TSM&O CONSORTIUM MEETING SUMMARY

Meeting Date:	July 23, 2020 (Thursday)	**Time**: 10:00 AM – 12:00 PM
Subject:	TSM&O Consortium Meeting	
Meeting Location:	Teleconference	

I. OVERVIEW

The purpose of this recurring meeting is to provide an opportunity for District Five FDOT staff and local/regional agency partners to collaborate on the state of the TSM&O Program and ongoing efforts in District Five. Jeremy Dilmore gave a short introduction and outlined the meeting agenda.

II. METROPLAN ORLANDO CAV READINESS STUDY – FINDINGS AND RECOMMENDATIONS

Eric Hill gave a presentation on the MetroPlan Orlando CAV Readiness Study, providing the final findings and lessons learned from the study.

- Purpose:
  - Provide area stakeholders with a thorough evaluation of the current preparedness of local counties and cities for the emergence of CAVs, as well as to recommend next steps to proactively enhance their preparation.
- Tasks:
  - CAV Industry Best Practices Review
  - Evaluation of Existing Local Capabilities
  - Host Public Involvement Workshops
  - Provide Recommendations for CAV Preparedness
  - Final Report
- Public Engagement: Concerns, Challenges, and Opportunities:
  - Biggest Concerns: Safety, privacy, and data security
  - Biggest Challenges: Vehicle technology development, workforce training, and data storage
  - Biggest Opportunities: Educating the public, cross-agency knowledge sharing, and equity in CAV testing/pilot programs across both urban and rural areas
- Recommendations:
  - Planning & Policy
    - Executive Guidance
      - Ensure leadership is on-board
      - Establish clear roles & responsibilities
      - TSM&O Consortium is a big asset in this

- Long-Range Transportation Planning
  - Align CAV with committees or partnerships
  - MetroPlan 2045 Metropolitan Transportation Plan
- Site Development
  - Develop guidelines and promulgate best practices
  - Identify CAV zone(s)
    - Up to local jurisdictions whether or not they want CAV
  - Monitor parking trends
- Equity
  - Vertical
    - The broadest possible cross-section of Floridians experience CAV benefits, demonstrations, and challenges.
    - Nobody will be impacted negatively.
  - Horizontal
    - Each agency within the MetroPlan Orlando region is at a different level when it comes to system capabilities, and each agency has different challenges that they are facing in terms of providing predictable and reliable multi-modal options.
    - Focus on developing the same functionality across jurisdictions for the sake of consistency in use.

- Infrastructure Guidelines
  - Review new and evolving national infrastructure guidelines
    - Signalized intersections
    - Signing & pavement markings
  - TSM&O/ITS Guidelines
  - Maintenance
    - CAV technologies will bring additional maintenance responsibilities for local jurisdictions, the state, and private industry partners.
    - Guidance needed – defining who will maintain equipment, developing training for those performing maintenance
    - NCHRP 20-24(112) focuses on developing a consensus Connected Road Classification System that will be useful to state and local DOTs and MPOs that are planning or implementing CAV-compatible infrastructure. The project is based on the premise that an important decision facing each infrastructure owner/operator is the level to which they intend to equip their roadways for the impending rollout of CAVs.
- Data Collection & Management
  - Data Governance
    - Systems for managing data
    - Decision-making authority on data policies
    - Data stewardship
    - The ultimate responsibility for data governance for the region should be at the state level, with FDOT setting clear and consistent guidance
  - Data Collection/Storage

- Increasing connectivity of vehicles, infrastructure, and other objects in the transportation system will lead to ample opportunities to collect data via information that is transmitted for other purposes.

- Sharing
  - Policies on whether and how to share data with entities other than the agency collecting and storing the data will need to be determined in order to support novel uses of CAV data while protecting data value, privacy, and security.
- Security
  - Collecting, storing, and sharing CAV data brings with it the responsibility to ensure this information is protected. Learning from best practices elsewhere, including in other industries, agencies within the region will need to implement strong systems to maintain data security.

- Pilot Projects
  - Identify corridors for potential applications
  - Establish use cases for AV pilot projects
  - Partner with local interest groups to gain user insight
  - Federal grant/funding opportunities – multiple federal grants are available
- Staffing & Training
  - Recruitment/Retention
    - Offer existing staff new opportunities
    - Address recruitment challenges for data scientists
  - Training
    - Identify regional training efforts
    - Seek out external training opportunities
    - Ensure that staff training keeps pace with tech advances
- What's Next:
  - Conduit
  - Convener
  - Collaboration
  - Pilots
  - Reflect needs
  - Available funds
  - Scenarios for MTP
    - Scenario-based planning
    - Anticipate scenarios of multiple kinds - figure out funding changes, culture changes.
    - Reevaluate funding models to reflect changing times

Discussion:

Q: Other than the Lake Nona AV pilot, what AV pilots are currently ongoing in the region?

A: There are quite a few:

- Voyage in the Villages – both with and without driver
- Gainesville Autobus project
- LYNX study on using AVs in transit service (with MetroPlan and the City of Orlando)
- UCF Shuttle testing on campus (with FDOT)
- SPaT study in Seminole County
- Pedways – looking at AV interactions with pedestrian crossings.
- Altamonte AV Shuttle intersecting the SR 436 corridor

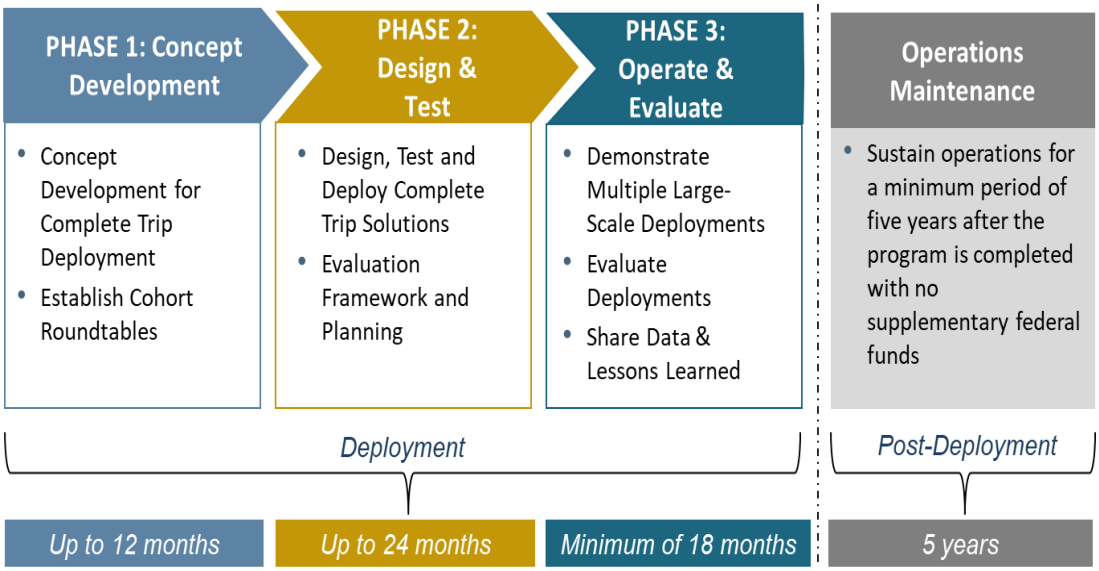
Note: It is part of the recommendations of the CAV Readiness Study that we continue testing and look into new testing. Florida Senator Brandes wanted to open Florida more to CAV tech to attract testing projects from private sector vendors (e.g. SunTrax). As local needs will vary between jurisdictions, consideration should be made to open markets to vendors who will meet local needs in the process of completing their projects.

III. COMPLETE TRIP – ITS4US GRANT PROGRAM

Eric Hill presented on the application being developed and written for the USDOT ITS4US Grant Program.

- USDOT Requirements:
    - Select target users from among:
        - People with Disabilities
        - Older Adults
        - Low Income
        - Rural Residents
        - Veterans
        - Limited English Proficiency
    - Complete Trip Concept:
        - Trip planning
        - Outdoor navigation
        - Intersection crossing
        - Boarding/using vehicles
        - Vehicles & mode transfer/payment stops & stations
        - Indoor/outdoor transition
        - Indoor navigation
        - Connecting & completing trip segments
    - Partnerships:
        - Institutional
            - Inter-governmental
            - Academic
            - Major Employer or Destination
        - Business
            - Technical Services
            - Vendor

        - Local
            - Advocacy Groups
            - Community Organizations
    - Development Phases:



    - Funding:
        - **Phase 1**: $1-1.8 million with no match required
        - **Overall**: $4-12 million shared over all three phases with 20% match required for Phases 2 & 3

- AIM2GO Program Application:
    - Target Users: Low Income and Limited English Proficiency populations in the Greater Orlando Area.
    - Partnership:
        - MetroPlan Orlando
        - Orange County
        - Osceola County
        - Seminole County
        - City of Orlando
        - City of Kissimmee
        - LYNX
        - SunRail
        - United Against Poverty
        - Christian Service Center
        - Community Hope Center
        - The Sharing Center
    - Concept Phases:
        - Phase 1:
            - Low-income
            - English Language Proficiency
            - "Laborland"
            - Post COVID-19 (bringing people back to transit)
            - Sales Tax
        - Phase 2:
            - MaaS
            - Fare payment
                - Contactless/Ticketless payment helps reduce costs

        - Central Payment System
    - Multilingual Trip Planner
    - Data sharing
    - Efficiency
- Phase 3:
    - More discussion is needed prior to the start of Phase 3
    - Where? (UCF is a likely testing area)
    - Who will provide the services (private entity, service operator, MPO, FDOT)?
- Operations & Maintenance: TBD

- Proposed Concept:
    - Central Payment System
        - Single payment account to access all transportation modes
            - Transit, BikeShare, CarShare, SunRail, Scooter, Parking, TNC
        - Multiple payment methods
            - Bank Account, Mobile Wallet, Cash, etc.
            - Serves the unbanked and underbanked
        - Potential partnership with ridesharing company to subsidize trips
            - As part of account system, individual users who qualify for low-income status can receive a subsidy for important trips using rideshare
                - Important trips – healthcare visit, grocery store (food desert constraints)
            - The logistics of this partnership and how the subsidy could be accomplished will need to be fleshed out during Phase 1
    - Multilingual Trip Planner
        - Built on preexisting Trip Planner in development
        - Incorporates all transportation modes/combinations
        - User Interface focused on graphics instead of text
            - Where text is necessary, provide Spanish translation
        - Built on on-board unit (OBU) emulator for Smartphone application
    - Transit Kiosks
        - Deploy standardized transit kiosks in identified areas
            - Will provide Trip Planner functionality for users without smartphone
    - Data and Planning
        - All Personally Identifiable Information (PII) will be removed from accessible data
        - Aggregated Origin-Destination and other travel data will be available
            - No one with access to the planning data will be able to track a single user's movements
            - Data will be obfuscated/concealed by limiting roadway tracking to minor arterials and larger; no side streets will be tracked

        - Will use quarter-hour or hour timeframes instead of minute by minute
    - *Note:*
        - *We are submitting this proposal for the opportunity to **fully develop** the concept in Phase 1*
        - *Some details/logistics may not be determined until Phase 1*
        - *Part of proposal is identifying these unknowns and accounting for them in the process*
- We need to hear from you:
    - Do you have any questions regarding the ITS4US Program?
    - Do you have any thoughts and/or questions on the proposed concept?
    - Did we miss anything when considering these underserved population groups?

IV. ATTAIN CENTRAL FLORIDA - UPDATE

Jeremy Dilmore gave an update on the ATTAIN Central Florida project.

- Challenge: Demand on the transportation system in Central Florida and the need to support underserved communities with safe options are both growing.
- Solution: Leverage innovative technologies to connect people, especially those struggling with mobility issues, with places where they need to go and services they need.
- FDOT is implementing ATTAIN Central Florida
    - Deploys smart transportation technologies that enhance mobility
    - Will evaluate deployments to identify best practices and lessons learned
    - Proven technologies will be applied to future deployment locations in the region
- FDOT Mission
    - Provide a safe transportation system
        - PedSafe – Collision Avoidance Warning System
        - GreenWay – CV infrastructure providing critical information to motorist
        - SunStore – Improved performance measurement capabilities via data warehouse, leading to more pertinent and effective analyses by planners, engineers, and researchers
    - Ensure mobility of people and goods
        - GreenWay – R-ICMS, Smart Signals, ASCT, TSP
        - SmartCommunity – Transit Kiosks, AV Shuttle, Parking Management, Trip Planning
        - SunStore – Improved performance measurement capabilities via data warehouse, leading to more pertinent and effective analyses by planners, engineers, and researchers
    - Enhance economic prosperity
        - GreenWay – Potentially reduced congestion via R-ICMS, Smart Signals, ASCT, aiding movement of goods and reducing “cost of congestion”
        - SmartCommunity – Supporting alternative modes of transportation, encouraging fewer SOV trips, and potentially leading to reduced congestion

        - UCF has devoted significant faculty time and resources to the ATCMTD initiative, providing a tangible economic benefit in our region
        - Spurring additional partnerships and projects between local, regional, and state agencies
    - Preserve the quality of our environment and our communities
        - Reducing congestion and SOV use to improve air quality
        - Supporting mobility on demand to improve quality of life
        - Improving mobility for residents and visitors of our communities through advanced technologies rather than widening projects that may require additional right-of-way
- Partners:
    - FDOT
        - Manages all programs
        - Oversees funding
        - Responsible for deliverables
    - MetroPlan Orlando
        - Facilitates collaboration
        - Maintains agency support
        - Ensures projects meet intended purposes
    - UCF
        - Research capabilities
        - Data analysis expertise
        - Multiple deployment locations on main campus
    - 28 other local governments and regional agencies (total number that have approved resolutions in support of the ATTAIN Central Florida)
- Funding:
    - $11.9 million – FHWA ATCMTD Grant
    - $53.1 million – Matching local funds and VIK assets
- Transit Signal Priority:
    - Lesson learned from Phase 1: The look ahead distance from the stop bar to the signal is too far in some cases, will need to be altered for Phase 2&3.
    - Phase 2&3: All phase selectors are in place and in testing.
- OBU Presentation:
    - Starting to meet with first responders to equip their vehicles with OBUs
    - Anticipated Questions from the Public:
        - Will the app be similar to regular phone apps?
            - Yes!
            - Only there is no app store yet
            - The apps don't work right until you tweak them with your own programmer
            - There are very few developers
            - Applications have to handshake with the security system so do one can add applications on the side ("side loading")
            - New products come via downloads

        - Old phones are supposed to work with newer ones
    - Will the users' privacy be protected?
        - The technology incorporates privacy
        - The technology does not track the user. It provides information when in range of a receiving unit only
        - Vehicle ID is changed multiple times an hour to prevent tracking
        - The package is encrypted like a VPN by SCMS (Security Credential Management System)
        - The information a driver sees is the warnings
        - Please reach out to FDOT if you need any supplemental security/privacy information to assuage public fears in your area
    - Will this technology turn my car into an AV?
        - This is connected vehicle technology
        - It is vehicles talking to each other
        - It is made to warn you and other drivers (like your backup camera might do)
        - Sorry if you think these are annoying
        - The goal is to improve safety, most importantly your safety
        - This technology is not made to drive your car or take decisions out of your hands
        - The technology automates alerts and warnings, not driving
- OBU Equipment and Location:
    - Procure, prepare, install, configure, and test the OBU installation
    - OBU is configured with Statewide Security Credential Management System
    - Ensure installation staff is ASE certified
    - Support and Maintenance
    - Schedule time and location

- Autonomous Shuttle:
    - Working with UCF
    - Items for Coordination
        - Charging Infrastructure Needs
            - Inductive charging at stops so that shuttle doesn't need to be taken out of service for charging
            - 120V power supply; contractor added whip
        - Vehicle Storage Area – aesthetically pleasing and secure
        - Signing and Pavement Markings
            - Repurposed the share trail and transit symbols
        - Point cloud mapped using a LiDAR unit will be used with the LiDAR on the shuttle to keep it on the path. Will also help in avoiding pedestrians and other obstacles.
- Adaptive Traffic Signal Interface with Positive Train Control:
    - Overall Goal: To use the location data from a Train AVL system to better move traffic through signalized intersection near the crossings.
    - Project Locations

        - 442739-1-93-01 Project focuses on three SunRail crossings and nearby intersections in Seminole County.
        - SR 434 and CR 427 Railroad Crossing
        - SR 436 and CR 427 Railroad Crossing
        - Lake Mary Blvd and C-15 Crossing
    - Scope of Work
        - Vendor doing development is Cubic/Trafficware
        - They manufacturer the traffic signal controllers and ATMS software used in Seminole County.
        - This project creating software modules to ATMS.now and SynchroGreen to allow input and understanding of the SunRail SDI data.
        - SunRail SDI data is the real-time train location and stops.
    - Functional Procedure:
        1. Normal traffic flow
        2. Approaching train detected
        3. System extends red light cycles and stops traffic moving towards crossing
        4. Longer light cycles to flush both lanes that cross the rail tracks
        5. Return to normal traffic flow after train passes
    - Project Status:
        - White list access to the SunRail SDI data feed complete and tested.
        - SynchroGreen adaptive signal control logic to allow programming to shorten red lights or holds green lights to provide clear movements about to be blocked by train crossing complete.
        - ATMS.now enhancement to bring the SunRail SDI as an input in testing.
        - Deployment of new software in Seminole County TMC scheduled for week of July 20th.
        - 60 days of field fine tuning of signal timings to begin the first week of August 2020.
- R–ICMS:
    - Testing CIRA in Orange, Seminole, and Brevard Counties
    - CIRA Response System:
        1. Incident occurs
        2. DSS detects incident, evaluates responses, recommends route
        3. Corridor manager receives notice, approves route; the regional operators receive notice, approve route
        4. Corridor manager receives approvals, deploys route (one click)
        5. Route signals show info to drivers
        6. Route RSUs broadcast info to vehicles
        7. Route signals switch timing plans
        8. Corridor manager monitors, clears incident (one-click)
    - RICMS
        - Three-layer architecture
            - Data Fusion Environment – Data Layer
                - Regional one-stop-shop for transportation data

- Decision Support System – Business Layer
  - Expert Rules Engine: selects, filters, proposes response plans
  - **Predictive Model:** rank the response plans
  - **Evaluation Model:** evaluate performance of response plan, recommend improvements
- Information Exchange Network – Presentation Layer
  - Users view of transportation system
  - Create / edit pre-planned events
  - Coordinate response plans
- Systems Integrations (Interfaces)
  - FDOT ATMS
  - **FDOT SIIA**
  - **FDOT ITSIQA**
  - Third Party signal vendors
  - Third party traffic simulation
  - Third party signal optimization
  - Public transit GTFS feeds
  - Public NWS feeds
  - Other public data
- Making Changes to ITSIQA
  - Adding logic based on UCF and UF research
    - Allows for interpolation of data between two signals for an intermediate signal with missing data.
  - Using existing detection to approximate TMCs
  - Requires accurate data about the intersection
    - If update channels and/or detection it **MUST** be **Updated** in **SIIA**
    - If not, SOT will give false results
    - Accounts via cflsmartroads.com or Aurelio

