



CENTRAL FLORIDA TSM&O CONSORTIUM MEETING SUMMARY

Meeting Date: February 4, 2021 (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 Central Florida. Jeremy Dilmore gave a short introduction and outlined the meeting agenda.

II. HIGHWAY RAIL NOTIFICATION & ARTERIAL APPROACH CLEARANCE

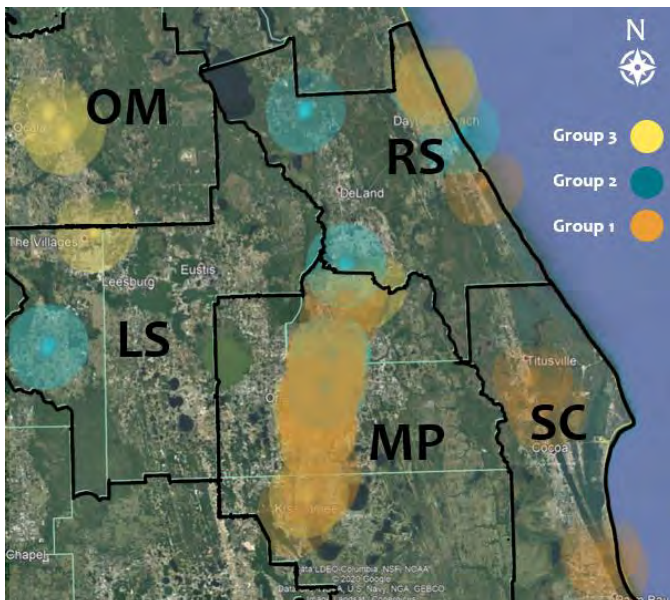
Carlo Adair (HNTB) discussed the Highway Rail Notification & Arterial Approach Clearance project within the District.

- 900 railroad crossings in District Five
- **Purpose:** to engage regional stakeholders to evaluate potential improvement scenarios that incorporate TSM&O principles for improved rail safety
- Study will result in an Implementation Plan that will include a prioritized list of District crossing locations with proposed specific site solutions, concept level plans advancement, and an implementation timeline for the solutions
- **Timeline**
 - Phase 1
 - Data collection
 - Rail crossing prioritization
 - Stakeholder Involvement Plan
 - Literature Review
 - Stakeholder Coordination
 - Phase 2
 - Refine Rail Crossing Prioritization List
 - Evaluation of Prioritized Crossing Locations
 - Recommend Solutions
 - Stakeholder Coordination
 - Phase 3
 - Refine Recommended Solutions
 - Develop Concept Level Plans
 - Develop SE Documentation

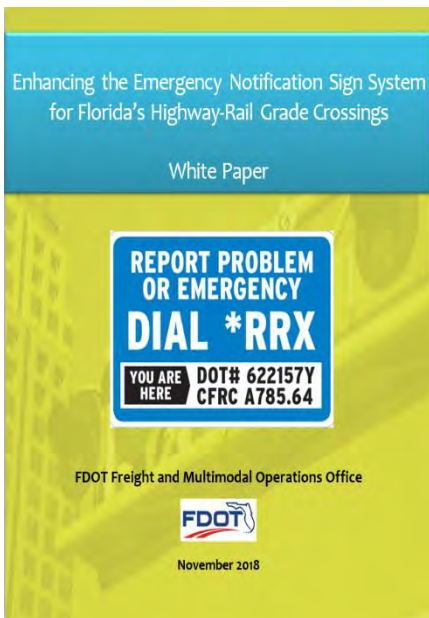
- Stakeholder Coordination
- Developing Implementation Plan based on data collection/analysis
- Initial Prioritization
 - Web-Based Accident Prediction System (WBAPS)
 - Model that assists in allocating resources based on accident predictability
 - Generates reports of ranked highway-rail grade crossings by predicted collisions per year
 - Accident prediction value is the probability that a train collision will occur at the crossing
 - Formula based upon crossing’s physical, operating, and collision history factors
- WBAPS Analysis
 - Group 3 – 90% to 95% probability of collision
 - Group 2 – 95% to 97.5% probability of collision
 - Group 1 – 97.5%+ probability of collision
- Crossing Prioritization Methodology

Weight	Factors	
20%	Traffic Volume	
14%	Functioning of Active Warning Devices	
11%	Motorist Traversal Time	
11%	Obstructed Sight Distance	
10%	Stop Bar & Gate Distance	
8%	Probability of Queuing	
7%	Exit Gates	
5%	Pavement Marking Condition	
5%	No Train Horn	
4%	Train Speed	
3%	Single or Multiple Traffic Lanes	
2%	Grade Crossing Surface Condition	

- Regional Priority Crossings



- For each location within each group, see the presentation slides at the end of this meeting summary
- The Project Team discussed Group 1's top 10 conflict areas in more depth (see presentation slides at the end of this meeting summary), providing aerial and street views for context
- The Project team provided a brief review of the crossings with the highest scoring for potential crash risk
- Literature Review
 - Strategies for Reducing Railroad Trespassing Report (SRRT)
 - Additional mitigation strategies
 - Mitigation Strategies identified based on applicability
- Current Emergency Notification Sign (ENS) System posted at every grade crossing is complex and confuses drivers
 - low documented use during emergencies
 - Suggest implementing FHP system: one easy to remember set of letters

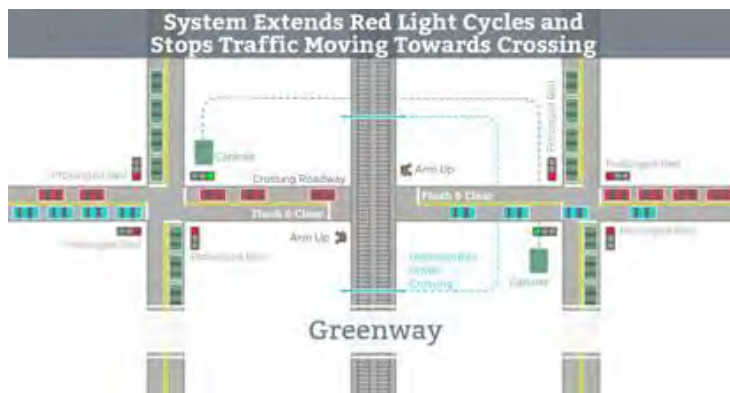


- System will route caller to correct railroad dispatcher

- Preemption, Pre-signal, and Queue Cutter Technology



- Adaptive Traffic Signal Interface



- Integrated Alert System



- Intelligent Grade Crossing Systems
 - Detect/collect vehicles queued over tracks
 - integrates with other management subsystems (queue cutter, preemption, etc)



- Wayside Horns



- AI and Machine Learning
- Escape Lanes
 - allows trapped vehicles to move off of tracks
 - applicable for locations more than 500ft from intersection
 - Queuing mitigation strategy

- Dynamic Envelopes
 - highly visible pavement markings (white hash or 'x' mark) that indicate no-stop zones
 - planned implementation for all FDOT-owned at-grade crossings



- Delineators, RPMs, and Striping
- Human Behavior Motivators
- Actuated Flashing-Enhanced R8-8 “Do Not Stop on Tracks”
- Rail Light Systems (RLS)
- During the next Consortium Meeting (April 1, 2021), the Study Team will solicit additional feedback from stakeholders
- Following the meeting, Consortium stakeholders were encouraged to participate in a survey to assess the project’s approach and provide additional feedback to the Project Team

Discussion:

Q: Does the 900+ railroad crossings include both public and private crossings?

