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|  | Florida ITS Architecture Support and Maintenance Project  2023-2024 Draft District 5 Update Report  Version 1.0 |

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# Introduction

This Update Report for the Florida District 5 Regional ITS Architecture (RITSA) identifies the revisions incorporated into the architecture. The purpose of this District 5 RITSA Update Report is to document revisions made to the District 5 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 Florida Department of Transportation (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

Twelve maintenance log items was 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 Altamonte Springs Autonomous Vehicle (AV) Shuttle: The City will contract with a private vendor for the planning, deployment, operation, and maintenance of a safe autonomous vehicle transportation system (BEEP). This AV Shuttle is planned to be deployed in three (3) phases. Phase I will not interact with any ITS for FDOT infrastructure and have no communication with service packages. Phases II and III may expand to interact with service package VS16. New RITSA Change Request forms will be submitted for Phase II and III in years 2 and 3 respectively. See attached AV Shuttle Flow Chart. | 150 | Added new project: City of Altamonte Springs Autonomous Vehicle Shuttle Project   * Included Stakeholders: City of Altamonte Springs, Travelers * Added Element: City of Altamonte Springs AV - Beep Command Center, City of Altamonte Springs AV Shuttle, City of Altamonte Springs AV Shuttle Roadside Equipment * Included Existing Elements: Private Travelers Personal Computing Devices * Added Services:   + PT01: Transit Vehicle Tracking (City of Altamonte Springs AV Shuttle)   + PT04: Transit Fare Collection Management (City of Altamonte Springs AV Shuttle)   + PT07: Transit Passenger Counting (City of Altamonte Springs AV Shuttle)   + TI04: Trip Planning and Payment (City of Altamonte Springs AV Shuttle)   + VS16: Automated Vehicle Operations (City of Altamonte Springs Autonomous Vehicle Shuttle) * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |
| Lake County CV Smart Signal and VZERO deployments: Adding "Lake County CV Smart Signal and VZERO Projects" as new CAV Deployment. This project should mirror the Seminole Countywide SPaT Deployment (Connected Vehicle Pilot on SR 434), replacing "Seminole County" with "Lake County".  Adding new data flow for TM03 - Lake County D5 - CV Smart Signal --Lake County Field Equipment --> FDOT RTMC ATMC --> Lake County TMC | 151 | Added new project: Lake County CV Smart Signal and VZERO Projects   * Included Stakeholders: Counties and Cities, FDOT Central Office (CO), FDOT District 5, Lake County, Travelers * Added Element: Lake County CAV Field Equipment, * Included Existing Elements: CAV-ITS Map Update System, County and City Public Information System, FDOT District 5 RTMC, FDOT SCMS, Lake County Field Equipment, Lake County TMC, Vehicle * Added Services:   + SU04: Map Management (Lake County CV Smart Signal and VZERO Projects)   + SU08: Security and Credentials Management (Lake County CV Smart Signal and VZERO Projects)   + TI01: Broadcast Traveler Information (Lake County CV Smart Signal and VZERO Projects)   + TM04: Connected Vehicle Traffic Signal System (Lake County CV Smart Signal and VZERO Projects) * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |
| FDOT District 5 Critical Railroad Smart Monitoring Project: The state will design and install ITS/CAV devices at 28 railroad crossings on state roads or near interstates where a faulty crossing could significantly impact mobility. The devices will alert nearby travelers of potential hazards (via RSU broadcast) and alert operators of potential malfunction. | 152 | Added new project: FDOT District 5 Critical Railroad Smart Monitoring Project   * Included Stakeholders: County and City Emergency Management Agencies, FDOT CO, FDOT District 5, Government Agencies, Rail Operator, Travelers * Added Element: (no new elements) * Included Existing Elements: Archived Data User Systems, CAV-ITS Map Update System, County EOCs/Warning Points, FDOT District 5 CAV Field Equipment, FDOT District 5 Field Equipment, FDOT District 5 RTMC, FDOT SCMS, Government Reporting Systems, Rail Operations Centers, Rail Operators Wayside Equipment, Vehicle * Added Services:   + DM01: ITS Data Warehouse (FDOT District 5 Critical Railroad Smart Monitoring Project)   + DM02: Performance Monitoring (FDOT District 5 Critical Railroad Smart Monitoring Project)   + SU04: Map Management (FDOT District 5 Critical Railroad Smart Monitoring Project)   + SU08: Security and Credentials Management (FDOT District 5 Critical Railroad Smart Monitoring Project)   + TI01: Broadcast Traveler Information (FDOT District 5 Critical Railroad Smart Monitoring Project)   + TM01: Infrastructure-Based Traffic Surveillance (FDOT District 5 Critical Railroad Smart Monitoring Project)   + TM08: Traffic Incident Management System (FDOT District 5 Critical Railroad Smart Monitoring Project)   + TM13: Standard Railroad Grade Crossing (FDOT District 5 Critical Railroad Smart Monitoring Project)   + TM14: Advanced Railroad Grade Crossing (FDOT District 5 Critical Railroad Smart Monitoring Project)   + TM15: Railroad Operations Coordination (FDOT District 5 Critical Railroad Smart Monitoring Project)   + VS08: Queue Warning (FDOT District 5 Critical Railroad Smart Monitoring Project)   + VS13: Intersection Safety Warning and Collision Avoidance (FDOT District 5 Critical Railroad Smart Monitoring Project) * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |
| Open Payments on fixed route and demand response (NeighborLink): LYNX is implementing Open Payments for fare payment on fareboxes on all fixed route buses and demand response (NeighborLink) vehicles. This allows fare payment using the VISA, MasterCard, and Discover Card network by accepting the contactless Tap to Pay. Also included are any devices that allow Tap to Pay via these networks (cell phone with nearfield and wearables). This will involve the Open Payment media interacting with the farebox to pay the fare. The farebox will communicate via cellular to the back office system which then processes the charge through the merchant network. Request for authorization and for payment goes from farebox to back office and from back office to merchant network, authorization and electronic payment from the merchant network to the back office with authorization back to the farebox. Also credit card number black lists are communicated from the back office to the farebox. All of this communication is via cellular network (4G). | 153 | Added new project: LYNX Open Payment System   * Included Stakeholders: Financial Institutions, LYNX, SunRail, Travelers * Added Element: (No new elements) * Included Existing Elements: Financial Institutions, LYNX Transit Vehicles, LYNX Transportation Center, Private Travelers Personal Computing Devices, SunRail Operations Control Center, SunRail Rail Vehicles * Added Services:   + PT04: Transit Fare Collection Management (LYNX Open Payment System) * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |
| Updating link to Space Coast TPO's Long Range Transportation Plan. Replacing current link to the SCTPO LRTP with the correct link: <https://www.spacecoasttpo.com/what-we-do/planning/core-work-products/long-range-transportation-plan>. The current link under the D5 Architecture Planning Resources tab that points to the SCTPO LRTP is no longer valid. | 154 | Updated the link on the D5 RITSA Resources page. |
| FDOT I-4 Beyond the Ultimate (BtU) Segments 1A/1B/2 Project & FDOT I-4 BtU Segments 3/4 Project: Modify these two District 5 ITS Architecture Projects to include the Smart Work Zone service package modifications as described in Maintenance Items 173-177. Updating FDOT I-4 BtU Segments 1A/1B/2 Project and FDOT I-4 BtU Segments 3/4 Project to incorporate new/revised Service Packages:   * MC06: Work Zone Management -- Smart Work Zone updates * MC07: Work Zone Monitoring (FDOT District 5) -- new * TM06: Traffic Information Dissemination -- Smart Work Zone updates * TM12: Dynamic Roadway Warning -- Smart Work Zone updates * VS08: Queue Warning -- Smart Work Zone updates   The new and updated service packages listed above will be critical in monitoring safety and congestion along I-4 BtU segment projects during construction. | 172 | Updates made to the following 2 project architectures:   * FDOT I-4 BtU Segments 1A/1B/2 * FDOT I-4 BtU Segments 3/4   See changes for Maintenance Items 173 through 177 below for the details. |
| Update MC06 Work Zone Management (FDOT I-4 BtU) Definition: add Smart Work Zone language to the definition of the MC06 Work Zone Management service package in the D5 RITSA and relevant projects. Modifying service package language to include Smart Work Zone applications in existing  MC06 - Work Zone Management, including AWZI (Advanced Work Zone Information), QDAW (Queue Detection and Warning) and VCATS (Visibility Conditions and Traffic Safety). Attachment provided with proposed language. | 173 | The FDOT I-4 BtU Segments 1A/1B/2 and FDOT I-4 BtU Segments 3/4 are already defined in the RITSA. To reflect the smart work zone application described for the project, the following components were added to each project:   * Added Elements: FDOT District 5 CAV Field Equipment, FDOT District 5 Smart Work Zone Equipment, * Modified Services:   + MC06 Smart Work Zone Management (FDOT I-4 BtU) – the following elements were added:     - FDOT District 5 CAV Field Equipment     - FDOT District 5 Smart Work Zone Equipment     - Vehicle * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |
| Add MC07 Work Zone Safety Monitoring: Add service package, MC07 Work Zone Safety Monitoring (FDOT I-4 BtU), to the D5 RITSA and relevant projects to further support for Smart Work Zone applications. (proposed definition and graphics included with form) | 174 | The FDOT I-4 BtU Segments 1A/1B/2 and FDOT I-4 BtU Segments 3/4 are already defined in the RITSA. To reflect the smart work zone application described for the project, the following components were added to each project:   * Added Elements: FDOT District 5 Smart Work Zone Equipment, Maintenance and Construction Personnel Device * Included Existing Elements: FDOT District 5 Construction and Maintenance, Vehicle * Added Services:   + Smart Work Zone Safety Monitoring (FDOT I-4 BtU) * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |
| Update TM06 Traffic Information Dissemination Definition: add Smart Work Zone language to the definition of the TM06 Traffic Information Dissemination (FDOT I-4 BtU Segments 1A/1B/2 Project) service package in the D5 RITSA and relevant projects. Modifying service package language to include Smart Work Zone applications in existing   * TM06 Traffic Information Dissemination, including QDAW (Queue Detection and Warning) and * VCATS (Visibility Conditions and Traffic Safety).   Attachment provided with proposed language. | 175 | The FDOT I-4 BtU Segments 1A/1B/2 and FDOT I-4 BtU Segments 3/4 are already defined in the RITSA. To reflect the smart work zone application described for the project, the following changes were made to each project:   * Added Elements: FDOT District 5 Smart Work Zone Equipment, * Included Existing Elements: FDOT District 5 Field Equipment, FDOT District 5 RTMC, FL511, Private Sector Traveler Information Services, Vehicle * Modified Services:   + TM06 Traffic Information Dissemination (FDOT I-4 BtU Segments 1A/1B/2 Project) – the following elements were added:     - FDOT District 5 Smart Work Zone Equipment     - Vehicle * Added Services:   + TM06 Traffic Information Dissemination (FDOT I-4 BtU Segments 3/4) * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |
| Add TM12 - Dynamic Roadway Warning: Add service package, TM12 - Dynamic Roadway Warning, to the D5 RITSA and relevant projects to further support for Smart Work Zone applications. (proposed definition and graphics included with form) | 176 | The FDOT I-4 BtU Segments 1A/1B/2 and FDOT I-4 BtU Segments 3/4 are already defined in the RITSA. To reflect the smart work zone application described for the project, the following changes were made to each project:   * Added Elements: FDOT District 5 Smart Work Zone Equipment, * Included Existing Elements: FDOT District 5 Field Equipment, FDOT District 5 RTMC * Added Services:   + TM12 Dynamic Roadway Warning (FDOT I-4 BtU Segments 1A/1B/2)   + TM12 Dynamic Roadway Warning (FDOT I-4 BtU Segments 3/4) * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |
| Add VS08 - Queue Warning: Add service package, VS08 - Queue Warning, to the D5 RITSA and relevant projects to further support for Smart Work Zone applications. (proposed definition and graphics included with form) | 177 | The FDOT I-4 BtU Segments 1A/1B/2 and FDOT I-4 BtU Segments 3/4 are already defined in the RITSA. To reflect the smart work zone application described for the project, the following changes were made to each project:   * Added Elements: FDOT District 5 Smart Work Zone Equipment, * Included Existing Elements: FDOT District 5 CAV Field Equipment, FDOT District 5 Field Equipment, FDOT District 5 RTMC, Vehicle * Added Services:   + VS08 Queue Warning (FDOT I-4 BtU Segments 1A/1B/2)   + VS08 Queue Warning (FDOT I-4 BtU Segments 3/4) * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |
| CFX Part Time Shoulder Use (PTSU) Project: Add a project architecture to show the PTSU project for CFX. This would include the following elements in the D5 RITSA:   * CFX Road Ranger Service Patrol Vehicles * CFX Maintenance Vehicles * CFX Public Website * FDOT District 5 RTMC * FL511 * CFX CAV Field Equipment * CFX Expressway Management System * CFX Field Equipment * Commercial Vehicle * Vehicle   This would include the following service packages:   * TM20 (Variable Speed Limits) - * TM22 (Dynamic Lane Management and Shoulder Use) * MC05 (Roadway Maintenance and Construction) * PS08 (Roadway Service Patrols) * TI01 (Broadcast Traveler Information) | 181 | Added new project: CFX Part Time Shoulder Use   * Included Stakeholders: CFX, FDOT CO, FDOT District 5, Private Commercial Vehicle and Fleet Operators, Travelers * Added Element: (No new elements) * Included Existing Elements: CFX CAV Field Equipment, CFX Expressway Management System, CFX Field Equipment, CFX Maintenance Vehicles, CFX Public Website, CFX Road Ranger Service Patrol Vehicles, Commercial Vehicle, FDOT District 5 RTMC, FL511, Vehicle * Added Services:   + MC05 Roadway Maintenance and Construction (CFX PTSU)   + PS08 Roadway Service Patrols (CFX PTSU)   + TI01 Broadcast Traveler Information (CFX PTSU)   + TM20 Variable Speed Limits (CFX PTSU)   + TM22 Dynamic Lane Management and Shoulder Use (CFX PTSU) * Added Interfaces. * Added Roles and Responsibilities. * Added Functional Requirements. * Selected Communications Solutions. |

Appendix A: Architecture Maintenance Log (District 5 RITSA)

The maintenance log in Table 2 provides the District 5 RITSA maintenance items considerations for the update.

