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# Introduction

This Update Report for the Florida District 1 Regional ITS Architecture (RITSA) identifies the revisions incorporated into the architecture. The purpose of this District 1 RITSA Update Report is to document revisions made to the District 1 RITSA to support Stakeholder input received through Architecture Change Requests as part of the Florida Intelligent Transportation Systems (ITS) Architecture Support and Maintenance Project.

The Florida ITS Architecture Support and Maintenance Project included the initial major update of the Statewide ITS Architecture (SITSA) and seven RITSAs. Following the major update phase, periodic updates are executed to maintain the architecture content. The FDOT Architecture Team coordinates with the FDOT Project Manager or designee and each applicable District Transportation Systems Management and Operations (TSM&O) Program Engineer or designee for the RITSAs.

# Description of Changes

Fifteen maintenance log items were addressed in the update. Table 1 provides descriptions for each change request that was implemented in the architecture update. A log reference number is provided for each change to relate it to the Architecture Maintenance Log that is provided in Appendix A. Each architecture change that is received is added to the maintenance log for tracking and disposition.

Information about stakeholders, elements, and services is provided to summarize the changes. Some architecture components such as interfaces, roles and responsibilities, functional requirements and standards are numerous and can be reviewed on the architecture website or in the Regional Architecture Development for Intelligent Transportation (RAD-IT) software tool to explore the details of each project.