A: Yes.

Q: Is there a protocol or guidance on what you should do if you get stuck on a grade crossing?

A: Yes.

Q: Where are we on having the ability (data) to identify near misses that can be used determine hot spots or other non-obvious problem crossings that could become a potential site for a fatality or serious injury?

A: Yes we track all near-miss data available and incorporated that in the analysis.

Q: Does the analysis include evaluating whether the railroad crossing can be closed and traffic re-routed to a nearby one, probably due to low traffic usage or road realignment?

A: We looked at closing grade crossings, but it was untenable.

III. ATTAIN CENTRAL FLORIDA

Jeremy Dilmore discussed the ATTAIN Central Florida program developed as part of the FHWA ATCMTD Grant Program. The project managers for the various work efforts under the ATTAIN Central Florida program briefly provided status updates on their projects.

- Focus on if we are meeting the needs identified at the outset of the ATTAIN program
 - Improve pedestrian safety; reduce vehicle crashes with vulnerable road users
 - Reduce congestion and increase reliability of all regional mobility options
 - link communities by connecting people to frequented destinations and necessary services
 - connect, manage, and integrate data sources and make data available to third-party entities
- ATTAIN Program Approach
 - divided program into many smaller projects
 - encumbered high management overhead, but reduced overall risk
 - each project broken into smaller V diagrams
- Project Updates
 - R-ICMS
 - development complete; acceptance testing in December 2020; independent testing ongoing
 - Soft launch in March with training in February
 - SunGuide
 - development underway; anticipated completion in February
 - TMDD Deployment
 - Seminole – deployment complete
 - Orlando – underway
 - Orange – deployment started, pending minor vendor update
 - Osceola – deployment pending support agreement
 - Route and Mode Choice Engine
 - SmartCommunity – focus on new technologies that connect people with the places they want to go and services they need
 - RMCE – software development project that is building the underlying data engine for Multimodal Trip Planning; based on the open-source OpenTripPlanner (OTP)
 - Status
 - Internal System testing
 - Next steps – System Acceptance Testing and System Build Complete
 - Public Launch and Training – scheduled for August 2021



- RAJ-P
 - Formerly *OBU Emulator*
 - Behind schedule; considered high-risk in the SE process
 - since we followed the SE process, we were able to determine that our project did not meet the user needs as outlined in the original scope; currently updating the ConOps with Alternative Analysis
 - Currently have a TWO out to review existing COTS options for the OBU emulator/RAJ-P to provide data to all users
 - Next steps – update scope and schedule based on alternative analysis

- AV Shuttle
 - very close to starting service
 - on-campus testing and training week of February 9th
 - Verification/Validation Plan Test witnessing scheduled February 12th
 - Operator Training held at COAST Facility



- SunStore
 - Currently 114 datasets available
 - sunstore.cflsmarthroads.com
 - Status
 - new contract executed in August 2020
 - task to bring in new data sets (TMDD) should be wrapped up shortly
 - Next steps – CV data, Video Stream Playground for Analytics, Turning Movement Counts
 - Question: Is there a way to pull certain data from the data picker past the previous 2 weeks?
 - Yes. The default is just set to 2 weeks, but you can adjust the dates as needed.

- TSP
 - GPS Opticom devices installed at series of intersections in Orange and Osceola Counties and Lynx buses
 - Main focus to enhance operations
 - Status
 - Orlando is repairing communication at JYP and Lynx Ln
 - Operational testing will start after repairs are finalized
 - Completion anticipated Q1 2021
 - Question: Is there going to be any training for the TSP equipment? Question from staff relating to maintenance (how to program controllers, how to coordinate with existing traffic management software Orange County has, etc.)

- There was a training held by FDOT regarding the TSP equipment. David will provide to the group.
 - Question: With SunRail DeLand North being approved by FDOT, will TSP be coming to Volusia?
 - not currently a planned project, but can be looked into
- Intersection Improvements
 - deploy latest ATC controllers; increase available detection channels and available space in traffic signal cabinets; expand CCTV coverage; and establish communication and bring in several off-system intersections that are critical for diversion routes
- PedSafe
 - installation of CV hardware, passive ped detection, intersection movement counts cameras, smart transit kiosk, and parking availability system for surface lots
 - Rich Ataman – Brevard is in the final inspection phase of the PedSafe Gridsmart system installations. PedSafe Gridsmart programming will be finalized once the inspection deficiencies are resolved.
 - Jeremy – yes, thank you for catching those deficiencies and reporting them for us to close the gaps.
 - Status
 - CV hardware installation complete
 - IMC cameras are installed for all locations aside from City of Orlando
 - Next steps – integration and testing CV applications (SPaT, Ped Intersection Crosswalk, etc); finalize data flows between end devices and user systems
 - Projected completion Q2 2021
- UCF Activities
 - ATTAIN Phase 1 – develop smart garage system; apply LiDAR to detect real-time traffic status at intersection; predict travel time on expressways and arterials in real time; predict crash risk
 - completed in 2020
 - ATTAIN Phase 2 – develop architecture to obtain road users’ trajectories and conduct traffic analysis; pedestrian crossing behavior analysis and conflict prediction; expedited freeway crash verification using CCTV cameras
 - underway, to be completed in 2021
 - ATTAIN Phase 3 – SPaT prediction; evaluate video analysis systems; Smart Corridor Sensor Fusion; Warning System Protocol for smartphone messages
 - just recently kicked off
- We ran into problems during the ATCMTD/ATTAIN deployment; the UCF research is being conducted to reinforce the ATTAIN deployment and being rolled back into the work efforts
- Are we hitting the mark?
 - Are we reducing pedestrian incidents?
 - Are we reducing congestion?
 - Are we putting out systems that are functional and maintainable?
- Importance of O&M
 - IP address revisions
 - SIIA updates

- really important that folks can start using SIIA to identify inventory updates
- MIMS changes

IV. TAPs-LA FY2022

Jeremy Dilmore briefly discussed the Technology Application Partnerships with Local Agencies (TAPs-LA) FY22 program, which kicked off in December 2020.