Table 2 Architecture Maintenance Log (District 5 RITSA)

| **#** | **Date** | **Architecture** | **Source** | **Contact** | **Change** | **Disposition** | **Recommend Maintenance** | **Incorporated** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 150 | 6/19/23 | D5 RITSA | Change Request Form: FDOT District 5 | Bruce Doig / City of Altamonte Springs | City of Altamonte Springs Autonomous Vehicle Shuttle: The City will contract with a private vendor for the planning, deployment, operation, and maintenance of a safe autonomous vehicle transportation system (BEEP). This AV Shuttle is planned to be deployed in three (3) phases. Phase I will not interact with any ITS for FDOT infrastructure and have no communication with service packages. Phases II and III may expand to interact with service package VS16. New RITSA Change Request forms will be submitted for Phase II and III in years 2 and 3 respectively. See attached AV Shuttle Flow Chart. | Add new project. | Yes | Yes |
| 151 | 6/19/23 | D5 RITSA | Change Request Form: FDOT District 5 | David Williams / FDOT District 5 | Lake County CV Smart Signal and VZERO deployments: Adding "Lake County CV Smart Signal and VZERO Projects" as new CAV Deployment. This project should mirror the Seminole Countywide SPaT Deployment (Connected Vehicle Pilot on SR 434), replacing "Seminole County" with "Lake County". Adding new data flow for TM03 - Lake County D5 - CV Smart Signal --Lake County Field Equipment --> FDOT RTMC ATMC --> Lake County TMC | Add new project. | Yes | Yes |
| 152 | 6/19/23 | D5 RITSA | Change Request Form: FDOT District 5 | David Williams / FDOT District 5 | FDOT District 5 Critical Railroad Smart Monitoring Project: The state will design and install ITS/CAV devices at 28 railroad crossings on state roads or near interstates where a faulty crossing could significantly impact mobility. The devices will alert nearby travelers of potential hazards (via RSU broadcast) and alert operators of potential malfunction. | Add new project. | Yes | Yes |
| 153 | 6/20/23 | D5 RITSA | Change Request Form: FDOT District 5 | Kenneth Jamison / LYNX | Open Payments on fixed route and demand response (NeighborLink): LYNX is implementing Open Payments for fare payment on fareboxes on all fixed route buses and demand response (NeighborLink) vehicles. This allows fare payment using the VISA, MasterCard, and Discover Card network by accepting the contactless Tap to Pay. Also included are any devices that allow Tap to Pay via these networks (cell phone with nearfield and wearables). This will involve the Open Payment media interacting with the farebox to pay the fare. The farebox will communicate via cellular to the back office system which then processes the charge through the merchant network. Request for authorization and for payment goes from farebox to back office and from back office to merchant network, authorization and electronic payment from the merchant network to the back office with authorization back to the farebox. Also credit card number black lists are communicated from the back office to the farebox. All of this communication is via cellular network (4G). | Add new project. | Yes | Yes |
| 154 | 6/20/23 | D5 RITSA | Change Request Form: FDOT District 5 | David Williams / FDOT District 5 | Updating link to Space Coast TPO's Long Range Transportation Plan. Replacing current link to the SCTPO LRTP with the correct link: https://www.spacecoasttpo.com/what-we-do/planning/core-work-products/long-range-transportation-plan. The current link under the D5 Architecture Planning Resources tab that points to the SCTPO LRTP is no longer valid. | Update link | Yes | Yes |
