

I-10 Corridor Coalition Truck Parking Availability System

ITS Georgia Annual Meeting
September 20, 2021



I-10 TPAS at a Glance

- Real-time truck parking availability information
- Deployed at 37 public rest areas along the corridor
- Funded through \$6.85 M ATCMTD Grant and 1:1 state matching funds
- 2023 system launch



I-10 TPAS Funding

PROJECT BUDGET BREAKDOWN BY STATE

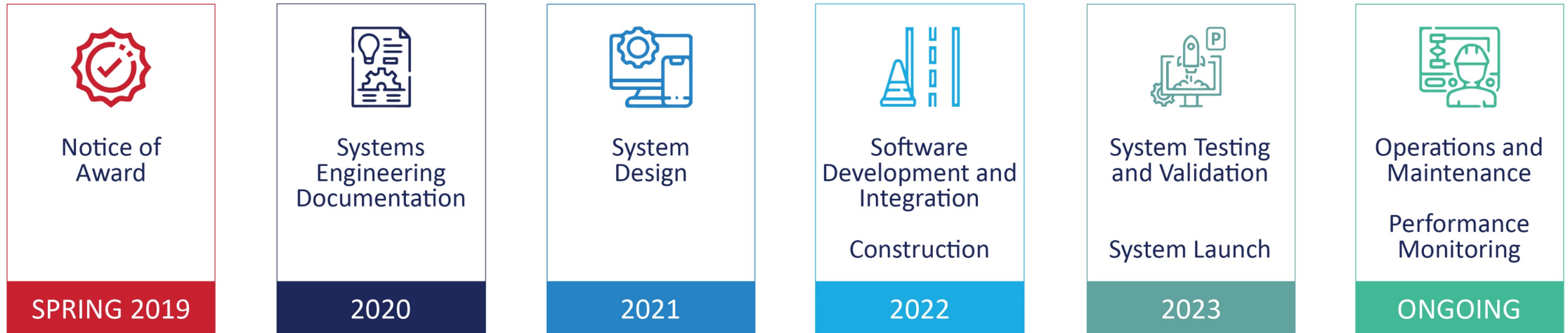
State	Federal Funds	State Match*	Total
California	\$1,074,000	\$1,074,000	\$2,148,000
Arizona	\$1,432,000	\$1,432,000	\$2,864,000
New Mexico	\$895,000	\$895,000	\$1,790,000
Texas	\$3,449,000	\$3,449,000	\$6,898,000
Total	\$6,850,000	\$6,850,000	\$13,700,000

*Grant commitment requires states to match Federal funds 1:1

Funded Through \$6.85 M ATCMTD Grant

Project Schedule

TPAS PROJECT SCHEDULE



STAKEHOLDER ENGAGEMENT

Why is TPAS Needed?

- More than 80 percent of drivers are searching for parking for 30 minutes or longer
- Fatigued truck drivers can go over their required Hours of Service if they cannot find parking, leading to fines or job loss
- Informed decision-making means fatigued drivers will be less likely to be on the road, searching for parking under unsafe operating conditions and in unsafe locations



I-10 Corridor Coalition TPAS Vision

- Vision: Help commercial vehicle drivers make safer, more efficient truck parking decisions through a user-focused parking information service
 - Provide timely, reliable information to drivers and dispatchers
 - Maximize usage of existing truck parking
 - Provide safe truck parking to the trucking industry
 - Ensure harmonious and consistent messaging and operations between states
 - Implement the system in a sustainable and scalable way



I-10 Corridor Coalition TPAS Goals



- Reduce fatigue-related truck-involved crashes
- Reduce emissions by shortening time searching for parking
- Reduce public infrastructure degradation
- Create a platform for future technology improvements

I-10 Corridor Coalition TPAS Objectives

- Allow commercial vehicle drivers to readily identify available truck parking and reduce chances of operating while fatigued
- Enable commercial vehicle drivers to reduce travel time searching for truck parking
- Reduce truck parking along highway shoulders, ramps, or other unauthorized locations
- Improve commercial vehicle safety
- Create a system that can be expanded within the Coalition States and possibly adjacent States
- Deliver other truck related travel information such as weather advisories and incident management alerts

