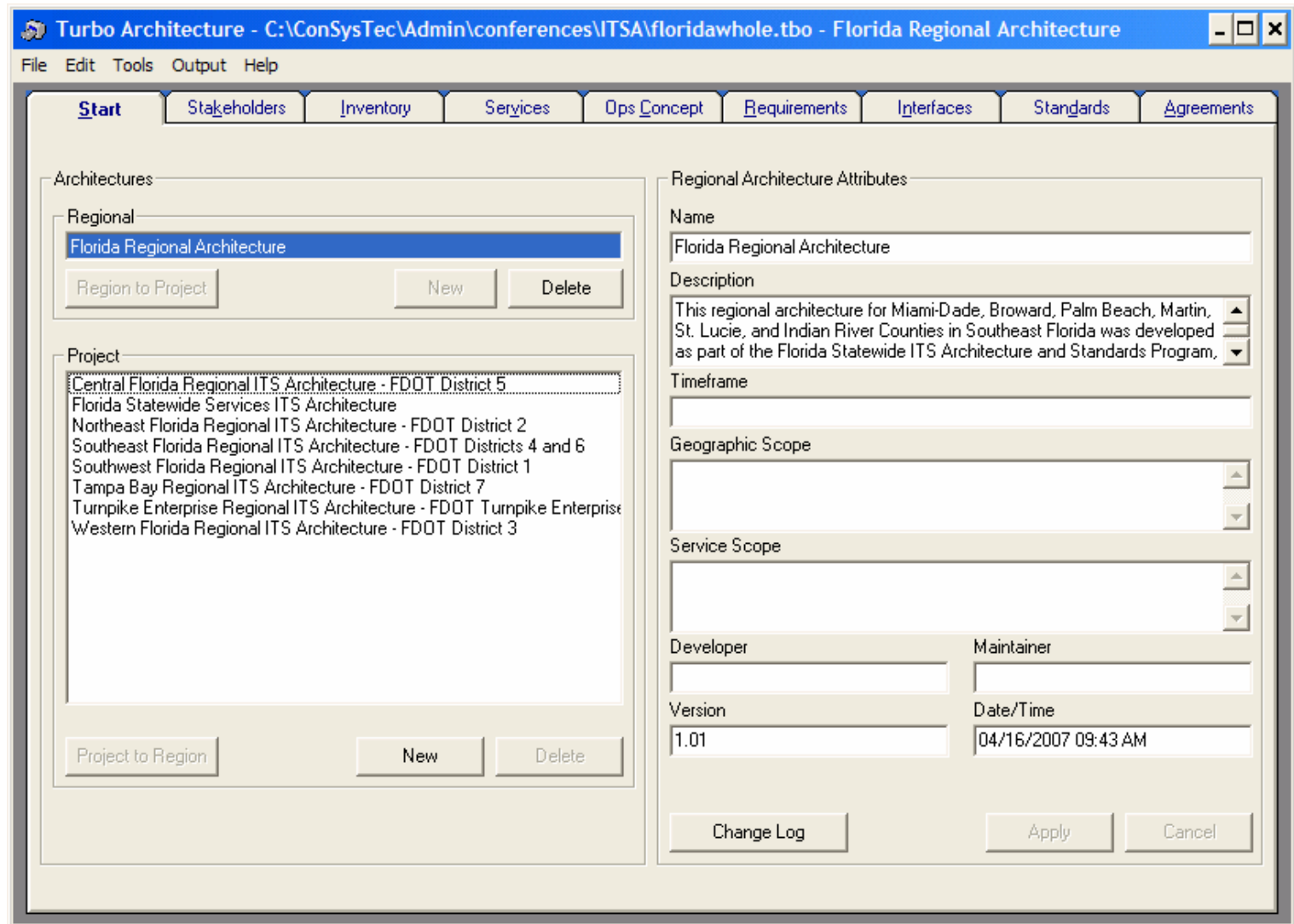
Cancel

All

All Interconnects (2753 Entries)