| 172 | 7/5/23 | D5 RITSA | Change Request Form: FDOT District 5 | Jeremy Dilmore | FDOT I-4 Beyond the Ultimate (BtU) Segments 1A/1B/2 Project & FDOT I-4 BtU Segments 3/4 Project: Modify these two District 5 ITS Architecture Projects to include the Smart Work Zone service package modifications as described in Maintenance Items 173-177. Updating FDOT I-4 BtU Segments 1A/1B/2 Project and FDOT I-4 BtU Segments 3/4 Project to incorporate new/revised Service Packages: -MC06: Work Zone Management -- Smart Work Zone updates -MC07: Work Zone Monitoring (FDOT District 5) -- new -TM06: Traffic Information Dissemination -- Smart Work Zone updates -TM12: Dynamic Roadway Warning -- Smart Work Zone updates -VS08: Queue Warning -- Smart Work Zone updates The new and updated service packages listed above will be critical in monitoring safety and congestion along I-4 BtU segment projects during construction. | Update projects | Yes | Yes |
| 173 | 6/30/23 | D5 RITSA | Change Request Form: FDOT District 5 | Jeremy Dilmore | Update MC06 Work Zone Management (FDOT I-4 BtU) Definition: add Smart Work Zone language to the definition of the MC06 Work Zone Management service package in the D5 RITSA and relevant projects. Modifying service package language to include Smart Work Zone applications in existing MC06 - Work Zone Management, including AWZI (Advanced Work Zone Information), QDAW (Queue Detection and Warning) and VCATS (Visibility Conditions and Traffic Safety). Attachment provided with proposed language. | Update projects | Yes | Yes |
| 174 | 6/30/23 | D5 RITSA | Change Request Form: FDOT District 5 | Jeremy Dilmore | Add MC07 Work Zone Safety Monitoring: Add service package, MC07 Work Zone Safety Monitoring (FDOT I-4 BtU), to the D5 RITSA and relevant projects to further support for Smart Work Zone applications. (proposed defintion and graphics included with form) | Update projects | Yes | Yes |
| 175 | 6/30/23 | D5 RITSA | Change Request Form: FDOT District 5 | Jeremy Dilmore | Update TM06 Traffic Information Dissemination Definition: add Smart Work Zone language to the definition of the TM06 Traffic Information Dissemination (FDOT I-4 BtU Segments 1A/1B/2 Project) service package in the D5 RITSA and relevant projects. Modifying service package language to include Smart Work Zone applications in existing TM06 Traffic Information Dissemination, including QDAW (Queue Detection and Warning) and VCATS (Visibility Conditions and Traffic Safety). Attachment provided with proposed language. | Update projects | Yes | Yes |
| 176 | 6/30/23 | D5 RITSA | Change Request Form: FDOT District 5 | Jeremy Dilmore | Add TM12 - Dynamic Roadway Warning: Add service package, TM12 - Dynamic Roadway Warning, to the D5 RITSA and relevant projects to further support for Smart Work Zone applications. (proposed definition and graphics included with form) | Update projects | Yes | Yes |
| 177 | 6/30/23 | D5 RITSA | Change Request Form: FDOT District 5 | Jeremy Dilmore | Add VS08 - Queue Warning: Add service package, VS08 - Queue Warning, to the D5 RITSA and relevant projects to further support for Smart Work Zone applications. (proposed definition and graphics included with form) | Update projects | Yes | Yes |
| 181 | 10/16/23 | D5 RITSA | Change Request Form: FDOT District 5 | David Williams / FDOT District 5 | CFX Part Time Shoulder Use (PTSU) Project: Add a project architecture to show the PTSU project for CFX. This would include the following elements in the D5 RITSA:  - CFX Road Ranger Service Patrol Vehicles - CFX Maintenance Vehicles - CFX Public Website - FDOT District 5 RTMC - FL511 - CFX CAV Field Equipment - CFX Expressway Management System - CFX Field Equipment - Commercial Vehicle - Vehicle This would include the following service package -  - TM20 (Variable Speed Limits) - New Service Package to D5 RITSA - TM22 (Dynamic Lane Management and Shoulder Use) - MC05 (Roadway Maintenance and Construction) - PS08 (Roadway Service Patrols) - TI01 (Broadcast Traveler Information) | Add new project. | Yes | Yes |