- Funding provided by FDOT's CAV Program (Central Office)
 - \$2Million available (per FY) – up to \$500,000 per project
- Funds can be applied to state roads
- Eligible agencies – City, County, Public Transit, Port, Airport

V. NEXT MEETING

- April 1, 2021

VI. ATTACHMENTS

- A – Presentation Slides
- B – Meeting agenda

END OF SUMMARY

This summary was prepared by 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 the meeting summary can be finalized.

Welcome to the TSM&O Consortium Meeting February 4, 2021



Meeting Agenda

1. Welcome
2. Highway Rail Notification & Arterial Approach Clearance Project
3. ATTAIN Central Florida
4. Current Initiatives

A faded background image of a SunRail train (number 109) at a station platform. The train is white with blue and red accents. The SunRail logo is visible on the front. People are standing on the platform to the right. A dark blue vertical bar with a white grid pattern is on the left side of the image.

Highway Rail Notification & Arterial Approach Clearance

TSM&O Consortium Meeting
February 4, 2021





Presenters



Jeremy Dilmore, PE



R. "Carlo" Adair, PE



Scott Zornek, PE



Pam McCombe, P.Eng.



Melissa Gross, PE

Agenda

- Project Overview
- Prioritization Methodology
- Next Steps
- Study Areas
- Literature Review
- Feedback!



Project Overview

Purpose and Need

FDOT District 5 encompasses over 900 railroad crossings throughout its jurisdiction.

The purpose of this study is to engage regional stakeholders to evaluate potential improvement scenarios that incorporate Transportation Systems Management & Operations (TSM&O) principles for improved rail safety. The result will be an Implementation Plan that will include a prioritized list of District crossing locations with proposed specific site solutions, concept level plans advancement, and an implementation timeline for the solutions.

Phase I

- Data Collection
- Rail Crossing Prioritization
- Stakeholder Involvement Plan
- Literature Review
- **Stakeholder Coordination** ★

Phase II

- Refine Rail Crossing Prioritization List
- Evaluation of Prioritized Crossing Locations
- Recommend Solutions
- Stakeholder Coordination

Phase III

- Refine Recommended Solutions
- Develop Concept Level Plans
- Develop SE Documentation
- Develop Implementation Plan
- Stakeholder Coordination

Initial Rail Crossing Prioritization Process

First Steps...

1.

Data Mining & Scrubbing

2.

Collision Predictability

3.

Initial Prioritization

4.

HNTB Crossing Prioritization

5.

Traffic Operations Assessment

Step 3 - Initial Prioritization












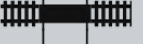
Web-Based Accident Prediction System (WBAPS)

- Model that assists in allocating resources based on accident predictability
- WBAPS generates reports of ranked highway-rail grade crossings by predicted collisions per year
- Reports include inventory and collision records
- The accident prediction value is the probability that a train collision will occur at the crossing
- Formula based upon crossing's physical, operating, and collision history factors

WBAPS Analysis

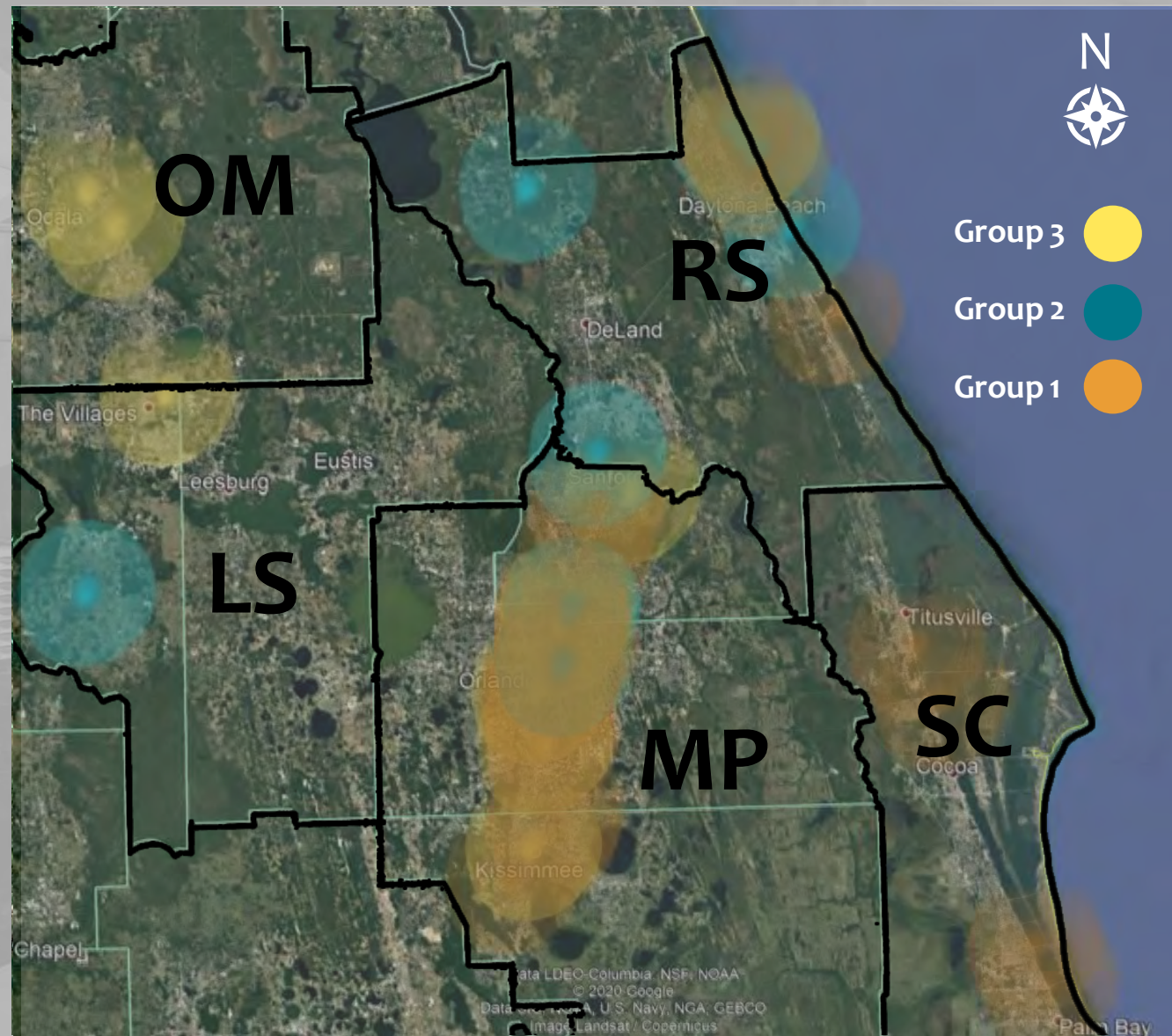
- Group 3: 90% to 95% probability of collision
- Group 2: 95+% to 97.5% probability of collision
- Group 1: 97.5+% probability of collision

