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Table of Contents

[1.0 Introduction 4](#_Toc165638126)

[2.0 Description of Changes 4](#_Toc165638127)

[3.0 Architecture Conversion Results 5](#_Toc165638128)

[3.1 Architecture Inventory Elements 5](#_Toc165638129)

[3.2 Architecture Information Flow Conversion 7](#_Toc165638130)

[3.3 ARC-IT 9.2 Changes 8](#_Toc165638131)

List of Tables

[Table 1. CONVERSION ANALYSIS OF INVENTORY ELEMENTS 5](#_Toc165638134)

[Table 2. Information Flow Conversion Details 7](#_Toc165638135)

[Table 3. ARC-IT 9.2 Physical Object Changes 8](#_Toc165638136)

[Table 4. ARC-IT 9.2 Service package Changes 8](#_Toc165638137)

[Table 5. ARC-IT 9.2 Information Flow Changes 9](#_Toc165638138)

# Introduction

This Architecture Update Report records the District 7 Regional Intelligent Transportation System (ITS) Architecture (RITSA) update from its reference in the Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT) Version 9.1 to ARC-IT Version 9.2. There were no updates to the District 7 architecture, so this report addresses notable results from the conversion process.

# Description of Changes

The architecture conversion process uses the Regional Architecture Development for Intelligent Transportation (RAD-IT) software Version 9.0 to convert the architecture to be compatible with ARC-IT Version 9.2. The process includes the following steps to accomplish the conversion.

* Architecture conversion: Conversion features in RAD-IT Version 9.2 convert the architecture database schema to be compatible with RAD-IT Version 9.2 and aligned to reference ARC-IT Version 9.2 content.
* Conversion analysis: Conversion information is produced by RAD-IT for the architecture conversion noting the changes made. The conversion information notes the schema and content changes, such as service splits or consolidations, element divisions, and information flow adjustments. Analysis is required for each converted item to assess the appropriateness of each change for the architecture.
* Architecture content update: The intent of the conversion process was to maintain the alignment of the converted Architecture content to the greatest extent possible with the pre-conversion Architecture content. Element physical object mapping changes, service package changes, information flow additions and adjustments, and the evolution of the standards mappings in ARC-IT Version 9.2 required changes to be made to the Architecture content. Unless it was necessary, no additional changes beyond those required to align the pre-conversion and converted architecture content were made. During the course of the Annual Architecture Maintenance Update, ARC-IT Version 9.2 features that could be considered as additional information to the Architecture will be assessed.
* Architecture website posting: The converted architecture will be posted to the Florida ITS Architecture website.

# Architecture Conversion Results

The District 7 RITSA was converted to be compatible with ARC-IT Version 9.2. The following sections highlight the changes made to the architecture as a result of the conversion process.

## Architecture Inventory Elements

Given that there were no updates to the District 7 architecture content, Table 1 provides conversion results for architecture inventory elements impacted by the conversion process. The table information shows the element impacted, the results of the element conversion, the analysis disposition which may indicate a revision to the conversion results depending on the architecture content, and the notes of the conversion implementation.