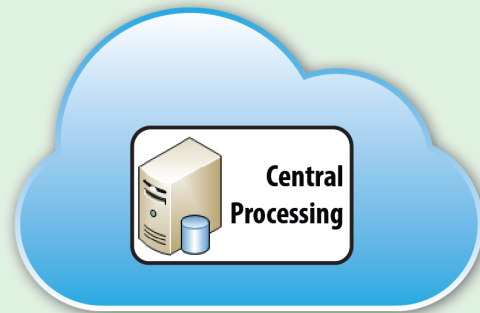


I-10 Corridor Coalition TPAS Concept

1 Vehicle detection systems measure available truck parking in rest areas across each state

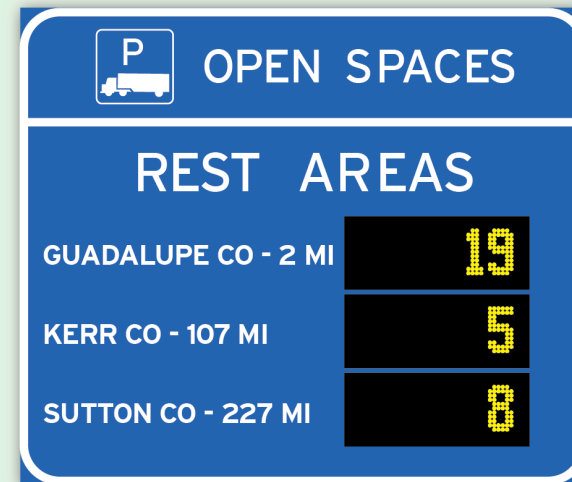


2 Parking data goes to states and 3rd party processors

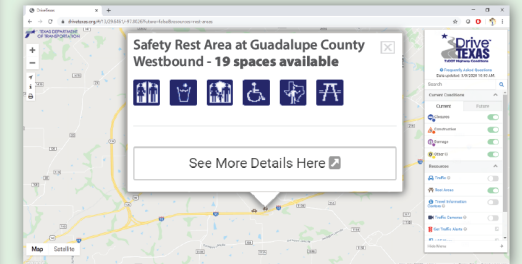


3* Data is delivered to drivers

Dynamic Message Signs

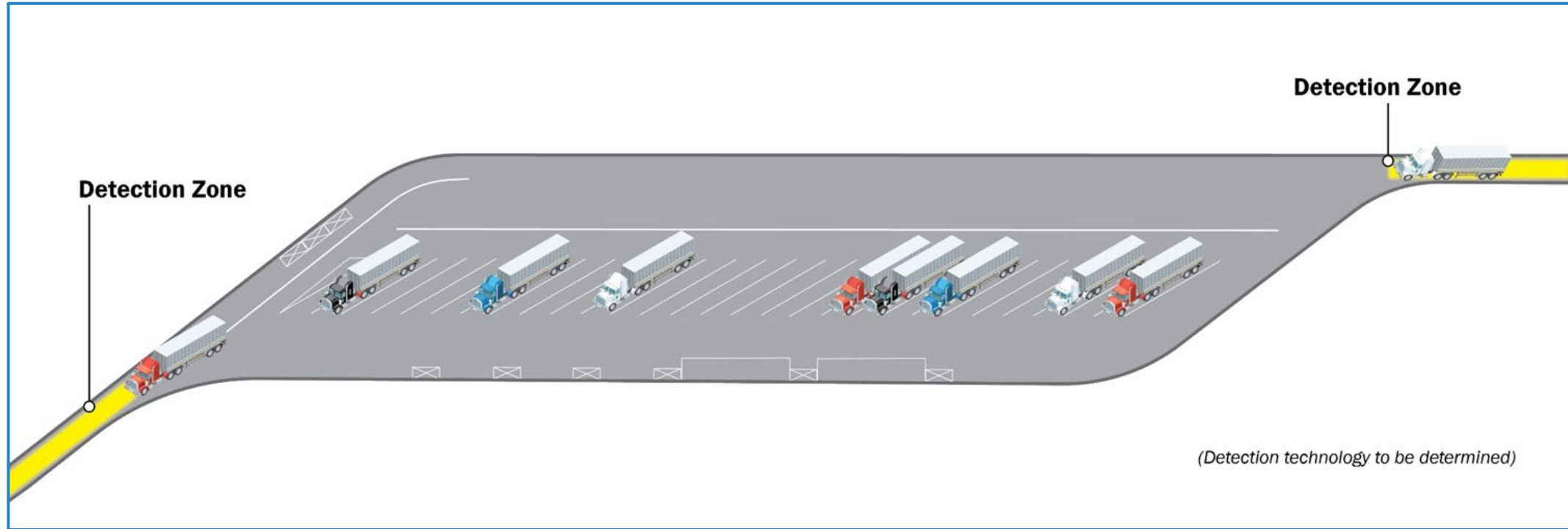


State Traveler Information Website



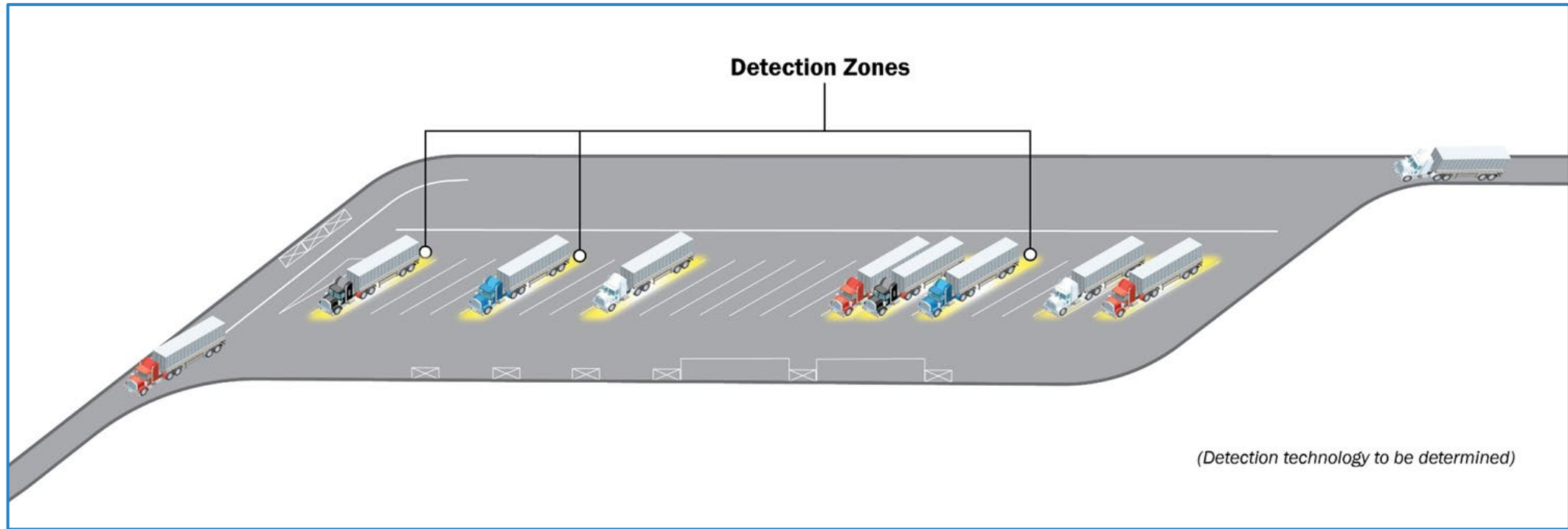