Step 4 - HNTB Crossing Prioritization Methodology

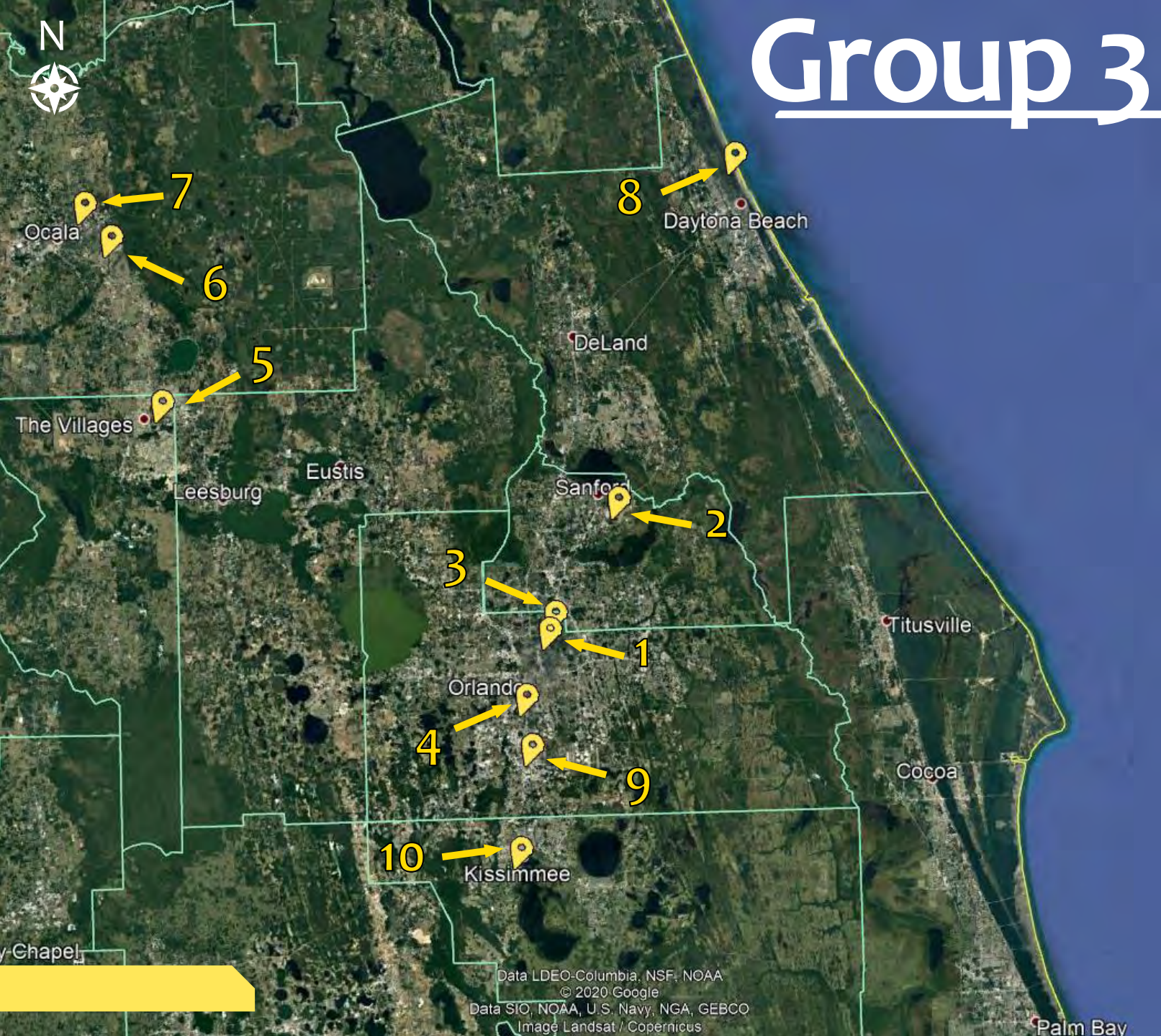
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4%	Train Speed	
3%	Single or Multiple Traffic Lanes	
2%	Grade Crossing Surface Condition	

Regional Priority Crossings

	MPO / TPO	Group 1	Group 2	Group 3	Total Study
LS	Lake – Sumter MPO	0	0	2	2
OM	Ocala Marion MPO	0	0	4	4
SC	Space Coast TPO	1	4	2	7
RS	River to Sea TPO	3	2	8	13
MP	MetroPlan Orlando	5	19	11	35