Element	Element	In Region	Include
▶ 911 Emergency Call Centers	FHP Troop K Dispatch	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
911 Emergency Call Centers	Florida State Incident and Mutual Aid Network	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
911 Emergency Call Centers	FTE EOC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
911 Emergency Call Centers	FTE Operations Center (Pompano)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
911 Emergency Call Centers	FTE Operations Center (Turkey Lake)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
911 Emergency Call Centers	Local Fire/EMS Dispatch	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
911 Emergency Call Centers	Local Police Dispatch	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
911 Emergency Call Centers	Private/Public Ambulance Dispatch	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Archived Data User Systems	FDOT Safety and Crash Data Collection System	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Archived Data User Systems	FDOT Statewide OIS Enterprise Databases	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Archived Data User Systems	FTE TEAMS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Archived Data User Systems	FTE Traffic Count Database	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Central Florida TMC Information Network	FTE Operations Center (Pompano)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Central Florida TMC Information Network	FTE Operations Center (Turkey Lake)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Central Florida Traveler Information System	FTE Operations Center (Pompano)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Central Florida Traveler Information System	FTE Operations Center (Turkey Lake)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CHEMTREC	FTE EOC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CHEMTREC	FTE Operations Center (Pompano)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Model



The screenshot shows the Turbo Architecture application window titled "Turbo Architecture - C:\ConSysTec\Admin\conferences\ITSA\floridawhole.tbo - Florida Regional Architecture". The interface includes a menu bar (File, Edit, Tools, Output, Help) and a tabbed navigation system with tabs for Start, Stakeholders, Inventory, Services, Ops Concept, Requirements, Interfaces, Standards, and Agreements. The main workspace is divided into several sections:

- Architectures:** A tree view showing a "Regional" folder containing "Florida Regional Architecture". Below this is a "Region to Project" button.
- Project:** A list of projects including "Central Florida Regional ITS Architecture - FDOT District 5", "Florida Statewide Services ITS Architecture", "Northeast Florida Regional ITS Architecture - FDOT District 2", "Southeast Florida Regional ITS Architecture - FDOT Districts 4 and 6", "Southwest Florida Regional ITS Architecture - FDOT District 1", "Tampa Bay Regional ITS Architecture - FDOT District 7", "Turnpike Enterprise Regional ITS Architecture - FDOT Turnpike Enterprise", and "Western Florida Regional ITS Architecture - FDOT District 3". Below this list are "Project to Region", "New", and "Delete" buttons.
- Regional Architecture Attributes:** A form for editing the selected architecture.
 - Name:** Florida Regional Architecture
 - Description:** This regional architecture for Miami-Dade, Broward, Palm Beach, Martin, St. Lucie, and Indian River Counties in Southeast Florida was developed as part of the Florida Statewide ITS Architecture and Standards Program.
 - Timeframe:** (Empty text box)
 - Geographic Scope:** (Empty text box with scroll arrows)
 - Service Scope:** (Empty text box with scroll arrows)
 - Developer:** (Empty text box)
 - Maintainer:** (Empty text box)
 - Version:** 1.01
 - Date/Time:** 04/16/2007 09:43 AM

At the bottom of the attributes form are "Change Log", "Apply", and "Cancel" buttons.

Market Packages

Selected Market Packages | All Market Packages

- ATMS01: Network Surveillance
- MP ATMS01-01_D1
- MP ATMS01-01_D46
- MP ATMS01-01_D7
- MP ATMS01-02_D1
- MP ATMS01-02_D46
- MP ATMS01-02_D7
- MP ATMS01-03_D1
- MP ATMS01-03_D46
- MP ATMS01-03_D7
- MP ATMS01-04_D1
- MP ATMS01-04_D46
- MP ATMS01-04_D7
- MP ATMS01-05_D1
- MP ATMS01-05_D46
- MP ATMS01-05_D7
- MP ATMS01-06_D1
- MP ATMS01-06_D46
- MP ATMS01-06_D7
- MP ATMS01-07_D1
- MP ATMS01-07_D46

