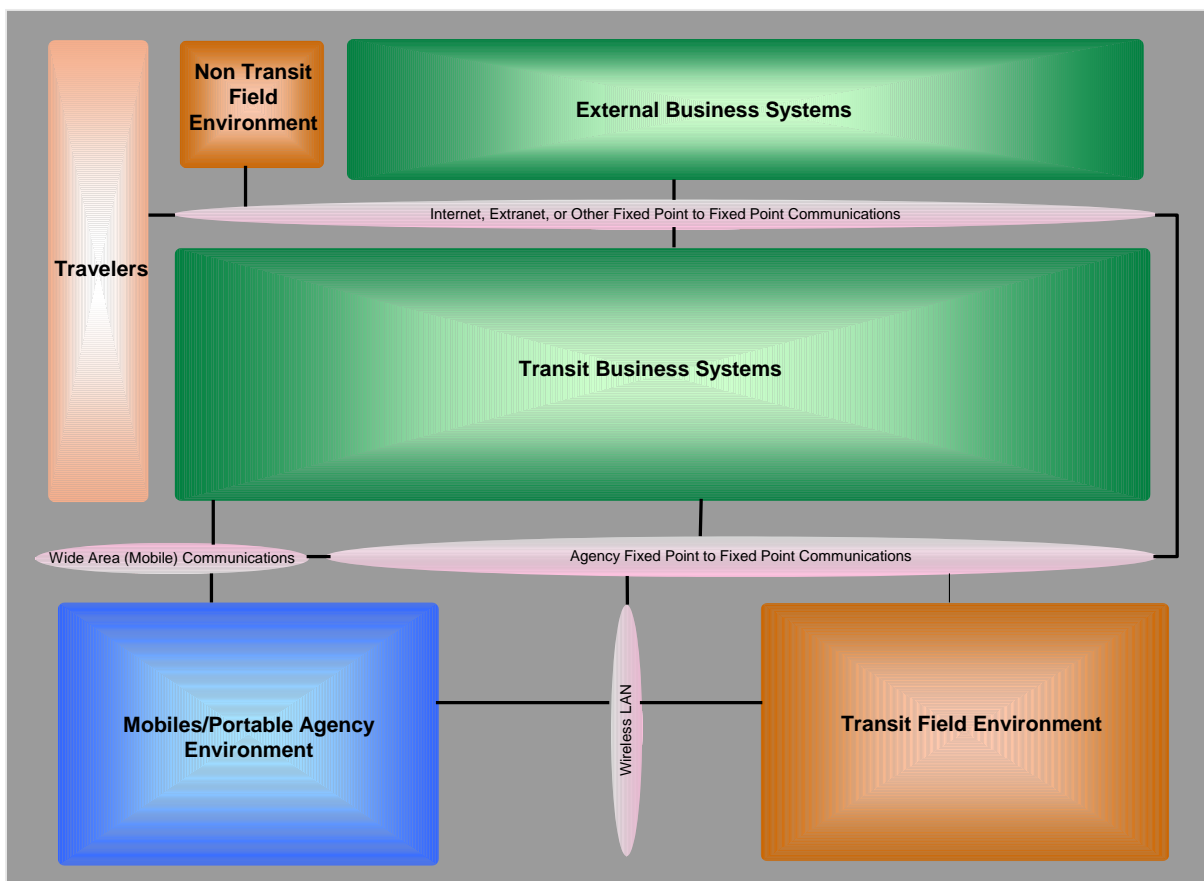# APTA TCIP-S-001 4.1.1,
APTA Standard for
Transit Communications Interface Profiles

Version 4.1.1

Volume IV
Annexes F - K

American Public Transportation Association

Table of Contents

Annex F

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Annex G

National ITS Architecture Traceability Mapping

NIA Mapping

This annex contains two reports:

- A mapping of the TCIP Model Architecture Logical Entities to the Equivalent NIA Pspecs (where an equivalent exists).
- A mapping of the TCIP Dialogs to the NIA data flows (where an equivalent exists).

NIA PSPEC to TCIP Entities Map

NIA Name	NIA Node	NIA TYPE	TCIP Entity	NIA Subsys Ref
Access Transit Vehicle Operator Cost Effectiveness	4.5.3	PSPEC	OAS	Transit Management
Assess Transit Vehicle Operator Availability	4.5.2	PSPEC	OAS	Transit Management
Assess Transit Vehicle Operator Eligibility	4.5.4	PSPEC	OAS	Transit Management
Assess Transit Vehicle Operator Performance	4.5.1	PSPEC	OAS	Transit Management
Bill Traveler for Transit Fare	7.3.1.5	PSPEC	FS	Transit Management
Check for Advanced Transit Fare Payment	7.3.1.4	PSPEC	FS	Transit Management
Collect Bad Transit Fare Payment Data	7.3.1.6	PSPEC	FS	Transit Management
Collect Secure Vehicle Area Sensor Data	5.1.7.3.3	PSPEC	PTV-SEC	Transit Vehicle Subsystem
Collect Transit Fares at the Roadside	4.7.2	DFD		
Collect Transit Fares in the Vehicle	4.6	DFD		
Collect Traveler Secure Area Sensor Data	5.1.7.1.3	PSPEC	PTSF-SEC	Remote Traveler Support
Compute Demand Responsive Transit Vehicle Availability	4.2.1.2	PSPEC		Transit Management
Confirm Demand Responsive Transit Schedule and Route	4.2.1.4	PSPEC		Transit Management
Coordinate Multiple Agency Responses to Transit Incidents	4.4.2	PSPEC	CAD/AVL	Transit Management
Detect Traveler at Roadside	4.7.2.1	PSPEC	PTSF-SEC	Remote Traveler Support
Detect Traveler on Vehicle	4.6.1	PSPEC	PTV-PAS	Transit Vehicle Subsystem
Determine Advanced Transit Fares	7.3.1.2	PSPEC	FS	Transit Management
Determine Transit Fare at Roadside	4.7.2.3	PSPEC	PTSF-CFC	Remote Traveler Support
Determine Transit Fare on Vehicle	4.6.3	PSPEC	PTV-CFC	Transit Vehicle Subsystem
Determine Transit Vehicle Corrective Instructions	4.1.2.2	PSPEC		Transit Vehicle Subsystem
Determine Transit Vehicle Deviation and Corrections	4.1.2	DFD		
Determine Transit Vehicle Deviation and ETA	4.1.2.1	PSPEC	PTV-ADH	Transit Vehicle Subsystem
Determine Traveler Needs at Roadside	4.7.2.2	PSPEC		Remote Traveler Support

NIA PSPEC to TCIP Entities Map

NIA Name	NIA Node	NIA TYPE	TCIP Entity	NIA Subsys Ref
Determine Traveler Needs on Vehicle	4.6.2	PSPEC		Transit Vehicle Subsystem
Generate Demand Responsive Transit Schedule and Routes	4.2.1.3	PSPEC		Transit Management
Generate Responses for Transit Incidents	4.4.3	PSPEC	CAD/AVL	Transit Management
Generate Technician Work Assignments	4.3.3	PSPEC	AM	Transit Management
Generate Transit Routes	4.2.3.1	PSPEC	SCH	Transit Management
Generate Transit Routes	4.2.3.1	PSPEC	GIS	Transit Management
Generate Transit Routes and Schedules	4.2.3	DFD		
Generate Transit Schedules	4.2.3.2	PSPEC	SCH	Transit Management
Generate Transit Vehicle Maintenance Schedules	4.3.2	PSPEC	AM	Transit Management
Generate Transit Vehicle Operator Route Assignments	4.5.5	PSPEC	OAS	Transit Management
Generate Transit Vehicle Operator Schedules	4.5	DFD		
Get Traveler Image for Violation	7.3.3	PSPEC	FS	Transit Management
Manage Indicator Preemptions	1.2.7.3	PSPEC	RDPRG	Roadway Subsystem
Manage Indicator Preemptions	1.2.7.3	PSPEC	RDPRS	Roadway Subsystem
Manage Secure Vehicle Emergencies	5.1.7.3.5	PSPEC	PTV-SEC	Transit Vehicle Subsystem
Manage Transit	4	DFD		
Manage Transit Archive Data	4.2.4	PSPEC	DR	Transit Management
Manage Transit Fare Billing at Roadside	4.7.2.4	PSPEC	PTSF-CFC	Remote Traveler Support
Manage Transit Fare Billing on Vehicle	4.6.4	PSPEC	PTV-CFC	Transit Vehicle Subsystem
Manage Transit Fare Financial Processing	7.3.1.3	PSPEC	FS	Transit Management
Manage Transit Operational Data Store	4.2.3.5	PSPEC	GIS	Transit Management
Manage Transit Operational Data Store	4.2.3.5	PSPEC	DR	Transit Management
Manage Transit Operational Data Store	4.2.3.5	PSPEC	SCH	Transit Management
Manage Transit Vehicle Advanced Payments	4.6.8	PSPEC	FS	Transit Management
Manage Transit Vehicle Deviations	4.1.4	PSPEC	CAD/AVL	Transit Management
Manage Transit Vehicle Operations	4.1.6	PSPEC	TRV	Transit Management
Manage Transit Vehicle Operations	4.1.6	PSPEC	CAD/AVL	Transit Management

NIA PSPEC to TCIP Entities Map

NIA Name	NIA Node	NIA TYPE	TCIP Entity	NIA Subsys Ref
Manage Transit Vehicle Operations	4.1.6	PSPEC	PRK	Transit Management
Manage Transit Vehicle Operations Data Store	4.3.7	PSPEC	DR	Transit Management
Manage Transit Vehicle Operations Data Store	4.3.7	PSPEC	AM	Transit Management
Monitor And Verify Maintenance Activity	4.3.4	PSPEC	AM	Transit Management
Monitor Transit Vehicle Condition	4.3.1	PSPEC	AM	Transit Management
Operate Transit Vehicles and Facilities	4.1	DFD		
Plan and Schedule Transit Services	4.2	DFD		
Prepare and Output In-vehicle Displays	6.2.2	PSPEC	PTV-ANN	Transit Vehicle Subsystem
Process Demand Responsive Transit Trip Request	4.2.1.1	PSPEC		Transit Management
Process Demand Responsive Transit Vehicle Availability Data	4.2.1.5	PSPEC		Transit Vehicle Subsystem
Process On-Board Systems Data	4.1.1	PSPEC	PTV-DAT	Transit Vehicle Subsystem
Process Secure Vehicle Area Sensor Data	5.1.7.3.4	PSPEC	PTV-SEC	Transit Vehicle Subsystem
Process Secure Vehicle Area Surveillance	5.1.7.3.2	PSPEC	PTV-SEC	Transit Vehicle Subsystem
Process Transit Vehicle Sensor Maintenance Data	4.1.9	PSPEC	PTV-HEL	Transit Vehicle Subsystem
Process Traveler Other Services Payments	7.4.1.5	PSPEC	FS	Transit Management
Process Traveler Secure Area Sensor Data	5.1.7.1.4	PSPEC	PTSF-SEC	Remote Traveler Support
Process Traveler Secure Area Surveillance	5.1.7.1.2	PSPEC	PTSF-SEC	Remote Traveler Support
Produce Transit Service Data for External Use	4.2.3.3	PSPEC	TRV	Transit Management
Produce Transit Service Data for External Use	4.2.3.3	PSPEC	SCH	Transit Management
Produce Transit Service Data for External Use	4.2.3.3	PSPEC	DR	Transit Management
Produce Transit Service Data for Manage Transit Use	4.2.3.6	PSPEC	SCH	Transit Management
Produce Transit Service Data for Manage Transit Use	4.2.3.6	PSPEC	GIS	Transit Management
Produce Transit Service Data for Manage Transit Use	4.2.3.6	PSPEC	DR	Transit Management

Provide Demand Responsive Transit Service	4.2.1	DFD

NIA PSPEC to TCIP Entities Map

NIA Name	NIA Node	NIA TYPE	TCIP Entity	NIA Subsys Ref
Provide Demand Responsive Transit Vehicle Operator Interface	4.2.1.6	PSPEC		Transit Vehicle Subsystem
Provide Interface for Other Transit Management Data	4.2.3.7	PSPEC	DR	Transit Management
Provide Interface for Other Transit Management Data	4.2.3.7	PSPEC	SCH	Transit Management
Provide Interface for Other Transit Management Data	4.2.3.7	PSPEC	GIS	Transit Management
Provide Interface for Transit Service Raw Data	4.2.3.8	PSPEC	DR	Transit Management
Provide Interface for Transit Service Raw Data	4.2.3.8	PSPEC	SCH	Transit Management
Provide Multimodal Route Selection	6.6.1	PSPEC	TRV	Information Service Provider
Provide Transit Advisory Data On Vehicle	6.2.7	PSPEC	PTV-ANN	Transit Vehicle Subsystem
Provide Transit Operations Data Distribution Interface	4.1.8	PSPEC	CAD/AVL	Information Service Provider
Provide Transit Operations Data Distribution Interface	4.1.8	PSPEC	TRV	Information Service Provider
Provide Transit Plans Store Interface	4.2.2	PSPEC		Transit Management
Provide Transit Roadside Passenger Data	4.7.2.7	PSPEC		Remote Traveler Support
Provide Transit Security and Emergency Management	4.4.1	PSPEC	CAD/AVL	Transit Management
Provide Transit Sys Operator Interface for Services Generation	4.2.3.4	PSPEC	SCH	Transit Management
Provide Transit System Operator Security Interface	4.4.4	PSPEC	CAD/AVL	Transit Management
Provide Transit Vehicle Correction Data Output Interface	4.1.2.4	PSPEC	CAD/AVL	Transit Management
Provide Transit Vehicle Deviation Data Output Interface	4.1.7	PSPEC	TRV	Transit Management
Provide Transit Vehicle Deviation Data Output Interface	4.1.7	PSPEC	CAD/AVL	Transit Management
Provide Transit Vehicle Location Data	4.1.3	PSPEC	PTV-LOC	Transit Vehicle Subsystem
Provide Transit Vehicle Operator Information Store Interface	4.5.8	PSPEC	DR	Transit Management
Provide Transit Vehicle Operator Information Store Interface	4.5.8	PSPEC	OAS	Transit Management
Provide Transit Vehicle Operator Interface	4.1.2.3	PSPEC	PTV-OPR	Transit Vehicle Subsystem

| Provide Transit Vehicle Operator Interface for Emergencies | 5.1.7.3.6 | PSPEC | PTV-OPR | Transit Vehicle Subsystem |

NIA PSPEC to TCIP Entities Map

NIA Name	NIA Node	NIA TYPE	TCIP Entity	NIA Subsys Ref
Provide Transit Vehicle Passenger Data	4.6.7	PSPEC	PTV-CFC	Transit Vehicle Subsystem
Provide Transit Vehicle Security	5.1.7.3	DFD		
Provide Transit Vehicle Status Information	4.1.5	PSPEC	CAD/AVL	Transit Management
Provide Transit Vehicle Status Information	4.1.5	PSPEC	TRV	Transit Management
Provide Transit Vehicle Traveler Card Interface	7.3.5	PSPEC	PTV-CFC	Transit Vehicle Subsystem
Provide Traveler Advisory Interface	6.2.3	PSPEC	PTV-ANN	Transit Vehicle Subsystem
Provide Traveler and Remote Area Security	5.1.7	DFD		
Provide Traveler Fare Payment Interface on Vehicle	4.6.5	PSPEC	PTV-CFC	Transit Vehicle Subsystem
Provide Traveler Roadside & Vehicle Data Interface	4.7.1	PSPEC		Remote Traveler Support
Provide Traveler Roadside Facilities	4.7	DFD		
Provide Traveler Roadside Fare Interface	4.7.2.5	PSPEC	PTSF-CFC	Remote Traveler Support
Provide Traveler Security	5.1.7.1	DFD		
Register for Advanced Transit Fare Payment	7.3.1.1	PSPEC	FS	Transit Management
Report Transit Vehicle Information	4.3.5	PSPEC	AM	Transit Management
Report Transit Vehicle Operator Information	4.5.7	PSPEC	DR	Transit Management
Report Transit Vehicle Operator Information	4.5.7	PSPEC	OAS	Transit Management
Report Traveler Emergencies	5.1.7.1.5	PSPEC	PTSF-SEC	Remote Traveler Support
Request Transit Vehicle Priorities	4.1.2.5	PSPEC	PTV-PRI	Transit Vehicle Subsystem
Schedule Transit Vehicle Maintenance	4.3	DFD		
Select Transit Route	6.6.4	PSPEC	TRV	Information Service Provider
Support Transit Security and Coordination	4.4	DFD		
Surveil Secure Vehicle Area	5.1.7.3.1	PSPEC	PTV-SEC	Transit Vehicle Subsystem
Surveil Traveler Secure Area	5.1.7.1.1	PSPEC	PTSF-SEC	Remote Traveler Support

Update Roadside Transit Fare Data	4.7.2.6	PSPEC	PTSF-CFC	Remote Traveler Support
Update Transit Fare Data	7.3.1.7	PSPEC	FS	Transit Management

NIA PSPEC to TCIP Entities Map

NIA Name	NIA Node	NIA TYPE	TCIP Entity	NIA Subsys Ref
Update Transit Map Data	4.2.3.9	PSPEC	GIS	Transit Management
Update Transit Vehicle Fare Data	4.6.6	PSPEC	PTV-CFC	Transit Vehicle Subsystem
Update Transit Vehicle Information	4.3.6	PSPEC	AM	Transit Management
Update Transit Vehicle Operator Information	4.5.6	PSPEC	OAS	Transit Management

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
1.1.2.1	1.2.5.4	Publish Stop Point Parking	parking_lot_dynamic_information_request_by_traffic
1.1.3	4.1.4	------------	prediction_data
1.1.4.1	4.1.6	------------	traffic_data_for_transit
1.1.4.1	4.2.1.3	------------	traffic_data_for_transit
1.2.2.1	4.1.4	------------	transit_highway_priority_given
1.2.2.2	4.1.4	SCP Priority Request Scenario 1,2,4,5	transit_road_priority_given
1.2.3	4.1.4	SCP Priority Request Scenario 1,2,4,5	transit_ramp_priority_given
1.2.5.1	1.1.2.1	Publish Stop Point Parking	parking_lot_current_state
1.2.5.1	1.2.5.3	Publish Stop Point Parking	parking_lot_static_data_operator_update
1.2.5.1	1.2.5.4	Publish Stop Point Parking	parking_lot_static_data
1.2.5.1	4.2.3.3	Publish Stop Point Parking	static_parking_information_for_transit
1.2.5.2	1.2.5.4	Publish Stop Point Parking	other_parking_lot_dynamic_data
1.2.5.2	7.2.1.7	Publish Stop Point Parking	other_parking_lot_price_data_request
1.2.5.4	1.2.4.4	Publish Stop Point Parking	parking_information_for_dissemination
1.2.5.4	4.1.6	Publish Stop Point Parking-	dynamic_parking_information_for_transit
1.3.1.3	1.3.4.2	Publish Video Images	incident_video_image
1.3.2.1	1.3.2.2	IEEE 1512	possible_incident_data_update
1.3.2.2	1.1.2.1	IEEE 1512	planned_event_data
1.3.2.2	1.1.3	IEEE 1512	planned_events
1.3.2.2	1.3.2.3	IEEE 1512	incident_data_update
1.3.2.2	1.3.2.4	IEEE 1512	planned_events_new_data
1.3.2.2	1.3.2.5	IEEE 1512	current_incidents_new_data
1.3.2.2	1.3.4.1	IEEE 1512	possible_incidents_data_output
1.3.2.2	4.1.4	IEEE 1512	planned_events
1.3.2.2	6.2.1.1	IEEE 1512	planned_events
1.3.2.2	6.6.1	IEEE 1512	planned_events
1.3.2.2	6.6.2.2	IEEE 1512	planned_events
1.3.2.2	6.6.5	IEEE 1512	planned_events
1.3.2.2	9.2.1	IEEE 1512	m_and_c_plan_feedback_from_traffic

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
1.3.2.2	Event Promoters	IEEE 1512	tevp-event_confirmation
1.3.2.3	1.1.2.1	IEEE 1512	current_incident_data
1.3.2.3	1.1.3	IEEE 1512	current_incident_data
1.3.2.3	1.3.2.4	IEEE 1512	request_planned_events_data
1.3.2.3	1.3.2.5	IEEE 1512	current_incidents_data_update
1.3.2.3	1.3.2.5	IEEE 1512	current_incidents_data_request
1.3.2.3	1.3.3	IEEE 1512	current_incidents_data_output
1.3.2.3	1.3.4.1	IEEE 1512	current_incidents
1.3.2.4	1.1.5	IEEE 1512	request_other_planned_events_data
1.3.2.4	1.1.5	IEEE 1512	planned_events_local_data
1.3.2.4	1.3.2.3	IEEE 1512	planned_events_data
1.3.2.4	1.3.4.1	IEEE 1512	planned_events_data_output
1.3.2.5	1.1.5	IEEE 1512	request_other_current_incidents_data
1.3.2.5	1.3.2.3	IEEE 1512	current_incidents_data
1.3.2.5	1.3.2.6	IEEE 1512	incidents_for_routing
1.3.2.6	1.1.5	IEEE 1512	traffic_detour_info_for_other_traffic
1.3.2.6	1.1.5	IEEE 1512	traffic_detour_control_for_other_traffic
1.3.2.6	1.2.4.2	IEEE 1512	freeway_control_request_for_detours
1.3.2.6	1.3.2.5	IEEE 1512	incidents_data_request_for_routing
1.3.2.6	1.3.5	IEEE 1512	request_predetermined_incident_response_data
1.3.2.6	4.1.6	Publish Incidents, IEEE 1512	roadway_detours_and_closures_for_transit
1.3.2.6	5.1.4	IEEE 1512	emergency_route_response
1.3.2.6	5.1.4	IEEE 1512	roadway_detours_and_closures_for_em
1.3.2.6	6.5.1	IEEE 1512	roadway_detours_and_closures_for_isp
1.3.3	1.2.1	IEEE 1512	cv_incident_override
1.3.3	1.2.1	IEEE 1512	incident_strategy_override
1.3.3	1.3.4.2	IEEE 1512	undefined_incident_response
1.3.3	5.1.1.3	IEEE 1512	incident_alert
1.3.3	5.1.4	IEEE 1512	incident_response_clear
1.3.3	9.1.7	IEEE 1512	incident_info_from_traffic
1.3.4.1	1.3.2.3	IEEE 1512	current_incidents_request

| 1.3.4.2 | 1.3.1.3 | Publish Video Images, IEEE 1512 | incident_video_image_control |

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
1.3.4.2	1.3.2.3	IEEE 1512	reclassify_incidents
1.3.4.2	1.3.4.1	IEEE 1512	request_incident_operations_data
1.3.4.2	1.3.4.4	IEEE 1512	request_incident_map_display_update
1.3.4.2	Traffic Operations Personnel	IEEE 1512	ttop-wide_area_alert_notification
1.3.4.2	Traffic Operations Personnel	IEEE 1512	ttop-possible_incidents_data
1.3.4.3	1.3.2.1	IEEE 1512	media_incident_data_updates
1.3.4.3	Media	IEEE 1512	tm-incident_data
1.3.5	1.3.4.2	IEEE 1512	defined_incident_response_data
1.4.2	4.1.5	Publish Service Bulletins	transit_conditions_demand_request
1.4.2	4.2.3.3	Publish Trip Itinerary List	transit_services_demand_request
1.4.2	7.3.1.7	Publish Itinerary Fare	transit_fare_direct_request
1.4.2	7.4.2	Publish Stop Point Parking	parking_lot_charge_request
1.4.2	7.4.2	Publish Itinerary Fare	transit_fare_request
1.4.4	4.2.3.4	Publish Service Bulletins	transit_services_changes_request
2.1.1.5	2.1.1.6	Publish Stoppoint List	geofence_data_for_tracking
4.1.1	4.1.2.1	------------	transit_vehicle_arrival_times
4.1.1	4.1.3	------------	transit_vehicle_on_board_data
4.1.1	4.1.6	------------	env_probe_data_from_transit_vehicle
4.1.1	4.1.6	Unload PTV Performance Data	transit_vehicle_collected_trip_data
4.1.2.1	4.1.2.2	------------	transit_vehicle_deviations
4.1.2.1	4.1.2.3	------------	transit_vehicle_deviation_data
4.1.2.1	4.1.4	Publish PTV Adherence	transit_vehicle_deviations_from_schedule
4.1.2.1	4.1.6	------------	transit_vehicle_eta
4.1.2.1	4.1.6	Publish PTV Adherence	transit_vehicle_schedule_deviation
4.1.2.1	4.2.3.6	Publish PTV-AVL	transit_services_for_eta_request
4.1.2.1	6.2.3	------------	transit_vehicle_eta_for_advisory
4.1.2.2	4.1.2.3	------------	transit_vehicle_corrective_instructions
4.1.2.2	4.1.2.4	------------	transit_vehicle_arrival_conditions
4.1.2.2	4.1.2.5	SCP Priority Request Scenario (1, 4-Message, 4-Optical)	transit_vehicle_priority_request
4.1.2.3	4.1.6	Report Operator Message	transit_service_status

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
4.1.2.3	Transit Vehicle Operator	------------	ttvo-corrective_instructions
4.1.2.3	Transit Vehicle Operator	------------	ttvo-transit_vehicle_schedule_deviations
4.1.2.4	Multimodal Transportation Service Provider	------------	tmtsp-transit_arrival_changes
4.1.2.5	1.2.7.3	SCP Priority Request Scenario (1, 4-Message, 4-Optical)	transit_vehicle_roadway_priorities
4.1.3	4.1.2.1	Publish Onboard Location	transit_vehicle_location_for_eta
4.1.3	4.1.4	Publish PTV Adherence	transit_vehicle_location_for_deviation
4.1.3	4.1.6	Publish PTV-AVL	transit_vehicle_location_for_store
4.1.3	4.2.1.2	------------	paratransit_vehicle_location
4.1.3	4.4.1	Publish PTV-AVL	transit_vehicle_location_for_security
4.1.3	4.6.5	Publish Onboard Location	transit_vehicle_location_for_fares
4.1.3	5.1.7.3.1	Publish PTV-AVL	secure_surveillance_transit_vehicle_location
4.1.3	5.1.7.3.3	Publish PTV-AVL	secure_sensors_transit_vehicle_location
4.1.3	5.1.7.3.5	Publish PTV-AVL	secure_transit_vehicle_location
4.1.3	6.2.7	------------	transit_vehicle_location_for_advisories
4.1.4	1.2.2.1	------------	transit_highway_overall_priority
4.1.4	1.2.2.2	------------	transit_road_overall_priority
4.1.4	1.2.3	------------	transit_ramp_overall_priority
4.1.4	4.1.2.2	Report Dispatch Message	approved_corrective_plan
4.1.4	4.1.6	------------	prediction_request
4.1.4	4.1.6	Publish PTV Adherence	transit_vehicle_deviation_update
4.1.4	4.1.7	Publish PTV Adherence	transit_vehicle_arrival_deviations
4.1.4	9.2.1	------------	m_and_c_plan_feedback_from_transit
4.1.4	Transit System Operators	------------	ttso-proposed_corrections
4.1.5	1.1.2.5	------------	transit_probe_data
4.1.5	1.4.2	Unload PTV Performance Data	transit_running_data_for_demand
4.1.5	4.1.6	Publish Stop Point ETA, Publish Service Status	transit_information_request
4.1.5	4.2.3.5	Publish Vehicle Inventory	transit_vehicle_data
4.1.5	4.2.4	Publish Vehicle Inventory	transit_vehicle_data_for_archive

| 4.1.5 | 4.3.1 | Publish PTV Health Alarms, Publish PTV Parameters | transit_vehicle_status |

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
4.1.5	4.3.4	------------	transit_vehicle_status
4.1.5	4.7.1	Publish Stop Point ETA, Publish Service Status	transit_vehicle_arrival_time
4.1.5	6.8.3.2	Publish Service Status	transit_vehicle_arrival_time
4.1.5	Transit System Operators	------------	ttso-transit_vehicle_data
4.1.6	1.2.5.4	------------	parking_lot_dynamic_information_request_by_transit
4.1.6	4.1.2.2	------------	road_network_info_for_transit
4.1.6	4.1.5	Publish PTV-AVL, Publish PTV Adherence, Publish PTV Health Alarms, Publish PTV Parameters, Unload PTV Performance Data	transit_vehicle_information
4.1.6	4.1.8	------------	transit_vehicle_deviations_details
4.1.6	4.1.8	Publish Service Status	transit_deviation_data_received
4.1.6	4.1.9	Publish PTV Health Alarms, Publish PTV Parameters, Unload PTV Performance Data	transit_vehicle_collected_maintenance_data_request
4.1.6	4.2.3.7	Publish Incidents, Publish Incident Report History	traffic_incident_data_for_transit
4.1.6	4.4.1	Publish PTV Adherence, Publish PTV-AVL	transit_vehicle_off_route_indication
4.1.6	4.7.1	------------	transit_vehicle_user_data
4.1.6	5.1.7.3.6	------------	transit_vehicle_operator_authentication_database_update
4.1.6	5.1.7.3.6	Report Operator Sign-on, Report Operator Sign-Off	transit_vehicle_operator_authentication
4.1.6	6.2.3	------------	transit_vehicle_advisory_eta
4.1.6	9.4.2	------------	env_probe_info_from_transit
4.1.6	Media	------------	tm-transit_schedule_deviations_to_media
4.1.6	Surface Transportation Weather Service	------------	tstws-trans_weather_info_request
4.1.7	Multimodal Transportation Service Provider	------------	tmtsp-transit_arrival_deviations
4.1.8	4.1.6	------------	transit_vehicle_deviations_details_request
4.1.8	6.1.5	------------	transit_deviations_personal_request_for_archive
4.1.8	6.1.5	------------	transit_deviation_kiosk_request_for_archive
4.1.8	6.2.1.3	------------	transit_running_data_for_advisory_output
4.1.8	6.3.2	Publish Trip Itinerary List	transit_services_for_distribution_to_ki

			osks
4.1.8	6.3.2	------------	transit_deviations_for_broadcast_to_ki osks

Dialog Flow-NIA Flow Mapping

NIA Source	NIA Sink	Dialog	NIA FLow
4.1.8	6.3.2	------------	transit_deviations_for_kiosks
4.1.8	6.5.6	------------	transit_deviations_for_511
4.1.8	6.5.6	Publish Trip Itinerary List	transit_services_for_511
4.1.8	6.6.4	Publish Stop Service, Publish Text Timetable	transit_running_data_for_guidance
4.1.8	6.8.3.2	------------	transit_deviations_for_broadcast_to_personal_devices
4.1.8	6.8.3.2	Publish Trip Itinerary List	transit_services_for_distribution_to_personal_devices
4.1.8	6.8.3.2	------------	transit_deviations_for_personal_devices
4.1.8	Media	------------	tm-transit_vehicle_deviations
4.1.9	4.1.6	Publish PTV Health Alarms, Publish PTV Parameters, Unload PTV Performance Data	transit_vehicle_collected_maintenance_data
4.2.1.1	4.2.1.3	------------	paratransit_request
4.2.1.1	4.2.1.4	------------	paratransit_requested_services
4.2.1.1	4.2.4	------------	paratransit_service_data_for_archive
4.2.1.1	6.1.1	------------	paratransit_personal_schedule
4.2.1.3	4.1.6	------------	request_for_traffic_info
4.2.1.3	4.2.1.1	------------	paratransit_schedule
4.2.1.3	4.2.2	------------	transit_services_demand_response_request
4.2.1.4	4.2.1.6	------------	paratransit_transit_vehicle_operator_instructions
4.2.1.4	4.2.2	------------	paratransit_service_output
4.2.1.4	4.5.5	------------	paratransit_services_for_transit_vehicle_operators
4.2.1.4	Transit System Operators	------------	ttso-paratransit_service
4.2.1.5	4.2.1.2	------------	paratransit_transit_vehicle_availability
4.2.1.6	4.2.1.4	------------	paratransit_service_status
4.2.1.6	Transit Vehicle Operator	------------	ttvo-paratransit_information
4.2.2	4.2.1.3	------------	transit_services_for_demand_response
4.2.2	4.2.3.1	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	transit_routes_current_data
4.2.2	4.2.3.2	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List,	transit_schedule_current_data