Group 3



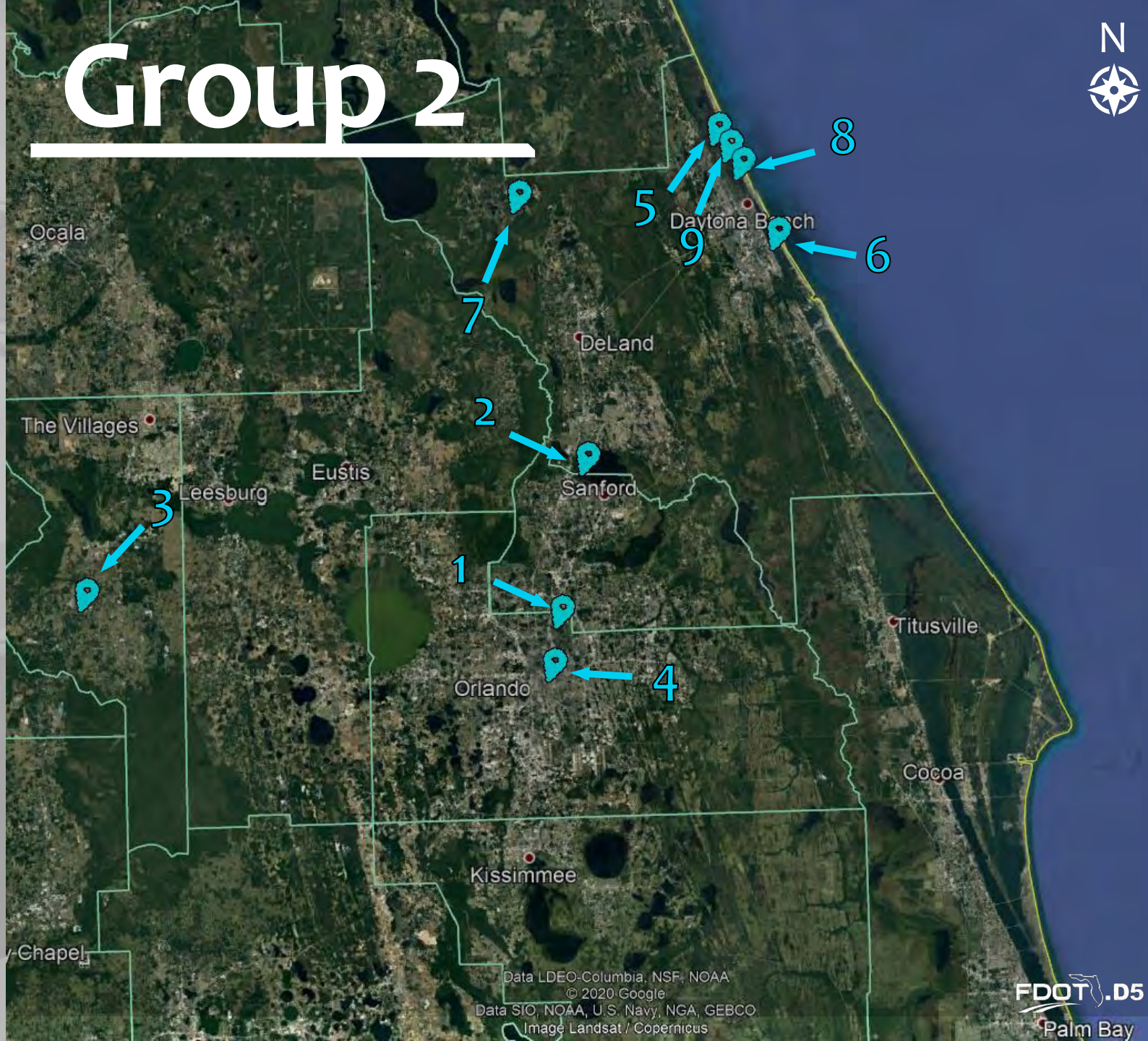
	CROSSING NAME	RAIL OWNER	FATALITY
1	S PENNSYLVANIA AVE	CFRC/SUNRAIL	
2	CR-15 / S COUNTRY CLUB	CFRC/SUNRAIL	X
3	W MORSE BLVD	CFRC/SUNRAIL	
4	HOLDEN AVE	CFRC/SUNRAIL	
5	CR-472	CSX	
6	SE 52ND ST	CSX	
7	SW BROADWAY ST	CSX	
8	8TH ST	FEC	X
9	4TH ST	CFRC/SUNRAIL	X
10	CR-531 / PLEASANT HILL RD	CFRC/SUNRAIL	

Data LDEO-Columbia, NSF, NOAA
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 Image Landsat / Copernicus