- NOEMI and SunStore:
  - Data picker update has been pushed out
  - Added ITSIQA data
  - New performance measures in place
  - NOEMI incorporated into work program for future improvements
  - Only a few people have access to edit/add data in NOEMI
- Intersection Details:
  - Working with Seminole County
  - Looking at Rhythm and R-IMCS
  - Pattern calls move Rhythm into detector mode
- OBU Emulator:
  - Concept of Operations reviewed the week of 7/20.
    - Data flows
    - Intersection set up
      - SIIA
    - Trunking data to avoid duplicate entry

- Preliminary Design underway.
- 3 Main Interrelated Systems comprise the OBU Emulator
  - Central Florida Mobility Application (CFMA)
  - Third-party App Depot (including approved third-party applications)
  - Third-party App Web Portal
- High-Level Architecture can be seen in the slides.
- Goal: Provide users with useful mobility-related information and improve pedestrian safety. In order to achieve the latter goal, the CFMA, CV Fundamentals App, and third-party developer apps will have to achieve a sufficient density of users to be able to frequently alert drivers of approaching cyclists, pedestrians, and/or other vulnerable road users via third-party developer apps.
- Location accuracy is still a concern
  - Looking at PedSafe Phase II for ATCMTD 2020 Grant
  - Deployment along SR 436 from Montgomery Road to US 17/92 (Altamonte Springs)
  - Improved Pedestrian Detection via enhanced LiDAR
  - Deploy Enhanced LiDAR at intersections with heavy ped traffic
  - Deploy Bluetooth / C-V2X at all intersections along route
  - Advanced Localization Technique
  - Using advances in indoor localization to improve outdoor positioning
  - Trilateration process with RF fingerprinting
  - Apply Machine Learning algorithm to data captured from older & newer phones to generate improved location information

- Smart Community:
  - Route and Mode Choice Engine
    - The Route and Mode Choice Engine will include four primary components and/or systems:
      1. APIs and Data Sources
      2. Routing Engine
      3. Trip Scoring
      4. Real-Time Trip Planning and Monitoring
    - Based on the Open Trip Planner open source software.
    - How it works:
      - Users will input their destination requests from mobile applications and transit kiosks.
      - Users will provide decision-making parameters and constraints: such as, things like “Time”, “Cost”, “Total Walking Distance”, “Calories Burned” or “Productive Time”.
  - Reaching the public:
    - As a web-based service, the Route and Mode Choice Engine will be accessible in a variety of ways.
    - Smart Phones
    - Transit Kiosks
- Notes:

- There will be 60 days of review and finetuning plus a report; we will provide an update based on report findings
- Expecting all of the ATTAIN project to wrap up within next 4 months

Discussion:

Q: On the various TSP rollouts, have we done before/after comparisons to understand benefits to transit riders?

A: Quarterly reports are available on the number of activations and arrivals here: http://www.cflsmartroads.com/operations_reports.html

Q: What agencies have been contacted for OBU installation? How many units total?

A: Orange, Seminole, Marion, and Ocala Counties have been contacted.

- For the total number of units, the OBU RFP includes:
  - UCF Transit Services (not Lynx): 55 Buses
    - Clause: to install the units at a later date
  - Fire Trucks at McCullock Lockwood
  - FDOT Fleet: 10
  - FDOT Ocala – Maintenance Yard: 25
  - Suntran Shuttle Bus: 5
  - Emergency Vehicles: 60 (This is not final – other routes are still being verified)
  - Sumter Co:
    - Sheriff's Office: 8 units
    - Fire Dept: 6 units
    - FHP Troop C: 2 units
  - Marion Co:
    - Sheriff's Office: 8 units
    - Ocala FD: 8 units
    - Ocala PD doesn't respond to 75 unless it's to provide additional support for large-scale incidents
    - Marion FD: 24-26 units
    - FHP Troop B: 2 units
  - Road Rangers at I-75: 4

Q: I would like to hear more on this. We will need something similar when Virgin Trains Comes online.

A: This project needs to be modified to its localized area. It's worth doing a B/C comparison if it works well here to determine whether it will work elsewhere. We are now checking the real-world improvements coming from this and will be able to determine if it's worth replicating this elsewhere.

Q: Is PedSafe still being applied in the Pine Hills target locations?

A: Yes, we just saw the UCF testbed as a lower cost option for optimizing the PedSafe platform before deploying a finalized version in Pine Hills

V. NEW FLORIDA LAW – *ESSENTIAL STATE INFRASTRUCTURE*

David Williams presented on a new Florida law regarding essential infrastructure.

- Took effect July 1, 2020

- Concerns *essential state infrastructure*, including:
    - The planning, design, and construction of "Staging Areas" on the Turnpike for public assistance during declared states of emergency
        - Allows for FDOT/FTE to plan, design, and construct "staging areas to be activated during a declared state of emergency at key geographic locations on the turnpike system." (Pages 2-4)
        - Staging areas will facilitate emergency response and assistance:
            - Evacuations
            - Deployment of emergency-related supplies and personnel
            - Restoration of essential services
        - Emergency supplies can be stored at staging areas for dispersal to the public as needed:
            - Water
            - Fuel
            - Generators
            - Vehicles
            - Equipment
            - Other related materials
        - Criteria for Location:
            - Facilitates the wide dissemination of supplies and equipment
            - Provides ease of access to major highways and other transportation facilities
            - Large enough to stage a significant amount of supplies and equipment
            - Provides space in support of emergency preparedness and evacuation activities, such as fuel reserve capacity
            - Could be used during nonemergency periods for commercial motor vehicle parking and for other uses
            - Is consistent with other state and local emergency management considerations
        - Priority of placement consideration: Counties with population less than 200,000 with MCORES facilities.
    - The development of a master plan for EV charging station infrastructure on the SHS
        - FDOT is required to develop a statewide Master Plan for EV charging station infrastructure along the State Highway System (pages 5-8)
        - Master Plan is due to Florida Congress by July 1, 2021, and should include recommendations for legislation and other recommendations as determined by FDOT
            - Preliminary recommendations due December 1, 2020
        - Public Service Commission responsibilities include:
            - Projecting the increase in EV use in Florida over the next 20 years
            - Determining how to support and encourage this growth in a manner supporting a competitive market with ample consumer choice

- Considering strategies to develop the supply of charging stations, including building partnerships with:
  - Local governments
  - Other state and federal entities
  - Electric utilities
  - Business community
  - The public
- *Note: **Jennifer Fortunas will lead FDOT's Essential State Infrastructure work efforts at the Central office level; Brian Stanger will lead at efforts at the District level.***

VI. AUTOMATED VEHICLE TRANSPARENCY AND ENGAGEMENT FOR SAFE TESTING (AV TEST) INITIATIVE

Jeremy Dilmore gave a brief presentation on the AV TEST Initiative.

- AV Transparency and Engagement for Safety Testing (AV TEST) Initiative
- AV TEST will include series of public events across the country to improve transparency and safety in the development/testing of ADS
- Participants can share information about activities/projects to:
  - Increase the public's awareness of testing
  - Promote USDOT role in safety and innovation
  - Build stronger relationships among public agencies and private stakeholders
- www.nhtsa.gov/avtest
- Voluntary web pilot will provide an online, public-facing platform for sharing ADS testing activities and other safety-related information
- Online mapping tools will also be available to view testing locations at local, state, and national level
  - Dates
  - Frequency
  - Vehicle counts
  - Routes
- The first AV TEST participants were announced in June 2020
  - California
  - Florida
  - Maryland
  - Michigan
  - Ohio
  - Pennsylvania
  - Texas
  - Utah
  - Beep
  - Cruise
  - Fiat Chrysler Automobiles
  - Local Motors
  - Navya
  - Nuro
  - Toyota
  - Uber
  - Waymo

VII. CURRENT INITIATIVES

Jeremy Dilmore gave an update on current initiatives in District Five.

- I-75 Frames
  - Security Credential Management System (SCMS)

  - Registration of devices went smoothly
    - Registered all units in DSRC
  - Tracking a lot of I-75 frames in Gainesville
    - Received updates on how their units are adapting to regulatory constraint of single channel (channel 180)
  - We also got a license to experiment with the C-V2X channel
  - Now they're trying to push all frames into channel 180 – not sure how that will work
    - Looking at testing
    - D2 coming up with testing scheme
    - Once the tech is in place, we will reach out to Seminole County to start testing down here - applying the configuration changes determined by D2
  - Working with contractors still installing equipment
- Research:
  - Improving ATSPM
    - Crash detection
    - Implementing by incentivizing contractors who offer ATSPM service in cloud
    - Releasing the document soon – Will advertise to contractors
    - Ability to incorporate into our system
  - ITSIQA
    - TMC research from UCF and UF for interpolating missing TMCs from neighboring intersections
  - DILMORE Project
    - Algorithm that runs faster and more efficiently than HCS; to replace ICMS in the future to more quickly cycle through intersections.
    - Determining what intersections to include/exclude from the system.
    - Changes each signal enough to revisit optimization and determine when they should be organized into systems – trigger to redo as part of ICMS
  - RTMC Phase 2 Map Enhancements
    - UF research: determining likely crash locations
    - Looking for arterials and freeways exhibiting behaviors outside the norm – signaling likely crash location
      - Recommendations for changes to system in ICMS
      - Handle crashes and automate signal changes in event
- Cabinet controller changeouts:
  - Still rolling them out
  - Updating controller databases

VIII. NEXT MEETING

- October 1, 2020

IX. ATTACHMENTS

- A – Presentation Slides
- B – Meeting agenda

END OF SUMMARY

This summary was prepared by Amanda Johnson and David Williams and is provided as a summary (not verbatim) for use by the Consortium Members. The comments do not reflect FDOT's concurrence. Please review and send comments via e-mail to dwilliams@vhb.com so they can be finalized for the files.

Welcome to the TSM&O Consortium Meeting

July 23, 2020

Transportation Systems Management & Operations

Meeting Agenda

1. Welcome
2. CAV Readiness Study – Findings & Recommendations
3. Complete Trip – ITS4US Update
4. ATTAIN Central Florida – Update
5. New Florida Law– *Essential State Infrastructure*
6. AV TEST and Florida
7. Current Initiatives

Connected and Automated Vehicle (CAV) Readiness Study

MetroPlan Orlando

June 2020

CAV Readiness Study

Commissioned Study

Purpose

Assess the region's readiness for arrival and integration of connected and automated vehicles (CAVs)

Tasks

- CAV Industry Best Practices Review
- Evaluation of Existing Local Capabilities
- Host Public Involvement Workshops
- Provide Recommendations for CAV Preparedness
- Final Report

CAV Public Engagement

Concerns, Challenges, and Opportunities

Biggest Concerns:

- Safety, privacy, and data security

Biggest Challenges:

- Vehicle technology development, workforce training, and data storage

Biggest Opportunities:

- Educating the public, cross-agency knowledge sharing, and equity in CAV testing/pilot programs across both urban and rural areas

CAV Recommendations

1. Planning & Policy
2. Infrastructure Guidelines
3. Data Collection & Management
4. Pilot Projects
5. Staffing & Training

Planning & Policy

Executive Guidance

- Ensure leadership is on-board
- Establish clear roles & responsibilities

Long-Range Transportation Planning

- Align CAV with committees or partnerships
- MetroPlan 2045 Metropolitan Transportation Plan

Planning & Policy (cont.)

Site Development

- Develop guidelines and promulgate best practices
- Identify CAV zone(s)
- Monitor parking trends

Equity

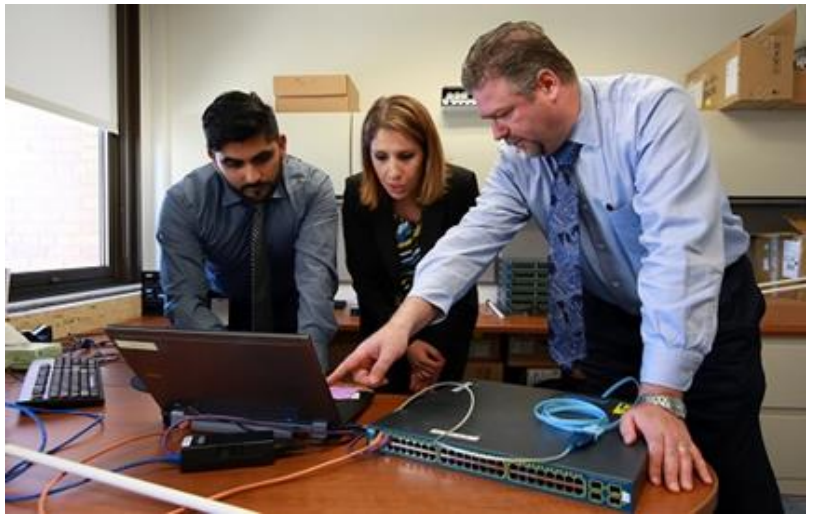
- Vertical
- Horizontal

Infrastructure Guidelines

- Review new and evolving national infrastructure guidelines
  - Signalized intersections
  - Signing & pavement markings
- TSM&O/ITS Guidelines
- Maintenance

Data Collection & Management

- Data Governance
- Data Collection/Storage
- Sharing
- Security



Pilot Projects

- Identify corridors for potential applications
- Establish use cases for AV pilot projects
- Partner with local interest groups to gain user insight
- Federal grant/funding opportunities

Staffing & Training

Recruitment/Retention

- Offer existing staff new opportunities
- Address recruitment challenges for data scientists

Training

- Identify regional training efforts
- Seek out external training opportunities

What's Next for CAVs

What's Next?

- Conduit
- Convener
- Collaboration

What's Next for CAVs

What's Next?

- Pilots
- Reflect needs
- Available funds
- Scenarios for MTP

What's Next for CAVs

Questions?

Thank You

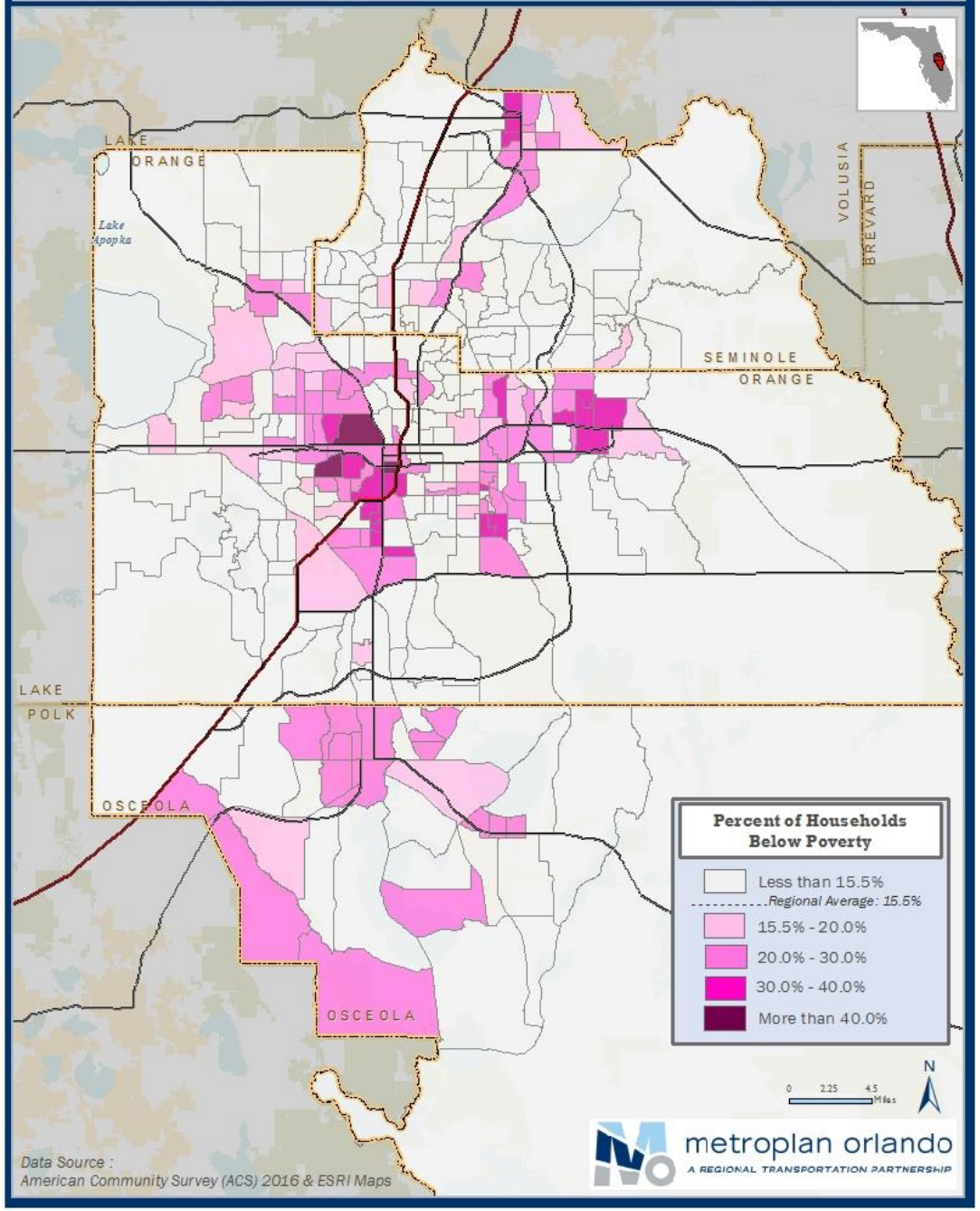
MetroPlanOrlando.org | (407) 481-5672
250 S. Orange Ave., Suite 200, Orlando, FL 32801