Publish Stoppoint List (No Paratransit
data)

Dialog Flow-NIA Flow Mapping

Source	*NIA Sink*	*Dialog*	*NIA FLow*
4.2.3.1	4.2.2	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	transit_routes_updates
4.2.3.1	4.2.2	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	transit_routes_request
4.2.3.1	4.2.3.8	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	transit_routes_data
4.2.3.2	4.2.2	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	transit_schedule_request
4.2.3.2	4.2.2	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	transit_schedule_updates
4.2.3.2	4.2.3.8	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	transit_schedule_data
4.2.3.3	1.2.5.1	Publish Stoppoint Parking	parking_lot_static_information_request _by_transit
4.2.3.3	1.4.2	Publish Text Timetable, Publish Stop Service, Publish Transfers, Publish Running Times, Publish Trip Itinerary	transit_services_for_demand
4.2.3.3	4.1.2.1	Publish Text Timetable, Publish Stop Service, Publish Transfers, Publish Running Times, Publish Trip Itinerary	traveler_transit_information
4.2.3.3	4.1.8	Publish Text Timetable, Publish Stop Service, Publish Transfers, Publish Running Times, Publish Trip Itinerary	transit_services_for_isp
4.2.3.3	4.2.3.8	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	request_transit_service_external_data
4.2.3.3	4.2.4	-----------	transit_services_for_deployment
4.2.3.3	4.7.1	Publish Text Timetable, Publish	transit_services_for_travelers

			Stop Service, Publish Transfers, Publish Running Times, Publish Trip Itinerary
4.2.3.3	6.2.1.3	-----------	transit_services_for_advisory_data

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
4.2.3.3	6.2.7	Publish Service Bulletins	traveler_transit_information_for_transit_advisories
4.2.3.3	6.3.2	Publish Text Timetable, Publish Stop Service, Publish Transfers, Publish Running Times, Publish Trip Itinerary List	transit_services_for_kiosks
4.2.3.3	6.6.4	Publish Trip Itineraries List	transit_services_for_guidance
4.2.3.3	6.8.3.2	Publish Text Timetable, Publish Stop Service, Publish Transfers, Publish Running Times, Publish Trip Itinerary	transit_services_for_personal_devices
4.2.3.3	Multimodal Transportation Service Provider	Publish Text Timetable, Publish Stop Service, Publish Transfers, Publish Running Times, Publish Trip Itinerary	tmtsp-transit_service_data
4.2.3.4	1.4.4	----------	transit_services_changes_response
4.2.3.4	4.2.3.1	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	update_routes
4.2.3.4	4.2.3.2	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	update_schedules
4.2.3.4	4.2.3.8	----------	request_transit_services_data_for_output
4.2.3.4	4.2.3.9	Load Map Image, Publish Map Image	request_transit_map_update
4.2.3.4	Transit System Operators	----------	ttso-parameters
4.2.3.4	Transit System Operators	----------	ttso-transit_services_output
4.2.3.5	4.2.4	Unload PTV Performance Data	transit_operational_data_for_archive
4.2.3.5	4.7.2.7	----------	transit_roadside_passenger_data_request
4.2.3.5	Transit System Operators	----------	ttso-passenger_loading_error
4.2.3.6	4.1.2.1	----------	transit_services_for_eta
4.2.3.6	4.1.2.2	----------	transit_services_for_corrections
4.2.3.6	4.1.4	----------	transit_services_for_scenarios
4.2.3.6	4.2.3.8	----------	request_transit_service_internal_data
4.2.3.6	4.5.5	----------	transit_services_for_transit_vehicle_operators
4.2.3.6	4.6.2	----------	transit_services_for_vehicle_fares

| 4.2.3.6 | 4.7.2.2 | ----------- | transit_services_for_roadside_fares |
| 4.2.3.6 | 7.3.1.2 | Publish Itinerary Fare | transit_services_for_advanced_fares |

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
4.2.3.7	4.2.3.8	----------	trmc_list
4.2.3.7	4.2.3.8	----------	other_transit_management_service_data
4.2.3.7	6.1.1	Publish Transfers, Publish Transfer Cluster List	transit_transfer_point_list
4.2.3.7	Other Transit Management	----------	totrm-transit_traveler_information
4.2.3.7	Other Transit Management	----------	totrm-transit_service_data
4.2.3.7	Other Transit Management	----------	totrm-transit_fare_data_coordination
4.2.3.8	4.2.3.3	----------	transit_service_external_data
4.2.3.8	4.2.3.4	----------	transit_services_data_for_output
4.2.3.8	4.2.3.6	----------	transit_service_internal_data
4.2.3.8	4.2.3.7	----------	transit_services_for_other_transit_management
4.2.3.9	Map Update Provider	Publish Map Image, Load Map image	tmup-transit_map_update_request
4.2.4	8.1	----------	transit_archive_data
4.2.4	Transit System Operators	----------	ttso-archive_status
4.3.1	4.3.2	----------	transit_vehicle_maintenance_information
4.3.1	4.3.7	----------	transit_vehicle_maintenance
4.3.2	4.2.3.5	Publish Unassigned Vehicles(Deprecated)	transit_vehicle_availability
4.3.2	4.3.3	----------	transit_vehicle_maintenance_schedule_data
4.3.2	4.3.7	----------	transit_vehicle_maintenance_schedule
4.3.2	4.4.1	Publish Unassigned Vehicles(Deprecated)	available_transit_vehicles
4.3.2	4.5.5	Report PTV Not Service Ready, Publish Unassigned Vehicles(Deprecated)	transit_vehicle_availability
4.3.3	4.2.4	----------	transit_technician_info
4.3.3	4.3.4	----------	transit_technician_work_assignment
4.3.3	Transit System Operators	----------	ttso-work_schedule
4.3.3	Transit System Operators	----------	ttso-technician_information
4.3.4	4.3.3	----------	transit_vehicle_maintenance_verification_results
4.3.4	4.3.7	----------	transit_vehicle_maintenance_log_data

| 4.3.5 | 4.3.7 | ----------- | transit_vehicle_maintenance_specs_update |

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
4.3.5	4.3.7	----------	transit_vehicle_maintenance_data_request
4.3.5	Transit System Operators	----------	ttso-transit_vehicle_maintenance_informati
4.3.6	4.3.7	----------	transit_vehicle_maintenance_data_update
4.3.7	4.2.4	----------	transit_vehicle_maintenance_info
4.3.7	4.3.1	----------	transit_vehicle_maintenance_specs
4.3.7	4.3.4	----------	transit_vehicle_maintenance_specs
4.3.7	4.3.5	----------	transit_vehicle_maintenance_data
4.4.1	1.3.2.6	----------	emergency_transit_schedule_information_for_traffic
4.4.1	1.3.7	----------	evacuation_transit_schedule_information_for_traffic
4.4.1	4.1.6	------------	transit_vehicle_operator_wide_area_alerts
4.4.1	4.2.3.1	Command Load PTV Trips, Report Detour	emergency_transit_route
4.4.1	4.2.3.2	----------	emergency_transit_schedule
4.4.1	4.2.4	----------	transit_emergency_data_for_archive
4.4.1	4.2.4	Publish Incident, Publish Incident Report History	transit_incident_info_for_archive
4.4.1	4.4.2	Publish Incident, Report Incident, Report Incident Update	transit_incident_information
4.4.1	4.4.2	----------	secure_transit_vehicle_emergency_information
4.4.1	4.4.4	Report Operator Alarm, Report Passenger Alarm	transit_operator_emergency_request
4.4.1	4.4.4	---------- (Not in NA DDE Descriptions)	transit_emergency_response_plan_to_personnel
4.4.1	4.4.4	Report Passenger Alarm, Report Operator Alarm	transit_operator_incident_information
4.4.1	4.6.6	----------	emergency_transit_fares
4.4.1	4.7.1	---------	transit_wide_area_alert_info
4.4.1	5.1.1.3	----------	transit_emergency_data
4.4.1	5.1.1.3	Publish Incident, Report Incident, Report Incident Update	transit_incident_details
4.4.1	5.1.4	---------	transit_system_status
4.4.1	5.1.4	----------	response_for_emergency_transit_support
4.4.1	5.1.4	---------	transit_schedule_information_during_emergencies
4.4.1	5.1.7.3.5	Command Remote PTV Disable	remote_transit_vehicle_disable
4.4.1	5.1.7.3.5	Silent Alarm, Report Passenger Alarm,	secure_transit_vehicle_alarm_acknowl

		Report Operator Alarm	edge_for_transit
4.4.1	5.1.7.3.5	Command Remote PTV Enable	transit_vehicle_disable_reset

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
4.4.1	5.1.8	----------	alert_notification_status_from_transit
4.4.1	5.7.2	----------	disaster_response_plan_coordination_from_transit
4.4.1	5.7.4	----------	evacuation_plan_coordination_from_transit
4.4.1	5.7.5	---------	transit_schedule_information_during_evacuation
4.4.1	5.7.5	----------	transit_evacuation_status
4.4.1	6.2.1.3	---------	transit_incident_data
4.4.1	6.2.7	---------	transit_traveler_wide_area_alert_info
4.4.1	6.5.1	----------	transit_evacuation_data_for_isp
4.4.1	Media	---------	tm-transit_incident_information
4.4.1	Media	---------	tm-transit_emergency_information
4.4.2	4.4.3	---------	request_transit_preplanned_incident_responses
4.4.2	5.1.4	---------	transit_coordination_data
4.4.2	Transit System Operators	---------	ttso-coordination_request
4.4.3	4.4.1	---------	transit_preplanned_responses_for_archive
4.4.3	4.4.2	---------	transit_preplanned_incident_responses
4.4.3	Transit System Operators	---------	ttso-response_parameter_output
4.4.4	4.4.1	---------	transit_media_interface_parameters
4.4.4	4.4.1	---------	wide_area_alert_notification_status
4.4.4	4.4.1	---------	transit_operator_security_action
4.4.4	4.4.1	---------	transit_emergency_response_plan_from_personnel
4.4.4	4.4.1	Silent Alarm	transit_vehicle_disable_from_operator
4.4.4	4.4.1	Silent Alarm, Operator Alarm	transit_operator_request_acknowledge
4.4.4	Transit System Operators	---------	ttso-potential_incidents_alarm
4.4.4	Transit System Operators	---------	ttso-infrastructure_integrity_status
4.4.4	Transit System Operators	---------	ttso-media_parameters
4.4.4	Transit System Operators	---------	ttso-emergency_request
4.4.4	Transit System Operators	---------	ttso-emergency_plan_response
4.4.4	Transit System Operators	---------	ttso-wide_area_alert_notification

Dialog Flow-NIA Flow Mapping

NIA Source	NIA Sink	Dialog	NIA FLow
4.4.4	Transit System Operators	---------	ttso-transit_vehicle_disable_status
4.5.1	4.5.4	---------	transit_vehicle_operator_performance_data
4.5.1	4.5.8	---------	transit_vehicle_operator_performance
4.5.2	4.4.1	Publish Unassigned Operators	available_transit_operators
4.5.2	4.5.4	---------	transit_vehicle_operator_availability_data
4.5.2	4.5.8	---------	transit_vehicle_operator_availability
4.5.3	4.5.4	---------	transit_vehicle_operator_cost_effectiveness_data
4.5.3	4.5.8	---------	transit_vehicle_operator_cost_effectiveness
4.5.4	4.5.5	---------	transit_vehicle_operator_eligibility_data
4.5.4	4.5.8	---------	transit_vehicle_operator_eligibility
4.5.5	4.2.4	---------	transit_route_assign_for_archive
4.5.5	Transit Vehicle Operator	---------	ttvo-route_assignments
4.5.6	4.5.8	---------	transit_vehicle_operator_consideration_inputs
4.5.7	4.5.8	---------	transit_vehicle_operator_consideration_updates
4.5.7	4.5.8	---------	transit_vehicle_operator_information_output_request
4.5.7	Transit System Operators	---------	ttso-transit_vehicle_operator_information
4.5.8	4.2.4	---------	transit_vehicle_operator_info_for_archive
4.5.8	4.5.1	---------	transit_vehicle_operator_performance_considerations
4.5.8	4.5.2	---------	transit_vehicle_operator_availability_considerations
4.5.8	4.5.3	---------	transit_vehicle_operator_cost_effectiveness_considerations
4.5.8	4.5.4	---------	transit_vehicle_operator_eligibility_considerations
4.5.8	4.5.5	---------	transit_vehicle_operator_route_assignment_considerations
4.5.8	4.5.7	---------	transit_vehicle_operator_information_output
4.6.1	4.6.2	---------	traveler_vehicle_tag_identity
4.6.1	4.6.4	---------	traveler_vehicle_tag_identity
4.6.1	7.3.3	---------	traveler_vehicle_image
4.6.2	4.6.3	---------	traveler_vehicle_ride
4.6.2	4.6.7	---------	traveler_vehicle_ride_data
4.6.3	4.6.4	---------	traveler_vehicle_fare

4.6.4   4.6.5   ----------   traveler_vehicle_payment_response

Dialog Flow-NIA Flow Mapping

NIA Source	NIA Sink	Dialog	NIA FLow
4.6.4	4.6.7	---------	traveler_vehicle_processed_fare_data
4.6.4	5.4.5	---------	fare_collection_vehicle_violation_infor mation
4.6.4	7.3.1.4	---------	request_vehicle_fare_payment
4.6.4	7.3.1.5	Load Fare Collection Data	bad_tag_list_request
4.6.4	Transit Vehicle Operator	---------	ttvo- request_fare_transaction_mode_set_u
4.6.4	Transit Vehicle Operator	---------	ttvo-batch_mode_data_transfer_status
4.6.4	Traveler	---------	tt-vehicle_access_message
4.6.5	4.6.2	---------	traveler_vehicle_information
4.6.5	4.6.8	---------	transit_vehicle_advanced_payment_re quest
4.6.5	Traveler	---------	tt-vehicle_payment_confirmed
4.6.5	Traveler Card	---------	ttc- debited_traveler_payment_at_vehicle
4.6.6	4.6.3	Load Fare Collection Data	transit_fares_for_vehicle
4.6.7	4.2.3.5	Unload Fare Collection Data, Unload PTV Performance Data	transit_vehicle_passenger_data
4.6.8	4.6.5	---------	transit_vehicle_advanced_payment_re sponse
4.6.8	7.3.2	---------	advanced_tolls_and_charges_vehicle_ request
4.7.1	4.2.3.3	---------	transit_services_travelers_request
4.7.1	Traveler	---------	tt-transit_information
4.7.1	Traveler	---------	tt-transit_vehicle_information
4.7.2.1	4.7.2.2	---------	traveler_roadside_tag_identity
4.7.2.1	4.7.2.4	---------	traveler_roadside_tag_identity
4.7.2.1	7.3.3	Unload Video Images	traveler_roadside_image
4.7.2.2	4.7.2.3	---------	traveler_roadside_ride
4.7.2.2	4.7.2.7	---------	traveler_roadside_ride_data
4.7.2.3	4.7.2.4	Load Fare Collection Data	traveler_roadside_fare
4.7.2.4	4.7.2.5	---------	traveler_roadside_payment_response
4.7.2.4	4.7.2.7	Unload Fare Collection Data	traveler_roadside_processed_fare_dat a
4.7.2.4	5.4.7	---------	fare_collection_roadside_violation_info rmation
4.7.2.4	7.3.1.4	---------	request_roadside_fare_payment
4.7.2.4	Traveler	---------	tt-roadside_access_message
4.7.2.5	4.7.2.2	---------	traveler_roadside_information

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
4.7.2.5	7.3.2	----------	advanced_tolls_and_charges_roadside_request
4.7.2.5	7.4.1.5	----------	other_services_roadside_request
4.7.2.5	7.5.2	----------	traveler_advanced_payment_at_roadside
4.7.2.5	Traveler	----------	tt-other_services_roadside_confirmed
4.7.2.5	Traveler	----------	tt-roadside_payment_confirmed
4.7.2.7	4.2.3.5	Unload Fare Collection Data	transit_roadside_passenger_data
5.1.1.2	5.1.1.1	-----------	incident_cvo_data
5.1.1.4.1	4.4.1	-----------	infrastructure_integrity_status_for_transit
5.1.1.4.1	5.1.7.3.3	-----------	vehicle_threat_sensor_control
5.1.1.4.1	5.1.7.3.3	-----------	vehicle_object_detection_sensor_control
5.1.1.4.1	5.1.7.3.4	-----------	vehicle_secure_area_sensor_field_proc_parameters
5.1.1.4.2	5.1.7.3.1	-----------	vehicle_secure_area_surveillance_control
5.1.1.4.2	5.1.7.3.2	-----------	vehicle_secure_area_surveillance_field_proc_parameters
5.1.1.4.4	4.4.1	-----------	threat_info_for_transit
5.1.1.4.6	5.1.7.4	Silent Alarm, Report Passenger Alarm, Report Operator Alarm	silent_and_audible_alarm_response
5.1.3	4.4.1	-----------	emergency_data_for_transit
5.1.3	4.4.1	-----------	deactivate_traveler_information_restrictions_for_transit
5.1.3	4.4.1	-----------	traveler_information_restrictions_for_transit
5.1.3	4.4.2	-----------	transit_incident_coordination_data
5.1.3	5.1.7.3.5	-----------	secure_transit_vehicle_broadcast_message
5.1.4	4.4.1	----------	request_for_emergency_transit_support
5.1.7.1.1	5.1.1.4.2	Unload Video Images, Publish Video Images	traveler_secure_area_images
5.1.7.1.1	5.1.7.1.2	Unload Video Images, Publish Video Images	traveler_secure_area_images_for_field_proc
5.1.7.1.2	5.1.1.4.2	Unload Video Images, Publish Video Images	field_processed_traveler_secure_area_images
5.1.7.1.5	5.1.7.4	Report Passenger Alarm	traveler_alarm_request
5.1.7.2.1	5.1.1.4.2	Publish Video Images	secure_area_images
5.1.7.3.1	5.1.1.4.2	Silent Alarm	vehicle_secure_area_audio
5.1.7.3.1	5.1.1.4.2	-----------	vehicle_secure_area_images
5.1.7.3.1	5.1.1.4.2	-----------	vehicle_secure_area_surveillance_status

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| 5.1.7.3.1 | 5.1.1.4.2 | Publish PTV-AVL | transit_vehicle_location_for_surveillance_and_security |

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
5.1.7.3.1	5.1.7.3.2	Silent Alarm	vehicle_secure_area_audio_for_field_proc
5.1.7.3.1	5.1.7.3.2	------------	vehicle_secure_area_images_for_field_proc
5.1.7.3.1	5.1.7.3.6	------------	vehicle_secure_area_surveillance_for_transit_operator
5.1.7.3.2	5.1.1.4.2	------------	field_processed_vehicle_secure_area_images
5.1.7.3.2	5.1.1.4.2	Silent Alarm	field_processed_vehicle_secure_area_audio
5.1.7.3.2	5.1.1.4.2	------------	vehicle_secure_area_surveillance_threat_data
5.1.7.3.3	5.1.1.4.1	------------	vehicle_threat_sensor_data
5.1.7.3.3	5.1.1.4.1	------------	vehicle_object_detection_sensor_status
5.1.7.3.3	5.1.1.4.1	------------	vehicle_threat_sensor_status
5.1.7.3.3	5.1.1.4.1	------------	vehicle_object_detection_sensor_data
5.1.7.3.3	5.1.1.4.1	Publish PTV-AVL	transit_vehicle_location_for_sensors
5.1.7.3.3	5.1.7.3.4	------------	vehicle_threat_sensor_data_for_field_proc
5.1.7.3.3	5.1.7.3.4	------------	vehicle_object_detection_sensor_data_for_field_proc
5.1.7.3.4	5.1.1.4.1	------------	vehicle_secure_area_sensor_threat_data
5.1.7.3.4	5.1.1.4.1	------------	field_processed_vehicle_threat_sensor_data
5.1.7.3.4	5.1.1.4.1	------------	field_processed_vehicle_object_detection_sensor_data
5.1.7.3.5	4.4.1	Silent Alarm, Report Passenger Alarm, Report Operator Alarm	secure_transit_vehicle_alarm_request_for_transit
5.1.7.3.5	5.1.7.3.6	Command Remote PTV Disable	transit_vehicle_disabled
5.1.7.3.5	5.1.7.3.6	Silent Alarm, Report Passenger Alarm, Report Operator Alarm	emergency_response_to_transit_operator
5.1.7.3.5	5.1.7.4	Report Operator Alarm, Report Passenger Alarm, Silent Alarm, Publish PTV Health Alarm	transit_vehicle_location_for_alarms
5.1.7.3.5	5.1.7.4	Silent Alarm, Report Passenger Alarm, Report Operator Alarm	secure_transit_vehicle_alarm_request
5.1.7.3.5	Basic Transit Vehicle	Command Remote PTV Disable	tbtv-transit_vehicle_disable_command
5.1.7.3.5	Basic Transit Vehicle	Command Remote PTV Enable	tbtv-transit_vehicle_disable_reset_command
5.1.7.3.5	Traveler	------------	tt-secure_transit_vehicle_broadcast_mes
5.1.7.3.5	Traveler	------------	tt-secure_transit_vehicle_emergency_re
5.1.7.3.6	4.1.6	Report Operator Sign-Off, Report Operator Sign-On	transit_vehicle_operator_authentication_status
5.1.7.3.6	4.1.6	------------	request_transit_operator_authentication
5.1.7.3.6	5.1.7.3.1	------------	vehicle_secure_area_surveillance_con

			trol_from_transit_operator
5.1.7.3.6	5.1.7.3.5	Report Operator Sign-on, Report Operator Sign-Off	local_transit_operator_authentication

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
5.1.7.3.6	5.1.7.3.5	Report Operator Alarm, Silent Alarm	emergency_request_from_transit_operator
5.1.7.3.6	Transit Vehicle Operator	------------	ttvo-secure_transit_vehicle_surveillance
5.1.7.3.6	Transit Vehicle Operator	------------	ttvo-secure_transit_vehicle_emergency_re
5.1.7.3.6	Transit Vehicle Operator	Command Remote PTV Enable, Command Remote PTV Disable	ttvo-transit_vehicle_disable_status
5.1.7.4	5.1.1.3	Report Traveler Alarm, Report Operator Alarm, Report Passenger Alarm, Silent Alarm	silent_and_audible_alarm_data
5.1.7.4	5.1.1.4.6	Report Traveler Alarm, Report Operator Alarm, Report Passenger Alarm, Silent Alarm	silent_and_audible_alarm_request
5.1.7.4	5.1.7.1.5	Report Traveler Alarm	traveler_alarm_acknowledge
5.1.7.4	5.1.7.3.5	Report Operator Alarm, Report Passenger Alarm, Silent Alarm	secure_transit_vehicle_alarm_acknowledge
5.1.8	4.4.1	Report Dispatch Message	wide_area_alert_notification_for_transit
5.4.4	4.2.4	------------	bad_transit_collected_fare_payment
5.4.5	4.2.4	----------	bad_transit_vehicle_fare_payment
5.4.7	4.2.4	----------	bad_transit_roadside_fare_payment
5.7.1	4.4.1	----------	disaster_transportation_system_status_for_transit
5.7.2	4.4.1	----------	disaster_response_plan_coordination_to_transit
5.7.3	4.4.1	-----------	evacuation_transportation_system_status_for_transit
5.7.4	4.4.1	-----------	evacuation_plan_coordination_to_transit
5.7.5	4.4.1	-----------	evacuation_information_for_transit_management
5.7.5	4.4.1	------------	transit_evacuation_resource_request
6.1.1	1.2.5.1	Publish Stop Point Parking	parking_lot_static_information_request_by_isp
6.1.1	1.2.5.4	Publish Stop Point Parking	parking_lot_dynamic_information_request_by_isp
6.1.1	4.2.1.1	------------	paratransit_trip_request
6.1.1	4.2.3.7	Publish Transfers, Publish Transfer Clusters	request_transit_transfer_points
6.1.1	6.6.1	------------	paratransit_route_response
6.1.1	6.8.3.2	Report New Customer Profile, Report Update Customer Profile	traveler_personal_trip_information
6.1.2	4.2.1.1	------------	paratransit_service_confirmation
6.2.1.3	4.1.8	------------	transit_conditions_advisories_request
6.2.1.3	4.2.3.3	Publish Service Bulletins	transit_services_advisories_request

| 6.2.3 | 6.2.7 | ------------ | transit_advisory_data_request |

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
6.2.7	4.6.2	-----------	transit_advisory_vehicle_information
6.2.7	6.2.3	-----------	transit_advisory_data
6.3.2	4.1.8	-----------	transit_deviation_kiosk_request
6.3.2	4.1.8	-----------	transit_services_for_distribution_kiosk_request
6.3.2	4.2.3.3	Publish Trip Itinerary List	transit_services_kiosk_request
6.5.6	4.1.8	-----------	transit_deviations_511_request
6.5.6	4.1.8	-----------	transit_services_511_request
6.6.1	6.1.1	-----------	paratransit_route_request
6.6.1	6.1.2	-----------	paratransit_route_confirm
6.6.4	4.1.8	-----------	transit_conditions_guidance_request
6.6.4	4.2.3.3	Publish Trip Itinerary List	transit_services_guidance_request
6.6.4	6.6.1	-----------	transit_route
6.7.2.2	4.1.3	-----------	vehicle_location_for_transit
6.8.3.1	4.1.8	Publish Trip Itinerary List	traveler_transit_profile
6.8.3.2	4.1.8	-----------	transit_services_for_distribution_personal_request
6.8.3.2	4.1.8	-----------	transit_deviations_personal_request
6.8.3.2	4.2.3.3	Publish Trip Itinerary List	transit_services_personal_request
7.3.1.3	4.2.4	Unload Fare Collection Data	transit_fare_transactions
7.3.1.5	4.6.4	----------	confirm_vehicle_fare_payment
7.3.1.5	4.6.4	Load Fare Collection Data	bad_tag_list_update
7.3.1.5	4.7.2.4	---------	confirm_roadside_fare_payment
7.3.1.5	7.3.4	-----------	transit_roadside_fare_payment_request
7.3.1.5	7.3.4	-----------	transit_roadside_fare_payment_debited
7.3.1.5	7.3.5	-----------	transit_vehicle_fare_payment_debited
7.3.1.5	7.3.5	-----------	transit_vehicle_fare_payment_request
7.3.1.7	1.4.2	-----------	transit_fare_direct_details
7.3.1.7	4.6.6	Load Fare Collection Data	transit_vehicle_fare_data
7.3.1.7	4.7.2.6	-----------	transit_roadside_fare_data
7.3.1.7	7.3.1.2	-----------	transit_fares_for_advanced_payments
7.3.1.7	7.4.2	-----------	transit_fare_data
7.3.2	4.6.8	----------	advanced_tolls_and_charges_vehicle_confirm

| 7.3.2 | 4.7.2.5 | --------- | advanced_tolls_and_charges_roadside_confirm |

Dialog Flow-NIA Flow Mapping

NIA Source	NIA Sink	Dialog	NIA FLow
7.3.2	7.3.1.1	Publish Itinerary Fare	advanced_other_fares_request
7.3.3	4.6.1	----------	request_traveler_vehicle_image
7.3.3	4.7.2.1	---------	request_traveler_roadside_image
7.3.4	4.7.2.1	---------	traveler_roadside_tag_data
7.3.4	7.3.1.5	-----------	transit_roadside_fare_payment_confir mation
7.3.5	4.6.1	----------	traveler_vehicle_tag_data
7.3.5	7.3.1.5	-----------	transit_vehicle_fare_payment_confirm ation
7.4.1.5	4.2.4	-----------	traveler_payments_transactions
7.4.1.5	4.7.2.5	---------	other_services_roadside_response
7.4.2	1.4.2	-----------	transit_fare_details
7.4.2	7.3.1.7	-----------	transit_fare_data_request
7.5.2	4.7.2.5	---------	traveler_roadside_credit_identity_for_t ransit
8.1	4.2.4	----------	transit_archive_status
8.1	4.2.4	-----------	transit_archive_request
9.2.1	4.1.4	-----------	m_and_c_work_plans_for_transit
9.2.2	4.1.4	-----------	roadway_maint_status_for_transit
9.2.2	4.1.6	-----------	asset_restrictions_for_transit
9.3.2.3	4.1.6	-----------	work_zone_info_for_transit
9.4.4	4.1.6	-----------	road_weather_info_for_transit
Alerting and Advisory Systems	4.4.1	-----------	faas-alerts_and_advisories_for_transit
Basic Transit Vehicle	4.1.1	-----------	fbtv-vehicle_trip_data
Basic Transit Vehicle	4.1.9	-----------	fbtv-vehicle_maintenance_data
Basic Transit Vehicle	4.2.1.5	-----------	fbtv-availability
Map Update Provider	4.2.3.9	-----------	fmup-transit_map_update
Media	4.1.6	-----------	fm-transit_schedule_deviations_request
Media	4.1.8	-----------	fm-transit_vehicle_deviations_request
Media	4.4.1	----------	fm-transit_incident_information_request
Multimodal Transportation Service Provider	4.2.3.8	Publish Transfers, Publish Transfer Clusters	fmtsp-transit_service_data
Other ISP	6.2.1.3	-----------	foisp-transit_information_request