Table 1. CONVERSION ANALYSIS OF INVENTORY ELEMENTS

| **Element Name** | **Change** | **Old Mapping** | **New Mapping** | **Old Kind** | **New Kind** |
| --- | --- | --- | --- | --- | --- |
| Autonomous Shuttle Vehicle | Added |  | Light Vehicle OBE |  | Subsystem |
| Autonomous Shuttle Vehicle | Replaced | Vehicle OBE | Vehicle | Subsystem | Subsystem |
| Citrus County Paratransit Vehicles | Added |  | Vehicle |  | Subsystem |
| Commercial Vehicle | Replaced | Vehicle OBE | Vehicle | Subsystem | Subsystem |
| County and City PWD Vehicles | Added |  | Vehicle |  | Subsystem |
| FDOT District 1 I-4 and I-275 Road Ranger Service Patrol Vehicles | Added |  | Vehicle |  | Subsystem |
| FDOT District 7 Maintenance Vehicles | Added |  | Vehicle |  | Subsystem |
| FDOT District 7 Road Ranger Service Patrol Vehicles | Added |  | Vehicle |  | Subsystem |
| FHP Vehicles | Replaced | Vehicle OBE | Vehicle | Subsystem | Subsystem |
| Florida Highway Patrol Vehicles | Added |  | Vehicle |  | Subsystem |
| HART Transit Vehicles | Added |  | Vehicle |  | Subsystem |
| Local Fire Vehicles | Added |  | Vehicle |  | Subsystem |
| Local Fire/EMS Vehicles | Added |  | Vehicle |  | Subsystem |
| Local Police Vehicles | Added |  | Vehicle |  | Subsystem |
| OneBusAway App | Added |  | Personal |  | Subsystem |
| PCPT Transit Vehicles | Added |  | Vehicle |  | Subsystem |
| Pedestrians | Replaced | Cyclist | MMV User | Terminator | Terminator |
| Personnel Device | Added |  | Personal |  | Subsystem |
| Pinellas County Maintenance Vehicles | Replaced | Vehicle OBE | Vehicle | Subsystem | Subsystem |
| Private Fleet Vehicle Dispatch Systems | Added |  | Shared Use Transportation Center |  | Subsystem |
| Private Travelers Personal Computing Devices | Added |  | Personal |  | Subsystem |
| Private/Public Ambulance Vehicles | Added |  | Vehicle |  | Subsystem |
| PSTA Transit Vehicles | Added |  | Light Vehicle OBE |  | Subsystem |
| PSTA Transit Vehicles | Replaced | Vehicle OBE | Vehicle | Subsystem | Subsystem |
| School District Transportation Buses | Added |  | Vehicle |  | Subsystem |
| SunPass Tag | Added |  | Light Vehicle OBE |  | Subsystem |
| SunPass Tag | Added |  | Personal |  | Subsystem |
| SunPass Tag | Replaced | Vehicle OBE | Vehicle | Subsystem | Subsystem |
| TECO Street Car Line Vehicles | Added |  | Vehicle |  | Subsystem |
| The Hernando Express Transit Vehicles | Added |  | Vehicle |  | Subsystem |
| TransHernando Transit Vehicles | Added |  | Vehicle |  | Subsystem |
| Vehicles | Added |  | Light Vehicle OBE |  | Subsystem |
| Vehicles | Replaced | Vehicle OBE | Vehicle | Subsystem | Subsystem |

## Architecture Information Flow Conversion

Table 2. Information Flow Conversion Details

| **Regional** | **Architecture** | **Change** | **Source Element** | **Destination Element** | **Old Flow** | **New Flow** |
| --- | --- | --- | --- | --- | --- | --- |
| In Region | Tampa Bay Regional ITS Architecture - FDOT District 7 | Replaced | City of Plant City TMC | City of Plant City Field Equipment | environmental sensors control | environmental sensor control |
| In Region | Tampa Bay Regional ITS Architecture - FDOT District 7 | Replaced | City of Tampa TMC | City of Tampa Field Equipment | environmental sensors control | environmental sensor control |
| In Region | Tampa Bay Regional ITS Architecture - FDOT District 7 | Replaced | County and City Roadway Maintenance and Construction Systems | County and Local Field Equipment | environmental sensors control | environmental sensor control |
| In Region | Tampa Bay Regional ITS Architecture - FDOT District 7 | Replaced | FDOT District 7 Tampa Bay SunGuide Center | FDOT District 1 Field Equipment | environmental sensors control | environmental sensor control |
| In Region | Tampa Bay Regional ITS Architecture - FDOT District 7 | Replaced | FDOT District 7 Tampa Bay SunGuide Center | FDOT District 7 Field Equipment | environmental sensors control | environmental sensor control |
| In Region | Tampa Bay Regional ITS Architecture - FDOT District 7 | Replaced | Hillsborough County Traffic Management Center | Hillsborough County Field Equipment | environmental sensors control | environmental sensor control |
| Project | City of Tampa ATMS Expansion | Replaced | City of Tampa TMC | City of Tampa Field Equipment | environmental sensors control | environmental sensor control |
| Project | FDOT District 7 I-4 FRAME | Replaced | City of Plant City TMC | City of Plant City Field Equipment | environmental sensors control | environmental sensor control |
| Project | FDOT District 7 I-4 FRAME | Replaced | City of Tampa TMC | City of Tampa Field Equipment | environmental sensors control | environmental sensor control |
| Project | FDOT District 7 I-4 FRAME | Replaced | FDOT District 7 Tampa Bay SunGuide Center | FDOT District 7 Field Equipment | environmental sensors control | environmental sensor control |
| Project | FDOT District 7 I-4 FRAME | Replaced | Hillsborough County Traffic Management Center | Hillsborough County Field Equipment | environmental sensors control | environmental sensor control |

## ARC-IT 9.2 Changes

This section provides a summary of changes made to the ARC-IT reference model that may or may not impact current or future changes for this regional architecture. Listed in the following tables are changes made at the national level for physical objects, service packages, and information flows. Refer to the [www.arc-it.net](http://www.arc-it.net) website for details about these components.