Table 1 ARCHITECTURE Updates

| **Change** | **Log Ref #** | **Actions Taken / Changes Implemented** |
| --- | --- | --- |
| City of Sarasota ATMS Network Switch Upgrade: Upgrade switches to higher speeds to handle CCTV and CV. | 112 | Added new project architecture: City of Sarasota ATMS Network Switch Upgrade Project - created to show the new communications equipment to interconnect the city’s field and center systems.* Added Elements: City of Sarasota ATMS Network Switches, City of Sarasota CAV Field Equipment, City of Sarasota TMC, City of Sarasota Traffic Control Equipment
* Added Services:
	+ TM01 Infrastructure-Based Traffic Surveillance (City of Sarasota Travel Time/Vehicle Count Infrastructure Deployment)
	+ TM02 Vehicle-Based Traffic Surveillance (City of Sarasota CAV)
* Added Interfaces, selecting the new Network Switches as the Communications element between the center and field elements.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| City of Sarasota Bicycle Detection Deployment: Develop and implement a program to install bike detection to allow for bicyclist to be detected at the stop bar of a traffic signal. | 113 | Added new project architecture: City of Sarasota Bicycle Detection Deployment Project - created to show detection of bicycles at traffic signals.* Added Elements: City of Sarasota TMC, City of Sarasota Traffic Control Equipment
* Added Services:
	+ TM01: Infrastructure-Based Traffic Surveillance (City of Sarasota Bicycle Detection)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| City of Sarasota Connected & Automated Vehicle (CAV) Deployment: Implement CAV technologies throughout the City which offers improved operations and new applications that are not available through traditional communications. This project proposes to improve road user safety by supporting the vision of the region by deploying CAV technologies. The CAV deployment will include safety and mobility focused applications. Additional information at <https://www.fdot.gov/traffic/teo-divisions.shtm/cav-ml-stamp/cv/maplocations/city-of-sarasota-cav-project>  | 114 & 141 | Added new project architecture: City of Sarasota CAV Project - added to include the new CAV equipment interfacing with other FDOT and city systems. * Added Elements: CAV Authorizing Center, CAV-ITS Map Update System, FDOT SCMS, City of Sarasota CAV Field Equipment, City of Sarasota TMC, City of Sarasota Traffic Control Equipment, Private Travelers Personal Computing Devices, and Vehicles
* Added Services:
	+ SU01: Connected Vehicle System Monitoring and Management (City of Sarasota CAV)
	+ SU04: Map Management (City of Sarasota CAV)
	+ SU08: Security and Credentials Management (City of Sarasota CAV)
	+ TM02: Vehicle-Based Traffic Surveillance (City of Sarasota CAV)
	+ TM04: Connected Vehicle Traffic Signal System (City of Sarasota CAV)
	+ VS12: Pedestrian and Cyclist Safety (City of Sarasota CAV)
	+ VS13: Intersection Safety Warning and Collision Avoidance (City of Sarasota CAV)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| City of Sarasota Fiber Optic Cable Expansion. Upgrade existing twisted pair copper cable to fiber optic cable. Also expand to areas that currently do not have fiber optic cable existing. Expands the existing network to allow more connectivity and redundancy within the network. | 115 | Added new project architecture: City of Sarasota Fiber Optic Cable Expansion Project - created to show the new communications. equipment to interconnect the city’s field and center systems.* Added Elements: City of Sarasota Fiber Optic Network, City of Sarasota TMC, City of Sarasota Traffic Control Equipment
* Selected Services:
	+ TM03: Traffic Signal Control (City of Sarasota)
	+ TM06: Traffic Information Dissemination (City of Sarasota)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| City of Sarasota Passive Pedestrian Detection. Develop a 3 tier ped treatment standard (Recall, Passive, Buttons) and implement the passive systems. Captures pedestrian activity that has not activated a manual pedstrian detection device. | 116 | Added new project architecture: City of Sarasota Passive Pedestrian Detection Project - created to show the field equipment detecting pedestrians approaching intersections and crosswalks. * Added Elements: City of Sarasota TMC, City of Sarasota Traffic Control Equipment, Vulnerable Road Users, Pedestrians
* Selected Services:
	+ TM03: Traffic Signal Control (Passive Pedestrian Detection)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| City of Sarasota Smart City Initiative. The smart city concept integrates information and communication technology (ICT) and various physical devices connected to the IoT (Internet of things) network to optimize the efficiency of city operations and services and connect to citizens. Smart city technology allows city officials to interact directly with community and City infrastructure, monitor what is happening in the City and how the City is evolving, and provide long -term resiliency. Fosters innovation and economic growth by bringing together through Technology; People; Businesses; Organizations; and Systems. | 117 | Added new project architecture: City of Sarasota Smart City Initiative Project - created to show the data collection technologies and center-to-center exchanges among regional agencies to support overall transportation management with the dissemination of information to the travelers. * Added Elements: City of Sarasota TMC, County and City Public Information System, Local Fire/EMS Dispatch, Local Venue Event Scheduling System, Newspapers, Radio, Television Stations, Off-street Parking System, Private Sector Traveler Information Services, Private Travelers Personal Computing Devices, Sarasota County SCAT Dispatch, Sarasota County TMC, Transit Kiosks
* Selected Services:
	+ PT14: Multi-modal Coordination (City of Sarasota Smart City Initiative)
	+ TI02: Personalized Traveler Information (City of Sarasota Smart City Initiative)
	+ TI06: Dynamic Ridesharing and Shared Use Transportation (City of Sarasota Smart City Initiative)
	+ TM07: Regional Traffic Management (City of Sarasota Smart City Initiative)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| City of Sarasota Smart School Zones. Upgrade existing school zones to equipment that can be remotely operated and monitored. Includes the ability to remotely monitor and operate school zone flashers. | 118 | Added new project architecture: City of Sarasota Smart School Zones Project - created to show the field to center interfaces for detecting pedestrians and warning motorists of reduced speed zones.* Added Elements: City of Sarasota TMC, City of Sarasota Traffic Control Equipment
* Selected Services:
	+ TM17: Speed Zone Warning and Control (City of Sarasota Smart School Zones)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| City of Sarasota Traffic Signal Controller Upgrade. Replace existing traffic signal controllers with an Advanced Transportation Controller (ATC). This will allow for additional controller features to be implimented through out the City. | 119 | Added new project architecture: City of Sarasota Smart School Zones Project - created to show the field to center interfaces for detecting pedestrians and warning motorists of reduced speed zones.* Added Elements: City of Sarasota TMC, City of Sarasota Traffic Control Equipment
* Selected Services:
	+ TM17: Speed Zone Warning and Control (City of Sarasota Smart School Zones)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| City of Sarasota Travel Time/Vehicle Count Infrastructure Deployment. | 120 | Added new project architecture: City of Sarasota Travel Time/Vehicle Count Infrastructure Deployment Project - created to show the field to center interfaces for measuring and recording travel times along city corridors.* Added Elements: City of Sarasota TMC, City of Sarasota Traffic Control Equipment, Sarasota/Manatee MPO Data Dashboard/Data Management Application, Vehicles
* Selected Services:
	+ DM01: ITS Data Warehouse (City of Sarasota Travel Time/Vehicle Count Infrastructure Deployment)
	+ TM01: Infrastructure-Based Traffic Surveillance (City of Sarasota Travel Time/Vehicle Count Infrastructure Deployment)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| FDOT District 1 Bee Ridge Smart Signal Project in Sarasota County. This project is intended to apply technology improvements to address safety issues along Bee Ridge Rd (SR 758) corridor between US 41 and I-75 in Sarasota County. The project will add advance detection for dilemma zone protection on all major street approaches; replace stop bar detection on all approaches; install closed-circuit television (CCTV) cameras at intersections that do not presently have this coverage; and install connected vehicle infrastructure (roadside units) to transmit MAP and SPaT messages. Service packages and elements supporting this project are already in the RITSA. Additional information at <https://www.fdot.gov/traffic/teo-divisions.shtm/cav-ml-stamp/cv/maplocations/bee-ridge-corridor-smart-signals> | 134 & 147 | Added new project architecture: FDOT District 1 Bee Ridge Smart Signal Project in Sarasota County - created to show additional detection and signal control interfacing to the centers along with new connected/automated vehicle data collection, traffic signal control, mapping, and security services. * Added Elements: CAV Authorizing Center, CAV-ITS Map Update System, FDOT SCMS, Sarasota County CAV Field Equipment, Sarasota County Field Equipment, Sarasota County TMC, Commercial Vehicle, Vehicles