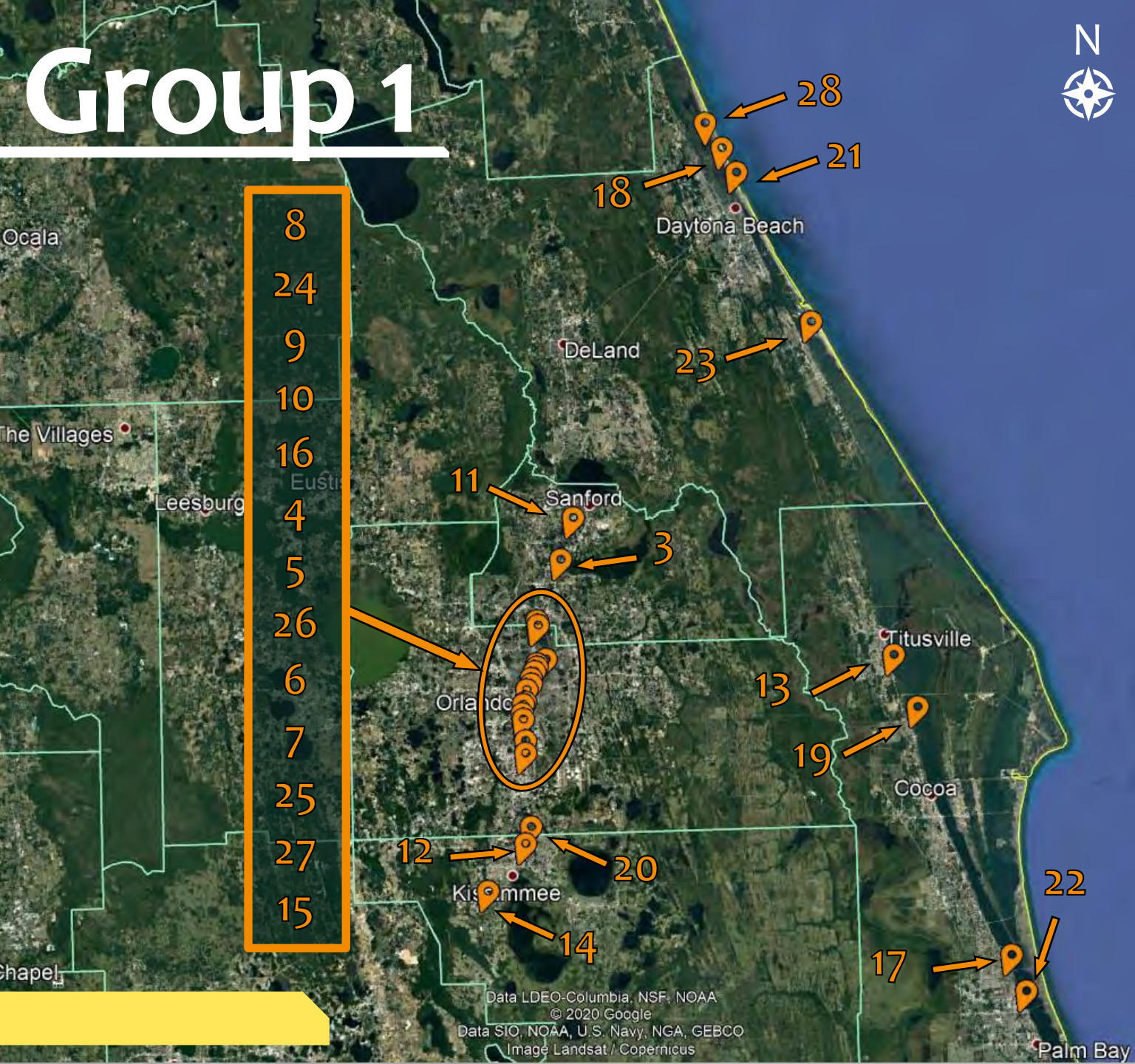
Group 2



CROSSING NAME	RAIL OWNER	FATALITY
1 CR-427 / S MAITLAND AVE	CFRC/SUNRAIL	
2 MONROE RD	CFRC/SUNRAIL	
3 E NOBLE AVE	CSX	
4 W WASHINGTON ST	CFRC/SUNRAIL	
5 CR-4044 / 3RD ST	FEC	X
6 CR-4076 / RIDGE BLVD	FEC	
7 SR-40 W	CSX	
8 2ND ST / BRENTWOOD AVE	FEC	
9 NORTH ST	FEC	



Group 1



	CROSSING NAME	RAIL OWNER	FATALITY
1	CR-528 / E LANDSTREET RD	CFRC/SUNRAIL	
2	E LANCASTER RD	CFRC/SUNRAIL	
3	CR-427 / N R. REAGAN BLVD	CFRC/SUNRAIL	X
4	SR-527 / N MAGNOLIA AVE	CFRC/SUNRAIL	
5	US-17/92 / W COLONIAL DR	CFRC/SUNRAIL	
6	W PINE ST	CFRC/SUNRAIL	X
7	W SOUTH ST	CFRC/SUNRAIL	
8	E HORATIO AVE	CFRC/SUNRAIL	
9	SR-426/527 / FAIRBANKS AVE	CFRC/SUNRAIL	
10	US-17/92 / S ORLANDO AVE	CFRC/SUNRAIL	
11	CR-4220 / W LAKE MARY BLVD	CFRC/SUNRAIL	
12	US-192/441 / VINE ST	CFRC/SUNRAIL	
13	SR-50 / CHENEY HWY	FEC	
14	S POINCIANA BLVD	CFRC/SUNRAIL	
15	W MICHIGAN ST	CFRC/SUNRAIL	
16	VIRGINIA DR	CFRC/SUNRAIL	
17	SR-518 / W EAU GALLIE BLVD	FEC	
18	CR-4019 / LPGA BLVD	FEC	X
19	FAY BLVD	FEC	
20	E CARROLL ST	CFRC/SUNRAIL	
21	CR-4040 / FAIRVIEW AVE	FEC	
22	E HIBISCUS BLVD	FEC	X
23	WASHINGTON ST	FEC	
24	E PACKWOOD AVE	CFRC/SUNRAIL	
25	W GORE ST	CFRC/SUNRAIL	
26	W JEFFERSON ST	CFRC/SUNRAIL	
27	W KALEY ST	CFRC/SUNRAIL	
28	HAND AVE	FEC	X

Data LDEO-Columbia, NSF, NOAA
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 Data SIO, NOAA, U.S. Navy, NGA, GEBCO
 Image Landsat / Copernicus

Group 1 – Next Steps...

Summary thus far

Evaluation Factors:

- Empirical Data
- Historical Records
- Human Behavior
- Physical Conditions
- Probability and Statistics
- Engineering Judgement

Traffic Engineering Analysis

Evaluation Factors:

- Existing Conditions Verification
- Regional Impacts
- Future Development
- Planning and Coordination
- **Stakeholder Feedback**

Phase I

- Data Collection
- Rail Crossing Prioritization
- Stakeholder Involvement Plan
- Literature Review
- **Stakeholder Coordination** ★

Phase II

- Refine Rail Crossing Prioritization List
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- Recommend Solutions
- Stakeholder Coordination

Phase III

- Refine Recommended Solutions
- Develop Concept Level Plans
- Develop SE Documentation
- Develop Implementation Plan
- Stakeholder Coordination

1 - CR-528 / East Landstreet Road



CR-528 / East Landstreet Road



CR-528 / E. Landstreet Road (E.B.)



CR-528 / E. Landstreet Road (W.B.)

- Adjacent stop-controlled intersection with short clear storage distance
 - High truck volumes further reducing queue capacity
 - History of turns on tracks to avoid signal
-
- Programmed enhancements:
Pre-Signal



2 - East Lancaster Road

- Adjacent stop-controlled intersection with short clear storage distance
- High truck volumes further reducing queue capacity

-
- Programmed enhancements:
Delineators, striping and RPMs



 Pine Castle, FL.



East Lancaster Road



E. Lancaster Road (E.B.)



E. Lancaster Road (W.B.)

3 - CR-427 / North Ronald Reagan Boulevard



CR-427 / North Ronald Reagan Boulevard

- Adjacent stop-controlled intersection with short clear storage distance
- High truck volumes further reducing queue capacity
- Crossing skew affects stop bar distances



CR-427 / N. R. Reagan Blvd. (N.B.)



CR-427 / N. R. Reagan Blvd. (S.B.)



4 - SR-527 / North Magnolia Avenue



SR-527 / North Magnolia Avenue



SR-527 / N. Magnolia Ave. (N.B.)



SR-527 / N. Magnolia Ave. (S.B.)

- Crossing skew affects stop bar distances
- Reduced sight distance

-
- Programmed enhancements:
Traffic actuated “Do Not Stop on Tracks” sign



5 - US-17/92 / West Colonial Drive

- Continually high traffic volume
- Adjacent stop-controlled intersection with short clear storage distance
 - Both directions of travel are impacted



US-17/92 / West Colonial Drive



US-17/92 / West Colonial Drive (E.B.)



US-17/92 / West Colonial Drive (W.B.)

6 - West Pine Street

- Reduced sight distance
- Stop bar location
- Pavement surface/ marking condition
- Adjacent stop-controlled intersection with short clear storage distance



West Pine Street



West Pine Street (E.B.)



West Pine Street (W.B.)

7 - West South Street



West South Street



West South Street (E.B.)



West South Street (W.B.)

- Stop bar location
- Adjacent stop-controlled intersection with short clear storage distance
Both directions of travel are impacted
- High pedestrian volumes



8 - East Horatio Avenue

- Adjacent stop-controlled intersection with short clear storage distance
Both Directions of travel are impacted
- High traffic volumes at peak hours

- Programmed enhancements:
Traffic actuated “Do Not Stop on Tracks” sign



East Horatio Avenue



East Horatio Avenue (E.B.)