Other ISP   6.2.1.3   ------------   foisp-transit_data

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
Other Transit Management	4.2.3.7	----------(not in NA DDE Definitions)	fotrm-transit_traveler_information
Other Transit Management	4.2.3.7	-----------	fotrm-transit_fare_data_coordination
Other Transit Management	4.2.3.7	-----------	fotrm-transit_service_data
Roadway Environment	4.1.1	-----------	fre-environmental_conditions
Secure Area Environment	5.1.7.3.1	Silent Alarm	fsae-area_audio_for_transit_vehicle
Secure Area Environment	5.1.7.3.1	------------	fsae-area_image_for_transit_vehicle
Secure Area Environment	5.1.7.3.3	------------	fsae-area_characteristics_for_transit_vehicle
Surface Transportation Weather Service	4.1.6	------------	fstws-surface_trans_weather_observations
Surface Transportation Weather Service	4.1.6	------------	fstws-surface_trans_weather_forecasts
Telecommunications System for Traveler Information	6.5.6	Publish Trip Itinerary List	ftsti-511_caller_request
Telecommunications System for Traveler Information	6.5.6	---------	ftsti-511_batch_regional_info_request
Transit System Operators	4.1.4	------------	ftso-approved_corrections
Transit System Operators	4.1.5	------------	ftso-request_transit_vehicle_data
Transit System Operators	4.2.3.4	-----------	ftso-transit_display_update_request
Transit System Operators	4.2.3.4	-----------	ftso-planning_parameters
Transit System Operators	4.2.3.4	-----------	ftso-initiate_service_updates
Transit System Operators	4.2.3.4	Publish Master Schedule Version, Publish Route Schedule, Publish Pattern List, Publish Timepoint List, Publish Stoppoint List (No Paratransit data)	ftso-transit_services_output_request
Transit System Operators	4.2.3.4	-----------	ftso-planning_parameters_update_request
Transit System Operators	4.2.3.5	----------	ftso-passenger_loading_updates

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Transit System Operators	4.2.4	----------	ftso-archive_commands
Transit System Operators	4.3.3	-----------	ftso-technician_information_updates

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
Transit System Operators	4.3.3	----------	ftso-technician_information_request
Transit System Operators	4.3.5	----------	ftso-transit_vehicle_maintenance_informati
Transit System Operators	4.3.5	----------	ftso-transit_vehicle_maintenance_specs
Transit System Operators	4.3.6	----------	ftso-transit_vehicle_maintenance_updates
Transit System Operators	4.4.2	----------	ftso-coordination_data
Transit System Operators	4.4.3	----------	ftso-response_parameters
Transit System Operators	4.4.3	----------	ftso-request_response_parameter_output
Transit System Operators	4.4.4	----------	ftso-media_parameter_updates
Transit System Operators	4.4.4	----------	ftso-media_parameter_request
Transit System Operators	4.4.4	----------	ftso-alert_notification_status
Transit System Operators	4.4.4	Command Remote PTV Disable	ftso-disable_transit_vehicle
Transit System Operators	4.4.4	---------	ftso-emergency_plan_response
Transit System Operators	4.4.4	----------	ftso-security_action
Transit System Operators	4.5.7	---------	ftso-transit_vehicle_operator_information_u
Transit System Operators	4.5.7	---------	ftso-transit_vehicle_operator_information_r
Transit System Operators	4.5.7	---------	ftso-transit_vehicle_operator_route_prefere
Transit System Operators	7.3.1.7	---------	ftso-fare_updates
Transit System Operators	7.3.1.7	----------	ftso-request_fare_output
Transit Vehicle Operator	4.1.2.3	----------	ftvo-transit_service_status
Transit Vehicle Operator	4.2.1.6	------------	ftvo-paratransit_status
Transit Vehicle Operator	4.5.6	---------	ftvo-information_updates
Transit Vehicle Operator	4.6.4	---------	ftvo-fare_transaction_mode_set_up

Transit Vehicle Operator	4.6.4	----------	ftvo-request_batch_mode_data_transfer

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
Transit Vehicle Operator	5.1.7.3.6	Publish Operator Sign On, Report Operator Sign-On, Report Operator Sign-Off	ftvo-request_logon_authentication
Transit Vehicle Operator	5.1.7.3.6	Silent Alarm, Operator Alarm	ftvo-secure_transit_vehicle_emergency_re
Transit Vehicle Operator	5.1.7.3.6	------------	ftvo-secure_transit_vehicle_surveillance_c
Traveler	4.6.1	----------	ft-traveler_vehicle_image
Traveler	4.6.4	----------	ft-traveler_vehicle_image
Traveler	4.7.1	Publish Stop Point Service, Subscibe Nearest Stop List, Publish Text Timetable, Publish Landmarks List, Publish Trip Itineraries List	ft-transit_information_request
Traveler	4.7.2.1	---------	ft-traveler_roadside_image
Traveler	4.7.2.4	---------	ft-traveler_roadside_image
Traveler	4.7.2.5	------------	ft-destination_at_roadside
Traveler	4.7.2.5	Publish Amenities	ft-other_services_roadside_request
Traveler	5.1.7.1.5	-----------	ft-remote_emergency_request
Traveler	5.1.7.3.5	Report Passenger Alarm	ft-secure_transit_vehicle_emergency_re
Traveler	6.2.3	-----------	ft-request_advisory_information
Traveler	6.2.7	-----------	ft-other_services_vehicle_request
Traveler	6.2.7	---------	ft-destination_on_vehicle
Traveler	6.3.3	Publish Stop Point Service, Subscibe Nearest Stop List, Publish Text Timetable, Publish Landmarks List, Publish Trip Itineraries List	ft-trip_planning_requests
Traveler	6.3.3	--------	ft-extra_trip_data
Traveler	6.8.1.2	Publish Trip Itinerary List, Publish Nearest Stop List, Publish Stop Service	ft-guidance_request
Traveler	6.8.1.2	Publish Trip Itinerary List, Publish Nearest Stop List, Publish Stop Service	ft-guidance_data
Traveler	6.8.1.2	---------	ft-guidance_map_update_request
Traveler	6.8.1.2	---------	ft-guidance_route_accepted
Traveler	6.8.2.1	-----------	ft-personal_emergency_request
Traveler	6.8.3.3	-----------	ft-personal_trip_planning_requests
Traveler	6.8.3.3	-----------	ft-personal_map_display_update_request
Traveler	6.8.3.3	-----------	ft-personal_extra_trip_data

| Traveler Card | 4.6.5 | ---------- | ftc-traveler_vehicle_input_credit_identity_ |

Dialog Flow-NIA Flow Mapping

NIA Source	*NIA Sink*	*Dialog*	*NIA FLow*
Weather Service	4.1.6	------------	fws-current_weather_observations
Weather Service	4.1.6	------------	fws-weather_forecasts

Annex H

Base Type Definitions

H.1 ASN.1 Data Types

TCIP uses the following ASN.1 data types as the base types to define TCIP data:

Table H.1 List of ASN.1 Types	
ASN.1 Type	**Purpose**
BOOLEAN	This base type supports True and False values. The data element CPT-Boolean uses this type.
ENUMERATED	This base type restricts a variable to a specified list of values. Data elements are defined using ENUMERATED, and a specification of the allowed values.
INTEGER	This base type is used to create several TCIP numeric subtypes.
UTF8String	This base type is used to create several TCIP string.
Numeric String	This base type is similar to a UTF8String, but limited to numeric values.
OCTET String	This base type is used to create base types.

H.2 TCIP Subtypes of ASN.1 Data Types

The ASN.1 data types above are extended through the creation of subtypes. These subtypes and are defined in the following sections.

H.2.1 Subtype Definitions

This section lists the specialized subtypes based on ASN.1 that may be used in the TCIP family of standards (in addition to ASN.1 universal types).

H.2.1.1 Integer Subtypes
The subtypes include BYTE, UBYTE, SHORT, USHORT, LONG and ULONG. These subtypes are defined as follows:

Table H.2.1.1		
ASN.1 Definition	**XML Simple Type**	**Narrowband Encoding**
BYTE::=INTEGER (-128..127)	xs:byte	Binary signed 8 bits
UBYTE::=INTEGER (0..225)	xs:unsignedByte	Binary unsigned 8 bits
SHORT::=INTEGER (-32,768 .. 32,767)	xs:short	Binary signed 16 bits
USHORT ::=INTEGER (0 .. 65,535)	xs:unsignedShort	Binary unsigned 16 bits
INT::=INTEGER(-2,147,483,648..2,147,483,647)	xs:int	Binary signed 32 bits
UINT::=INTEGER(0 ..4,294,967,295)	xs:unsignedInt	Binary unsigned 32 bits
LONG ::= INTEGER (-9,223,372,036,854,775,808 .. 9,223,372,036,854,775,807)	xs:long	Binary signed 64 bits
ULONG ::=INTEGER (0..18,446,744,073,709,551,615)	xs: unsignedLong	Binary unsigned 64 bits

H.2.1.2 Date and Time Subtypes

TCIP Subtypes for defining time artifacts are TIME, DATE, DATETIME, SCHTIME, and DURATION. These Subtypes are defined as follows.

Table H.2.1.2		
Date and Time Subtype Definitions		
Subtype Name	**XML Simple Type**	**Narrowband Encoding Definition**
TIME	xs:time	UINT constrained to the range 0…235960999. The value is masked by digits as HHMMSS.FFF where HH represents hours, MM represents minutes, SS represents seconds and FFF represents fractions of seconds. Seconds are allowed to equal 60 to allow for a leap second.
DATE	xs:date	UINT constrained to the range 0…99991231. The value is masked by digits as CCYYMMDD where CC represents the century, YY represents the century, YY represents the year MM represents the month, and DD represents the day of the month.
DATETIME	xs:dateTime	A six octet grouping where the first 2 octets are treated as a USHORT conveying the century and year. The last 4 octets are treated as a UINT conveying the date and time. The value is masked by digits as MMDDhhmmss where MM is the Month, DD is the date, hh is the hour mm is the minutes and ss is the seconds.
SCHTIME	xs:duration, however only the seconds field is allowed. All other fields are to be unspecified. The specified number of seconds indicates time since midnight, negative values indicate the time before midnight (previous calendar day).	INT interpreted as seconds since midnight. Negative values indicate seconds prior to midnight on the schedule day.

DURATION	xs:duration	INT interpreted as an interval in seconds.

H.2.1.3 String, Name and Identifier Subtypes

These subtypes are identified as follows:

<table>
<tr><th colspan="4">Table H.2.1.3</th></tr>
<tr><th>ASN.1 Definition</th><th>Description</th><th>XML Types</th><th>Narrowband Encoding</th></tr>
<tr><td>TELEPHONE ::= NUMERIC STRING (SIZE(1..16))</td><td>A string of up to 16 digits to dial</td><td>xs:string</td><td>One octet length field followed by 1-16 characters defining digits to dial.</td></tr>
<tr><td>FOOTNOTE ::=UTF8String (SIZE(1…2047))</td><td>Footnote is a memo field for defining comments and other free form text.</td><td>xs:string</td><td>One or two octet length field followed by 1-2047 characters.</td></tr>
<tr><td>MEMSHORT16 ::= OCTET STRING (SIZE(1..16))</td><td>A binary field of up to 16 octets.</td><td>xs:base64binary</td><td>One octet length field followed by 1-16 octets of data.</td></tr>
<tr><td>MEMSHORT2 ::= OCTET STRING (SIZE(1..2))</td><td>A binary field of up to 2 octets.</td><td>xs:base64binary</td><td>One octet length field followed by 1-2 octets of data.</td></tr>
<tr><td>MEMSHORT23 ::= OCTET STRING (SIZE 1..23))</td><td>A binary field of up to 23 octets.</td><td>xs:base64binary</td><td>One octet length field followed by 1-23 octets of data.</td></tr>
<tr><td>MEMSHORT32 ::= OCTET STRING (SIZE(1..32))</td><td>A binary field of up to 32 octets.</td><td>xs:base64binary</td><td>One octet length field followed by 1-32 octets of data.</td></tr>
<tr><td>MEMVSHORT ::= OCTET STRING (SIZE(1..255))</td><td>A binary field of up to 255 octets.</td><td>xs:base64binary</td><td>One or two octet length field followed by 1-255 octets of data.</td></tr>
<tr><td>MEMSHORT ::=OCTET STRING (SIZE(1..2047))</td><td>A binary field of up to 2047 octets.</td><td>xs:base64binary</td><td>One or two length octet field followed by 1-2047 octets of data.</td></tr>
<tr><td>MEMLONG ::= OCTET STRING (SIZE(1..2,000,000)</td><td>A binary field of up to 2,000,000 octets.</td><td>xs:base64binary</td><td>One to three octet length field followed by 1-2,000,000 octets of data.</td></tr>
<tr><td>NAME1 ::=UTF8String (SIZE (1))</td><td>A string of 1 character.</td><td>xs:string</td><td>One octet length field followed by 1 character of data.</td></tr>
</table>

Table H.2.1.3

ASN.1 Definition	Description	XML Types	Narrowband Encoding
NAME2 ::=UTF8String (SIZE(1..2))	A string of up to 2 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME3 ::=UTF8String (SIZE (1..3))	A string of up to 3 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME4 ::=UTF8String (SIZE (1..4))	A string of up to 4 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME5 ::=UTF8String (SIZE (1..5))	A string of up to 5 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME6 ::=UTF8String (SIZE (1..6))	A string of up to 6 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME7 ::=UTF8String (SIZE (1..7))	A string of up to 7 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME8 ::= UTF8String (SIZE(1..8))	A string of up to 8 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME9 ::=UTF8String (SIZE (1..9))	A string of up to 9 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME10 ::=UTF8String (SIZE (1..10))	A string of up to 10 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME11 ::=UTF8String (SIZE (1..11))	A string of up to 11 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME12 ::=UTF8String (SIZE (1..12))	A string of up to 12 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME13 ::=UTF8String (SIZE (1..13))	A string of up to 13 characters.	xs:string	One octet length field followed by up to 2 characters of data.

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	Table H.2.1.3		
ASN.1 Definition	**Description**	**XML Types**	**Narrowband Encoding**
NAME14 ::=UTF8String (SIZE (1..14))	A string of up to 14 characters.	xs:string	One octet length field followed by up to 2 characters of data.
NAME15 ::=UTF8String (SIZE (1..15))	A string of up to 15 characters.	xs:string	One octet length field followed by up to 15 characters of data.
NAME16 ::= UTF8 String (SIZE(1…16))	A string of up to 16 characters.	xs:string	One octet length field followed by up to 16 characters of data.
NAME17 ::=UTF8String (SIZE (1..17))	A string of 17 characters.	xs:string	One octet length field followed by up to 17 characters of data.
NAME18 ::=UTF8String (SIZE (1..18))	A string of up to 18 characters.	xs:string	One octet length field followed by up to 18 characters of data.
NAME19 ::=UTF8String (SIZE (1..19))	A string of up to 19 characters.	xs:string	One octet length field followed by up to 19 characters of data.
NAME20 ::=UTF8String (SIZE (1..20))	A string of up to 20 characters.	xs:string	One octet length field followed by up to 20 characters of data.
NAME21 ::=UTF8String (SIZE (1..21))	A string of up to 21 characters.	xs:string	One octet length field followed by up to 21 characters of data.
NAME22 ::=UTF8String (SIZE (1..22))	A string of up to 22 characters.	xs:string	One octet length field followed by up to 22 characters of data.
NAME23 ::=UTF8String (SIZE (1..23))	A string of up to 23 characters.	xs:string	One octet length field followed by up to 23 characters of data.
NAME24 ::=UTF8String (SIZE (1..24))	A string of up to 24 characters.	xs:string	One octet length field followed by up to 24 characters of data.

Table H.2.1.3

ASN.1 Definition	Description	XML Types	Narrowband Encoding
NAME25 ::=UTF8String (SIZE (1..25))	A string of up to 25 characters.	xs:string	One octet length field followed by up to 25 characters of data.
NAME30 ::= UTF8String (SIZE(1..30))	A string of up to 30 characters.	xs:string	One octet length field followed by up to 30 characters of data.
NAME32 ::=UTF8String (SIZE(1..32))	A string of up to 32 characters.	xs:string	One octet length field followed by up to 32 characters of data.
NAME40 ::=UTF8String (SIZE (1..40))	A string of up to 40 characters.	xs:string	One octet length field followed by up to 40 characters of data.
NAME60 ::=UTF8String (SIZE (1..60))	A string of up to 60 characters.	xs:string	One octet length field followed by up to 60 characters of data.
IDENS ::= USHORT	An identifier 16 bits in length	xs:unsignedshort	A two octet binary unsigned numeric field.
IDENL ::= ULONG	An identifier 32 bits in length	xs:unsignedlong	A four octet binary unsigned numeric field.
TEXTLONG ::=UTF8String (SIZE(1..50000))	A field for conveying large text sequences.	xs:string	1-3 octet length field followed by 50,000 character text field.
MEMSHORT8 := OCTET STRING (SIZE (1…8))	A binary field of up to 8 octet.	xs:base64binary	One octet length field Followed by 1-8 octets of data.

Annex I TCIP Narrowband Encoding

I.1 Narrow Band Data Communications

Limited capacity public or private data networks are widely used by transit agencies to track and interact with public transit vehicles, supervisory vehicles, maintenance vehicles and other agency mobile assets. To accommodate communications over such networks, TCIP specifies narrowband messages – "Narrowband TCIP" encoding. Narrowband TCIP messages are designed to be compact to make efficient use of the scarce capacity of narrow band links. Consequently, Narrowband TCIP messages are specified as binary bit patterns rather than as extensible Markup Language (XML) schemas. The impact of this is that Narrowband TCIP messages cannot be used with

XML parsers, but requires software at the sending and receiving ends that "understand" the Narrowband TCIP binary format. ***Use of the TCIP Narrowband format is <u>Optional</u> – agencies may specify other narrowband schemes which comply with the requirements of Section 6.1.***

I.1.1 Narrowband TCIP Message Order of Octet and Bit Transmission

Since Narrowband messages are defined in binary, the order of bit and octet transmission must be defined. The following rules govern the transmission of Narrowband TCIP Messages:

- Data elements within a Narrowband TCIP message shall be transmitted in the order listed in the message definition
- String and text fields shall be transmitted character by character using ASCII 8 bits no parity. Characters shall be transmitted in the order normally read. Bits within a character shall be transmitted least significant bit first.
- Numeric fields shall be transmitted most significant octet first within a number, least significant bit first within an octet.
- Bit fields shall be transmitted as numerics, that is most significant octet first, with the least significant bit first in each octet.

I.1.2 Narrowband TCIP Message Encoding Restrictions

There are no restrictions on the TCIP messages that can be encoded using the Narrowband TCIP encoding rules – all TCIP messages can be encoded into Narrowband TCIP messages. While there are no restrictions on which TCIP messages can be encoded using the Narrowband encoding rules, it is expected that only those interface with bona fide capacity constraints will use the non-XML version of TCIP. Note that while every message type can be narrowband encoded, not every instance of every type can be narrowband encoded due to limitations on sequence sizes inherent in the encoding rules and on message length limitations that may be imposed by implementations.

I.1.3 Narrowband TCIP Message Encoding Technique

The Narrowband TCIP Message encoding mechanism is designed to achieve significant compression of TCIP messages when compared to XML encoding, while using a relatively simple algorithm to control software complexity, and at the same time maintaining the capability to take advantage of key constructs such as data frames, optional fields, and sequences of elements/frames.

Each Narrowband TCIP Message shall consist of a message header and a message body as shown in Figure 6.2.3.2.

> Commentary: The Narrowband TCIP encoding scheme does not attempt to optimize data compression of TCIP messages, but strives to maintain a balance between data compression, ease of use and future growth considerations. Consequently, message header information is not packed to the maximum extent possible.

> Commentary: Decoding of Narrowband TCIP encoded messages requires that the decoding entity has access to the detailed structure information for each encoded message. This information includes parameters such as the specific elements and order of elements within a message, OPTIONAL designations, enumerated codes, message lengths, etc.

I.1.3.1 Narrowband Message Header

The first five octets in the message header shall consist of an 8-bit business area ID, a 16-bit message number, and a 16-bit TCIP version number field. The message numbers are defined with each TCIP message definition in Annex C. Note that these numbers are not globally unique, but are unique within a business area.

Following the message identifier octets, an additional 1 to 15 octets, depending on the total number of both OPTIONAL and non-OPTIONAL fields in the TCIP Message, shall be included in the Narrowband TCIP Message header. These octets shall provide an entry-present-map for the message by identifying which of the entries defined for the message are present in this instance of the message. The low order bit of the map shall represent the first entry in the message, and each successively higher order bit shall represent a subsequent message entry as shown in Figure 6.2.3.2. A bit set to zero shall indicate that a field is not present, and a bit set to one shall indicate that the field is present. If an entry is not specified as OPTIONAL or a choice alternative in the message definition, then it shall be an error to set the bit corresponding to that field to zero. Bits representing entries beyond the last entry specified in the message definition (if any) shall be set to zero.

Business Area identifiers shall be defined as follows:
    0-Reserved
    1-Scheduling/Blocking/Runcutting (SCH)
    2-Passenger Information (PI)
    3- Incident Management (IM)
    4-Reserved for Testing (RT)
    5-Onboard (OB)
    6-Control Center (CC)
    7- Fare Collection (FC)
    8-Spatial Representation (SP)
    9-Common Public Transportation (CPT)
    10-Transit Signal Priority (TSP)
    11-100-Reserved
    101-199 Local Use
    200-255 Reserved

I.1.3.2 Narrowband Message Body

The Message Body that follows the Narrowband TCIP Message Header shall consist of a series of Data Fields, one for each entry in the message that is present, per the entry-present-map in the Message Header. If an entry is OPTIONAL and not present, no octets representing that missing entry shall be provided in the Message Body. If a CHOICE constructor is used, each choice value shall be treated as a separate entry, although only one entry present-bit may be set to true for the listed choice alternative entries.

There shall be 6 different types of Data Fields that can be included in the Message Body:

- Type 1: Fixed Length Element
- Type 2: Variable Length Element
- Type 3: ENUMERATED Element
- Type 4: Data Frame / Message
- Type 5: SEQUENCE OF constructor
- Type 6: Choice constructor

The detailed encoding rules for each of these Data Field types are provided in following sections.
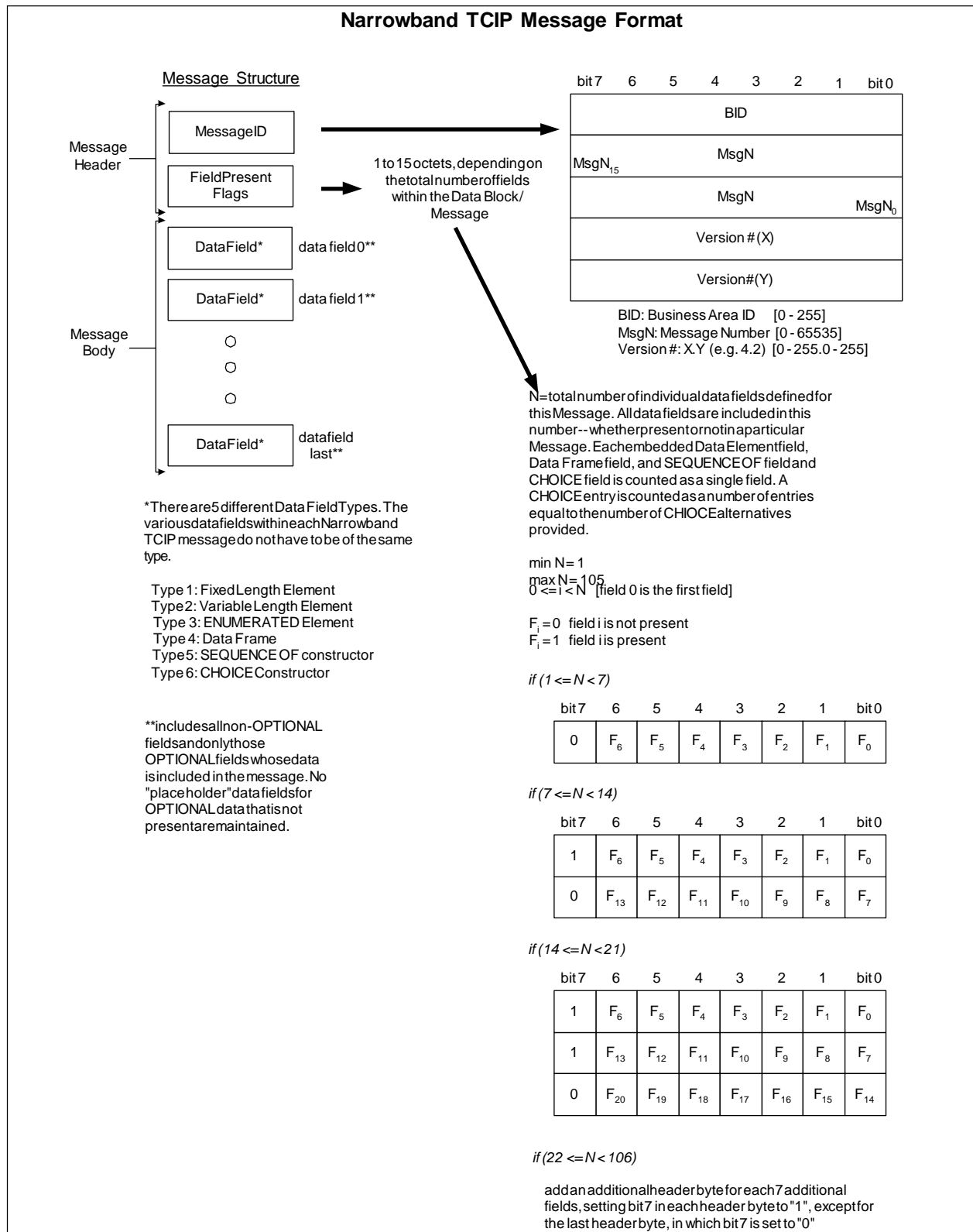
Narrowband TCIP Message Format

Message Structure

Message Header — MessageID

FieldPresent Flags

Message Body — DataField*   data field 0**

DataField*   data field 1**

○
○
○

DataField*   data field last**

1 to 15 octets, depending on the total number of fields within the Data Block/ Message

bit 7	6	5	4	3	2	1	bit 0
			BID				
$MsgN_{15}$			MsgN				
			MsgN				$MsgN_0$
			Version # (X)				
			Version # (Y)				

BID: Business Area ID   [0 - 255]
MsgN: Message Number   [0 - 65535]
Version #: X.Y (e.g. 4.2)   [0 - 255.0 - 255]

*There are 5 different Data Field Types. The various data fields within each Narrowband TCIP message do not have to be of the same type.

Type 1: Fixed Length Element
Type 2: Variable Length Element
Type 3: ENUMERATED Element
Type 4: Data Frame
Type 5: SEQUENCE OF constructor
Type 6: CHOICE Constructor

**includes all non-OPTIONAL fields and only those OPTIONAL fields whose data is included in the message. No "placeholder" data fields for OPTIONAL data that is not present are maintained.

N = total number of individual data fields defined for this Message. All data fields are included in this number -- whether present or not in a particular Message. Each embedded Data Element field, Data Frame field, and SEQUENCE OF field and CHOICE field is counted as a single field. A CHOICE entry is counted as a number of entries equal to the number of CHIOCE alternatives provided.

min N = 1
max N = 105
$0 <= i < N$ [field 0 is the first field]

$F_i = 0$ field i is not present
$F_i = 1$ field i is present

if (1 <= N < 7)

bit 7	6	5	4	3	2	1	bit 0
0	F_6	F_5	F_4	F_3	F_2	F_1	F_0

if (7 <= N < 14)

bit 7	6	5	4	3	2	1	bit 0
1	F_6	F_5	F_4	F_3	F_2	F_1	F_0
0	F_{13}	F_{12}	F_{11}	F_{10}	F_9	F_8	F_7

if (14 <= N < 21)

bit 7	6	5	4	3	2	1	bit 0
1	F_6	F_5	F_4	F_3	F_2	F_1	F_0
1	F_{13}	F_{12}	F_{11}	F_{10}	F_9	F_8	F_7
0	F_{20}	F_{19}	F_{18}	F_{17}	F_{16}	F_{15}	F_{14}

if (22 <= N < 106)

add an additional header byte for each 7 additional fields, setting bit 7 in each header byte to "1", except for the last header byte, in which bit 7 is set to "0"

Figure I.3.2: Narrowband TCIP Message Format

I.1.3.2.1 Fixed Length Data Elements

Fixed Length data elements shall be data elements with the following base types and subtypes:

BOOLEAN – one octet field
BYTE   – one octet field
DATE   – four octet field
DATETIME – six octet field
DURTIME – four octet field
IDENL   – eight octet field
IDENS   – two octet field
INT   --four octet field
LONG   – eight octet field
SCHTIME   – four octet field
SHORT   – two octet field
TIME   – four octet field
UBYTE   – one octet field
UINT   --four octet field
ULONG   – eight octet field
USHORT   – two octet field

The fixed length fields shall be placed in the message most to least significant byte.