ITS4US
Briefing

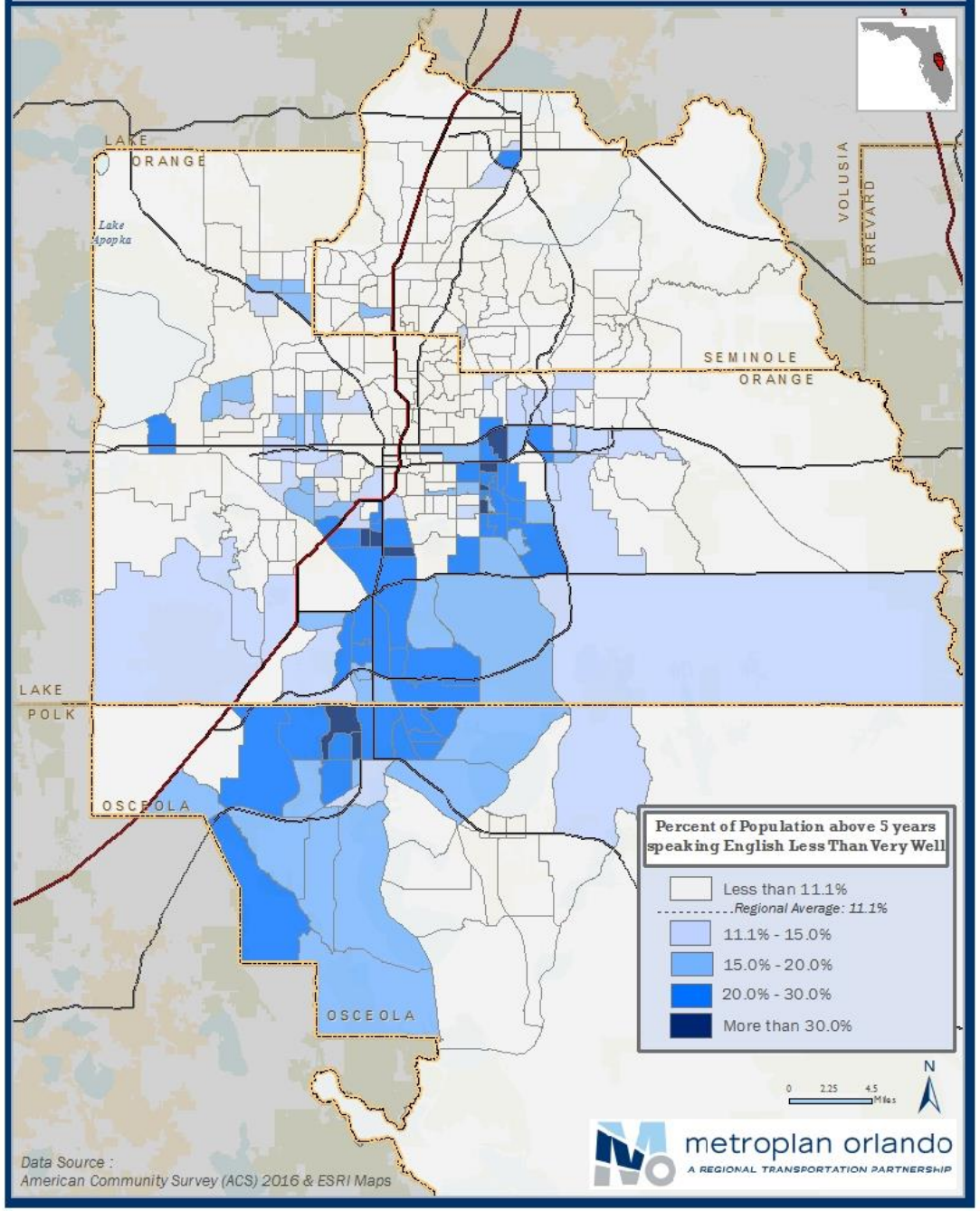
ITS4US Deployment Program

Complete Trip Concept

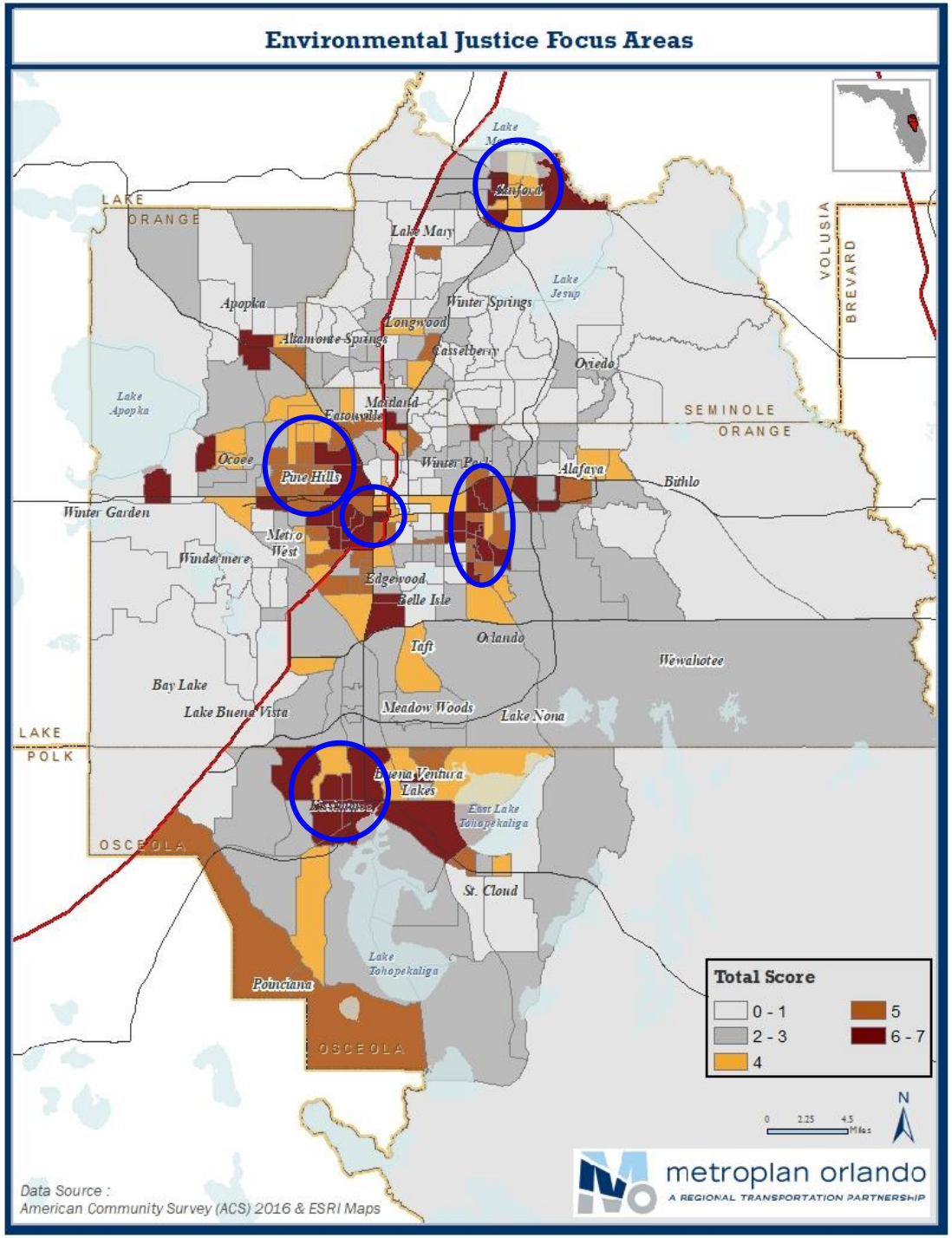
Percentage of Households below Poverty



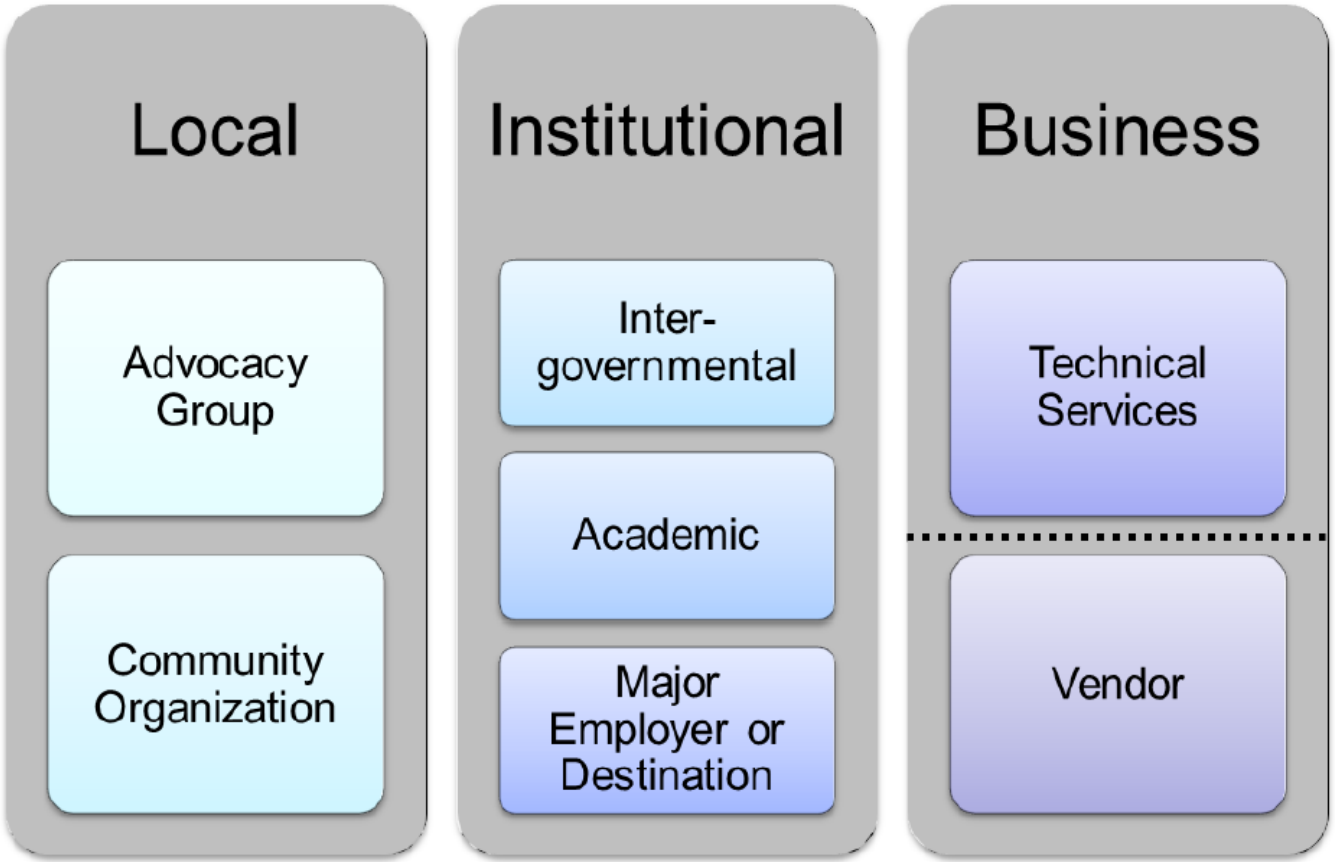
Percentage of Population with Limited English Proficiency



Environmental Justice Focus Areas



Partnerships



Partnerships

metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

ORANGE COUNTY GOVERNMENT
FLORIDA

OSCEOLA COUNTY FLORIDA

SEMINOLE COUNTY
FLORIDA'S NATURAL CHOICE

CITY OF ORLANDO

CITY OF KISSIMMEE
1883

UNITED AGAINST POVERTY

Community HOPE CENTER

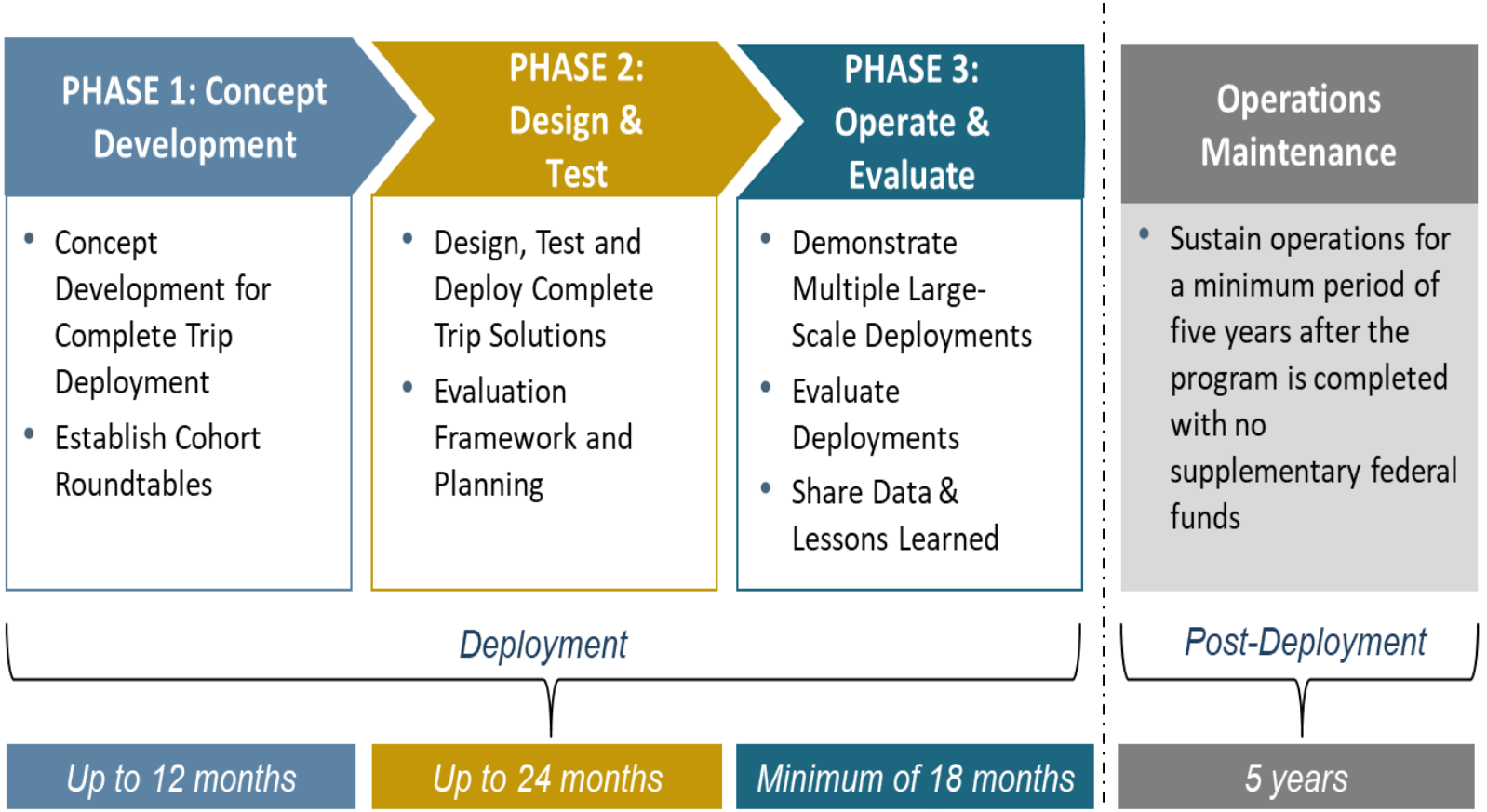
LYNX®

SunRail

CHRISTIAN SERVICE CENTER

the Sharing center

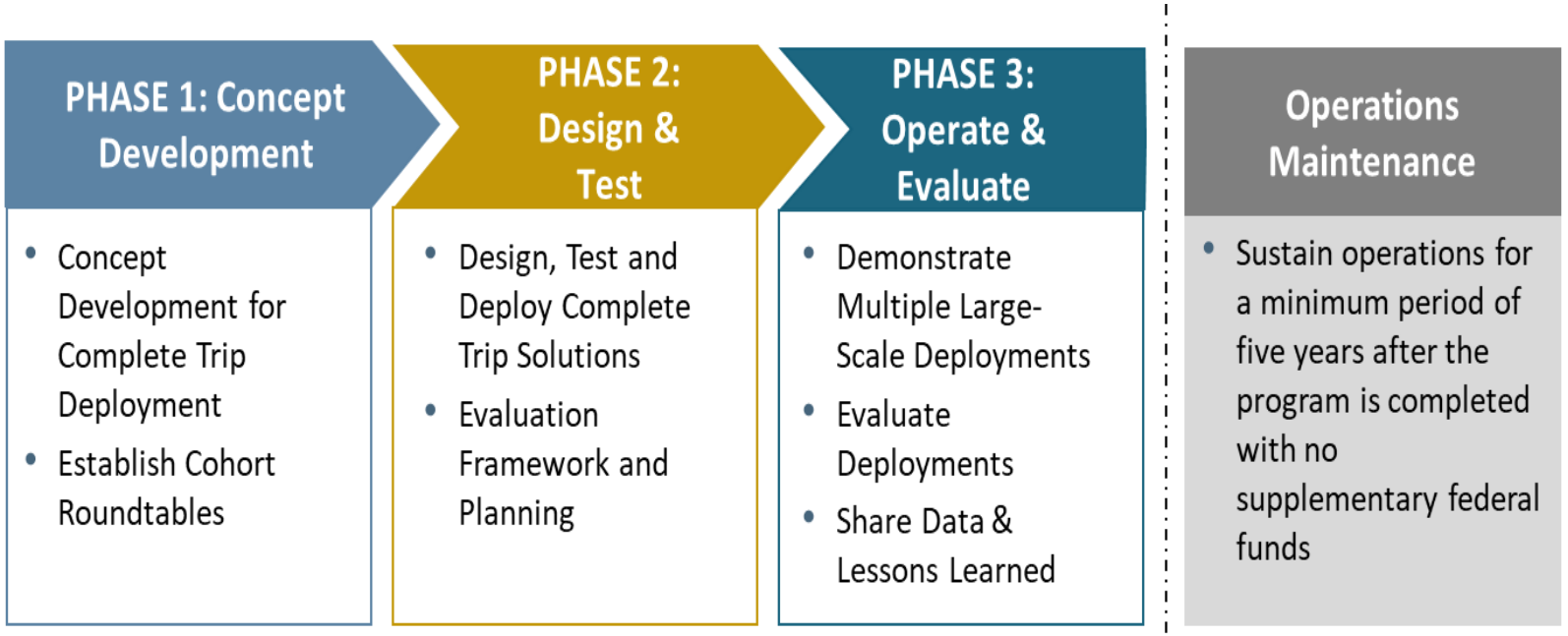
Deployment Phases



- $1 - $1.8 million
- No match required in Phase 1

- $4 million to $12 million Federal share over all three phases
- 20% match for Phases 2 and 3

Concept Phases



- Low-income
- English Language Proficiency
- "Laborland"
- Post COVID-19
- Sales Tax

- MaaS
- Fare payment
- Data sharing
- Efficiency

- TBD
- Where/Who?