East Horatio Avenue (W.B.)

9 - SR-426 / SR-527 / W. Fairbanks Avenue



SR-426 / SR-527 / Fairbanks Avenue

- Crossing skew affects stop bar distances
- Reduced sight distance
- Continually high traffic volume



SR-426/527 / Fairbanks Ave. (E.B.)



SR-426/527 / Fairbanks Ave. (W.B.)



10 - US 17-92 / South Orlando Avenue

- Crossing skew affects stop bar distances
 - Reduced sight distance
 - Proximity of unsignalized intersection of crossing does not provide adequate deceleration and queuing
-
- Programmed enhancements:
 - Traffic actuated “Do Not Stop on Tracks” sign



US 17-92 / South Orlando Avenue



US 17-92 / S. Orlando Avenue (N.B.)



US 17-92 / S. Orlando Avenue (S.B.)

11 - CR-4220 / West Lake Mary Boulevard



CR-4220 / West Lake Mary Boulevard

- Sight distance issues due to crossing elevation
- Short queuing distance compared to high traffic volumes



CR-4220 / W Lake Mary Blvd. (E.B.)



CR-4220 / W Lake Mary Blvd (W.B.)



12 - US 192-441 / Vine Street

- High traffic volumes
- No adjacent signal but queuing occurs



US 192-441/Vine Street



US 192-441/Vine Street (E.B.)



US 192-441/Vine Street (W.B.)

13 - SR-50 / Cheney Highway



SR-50 / Cheney Highway



SR-50 / Cheney Highway (E.B.)



SR-50 / Cheney Highway (W.B.)

- Continually high traffic volume
- Adjacent stop-controlled intersection with short clear storage distance
- High train speed



14 - South Poinciana Boulevard

- Adjacent stop-controlled intersection with short clear storage distance
- High train speed



South Poinciana Boulevard



South Poinciana Boulevard (N.B.)



South Poinciana Boulevard (S.B.)

15 - West Michigan Street

- Pavement surface/ marking condition
- Reduced sight distance
- No adjacent signal but queuing occurs



West Michigan Street



West Michigan Street (E.B.)



West Michigan Street (W.B.)

16 - Virginia Drive

- Pavement surface/ marking condition
- Stop bar location
- Adjacent stop-controlled intersection with short clear storage distance
Both directions of travel are impacted
- Sight distance issues due to crossing elevation



Virginia Drive



Virginia Drive (E.B.)



Virginia Drive (W.B.)

17 - SR-518 / West Eau Gallie Boulevard



SR-518 / West Eau Gallie Boulevard

- High traffic volumes
- High train speed
- Historic fatal vehicular collision



SR-518 / W. Eau Gallie Blvd. (E.B.)



SR-518 / W. Eau Gallie Blvd. (W.B.)



18 - CR-4019 / LPGA Boulevard

- High traffic volumes
- Limited pedestrian facilities



CR-4019 / LPGA Boulevard



CR-4019 / LPGA Boulevard (E.B.)



CR-4019 / LPGA Boulevard (W.B.)



19 - Fay Boulevard

- High train speed
- Moderate traffic volumes



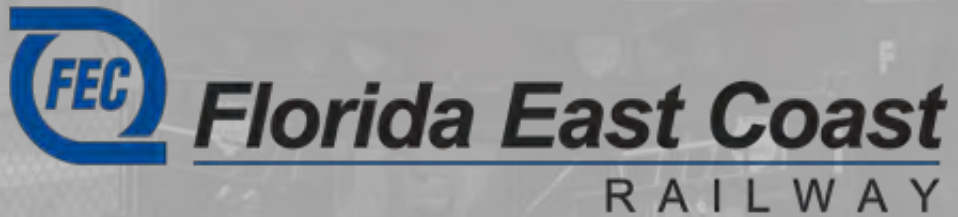
Fay Boulevard



Fay Boulevard (E.B.)



Fay Boulevard (W.B.)



20 - East Carroll Street



East Carroll Street

- High traffic volumes
- High train speed
- Roadway geometry reducing sight distance



East Carroll Street (E.B.)

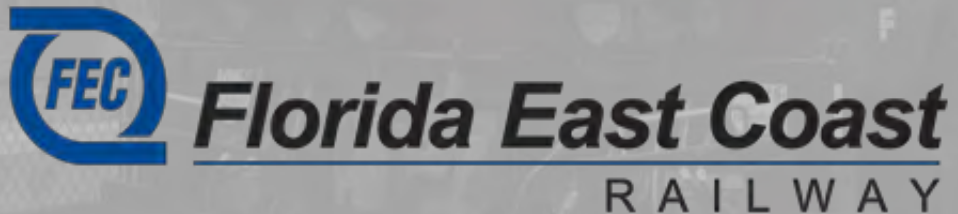


East Carroll Street (W.B.)



21 - CR-4040 / Fairview Ave

- Pavement surface/ marking condition
- Roadway geometry reducing sight distance
- No pedestrian gates
- Proximity of unsignalized intersection of crossing does not provide adequate deceleration and queuing



CR-4040 / Fairview Ave



CR-4040 / Fairview Ave (E.B.)



CR-4040 / Fairview Ave (W.B.)

22 - East Hibiscus Boulevard



East Hibiscus Boulevard

- High traffic volume
- High train speed
- No pedestrian facilities



East Hibiscus Boulevard (E.B.)



East Hibiscus Boulevard (W.B.)



23 - Washington Street



Washington Street



Washington Street (E.B.)



Washington Street (W.B.)

- High train speed
- Adjacent stop-controlled intersection with short clear storage distance



24 - East Packwood Avenue

- Adjacent stop-controlled intersection with short clear storage distance
- Gate operation concerns

- Programmed enhancements:
Traffic actuated “Do Not Stop on Tracks” sign



East Packwood Avenue



E. Packwood Avenue (E.B.)



E. Packwood Avenue (W.B.)

25 - West Gore Street



West Gore Street

- Continually high traffic volume
- Stop bar location
- Pavement quality



West Gore Street (E.B.)



West Gore Street (W.B.)



26 - West Jefferson Street



West Jefferson Street



West Jefferson Street (E.B.)



West Jefferson Street (W.B.)