Data Field Structure: Element Data

1 bit element:
BOOLEAN

bit 7	6	5	4	3	2	1	bit 0
0	0	0	0	0	0	0	B

FALSE: B = 0 TRUE: B = 1

1 Octet elements:
BYTE,UBYTE

bit 7	6	5	4	3	2	1	bit 0
MSB							LSB

2 Octet elements:
INTEGER(2 Octet),IDENS,SCHTIME,SHORT,USHORT, Enumerated

bit 7	6	5	4	3	2	1	bit 0
MS Byte MSB		*bits 8 - 15*					
LS Byte		*bits 0 - 7*					LSB

4 Byte elements :
DATE, DATETIME,DURTIME,INT,LONG,TIME,UINT

bit 7	6	5	4	3	2	1	bit 0
MS Byte MSB		*Bits 24-31*					
		Bits 16-23					
		Bits 8-15					
LS Byte		*Bits 0-7*					LSB

6 Octet element:
DateTime

bit 7	6	5	4	3	2	1	bit 0
MS Byte MSB		*Bits 8-15*					
		Bits 0-7					
		Bits 24-31					
		Bits 16-23					
		Bits 8-15					
LS Byte		*Bits 0-7*					LSB

USHORT CCYY
ULONG MMDDhhmmss

8 Byte elements :
IDENL,LONG,ULONG

bit 7	6	5	4	3	2	1	bit 0
MS Byte MSB		*Bits 56-63*					
		Bits 48-55					
		Bits 40-47					
		Bits 32-39					
		Bits 24-31					
		Bits 16-23					
		Bits 8-15					
LS Byte		*Bits 0-7*					LSB LSB

Fig I.3.2.1: Narrowband TCIP Fixed Length Element Type

Figure I.3.2.1: Narrowband TCIP Fixed Length Element Type

I.1.3.2.2 Variable Length Data Elements

Variable length data elements shall be data elements with the following base types and sub types:

FOOTNOTE	-up to 255 characters
MEMLONG	-up to 2,000,000 octets
MEMSHORT23	-up to 23 octets
MEMSHORT	-up to 2047 octets
MEMVSHORT	-up to 255 octets
NAME2	-up to 2 characters
NAME3	-up to 3 characters

AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

NAME4   -up to 4 characters
NAME5   -up to 5 characters
NAME6   -up to 6 characters
NAME7   -up to 7 characters
NAME8   -up to 8 characters
NAME9   -up to 9 characters
NAME10   -up to10 characters
NAME11   -up to 11 characters
NAME12   -up to 12 characters
NAME13   -up to 13 characters
NAME14   -up to 14 characters
NAME15   -up to 15 characters
NAME16   -up to 16 characters
NAME17   -up to 17 characters
NAME18   -up to 18 characters
NAME20   -up to 20 characters
NAME21   -up to 21 characters
NAME22   -up to 22 characters
NAME23   -up to 23 characters
NAME24   -up to 24 characters
NAME25   -up to 25 characters
NAME30   -up to 30 characters
NAME40   -up to 40 characters
NAME60   -up to 60 characters
NAME 80   -up to 80 characters
TELEPHONE   -up to 16 numeric characters

A variable length field shall be in the message by an element length subfield, and an element data subfield. The element length subfield shall store the length information in the lower 7 bits of each octet, and shall use the most significant bit (7 bit) as a continuation bit. The element length subfield shall be a maximum of 3 octets long allowing it to support up to 2,097,152 length element data fields.

The element data subfield shall follow the element length subfield and shall contain as many octets as are specified by the element data subfield. For UTF8String types, the characters in the string shall be stored in the element data subfield in the order normally read. For OCTET STRING types, the octets shall be stored in from first to last, in the message, in the same order as their appearance in the OCTET STRING.

Figure I.3.2.2 depicts the implementation of variable length data elements.

Type 2 Data Field: Variable Length Data Elements

Data Field Structure

| Element Length |

→ 1 to 3 octets, depending on length of the element data ↘

| Element Data* |

LEN = length, in octets, of the element data

min LEN = 1
max LEN = 2,097,151 (21 bits)

if (1 <= LEN < 128)

bit 7	6	5	4	3	2	1	bit 0
0	LEN_6			LEN			LEN_0

if (128 <= LEN < 16384)

bit 7	6	5	4	3	2	1	bit 0
1	LEN_6			LEN			LEN_0
0	LEN_{13}			LEN			LEN_7

if (16384 <= LEN < 2,097,152)

bit 7	6	5	4	3	2	1	bit 0
1	LEN_6			LEN			LEN_0
1	LEN_{13}			LEN			LEN_7
0	LEN_{20}			LEN			LEN_{14}
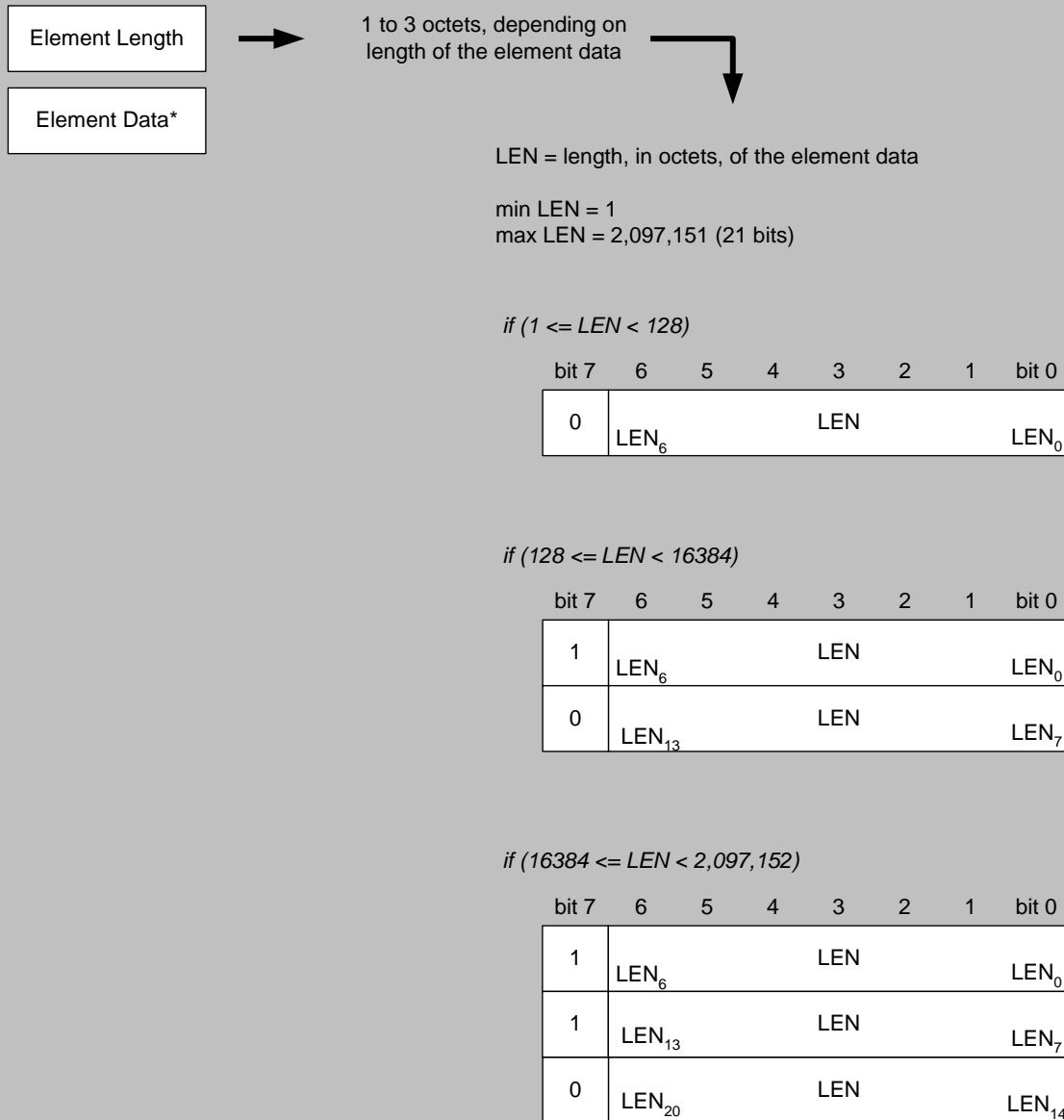
Figure I.3.2.2: Narrowband TCIP Variable Length Data Element Type

I.1.3.2.3 Enumerated Data Elements

Enumerated data fields shall be signified by the use of the ENUMERATED keyword in their ASN.1 definition. Some TCIP enumerated data types define specific numeric index values for each token value listed for the data element. In those cases the index value used to identify the token shall be the number assigned to that token in the data element definition. For any enumerated element without specified index values corresponding to each token,

the index value of the first specified token in the data element definition shall be one. Each subsequently defined token value shall have a corresponding index value incremented by one.

For example, if a data element definition specified allowed values of A,B,C,D and E, and no corresponding index values were specified, then the index values would be:

    A=1
    B=2
    C=3
    D=4
    E=5

And values 0, 6-255 would be invalid.

If, on the other hand the data element definition specified that the values were:

    A=1
    B=2
    C=3
    D=4
    --5 reserved
    E=6
    --7-10 reserved
    --11-20 local use
    --21-200 reserved

Then the values 0, 5, 7-10, and 21-255 would be invalid. The values 1-4 and 6 would be used as index values as indicated in the data element definition. The values 11-20 would be valid if locally defined, and would have the locally defined significance. If the values 11-20, or any subset of those values were not locally defined, those undefined values would be invalid.

Figure I.3.2.3 depicts the implementation of Enumerated Data Elements.

Type 3 Data Field: ENUMERATED element

Data Field Structure

ENUMERATED Selection → 1 byte integer that specifies the selected field from the enumerated list in an ENUMERATED type element

INDEX = enumerated index of the ENUMERATED type

min INDEX = 0
max INDEX = 255

bit 7	6	5	4	3	2	1	bit 0
MSB				INDEX			
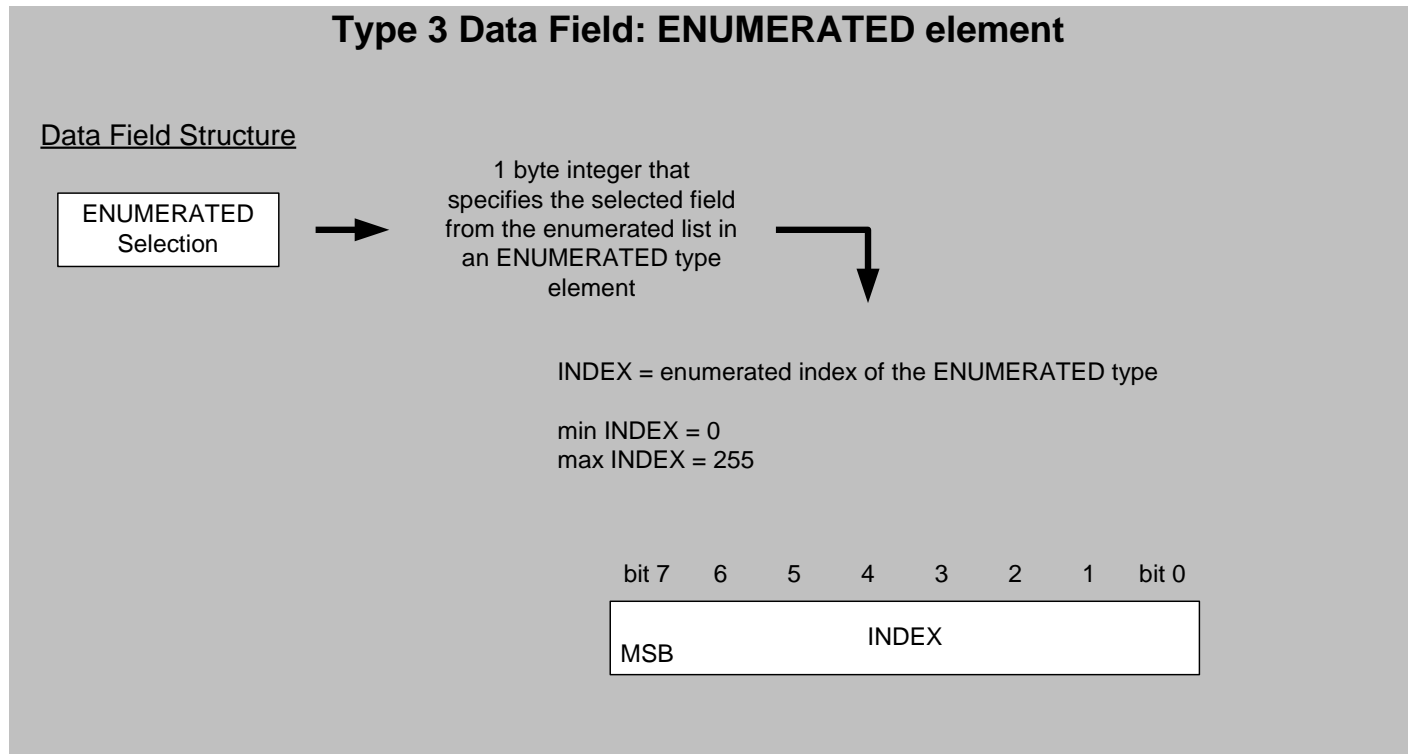
Figure I.3.2.3: Narrowband TCIP ENUMERATED Element Type

I.1.3.2.4 Data Frames

Data frame encoding shall be performed similarly to the message encoding, but without the message identifier. 1-15 octets shall encode the entry-present-map for the frame. CHOICE fields shall be encoded as if the CHOICE were not present. A separate bit shall define the presence or absence of the CHOICE alternative. A bit set to zero shall indicate that the field is not present, and a bit set to one shall indicate that the field is present. If an entry is not specified as OPTIONAL or is a CHOICE alternative in the message definition, then it shall be an error to set the corresponding bit to zero. Bits representing entries beyond the last entry specified in the data frame definition (if any) shall be set to zero.

The same 5 types of data fields allowed in a message body shall be allowed in a data frame body. Figure 6.2.3.2.4 depicts encoding of a TCIP Data Frame.

APTA
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Page 71

Type 4 Data Field: Data Frame

Data Field Structure

```
Field Present
Flags
```
→ 1 to 15 octets, depending on the total number of fields within the Data Frame →

```
Data Field*      data field 0**
```

```
Data Field*      data field 1**
```

○
○
○

```
Data Field*      data field last**
```

* can be any Type Data Field. The Data Fields do not have to be of the same type

** includes all non-OPTIONAL fields and only those OPTIONAL fields whose data is included in the message. No "place holder" data fields for OPTIONAL data that is not present are maintained.

N = total number of individual data fields defined for this Data Frame. All data fields are included in this number -- whether present or not in a particular Data Frame. Each embedded Element field, Data Frame field, and SEQUENCE OF field is counted as a single field. A CHOICE field is counted as a number of entries equal to the numer of CHOICE alternatives provided.

min N = 1
max N = 105

$0 <= i < N$ [field 0 is the first field]

$F_i = 0$ field i is not present
$F_i = 1$ field i is present

if (1 <= N < 7)

bit 7	6	5	4	3	2	1	bit 0
0	F_6	F_5	F_4	F_3	F_2	F_1	F_0

if (7 <= N < 14)

bit 7	6	5	4	3	2	1	bit 0
1	F_6	F_5	F_4	F_3	F_2	F_1	F_0
0	F_{13}	F_{12}	F_{11}	F_{10}	F_9	F_8	F_7

if (14 <= N < 21)

bit 7	6	5	4	3	2	1	bit 0
1	F_6	F_5	F_4	F_3	F_2	F_1	F_0
1	F_{13}	F_{12}	F_{11}	F_{10}	F_9	F_8	F_7
0	F_{20}	F_{19}	F_{18}	F_{17}	F_{16}	F_{15}	F_{14}

if (22 <= N < 106)

add an additional header octet for each 7 additional fields, setting bit 7 in each header byte to "1", except for the last header octet, in which bit 7 is set to "0"

Figure I.3.2.4: Narrowband TCIP Data Frame Type

I.1.3.2.5 SEQUENCE OF Constructor

The sequence of constructor shall provide the encoding for a sequence of data frames or data elements inside a message or data frame. The data field shall begin with a 16-bit count field that defines the number of items in the sequence. The sequence of items shall follow the count. All items in the sequence shall be of the same type. Figure I.3.2.5 illustrates the SEQUENCE OF constructor.
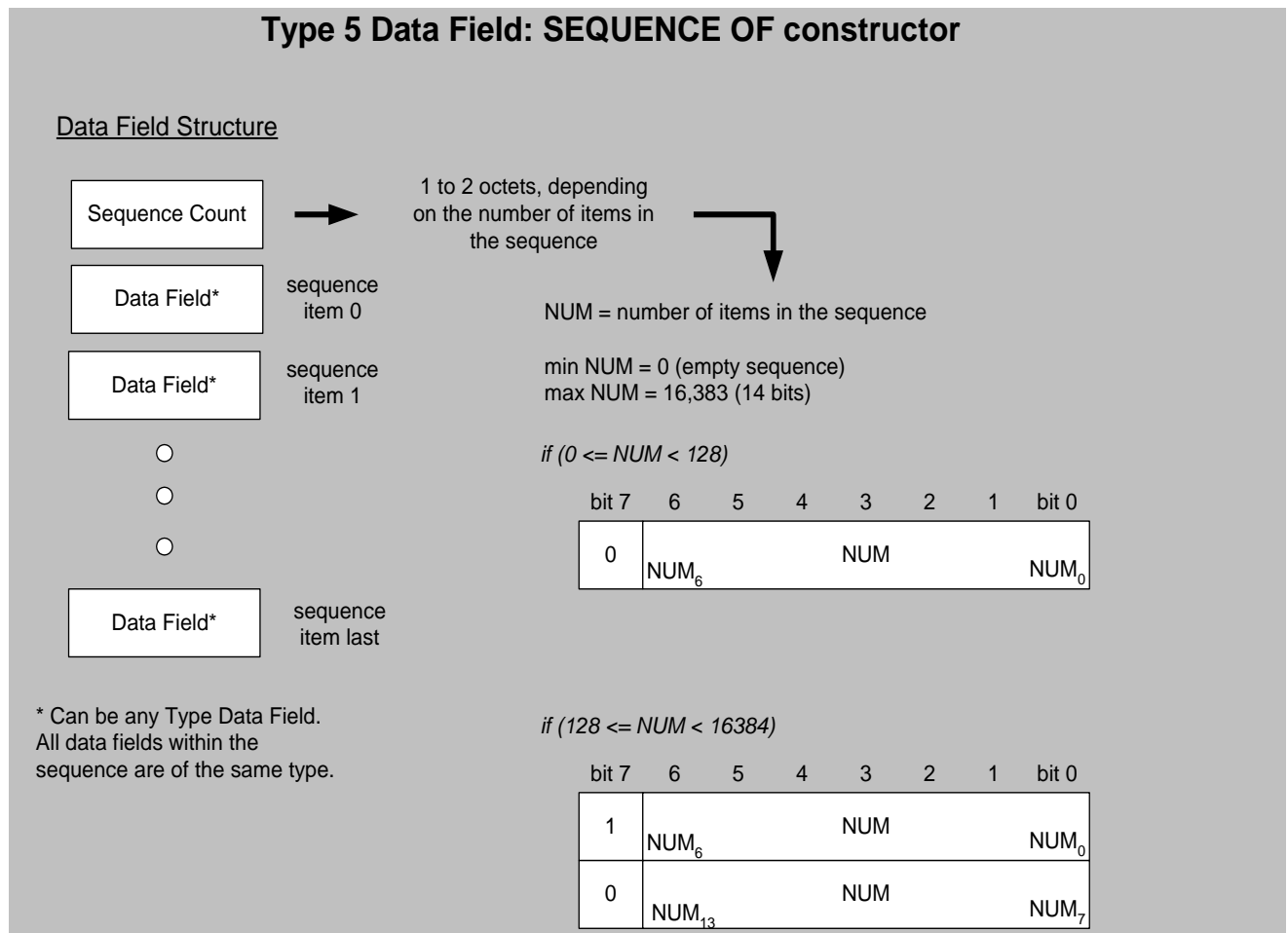
Figure I.3.2.5: Narrowband TCIP SEQUENCE OF Type

Annex J

Polling Protocol

This annex provides an optional data communications protocol that may be used to provide PTV-to central communications over a dedicated private radio channel. If an agency elects to use this protocol, then all requirements defined in this Annex apply.

J.2 Overview

The polling function provides the following capabilities:
- Allocation/deallocation of polling slots to PTVs
- Unacknowledged transfer of state information from PTVs to the CAD/AVL System via the polling controller
- Priority polls to allow PTVs to send emergency information ahead of the normal poll cycle
- Acknowledged transfer of TCIP messages between PTVs and authorized transit business systems including the CAD/AVL System
- Notification from the polling controller to the CAD/AVL System of vehicles joining, leaving, or losing contact with the polling session
- Fast polling of selected vehicles based on operating conditions
- Group address message transfer to PTVs
- Packetization and reassembly of large messages from a business system to a PTV

The polling controller shall manage the radio channel and shall pass messages between the agency's fixed communications network and the PTV (VLU). PTV operating status information shall be passed to the polling controller in poll responses from the PTV. The polling controller shall forward this status information to the CAD/AVL System using the "Notify PTV Polling Result" dialog. The polling controller shall by default request the minimum operating information with each poll. The polling controller shall be configured by the CAD/AVL System to request additional information on a PTV-specific basis using the Publish PTV-Polled Parameters dialog.

The polling controller may send a narrowband TCIP message, an SNMP TCIP message, or packets of a long TCIP narrowband-encoded message (in a message wrapper) to any PTV in the polling session at any time, except when that PTV is the 'currently polled' PTV. The PTV shall send a narrowband-encoded TCIP message or an SNMP-encoded TCIP message to the polling controller immediately following a Poll Response if the PTV has such a message queued to send. The polling function defines the interactions between a "polling controller" and a PTV. The functions described in this section can be implemented in a variety of ways as shown in the following scenarios.

J.2.1 Scenario 1

This scenario incorporates the Polling Controller with the CAD/AVL System. Figure J.2.1 depicts the relationships in this scenario. The narrowband codec provides a two-way translation function between an agency-specified list of TCIP-XML messages and their TCIP narrowband encoded equivalents.

Scenario #1
Figure J.2.1
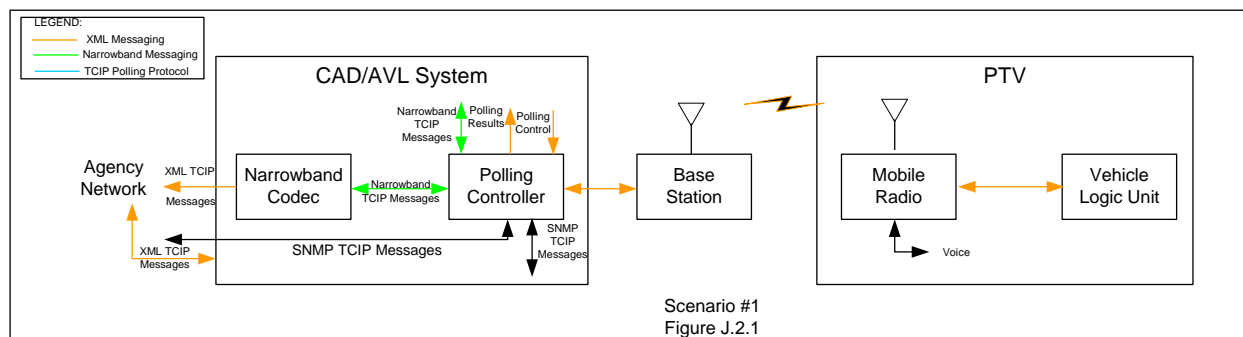
J.2.2 Scenario 2 Separate Units

This scenario separates the polling controller, CAD/AVL System, and Narrowband Codec into separate physical devices. This approach may be useful where narrowband messages are to be distributed to more than one polling controller, or to a non-TCIP polling controller. TCIP does not specify the wrapper or protocol to be used to convey narrowband messages between the Narrowband Codec and the polling controller. Figure J.2.2 depicts the relationships in this scenario.

Scenario #2
Figure J.2.2
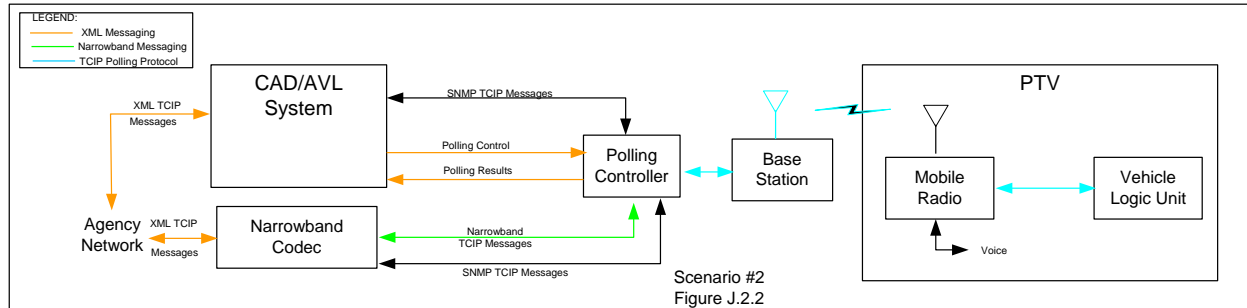
J.2.3 Scenario 3 Integrated Codec/Polling controller

This scenario incorporates the Narrowband Codec into the polling controller. Figure J.2.3 depicts the relationships in this scenario.

Scenario #3
Figure J.2.3
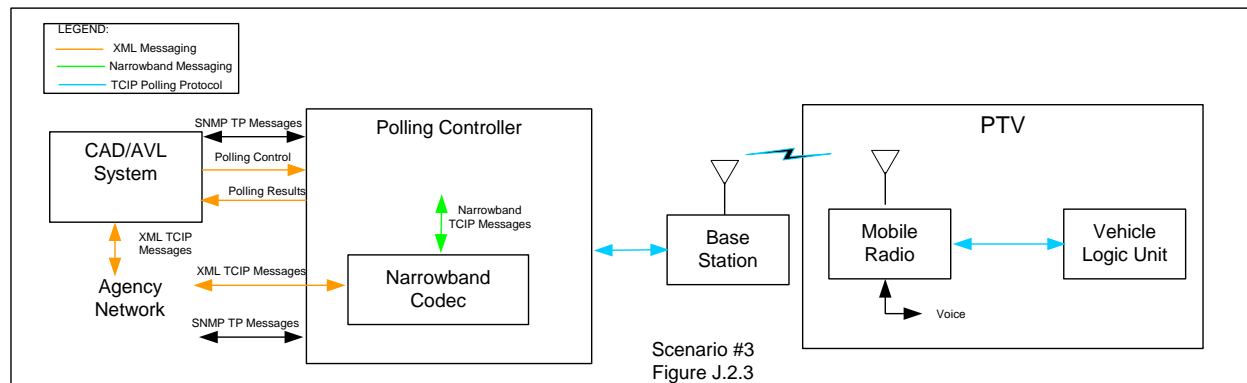
J.3 Assumptions

The TCIP Polling Protocol is based on the following assumptions:

- The agency owns a private radio network that is shared for voice and data. Separate channels are allocated for voice and data. The Operator Initiated Voice Radio Call and Dispatcher Initiated Voice Radio Call dialogs are used to control the transfers between voice and data modes.

- Radio system characteristics including band, channel allocation, bit rate and radio performance vary from agency to agency. See section J.8 for a list of parameters that affect the operation of the TCIP Polling Protocol.

- Base (fixed) radios communicate on the voice and data channel(s) simultaneously, and possibly in full duplex mode on the data channel. Mobile radios communicate on only one channel (voice or data) at a time and may be limited to simplex two-way alternate mode on the data channel.

- All PTVs (on power-up) are initially not allocated to a polling slot. A PTV which has been turned off or out of contact must 'join' the polling session and be allocated a slot by the polling controller.

- The protocol allows for very large numbers of PTVs on a channel as well as for very long message lengths (approximately 64k in each case) however, real-world implementations will be limited to much smaller values in each case to achieve reasonable performance levels. In particular agencies will assign upper limits on narrowband-encoded TCIP message length. These maximum message lengths may be different for messages to and from the PTV.

J.4 Definitions

Allocation Update – a data structure sent across the radio channel from the polling controller to the PTV announcing recent allocations and deallocations.

Polling controller – A fixed software entity that controls access to a data channel, by allocating and deallocating polling slot numbers to mobile units, and by issuing polls that allow PTVs to access the channel.

Join Request – A Data structure sent across the radio channel from the PTV to the polling controller requesting that the PTV be allocated a polling slot number. Also used in response to a priority poll to notify the polling controller of an urgent message queued on the PTV.

Leave Request – a data structure sent across the radio channel from the PTV to the polling controller requesting deallocation of its polling slot.

Message Wrapper – A data structure sent across a TCIP Polled Protocol Channel in either direction conveying a TCIP – Narrowband – encoded message.

Poll – A data structure sent across the radio channel from the polling controller to the PTV giving the PTV permission to transmit.

Poll Response – A data structure, containing PTV operating information, sent across the radio channel from the PTV to the polling controller in response to a poll.

Priority Poll – A data structure sent across the radio channel from the polling controller to the PTV to allow any PTV to notify the polling controller of an urgent message waiting.

Session Poll – a data structure sent from the polling controller to the PTV to allow a PTV without a polling slot to send a join request.

J.5 Data Structure Definitions

The data structures used by the TCIP Polling Protocol are the: Poll, Poll Response, Priority Poll, Session Poll, Packetized Message Wrapper, Narrowband Message Wrapper, SNMP Message Wrapper, Group Reset, Join Request, Leave Request, and Allocation Update. All of these structures share the same basic data frame structure. Each data structure is defined in the following subsections.

J.5.1 Basic Polling Data Frame Structure

The Basic Polling Data Frame structure shall be used to convey all TCIP Polling Protocol Data Structures. It shall be defined as follows:

FIELD #	NAME	CONTENT	NOTES
1	Bit Sync	Minimum 1 octet value AAH	Agencies/vendors may extend the length of this field by adding additional octets of AAH if the radio system cannot reliably achieve bit sync in one octet time.
2	Frame Sync Flag	One octet value 7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	Two octet field-most significant octet first	Identifies the slot number associated with this data structure.
4	Length	Two octet field denoting the length in octets of the contents of this structure	Measured from the Frame Sync Flag to the End Sync Flag – non-inclusive.
5	ID	Octet field identifying the type of this data structure.	Values 01-10H are reserved for TCIP Business areas, and signify a message wrapper. Other values are identified with each data structure.
6-N	Structure Type-specific content		
N+1	Checksum	Modulo – 256 sum of values in fields 3-N	
N+2	End Sync Flag	One octet value 7EH	Allows receiver to verify end of transmission

Important Note: The decoders in both the TCIP Controller and the VLU shall detect the end of frame by calculating the octets left until the end of the frame. The End Sync Flag shall be used only as a verification that the receiver remained in sync throughout the frame. Nonconformant use of the end sync flag as a "trigger" will result in random premature end of frame detections and failures to decode frames.

J.5.2 Poll Data Structure

The Poll Data Structure shall be used to elicit a response from a PTV, after the PTV has been allocated a polling slot. The Poll Contents field contains fields to acknowledge the most recently received message wrapper from the PTV and to direct the PTV as to what information should be returned in the poll response.