- TBD
- MTP

Proposed Concept

- *Application for Independent Mobility – Transportation for Work Opportunities in Greater Orlando (**AIM2GO**)*
- Central Payment System
  - Single payment account to access **all transportation modes**
  - Multiple payment methods
    - Bank Account, Mobile Wallet, Cash, etc.
  - Potential partnership with ridesharing company to subsidize trips
- Multilingual Trip Planner
  - Built on preexisting Trip Planner in development
  - Incorporates all transportation modes/combinations
  - User Interface focused on graphics instead of text
    - Where text is necessary, provide Spanish translation
  - Built on on-board unit (OBU) emulator for Smartphone application

Proposed Concept

- Transit Kiosks
  - Deploy standardized transit kiosks in identified areas
    - Will provide Trip Planner functionality for users without smartphone

- Data and Planning
  - All Personally Identifiable Information (PII) will be removed from accessible data
  - **Aggregated** Origin-Destination and other travel data will be available

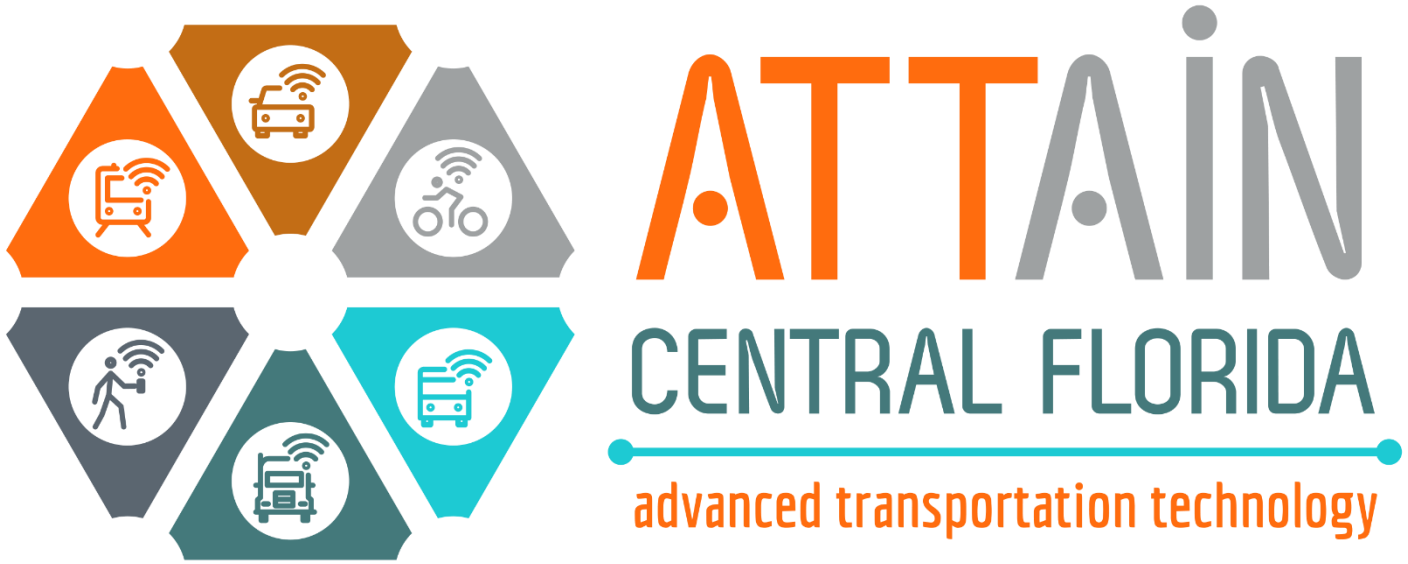
Proposed Concept

- Important Note:
  - The ITS4US Program is divided into 3 Phases
  - We are submitting this proposal for the opportunity to **fully develop** the concept in Phase 1
  - Some details/logistics may not be determined until Phase 1
    - Part of proposal is identifying these unknowns and accounting for them in the process

QUESTIONS?

Eric Hill, MetroPlan Orlando

www.its.dot.gov/its4us



ATTAIN Central Florida

Florida Department of Transportation, District Five

SOURCE: FDOT

Connecting Central Florida

Challenge:

Demand on the transportation system in Central Florida and the need to support underserved communities with safe options are both growing

Solution:

Leverage innovative technologies to connect people, especially those struggling with mobility issues, with places where they need to go and services they need

Connecting Central Florida

FDOT is implementing ATTAIN Central Florida

- Deploys smart transportation technologies that enhance mobility
- Will evaluate deployments to identify best practices and lessons learned
- Proven technologies will be applied to future deployment locations in the region

Meet the FDOT Mission

- Provide a safe transportation system
- Ensure mobility of people and goods
- Enhance economic prosperity
- Preserve the quality of our environment and our communities

ATTAIN Central Florida

Partners

FDOT

- Manages all programs
- Oversees funding
- Responsible for deliverables

metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

- Facilitates collaboration
- Maintains agency support
- Ensures projects meet intended purposes

UCF
UNIVERSITY OF CENTRAL FLORIDA

- Research capabilities
- Data analysis expertise
- Multiple deployment locations on main campus

28

LOCAL GOVERNMENTS AND REGIONAL AGENCIES

Total number that have approved resolutions in support of the ATTAIN Central Florida

ATTAIN CENTRAL FLORIDA
advanced transportation technology

FDOT

ATTAIN Central Florida

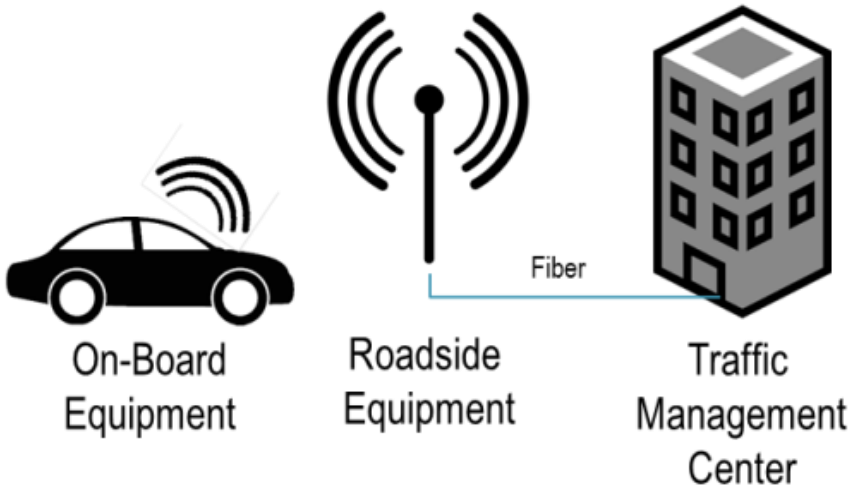
Funding

$11.9
MILLION
FHWA ATCMTD Grant

$53.1
MILLION
Matching Local Funds and VIK Assets

$65
MILLION
Total Program Funding

Transit Signal Priority



Florida Department of Transportation

Transit Signal Priority

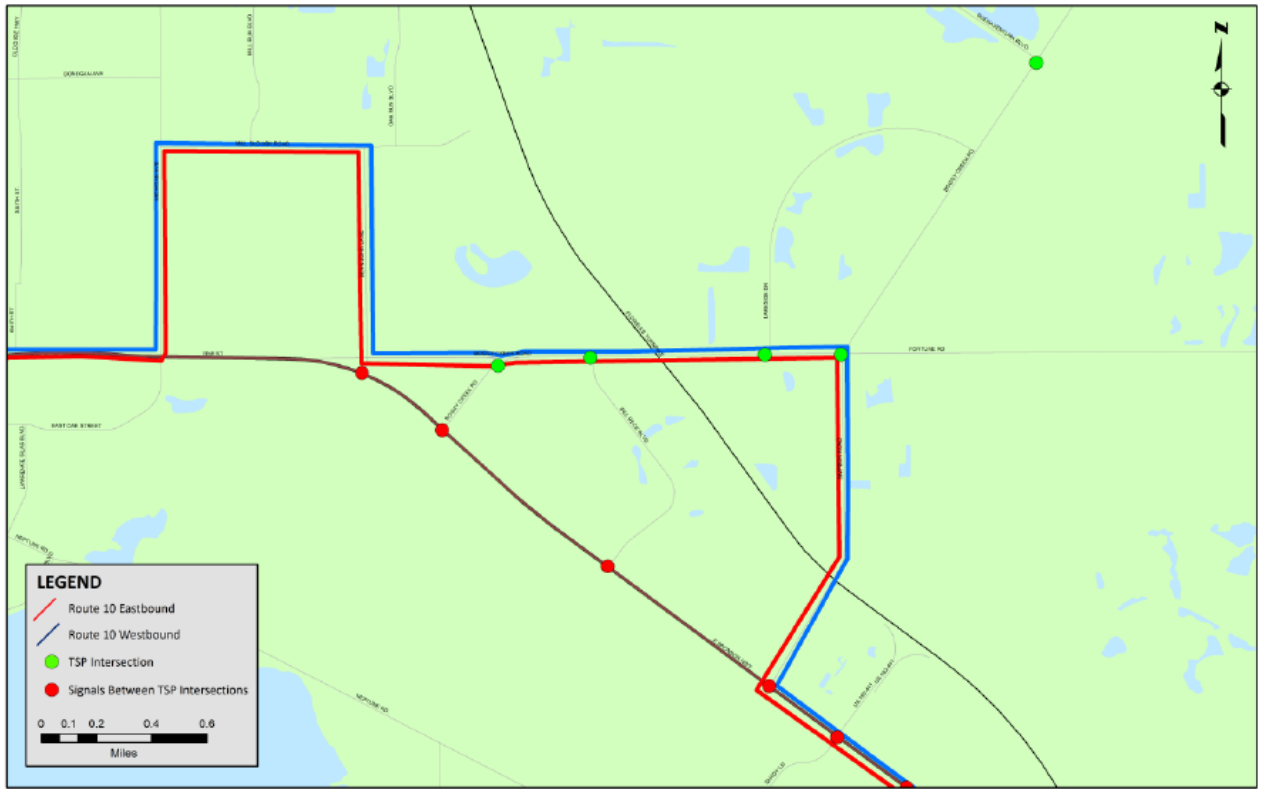


Figure 1 – LYNX Route Map – Link 10

LYNX Route 10 (Kissimmee to St. Cloud)

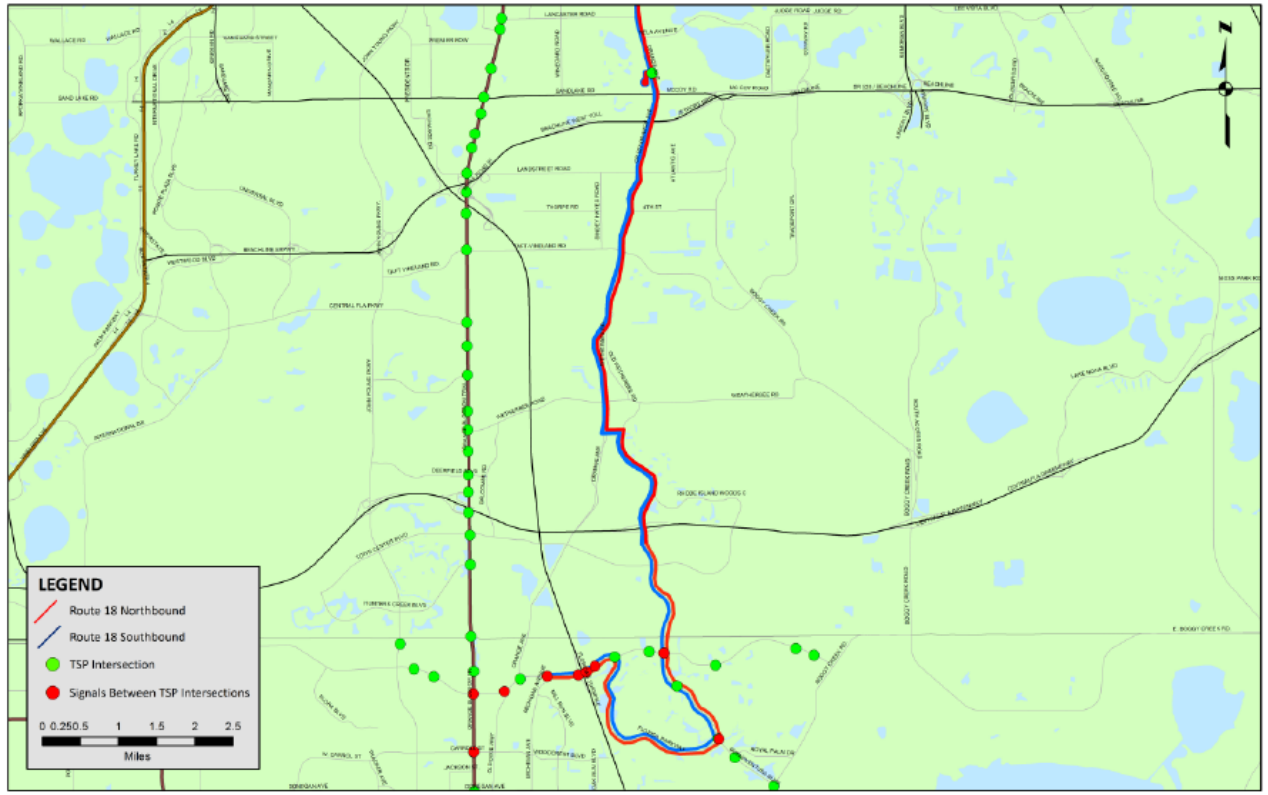


Figure 2 – LYNX Route Map – Link 18

LYNX Route 18 (Kissimmee to Orlando)