* Examples are for illustrative purposes only

I-10 TPAS Entrance/Exit Counting Approach



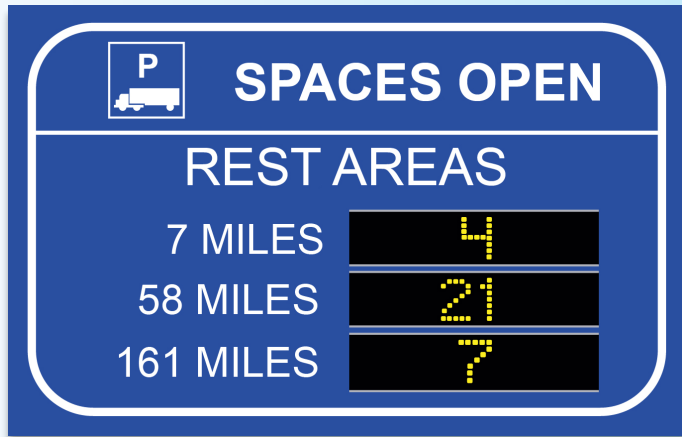
Entrance/exit detection technology (in-pavement sensors, video analytics, radar, laser, etc.) selected during concept of operations and preliminary engineering phase

Space Occupancy Counting Approach



Space occupancy detection technology (in-pavement sensors, video analytics, etc.)

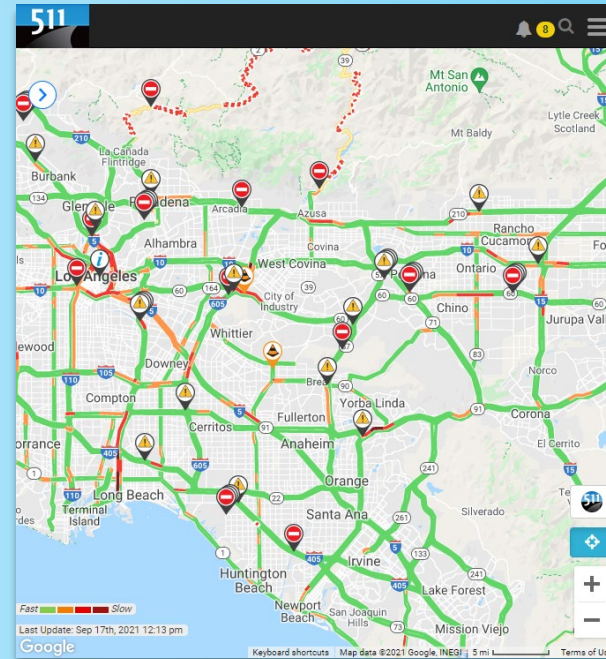
I-10 TPAS Data Distribution and Communications