FIELD #	NAME	CONTENT	NOTES
1	Bit Sync	Minimum 1 octet value AAH	Agencies/vendors may extend the length of this field by adding additional octets of AAH if the radio system cannot reliably achieve bit sync in one octet time.
2	Frame Sync Flag	One octet value 7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	Two octet field-most significant octet first	Identifies the mobile, by slot number, that should respond to this poll.
4	Length	Two octets-variable	
5	ID	1 octet field value =A1H	
6	Poll Contents	Narrow-band encoded TCIP data frame.	CCPollContents
7	Checksum	Modulo – 256 sum of values in fields 3-N	
8	End Sync Flag	One octet value 7EH	Allows receiver to verify end of transmission

J.5.3 Poll Response Data Structure

The Poll Response Data Structure shall provide the PTV response to a poll from the PTV to the polling controller. This structure has three alternative identifiers:

- A2H indicates the poll response is the complete data transmission from the PTV to the polling controller.
- A3H indicates that the poll response is followed by a message wrapper from the PTV to the polling controller.

Note that field #6 uses a TCIP data frame, not a message as its contents.

FIELD #	NAME	CONTENT	NOTES
1	Bit Sync	Minimum 1 octet value AAH	Agencies/vendors may extend the length of this field by adding additional octets of AAH if the radio system cannot reliably achieve bit sync in one octet time.
2	Frame Sync Flag	One octet value 7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	Two octet field-most significant octet first	Identifies the mobile, by slot number, sending the poll response
4	Length	Two octets-variable	
5	ID	A2H – No wrapper A3H – Wrapper follows	
6	Response Contents	Narrow-band encoded TCIP –data frame	CCPollResponseContents
7	Checksum	Modulo – 256 sum of values in fields 3-N	
8	End Sync Flag	One octet value 7EH	Allows receiver to verify end of transmission

J.5.4 Priority Poll

The Priority Poll Data Structure shall be used by the polling controller to create a contention-based opportunity for a PTV to send a Join Request signifying a high-priority message to the CAD/AVL System without waiting for its regular poll. The selection of what messages the Vehicle Logic Unit deems high-priority is local agency-defined.

FIELD #	NAME	CONTENT	NOTES
1	Bit Sync	AAH	Agencies/vendors may extend the length of this field by adding additional octets of AAH if the radio system cannot reliably achieve bit sync in one octet time.
2	Frame Sync Flag	7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	FFFFH	Broadcast- for use by any authorized PTV
4	Length	Two octets 0006H	
5	ID	One octet A4H	
6	Checksum	Modulo – 256 sum of values in fields 3-N	
7	End Sync Flag	One octet value 7EH	Allows receiver to verify end of transmission

J.5.5 Session Poll

The Session Poll Data Structure shall be used by the polling controller to invite PTVs that do not have an allocated polling slot to request a slot.

FIELD #	NAME	CONTENT	NOTES
1	Bit Sync	AAH	
2	Frame Sync Flag	7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	FFFFH	Broadcast- for use by any unallocated PTV
4	Length	Two octets 0006H	
5	ID	One octet A5H	
6	Checksum	Modulo – 256 sum of values in fields 3-N	
7	End Sync Flag	One octet value 7EH	Allows receiver to verify end of transmission

J.5.6 Narrowband Message Wrapper

The Narrowband Message Wrapper Data Structure shall be used by the PTV or the polling controller to convey a Narrowband TCIP message.

FIELD #	NAME	CONTENT	NOTES
1	Bit Sync	AAH	
2	Frame Sync Flag	7EH	Allows the receiver to detect the end of bit sync and transition to start of contents
3	Slot Number		Identifies the mobile originator or destination to which the message pertains. Value FFFFH indicates all mobiles (broadcast from polling controller)
4	Length	Two octets 0005H	Measured from the Frame Sync Flag to the End Sync Flag – non-inclusive.
5	ID	Identifies the TCIP business area	Value 01-20H. This matches as the BID field for the narrowband encoded message.
6	Fixed IP address	16 octets	IPV6 Format, Same as CPT-IP-Address
7	Fixed Port	1 octet	Same as CPT-UDP-TCP-Port-Number
8	Message Number	1 octet	Same as CC-MessageCounter
9	Last Received Message Number	1 octet	Same as CC-MessageCounter
10	Message Data	TCIP Narrowband-Encoded Message	Variable Length
11	Checksum	Modulo – 256 sum of values in fields 3-10	
12	End Sync Flag	One octet value 7EH	Allows receiver to verify end of transmission

J.5.7 Join Request Data Structure

The Join Request Data Structure shall be used by the PTV to request to join the TCIP polling session, or in response to a Priority Poll to notify the polling controller of a high-priority message.

FIELD #	NAME	CONTENT	NOTES
1	Bit Sync	Minimum 1 octet value AAH	
2	Frame Sync Flag	One octet value 7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	Two octets	0000H in response to a Session Poll, assigned slot number in response to a priority poll.
4	Length	Two octets – 000AH	
5	ID	One octet – Value = A6H	
6	vehicle ID	Four octets	Same value as CPT-VehicleID to identity requester
7	Checksum	Modulo – 256 sum of values in fields 3-N	
8	End Sync Flag	One octet value 7EH	Allows receiver to verify end of transmission

J.5.8 Leave Request Data Structure

The Leave Request Data Structure shall be used by a PTV to ask to be removed from the polling cycle by the polling controller. The Leave Request shall be sent in lieu of a Poll Response by the PTV.

FIELD #	NAME	CONTENT	NOTES
1	Bit Sync	Minimum 1 octet value AAH	
2	Frame Sync Flag	One octet value 7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	Two octets	Currently assigned slot
4	Length	Two octets – Value = 000AH	
5	ID	One octet – Value = A7H	
6	Vehicle ID	Four octets	Same value as CPT-VehicleID
7	Checksum	Modulo – 256 sum of values in fields 3-N	
8	End Sync Flag	One octet value 7EH	Allows receiver to verify end of transmission

J.5.9 Allocation Update Data Structure

The Allocation Update Data Structure shall be used by the polling controller to notify PTVs that they have been added or deleted from the poll cycle. A history of the last 6 adds and deletes are included to allow multiple opportunities for a PTV to receive a copy of the Allocation Update and recognize its revised status.

The polling controller shall not include the same slot identifier in the added and deleted lists except for slot zero which is always valid.

FIELD #	NAME	CONTENT	NOTES
1	Bit Sync	Minimum 1 octet value AAH	
2	Frame Sync Flag	One octet value 7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	FFFFH	Broadcast
4	Length	Two octets – Value =0037H	
5	ID	One octet – Value = A8	
6	Delete all	Boolean (1 octet)	Value 1 all slots rescinded due to polling controller restart, value 0 normal operations.
7	Added slot 1	Two Octets	Slot # Assigned
8	Added Vehicle 1	Four Octets	CPT-VehicleID
9	Added slot 2	Two Octets	Slot # Assigned
10	Added Vehicle 2	Four Octets	CPT-VehicleID
11	Added slot 3	Two Octets	Slot # Assigned
12	Added Vehicle 3	Four Octets	CPT-VehicleID
13	Added slot 4	Two Octets	Slot # Assigned
14	Added Vehicle 4	Four Octets	CPT-VehicleID
15	Added slot 5	Two Octets	Slot # Assigned
16	Added Vehicle 5	Four Octets	CPT-VehicleID
17	Added slot 6	Two Octets	Slot # Assigned
18	Added Vehicle 6	Four Octets	CPT-VehicleID
19	Deleted slot 1	Two Octets	Slot # Vacated
20	Deleted slot 2	Two Octets	Slot # Vacated
21	Deleted slot 3	Two Octets	Slot # Vacated
22	Deleted slot 4	Two Octets	Slot # Vacated
23	Deleted slot 5	Two Octets	Slot # Vacated
24	Deleted slot 6	Two Octets	Slot # Vacated
25	Checksum	Modulo – 256 sum of values in fields 3-N	
26	End Sync Flag	One octet value 7EH	Allows receiver to verify end of transmission

J.5.10 Packetized Message Wrapper

The Packetized Message Wrapper shall be used by the Polling Controller to convey a segment of a long TCIP narrowband message to a PTV.

Field #	Name	Content	Notes
1	Bit Sync	AAH	Agencies/vendors may extend the length of this field by adding additional octets of AAH if the radio system cannot reliably achieve bit sync in one octet time.
2	Frame Sync Flag	7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number		Identifies the mobile(s) to which this frame is sent.
4	Length	Two Octets-variable	Measured from the Frame Sync Flag to the End Sync Flag – non-inclusive.
5ID	Two Octets-identifies the TCIP Business Area	Value = BI-DHO. This matches the BID field plus BOH for the narrowband-encoded message	
6	Fixed IP Address	16 Octets	IPV6 Format, Same as CPT-IP-Address
7	Fixed Port	1 octet	Same as CPT-UDP-TCP-Port-Number
8	Message Number	1 octet	Same as CC-MessageCounter
9	Last Received Message Number	1 octet	Same as CC-MessageCounter
10	Segment Numbers	1 octet	High order 4 bits = m,low order 4 bits=n. This is segment m of n.
11	Message Data	TCIP-Narrowband Encoded Message Segment	Variable Length
12	Checksum	Modulo – 256 sum of fields 3-11	
13	End Sync Flag	1 octet Value 7EH	Allows receiver to verify end of transmission

J.5.11 SNMP Message Wrapper

The SNMP Message Wrapper Data Structure shall be sued to convey SNMP-encoded messages over the TCIP-Polled radio link.

Field #	Name	Content	Notes
1	Bit Sync	Minimum 1 octet value = AAH	Agencies/vendors may extend the length of this field by adding additional octets of AAH if the radio system cannot reliably achieve bit sync in one octet time.
2	Frame Sync Flag	1 Octet value 7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	2 Octet field, most significant octet first	Identifies the mobile that originated, or should receive this frame.
4	Length	2 Octet field-variable	
5	ID	The octet value = AAH	
6	Fixed IP Address	16 Octets	IPV 6 Format – Same as CPT-IP-Address
7	Fixed Port	1 Octet	Same as CPT-UDP-TCP-Port Number
8	Message Number	1 Octet	Same as CC-MessageCounter
9	Last Received Message	1 Octet	Same as CC-MessageCounter
10	Message Data	TCIP-SNMP Encoded Message	Variable Length
11	Checksum	Modulo-256 sum of values in fields 3-10	
12	End Sync Flag	One Octet Value 7EH	Allows receiver to verify end of transmission

J.5.12 Group Reset

The Group Reset Data Structure shall be used to notify PTVs that one or more polling group has been reset. If not enough groups are reset to fill the frame, the last reset group is repeated until the frame is filled.

Field #	Name	Content	Notes
1	Bit Sync	Minimum 1 octet value AAH	Agencies/vendors may extend the length of this field by adding additional octets of AAH if the radio system cannot reliably achieve bit sync in one octet time.
2	Frame Sync Flag	7EH	Allows the receiver to detect the end of bit sync and transition to start of contents.
3	Slot Number	FFFFH	Broadcast-let everybody know about this event
4	Length	2 Octets value = 0010H	
5	1D	1 Octet value = A9	
6	Reset Group 1	Number of Group to Reset	Type = CC=PollingGroup
7	Reset Group 2	Number of Group to Reset	Type = CC=PollingGroup
8	Reset Group 3	Number of Group to Reset	Type = CC=PollingGroup
9	Reset Group 4	Number of Group to Reset	Type = CC=PollingGroup
10	Reset Group 5	Number of Group to Reset	Type = CC=PollingGroup
11	Reset Group 6	Number of Group to Reset	Type = CC=PollingGroup
12	Reset Group 7	Number of Group to Reset	Type = CC=PollingGroup
13	Reset Group 8	Number of Group to Reset	Type = CC=PollingGroup
14	Reset Group 9	Number of Group to Reset	Type = CC=PollingGroup
15	Reset Group 10	Number of Group to Reset	Type = CC=PollingGroup
16	Checksum	Modulo 256 sum of values in fields 3-15	
17	End Sync Flag	1 Octet value = 7EH	Allows receiver to verify end of transmission.

J.6 Polling Controller Rules of Procedure

J.6.1 Allocation of Slot Numbers

The polling controller shall allocate slot numbers in the range 0101H – FFFEH. Slot number 0000H shall be reserved as a null slot number, and slot FFFFM shall be reserved as a broadcast slot number. The polling controller shall assign slot numbers beginning with 0101H and increasing sequentially, skipping any already assigned slot numbers. Upon allocating slot number FFFEH, the polling controller shall make new allocations starting with slot number 0101H, or the lowest currently unallocated slot number. Slot numbers 0001H – 00FFH shall be reserved for PTV group addresses.

The polling controller shall allocate slot numbers only to PTVs requesting a slot allocation by sending a Join Request to the polling controller. When the polling controller allocates a slot number, it shall immediately send an Allocation Update. The polling controller may repeat the Allocation Update transmission $N_{ALLOCTRETRY}$ times, to increase the probability of success. The polling controller shall log each allocation event.

For each allocated slot, the polling controller shall maintain the following slot data:
- Slot-number (from allocation algorithm)
- PTV ID (from join request)
- Last-message-number-sent (initialize to zero)
- Last-message-number-received (initialize to zero)
- Queue of up to $N_{CTLPTVQ}$ (default 8) TCIP messages to the PTV (initialize to empty). Elements in this queue may be SNMP-encoded messages in a SNMP message wrapper, TCIP-narrowband encoded messages in a narrowband message wrapper or a segment of a TCIP narrowband –encoded message in a Packetized Message Wrapper
- Message-try-count (initialize to zero)
- Message ready to send (initialize to false)
- Poll-no-response-count (initialize to zero)
- Agency-data (CC-AgencyData=Initialize to none)
- Agency-data-try-count (initialize to zero)
- Poll-data (initialize to zero)

J.6.2 Deallocation of Slot Numbers

The polling controller shall deallocate slot numbers upon incrementing the Poll-no-response-count for the slot to $(1+ N_{MAXBADPOLL})$, or upon receipt of a Leave Request from the PTV.

J.6.3 Session Polls

The polling controller shall issue a Session Poll to the radio channel at least once per polling cycle, and at least once per $T_{SESSIONPOLL}$ seconds. Upon issuing a Session Poll the polling controller shall refrain from issuing any additional polls (of any kind) while it waits for a poll answer.

J.6.4 Priority Polls

The polling controller shall issue a Priority Poll to the radio channel at least once per polling cycle or at least once per $T_{PRIORITYPOLL}$ seconds. Upon issuing a Priority Poll, the polling controller shall refrain from issuing any additional polls (of any kind) while it waits for a poll answer.

J.6.5 Normal Polls

The polling controller shall issue Polls to the radio channel on a cyclical basis to each allocated slot number. Additionally up to $N_{MAXFASTPOLL}$ PTVs may be assigned to be 'fast polled' at a rate of once every $T_{FASTPOLLINTERVAL}$ seconds. Fast polls are identical to other polls, except the designated PTVs are polled every $T_{FASTPOLLINTERVAL}$ in addition to their normal poll cycle. The polling controller may be optionally configured to automatically provide additional polls to vehicles with Poll Responses reporting queued messages to the polling controller.

When the polling controller issues a poll to a PTV, it shall populate the poll data structure using the internally stored values for the PTV to be polled including Last-message-number-received, Poll-data, and Agency-data (if present). If Agency data is present, the polling controller shall increment the Agency-data-try-count and shall compare it with the configured value $N_{AGENCYDATAMAXTRIES}$. If the Agency-data-try-count is greater or equal to $N_{AGENCYDATAMAXTRIES}$, then the polling controller shall delete the agency data and shall reset Agency-data-try-count to zero.

After issuing a poll, the polling controller shall refrain from issuing any additional polls (of any kind) while it waits for a poll answer.

J.6.6 Waiting for a Poll Answer

Upon issuing a Session or Priority Poll, the polling controller shall wait for a valid received answer (Join Request) for up to $T_{SESSIONWAIT}$ milliseconds. If a valid Join Request is received, the polling controller shall cease waiting and immediately process it as described in section J.6.8. If a Join Request is not received and $T_{SESSIONWAIT}$ expires, the polling controller shall resume polling.

Upon issuing a Normal Poll, the polling controller shall wait for a valid received answer (Poll Response) for up to $T_{NORMALWAIT}$ milliseconds. If a valid Poll Response is received, the polling controller shall cease waiting and immediately process it as described in section J.6.11. If a Poll Response is not received and $T_{NORMALWAIT}$ expires, the polling controller shall:
- Increment the Poll-no-response-count variable for the polled PTV
- If Poll-no-response-count >= $N_{MAXBADPOLL}$ then
  - Log a loss of contact event
  - Deallocate the polling slot for the polled PTV
- Resume polling (with next allocated slot number)

J.6.7 Sending a PTV Message

The polling controller shall send messages to PTVs interspersed with polls "messages" in this context include:
- A complete narrowband TCIP message in a message wrapper
- A complete SNMP encoded TCIP message
- A segment of a TCIP-narrowband encoded message in a packetized message wrapper

 If the base station(s) is full-duplex, the polling controller may send a message to a PTV while waiting for an answer to a poll, however the polling controller shall not send a message to a PTV while it is waiting for an answer to a poll from that specific PTV. The polling controller shall send each pending outbound message at least once per polling cycle, until it is acknowledged by a received SNMP or Narrowband message wrapper, or Poll Response, or discarded based on the value of PTV Message Try Count (see below).

The polling controller shall increment the PTV message try count each time the PTV is polled. If the Message-try-count exceeds $N_{MSGMAXTRIES}$, the polling controller shall:

- Reset Message-try-count to zero for that PTV
- Discard the message at the head of the queue for that PTV

- If there is another message in the queue to that PTV, assign the next sequential message number to the new message at the head of the queue.

J.6.8 Receiving a Join Request

Upon receipt of a Join Request in response to a Session Poll, the polling controller shall allocate a polling slot to the requesting PTV (see J.6.1), and check for any duplicate slot for the same PTV. If the polling controller finds a duplicate polling slot assignment, the polling controller shall move the message queue, poll data and agency data from the old slot to the new slot and deallocate the old slot. The polling controller shall send an Allocation Update immediately, or immediately following the current message or poll transmission if one is in progress. The Allocation update shall be transmitted $N_{ALLOCRETRY}$ times, after which the polling controller shall resume the poll cycle.

J.6.9 Receiving a Message Wrapper

Upon receipt of a message wrapper from the PTV, the polling controller shall:

- Check the last received message number in the wrapper and compare with the message to the PTV awaiting acknowledgement (if any). If the message is acknowledged:
    - Reset PTV Message Try Count to zero for that PTV
    - Discard the message at the head of the queue for that PTV
    - If there is another message in the queue to that PTV, assign the next sequential message number to the message at the head of the queue.
- Check the message number in the wrapper and determine if it matches Last-message-number-received for that PTV.
    - If the numbers match discard the message wrapper (duplicate)
    - If the numbers don't match set Last-message-number-received to the value in the wrapper and forward the message to its recipient.

J.6.10 Receiving a Leave Request

Upon receipt of a Leave Request, the polling controller shall deallocate the polling slot of the requesting PTV, discard any queued message for that PTV, and send an Allocation Update immediately or immediately following the current message or poll transmission if one is in progress.

J.6.11 Receiving a Poll Response

Upon receipt of a Poll Response from a PTV, the polling controller shall:
- Check the last received message number in the response and compare with the message to the PTV awaiting acknowledgement (if any). If the message is acknowledged:
    - Reset PTV Message Try Count to zero for that PTV
    - Discard the message at the head of the queue for that PTV
    - If there is another message in the queue to that PTV, assign the next sequential message number to the message at the head of the queue.
- Package the CcPollResponseContents for the Poll Response into a CcPTVPollInfo message and send to the CAD/AVL System (Notify PTV Polling Result dialog.)

J.6.12 Receiving a CcPollParameters Message

The polling controller shall establish and maintain an event-driven subscription to polling control and configuration information from the CAD/AVL System using the Publish Poll Control dialog. Upon receipt of a CcPollParameters message from the CAD/AVL System, the polling controller shall:
- Update any configured timer and/or counter values to the values specified in the received message.
- Set the fast poll PTV list to match the list in the received message, or remove all PTVs from the list if no fast poll PTVs are listed in the message.
- If any init-polling-groups are present:
  - For each init-polling-group present find all stored PTV records with the stored group ID set to the received group-id value and update the stored GroupID field to zero. Commentary: Newly initialized groups should have no members.
  - For each init-polling-group present create a group record for the initialized group containing the group id, the group's IP address, and a last-message-sent counter (initialize to zero) for that group. Overwrite or delete any old group record containing the same group ID.
  - For each init-polling-group log the initialization event
  - Send as many Group Reset frames as are required to reset all groups specified by the CcPollParameters message
- If any add-group-PTVs are present; find the indicated PTV's stored data, and update the Group ID field. If a PTV is listed, but does not have an allocation, log this event.
- For each PTV for which a PTV-poll-infosets entry is present:
  - If a poll-data field is present, replace the Poll-data for that PTV with the received value.
  - If an agency-data field is present, replace the stored Agency-data for that PTV with the received value and set the Agency-data-try-count to zero.
  - Update the stored Group-id to the received value provided in group-id

J.6.13 Receiving a TCIP Message for Delivery to a PTV

The polling controller upon receiving a message from an agency for transmission to a PTV shall:

1. Determine if the message length exceeds $N_{MASMSGLENTOPTV}$ for a narrowband encoded message or exceeds $N_{MAXPACKET}$ for an SNMP encoded message.
2. Determine if the message is to a PTV with an allocated slot, if the PTV's slot is not allocated, the polling controller shall discard the message and log the event
3. Determine if the message is a narrowband encoded message of length less than $N_{MAXPACKET}$, a narrowband encoded message of length greater than $N_{MAXPACKET}$, or an SNMP encoded message.
4. If the message is a narrowband encoded message of length less than $N_{MAXPACKET}$:
   a. Encode the message in a narrowband message wrapper
   b. Determine if the addition of the message to the queue for the destination PTV would cause the queue length to exceed $N_{CTLPTVQ}$, and if so discard the message an log the event
   c. Otherwise add the message to the queue for the PATV. If the message is at the head of the queue, transmit the message and set the Message-try-count to zero.
5. If the Message is a narrowband encoded message of length greater than $N_{MAXPACKET}$ and less than or equal to $N_{MAXNSGLEN}$:
   a. Encode the message into a sequence of packetized message wrappers. Include $N_{MAXPACKET}$ octets of the message into each wrapper until the final wrapper has less than $N_{MAXPACKET}$ octets to include.
   b. Determine if the addition of the message segments to the queue for the destination PTV would cause the queue length to exceed $N_{CTLPTVQ}$, and if so discard the message (all segments) and (e.g. the event)
   c. Otherwise add the message segments to he queue for the PTV. If the first segment is at the head of the queue, transmit the message segment and set the Message-try-count to zero.
6. If the message is an SNMP-encoded message of length less than $N_{MAXPACKET}$:
   a. Encode the message in an SNMP message wrapper

b. Determine if the addition of the message to the queue for the destination PTV would cause the queue length to exceed $N_{CTLPTVQ}$, and if so discard the message and log the event

c. Otherwise add the message to the queue for the PTV. If the first segment is at the head of the queue, transmit the message and set the message-try-count to zero

Alternative Queue Overflow Procedure:

In steps 4.b, 5.b, and 6.b above the TCIP Polling Controller may optionally handle the queue overflow situation by sending all messages in the queue (in order) followed by the new message (or all message segments) leaving the queue empty. This alternative has the advantage of giving every message an opportunity to be successfully transmitted (albeit with acknowledgements/retries) and clears the queue so that message delays are controlled.

The disadvantage of this alternative is that if many queues (to different PTVs) overflow in a short interval of time, a substantial percentage of the channel capacity can be consumed dumping overflowed queues.

J.6.14 Receiving a TCIP Message for Delivery to a Group of PTVs.

The Polling Controller upon receiving a message from an agency network for transmission to a group of PTVs shall:
1. Determine if the message length exceeds NMAXPACKET, or if the message in SNMP-encoded, and if so discard the message and log the event. Commentary: SNMP group addressing and multipacket group addressing are not supported.
2. Verify that a group has been initialized with the indicated IP address. If the group does not exist discard the message and log the event.
3. Assign the value ((last-message-sent)+1) modulo 256 to the message number field in the message wrapper, and set the last-message-sent value for the group to the same number.
4. Transmit the message in a narrowband message wrapper three successive times. Commentary: Three transmission increases the probability of success. This is implemented because group messages are not acknowledged.

J.6.15 Polling Controller Start Up

Upon startup the polling controller shall delete all allocations, and log the startup event. The polling controller shall send twenty (20) sequential Allocation Update data structures indicating that all slots are deallocated due to a restart. The polling controller shall then send a Session Poll. The polling controller shall continue to send Session Polls until a Join Request is received.

After the first Join Request is received, the polling controller shall send an Allocation Update, and resume sending Session Polls. The polling controller shall transmit only Session Polls and Allocation Updates for the first $T_{SESSIONONLY}$ seconds following the receipt of the first Join Request. At the end of $T_{SESSIONONLY}$ the polling controller shall begin the polling cycle, however for he first $T_{STARTUP}$ minutes after startup, the polling controller shall issue a Session Poll within every $T_{SESSIONPOLLSTART}$ interval (rather than the normal $T_{SESSIONPOLL}$ interval). The requirement to issue a Session Poll every polling cycle shall be in effect throughout the startup period.

Commentary: This faster Session Poll generation rates during $T_{SESSIONONLY}$ and T_{START} expedite the process of allocating slots to all PTVs in a large fleet after a polling controller restart.

J.7 VLU Rules of Procedure

J.7.1 Transmitting on the Channel

The VLU shall not transmit on the radio channel, (except to transmit a Join Request in response to a Session Poll), until it receives an Allocation Update from the polling controller indicating that the PTV has been allocated a slot number.

Once a slot number is obtained, the VLU shall transmit on the channel only:
- In response to a poll from the polling controller containing the PTVs assigned slot number
- In response to a Priority Poll while the VLU has a high-priority message queued.

J.7.2 Joining the Channel

The VLU shall join the channel as described below unless the VLU receives an Allocation Update indicating a polling controller restart. In the event of a polling controller restart the VLU must use the process defined in section

The normal process for Joining the channel is:
- The VLU shall set the message Try Count last-message-number-sent GroupID, and last-message-number-received values to zero
- The VLU shall select a random number, N_{SKIP}, in the range 0-N_{RANDOM}
- The VLU shall monitor the radio channel and skip the first N_{SKIP} Session Polls, (none if $N_{SKIP} = 0$)
- The VLU shall transmit a Join Request in response to the next Session Poll.
- The VLU shall monitor the radio channel for 3 seconds awaiting an Allocation Update from the polling controller.
- If no Allocation Update is received within 2 seconds, or if an Allocation Update is received that does not allocate a slot to the PTV, the VLU shall restart the join process at the first bullet above.
- If an Allocation Update is received allocating a slot to the PTV, the VLU shall begin operating on the channel using the allocated slot number.

J.7.3 Polling Controller Restart

If the VLU receives a Allocation Update indicating a polling controller restart (at any time), the VLU shall immediately discard any assigned slot allocation, and abandon any ongoing attempt to join the channel (see J.7.2 above).

The VLU shall:
- Select a new skip count based on the formula $N_{SKIP} = $ (vehicle ID) modulo ($N_{FLEETSIZE}$) where vehicle ID is the PTV's value of type CPT-VehicleID.
- Monitor the radio channel and skip the first N_{SKIP} Session Polls (none if $N_{SKIP}=0$)
- Send a Join Request in response to the next Session Poll.
- Monitor the radio for 2 seconds awaiting an Allocation Update from the polling controller.
- If an Allocation Update is received within 2 seconds allocating a slot to the PTV, the VLU shall begin operating on the channel using the allocated slot number. This would complete this process, otherwise continue with the next bullet.
- Assign $N_{SKIP} = N_{FLEETSIZE}$
- Monitor the channel and skip the first N_{SKIP} Session Polls
- Send a Join Request in response to the next Session Poll
- Monitor the radio channel for 2 seconds awaiting an Allocation Update from the polling controller
- If an Allocation Update is received within 2 seconds allocating a slot to the PTV, the VLU shall begin operating on the channel using the allocated slot number. This would complete this process, otherwise begin the Joining the Channel process defined in section 10.7.2.

J.7.4 Responding to a Normal Poll

Upon receipt of a normal poll with a slot number matching the slot number allocated to the PTV, the VLU shall:
- Determine if it should attempt to leave the channel (e.g. vehicle shutdown in progress) . If so transmit a Leave Request, and discard the slot allocation for the PTV.
- Determine if there is a message to the polling controller at the head of the queue and if so:
    - Determine if the poll acknowledges the message
    - If the poll acknowledges the message, discard the message, set message Try Count to zero, bring the next queued message (if any) to the head of the queue and assign the next send message number.
    - If the poll does not acknowledge the message and Message-try-count $> = N_{MSGMAXTRIES}$, discard the message, set Message-try-count to zero bring the next queued message (if any) to the head of the queue and assign the next send message number.
    - Otherwise leave the message at the head of the queue
- If there is a message at the head of the queue to be sent to the polling controller then ID=A3H, otherwise ID=A2H
- Generate and transmit a Poll Response using the ID from above, and containing the available fields requested in the poll. Note: a poll may ask for alarms or agency-data and there may be none to include.
- If the ID=A3H, transmit a message wrapper containing the message at the head of the queue, and increment Message-try-count.
- Update the stored GroupID value for the PTV based on the groupID received in the poll.

J.7.5 Discarding a Slot Allocation

When the VLU discards a previously provided slot allocation for the PTV, it shall discard any queued messages for the polling controller, and take any related manufacturer-defined recovery procedures and reset the Message-try-count the Last-message-number-sent, and Last-message-number-received values to zero.

J.6.7 Responding to a Priority Poll

Upon receipt of a Priority Poll, the VLU shall determine if it has any high-priority messages to send to the polling controller. If so the VLU shall respond with a Join Request containing the PTV's slot allocation, and reset the flag indicating that a high-priority message is waiting. Note: The assignment of messages to a high-priority status is a local agency decision.

J.7.7 Receipt of an Allocation Update

If the VLU receives an Allocation Update containing a polling controller restart indication, it shall conform to section J.7.3.

If the VLU receives an Allocation Update containing an allocation of the PTV's allocated slot number to another PTV, or containing a deleted slot matching the PTV's allocated slot number, the VLU shall discard the slot allocation and begin the Joining the Channel process as defined in section J.7.2

If the VLU receives an Allocation Update allocating the PTV to another slot (adds PTV with new slot number), the VLU shall discard the existing slot number and join the channel with the newly assigned slot number.