Transit Signal Priority

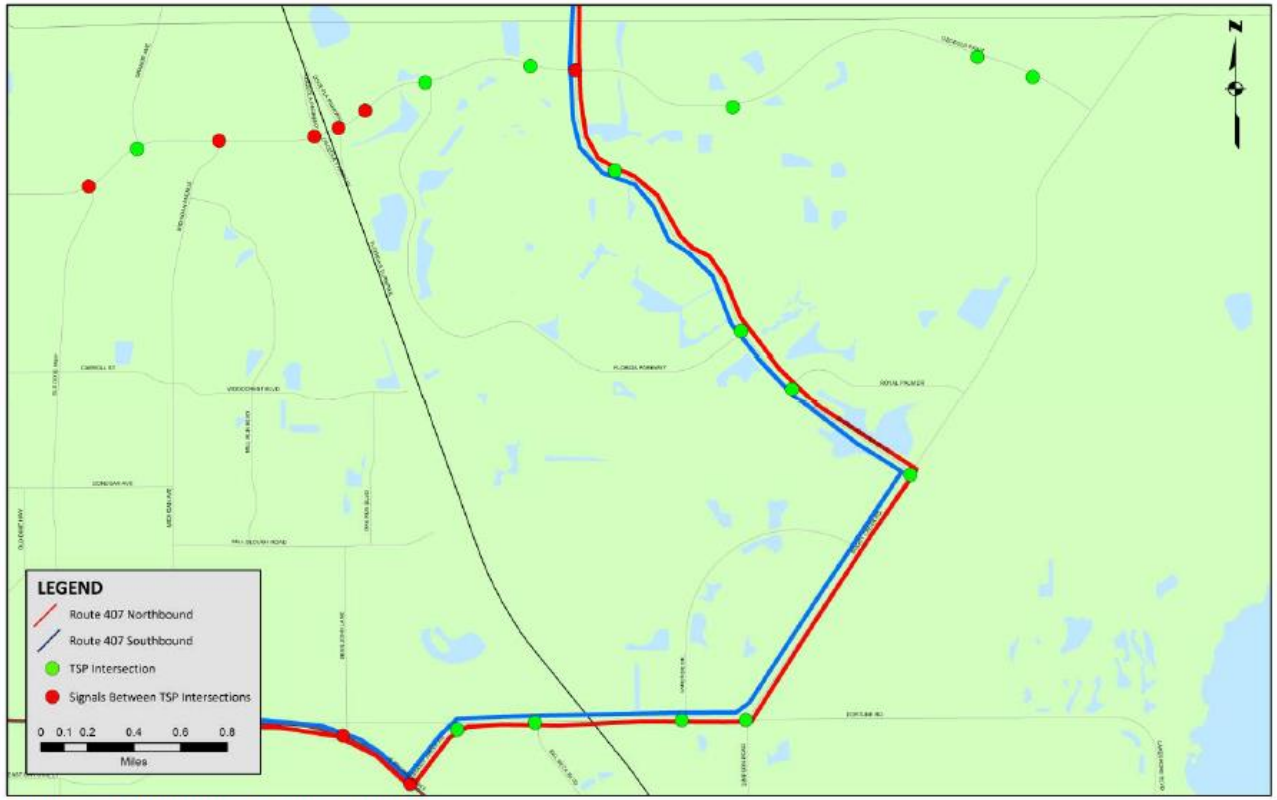


Figure 6 – LYNX Route Map – Link 407

LYNX Route 407 (Kissimmee to OIA)
FastLink

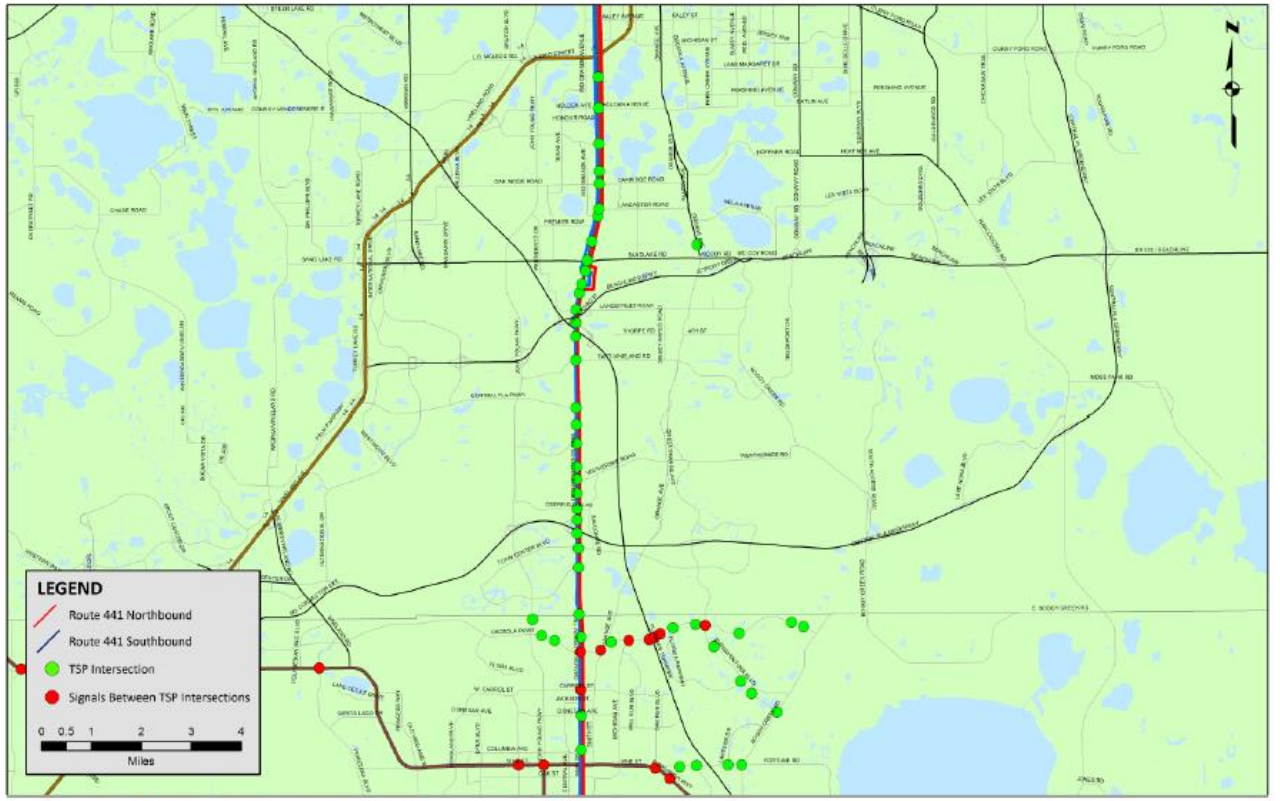


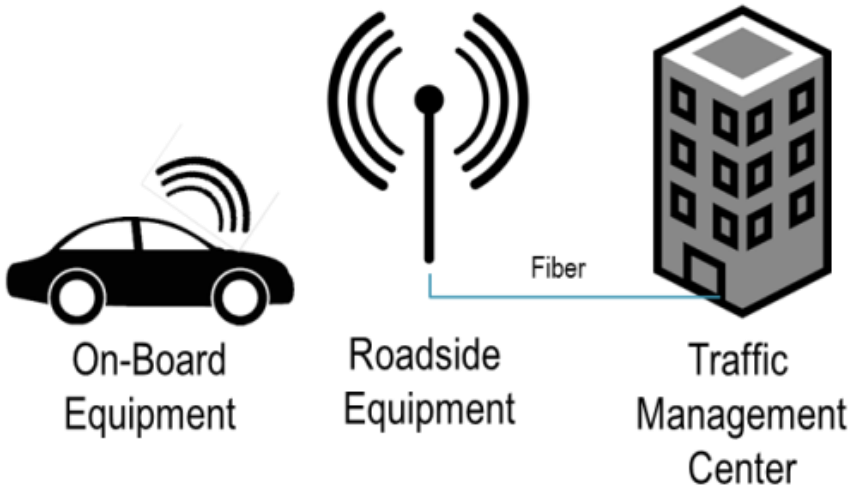
Figure 7 – LYNX Route Map – Link 441

LYNX Route 441 (Kissimmee to Orlando)
FastLink

Phase 2 and 3

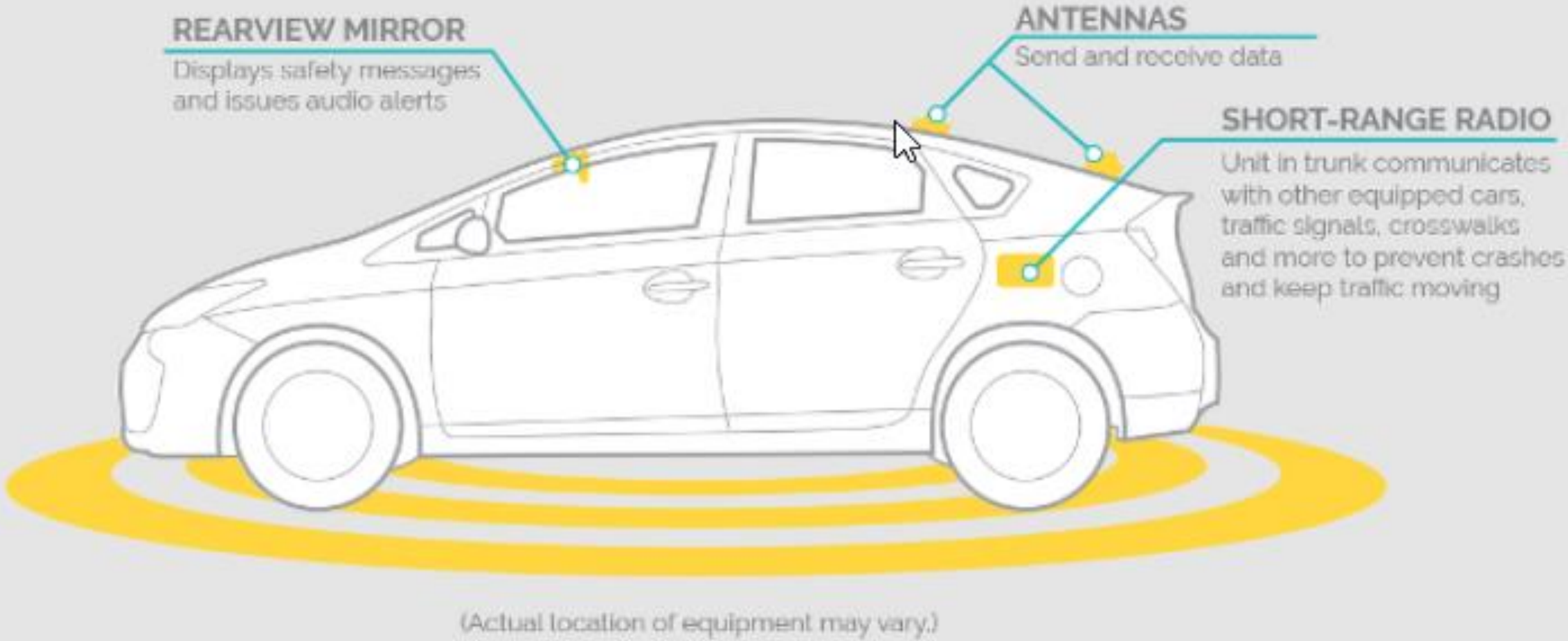
- All phase selectors are in place
- In testing

On-Board Unit (OBU) Presentation



Florida Department of Transportation

OBU Equipment & Location



So these apps … are they like my iPhone?

- YES!
- Only there is no app store yet
- The apps don’t work right until you tweak them with your own programmer
- There are very few developers
- Applications have to handshake with the security system so do one can add applications on the side (“side loading”)
- New products come via downloads
- Old phones are supposed to work with newer ones

So FDOT wants to spy on me and share my location with everyone, huh?

- NO!
  - The technology incorporates privacy
  - The technology does not track you. It provides information when in range of a receiving unit only
  - It changes your ID multiple times an hour to prevent tracking
  - The package is encrypted like a VPN by something called an SCMS*
  - The information a driver sees is the warnings

*SCMS – Security Credential Management System

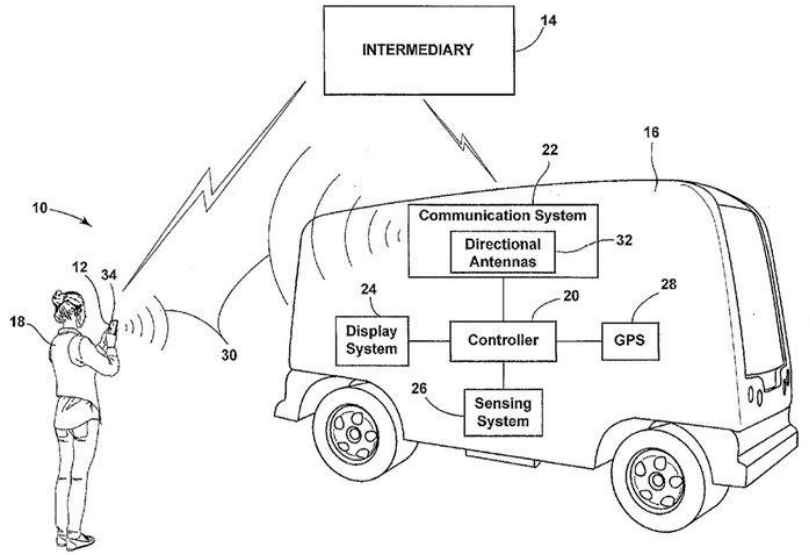
So you are trying to turn my vehicle into an autonomous car? I am not going to let it drive.

- This is connected vehicle technology
- It is vehicles talking to each others
- It is made to warn you and other drivers (like your backup camera might do)
  - Sorry if you think these are annoying
  - The goal is to improve safety, most importantly your safety
- This technology is not made to drive your car or take decisions out of your hands

OBU Equipment & Location

- Procure, prepare, install, configure, and test the OBU installation
- OBU is configured with Statewide Security Credential Management System
- Ensure installation staff is ASE certified
- Support and Maintenance
- Schedule time and location

Autonomous Shuttle



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Items for Coordination

- Charging Infrastructure Needs
  - 120V power supply; contractor added whip
- Vehicle Storage Area
- Signing and Pavement Markings
  - Repurposed the share trail and transit symbols


10

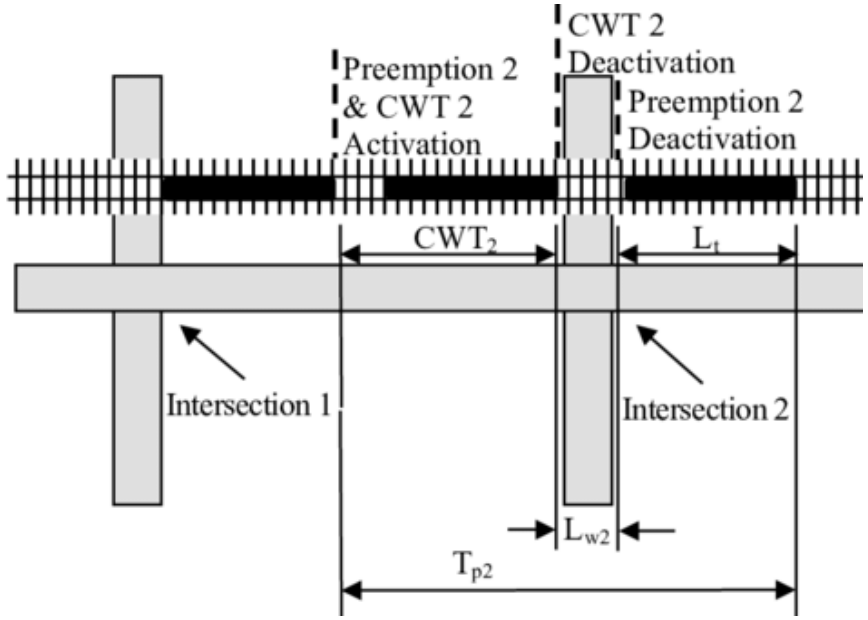
Greenway

Adaptive Traffic Signal Interface with Positive Train Control

- Overall Goal: To use the location data from a Train AVL system to better move traffic through signalized intersection near the crossings.

SOURCE: ORLANDO BUSINESS JOURNAL

Adaptive Traffic Signal Interface with Positive Train Control



Florida Department of Transportation

Greenway

Project Locations

- 442739-1-93-01 Project focuses on three SunRail crossings and nearby intersections in Seminole County.
  - SR 434 and CR 427 Railroad Crossing
  - SR 436 and CR 427 Railroad Crossing
  - Lake Mary Blvd and C-15 Crossing

SOURCE: ORLANDO BUSINESS JOURNAL

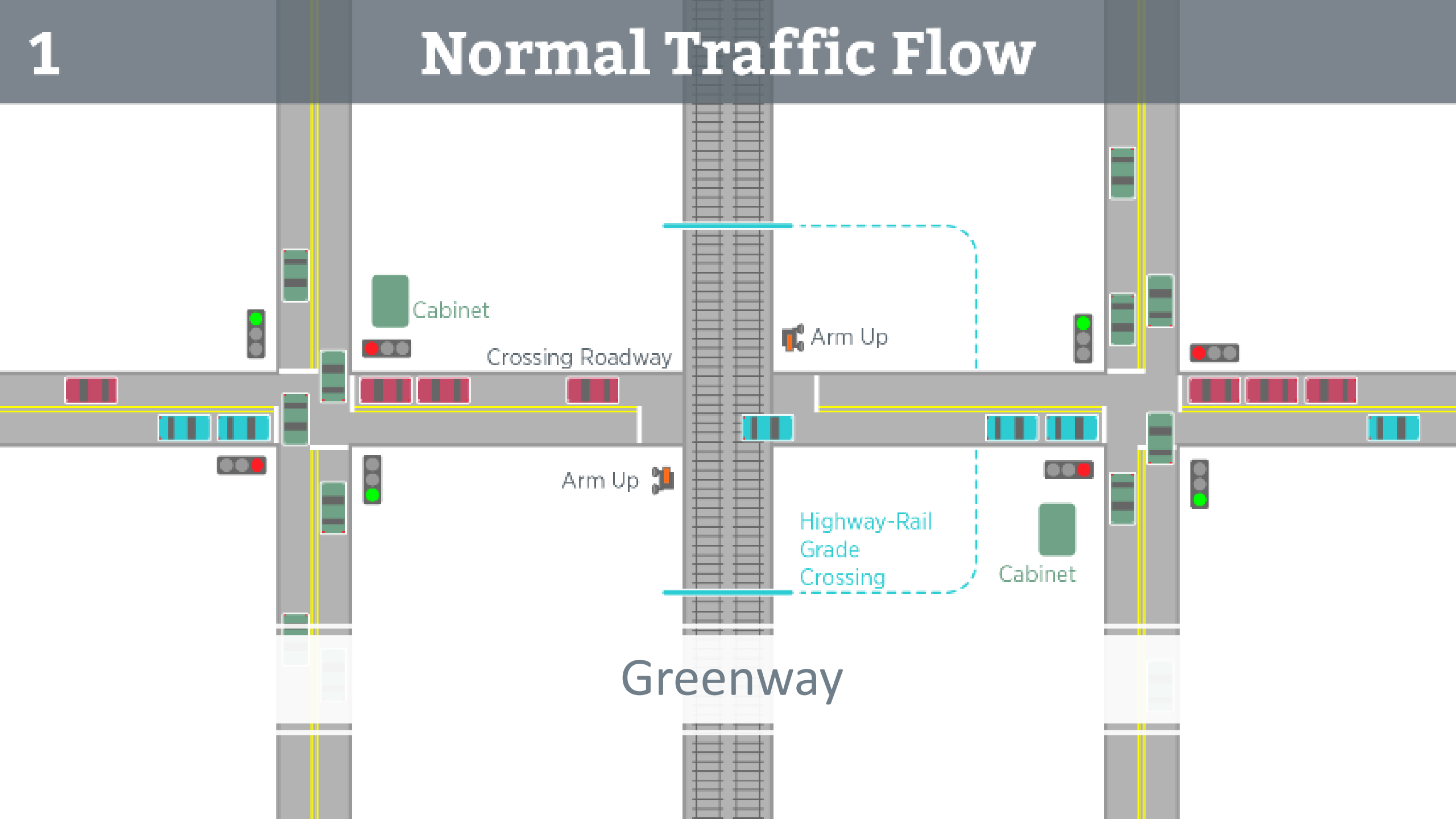
Greenway

Scope of Work

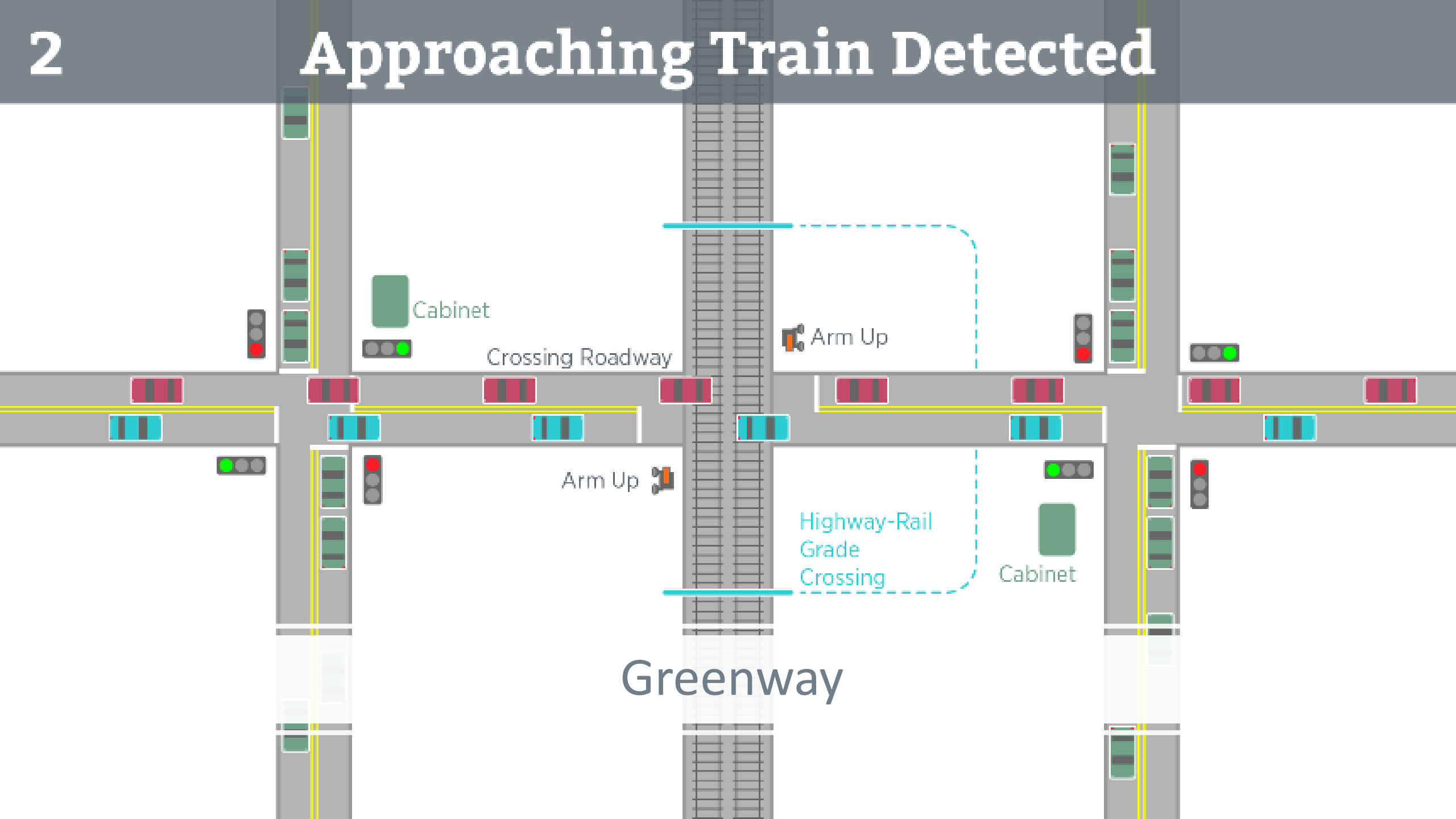
- Vendor doing development is Cubic/Trafficware
- They manufacture the traffic signal controllers and ATMS software used in Seminole County.
- This project creating software modules to ATMS.now and SynchroGreen to allow input and understanding of the SunRail SDI data.
- SunRail SDI data is the real-time train location and stops.