* Selected Services for FDOT District 1 Bee Ridge Smart Signal Project in Sarasota County:
	+ SU01: Connected Vehicle System Monitoring and Management (FDOT District 1 Bee Ridge Smart Signal Project in Sarasota County)
	+ SU04: Map Management service package (FDOT District 1 Bee Ridge Smart Signal Project in Sarasota County)
	+ SU08: Security and Credentials Management (FDOT District 1 Bee Ridge Smart Signal Project in Sarasota County)
	+ TM03: Traffic Signal Control (FDOT District 1 Bee Ridge Smart Signal Project in Sarasota County)
	+ TM04: Connected Vehicle Traffic Signal System (FDOT District 1 Bee Ridge Smart Signal Project in Sarasota County)
	+ VS13: Intersection Safety Warning and Collision Avoidance (FDOT District 1 Bee Ridge Smart Signal Project in Sarasota County)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| FDOT District 1 Wildlife Detection and Warning. Add new project FPID: 448693-1-52-01, SR 29 Wildlife Detection in Collier County to FDOT D1 Projects list. Project includes wildlife detection sensors and a combination of roadside and in-vehicle warning devices at the project locations.The warning system is expected to:Detect animal presence on the roadway and near roadway Activate warning beacons to alert driversCollect and store the data of animal detection and make the data available for performance evaluationAllow the Department to independently operate the system without a third party’s involvement at the completion of the project.  | 144 | Added new project architecture: FDOT District 1 Wildlife Detection and Warning - created to show the wildlife detection/warning devices with interfaces to other field equipment and centers for recording and warning other approaching drivers, including CAVs.* Added Elements: FDOT District 1 CAV Field Equipment, FDOT District 1 Field Equipment, FDOT District 1 Wildlife Detection System, FDOT District 1 SWIFT Center, SunGuide Data Archiving, Vehicles, Wildlife Animal
* Selected Services:
	+ TI07: In-Vehicle Signage (FDOT D1 Wildlife Detection and Warning)
	+ TM12: Dynamic Roadway Warning (FDOT D1 Wildlife Detection and Warning)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| FDOT District 1 Automated Shuttle Service. Add new project for the deployment of a District 1 Automated Transit Shuttle Service in Lee County to FDOT D1 Projects list. Project to provide an estimated 5 years of D1 Automated Shuttle Service in Lee County. Stakeholders: LeeTran, Lee County DOT, City of Ft Myers. | 145 | Added new project architecture: FDOT District 1 Automated Shuttle Service - created to show the devices and interfaces for an autonomous transit system.* Added Elements: FDOT SCMS, City of Fort Myers Traffic Monitoring System, City of Fort Myers Field Equipment, Lee County CAV Field Equipment, Lee County-Wide Advanced Traffic Management System; LeeTran AV Shuttle Vehicles
* Selected Services:
	+ SU08: Security and Credentials Management (FDOT District 1 Automated Shuttle Service)
	+ SU09: Device Certification and Enrollment (FDOT District 1 Automated Shuttle Service)
	+ PT01: Transit Vehicle Tracking (FDOT District 1 Automated Shuttle Service)
	+ VS16: Automated Vehicle Operations (FDOT District 1 Automated Shuttle Service)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |
| LeeTran US 41 Traffic Signal Priority (TSP). Add new project to implement TSP within the US 41 FRAME project area using the CV elements deployed. Procure and install On-Board Units (OBU's) that will integrate Signal Priority elements within the US 41 FRAME project. This project is standalone and is intended to demonstrate the viability of using CV equipment for TSP.  | 146 | Added new project architecture: LeeTran US 41 Traffic Signal Priority (TSP) - created to show the devices and vehicle-to-field based interfaces. * Added Elements: CAV-ITS Map Update System, FDOT SCMS, Lee County and Cities Field Equipment, Lee County CAV Field Equipment, Lee County-Wide Advanced Traffic Management System, LeeTran Fixed Route Transit Vehicles, LeeTran Transit Operations Center
* Selected Services:
	+ PT09: Transit Signal Priority (LeeTran US 41 Traffic Signal Priority)
	+ SU04: Map Management (LeeTran US 41 Traffic Signal Priority)
	+ SU08: Security and Credentials Management (LeeTran US 41 Traffic Signal Priority)
* Added Interfaces.
* Added Roles and Responsibilities.
* Added Functional Requirements.
* Selected Communications Solutions.
 |