Dynamic Parking Availability Signs



Private (3rd-party) Smartphone or Online Traveler Applications



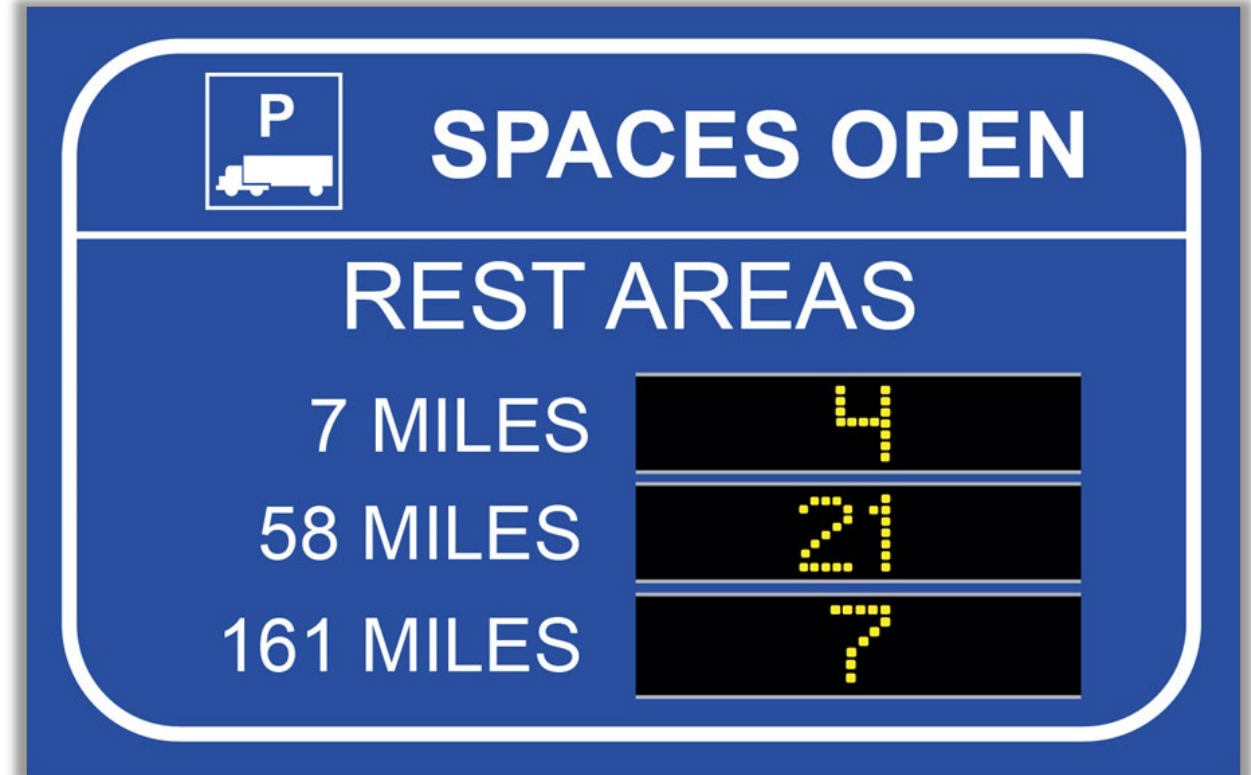
State DOT Smartphone or Online Traveler Information Applications