New

Delete

Market Package Attributes

ID: ATMS01 Status: Planned

Name: Network Surveillance

Description: This market package includes traffic detectors, other surveillance equipment, the supporting field equipment, and fixed-point to fixed-point communications to transmit the collected data back to the Traffic

Selected Elements | All Related Elements

- 511 Tampa Bay
- Alachua County Field Equipment
- Alachua County Traffic Management Center
- Bay County Field Equipment

Selected Projects | All Projects

- Central Florida Regional ITS Architecture - FDOT District 5
- Northeast Florida Regional ITS Architecture - FDOT District 2
- Southeast Florida Regional ITS Architecture - FDOT Districts 4 and 6

Comment: FDOT provides monitoring on freeways. Information also collected by Dade County traffic signal system.

Apply

Cancel

All

Build Connect Flows Group Sort

Filter Elements Limit New Info Present

All Interconnects (4854 Entries)

Element	Element	Include
▶ 1-800-Sunshine	County and City Roadway Maintenance and Construction Systems	<input checked="" type="checkbox"/>
511 Tampa Bay	Cape Coral Minibus Service Dispatch	<input checked="" type="checkbox"/>
511 Tampa Bay	Citrus County Traffic Control Center	<input checked="" type="checkbox"/>
511 Tampa Bay	Citrus County Transit Management Center	<input checked="" type="checkbox"/>
511 Tampa Bay	City of Bradenton Traffic Signal Control System	<input checked="" type="checkbox"/>
511 Tampa Bay	City of Clearwater Traffic Control Center	<input checked="" type="checkbox"/>
511 Tampa Bay	City of Lakeland Advanced Traffic Management System	<input checked="" type="checkbox"/>
511 Tampa Bay	City of Plant City Traffic Control Center	<input checked="" type="checkbox"/>
511 Tampa Bay	City of Sarasota Traffic Signal Control System	<input checked="" type="checkbox"/>
511 Tampa Bay	City of St. Petersburg Traffic Control Center	<input checked="" type="checkbox"/>
511 Tampa Bay	City of Venice Traffic Signal Control System	<input checked="" type="checkbox"/>
511 Tampa Bay	City of Winter Haven Traffic Signal Control System	<input checked="" type="checkbox"/>
511 Tampa Bay	County and City Roadway Maintenance and Construction Systems	<input checked="" type="checkbox"/>
511 Tampa Bay	County EOCs/Warning Points	<input checked="" type="checkbox"/>
511 Tampa Bay	County Fire EMS/Rescue Dispatch	<input checked="" type="checkbox"/>
511 Tampa Bay	County Sheriff Dispatch	<input checked="" type="checkbox"/>
511 Tampa Bay	FDOT 511 System	<input checked="" type="checkbox"/>
511 Tampa Bay	FDOT District 1 I-75 Traffic Management Center (Charlotte, Lee an	<input checked="" type="checkbox"/>

Model – Creating a Common Database

Step 1:

Develop each regional ITS architecture in its own
Turbo Architecture database

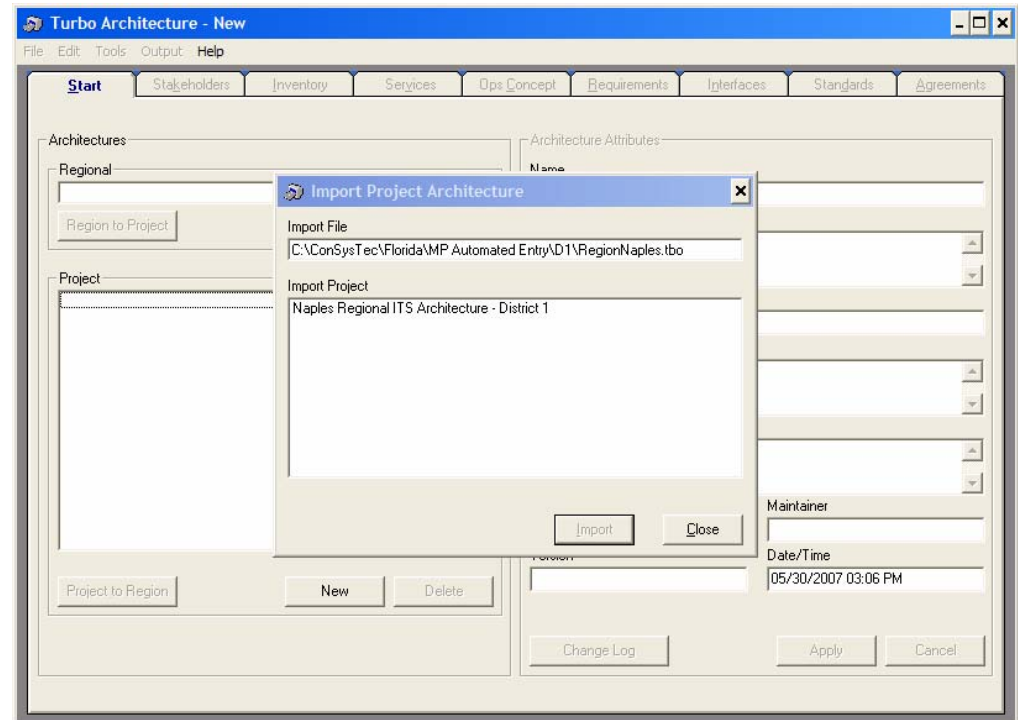
Or

Gather the existing Turbo Architecture databases

Model - Creating a Common Database

Step 2:

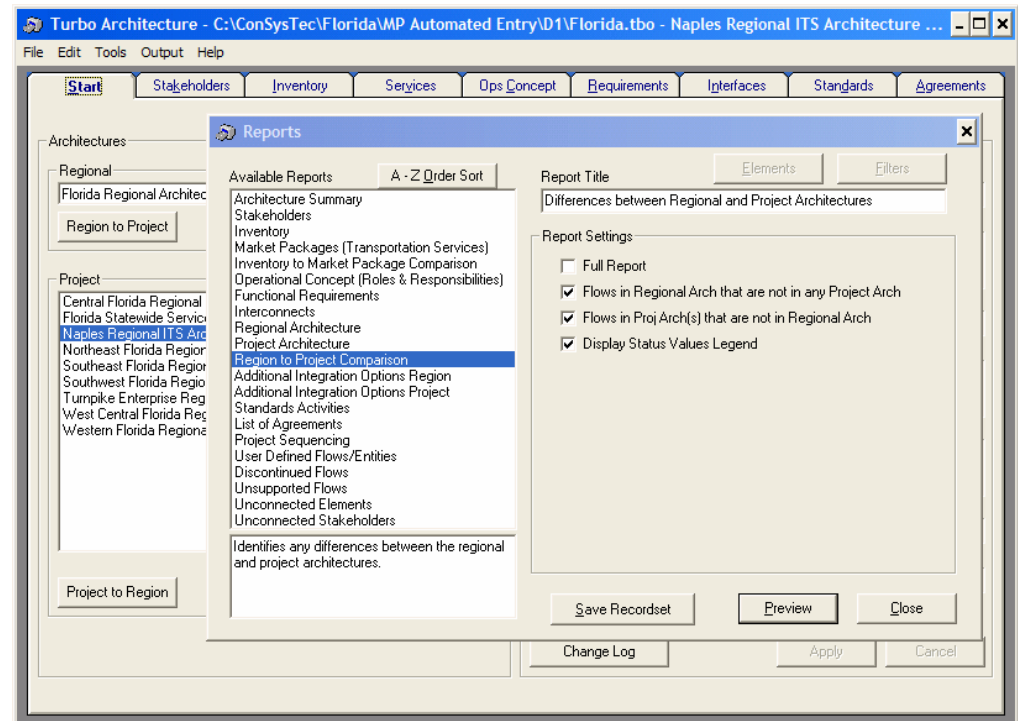
Import each regional ITS architecture as a new project architecture.