SOURCE: ORLANDO BUSINESS JOURNAL

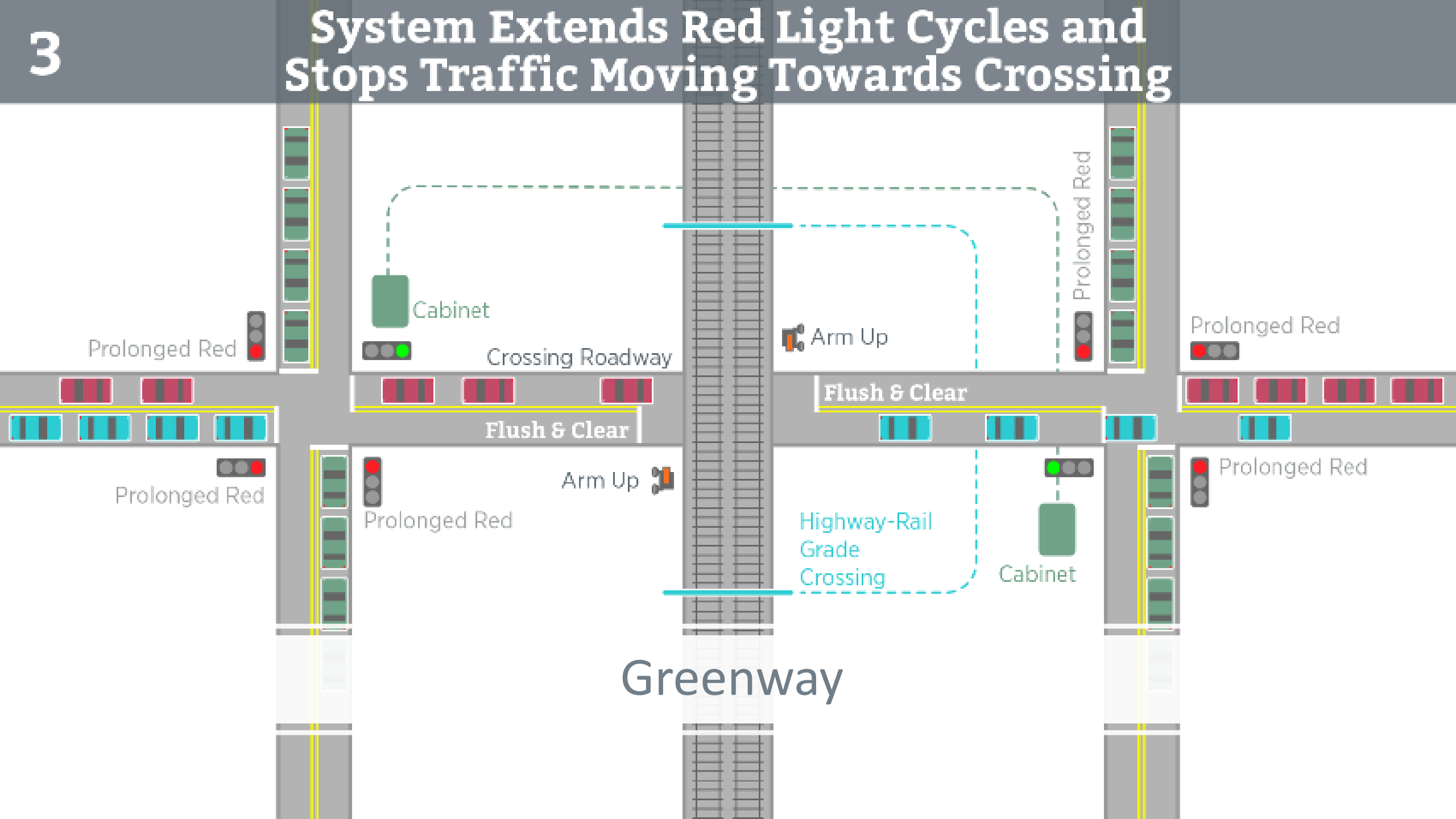
1 Normal Traffic Flow



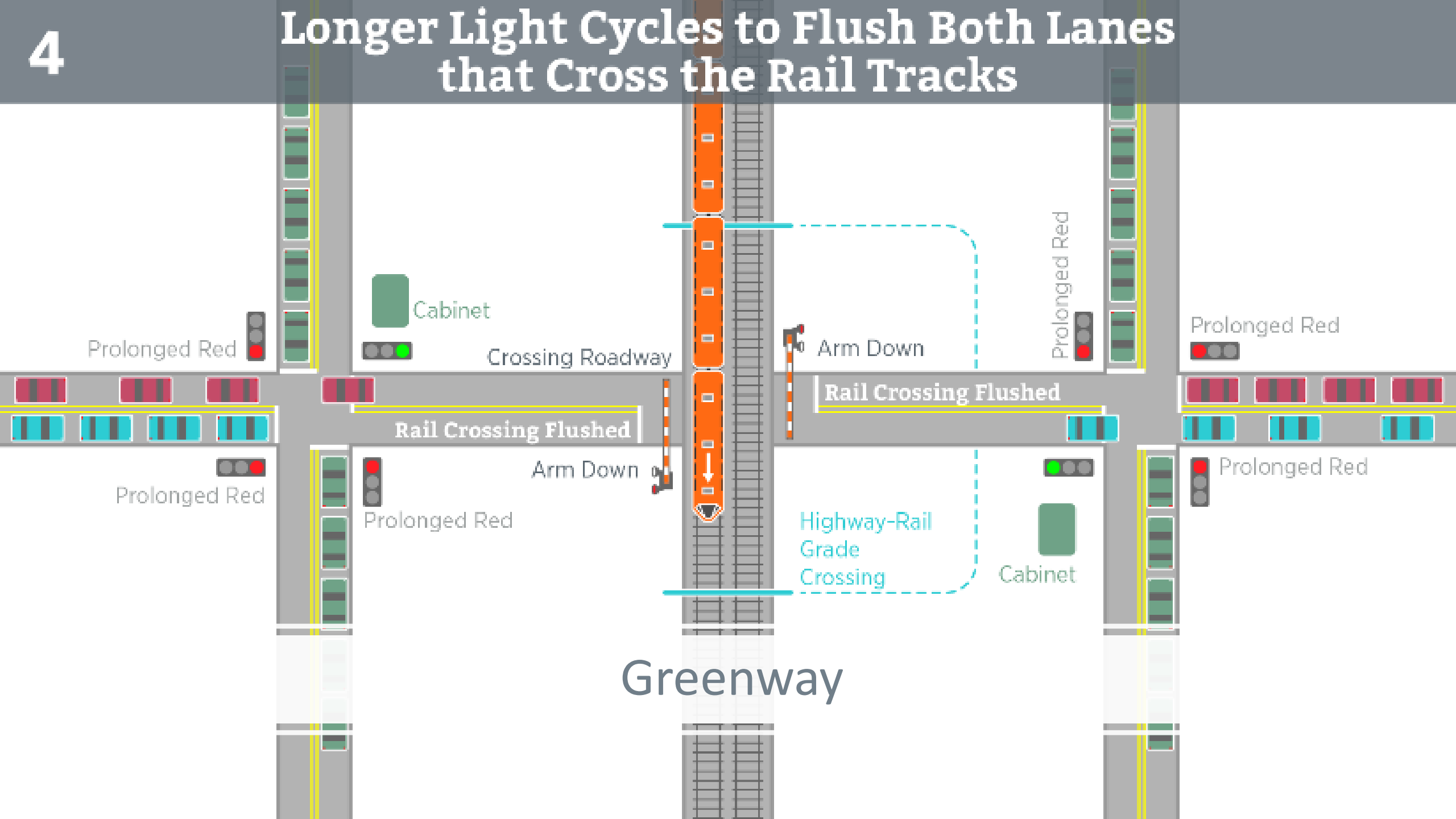
2 Approaching Train Detected



3 System Extends Red Light Cycles and Stops Traffic Moving Towards Crossing



4 Longer Light Cycles to Flush Both Lanes that Cross the Rail Tracks



Greenway

Project Status

- White list access to the SunRail SDI data feed complete and tested.
- SynchroGreen adaptive signal control logic to allow programming to shorten red lights or holds green lights to provide clear movements about to be blocked by train crossing complete.
- ATMS.now enhancement to bring the SunRail SDI as an input in testing.
- Deployment of new software in Seminole County TMC scheduled for week of July 20th.
- 60 days of field fine tuning of signal timings to begin the first week of August 2020.

SOURCE: ORLANDO BUSINESS JOURNAL

FDOT

Regional Integrated Corridor Management Software

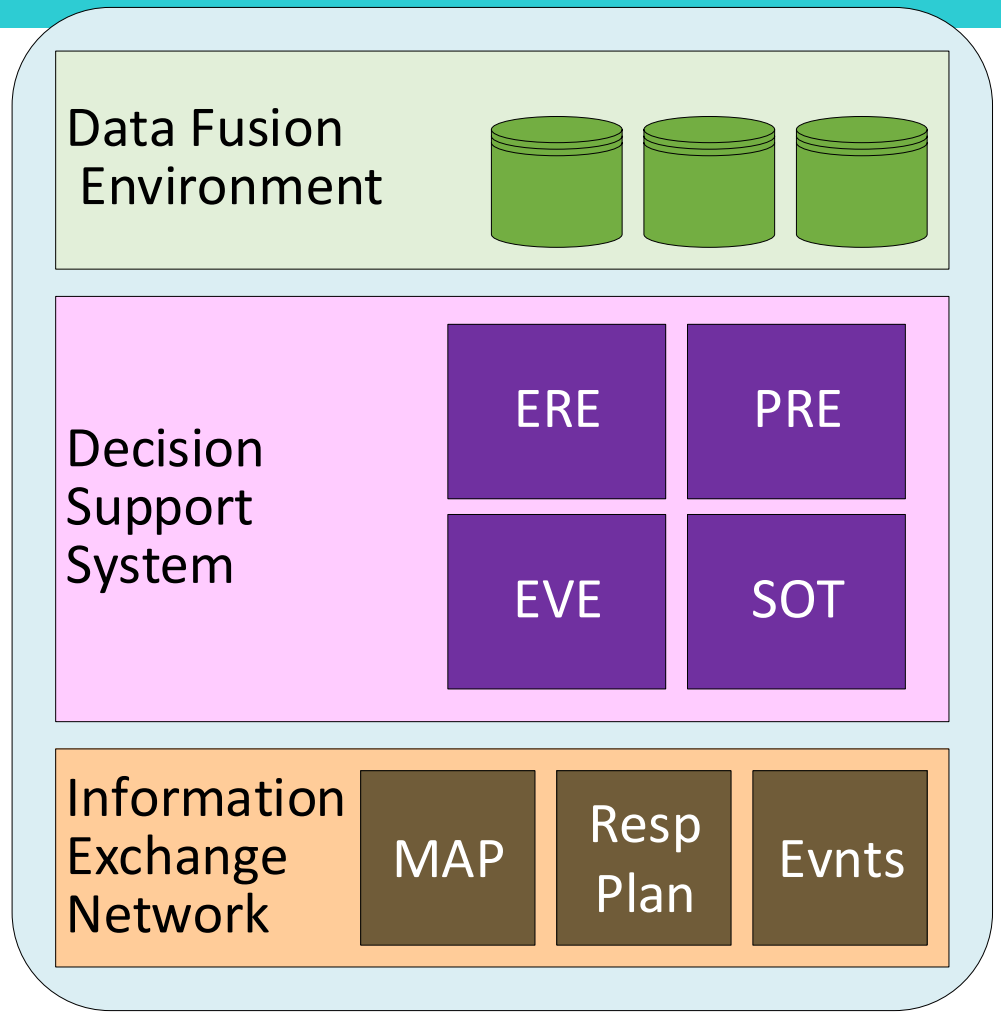
Florida Department of Transportation

FDOT

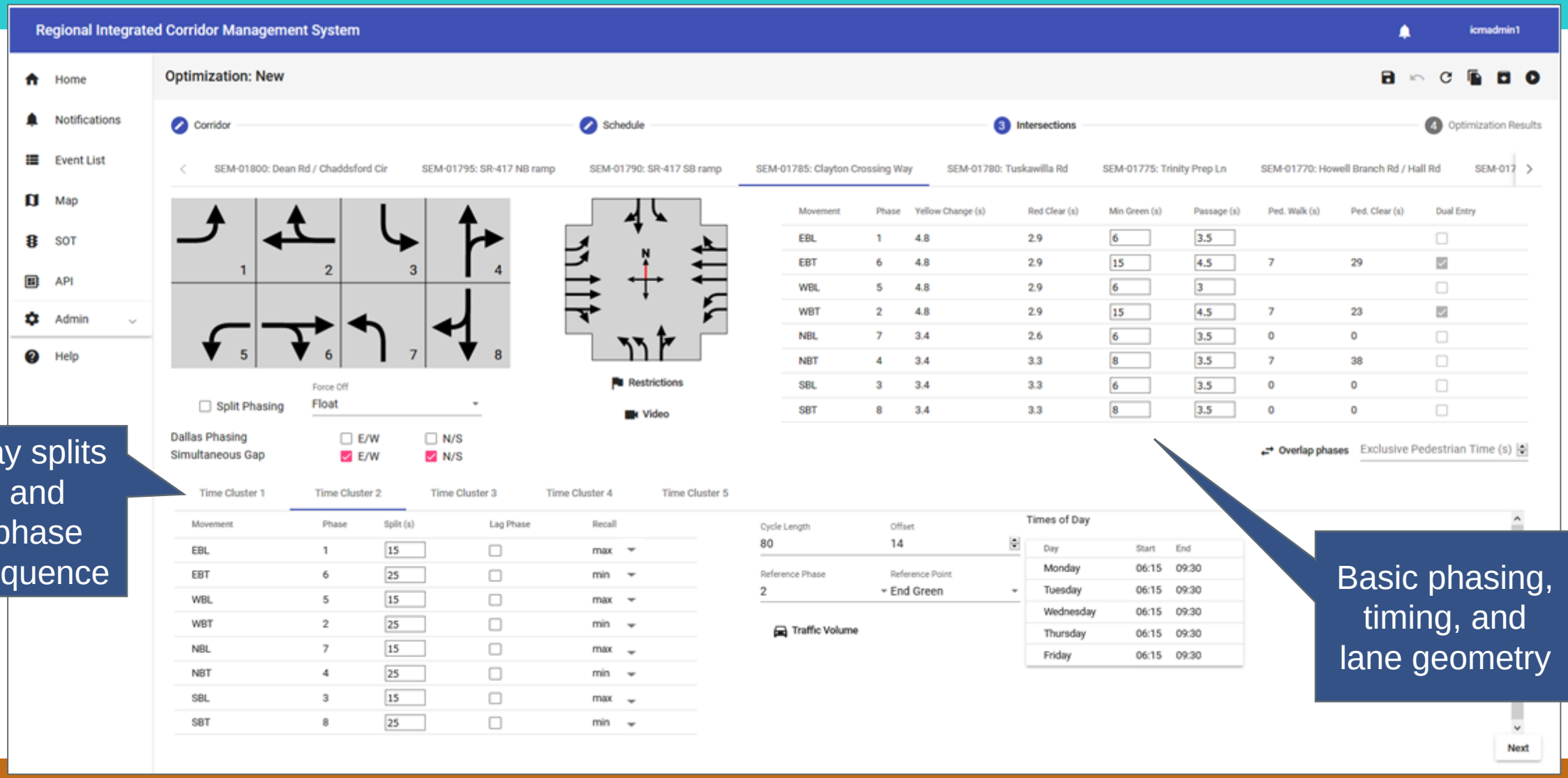

Coordinated Incident Response Automation
SwRI
TMC
2
3
4
8
1
6
5
LANES CLOSED AHEAD
DETOUR EXIT 32A
MAPLE TO POTTER
7
CHERRY ST.
ELM ST.
MAPLE ST.
POTTER ST.
3
Regional Operations
LEGEND
Detour Route
DOT Owned Signal
City Owned Signal
1 Incident occurs
2 DSS detects incident, evaluates responses, recommends route
3 Corridor manager receives notice, approves route; then regional operators receive notice, approve route
4 Corridor manager receives approvals, deploys route (one-click)
5 Route signs show info to drivers
6 Route RSUs broadcast info to vehicles
7 Route signals switch timing plans
8 Corridor manager monitors, clears incident (one-click)

FDOT Central Florida Regional ICMS

- Three layer architecture
  - Data Fusion Environment – Data Layer
    - Regional one stop shop for transportation data
  - Decision Support System – Business Layer
    - Expert Rules Engine: selects, filters, proposes response plans
    - **Predictive Model:** rank the response plans
    - **Evaluation Model:** evaluate performance of response plan, recommend improvements
  - Information Exchange Network – Presentation Layer
    - Users view of transportation system
    - Create / edit pre-planned events
    - Coordinate response plans