Table 3. ARC-IT 9.2 Physical Object Changes

| **Old Name** | **Change** | **Kind** | **Physical Object Name** | **Class** | **Type** |
| --- | --- | --- | --- | --- | --- |
| Cyclist | Modified | Terminator | MMV User | Personal | Human |
| Other Vehicle OBEs | Modified | Terminator | Other Vehicles | Vehicle | Other System |
| Traffic Regulatory Authority Center | Modified | Subsystem | METR System | Support | System |
| Vehicle OBE | Modified | Subsystem | Vehicle | Vehicle | System |
| Vehicles | Modified | Terminator | Vehicle Characteristics | Vehicle | Environment |

Table 4. ARC-IT 9.2 Service package Changes

| **Old Service Package** | **Change** | **Service Package** |
| --- | --- | --- |
| PT18: Integrated Multi-Modal Electronic Payment | Modified | TI05: Integrated Multi-Modal Electronic Payment |
| TI03: Dynamic Route Guidance | Modified | TI03: En-Route Guidance |
| TI04: Infrastructure-Provided Trip Planning and Route Guidance | Modified | TI04: Trip Planning and Payment |
| TI05: Travel Services Information and Reservation | Modified | TI09: Travel Services Information and Reservation |
| TI06: Dynamic Ridesharing and Shared Use Transportation | Modified | TI06: Shared Use Mobility and Dynamic Ridesharing |
| VS12: Pedestrian and Cyclist Safety | Modified | VS12: Vulnerable Road User Safety |
| VS17: Traffic Code Dissemination | Modified | VS17: Management of Electronic Traffic Regulations (METR) |
|  | New | MC12: One-Way Convoy Driving |
|  | New | SU15: Vulnerable Road User Device Transition Support |
|  | New | TI08: Personal Wayfinding |
|  | New | VS18: Vulnerable Road User Clustering |