In-cab Integration Systems

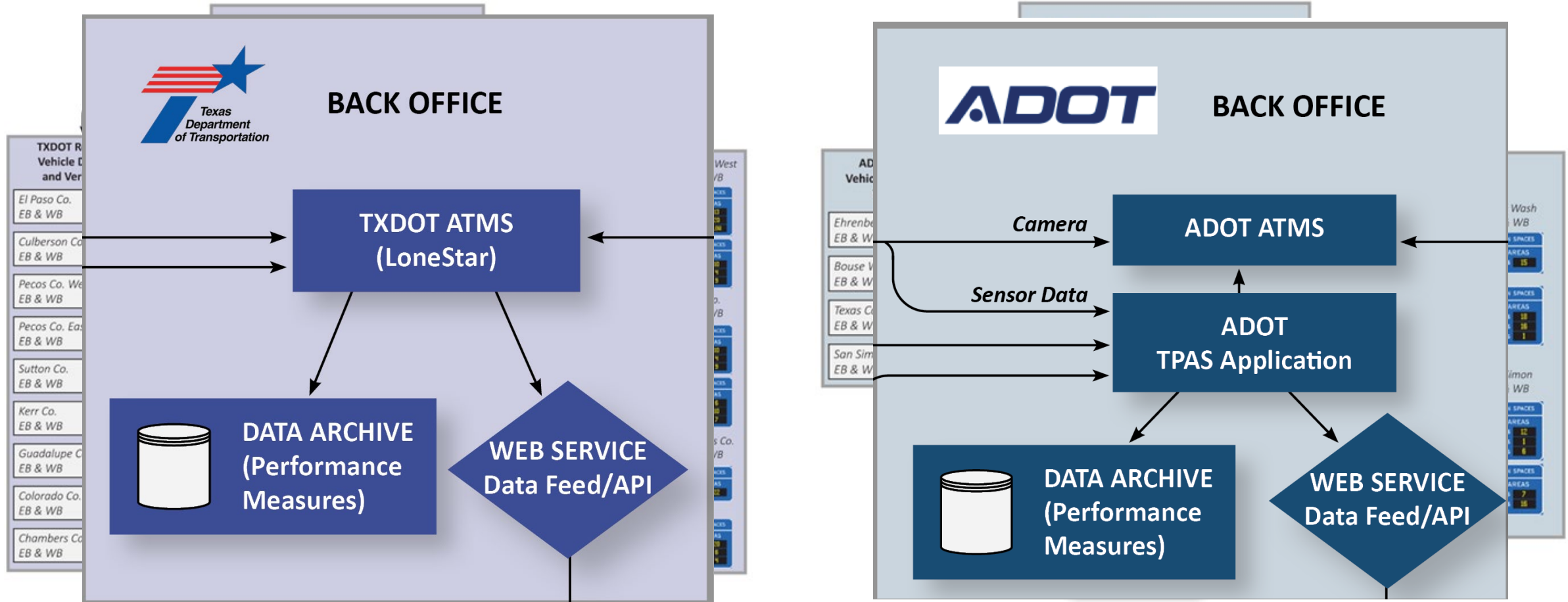


Dynamic Parking Availability Signs

- Advanced notice prior to upcoming sites (5-7 miles in advance)
- Display 2 – 3 sites in advance (range of 45-60 miles in advance)
- Provides number of available spaces



Project Architecture



- Example System Architectures captured in Concept of Operations

National ITS Architecture

Overview

- Developed Project ITS Architecture using RAD-IT
- State's architecture treated as project architectures in this model

The screenshot displays the RAD-IT software interface. The window title is "RAD-IT -". The ribbon includes "File", "Home", and "Output" tabs. The "Home" tab is active, showing groups for "Clipboard" (Copy, Cut, Paste), "Tools" (Synchronize Elements, Update Status, Add Physical Objects, Add Flows), and "Review" (Check Flows, Spelling, Architecture). Below the ribbon are tabs for "Start", "Planning", "Stakeholders", "Inventory", "Services", "User Needs", "R & R", "Functions", "Interfaces", "Communications", and "Agreements". The "Start" tab is selected, showing a "Current Region: I-10 Corridor Coalition TPAS".

The main interface is divided into several sections:

- Architectures:** A list of regional architectures with "I-10 Corridor Coalition TPAS" selected. Below the list are "Region to Project", "New", and "Delete" buttons.
- Project:** A list of project architectures including "ADOT TPAS", "Caltrans TPAS", "NMDOT TPAS", and "TxDOT TPAS". Below the list are "Project to Region", "New", and "Delete" buttons.
- Related:** A section for related architectures with "New" and "Delete" buttons.
- Regional Architecture Attributes:** A detailed view for the selected architecture, including:
 - Name:** I-10 Corridor Coalition TPAS
 - Description:** The I-10 Corridor Coalition Truck Parking Availability System (TPAS) is intended to determine available truck parking spaces for 37 truck parking sites along I-10 through the states of California, Arizona, New Mexico, and Texas. The system consists of detection technology to determine vacant truck parking spaces; video surveillance technology to verify parking space utilization; and messaging technology to convey the available spaces directly to trucks and to third parties interested in that data.
 - Timeframe:** 2019 through 2023
 - Geographic Scope:** I-10 through California, Arizona, New Mexico, and Texas. The I-10 TPAS encompasses the areas covered in Regional ITS Architectures for the Southern California Region; Arizona Statewide; New Mexico Statewide; Las Cruces, NM Region; El Paso, TX Region; Permian Basin (TX) Region; San Angelo, TX Region; San Antonio, TX Region; Yoakum, TX Region; Houston, TX Region; and Beaumont, TX Region.
 - Service Scope:** (Empty field)
 - Developer:** Taylor Glakas (HNTB) & Charlie Farnham (HNTB)
 - Maintainer:** (Empty field)
 - Version:** 1.0
 - Date/Time:** 8/1/2021 2:41:00 PM

At the bottom of the "Regional Architecture Attributes" section are "Change Log", "Apply", and "Cancel" buttons.