Appendix A: Architecture Maintenance Log (District 1 RITSA)

The maintenance log in Table 2 provides the District 1 RITSA maintenance items considerations for the update

Table . Architecture Maintenance Log (District 1 RITSA)

| **#** | **Date** | **Architecture** | **Source** | **Contact** | **Change** | **Disposition** | **Recommend Maintenance** | **Incorporated** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 112 | 3/17/2022 | D1 RITSA | Change Request Form: City of Sarasota | Nikesh Patel / City of Sarasota | ATMS Network Switch Upgrade: Upgrade switches to higher speeds to handle CCTV and CV. | Add new project. | Yes | Yes |
| 113 | 3/17/2022 | D1 RITSA | Change Request Form: City of Sarasota | Nikesh Patel / City of Sarasota | Bicycle Detection Deployment: Develop and implement a program to install bike detection to allow for bicyclist to be detected at the stop bar of a traffic signal.  | Add new project.  | Yes | Yes |
| 114 | 3/17/2022 | D1 RITSA | Change Request Form: City of Sarasota | Nikesh Patel / City of Sarasota | Connected Vehicle (CV) Deployment: Implement CV technologies throughout the City. CV technology offers improved operations and new applications that are not available through traditional communications.  | Add new project. | Yes | Yes |
| 115 | 3/17/2022 | D1 RITSA | Change Request Form: City of Sarasota | Nikesh Patel / City of Sarasota | Fiber Optic Cable Expansion: Upgrade existing twisted pair copper cable to fiber optic cable. Also expand to areas that currently do not have fiber optic cable existing. Expands the existing network to allow more connectivity and redundancy within the network.  | Add new project. | Yes | Yes |
| 116 | 3/17/2022 | D1 RITSA | Change Request Form: City of Sarasota | Nikesh Patel / City of Sarasota | Passive Pedestrian Detection: Develop a 3 tier ped treatment standard (Recall, Passive, Buttons) and implement the passive systems. Captures pedestrian activity that has not activated a manual pedestrian detection device. | Add new project.  | Yes | Yes |
| 117 | 3/17/2022 | D1 RITSA | Change Request Form: City of Sarasota | Nikesh Patel / City of Sarasota | Smart City Initiative: The smart city concept integrates information and communication technology (ICT) and various physical devices connected to the IoT (Internet of things) network to optimize the efficiency of city operations and services and connect to citizens. Smart city technology allows city officials to interact directly with community and City infrastructure, monitor what is happening in the City and how the City is evolving, and provide long -term resiliency. Fosters innovation and economic growth by bringing together through Technology; People; Businesses; Organizations; and Systems.  | Add new project.  | Yes | Yes |
| 118 | 3/17/2022 | D1 RITSA | Change Request Form: City of Sarasota | Nikesh Patel / City of Sarasota | Smart School Zones: Upgrade existing school zones to equipment that can be remotely operated and monitored. Includes the ability to remotely monitor and operate school zone flashers. | Add new project. | Yes | Yes |
| 119 | 3/17/2022 | D1 RITSA | Change Request Form: City of Sarasota | Nikesh Patel / City of Sarasota | Traffic Signal Controller Upgrade: Replace existing traffic signal controllers with an Advanced Transportation Controller (ATC). This will allow for additional controller features to be implemented throughout the City. | Add new project. | Yes | Yes |
| 120 | 3/17/2022 | D1 RITSA | Change Request Form: City of Sarasota | Nikesh Patel / City of Sarasota | Travel time / Vehicle Count Infrastructure Deployment: Install permanent vehicle counters to provide data for planning and evaluation. Install travel time detectors to provide data to the Regional website. Installs equipment to allow the City to better manage traffic. | Add new project. | Yes | Yes |
| 134 | 10/13/2022 | D1 RITSA | Change Request Form: FDOT District 1 | Steven Davis / FDOT | Bee Ridge Smart Signal Project in Sarasota County: This project is intended to apply technology improvements to address safety issues along Bee Ridge Rd (SR 758) corridor between US 41 and I-75 in Sarasota County. The project will add advance detection for dilemma zone protection on all major street approaches; replace stop bar detection on all approaches; install closed-circuit television (CCTV) cameras at intersections that do not presently have this coverage; and install connected vehicle infrastructure (roadside units) to transmit MAP and SPaT messages. Service packages and elements supporting this project are already in the RISTA. Additional information at <https://www.fdot.gov/traffic/teo-divisions.shtm/cav-ml-stamp/cv/maplocations/bee-ridge-corridor-smart-signals>.  | Add new project. | Yes | Yes |
| 141 | 10/13/2022 | D1 RITSA | Change Request Form: FDOT District 1 | Steven Davis / FDOT | City of Sarasota CAV Project: This project proposes to improve road user safety by supporting the vision of the region by deploying CAV technologies. The CAV deployment will include safety and mobility focused applications. Additional information at <https://www.fdot.gov/traffic/teo-divisions.shtm/cav-ml-stamp/cv/maplocations/city-of-sarasota-cav-project>.  | Project similar in scope to City of Sarasota CV Deployment Project requested as item 114 in maintenance log. This change addresses both items. | Yes | Yes |
| 144 | 10/25/2022 | D1 RITSA | Change Request Form: FDOT District 1 | Belinda Thomas / FDOT District 1 | SR 29 Wildlife Detection Project: Add new project FPID: 448693-1-52-01, SR 29 Wildlife Detection in Collier County to FDOT D1 Projects list. Project includes wildlife detection sensors and a combination of roadside and in-vehicle warning devices at the project locations. The warning system is expected to:* Detect animal presence on the roadway and near roadway
* Activate warning beacons to alert drivers
* Collect and store the data of animal detection and make the data available for performance evaluation
* Allow the Department to independently operate the system without a third party’s involvement at the completion of the project.
 | Add new project. | Yes | Yes |
| 145 | 10/25/2022 | D1 RITSA | Change Request Form: FDOT District 1 | Belinda Thomas / FDOT District 1 | FDOT District 1 Automated Shuttle Service Project: Add new project for the deployment of a District 1 Automated Transit Shuttle Service in Lee County to FDOT D1 Projects list. Project to provide an estimated 5 years of D1 Automated Shuttle Service in Lee County. Stakeholders: LeeTran, Lee County DOT, City of Ft Myers. | Add new project. | Yes | Yes |
| 146 | 10/25/2022 | D1 RITSA | Change Request Form: FDOT District 1 | Belinda Thomas / FDOT District 1 | LeeTran US 41 Traffic Signal Priority (TSP) Project: Add new project to implement TSP within the US 41 FRAME project area using the CV elements deployed. LeeTran proposed a project to procure and install On-Board Units (OBU's) that will integrate Signal Priority elements within the US 41 FRAME project. This project was funded by the TAPs-LA program in summer 2021. Stakeholders: LeeTran, Lee County DOT. The present interconnect and information flow diagrams for the "LeeTran TSP" project reflect a centralized approach. This project is standalone and is intended to demonstrate within Florida the viability of using CV equipment for this system. No modifications to the LeeTran TSP or the US 41 FRAME diagrams are proposed at this time, though if this project is successful and desirable for expansion, it will require revision of those diagrams at that time.  | Add new project. | Yes | Yes |
| 147 | 10/25/2023 | D1 RITSA | Change Request Form: FDOT District 1 | Belinda Thomas / FDOT District 1 | SR 758/Bee Ridge Rd. Smart Signals Project: Add new project for detection, CCTV, and connected vehicle (CV) improvements along SR 758/Bee Ridge Rd. in Sarasota County. Stakeholders: Sarasota County Public Works. 13 intersections from east of US 41 to I-75 (on SR 758), plus one intersection at Mauna Loa on county segment. | This change is a duplicate of change request 134. | Yes | Yes |