Table 5. ARC-IT 9.2 Information Flow Changes

| **Old Flow** | **Change** | **Source Physical Object** | **Destination Physical Object** | **Flow Name** |
| --- | --- | --- | --- | --- |
| environmental sensors control | Modified | Maint and Constr Management Center | ITS Roadway Equipment | environmental sensor control |
| environmental sensors control | Modified | Maint and Constr Management Center | Maint and Constr Vehicle OBE | environmental sensor control |
| environmental sensors control | Modified | Maint and Constr Vehicle OBE | ITS Roadway Equipment | environmental sensor control |
| environmental sensors control | Modified | Surface Transportation Weather Service | ITS Roadway Equipment | environmental sensor control |
| environmental sensors control | Modified | Traffic Management Center | ITS Roadway Equipment | environmental sensor control |
| traffic regulation information | Modified | METR Distribution Center | Personal Information Device | METR information for users |
| traffic regulation information | Modified | METR Distribution Center | Vehicle | METR information for users |
| traffic-related regulations | Modified | METR Distribution Center | METR Distribution Center | METR information |
| traffic-related regulations | Modified | METR Distribution Center | Other METR Distribution Centers | METR information |
| traffic-related regulations | Modified | METR System | Maint and Constr Management Center | METR information |
| traffic-related regulations | Modified | METR System | METR Distribution Center | METR information |
| traffic-related regulations | Modified | METR System | METR System | METR information |
| traffic-related regulations | Modified | METR System | Non-METR Distribution Center | METR information |
| traffic-related regulations | Modified | METR System | Other METR Systems | METR information |
| traffic-related regulations | Modified | Other METR Distribution Centers | METR Distribution Center | METR information |
| traffic-related regulations | Modified | Other METR Systems | METR System | METR information |
|  | New | Connected Vehicle Roadside Equipment | METR System | METR application status |
|  | New | Connected Vehicle Roadside Equipment | Personal Information Device | local METR information for users |
|  | New | Connected Vehicle Roadside Equipment | Vehicle | local METR information for users |
|  | New | Electric Charging Management Center | Electric Charging Station | electric charging station management information |
|  | New | Electric Charging Management Center | Electric Utility | electric service requests info |
|  | New | Electric Charging Management Center | Transportation Information Center | electric charging reservation confirmation |
|  | New | Electric Charging Station | Electric Charging Management Center | electric charging station data |
|  | New | Electric Utility | Electric Charging Management Center | electric charging utility info |
|  | New | Eligibility Certification Management System | Payment Administration Center | traveler eligibility |
|  | New | Emergency Vehicle OBE | Personal Information Device | local METR information for users |
|  | New | Emergency Vehicle OBE | Vehicle | local METR information for users |
|  | New | ITS Roadway Equipment | Connected Vehicle Roadside Equipment | field equipment status for METR |
|  | New | ITS Roadway Equipment | MMV User | traveler safety information |
|  | New | Light Vehicle Driver | Light Vehicle OBE | light vehicle driver input |
|  | New | Light Vehicle OBE | Light Vehicle Driver | light vehicle driver updates |
|  | New | Light Vehicle OBE | Transportation Information Center | trip status |
|  | New | Maint and Constr Management Center | METR System | METR coordination |
|  | New | Maint and Constr Management Center | METR System | METR TCD discrepancy status |
|  | New | Maint and Constr Vehicle OBE | Personal Information Device | local METR information for users |
|  | New | Maint and Constr Vehicle OBE | Vehicle | local METR information for users |
|  | New | Map Update System | Personal | pathway map updates |
|  | New | Map Update System | Traveler Support Equipment | pathway map updates |
|  | New | METR Distribution Center | METR System | system-generated discrepancy report |
|  | New | METR Distribution Center | Other METR Distribution Centers | system-generated discrepancy report |
|  | New | METR Rule-Maker/Agent | METR System | METR information approval |
|  | New | METR Rule-Maker/Agent | METR System | METR input |
|  | New | METR System | Connected Vehicle Roadside Equipment | METR application information |
|  | New | METR System | Emergency Vehicle OBE | METR management information |
|  | New | METR System | Maint and Constr Management Center | METR coordination |
|  | New | METR System | Maint and Constr Vehicle OBE | METR management information |
|  | New | METR System | METR Distribution Center | METR device status |
|  | New | METR System | METR Rule-Maker/Agent | METR feedback |
|  | New | METR System | METR Rule-Maker/Agent | METR information approval request |
|  | New | METR System | Other METR Systems | consolidated discrepancy report |
|  | New | METR System | Other METR Systems | discrepancy report details |
|  | New | METR System | Other METR Systems | discrepancy suppression information |
|  | New | METR System | Other METR Systems | METR coordination |
|  | New | METR System | Other METR Systems | system-generated discrepancy report |
|  | New | Micromobility Vehicle OBE | MMV User | MMV user updates |
|  | New | Micromobility Vehicle OBE | Other Micromobility Vehicle OBEs | MMV profile |
|  | New | Micromobility Vehicle OBE | Other Micromobility Vehicle OBEs | VRU cluster information |
|  | New | Micromobility Vehicle OBE | Other Micromobility Vehicle OBEs | VRU hazard event |
|  | New | Micromobility Vehicle OBE | Other Micromobility Vehicle OBEs | VRU path prediction |
|  | New | Micromobility Vehicle OBE | Personal Information Device | MMV identification |
|  | New | Micromobility Vehicle OBE | Personal Information Device | MMV profile |
|  | New | Micromobility Vehicle OBE | Shared Use Transportation Center | MMV location |
|  | New | Micromobility Vehicle OBE | Transportation Information Center | trip status |
|  | New | Micromobility Vehicle OBE | Transportation Information Center | wayfinding feedback |
|  | New | Micromobility Vehicle OBE | Transportation Information Center | wayfinding request |
|  | New | MMV User | Micromobility Vehicle OBE | MMV user input |
|  | New | Non-METR Distribution Center | METR System | system-generated discrepancy report |