Service Packages

- CVO05 Commercial Vehicle Parking
- DM01 ITS Data Warehouse
- DM02 Performance Monitoring
- MC05 Roadway Maintenance and Construction

The screenshot shows the RAD-IT- application interface. The main workspace is titled "Service Packages" and displays a list of packages under the "Region" filter. The packages listed are:

- CVO05: Commercial Vehicle Parking
- DM01: ITS Data Warehouse
- DM02: Performance Monitoring
- MC05: Roadway Maintenance and Construction

A tooltip message reads: "Use checkboxes to Include/Uninclude Service Packages in Region".

The "Service Package Attributes" section on the right shows the following details for CVO05:

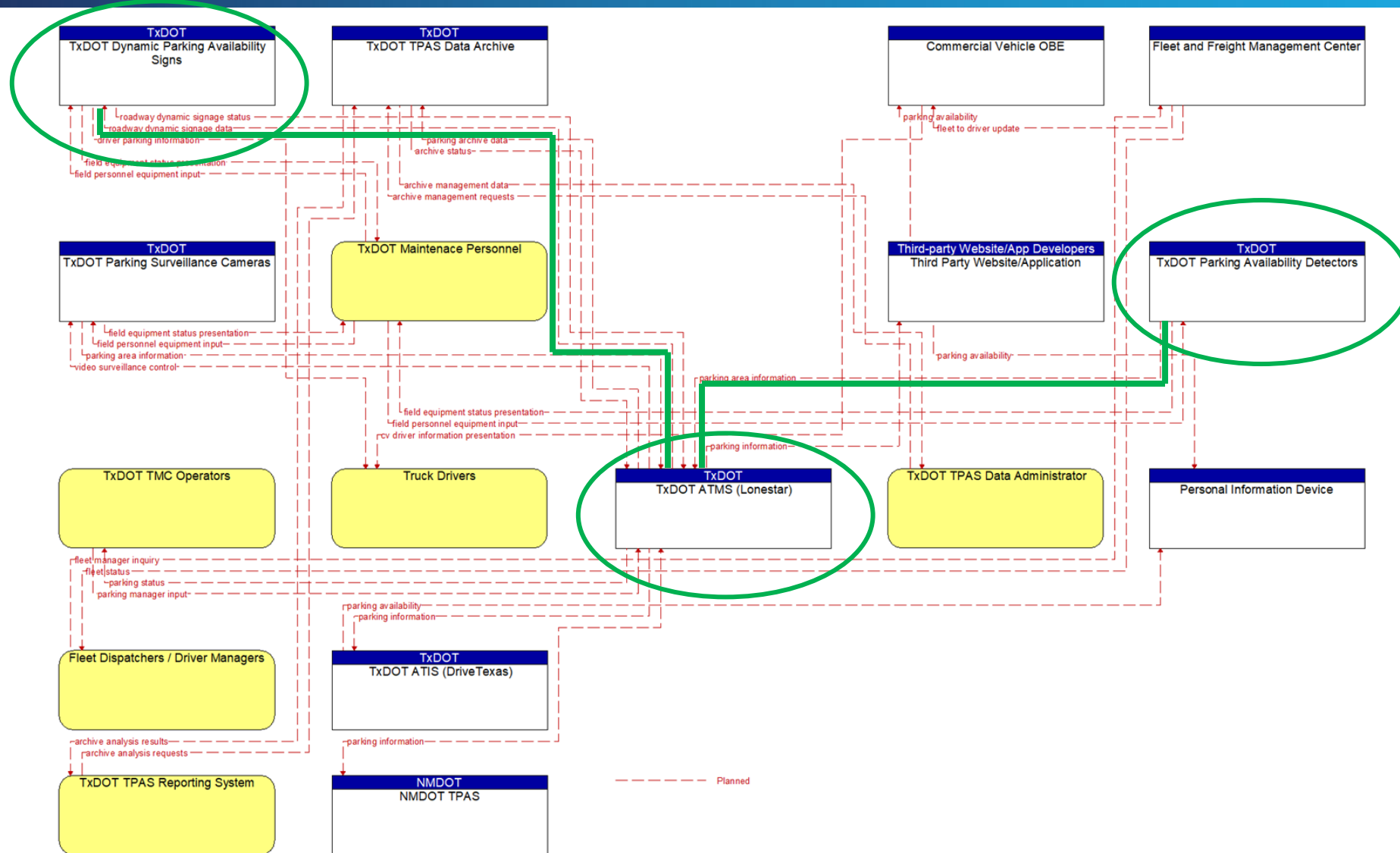
- ID: CVO05
- Status (Region): Planned
- Name: Commercial Vehicle Parking
- Description: This service package provides parking information to commercial vehicle operators both pre-trip and en route. The parking information will be based on information
- Elements: Selected Regional All
- Projects: Selected All