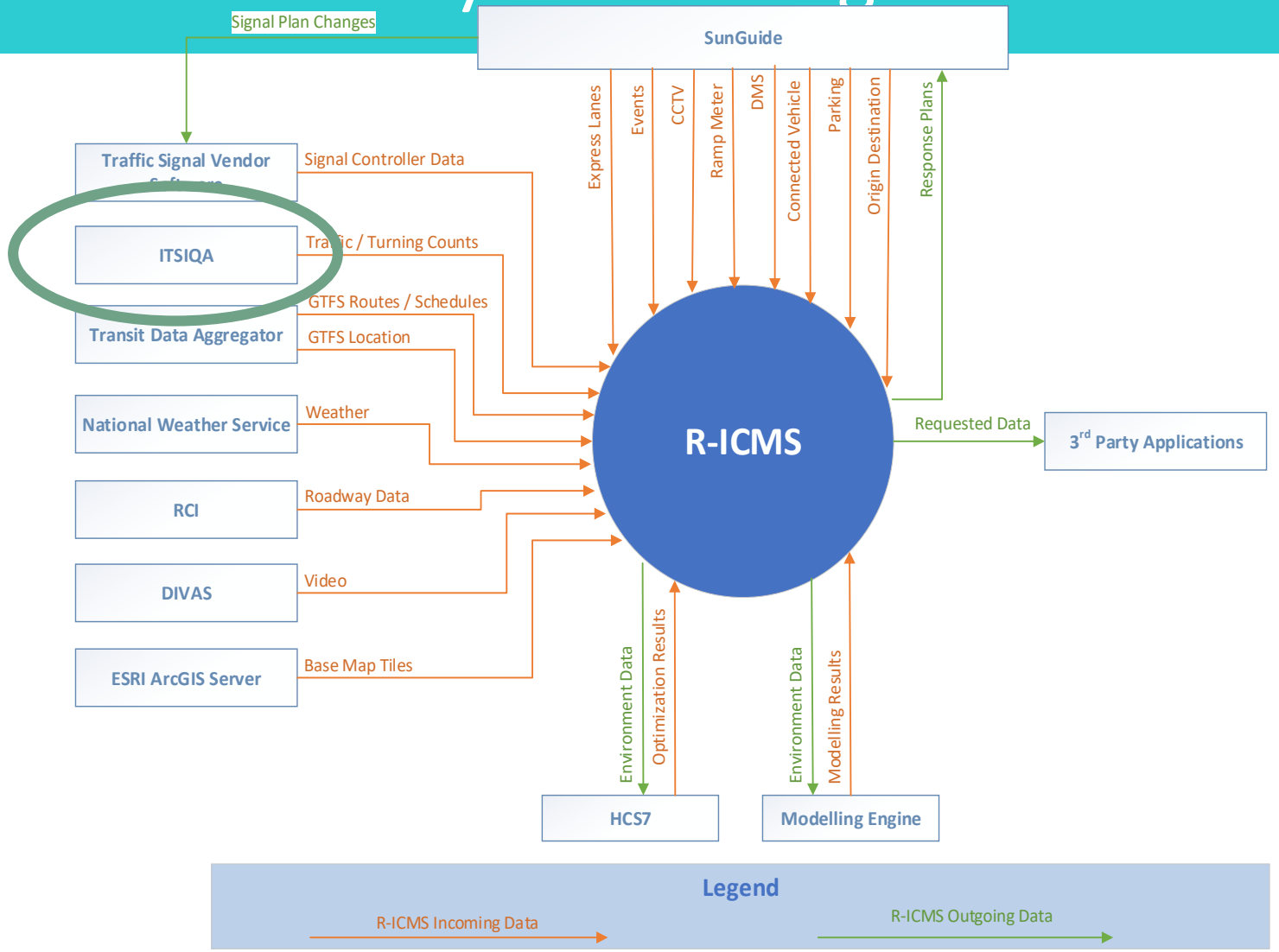
R-ICMS Signal Optimization Tool



day splits and phase sequence

Basic phasing, timing, and lane geometry

R-ICMS Systems Integrations



- Interfaces
  - ~~FDOT ATMS~~
  - FDOT SIIA
  - ~~FDOT ITSIQA~~
  - Third Party signal vendors
  - Third party traffic simulation
  - Third party signal optimization
  - Public transit GTFS feeds
  - Public NWS feeds
  - Other public data

Making Changes to ITSIQA

- Adding logic based on UCF research
- Using existing detection to approximate TMCs
- Requires accurate data about the intersection
  - If update channels and/or detection it **MUST** be **Updated** in **SIIA**
  - If not SOT will give false results
  - Accounts via cflsmartroads.com or Aurelio

NOEMI and SunStore

Florida Department of Transportation

FDOT DISTRICT 5

SUNSTORE DATA PICKER

Back To sunstore

Performance Measures | Sensor | Volume

STEP 1: DATA SETS

1. CHOOSE DATA SET(S)

Crash × C2C × Here × Itsiqa ×

STEP 2: DATE/TIME

1. CHOOSE DAY(S) OF THE WEEK:

S M T W T F S

2. CHOOSE DATE(S):

3. CHOOSE TIME(S):

DATE RANGES (14 DAY LIMIT):

07/07/2020 - 07/21/2020 ×

TIME RANGES:

07:00 - 18:00 ×

RESET

GET DATA MEOW

STEP 3: MAP SELECTOR

1. Select Roadway From The Map By Clicking On The Desired Roads Or Selecting From The Drop Down

SELECT BY ROADWAY NAME

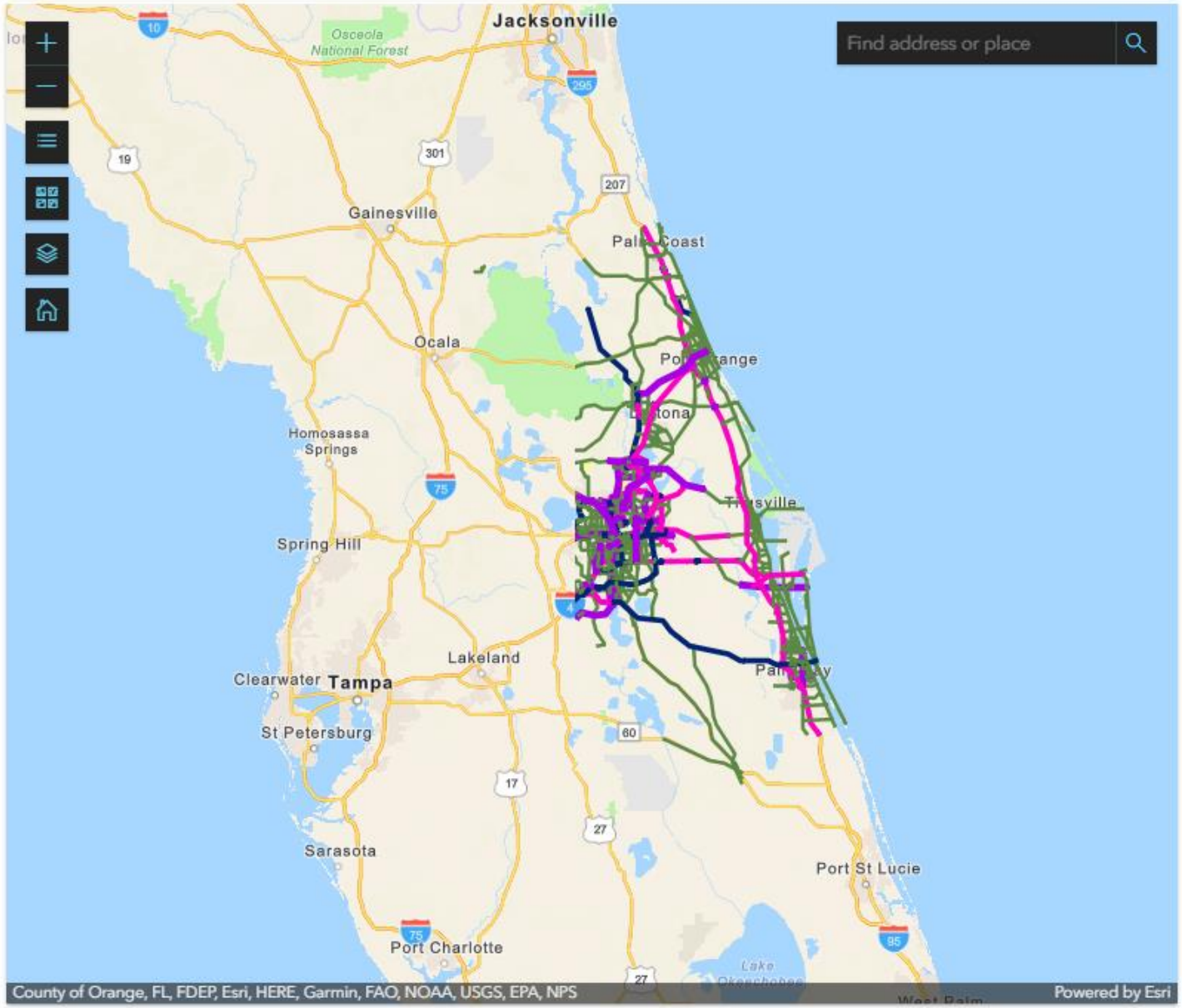
Select...

2. To Continue Complete The Following Step. Select A Single Roadway From The Grid Below.

NAME	B...	EM...

3. Once Road Is Selected From The Above Grid, The Option To Select A Sub-Segment Of Roadway Will Become Active. Use The Tool To Refine Roadway Selection By Drawing A Polygon. Use The Tool To Clear And Reset The Roadway Selection.

4. The Beginning And Ending Mile Post Below Reflects The Roadway Selection. Users Can Update The



https://sunstore.cflsmartroads.com/

FDOT NOEMI

Projects | User | Basemap | Intersections | Layers | SIIA | Filter | Import | Reports | Help

Current View:

Smart Signal Completion

Switch to Detailed View

A summary of the progress toward making a signalized intersection "smart", as determined by the following five criteria:

- Connection to a network
- Generation of ATSPM data
- Generation of IMC data
- Installation of an ATC controller
- Wiring for optimal detection

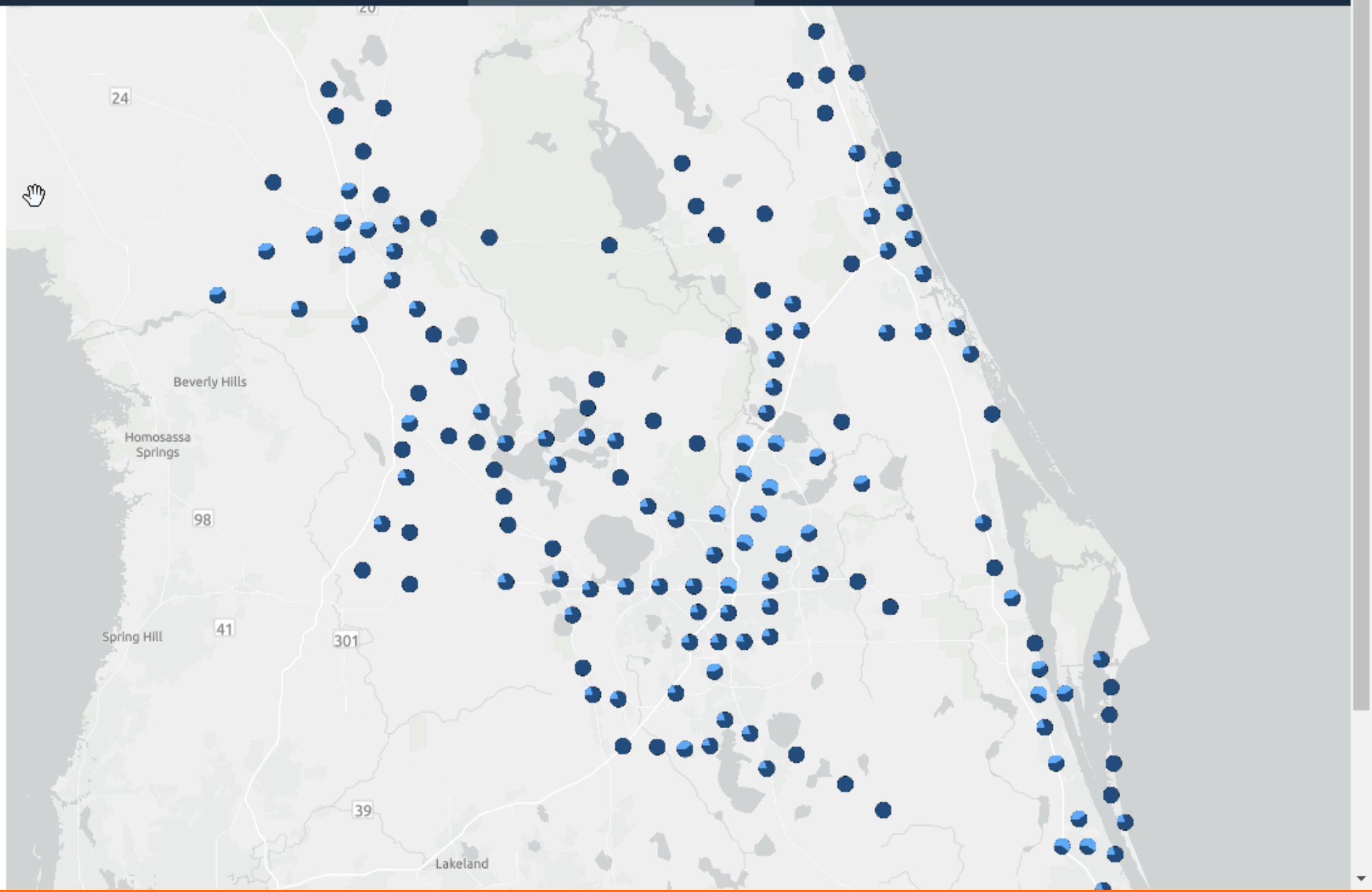
Legend

Activate Add Intersection

Activate Print Mode

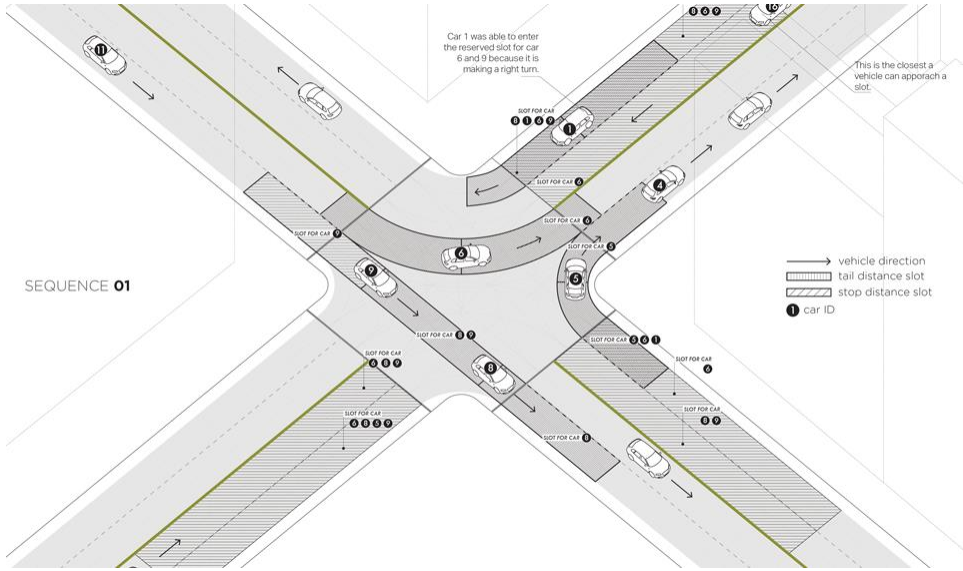
Maintaining Agency Filter

No Maintaining Agency Filter Active



https://noemi.cflsmartroads.com/

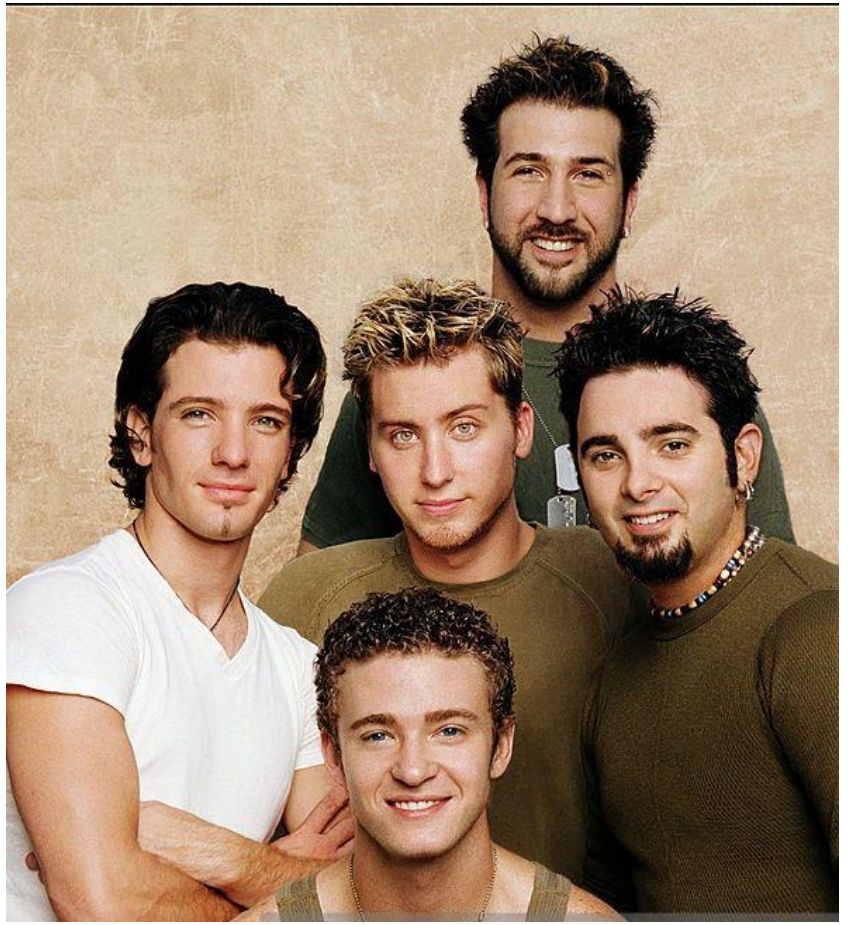
Intersection Details



Florida Department of Transportation

Intersection Details

- Working with Seminole County
- Looking at Rhythm and R-ICMS
  - Pattern calls move Rhythm into detector mode
- HERE WE GO!