J.7.8 Receipt of a Message Wrapper

If the VLU receives a narrowband or SNMP message wrapper containing the PTV's allocated slot number, the VLU shall:
- Determine if there is a message to the polling controller at the head of the queue, and if so:
    - Determine if the received message wrapper acknowledges the message

- o If the wrapper acknowledges the message, discard the message, set Message-try-count to zero, bring the next queued message (if any) to the head of the queue and assign the next send message number
  - Determine if the message is a duplicate (message number in wrapper matches Last-received-message-number); discard the message if a duplicate
  - If the message is not a duplicate deliver it to its destination within the PTV.

If the VLU receives a packetized message wrapper containing the PTV's allocated slot number, the VLU shall:
  - Determine if there is a message to the polling controller at the head of the queue, and if so:
    - o Determine if the received message wrapper acknowledges the message
    - o If the received wrapper acknowledges the message, set Message-try-count to zero, bring the next queued message (if any) to the head of the queue and assign the next send message number.
  - Determine if the received wrapper is a duplicate (message number in wrapper matches Last-received-message-number);discard the received wrapper if a duplicate.
  - Determine if the received wrapper is segment 1 of a new message. If so discard any precious multi-segment message being reassembled, and flag the message wrapper as part of the current message being reassembled.
  - Determine if the received wrapper is the next segment of a multi-segment message in progress. If so add the new segment to the message being assembled. If the message is complete, deliver it to its destination in the PTV.
  - Determine if the received wrapper is an out of sequence segment of a multipacket message. If so discard the current multi-segment message in progress (if any) and the received message wrapper.

If the VLU receives a narrowband message wrapper containing the PTV's stored GroupID in the slot number field (upper octet=0, lower octet matches Group ID), the VLU shall:
  - Determine if the received wrapper is a duplicate (message number in wrapper matches Last-received-message-number of the group), discard the message wrapper if a duplicate
  - Otherwise set Last-received-message-number for the group to the message number value from the wrapper and forward the message to its destination within the PTV.

J.7.9 Receipt of Generation or a Message to Send

Upon generating a message to send to the polling controller, or receipt of such a message from another onboard component, the VLU shall:
  - Determine if the queue length equals $N_{PTVCTLQ}$, and if so discard the message and perform any necessary error recovery.
  - Otherwise add the new message to the end of the queue
  - If the new message is at the head of the queue, assign the next message number, and set the Message-try-count to zero

J.7.10 Receipt of Generation or a High Priority Message to Send

Upon generating a high-priority message to send to the polling controller, or receipt of such a message from another onboard component, the VLU shall:
  - Determine if the queue length equals $N_{PTVCTLQ}$, and if so, discard the last message in the queue and perform any necessary error recovery
  - Add the message to the front of the queue, assign the next sequential message number and set the Message-try-count to zero
  - Set a flag indicating that a high-priority message is awaiting transmission to trigger the VLU to respond to the next priority poll.

Commentary: Local agencies determine which messages are to be considered high-priority for this purpose. Two examples that an agency might choose are CcOperatorCallRequest, and ImSilentAlarm.

J.8 TCIP Polling Protocol Parameters

Parameter	Description	Formula	Default
$N_{AGENCYDATAMAXTRIES}$	Number of tries to deliver agency data	Locally defined parameter	5
$N_{ALLOCRETRY}$	Number of sends on Allocation Updates	Locally defined parameter	2
$N_{BITRATE}$	Number of bits per second transmitted on the radio channel	Locally defined parameter	4800
$N_{BITSYNC}$	Number of AAH bit sync octets to send at the beginning of each transmission.	Locally defined parameter	1
N_{SKIP}	The number of Session Polls to be skipped by a VLU before generating a Join Request. This parameter reduces the rate of Join Request Collisions between PTVs.		
$N_{PTVCTLQ}$	Length of message queue to the polling controller in each allocated PTV	Locally defined parameter	8
$N_{CTLPTVQ}$	Length of message queue to each allocated PTV	Locally defined parameter	8
$N_{MAXBADPOLL}$	Number of bad polls before deallocating a slot	Locally defined parameter	10
$N_{MAXMSGLENFROMPTV}$	Maximum number of octets in a narrowband encoded TCIP message from a PTV	Locally defined parameter	100
$N_{MAXMSGLENTOPTV}$	Maximum number of octets in a narrowband encoded TCIP message to a PTV	Locally defined parameter, Cannot Exceed 15* $N_{MAXPACKET}$	500
$N_{MAXPACKET}$	Maximum number of octets in a segment of a multi-segment controller to PTV message.		300
$N_{MSGMAXTRIES}$	Number of tries to deliver a message wrapper	Locally defined parameter	5
$N_{FLEETSIZE}$	Approximate peak number of PTVs sharing the radio channel.	Locally defined parameter.	1200 -- illustrative only
N_{RANDOM}	Highest value in random number range used to randomize access to Session Polls.	Locally defined parameter	30
$T_{MESSAGEWAIT}$	Wait in milliseconds for a message to be sent following a poll response (ID=A3H).	$T_{RADIOTIME} + [(\{12 + N_{BITSYNC} + N_{MAXMSGLENGTH}\} * 8) * (1000 / N_{BITRATE})]$	200
T_{PRMAX}	Time in milliseconds to wait for a poll response (possibly containing agency data or alarms) before declaring a dry poll.	$T_{PRMED} + [(116 * 8) * (1000 / N_{BITRATE})]$	317
T_{PRMED}	Time in milliseconds to wait for a medium poll	$T_{PRMIN} + [(36 * 8) * (1000 / N_{BITRATE})]$	122

	response (optional fields, but no alarms or agency data) before declaring a dry poll.		
T_{PRMIN}	Time in milliseconds to wait for a minimal poll response (no optional fields) before declaring a dry poll.	$T_{RADIOTIME} + [(\{13+N_{BITSYNC}+ 17 \}*8) *(1000/N_{BITRATE})]$	62
$T_{RADIOTIME}$	Time in milliseconds added to each poll wait to allow for radio and VLU latency	Locally defined parameter	10
$T_{FASTPOLLINTERVAL}$	Maximum time in seconds between normal polls to a PTV in fast poll mode	Locally defined parameter	20
$T_{PRIORITYPOLL}$	Maximum time in seconds between priority polls	Locally defined parameter	5
$T_{SESSIONONLY}$	Length of interval in seconds after receipt of the first Join Request during which only session polls and no priority or normal polls are issued.	Locally Defined parameter	60
$T_{SESSIONPOLLSTART}$	Maximum time in seconds between Session Polls during startup.		2
$T_{STARTUP}$	Time in minutes, after a polling controller restart during which Session Polls are sent at a higher than normal rate	Locally defined parameter. Suggest a minimum value of (PTV count)*$T_{SESSIONPOLLSTART}$*2/60	40
$T_{SESSIONPOLL}$	Maximum time in seconds between Session Polls.	Locally defined parameter	8
$T_{SESSIONWAIT}$	Wait in Milliseconds after a Session Poll before declaring a dry poll.	$T_{RADIOTIME} + (\{8+N_{BITSYNC}\}*8)*(1000/N_{BITRATE})$	35

Annex K Sample PRL & PICS

This annex provides a sample PRL and PICS. A PRL is used to specify an agency's requirements for a TCIP conformant interface. A PICS is required as part of the development of a conformant TCIP Implemented Interface. The requirements for PRL and PICS contents are defined in Section 8 Conformance.

Profile Requirements List (PRL) Cover Sheet
Project Name: My Sample PRL
Creation Date: June 19, 2007
Agency/Company Name: Adirondack Transit Lines, Inc.
Agency ID: 2177
Project Component: My CAD/AVL
External Component(s): Their Scheduling System Their Garage Server

Profile Requirements List (PRL)

Project Name:
My Sample PRL

Agency/Company Name:	**Agency ID:**	**Agency Model:**
Adirondack Transit Lines, Inc.	2177	Single

Project Component:	**IP/Network Address:**	**Port/Transport Address:**
My CAD/AVL	123.000.111.203	50001

External Component:	**IP/Network Address:**	**Port/Transport Address:**
Their Scheduling System	NYI	NYI

Non TCIP Interfaces Supported:
Implementation shall support the importation of Transit's Personnel files using a legacy comma delimited file format to provide after contract award, per the Transit's RFP requirements.

Exceptions to TCIP Requirements:
Agency includes required exceptions to TCIP requirements to support legacy interfaces.

Conformance Class 1A: Supported Dialogs			
Project Component: My CAD/AVL			
External Component: Their Scheduling System			
Dialog Name	**Role**	**TCIP Version**	**PRL Annex**
Report Schedule Validation Error	Reporter	3_0_1_F	1A.1
Subscribe Calendar	Subscriber	3_0_1_F	1A.2

Conformance Class 2A: TCIP Message Files Accepted
Project Component: My CAD/AVL
External Component: Their Scheduling System
File Attributes & Limitations: The implementation shall import files from File Access Table (FAT), or New Technology File System (NTFS) formatted volumes. Implementation shall accept any legal file name under FAT or NTFS, and specifed to the implementation according to the manufacturer's instructions.

TCIP Message Name	TCIP Version	PICS Annex
SchMasterScheduleVersion	3_0_1_F	2A.1

Conformance Class 2B: TCIP Message Files Generated
Project Component: My CAD/AVL
External Component: Their Scheduling System
File Attributes & Limitations: Exported file shall be a well formed and valid TCIP XML Message per the TCIP XML Schema Version Selected. File shall contain no special characters. At least one blank shall follow the ned of the tCIP message, follo0wed by the end of file. File naming convention shall be user defined procedure defined above. The implementation shall be capable of exporting files to File Access Table (FAT), or New Technology File System (NTFS) formatted volumes. The implementation produce a maximum of one TCIP message per exported file.

TCIP Message Name	TCIP Version	PICS Annex
Not Applicable		

Annex 1A.1 - Message 1	
PRL Dialog Requirements	

Project Component:
My CAD/AVL

External Component:
Their Scheduling System

| | |

Dialog Name:
Report Schedule Validation Error

Dialog Role:
Reporter

Send Message Name:
SchReportValidationErrors

Optional Send Field Support Codes:
'A' - Field shall always be sent.
'N' - Field shall never be sent.
'C' - Field shall conditionally be sent.

Field	Code
version-used.route.agency-id	N
version-used.route.route-designator	ERR
version-used.route.route-name	ERR
version-used.metadata	A
version-used.metadata.created	C[1]
version-used.metadata.effective	C[2]
version-used.metadata.expiration	C[3]
version-used.metadata.activation	C[4]
version-used.metadata.deactivation	C[5]
version-used.route-sched-exp	C[6]
version-used.route-sched-version	ERR
version-used.timepoint-eff	C[7]
version-used.timepoint-exp	C[8]
version-used.timepoint-version	ERR
version-used.timepoint-update	C[9]
version-used.pattern-eff	C[10]
version-used.pattern-exp	C[11]
version-used.pattern-version	ERR

version-used.pattern-update	C^{12}
version-used.stoppoint-eff	C^{13}
version-used.stoppoint-exp	C^{14}
version-used.stoppoint-version	ERR
version-used.stoppoint-update	C^{15}
time-failed	A
errors-found.affected-patterns	C^{16}
errors-found.affected-patterns.agency-id	N
errors-found.affected-patterns.designator	ERR
errors-found.affected-patterns.name	ERR
errors-found.affected-segments	C^{17}
errors-found.affected-segments.agency-id	N
errors-found.affected-segments.name	ERR
errors-found.affected-trips	C^{18}
errors-found.affected-trips.agency-id	N
errors-found.affected-trips.designator	ERR
errors-found.affected-runs	C^{19}
errors-found.affected-runs.agency-id	N
errors-found.affected-runs.designator	ERR
errors-found.affected-blocks	C^{20}
errors-found.affected-blocks.agency-id	N
errors-found.affected-blocks.block-designator	ERR
errors-found.affected-blocks.block-name	ERR
errors-found.affected-routes	C^{21}
errors-found.affected-routes.agency-id	N
errors-found.affected-routes.route-designator	ERR
errors-found.affected-routes.route-name	ERR
errors-found.affected-directions	C^{22}
errors-found.affected-stoppoints	C^{23}
errors-found.affected-stoppoints.agency-id	N
errors-found.affected-stoppoints.name	ERR
errors-found.affected-timepoints	C^{24}
errors-found.affected-timepoints.agency-id	N
errors-found.affected-timepoints.designator	ERR
errors-found.affected-timepoints.name	ERR

errors-found.affected-transfers	C[25]
errors-found.explanation	C[26]

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

[1] The field is included if the creation date-time for the row data is available.

[2] The field is included if the efective date-time for the row data is available.

[3] The field is included if the expiration date-time for the row data is available.

[4] The field is included if the activation date-time for the item described by the row data is available. Example if the row data describes a stoppoint, the activation date-time for the stoppoint.

[5] The field is included if the deactivation date-time for the item described by the row data is available. Example if the row data describes a stoppoint, the deactivation date-time for the stoppoint.

[6] If the My Sample PRL has the data available.

[7] If the My Sample PRL has the data available.

[8] If the My Sample PRL has the data available.

[9] If the My Sample PRL has the data available.

[10] If the My Sample PRL has the data available.

[11] If the My Sample PRL has the data available.

[12] If the My Sample PRL has the data available.

[13] If the My Sample PRL has the data available.

[14] If the My Sample PRL has the data available.

[15] If the My Sample PRL has the data available.

[16] Field is present if the validator associated the schedule validation errror with a specific transit stopping pattern or set of patterns.

[17] Field is present if the validator associated the schedule validation errror with a specific transit stopping pattern segment or set of pattern segments.

[18] Field is present if the validator associated the schedule validation errror with a specific transit trip or set of trips.

[19] Field is present if the validator associated the schedule validation errror with a specific transit run (operator assignment) or set of runs.

[20] Field is present if the validator associated the schedule validation errror with a specific transit block (vehicle assignment) or set of blocks.

[21] Field is present if the validator associated the schedule validation errror with a specific transit route or set of routes.

[22] Field is present if the validator associated the schedule validation errror with a specific direction or set of directions.

[23] Field is present if the validator associated the schedule validation errror with a specific transit stoppoint or set of stoppoints.

[24] Field is present if the validator associated the schedule validation errror with a specific transit timepoint or set of timepoints.

[25] Field is present if the validator associated the schedule validation errror with a specific transfer or set of transfers.

[26] If the My Sample PRL has the data available.

Annex 1A.1 - Message 2	
PRL Dialog Requirements	
Project Component: My CAD/AVL	
External Component: Their Scheduling System	
Dialog Name: Report Schedule Validation Error	
Dialog Role: Reporter	
Receive Message Name: SchReportValidationErrorsAck	
Optional Receive Field Support Codes: 'U' - Field shall be used or stored if present. 'R' - Field required by implementation. 'I' - Field may be ignored if present.	
Field	**Code**
version-used.route.agency-id	I
version-used.route.route-designator	ERR
version-used.route.route-name	ERR
version-used.metadata	U
version-used.metadata.created	U
version-used.metadata.effective	U
version-used.metadata.expiration	U
version-used.metadata.activation	U
version-used.metadata.deactivation	U
version-used.route-sched-exp	U
version-used.route-sched-version	ERR
version-used.timepoint-eff	U
version-used.timepoint-exp	U
version-used.timepoint-version	ERR
version-used.timepoint-update	U
version-used.pattern-eff	U
version-used.pattern-exp	U

version-used.pattern-version	ERR
version-used.pattern-update	U
version-used.stoppoint-eff	U
version-used.stoppoint-exp	U
version-used.stoppoint-version	ERR
version-used.stoppoint-update	U

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

name	
subscriptionInfo.applicability.applicable-garages	ERR
subscriptionInfo.applicability.applicable-garages.agency-id	N
subscriptionInfo.applicability.applicable-garages.facility-name	C^4
subscriptionInfo.applicability.applicable-garages.base-name	C^5
subscriptionInfo.applicability.applicable-fleet-subsets	ERR
subscriptionInfo.applicability.applicable-stoppoint-subsets	ERR
subscriptionInfo.applicability.applicable-fare-subsets	ERR

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

[1] If the My Sample PRL has the data available.
[2] If the facility is a not a base and My Sample PRL has the name available.
[3] If the facility is a base and My Sample PRL has the name available.
[4] If the facility is a not a base and My Sample PRL has the name available.
[5] If the facility is a base and My Sample PRL has the name available.

Annex 1A.2 - Message 2	
PRL Dialog Requirements	

Project Component:	
My CAD/AVL	

External Component:
Their Scheduling System

Dialog Name:
Subscribe Calendar

Dialog Role:
Subscriber

Receive Message Name:
SchCalendar

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
subscriptionInfo.reportInterval	U
subscriptionInfo.applicability	ERR
subscriptionInfo.applicability.applicable-routes	ERR
subscriptionInfo.applicability.applicable-routes.agency-id	I
subscriptionInfo.applicability.applicable-routes.route-designator	ERR
subscriptionInfo.applicability.applicable-routes.route-name	ERR
subscriptionInfo.applicability.applicable-ptvs	ERR
subscriptionInfo.applicability.applicable-ptvs.agency-id	I
subscriptionInfo.applicability.applicable-ptvs.vin	U
subscriptionInfo.applicability.applicable-stops	ERR
subscriptionInfo.applicability.applicable-stops.agency-id	I
subscriptionInfo.applicability.applicable-stops.name	ERR
subscriptionInfo.applicability.applicable-facilities	ERR
subscriptionInfo.applicability.applicable-facilities.agency-id	I
subscriptionInfo.applicability.applicable-facilities.facility-	U

name	
subscriptionInfo.applicability.applicable-facilities.base-name	U
subscriptionInfo.applicability.applicable-garages	ERR
subscriptionInfo.applicability.applicable-garages.agency-id	I
subscriptionInfo.applicability.applicable-garages.facility-name	U
subscriptionInfo.applicability.applicable-garages.base-name	U
subscriptionInfo.applicability.applicable-fleet-subsets	ERR
subscriptionInfo.applicability.applicable-stoppoint-subsets	ERR
subscriptionInfo.applicability.applicable-fare-subsets	ERR
day-definitions.names	U

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

Annex 1A.2 - Message 3	
PRL Dialog Requirements	

Project Component:	
My CAD/AVL	

External Component:
Their Scheduling System

Dialog Name:
Subscribe Calendar

Dialog Role:
Subscriber

Receive Message Name:
CptSubErrorNotice

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
subscription.reportInterval	U
subscription.applicability	ERR
subscription.applicability.applicable-routes	ERR
subscription.applicability.applicable-routes.agency-id	I
subscription.applicability.applicable-routes.route-designator	ERR
subscription.applicability.applicable-routes.route-name	ERR
subscription.applicability.applicable-ptvs	ERR
subscription.applicability.applicable-ptvs.agency-id	I
subscription.applicability.applicable-ptvs.vin	U
subscription.applicability.applicable-stops	ERR
subscription.applicability.applicable-stops.agency-id	I
subscription.applicability.applicable-stops.name	ERR
subscription.applicability.applicable-facilities	ERR
subscription.applicability.applicable-facilities.agency-id	I
subscription.applicability.applicable-facilities.facility-name	U
subscription.applicability.applicable-facilities.base-name	U
subscription.applicability.applicable-garages	ERR

subscription.applicability.applicable-garages.agency-id	I
subscription.applicability.applicable-garages.facility-name	U
subscription.applicability.applicable-garages.base-name	U
subscription.applicability.applicable-fleet-subsets	ERR
subscription.applicability.applicable-stoppoint-subsets	ERR
subscription.applicability.applicable-fare-subsets	ERR
description	U

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

| Field | Code |
| No local extensions are defined for this message. | |

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

Annex 2A.1	
PRL Receive Message File Requirements	

Project Component:
My CAD/AVL

External Component:
Their Scheduling System

Receive Message Name:
SchMasterScheduleVersion

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
subscriptionInfo.reportInterval	U
subscriptionInfo.applicability	ERR
subscriptionInfo.applicability.applicable-routes	ERR
subscriptionInfo.applicability.applicable-routes.agency-id	I
subscriptionInfo.applicability.applicable-routes.route-designator	ERR
subscriptionInfo.applicability.applicable-routes.route-name	ERR
subscriptionInfo.applicability.applicable-ptvs	ERR
subscriptionInfo.applicability.applicable-ptvs.agency-id	I
subscriptionInfo.applicability.applicable-ptvs.vin	U
subscriptionInfo.applicability.applicable-stops	ERR
subscriptionInfo.applicability.applicable-stops.agency-id	I
subscriptionInfo.applicability.applicable-stops.name	ERR
subscriptionInfo.applicability.applicable-facilities	ERR
subscriptionInfo.applicability.applicable-facilities.agency-id	I
subscriptionInfo.applicability.applicable-facilities.facility-name	U
subscriptionInfo.applicability.applicable-facilities.base-name	U
subscriptionInfo.applicability.applicable-garages	ERR
subscriptionInfo.applicability.applicable-garages.agency-id	I
subscriptionInfo.applicability.applicable-garages.facility-	U

name	
subscriptionInfo.applicability.applicable-garages.base-name	U
subscriptionInfo.applicability.applicable-fleet-subsets	ERR
subscriptionInfo.applicability.applicable-stoppoint-subsets	ERR
subscriptionInfo.applicability.applicable-fare-subsets	ERR
begin	U
end	U
agencies	U
routes	U
routes.agency-id	I
routes.route-designator	ERR
routes.route-name	ERR
route-versions.route.agency-id	I
route-versions.route.route-designator	ERR
route-versions.route.route-name	ERR
route-versions.metadata	U
route-versions.metadata.created	U
route-versions.metadata.effective	U
route-versions.metadata.expiration	U
route-versions.metadata.activation	U
route-versions.metadata.deactivation	U
route-versions.route-sched-exp	U
route-versions.route-sched-version	ERR
route-versions.timepoint-eff	U
route-versions.timepoint-exp	U
route-versions.timepoint-version	ERR
route-versions.timepoint-update	U
route-versions.pattern-eff	U
route-versions.pattern-exp	U
route-versions.pattern-version	ERR
route-versions.pattern-update	U
route-versions.stoppoint-eff	U
route-versions.stoppoint-exp	U
route-versions.stoppoint-version	ERR
route-versions.stoppoint-update	U

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd	
Field	**Code**
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd			
Field	**Data Element**	**Local Codes**	**Code**
No local code extensions are defined for this message.			

Profile Requirements List (PRL)

Project Name: My Sample PRL		
Agency/Company Name: Adirondack Transit Lines, Inc.	**Agency ID:** 2177	**Agency Model:** Single
Project Component: My CAD/AVL	**IP/Network Address:** 123.000.111.203	**Port/Transport Address:** 50001
External Component: Their Garage Server	**IP/Network Address:** NYI	**Port/Transport Address:** NYI
Non TCIP Interfaces Supported: Implementation shall support the importation of Transit's Personnel files using a legacy comma delimited file format to provide after contract award, per the Transit's RFP requirements.		
Exceptions to TCIP Requirements: Agency includes required exceptions to TCIP requirements to support legacy interfaces.		

Conformance Class 1A: Supported Dialogs			
Project Component: My CAD/AVL			
External Component: Their Garage Server			
Dialog Name	**Role**	**TCIP Version**	**PRL Annex**
Load Component Software	Source	3_0_1_F	1A.1

Conformance Class 2A: TCIP Message Files Accepted

Project Component:
My CAD/AVL

External Component:
Their Garage Server

File Attributes & Limitations:
The implementation shall import files from File Access Table (FAT), or New Technology File System (NTFS) formatted volumes. Implementation shall accept any legal file name under FAT or NTFS, and specifed to the implementation according to the manufacturer's instructions.

TCIP Message Name	TCIP Version	PICS Annex
Not Applicable		

Conformance Class 2B: TCIP Message Files Generated		
Project Component: My CAD/AVL		
External Component: Their Garage Server		
File Attributes & Limitations: Exported file shall be a well formed and valid TCIP XML Message per the TCIP XML Schema Version Selected. File shall contain no special characters. At least one blank shall follow the ned of the tCIP message, follo0wed by the end of file. File naming convention shall be user defined procedure defined above. The implementation shall be capable of exporting files to File Access Table (FAT), or New Technology File System (NTFS) formatted volumes. The implementation produce a maximum of one TCIP message per exported file.		
TCIP Message Name	**TCIP Version**	**PICS Annex**
Not Applicable		

Annex 1A.1 - Message 1
PRL Dialog Requirements

Project Component:
My CAD/AVL

External Component:
Their Garage Server

Dialog Name:
Load Component Software

Dialog Role:
Source

Send Message Name:
CptForceLoad

Optional Send Field Support Codes:
'A' - Field shall always be sent.
'N' - Field shall never be sent.
'C' - Field shall conditionally be sent.

Field	Code
vehicle	C^1
vehicle.agency-id	N
vehicle.vin	C^2
componentID	C^3
stoppoint	C^4
stoppoint.agency-id	N
stoppoint.name	ERR
field-address	C^5
field-port	C^6

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

[1] Field is present if the component to be loaded is on a vehicle.
[2] If the My Sample PRL has the data available.
[3] Field is present if the component to be loaded is on a vehicle.
[4] Field is present if the component to be loaded is a field component associated with a stoppoint.
[5] Field is present if the component to be loaded is a field component.
[6] Field is present if the component to be loaded is a field component.

Annex 1A.1 - Message 2	
PRL Dialog Requirements	

Project Component:
My CAD/AVL

External Component:
Their Garage Server

Dialog Name:
Load Component Software

Dialog Role:
Source

Receive Message Name:
CptOnboardVersionNotice

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
files-on-hand.vehicle	U
files-on-hand.vehicle.agency-id	I
files-on-hand.vehicle.vin	U
files-on-hand.component-identifier	ERR
files-on-hand.component-IP	ERR
files-on-hand.component-port	ERR
files-on-hand.stoppoint	ERR
files-on-hand.stoppoint.agency-id	I
files-on-hand.stoppoint.name	ERR
files-on-hand.field-address	ERR
files-on-hand.field-port	ERR
files-on-hand.version-number	U
files-on-hand.sched-version	ERR
files-on-hand.effective-datetime	U
files-on-hand.updates-since	U
files-on-hand.applicability	U
files-on-hand.applicability.applicable-routes	ERR

files-on-hand.applicability.applicable-routes.agency-id	I
files-on-hand.applicability.applicable-routes.route-designator	ERR
files-on-hand.applicability.applicable-routes.route-name	ERR
files-on-hand.applicability.applicable-ptvs	ERR
files-on-hand.applicability.applicable-ptvs.agency-id	I
files-on-hand.applicability.applicable-ptvs.vin	U
files-on-hand.applicability.applicable-stops	ERR
files-on-hand.applicability.applicable-stops.agency-id	I
files-on-hand.applicability.applicable-stops.name	ERR
files-on-hand.applicability.applicable-facilities	ERR
files-on-hand.applicability.applicable-facilities.agency-id	I
files-on-hand.applicability.applicable-facilities.facility-name	U
files-on-hand.applicability.applicable-facilities.base-name	U
files-on-hand.applicability.applicable-garages	ERR
files-on-hand.applicability.applicable-garages.agency-id	I
files-on-hand.applicability.applicable-garages.facility-name	U
files-on-hand.applicability.applicable-garages.base-name	U
files-on-hand.applicability.applicable-fleet-subsets	ERR
files-on-hand.applicability.applicable-stoppoint-subsets	ERR
files-on-hand.applicability.applicable-fare-subsets	ERR

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

Annex 1A.1 - Message 3	
PRL Dialog Requirements	

Project Component:
My CAD/AVL

External Component:
Their Garage Server

Dialog Name:
Load Component Software

Dialog Role:
Source

Send Message Name:
CptLoadControl

Optional Send Field Support Codes:
'A' - Field shall always be sent.
'N' - Field shall never be sent.
'C' - Field shall conditionally be sent.