The "Projects" list includes:

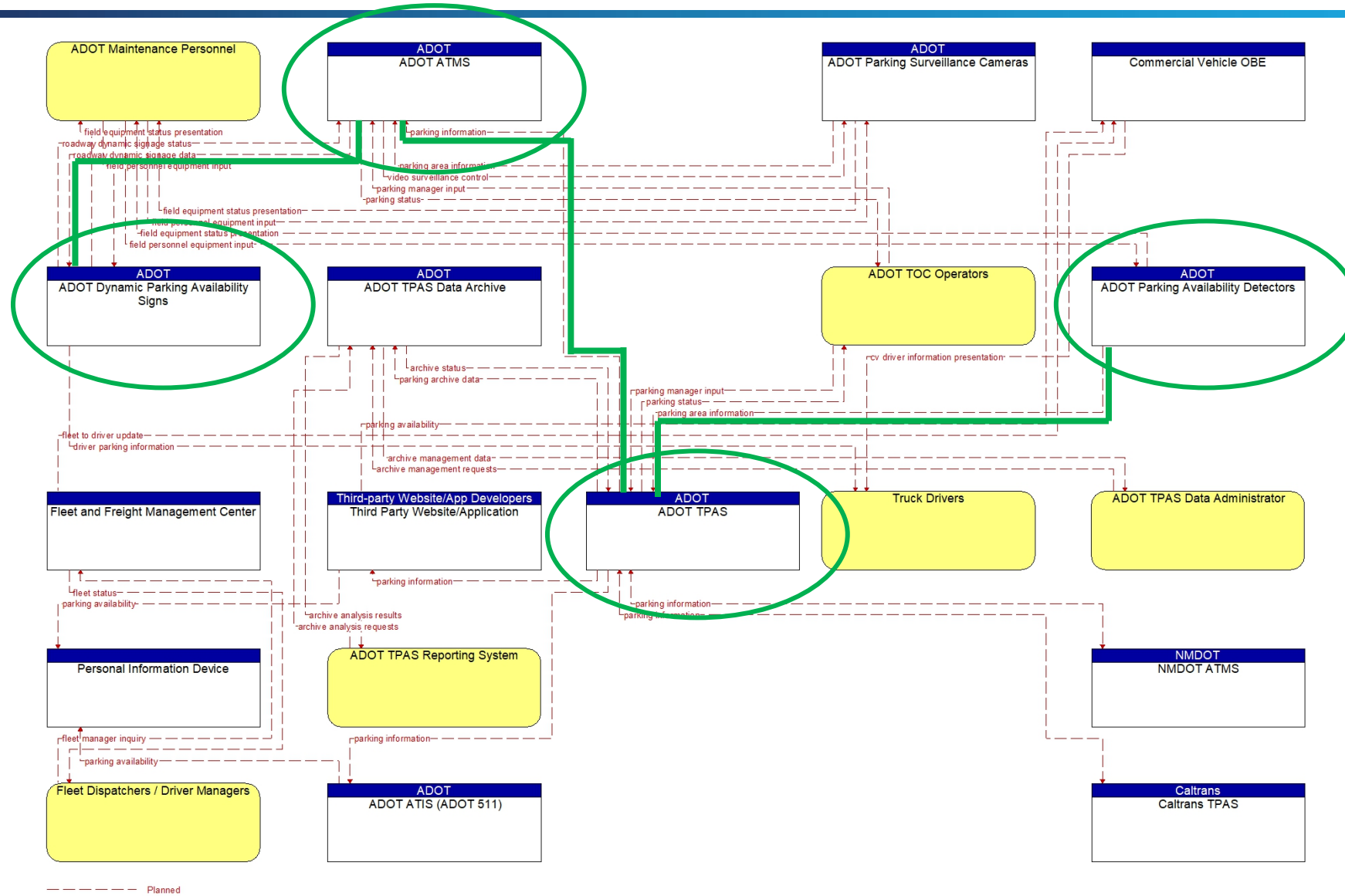
- ADOT TPAS
- Caltrans TPAS
- NMDOT TPAS
- TxDOT TPAS

The interface also includes a "Comment" field and buttons for "New", "Delete", "Apply", and "Cancel".