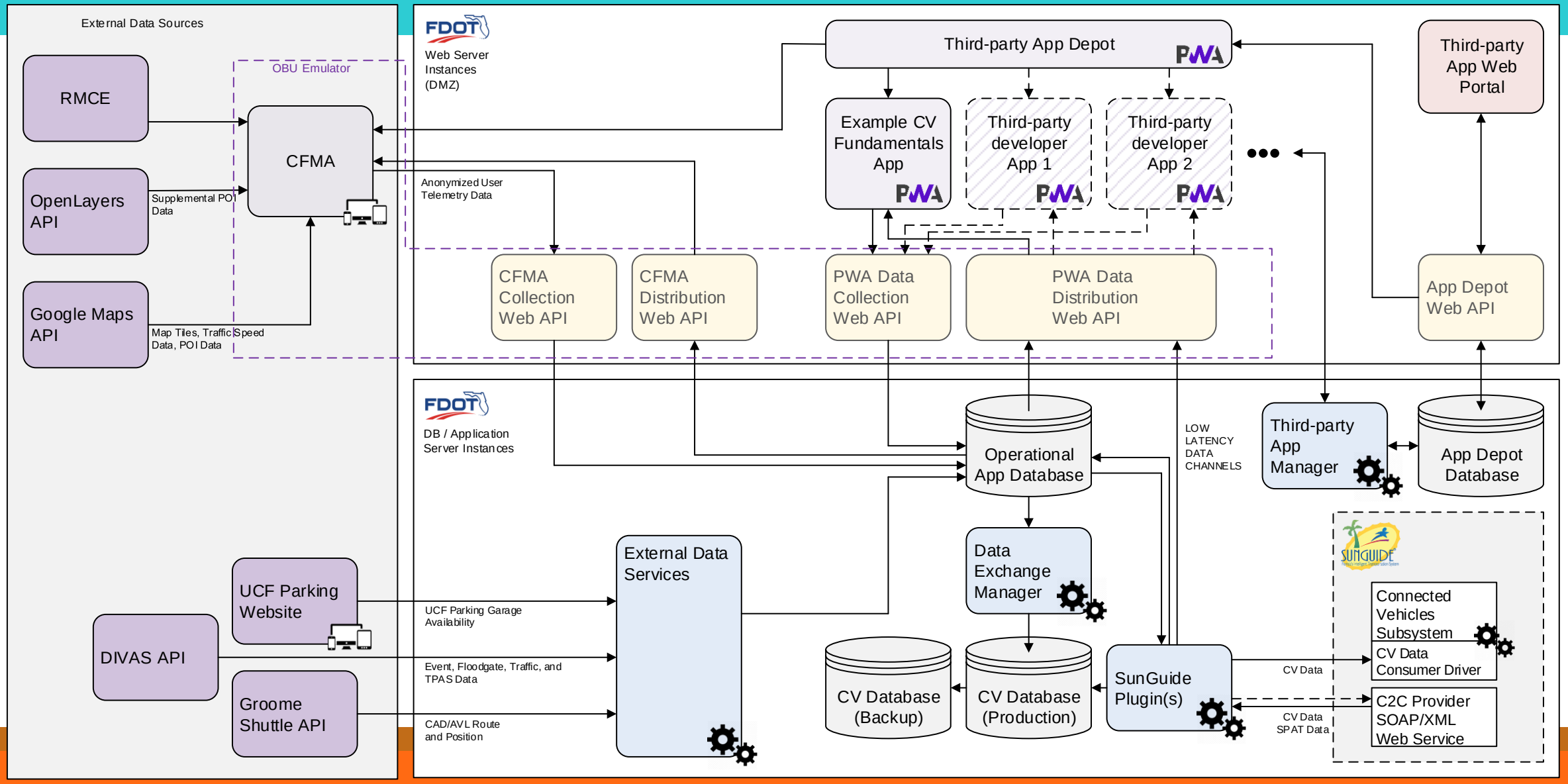
OBU Emulator

Florida Department of Transportation

OBU Emulator

- Concept of Operations in review this week.
- Preliminary Design underway.
- 3 Main Interrelated Systems comprise the OBU Emulator
  - Central Florida Mobility Application (CFMA)
  - Third-party App Depot (including approved third-party applications)
  - Third-party App Web Portal
- High-Level Architecture can be seen on the next slide.

OBU Emulator



OBU Emulator

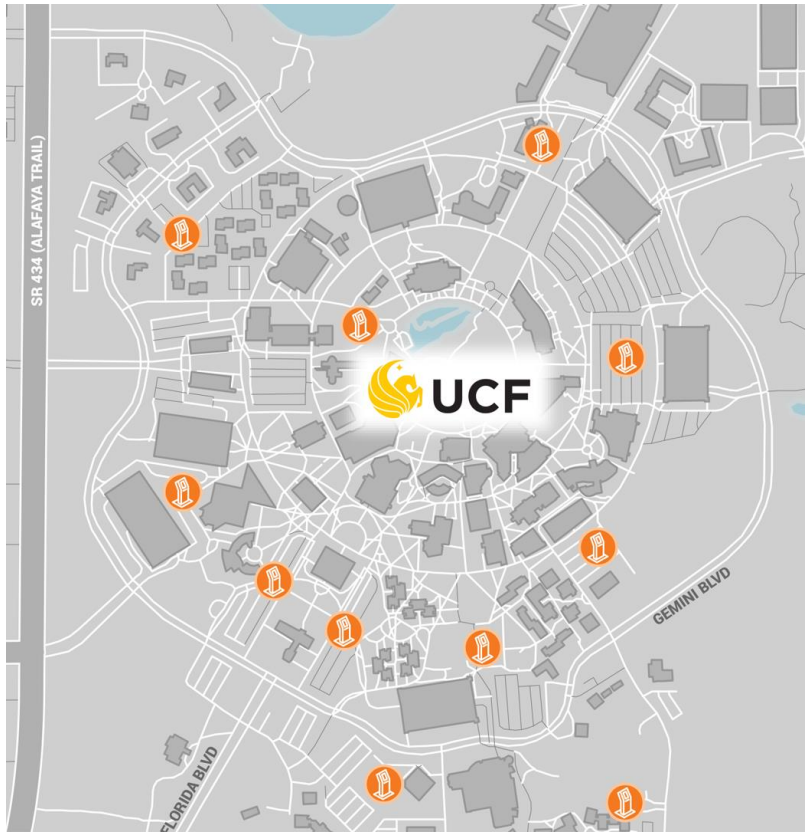
- FDOT D5's goal is to provide users with useful mobility-related information and improve pedestrian safety. In order to achieve the latter goal, the CFMA, CV Fundamentals App, and third-party developer apps **will have to achieve a sufficient density of users** to be able to frequently alert drivers of approaching cyclists, pedestrians, and/or other vulnerable road users via third-party developer apps.

Location Accuracy is still a concern

- Looking at PedSafe Phase II for **ATCMTD 2020 Grant**
  - Deployment along SR 436 from Montgomery Road to US 17/92 (Altamonte Springs)
  - Improved Pedestrian Detection via enhanced LiDAR
    - Deploy Enhanced LiDAR at intersections with heavy ped traffic
    - Deploy Bluetooth / C-V2X at all intersections along route
  - Advanced Localization Technique
    - Using advances in indoor localization to improve outdoor positioning
    - Trilateration process with RF fingerprinting
    - Apply Machine Learning algorithm to data captured from older & newer phones to generate improved location information

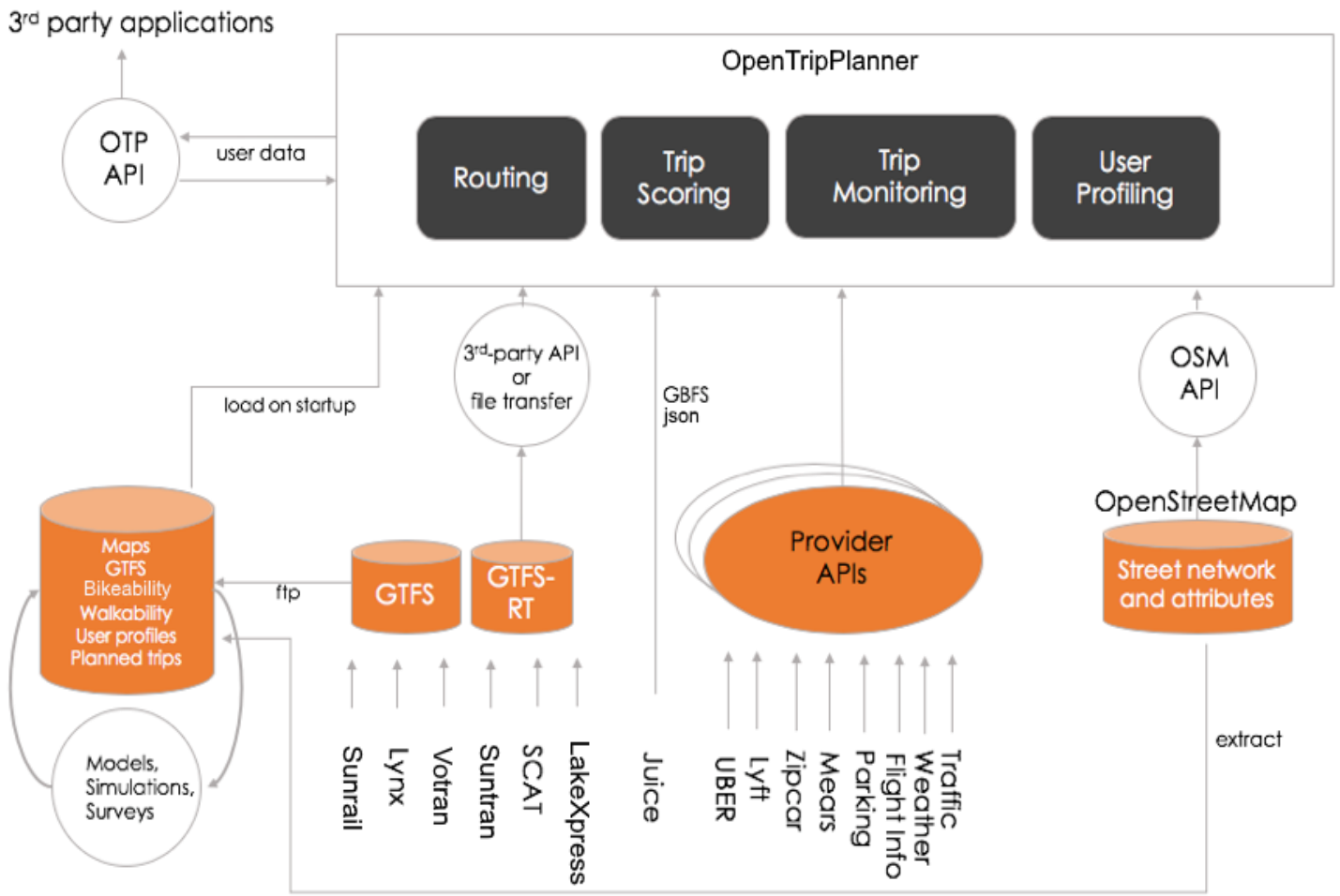
Smart Community

Florida Department of Transportation



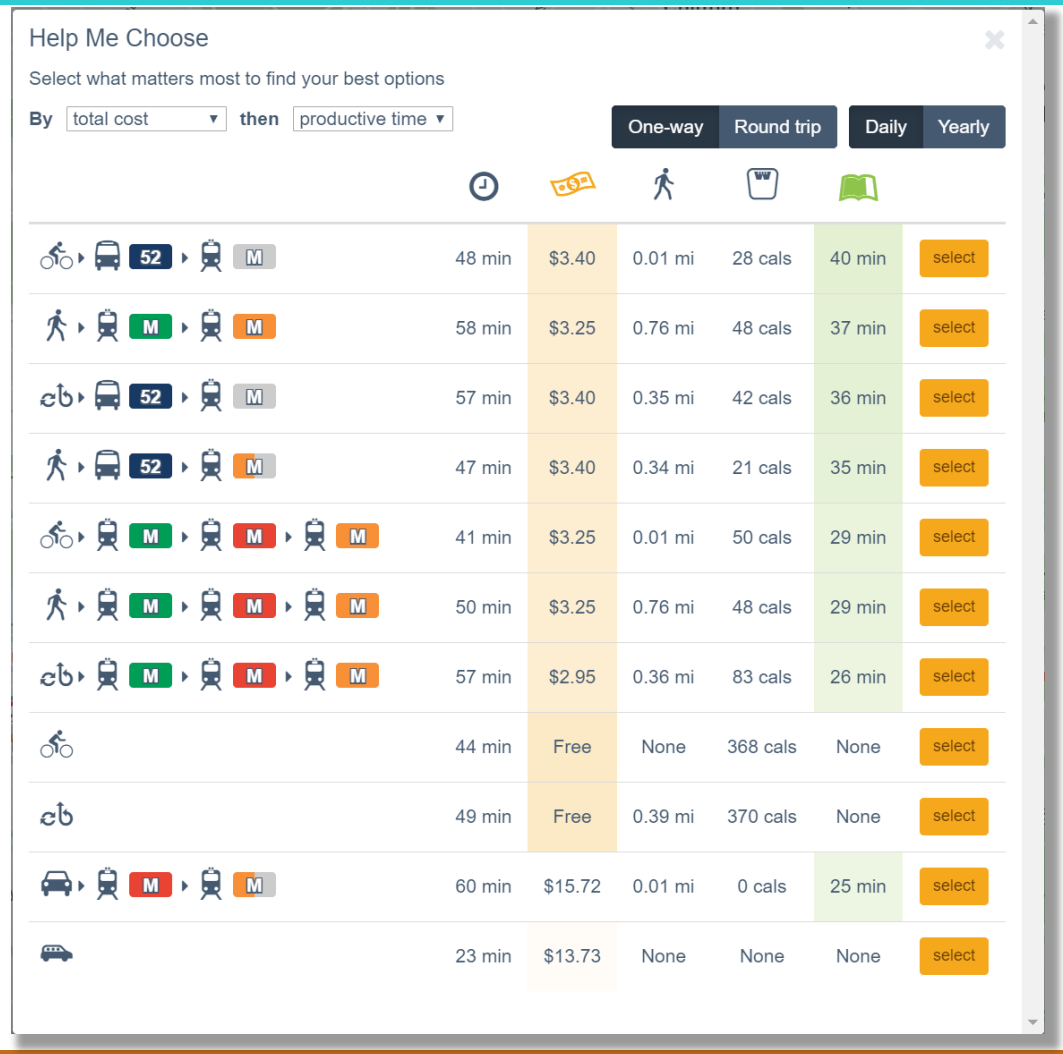
Route and Mode Choice Engine

- The Route and Mode Choice Engine will include four primary components and/or systems:
  1. APIs and Data Sources
  2. Routing Engine
  3. Trip Scoring
  4. Real-Time Trip Planning and Monitoring



Route and Mode Choice Engine

- Based on the Open Trip Planner open source software.
- How it works
  - Users will input their destination requests from mobile applications and transit kiosks.
  - Users will provide decision-making parameters and constraints: such as, things like “Time”, “Cost”, “Total Walking Distance”, “Calories Burned” or “Productive Time”.



Reaching the Public

- As a web-based service, the Route and Mode Choice Engine will be accessible in a variety of ways.
  - Smart Phones
  - Transit Kiosks

ATTAIN Central Florida

For more information, please visit:

www.CFLSmartRoads.com

ATTAIN
CENTRAL FLORIDA
advanced transportation technology

New Florida Law: Essential State Infrastructure (SB 7018)

David Williams, VHB

https://flsenate.gov/Session/Bill/2020/7018/BillText/er/PDF

FLSenate.gov – search Bill Number 7018

Transportation Systems Management & Operations

FDOT TSM&O
Transportation Systems Management & Operations

CENTRAL FLORIDA TSM&O CONSORTIUM

Essential State Infrastructure (SB 7018)

- Took effect **July 1, 2020**
- Concerns *essential state infrastructure*, including:
  - The planning, design, and construction of **"Staging Areas" on the turnpike system** for public assistance during declared states of emergency
  - The development of a **master plan for EV charging station** infrastructure on the SHS

Turnpike System – Emergency Staging Areas

- Allows for FDOT/FTE to plan, design, and construct “staging areas to be activated during a declared state of emergency at key geographic locations on the turnpike system.” (Pages 2-4)

- Staging areas will facilitate emergency response and assistance:
  - Evacuations
  - Deployment of emergency-related supplies and personnel
  - Restoration of essential services

Turnpike System – Emergency Staging Areas

- Emergency supplies can be stored at staging areas for dispersal to the public as needed:
  - Water
  - Fuel
  - Generators
  - Vehicles
  - Equipment
  - Other related materials

Turnpike System – Emergency Staging Areas

- Criteria for Location:
  - Facilitates the wide dissemination of supplies and equipment
  - **Provides ease of access to major highways and other transportation facilities**
  - Large enough to stage a significant amount of supplies and equipment
  - Provides space in support of emergency preparedness and evacuation activities, such as fuel reserve capacity
  - **Could be used during nonemergency periods for commercial motor vehicle parking and for other uses**
  - Is consistent with other state and local emergency management considerations

Turnpike System – Emergency Staging Areas

- Priority of placement consideration:
  - Counties with population less than 200,000 that have a qualifying MCORES facility

EV Charging

- FDOT is required to develop a statewide **Master Plan for EV charging station** infrastructure along the State Highway System (pages 5-8)
- Master Plan is due to Florida Congress by **July 1, 2021**, and should include recommendations for legislation and other recommendations as determined by FDOT
  - Preliminary recommendations due December 1, 2020

EV Charging

- Public Service Commission responsibilities include:
  - Projecting the increase in EV use in Florida over the next 20 years
  - Determining how to support and encourage this growth in a manner supporting a competitive market with ample consumer choice
  - Considering strategies to develop the supply of charging stations, including building partnerships with:
    - Local governments
    - Other state and federal entities
    - Electric utilities
    - Business community
    - The public

Questions?

https://flsenate.gov/Session/Bill/2020/7018/BillText/er/PDF

FLSenate.gov – search Bill Number 7018

AV Transparency and Engagement for Safe Testing (AV TEST)

Jeremy Dilmore, District Five TSM&O

AV TEST and Florida

- AV Transparency and Engagement for Safety Testing (**AV TEST**) Initiative
- AV TEST will include series of public events across the country to improve transparency and safety in the development/testing of ADS
- Participants can share information about activities/projects to:
  - Increase the public's awareness of testing
  - Promote USDOT role in safety and innovation
  - Build stronger relationships among public agencies and private stakeholders
- www.nhtsa.gov/avtest

AV TEST and Florida

- Voluntary web pilot will provide an online, public-facing platform for sharing ADS testing activities and other safety-related information
- Online mapping tools will also be available to view testing locations at local, state, and national level
  - Dates
  - Frequency
  - Vehicle counts
  - Routes

AV TEST and Florida

- The first AV TEST participants were announced in June 2020
  - California
  - **Florida**
  - Maryland
  - Michigan
  - Ohio
  - Pennsylvania
  - Texas
  - Utah
  - Beep
  - Cruise
  - Fiat Chrysler Automobiles
  - Local Motors
  - Navya
  - Nuro
  - Toyota
  - Uber
  - Waymo

Questions?

www.nhtsa.gov/avtest

Current Initiatives

Jeremy Dilmore, District Five TSM&O

THANK YOU!

Next Consortium – September 24, 2020

TSM&O Consortium Meeting

MEETING AGENDA
Teleconference

July 23, 2020
10:00 AM-12:00 PM

1) WELCOME
2) METROPLAN ORLANDO CAV READINESS STUDY – FINDINGS AND RECOMMENDATIONS
   - Eric Hill, MetroPlan Orlando
3) COMPLETE TRIP – ITS4US GRANT PROGRAM
   - Eric Hill, MetroPlan Orlando
4) ATTAIN CENTRAL FLORIDA – UPDATE
   - Jeremy Dilmore, District Five TSM&O
5) NEW FLORIDA LAW – *ESSENTIAL STATE INFRASTRUCTURE*
   - David Williams, VHB
6) AUTOMATED VEHICLE TRANSPARENCY AND ENGAGEMENT FOR SAFE TESTING (**AV TEST**) INITIATIVE
   - Jeremy Dilmore, District Five TSM&O
7) CURRENT INITIATIVES
   - Jeremy Dilmore, District Five TSM&O