Field	Code
files-on-Hand.vehicle	C^1
files-on-Hand.vehicle.agency-id	N
files-on-Hand.vehicle.vin	C^2
files-on-Hand.component-identifier	C^3
files-on-Hand.component-IP	C^4
files-on-Hand.component-port	C^5
files-on-Hand.stoppoint	C^6
files-on-Hand.stoppoint.agency-id	N
files-on-Hand.stoppoint.name	ERR
files-on-Hand.field-address	C^7
files-on-Hand.field-port	C^8
files-on-Hand.version-number	C^9
files-on-Hand.sched-version	ERR
files-on-Hand.effective-datetime	A
files-on-Hand.updates-since	C^{10}
files-on-Hand.applicability	C^{11}
files-on-Hand.applicability.applicable-routes	ERR
files-on-Hand.applicability.applicable-routes.agency-id	N

files-on-Hand.applicability.applicable-routes.route-designator	ERR
files-on-Hand.applicability.applicable-routes.route-name	ERR
files-on-Hand.applicability.applicable-ptvs	ERR
files-on-Hand.applicability.applicable-ptvs.agency-id	N
files-on-Hand.applicability.applicable-ptvs.vin	C^{12}
files-on-Hand.applicability.applicable-stops	ERR
files-on-Hand.applicability.applicable-stops.agency-id	N
files-on-Hand.applicability.applicable-stops.name	ERR
files-on-Hand.applicability.applicable-facilities	ERR
files-on-Hand.applicability.applicable-facilities.agency-id	N
files-on-Hand.applicability.applicable-facilities.facility-name	C^{13}
files-on-Hand.applicability.applicable-facilities.base-name	C^{14}
files-on-Hand.applicability.applicable-garages	ERR
files-on-Hand.applicability.applicable-garages.agency-id	N
files-on-Hand.applicability.applicable-garages.facility-name	C^{15}
files-on-Hand.applicability.applicable-garages.base-name	C^{16}
files-on-Hand.applicability.applicable-fleet-subsets	ERR
files-on-Hand.applicability.applicable-stoppoint-subsets	ERR
files-on-Hand.applicability.applicable-fare-subsets	ERR
most-Recent-Load-File.vehicle	C^{17}
most-Recent-Load-File.vehicle.agency-id	N
most-Recent-Load-File.vehicle.vin	C^{18}
most-Recent-Load-File.component-identifier	C^{19}
most-Recent-Load-File.component-IP	C^{20}
most-Recent-Load-File.component-port	C^{21}
most-Recent-Load-File.stoppoint	C^{22}
most-Recent-Load-File.stoppoint.agency-id	N
most-Recent-Load-File.stoppoint.name	ERR
most-Recent-Load-File.field-address	C^{23}
most-Recent-Load-File.field-port	C^{24}
most-Recent-Load-File.version-number	C^{25}
most-Recent-Load-File.sched-version	ERR
most-Recent-Load-File.effective-datetime	A
most-Recent-Load-File.updates-since	C^{26}

most-Recent-Load-File.applicability	C[27]
most-Recent-Load-File.applicability.applicable-routes	ERR
most-Recent-Load-File.applicability.applicable-routes.agency-id	N
most-Recent-Load-File.applicability.applicable-routes.route-designator	ERR
most-Recent-Load-File.applicability.applicable-routes.route-name	ERR
most-Recent-Load-File.applicability.applicable-ptvs	ERR
most-Recent-Load-File.applicability.applicable-ptvs.agency-id	N
most-Recent-Load-File.applicability.applicable-ptvs.vin	C[28]
most-Recent-Load-File.applicability.applicable-stops	ERR
most-Recent-Load-File.applicability.applicable-stops.agency-id	N
most-Recent-Load-File.applicability.applicable-stops.name	ERR
most-Recent-Load-File.applicability.applicable-facilities	ERR
most-Recent-Load-File.applicability.applicable-facilities.agency-id	N
most-Recent-Load-File.applicability.applicable-facilities.facility-name	C[29]
most-Recent-Load-File.applicability.applicable-facilities.base-name	C[30]
most-Recent-Load-File.applicability.applicable-garages	ERR
most-Recent-Load-File.applicability.applicable-garages.agency-id	N
most-Recent-Load-File.applicability.applicable-garages.facility-name	C[31]
most-Recent-Load-File.applicability.applicable-garages.base-name	C[32]
most-Recent-Load-File.applicability.applicable-fleet-subsets	ERR
most-Recent-Load-File.applicability.applicable-stoppoint-subsets	ERR
most-Recent-Load-File.applicability.applicable-fare-subsets	ERR
load-Stop-Reason	C[33]
next-file-requested	C[34]
next-file-requested.vehicle	C[35]
next-file-requested.vehicle.agency-id	N

next-file-requested.vehicle.vin	C^{36}
next-file-requested.component-identifier	C^{37}
next-file-requested.component-IP	C^{38}
next-file-requested.component-port	C^{39}
next-file-requested.stoppoint	C^{40}
next-file-requested.stoppoint.agency-id	N
next-file-requested.stoppoint.name	ERR
next-file-requested.field-address	C^{41}
next-file-requested.field-port	C^{42}
next-file-requested.version-number	C^{43}
next-file-requested.sched-version	ERR
next-file-requested.effective-datetime	A
next-file-requested.updates-since	C^{44}
next-file-requested.applicability	C^{45}
next-file-requested.applicability.applicable-routes	ERR
next-file-requested.applicability.applicable-routes.agency-id	N
next-file-requested.applicability.applicable-routes.route-designator	ERR
next-file-requested.applicability.applicable-routes.route-name	ERR
next-file-requested.applicability.applicable-ptvs	ERR
next-file-requested.applicability.applicable-ptvs.agency-id	N
next-file-requested.applicability.applicable-ptvs.vin	C^{46}
next-file-requested.applicability.applicable-stops	ERR
next-file-requested.applicability.applicable-stops.agency-id	N
next-file-requested.applicability.applicable-stops.name	ERR
next-file-requested.applicability.applicable-facilities	ERR
next-file-requested.applicability.applicable-facilities.agency-id	N
next-file-requested.applicability.applicable-facilities.facility-name	C^{47}
next-file-requested.applicability.applicable-facilities.base-name	C^{48}
next-file-requested.applicability.applicable-garages	ERR
next-file-requested.applicability.applicable-garages.agency-id	N
next-file-requested.applicability.applicable-garages.facility-	C^{49}

name	
next-file-requested.applicability.applicable-garages.base-name	C[50]
next-file-requested.applicability.applicable-fleet-subsets	ERR
next-file-requested.applicability.applicable-stoppoint-subsets	ERR
next-file-requested.applicability.applicable-fare-subsets	ERR
next-file-update-since	C[51]

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

[1] Field is present if the component to be loaded is on a vehicle.

[2] If the My Sample PRL has the data available.

[3] Field is present if the component to be loaded is on a vehicle.

[4] Field is present if the component to be loaded is on a vehicle.

[5] Field is present if the component to be loaded is on a vehicle.

[6] Field is present if the component to be loaded is a field component associated with a stoppoint.

[7] Field is present if the component to be loaded is a field component.

[8] Field is present if the component to be loaded is a field component.

[9] If the push message contains non-schedule information, that has an associated version number.

[10] If the requested load or actual load contains updates to previously sent data rather than a complete load.

[11] Field is present if the scope of the loaded data is specified using an agency-specified applicability group.

[12] If the My Sample PRL has the data available.

[13] If the facility is a not a base and My Sample PRL has the name available.

[14] If the facility is a base and My Sample PRL has the name available.

[15] If the facility is a not a base and My Sample PRL has the name available.

[16] If the facility is a base and My Sample PRL has the name available.

[17] Field is present if the component to be loaded is on a vehicle.

[18] If the My Sample PRL has the data available.

[19] Field is present if the component to be loaded is on a vehicle.

[20] Field is present if the component to be loaded is on a vehicle.

[21] Field is present if the component to be loaded is on a vehicle.

[22] Field is present if the component to be loaded is a field component associated with a stoppoint.

[23] Field is present if the component to be loaded is a field component.

[24] Field is present if the component to be loaded is a field component.

[25] If the push message contains non-schedule information, that has an associated version number.

[26] If the requested load or actual load contains updates to previously sent data rather than a complete load.

[27] Field is present if the scope of the loaded data is specified using an agency-specified applicability group.

[28] If the My Sample PRL has the data available.

[29] If the facility is a not a base and My Sample PRL has the name available.

[30] If the facility is a base and My Sample PRL has the name available.

[31] If the facility is a not a base and My Sample PRL has the name available.

[32] If the facility is a base and My Sample PRL has the name available.

[33] Field is present if the stop-load field is set to True.

[34] Field is present if there is an identified next file to load.

[35] Field is present if the component to be loaded is on a vehicle.

[36] If the My Sample PRL has the data available.

[37] Field is present if the component to be loaded is on a vehicle.

[38] Field is present if the component to be loaded is on a vehicle.

[39] Field is present if the component to be loaded is on a vehicle.

[40] Field is present if the component to be loaded is a field component associated with a stoppoint.

[41] Field is present if the component to be loaded is a field component.

[42] Field is present if the component to be loaded is a field component.

[43] If the push message contains non-schedule information, that has an associated version number.

[44] If the requested load or actual load contains updates to previously sent data rather than a complete load.

[45] Field is present if the scope of the loaded data is specified using an agency-specified applicability group.

[46] If the My Sample PRL has the data available.

[47] If the facility is a not a base and My Sample PRL has the name available.

[48] If the facility is a base and My Sample PRL has the name available.

[49] If the facility is a not a base and My Sample PRL has the name available.

[50] If the facility is a base and My Sample PRL has the name available.

[51] Field is present if there is an identified next file to load, and the next load is to be updates only to a previous load.

Annex 1A.1 - Message 4	
PRL Dialog Requirements	
Project Component: My CAD/AVL	
External Component: Their Garage Server	
Dialog Name: Load Component Software	
Dialog Role: Source	
Send Message Name: CptCurrentVersionNotice	
Optional Send Field Support Codes: 'A' - Field shall always be sent. 'N' - Field shall never be sent. 'C' - Field shall conditionally be sent.	
Field	**Code**
current-files.vehicle	C^1
current-files.vehicle.agency-id	N
current-files.vehicle.vin	C^2
current-files.component-identifier	C^3
current-files.component-IP	C^4
current-files.component-port	C^5
current-files.stoppoint	C^6
current-files.stoppoint.agency-id	N
current-files.stoppoint.name	ERR
current-files.field-address	C^7
current-files.field-port	C^8
current-files.version-number	C^9
current-files.sched-version	ERR
current-files.effective-datetime	A
current-files.updates-since	C^{10}
current-files.applicability	C^{11}
current-files.applicability.applicable-routes	ERR

current-files.applicability.applicable-routes.agency-id	N
current-files.applicability.applicable-routes.route-designator	ERR
current-files.applicability.applicable-routes.route-name	ERR
current-files.applicability.applicable-ptvs	ERR
current-files.applicability.applicable-ptvs.agency-id	N
current-files.applicability.applicable-ptvs.vin	C^{12}
current-files.applicability.applicable-stops	ERR
current-files.applicability.applicable-stops.agency-id	N
current-files.applicability.applicable-stops.name	ERR
current-files.applicability.applicable-facilities	ERR
current-files.applicability.applicable-facilities.agency-id	N
current-files.applicability.applicable-facilities.facility-name	C^{13}
current-files.applicability.applicable-facilities.base-name	C^{14}
current-files.applicability.applicable-garages	ERR
current-files.applicability.applicable-garages.agency-id	N
current-files.applicability.applicable-garages.facility-name	C^{15}
current-files.applicability.applicable-garages.base-name	C^{16}
current-files.applicability.applicable-fleet-subsets	ERR
current-files.applicability.applicable-stoppoint-subsets	ERR
current-files.applicability.applicable-fare-subsets	ERR
files-to-delete.vehicle	C^{17}
files-to-delete.vehicle.agency-id	N
files-to-delete.vehicle.vin	C^{18}
files-to-delete.component-identifier	C^{19}
files-to-delete.component-IP	C^{20}
files-to-delete.component-port	C^{21}
files-to-delete.stoppoint	C^{22}
files-to-delete.stoppoint.agency-id	N
files-to-delete.stoppoint.name	ERR
files-to-delete.field-address	C^{23}
files-to-delete.field-port	C^{24}
files-to-delete.version-number	C^{25}
files-to-delete.sched-version	ERR

files-to-delete.effective-datetime	A
files-to-delete.updates-since	C[26]
files-to-delete.applicability	C[27]
files-to-delete.applicability.applicable-routes	ERR
files-to-delete.applicability.applicable-routes.agency-id	N
files-to-delete.applicability.applicable-routes.route-designator	ERR
files-to-delete.applicability.applicable-routes.route-name	ERR
files-to-delete.applicability.applicable-ptvs	ERR
files-to-delete.applicability.applicable-ptvs.agency-id	N
files-to-delete.applicability.applicable-ptvs.vin	C[28]
files-to-delete.applicability.applicable-stops	ERR
files-to-delete.applicability.applicable-stops.agency-id	N
files-to-delete.applicability.applicable-stops.name	ERR
files-to-delete.applicability.applicable-facilities	ERR
files-to-delete.applicability.applicable-facilities.agency-id	N
files-to-delete.applicability.applicable-facilities.facility-name	C[29]
files-to-delete.applicability.applicable-facilities.base-name	C[30]
files-to-delete.applicability.applicable-garages	ERR
files-to-delete.applicability.applicable-garages.agency-id	N
files-to-delete.applicability.applicable-garages.facility-name	C[31]
files-to-delete.applicability.applicable-garages.base-name	C[32]
files-to-delete.applicability.applicable-fleet-subsets	ERR
files-to-delete.applicability.applicable-stoppoint-subsets	ERR
files-to-delete.applicability.applicable-fare-subsets	ERR

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd	
Field	**Code**
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd			
Field	**Data**	**Local**	**Code**

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	Element	**Codes**	
No local code extensions are defined for this message.			

[1] Field is present if the component to be loaded is on a vehicle.
[2] If the My Sample PRL has the data available.
[3] Field is present if the component to be loaded is on a vehicle.
[4] Field is present if the component to be loaded is on a vehicle.
[5] Field is present if the component to be loaded is on a vehicle.
[6] Field is present if the component to be loaded is a field component associated with a stoppoint.
[7] Field is present if the component to be loaded is a field component.
[8] Field is present if the component to be loaded is a field component.
[9] If the push message contains non-schedule information, that has an associated version number.
[10] If the requested load or actual load contains updates to previously sent data rather than a complete load.
[11] Field is present if the scope of the loaded data is specified using an agency-specified applicability group.
[12] If the My Sample PRL has the data available.
[13] If the facility is a not a base and My Sample PRL has the name available.
[14] If the facility is a base and My Sample PRL has the name available.
[15] If the facility is a not a base and My Sample PRL has the name available.
[16] If the facility is a base and My Sample PRL has the name available.
[17] Field is present if the component to be loaded is on a vehicle.
[18] If the My Sample PRL has the data available.
[19] Field is present if the component to be loaded is on a vehicle.
[20] Field is present if the component to be loaded is on a vehicle.
[21] Field is present if the component to be loaded is on a vehicle.
[22] Field is present if the component to be loaded is a field component associated with a stoppoint.
[23] Field is present if the component to be loaded is a field component.
[24] Field is present if the component to be loaded is a field component.
[25] If the push message contains non-schedule information, that has an associated version number.
[26] If the requested load or actual load contains updates to previously sent data rather than a complete load.
[27] Field is present if the scope of the loaded data is specified using an agency-specified applicability group.
[28] If the My Sample PRL has the data available.
[29] If the facility is a not a base and My Sample PRL has the name available.
[30] If the facility is a base and My Sample PRL has the name available.
[31] If the facility is a not a base and My Sample PRL has the name available.
[32] If the facility is a base and My Sample PRL has the name available.

Annex 1A.1 - Message 5	
PRL Dialog Requirements	
Project Component: My CAD/AVL	
External Component: Their Garage Server	
Dialog Name: Load Component Software	
Dialog Role: Source	
Send Message Name: CptBadLoadRequest	
Optional Send Field Support Codes: 'A' - Field shall always be sent. 'N' - Field shall never be sent. 'C' - Field shall conditionally be sent.	
Field	**Code**
bad-Request.vehicle	C^1
bad-Request.vehicle.agency-id	N
bad-Request.vehicle.vin	C^2
bad-Request.component-identifier	C^3
bad-Request.component-IP	C^4
bad-Request.component-port	C^5
bad-Request.stoppoint	C^6
bad-Request.stoppoint.agency-id	N
bad-Request.stoppoint.name	ERR
bad-Request.field-address	C^7
bad-Request.field-port	C^8
bad-Request.version-number	C^9
bad-Request.sched-version	ERR
bad-Request.effective-datetime	A
bad-Request.updates-since	C^{10}
bad-Request.applicability	C^{11}
bad-Request.applicability.applicable-routes	ERR

bad-Request.applicability.applicable-routes.agency-id	N
bad-Request.applicability.applicable-routes.route-designator	ERR
bad-Request.applicability.applicable-routes.route-name	ERR
bad-Request.applicability.applicable-ptvs	ERR
bad-Request.applicability.applicable-ptvs.agency-id	N
bad-Request.applicability.applicable-ptvs.vin	C^{12}
bad-Request.applicability.applicable-stops	ERR
bad-Request.applicability.applicable-stops.agency-id	N
bad-Request.applicability.applicable-stops.name	ERR
bad-Request.applicability.applicable-facilities	ERR
bad-Request.applicability.applicable-facilities.agency-id	N
bad-Request.applicability.applicable-facilities.facility-name	C^{13}
bad-Request.applicability.applicable-facilities.base-name	C^{14}
bad-Request.applicability.applicable-garages	ERR
bad-Request.applicability.applicable-garages.agency-id	N
bad-Request.applicability.applicable-garages.facility-name	C^{15}
bad-Request.applicability.applicable-garages.base-name	C^{16}
bad-Request.applicability.applicable-fleet-subsets	ERR
bad-Request.applicability.applicable-stoppoint-subsets	ERR
bad-Request.applicability.applicable-fare-subsets	ERR

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

[1] Field is present if the component to be loaded is on a vehicle.
[2] If the My Sample PRL has the data available.
[3] Field is present if the component to be loaded is on a vehicle.
[4] Field is present if the component to be loaded is on a vehicle.
[5] Field is present if the component to be loaded is on a vehicle.
[6] Field is present if the component to be loaded is a field component associated with a stoppoint.
[7] Field is present if the component to be loaded is a field component.
[8] Field is present if the component to be loaded is a field component.
[9] If the push message contains non-schedule information, that has an associated version number.

[10] If the requested load or actual load contains updates to previously sent data rather than a complete load.
[11] Field is present if the scope of the loaded data is specified using an agency-specified applicability group.
[12] If the My Sample PRL has the data available.
[13] If the facility is a not a base and My Sample PRL has the name available.
[14] If the facility is a base and My Sample PRL has the name available.
[15] If the facility is a not a base and My Sample PRL has the name available.
[16] If the facility is a base and My Sample PRL has the name available.

Sample Profile Implementation Conformance Statement (PICS)

Profile Implementation Conformance Statement (PICS) Cover Sheet
Project Name: My Sample PICS
Creation Date: June 19, 2007
Agency/Company Name: Central Oklahoma Transportation and Parking Authority
Agency ID: 6017
Project Component: Computer Aided Dispatch/Automatic Vehicle Location
External Component(s): Scheduling System Data Repository

Profile Implementation Conformance Statement (PICS)

Project Name:
My Sample PICS

Agency/Company Name:	Agency ID:	Agency Model:
Central Oklahoma Transportation and Parking Authority	6017	Single

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Scheduling System

Network Configuration:
To set the network address and port number used by Sample Data Repository:
Use the edit/settings/network/address/self pull-down menu, in the pop-up dialog box, type the desired IP V4 or IP V6 address and port number, click the "Accept" button to change the address, or the "Cancel" button to leave the settings unchanged.
To set the network address and port number used by a corresponding system:
Use the edit/settings/network/address/external pull-down menu, in the pop-up dialog box, select an existing application address to edit from the pick list, or click on the "New Application" button. Enter (or edit) the application name, IP V4 or IP V6 address and port number on the pop-up Edit Application dialog, click the "Accept" button to change the address, or the "Cancel" button to leave the settings unchanged.
To set the network address and port number used by a PTVs"
Use the edit/settings/network/address/vehicles pull-down menu, in the pop-up dialog box, enter a formula for calculating PTV IP addresses in IP V4 or IP V6 based on vehicleID (for formula requirements refer to section 3.4.7 of the Example System Adminstrator Guide), or click on the "Table" button to explicitly enter or edit PTV addresses and port numbers click the "Accept" button to change the address, or the "Cancel" button to leave the settings unchanged.
CAUTION: Settings take effect immediately, and may disrupt ongoing communications.

Non TCIP Interfaces Supported:
Implementation shall support the importation of the project's personnel files using a legacy comma delimited file format to be provided after contract award, per the project's RFP requirements.

Exceptions to TCIP Requirements:

Agency includes required exceptions to TCIP requirements to support legacy interfaces.

Conformance Class 1A: Supported Dialogs			
Project Component: Computer Aided Dispatch/Automatic Vehicle Location			
External Component: Scheduling System			
Dialog Name	**Role**	**TCIP Version**	**PICS Annex**
Report Schedule Validation Error	Reporter	3_0_1_F	1A.1
Subscribe Block Schedule	Subscriber	3_0_1_F	1A.2

Conformance Class 2A: TCIP Message Files Accepted		
Project Component: Computer Aided Dispatch/Automatic Vehicle Location		
External Component: Scheduling System		
File Import Procedure: Use the file/import/tcip pulldown menu, in the pop-up dialog box, select the TCIP Message Name from the first pick list, select the TCIP Schema Version Nubmer from the second pick list, browse to the file to be imported, with the path and file to be imported displayed in the "File:" field, click on the "Import" Button.		
File Attributes & Limitations: Imported file must be a well formed and valid TCIP XML Message per the TCIP XML Schema Version Selected. File shall contain no special characters. Characters beyond the end of the TCIP XML Message will be ignored. The implementation can import files from File Access Table (FAT), or New Technology File System (NTFS) formatted volumes. File names can be an legal file name under FAT or NTFS, and specified to the implementation via the file import windows dialog. Recommend using the file extension .XML. The implementation consumes a maximum of one TCIP message per imported file.		
TCIP Message Name	**TCIP Version**	**PICS Annex**
SchMasterScheduleVersion	3_0_1_F	2A.1

Conformance Class 2B: TCIP Message Files Generated

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Scheduling System

File Export Procedure:
Use the file/export/tcip pulldown menu, in the pop-up dialog box, select the TCIP Message Name from the first pick list, select the TCIP Schema Version Number from the second pick list, browse to the file location where the export is to go, enter the exported file name in the "File Name:" box, with the path and file to be imported displayed in the "File:" field, click on the "Export" Button.

File Attributes & Limitations:
Exported file must be a well formed and valid TCIP XML Message per the TCIP XML Schema Version Selected. File shall contain no special characters. File will contain no special characters. At least one blank will follow the end of the TCIP message, followed by the end of file. This implementation has no operating system-specific file features. The implementation can export files to File Access Table (FAT), or New Technology File System (NTFS) formatted volumes. File names can be an legal file name under FAT or NTFS, and specified to the implementation via the file export windows dialog. Recommend using the file extension .XML. The implementation consumes a maximum of one TCIP message per imported file.

TCIP Message Name	TCIP Version	PICS Annex
Not Applicable		

Annex 1A.1 - Message 1	
PICS Dialog Requirements	
Project Component: Computer Aided Dispatch/Automatic Vehicle Location	
External Component: Scheduling System	
Dialog Name: Report Schedule Validation Error	
Dialog Role: Reporter	
Send Message Name: SchReportValidationErrors	
Optional Send Field Support Codes: 'A' - Field shall always be sent. 'N' - Field shall never be sent. 'C' - Field shall conditionally be sent.	
Field	**Code**
version-used.route.agency-id	N
version-used.route.route-designator	ERR
version-used.route.route-name	ERR
version-used.metadata	A
version-used.metadata.created	C^1
version-used.metadata.effective	C^2
version-used.metadata.expiration	C^3
version-used.metadata.activation	C^4
version-used.metadata.deactivation	C^5
version-used.route-sched-exp	C^6
version-used.route-sched-version	ERR
version-used.timepoint-eff	C^7
version-used.timepoint-exp	C^8
version-used.timepoint-version	ERR
version-used.timepoint-update	C^9
version-used.pattern-eff	C^{10}
version-used.pattern-exp	C^{11}
version-used.pattern-version	ERR

version-used.pattern-update	C^{12}
version-used.stoppoint-eff	C^{13}
version-used.stoppoint-exp	C^{14}
version-used.stoppoint-version	ERR
version-used.stoppoint-update	C^{15}
time-failed	A
errors-found.affected-patterns	C^{16}
errors-found.affected-patterns.agency-id	N
errors-found.affected-patterns.designator	ERR
errors-found.affected-patterns.name	ERR
errors-found.affected-segments	C^{17}
errors-found.affected-segments.agency-id	N
errors-found.affected-segments.name	ERR
errors-found.affected-trips	C^{18}
errors-found.affected-trips.agency-id	N
errors-found.affected-trips.designator	ERR
errors-found.affected-runs	C^{19}
errors-found.affected-runs.agency-id	N
errors-found.affected-runs.designator	ERR
errors-found.affected-blocks	C^{20}
errors-found.affected-blocks.agency-id	N
errors-found.affected-blocks.block-designator	ERR
errors-found.affected-blocks.block-name	ERR
errors-found.affected-routes	C^{21}
errors-found.affected-routes.agency-id	N
errors-found.affected-routes.route-designator	ERR
errors-found.affected-routes.route-name	ERR
errors-found.affected-directions	C^{22}
errors-found.affected-stoppoints	C^{23}
errors-found.affected-stoppoints.agency-id	N
errors-found.affected-stoppoints.name	ERR
errors-found.affected-timepoints	C^{24}
errors-found.affected-timepoints.agency-id	N
errors-found.affected-timepoints.designator	ERR
errors-found.affected-timepoints.name	ERR

errors-found.affected-transfers	C[25]
errors-found.explanation	C[26]

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

[1] The field is included if the creation date-time for the row data is available.

[2] The field is included if the efective date-time for the row data is available.

[3] The field is included if the expiration date-time for the row data is available.

[4] The field is included if the activation date-time for the item described by the row data is available. Example if the row data describes a stoppoint, the activation date-time for the stoppoint.

[5] The field is included if the deactivation date-time for the item described by the row data is available. Example if the row data describes a stoppoint, the deactivation date-time for the stoppoint.

[6] If the My Sample PICS has the data available.

[7] If the My Sample PICS has the data available.

[8] If the My Sample PICS has the data available.

[9] If the My Sample PICS has the data available.

[10] If the My Sample PICS has the data available.

[11] If the My Sample PICS has the data available.

[12] If the My Sample PICS has the data available.

[13] If the My Sample PICS has the data available.

[14] If the My Sample PICS has the data available.

[15] If the My Sample PICS has the data available.

[16] Field is present if the validator associated the schedule validation errror with a specific transit stopping pattern or set of patterns.

[17] Field is present if the validator associated the schedule validation errror with a specific transit stopping pattern segment or set of pattern segments.

[18] Field is present if the validator associated the schedule validation errror with a specific transit trip or set of trips.

[19] Field is present if the validator associated the schedule validation errror with a specific transit run (operator assignment) or set of runs.

[20] Field is present if the validator associated the schedule validation errror with a specific transit block (vehicle assignment) or set of blocks.

[21] Field is present if the validator associated the schedule validation errror with a specific transit route or set of routes.

[22] Field is present if the validator associated the schedule validation errror with a specific direction or set of directions.

[23] Field is present if the validator associated the schedule validation errror with a specific transit stoppoint or set of stoppoints.

[24] Field is present if the validator associated the schedule validation errror with a specific transit timepoint or set of timepoints.

[25] Field is present if the validator associated the schedule validation errror with a specific transfer or set of transfers.

[26] If the My Sample PICS has the data available.

Annex 1A.1 - Message 2	
PICS Dialog Requirements	

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Scheduling System

Dialog Name:
Report Schedule Validation Error

Dialog Role:
Reporter

Receive Message Name:
SchReportValidationErrorsAck

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
version-used.route.agency-id	I
version-used.route.route-designator	ERR
version-used.route.route-name	ERR
version-used.metadata	U
version-used.metadata.created	U
version-used.metadata.effective	U
version-used.metadata.expiration	U
version-used.metadata.activation	U
version-used.metadata.deactivation	U
version-used.route-sched-exp	U
version-used.route-sched-version	ERR
version-used.timepoint-eff	U
version-used.timepoint-exp	U
version-used.timepoint-version	ERR
version-used.timepoint-update	U
version-used.pattern-eff	U
version-used.pattern-exp	U

version-used.pattern-version	ERR
version-used.pattern-update	U
version-used.stoppoint-eff	U
version-used.stoppoint-exp	U
version-used.stoppoint-version	ERR
version-used.stoppoint-update	U

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

| Field | Code |
| No local extensions are defined for this message. | |

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

| Field | Data Element | Local Codes | Code |
| No local code extensions are defined for this message. | | | |

Annex 1A.2 - Message 1	
PICS Dialog Requirements	

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Scheduling System

Dialog Name:
Subscribe Block Schedule

Dialog Role:
Subscriber

Send Message Name:
SchBlockScheduleListSub

Optional Send Field Support Codes:
'A' - Field shall always be sent.
'N' - Field shall never be sent.
'C' - Field shall conditionally be sent.

Field	Code
subscriptionInfo.reportInterval	ERR
subscriptionInfo.applicability	ERR
subscriptionInfo.applicability.applicable-routes	ERR
subscriptionInfo.applicability.applicable-routes.agency-id	N
subscriptionInfo.applicability.applicable-routes.route-designator	ERR
subscriptionInfo.applicability.applicable-routes.route-name	ERR
subscriptionInfo.applicability.applicable-ptvs	ERR
subscriptionInfo.applicability.applicable-ptvs.agency-id	N
subscriptionInfo.applicability.applicable-ptvs.vin	C[1]
subscriptionInfo.applicability.applicable-stops	ERR
subscriptionInfo.applicability.applicable-stops.agency-id	N
subscriptionInfo.applicability.applicable-stops.name	ERR
subscriptionInfo.applicability.applicable-facilities	ERR
subscriptionInfo.applicability.applicable-facilities.agency-id	N
subscriptionInfo.applicability.applicable-facilities.facility-name	C[2]
subscriptionInfo.applicability.applicable-facilities.base-	C[3]

name	
subscriptionInfo.applicability.applicable-garages	ERR
subscriptionInfo.applicability.applicable-garages.agency-id	N
subscriptionInfo.applicability.applicable-garages.facility-name	C^4
subscriptionInfo.applicability.applicable-garages.base-name	C^5
subscriptionInfo.applicability.applicable-fleet-subsets	ERR
subscriptionInfo.applicability.applicable-stoppoint-subsets	ERR
subscriptionInfo.applicability.applicable-fare-subsets	ERR
specific-garages	C^6
specific-garages.agency-id	N
specific-garages.facility-name	C^7
specific-garages.base-name	C^8
specific-blocks	C^9
specific-blocks.agency-id	N
specific-blocks.block-designator	ERR
specific-blocks.block-name	ERR
update-since	C^{10}

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

[1] If the My Sample PICS has the data available.

[2] If the facility is a not a base and My Sample PICS has the name available.

[3] If the facility is a base and My Sample PICS has the name available.

[4] If the facility is a not a base and My Sample PICS has the name available.

[5] If the facility is a base and My Sample PICS has the name available.

[6] Field is present if the subscriber is querying for data filtered by one or more transit garages.

[7] If the facility is a not a base and My Sample PICS has the name available.

[8] If the facility is a base and My Sample PICS has the name available.

[9] Field is present if the subscriber is querying for data filtered by one or more transit blocks of work..

[10] Field is present is subscriber asked for data updates to previously subscribed data.