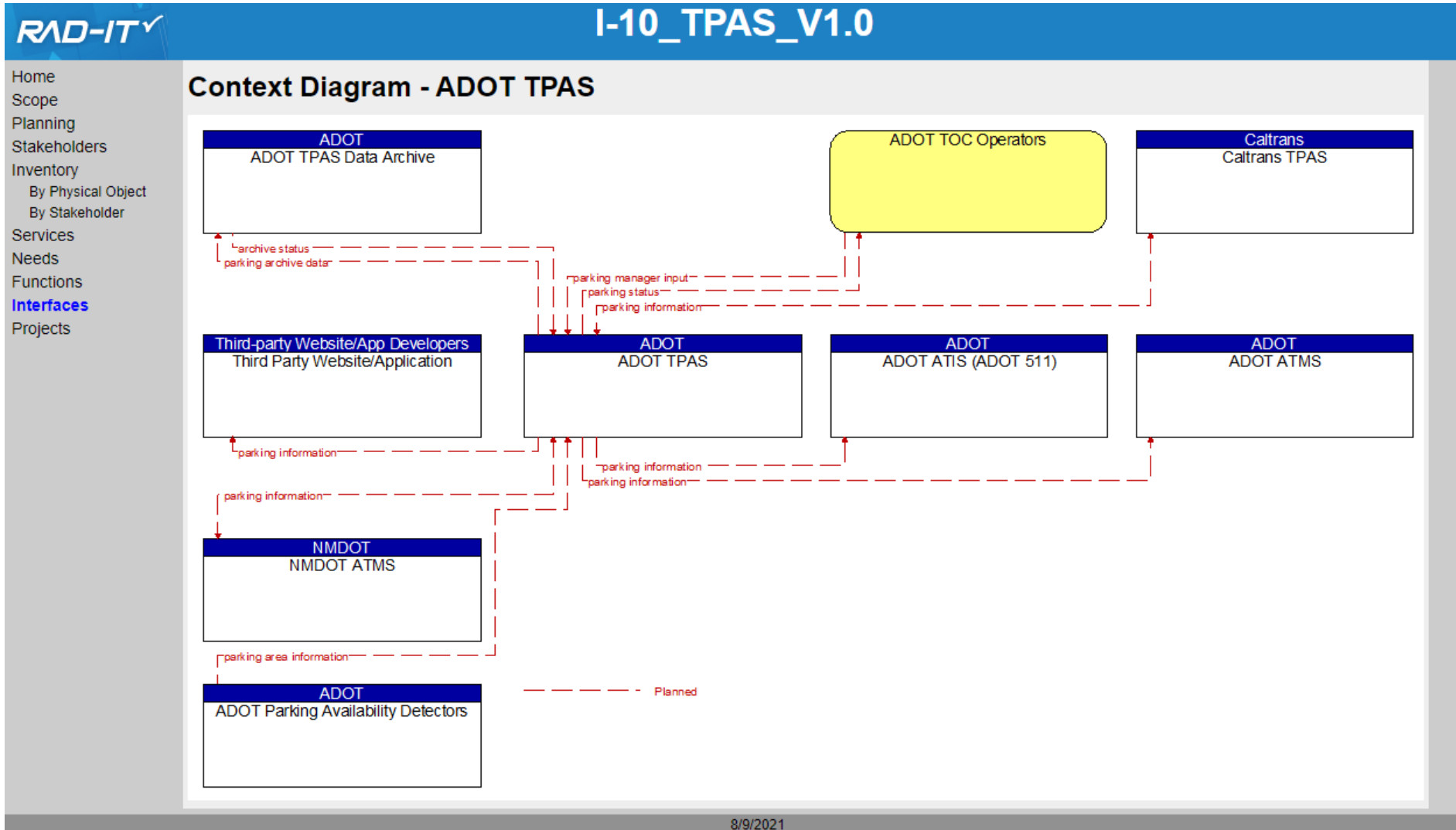
TxDOT ITS Architecture



ADOT ITS Architecture



I-10 TPAS ITS Architecture Website



TPAS Progress and Next Steps



Environmental Documentation

- Completed analysis, documentation, and approvals
- All infrastructure in existing State right of way



System Design

- Based on coordination with stakeholder input
- Evaluating detection type and procurement method



Software Integration

- Integrate TPAS data feed into 511/traveler information systems



System Testing

- Testing to begin in early 2023



Stakeholder Engagement

- Engaging State Trucking Associations, OOIDA, and others to ensure user needs are met

Contact Information

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