|  | New | Other METR Distribution Centers | METR Distribution Center | system-generated discrepancy report |
|  | New | Other METR Systems | METR System | consolidated discrepancy report |
|  | New | Other METR Systems | METR System | discrepancy report details |
|  | New | Other METR Systems | METR System | discrepancy suppression information |
|  | New | Other METR Systems | METR System | METR coordination |
|  | New | Other METR Systems | METR System | system-generated discrepancy report |
|  | New | Other Micromobility Vehicle OBEs | Micromobility Vehicle OBE | MMV profile |
|  | New | Other Micromobility Vehicle OBEs | Micromobility Vehicle OBE | VRU cluster information |
|  | New | Other Micromobility Vehicle OBEs | Micromobility Vehicle OBE | VRU hazard event |
|  | New | Other Micromobility Vehicle OBEs | Micromobility Vehicle OBE | VRU path prediction |
|  | New | Other Payment Administration Centers | Payment Administration Center | user account coordination |
|  | New | Other PIDs | Personal Information Device | VRU cluster information |
|  | New | Other PIDs | Personal Information Device | VRU hazard event |
|  | New | Other PIDs | Personal Information Device | VRU path prediction |
|  | New | Other Transportation Information Centers | Transportation Information Center | electric charging information |
|  | New | Pathway Equipment | Micromobility Vehicle OBE | pathway equipment state |
|  | New | Pathway Equipment | Micromobility Vehicle OBE | pathway equipment status |
|  | New | Pathway Equipment | Micromobility Vehicle OBE | pathway signage information |
|  | New | Pathway Equipment | MMV User | traveler pathway updates |
|  | New | Pathway Equipment | Personal Information Device | pathway equipment state |
|  | New | Pathway Equipment | Personal Information Device | pathway equipment status |
|  | New | Pathway Equipment | Personal Information Device | pathway signage information |
|  | New | Pathway Equipment | Personal Safety Device | pathway equipment state |
|  | New | Pathway Equipment | Transportation Information Center | pathway equipment state |
|  | New | Pathway Equipment | Transportation Information Center | pathway equipment status |
|  | New | Pathway Equipment | Traveler | traveler pathway updates |
|  | New | Payment Administration Center | Eligibility Certification Management System | traveler eligibility request |
|  | New | Payment Administration Center | Other Payment Administration Centers | user account coordination |
|  | New | Payment Administration Center | Shared Use Transportation Center | trip access coordination |
|  | New | Payment Administration Center | Transit Management Center | reconciliation response |
|  | New | Payment Administration Center | Transit Management Center | trip access coordination |
|  | New | Payment Administration Center | Transportation Information Center | reconciliation response |
|  | New | Payment Administration Center | Transportation Information Center | trip access coordination |
|  | New | Personal | Vehicle | device configuration coordination |
|  | New | Personal Information Device | Light Vehicle OBE | shared vehicle access enable |
|  | New | Personal Information Device | METR System | METR discrepancy report |
|  | New | Personal Information Device | Other PIDs | VRU cluster information |
|  | New | Personal Information Device | Other PIDs | VRU hazard event |
|  | New | Personal Information Device | Other PIDs | VRU path prediction |
|  | New | Personal Information Device | Payment Administration Center | payment device token information |
|  | New | Personal Information Device | Personal Safety Device | safety device control |
|  | New | Personal Information Device | Shared Use Transportation Center | shared vehicle access request |
|  | New | Personal Information Device | Transportation Information Center | trip status |
|  | New | Personal Information Device | Transportation Information Center | wayfinding feedback |
|  | New | Personal Information Device | Transportation Information Center | wayfinding request |
|  | New | Personal Safety Device | Personal Information Device | safety device inputs |
|  | New | Shared Use Transportation Center | Light Vehicle OBE | shared vehicle access enable |
|  | New | Shared Use Transportation Center | Micromobility Vehicle OBE | MMV access enable |
|  | New | Shared Use Transportation Center | Payment Administration Center | trip access coordination |
|  | New | Shared Use Transportation Center | Personal Information Device | shared vehicle information |
|  | New | Shared Use Transportation Center | SUTC Operator | STUC operations information presentation |
|  | New | SUTC Operator | Shared Use Transportation Center | STUC operator input |
|  | New | Transit Management Center | Payment Administration Center | smart card reconciliation |
|  | New | Transit Management Center | Payment Administration Center | trip access coordination |
|  | New | Transportation Information Center | Electric Charging Management Center | electric charging reservation request |
|  | New | Transportation Information Center | Light Vehicle OBE | guidance updates |
|  | New | Transportation Information Center | Micromobility Vehicle OBE | guidance updates |
|  | New | Transportation Information Center | Micromobility Vehicle OBE | wayfinding information |
|  | New | Transportation Information Center | Micromobility Vehicle OBE | wayfinding plan |
|  | New | Transportation Information Center | Other Transportation Information Centers | electric charging information |
|  | New | Transportation Information Center | Pathway Equipment | pathway equipment application info |
|  | New | Transportation Information Center | Payment Administration Center | smart card reconciliation |
|  | New | Transportation Information Center | Payment Administration Center | trip access coordination |
|  | New | Transportation Information Center | Personal Information Device | guidance updates |
|  | New | Transportation Information Center | Personal Information Device | wayfinding information |
|  | New | Transportation Information Center | Personal Information Device | wayfinding plan |
|  | New | Transportation Information Center | Traveler Support Equipment | wayfinding information |
|  | New | Transportation Information Center | Traveler Support Equipment | wayfinding plan |
|  | New | Traveler Support Equipment | Transportation Information Center | wayfinding request |
|  | New | Vehicle | METR System | METR discrepancy report |
|  | New | Vehicle | Personal | device configuration coordination |