Annex 1A.2 - Message 2	
PICS Dialog Requirements	

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Scheduling System

Dialog Name:
Subscribe Block Schedule

Dialog Role:
Subscriber

Receive Message Name:
SchBlockScheduleList

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
subscriptionInfo.reportInterval	U
subscriptionInfo.applicability	ERR
subscriptionInfo.applicability.applicable-routes	ERR
subscriptionInfo.applicability.applicable-routes.agency-id	I
subscriptionInfo.applicability.applicable-routes.route-designator	ERR
subscriptionInfo.applicability.applicable-routes.route-name	ERR
subscriptionInfo.applicability.applicable-ptvs	ERR
subscriptionInfo.applicability.applicable-ptvs.agency-id	I
subscriptionInfo.applicability.applicable-ptvs.vin	U
subscriptionInfo.applicability.applicable-stops	ERR
subscriptionInfo.applicability.applicable-stops.agency-id	I
subscriptionInfo.applicability.applicable-stops.name	ERR
subscriptionInfo.applicability.applicable-facilities	ERR
subscriptionInfo.applicability.applicable-facilities.agency-id	I
subscriptionInfo.applicability.applicable-facilities.facility-	U

name	
subscriptionInfo.applicability.applicable-facilities.base-name	U
subscriptionInfo.applicability.applicable-garages	ERR
subscriptionInfo.applicability.applicable-garages.agency-id	I
subscriptionInfo.applicability.applicable-garages.facility-name	U
subscriptionInfo.applicability.applicable-garages.base-name	U
subscriptionInfo.applicability.applicable-fleet-subsets	ERR
subscriptionInfo.applicability.applicable-stoppoint-subsets	ERR
subscriptionInfo.applicability.applicable-fare-subsets	ERR
specific-garages	U
specific-garages.agency-id	I
specific-garages.facility-name	U
specific-garages.base-name	U
specific-blocks	U
specific-blocks.agency-id	I
specific-blocks.block-designator	ERR
specific-blocks.block-name	ERR
update-since	U
sched-blocks	U
sched-blocks.block.agency-id	I
sched-blocks.block.block-designator	ERR
sched-blocks.block.block-name	ERR
sched-blocks.metadata.created	U
sched-blocks.metadata.effective	U
sched-blocks.metadata.expiration	U
sched-blocks.metadata.activation	U
sched-blocks.metadata.deactivation	U
sched-blocks.trip-details.trip.agency-id	I
sched-blocks.trip-details.trip.designator	ERR
sched-blocks.trip-details.route.agency-id	I
sched-blocks.trip-details.route.route-designator	ERR
sched-blocks.trip-details.route.route-name	ERR
sched-blocks.trip-details.direction	U

sched-blocks.trip-details.pattern	U
sched-blocks.trip-details.pattern.agency-id	I
sched-blocks.trip-details.pattern.designator	ERR
sched-blocks.trip-details.pattern.name	ERR
sched-blocks.trip-details.run	U
sched-blocks.trip-details.run.agency-id	I
sched-blocks.trip-details.run.designator	ERR
sched-blocks.trip-details.block	U
sched-blocks.trip-details.block.agency-id	I
sched-blocks.trip-details.block.block-designator	ERR
sched-blocks.trip-details.block.block-name	ERR
sched-blocks.trip-details.trip-type-name	U
sched-blocks.trip-details.events	U
sched-blocks.trip-details.events.time-begin	U
sched-blocks.trip-details.events.point	U
sched-blocks.trip-details.events.proximity	U
sched-blocks.trip-details.events.fare-zone-id	U
sched-blocks.trip-details.events.fare-zone-id.agency-id	I
sched-blocks.trip-details.events.fare-zone-id.zone-name	U
sched-blocks.trip-details.events.radio-zone-id	U
sched-blocks.trip-details.notes	U
sched-blocks.trip-details.notes.agency-id	I
sched-blocks.trip-details.notes.note-des	ERR
sched-blocks.trip-details.op-time-type	U
sched-blocks.begin-timepoint	U
sched-blocks.begin-timepoint.agency-id	I
sched-blocks.begin-timepoint.designator	ERR
sched-blocks.begin-timepoint.name	ERR
sched-blocks.end-timepoint	U
sched-blocks.end-timepoint.agency-id	I
sched-blocks.end-timepoint.designator	ERR
sched-blocks.end-timepoint.name	ERR
deleted-blocks	U
deleted-blocks.agency-id	I
deleted-blocks.block-designator	ERR

deleted-blocks.block-name	ERR		
Local Extension Fields Defined in tcip_3_0_1_F_local.xsd			
Field	**Code**		
No local extensions are defined for this message.			
Local Code Extensions Defined in tcip_3_0_1_F_local.xsd			
Field	**Data Element**	**Local Codes**	**Code**
No local code extensions are defined for this message.			

Annex 1A.2 - Message 3	
PICS Dialog Requirements	

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Scheduling System

Dialog Name:
Subscribe Block Schedule

Dialog Role:
Subscriber

Receive Message Name:
CptSubErrorNotice

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
subscription.reportInterval	U
subscription.applicability	ERR
subscription.applicability.applicable-routes	ERR
subscription.applicability.applicable-routes.agency-id	I
subscription.applicability.applicable-routes.route-designator	ERR
subscription.applicability.applicable-routes.route-name	ERR
subscription.applicability.applicable-ptvs	ERR
subscription.applicability.applicable-ptvs.agency-id	I
subscription.applicability.applicable-ptvs.vin	U
subscription.applicability.applicable-stops	ERR
subscription.applicability.applicable-stops.agency-id	I
subscription.applicability.applicable-stops.name	ERR
subscription.applicability.applicable-facilities	ERR
subscription.applicability.applicable-facilities.agency-id	I
subscription.applicability.applicable-facilities.facility-name	U
subscription.applicability.applicable-facilities.base-name	U
subscription.applicability.applicable-garages	ERR

subscription.applicability.applicable-garages.agency-id	I
subscription.applicability.applicable-garages.facility-name	U
subscription.applicability.applicable-garages.base-name	U
subscription.applicability.applicable-fleet-subsets	ERR
subscription.applicability.applicable-stoppoint-subsets	ERR
subscription.applicability.applicable-fare-subsets	ERR
description	U

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

Annex 2A.1
PICS Receive Message File Requirements

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Scheduling System

Receive Message Name:
SchMasterScheduleVersion

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
subscriptionInfo.reportInterval	U
subscriptionInfo.applicability	ERR
subscriptionInfo.applicability.applicable-routes	ERR
subscriptionInfo.applicability.applicable-routes.agency-id	I
subscriptionInfo.applicability.applicable-routes.route-designator	ERR
subscriptionInfo.applicability.applicable-routes.route-name	ERR
subscriptionInfo.applicability.applicable-ptvs	ERR
subscriptionInfo.applicability.applicable-ptvs.agency-id	I
subscriptionInfo.applicability.applicable-ptvs.vin	U
subscriptionInfo.applicability.applicable-stops	ERR
subscriptionInfo.applicability.applicable-stops.agency-id	I
subscriptionInfo.applicability.applicable-stops.name	ERR
subscriptionInfo.applicability.applicable-facilities	ERR
subscriptionInfo.applicability.applicable-facilities.agency-id	I
subscriptionInfo.applicability.applicable-facilities.facility-name	U
subscriptionInfo.applicability.applicable-facilities.base-name	U
subscriptionInfo.applicability.applicable-garages	ERR
subscriptionInfo.applicability.applicable-garages.agency-id	I
subscriptionInfo.applicability.applicable-garages.facility-	U

name	
subscriptionInfo.applicability.applicable-garages.base-name	U
subscriptionInfo.applicability.applicable-fleet-subsets	ERR
subscriptionInfo.applicability.applicable-stoppoint-subsets	ERR
subscriptionInfo.applicability.applicable-fare-subsets	ERR
begin	U
end	U
agencies	U
routes	U
routes.agency-id	I
routes.route-designator	ERR
routes.route-name	ERR
route-versions.route.agency-id	I
route-versions.route.route-designator	ERR
route-versions.route.route-name	ERR
route-versions.metadata	U
route-versions.metadata.created	U
route-versions.metadata.effective	U
route-versions.metadata.expiration	U
route-versions.metadata.activation	U
route-versions.metadata.deactivation	U
route-versions.route-sched-exp	U
route-versions.route-sched-version	ERR
route-versions.timepoint-eff	U
route-versions.timepoint-exp	U
route-versions.timepoint-version	ERR
route-versions.timepoint-update	U
route-versions.pattern-eff	U
route-versions.pattern-exp	U
route-versions.pattern-version	ERR
route-versions.pattern-update	U
route-versions.stoppoint-eff	U
route-versions.stoppoint-exp	U
route-versions.stoppoint-version	ERR
route-versions.stoppoint-update	U

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd	
Field	**Code**
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd			
Field	**Data Element**	**Local Codes**	**Code**
No local code extensions are defined for this message.			

Profile Implementation Conformance Statement (PICS)

Project Name:
My Sample PICS

Agency/Company Name:	**Agency ID:**	**Agency Model:**
Central Oklahoma Transportation and Parking Authority	6017	Single

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Data Repository

Network Configuration:
To set the network address and port number used by Sample Data Repository:
Use the edit/settings/network/address/self pull-down menu, in the pop-up dialog box, type the desired IP V4 or IP V6 address and port number, click the "Accept" button to change the address, or the "Cancel" button to leave the settings unchanged.
To set the network address and port number used by a corresponding system:
Use the edit/settings/network/address/external pull-down menu, in the pop-up dialog box, select an existing application address to edit from the pick list, or click on the "New Application" button. Enter (or edit) the application name, IP V4 or IP V6 address and port number on the pop-up Edit Application dialog, click the "Accept" button to change the address, or the "Cancel" button to leave the settings unchanged.
To set the network address and port number used by a PTVs"
Use the edit/settings/network/address/vehicles pull-down menu, in the pop-up dialog box, enter a formula for calculating PTV IP addresses in IP V4 or IP V6 based on vehicleID (for formula requirements refer to section 3.4.7 of the Example System Adminstrator Guide), or click on the "Table" button to explicitly enter or edit PTV addresses and port numbers click the "Accept" button to change the address, or the "Cancel" button to leave the settings unchanged.
CAUTION: Settings take effect immediately, and may disrupt ongoing communications.

Non TCIP Interfaces Supported:
Implementation shall support the importation of the project's personnel files using a legacy comma delimited file format to be provided after contract award, per the project's RFP requirements.

Exceptions to TCIP Requirements:

Agency includes required exceptions to TCIP requirements to support legacy interfaces.

Conformance Class 1A: Supported Dialogs			
Project Component: Computer Aided Dispatch/Automatic Vehicle Location			
External Component: Data Repository			
Dialog Name	**Role**	**TCIP Version**	**PICS Annex**
Notify Trip Cancellations	Notifier	3_0_1_F	1A.1
Subscribe Pattern List	Subscriber	3_0_1_F	1A.2

Conformance Class 2A: TCIP Message Files Accepted
Project Component: Computer Aided Dispatch/Automatic Vehicle Location
External Component: Data Repository
File Import Procedure: Use the file/import/tcip pulldown menu, in the pop-up dialog box, select the TCIP Message Name from the first pick list, select the TCIP Schema Version Nubmer from the second pick list, browse to the file to be imported, with the path and file to be imported displayed in the "File:" field, click on the "Import" Button.
File Attributes & Limitations: Imported file must be a well formed and valid TCIP XML Message per the TCIP XML Schema Version Selected. File shall contain no special characters. Characters beyond the end of the TCIP XML Message will be ignored. The implementation can import files from File Access Table (FAT), or New Technology File System (NTFS) formatted volumes. File names can be an legal file name under FAT or NTFS, and specified to the implementation via the file import windows dialog. Recommend using the file extension .XML. The implementation consumes a maximum of one TCIP message per imported file.

TCIP Message Name	TCIP Version	PICS Annex
SchPushPatterns	3_0_1_F	2A.1

Conformance Class 2B: TCIP Message Files Generated

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Data Repository

File Export Procedure:
Use the file/export/tcip pulldown menu, in the pop-up dialog box, select the TCIP Message Name from the first pick list, select the TCIP Schema Version Number from the second pick list, browse to the file location where the export is to go, enter the exported file name in the "File Name:" box, with the path and file to be imported displayed in the "File:" field, click on the "Export" Button.

File Attributes & Limitations:
Exported file must be a well formed and valid TCIP XML Message per the TCIP XML Schema Version Selected. File shall contain no special characters. File will contain no special characters. At least one blank will follow the end of the TCIP message, followed by the end of file. This implementation has no operating system-specific file features. The implementation can export files to File Access Table (FAT), or New Technology File System (NTFS) formatted volumes. File names can be an legal file name under FAT or NTFS, and specified to the implementation via the file export windows dialog. Recommend using the file extension .XML. The implementation consumes a maximum of one TCIP message per imported file.

TCIP Message Name	TCIP Version	PICS Annex
TspEventLogUnload	3_0_1_F	2B.1

Annex 1A.1 - Message 1
PICS Dialog Requirements
Project Component: Computer Aided Dispatch/Automatic Vehicle Location
External Component: Data Repository
Dialog Name: Notify Trip Cancellations
Dialog Role: Notifier
Send Message Name: CcCancelTrips
Optional Send Field Support Codes: 'A' - Field shall always be sent. 'N' - Field shall never be sent. 'C' - Field shall conditionally be sent.

Field	Code
cancel-records.cancelled-trips.agency-id	N
cancel-records.cancelled-trips.designator	ERR
cancel-records.day-types	C[1]
cancel-records.specific-dates	C[2]

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

[1] The field is present if the listed trips are to cancelled for all days of the indicated types.
[2] The field is present if the listed trips are to cancelled for all explicitly listed days.

Annex 1A.2 - Message 1	
PICS Dialog Requirements	

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Data Repository

Dialog Name:
Subscribe Pattern List

Dialog Role:
Subscriber

Send Message Name:
SchPatternListSub

Optional Send Field Support Codes:
'A' - Field shall always be sent.
'N' - Field shall never be sent.
'C' - Field shall conditionally be sent.

Field	Code
subscriptionInfo.reportInterval	ERR
subscriptionInfo.applicability	ERR
subscriptionInfo.applicability.applicable-routes	ERR
subscriptionInfo.applicability.applicable-routes.agency-id	N
subscriptionInfo.applicability.applicable-routes.route-designator	ERR
subscriptionInfo.applicability.applicable-routes.route-name	ERR
subscriptionInfo.applicability.applicable-ptvs	ERR
subscriptionInfo.applicability.applicable-ptvs.agency-id	N
subscriptionInfo.applicability.applicable-ptvs.vin	C[1]
subscriptionInfo.applicability.applicable-stops	ERR
subscriptionInfo.applicability.applicable-stops.agency-id	N
subscriptionInfo.applicability.applicable-stops.name	ERR
subscriptionInfo.applicability.applicable-facilities	ERR
subscriptionInfo.applicability.applicable-facilities.agency-id	N
subscriptionInfo.applicability.applicable-facilities.facility-	C[2]

name	
subscriptionInfo.applicability.applicable-facilities.base-name	C^3
subscriptionInfo.applicability.applicable-garages	ERR
subscriptionInfo.applicability.applicable-garages.agency-id	N
subscriptionInfo.applicability.applicable-garages.facility-name	C^4
subscriptionInfo.applicability.applicable-garages.base-name	C^5
subscriptionInfo.applicability.applicable-fleet-subsets	ERR
subscriptionInfo.applicability.applicable-stoppoint-subsets	ERR
subscriptionInfo.applicability.applicable-fare-subsets	ERR
patternVersion	ERR
updates-since	C^6

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

[1] If the My Sample PICS has the data available.

[2] If the facility is a not a base and My Sample PICS has the name available.

[3] If the facility is a base and My Sample PICS has the name available.

[4] If the facility is a not a base and My Sample PICS has the name available.

[5] If the facility is a base and My Sample PICS has the name available.

[6] Field is present if the subscriber is requesting only changes to the subscribed data since an indicated date-time.

Annex 1A.2 - Message 2	
PICS Dialog Requirements	

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Data Repository

Dialog Name:
Subscribe Pattern List

Dialog Role:
Subscriber

Receive Message Name:
SchPatternList

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
subscriptionInfo.reportInterval	U
subscriptionInfo.applicability	ERR
subscriptionInfo.applicability.applicable-routes	ERR
subscriptionInfo.applicability.applicable-routes.agency-id	I
subscriptionInfo.applicability.applicable-routes.route-designator	ERR
subscriptionInfo.applicability.applicable-routes.route-name	ERR
subscriptionInfo.applicability.applicable-ptvs	ERR
subscriptionInfo.applicability.applicable-ptvs.agency-id	I
subscriptionInfo.applicability.applicable-ptvs.vin	U
subscriptionInfo.applicability.applicable-stops	ERR
subscriptionInfo.applicability.applicable-stops.agency-id	I
subscriptionInfo.applicability.applicable-stops.name	ERR
subscriptionInfo.applicability.applicable-facilities	ERR
subscriptionInfo.applicability.applicable-facilities.agency-id	I
subscriptionInfo.applicability.applicable-facilities.facility-	U

name	
subscriptionInfo.applicability.applicable-facilities.base-name	U
subscriptionInfo.applicability.applicable-garages	ERR
subscriptionInfo.applicability.applicable-garages.agency-id	I
subscriptionInfo.applicability.applicable-garages.facility-name	U
subscriptionInfo.applicability.applicable-garages.base-name	U
subscriptionInfo.applicability.applicable-fleet-subsets	ERR
subscriptionInfo.applicability.applicable-stoppoint-subsets	ERR
subscriptionInfo.applicability.applicable-fare-subsets	ERR
patternVersion	ERR
update-since	U
stoppointVersion	ERR
timepointVersion	ERR
patterns	U
patterns.pattern.agency-id	I
patterns.pattern.designator	ERR
patterns.pattern.name	ERR
patterns.metadata	U
patterns.metadata.created	U
patterns.metadata.effective	U
patterns.metadata.expiration	U
patterns.metadata.activation	U
patterns.metadata.deactivation	U
patterns.pattern-notes	U
patterns.pattern-notes.agency-id	I
patterns.pattern-notes.note-des	ERR
patterns.triggers	ERR
patterns.mode	U
patterns.segments.agency-id	I
patterns.segments.name	ERR
patterns.segmentOffsets	ERR
patterns.radio-zones	ERR
patterns.radio-zones.channelList.channelName	U

patterns.radio-zones.channelList.inboundFreq	U
patterns.radio-zones.channelList.outboundFreq	U
patterns.radio-zones.channelList.channelBand	U
patterns.radio-zones.channelList.attributes	U
patterns.radio-zones.zone.polygonName	U
patterns.radio-zones.zone.polygonId	U
patterns.radio-zones.comment	U
patterns.events	ERR
patterns.events.time-begin	U
patterns.events.point	U
patterns.events.proximity	U
patterns.events.fare-zone-id	U
patterns.events.fare-zone-id.agency-id	I
patterns.events.fare-zone-id.zone-name	U
patterns.events.radio-zone-id	U
patterns.eventsOffsets	ERR
notes	U
notes.note.agency-id	I
notes.note.note-des	ERR
notes.metadata	U
notes.metadata.created	U
notes.metadata.effective	U
notes.metadata.expiration	U
notes.metadata.activation	U
notes.metadata.deactivation	U
segments	U
segments.segment.agency-id	I
segments.segment.name	ERR
segments.metadata	U
segments.metadata.created	U
segments.metadata.effective	U
segments.metadata.expiration	U
segments.metadata.activation	U
segments.metadata.deactivation	U
segments.segment-notes	U

segments.segment-notes.agency-id	I
segments.segment-notes.note-des	ERR
segments.timeStoppoints.timepoint-id	U
segments.timeStoppoints.timepoint-id.agency-id	I
segments.timeStoppoints.timepoint-id.designator	ERR
segments.timeStoppoints.timepoint-id.name	ERR
segments.timeStoppoints.stoppoint	U
segments.timeStoppoints.stoppoint.agency-id	I
segments.timeStoppoints.stoppoint.name	ERR
segments.timeStoppoints.offset	U
segments.trace-points	U
segments.trace-links	U
segments.trace-links.name	U
segments.trace-links.info	U
segments.trace-links.dist-along	U
segments.trace-links.points	U
segments.drive-directions	U
segments.events	U
segments.events.time-begin	U
segments.events.point	U
segments.events.proximity	U
segments.events.fare-zone-id	U
segments.events.fare-zone-id.agency-id	I
segments.events.fare-zone-id.zone-name	U
segments.events.radio-zone-id	U
deleted-patterns	U
deleted-patterns.agency-id	I
deleted-patterns.designator	ERR
deleted-patterns.name	ERR
deleted-segments	U
deleted-segments.agency-id	I
deleted-segments.name	ERR

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code

No local extensions are defined for this message.

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd			
Field	**Data Element**	**Local Codes**	**Code**
No local code extensions are defined for this message.			

Annex 1A.2 - Message 3	
PICS Dialog Requirements	

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Data Repository

Dialog Name:
Subscribe Pattern List

Dialog Role:
Subscriber

Receive Message Name:
CptSubErrorNotice

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
subscription.reportInterval	U
subscription.applicability	ERR
subscription.applicability.applicable-routes	ERR
subscription.applicability.applicable-routes.agency-id	I
subscription.applicability.applicable-routes.route-designator	ERR
subscription.applicability.applicable-routes.route-name	ERR
subscription.applicability.applicable-ptvs	ERR
subscription.applicability.applicable-ptvs.agency-id	I
subscription.applicability.applicable-ptvs.vin	U
subscription.applicability.applicable-stops	ERR
subscription.applicability.applicable-stops.agency-id	I
subscription.applicability.applicable-stops.name	ERR
subscription.applicability.applicable-facilities	ERR
subscription.applicability.applicable-facilities.agency-id	I
subscription.applicability.applicable-facilities.facility-name	U
subscription.applicability.applicable-facilities.base-name	U
subscription.applicability.applicable-garages	ERR

subscription.applicability.applicable-garages.agency-id	I
subscription.applicability.applicable-garages.facility-name	U
subscription.applicability.applicable-garages.base-name	U
subscription.applicability.applicable-fleet-subsets	ERR
subscription.applicability.applicable-stoppoint-subsets	ERR
subscription.applicability.applicable-fare-subsets	ERR
description	U

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

Annex 2A.1
PICS Receive Message File Requirements

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Data Repository

Receive Message Name:
SchPushPatterns

Optional Receive Field Support Codes:
'U' - Field shall be used or stored if present.
'R' - Field required by implementation.
'I' - Field may be ignored if present.

Field	Code
push-header.sched-version	ERR
push-header.version-number	U
push-header.updates-since	U
push-header.applicability	U
push-header.applicability.applicable-routes	ERR
push-header.applicability.applicable-routes.agency-id	I
push-header.applicability.applicable-routes.route-designator	ERR
push-header.applicability.applicable-routes.route-name	ERR
push-header.applicability.applicable-ptvs	ERR
push-header.applicability.applicable-ptvs.agency-id	I
push-header.applicability.applicable-ptvs.vin	U
push-header.applicability.applicable-stops	ERR
push-header.applicability.applicable-stops.agency-id	I
push-header.applicability.applicable-stops.name	ERR
push-header.applicability.applicable-facilities	ERR
push-header.applicability.applicable-facilities.agency-id	I
push-header.applicability.applicable-facilities.facility-name	U
push-header.applicability.applicable-facilities.base-name	U
push-header.applicability.applicable-garages	ERR
push-header.applicability.applicable-garages.agency-id	I

push-header.applicability.applicable-garages.facility-name	U
push-header.applicability.applicable-garages.base-name	U
push-header.applicability.applicable-fleet-subsets	ERR
push-header.applicability.applicable-stoppoint-subsets	ERR
push-header.applicability.applicable-fare-subsets	ERR
stoppointVersion	ERR
timepointVersion	ERR
patterns	U
patterns.pattern.agency-id	I
patterns.pattern.designator	ERR
patterns.pattern.name	ERR
patterns.metadata	U
patterns.metadata.created	U
patterns.metadata.effective	U
patterns.metadata.expiration	U
patterns.metadata.activation	U
patterns.metadata.deactivation	U
patterns.pattern-notes	U
patterns.pattern-notes.agency-id	I
patterns.pattern-notes.note-des	ERR
patterns.triggers	ERR
patterns.mode	U
patterns.segments.agency-id	I
patterns.segments.name	ERR
patterns.segmentOffsets	ERR
patterns.radio-zones	ERR
patterns.radio-zones.channelList.channelName	U
patterns.radio-zones.channelList.inboundFreq	U
patterns.radio-zones.channelList.outboundFreq	U
patterns.radio-zones.channelList.channelBand	U
patterns.radio-zones.channelList.attributes	U
patterns.radio-zones.zone.polygonName	U
patterns.radio-zones.zone.polygonId	U
patterns.radio-zones.comment	U
patterns.events	ERR

patterns.events.time-begin	U
patterns.events.point	U
patterns.events.proximity	U
patterns.events.fare-zone-id	U
patterns.events.fare-zone-id.agency-id	I
patterns.events.fare-zone-id.zone-name	U
patterns.events.radio-zone-id	U
patterns.eventsOffsets	ERR
segments	U
segments.segment.agency-id	I
segments.segment.name	ERR
segments.metadata	U
segments.metadata.created	U
segments.metadata.effective	U
segments.metadata.expiration	U
segments.metadata.activation	U
segments.metadata.deactivation	U
segments.segment-notes	U
segments.segment-notes.agency-id	I
segments.segment-notes.note-des	ERR
segments.timeStoppoints.timepoint-id	U
segments.timeStoppoints.timepoint-id.agency-id	I
segments.timeStoppoints.timepoint-id.designator	ERR
segments.timeStoppoints.timepoint-id.name	ERR
segments.timeStoppoints.stoppoint	U
segments.timeStoppoints.stoppoint.agency-id	I
segments.timeStoppoints.stoppoint.name	ERR
segments.timeStoppoints.offset	U
segments.trace-points	U
segments.trace-links	U
segments.trace-links.name	U
segments.trace-links.info	U
segments.trace-links.dist-along	U
segments.trace-links.points	U
segments.drive-directions	U

segments.events	U
segments.events.time-begin	U
segments.events.point	U
segments.events.proximity	U
segments.events.fare-zone-id	U
segments.events.fare-zone-id.agency-id	I
segments.events.fare-zone-id.zone-name	U
segments.events.radio-zone-id	U
notes	U
notes.note.agency-id	I
notes.note.note-des	ERR
notes.metadata	U
notes.metadata.created	U
notes.metadata.effective	U
notes.metadata.expiration	U
notes.metadata.activation	U
notes.metadata.deactivation	U
deleted-patterns	U
deleted-patterns.agency-id	I
deleted-patterns.designator	ERR
deleted-patterns.name	ERR
deleted-segments	U
deleted-segments.agency-id	I
deleted-segments.name	ERR

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd

Field	Data Element	Local Codes	Code
No local code extensions are defined for this message.			

Annex 2B.1
PICS Generated Message File Requirements

Project Component:
Computer Aided Dispatch/Automatic Vehicle Location

External Component:
Data Repository

Send Message Name:
TspEventLogUnload

Optional Send Field Support Codes:
'A' - Field shall always be sent.
'N' - Field shall never be sent.
'C' - Field shall conditionally be sent.

Field	Code
fileHeader.vehicle	C[1]
fileHeader.vehicle.agency-id	N
fileHeader.vehicle.vin	C[2]
fileHeader.component-identifier	C[3]
fileHeader.component-IP	C[4]
fileHeader.component-Port	C[5]
fileHeader.stoppoint	C[6]
fileHeader.stoppoint.agency-id	N
fileHeader.stoppoint.name	ERR
fileHeader.field-address	C[7]
fileHeader.field-port	C[8]
fileHeader.applicability	C[9]
fileHeader.applicability.applicable-routes	ERR
fileHeader.applicability.applicable-routes.agency-id	N
fileHeader.applicability.applicable-routes.route-designator	ERR
fileHeader.applicability.applicable-routes.route-name	ERR
fileHeader.applicability.applicable-ptvs	ERR
fileHeader.applicability.applicable-ptvs.agency-id	N
fileHeader.applicability.applicable-ptvs.vin	C[10]
fileHeader.applicability.applicable-stops	ERR
fileHeader.applicability.applicable-stops.agency-id	N

fileHeader.applicability.applicable-stops.name	ERR
fileHeader.applicability.applicable-facilities	ERR
fileHeader.applicability.applicable-facilities.agency-id	N
fileHeader.applicability.applicable-facilities.facility-name	C^{11}
fileHeader.applicability.applicable-facilities.base-name	C^{12}
fileHeader.applicability.applicable-garages	ERR
fileHeader.applicability.applicable-garages.agency-id	N
fileHeader.applicability.applicable-garages.facility-name	C^{13}
fileHeader.applicability.applicable-garages.base-name	C^{14}
fileHeader.applicability.applicable-fleet-subsets	ERR
fileHeader.applicability.applicable-stoppoint-subsets	ERR
fileHeader.applicability.applicable-fare-subsets	ERR
event-log.intersection.agency-id	N
event-log.intersection.tmdd-id	C^{15}
event-log.intersection.name	C^{16}
event-log.requestID	C^{17}
event-log.request-time	C^{18}
event-log.disposition	C^{19}
event-log.disposition-time	C^{20}
event-log.granted	C^{21}
event-log.grant-duration	C^{22}
event-log.grant-records	C^{23}
event-log.vin	C^{24}
event-log.vehicleClassType	C^{25}
event-log.serviceStrategyNumber	C^{26}
event-log.timeOfServiceDesired	C^{27}
event-log.timeOfEstimatedDeparture	C^{28}
event-log.preemption-vehicle	C^{29}
event-log.actual-wait-time	C^{30}
event-log.strategyEmployed	C^{31}

Local Extension Fields Defined in tcip_3_0_1_F_local.xsd

Field	Code
No local extensions are defined for this message.	

Local Code Extensions Defined in tcip_3_0_1_F_local.xsd			
Field	**Data Element**	**Local Codes**	**Code**
No local code extensions are defined for this message.			

[1] Field is present if the component to be unloaded is on a vehicle.
[2] If the My Sample PICS has the data available.
[3] Field is present if the component to be unloaded is on a vehicle.
[4] Field is present if the component to be unloaded is on a vehicle.
[5] Field is present if the component to be unloaded is on a vehicle.
[6] Field is present if the component to be unloaded is a field component associated with a stoppoint.
[7] Field is present if the component to be unloaded is a field component.
[8] Field is present if the component to be unloaded is a field component.
[9] Field is present if the scope of the unloaded data is specified using an agency-specified applicability group.
[10] If the My Sample PICS has the data available.
[11] If the facility is a not a base and My Sample PICS has the name available.
[12] If the facility is a base and My Sample PICS has the name available.
[13] If the facility is a not a base and My Sample PICS has the name available.
[14] If the facility is a base and My Sample PICS has the name available.
[15] If the My Sample PICS has the data available.
[16] If the agency uses locally defined intersection names, and My Sample PICS has the data available.
[17] Field is present if My Sample PICS has this information available for this specific event.
[18] Field is present if My Sample PICS has this information available for this specific event.
[19] Field is present if My Sample PICS has this information available for this specific event.
[20] Field is present if My Sample PICS has this information available for this specific event.
[21] Field is present if My Sample PICS has this information available for this specific event.
[22] Field is present if My Sample PICS has this information available for this specific event.
[23] Field is present if My Sample PICS has this information available for this specific event.
[24] Field is present if My Sample PICS has this information available for this specific event.
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[28] Field is present if My Sample PICS has this information available for this specific event.
[29] Field is present if My Sample PICS has this information available for this specific event.
[30] Field is present if My Sample PICS has this information available for this specific event.
[31] Field is present if My Sample PICS has this information available for this specific event.