Model – Creating a Common Database

Step 3:

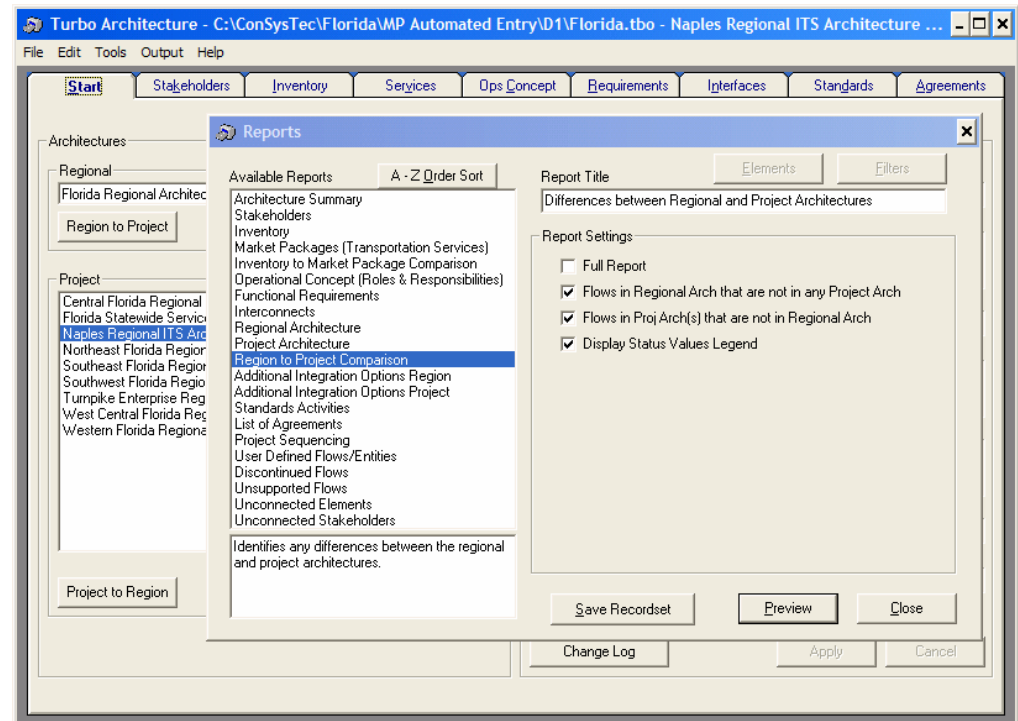
- Print the Reports showing the differences.
- Resolve the nomenclature as necessary.
- Do Not Save!



Model – Creating a Common Database

Step 4:

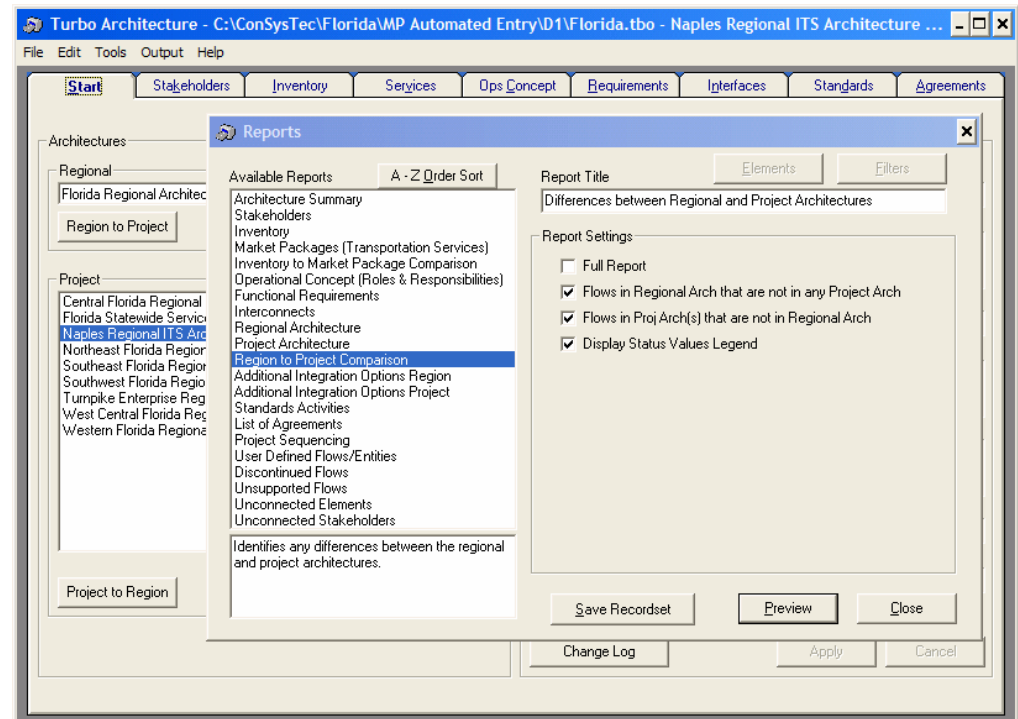
- Resolve the nomenclature (stakeholders & elements) as necessary.
- Save the Project!



Model – Creating a Common Database

Step 5:

- After all the architectures have been saved, establish the baseline.

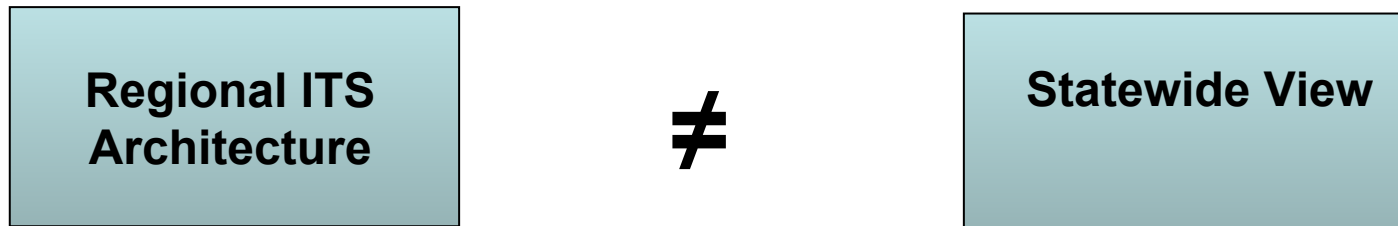


Model – Maintaining the Database

- Nomenclature – Changes to the names of the stakeholders and ITS elements are reflected in ALL architectures.

Model – Maintaining the Database

- Changes to Interfaces
 - Are not automatically reflected in the other level:



- Changes must be merged into the other level!
- Also, deletions must be manually deleted on the other level!

Architectures

Regional

Florida Regional Architecture

Region to Project New Delete

Project

- Central Florida Regional ITS Architecture - FDOT District 5
- Florida Statewide Services ITS Architecture
- Naples Regional ITS Architecture - District 1
- Northeast Florida Regional ITS Architecture - FDOT District 2
- Southeast Florida Regional ITS Architecture - FDOT Districts 4 and 6
- Southwest Florida Regional ITS Architecture - FDOT District 1
- Turnpike Enterprise Regional ITS Architecture - FDOT Turnpike Enterprise
- West Central Florida Regional ITS Architecture - FDOT District 7
- Western Florida Regional ITS Architecture - FDOT District 3**

Project to Region New Delete

Project Architecture Attributes

Name
Western Florida Regional ITS Architecture - FDOT District 3

Description
This regional architecture covers the counties in Florida DOT District 3 in the Florida panhandle. This region includes Escambia, Santa Rosa, Okaloosa, Walton, and Holmes counties and the cities of Pensacola, Fort

Timeframe Status
 Planned

Geographic Scope

Service Scope

Developer Maintainer
P. Chan

Version Date/Time
0.01 06/15/2005 01:41 PM

Change Log Apply Cancel

Summary

Advantages:

- Consistent naming convention throughout the State to represent stakeholders and their ITS elements
- Consistency of architecture flows that cross regional architecture boundaries
- May allow simpler maintenance across the state.
 - E.g., a name change is made only once as opposed to multiple times.
- Single database for State

Summary

Disadvantages:

- Requires a strong configuration control process.
 - Check-in & check-out process
 - Single database for the state

Thank You!

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