- Pavement quality
- Marking conditions
- Reduced sight distance
- Gate operation concerns
- Complex roadway geometry diverting driver's attention
- Limited pedestrian facilities



27 - West Kaley Street



West Kaley Street

- Stop bar distance
- Long vehicle traversal time
- Pavement surface/ marking condition
- Limited pedestrian facilities



W. Kaley Street (E.B.)



W. Kaley Street (W.B.)



28 - Hand Avenue

- Proximity of unsignalized intersection of crossing does not provide adequate deceleration and queuing



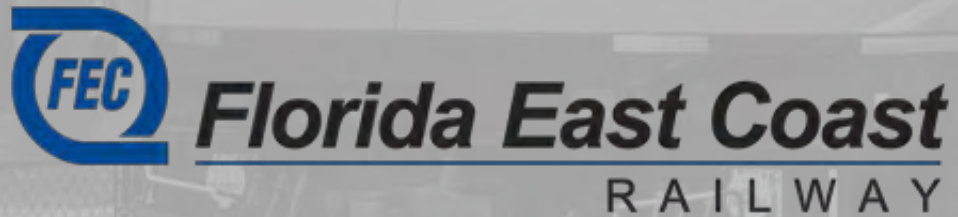
Hand Avenue



Hand Avenue (E.B.)



Hand Avenue (W.B.)



Literature Review

At-grade Rail Crossing Safety Mitigation

- Strategies for Reducing Railroad Trespassing Report (SRRT)
- Literature review for additional mitigation strategies
- Mitigation Strategies identified based on applicability to:
 - Identification of recurring issues
 - Existing conditions along the CFRC
 - Existing mitigation techniques
 - Proposed mitigations for both trespassing on the Right of Way and at grade crossings



Literature Review

At-grade Rail Crossing Safety Mitigation

- Risk Assessment
- Mitigation Strategies identified based on applicability to:
 - Local specific issues
 - Detailed investigation of data metrics
 - Augmentation to existing treatments



ORANGE COUNTY PUBLIC SCHOOL BUS AND CENTRAL FLORIDA RAIL CORRIDOR GRADE CROSSING RISK ASSESSMENT

NOVEMBER 2020



PREPARED FOR ORANGE COUNTY PUBLIC SCHOOL DISTRICT
BY CFRC/SUNRAIL AND OCPS TEAM

Literature Review

At-grade Rail Crossing Safety Mitigation

- Current Emergency Notification Sign (ENS) System posted at every grade crossing is complex and confuses drivers
- Low documented use during emergencies
- Implement FHP system: one easy to remember set of letters
- System will route caller to correct railroad dispatcher



Est. 1994



Enhancing the Emergency Notification Sign System
for Florida's Highway-Rail Grade Crossings

White Paper



FDOT Freight and Multimodal Operations Office



November 2018

Literature Review

At-grade Rail Crossing Safety Mitigation

- FHWA Recommendation – In-vehicle alert system at grade crossings
- FHWA Handbook for rail grade crossings
- FRA and APTA – White papers
- ITE – Queue management
- AREMA and Consultants – Data driven CCTV systems
- FDOT D5 Work – Adaptive Traffic Signal Interface with train positioning
- Vendors – Using mapping systems for in-vehicle and pedestrians alerts of blocked crossings and trains approaching
- Other Rail Systems and Transit Agencies

Mitigation Strategies

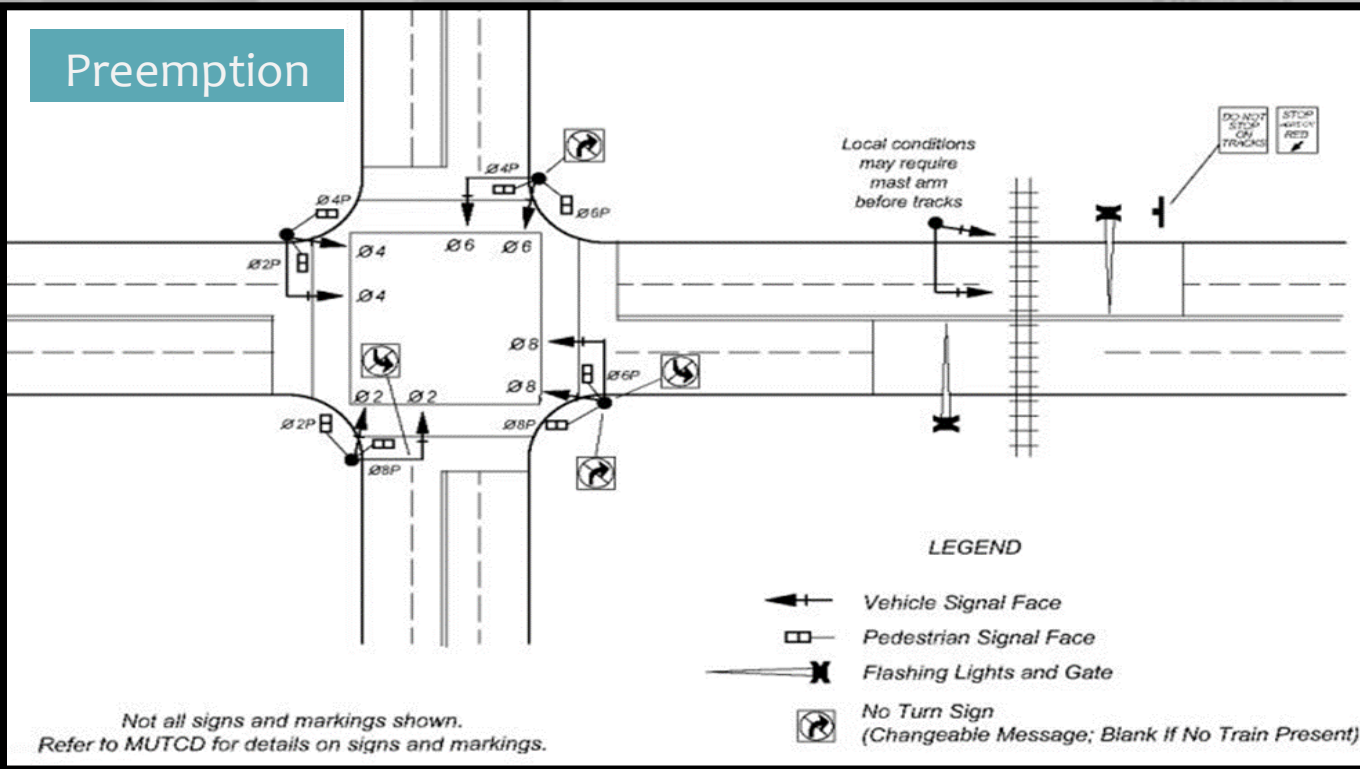


- Preemption, Pre-signal, and Queue Cutter Technology
- Adaptive Traffic Signal Interface with Train Position
- Integrated Alert Systems - Advanced Warning UI's
- Enhanced Emergency Notification System (ENS)
- Intelligent Grade Crossing
- Wayside Horn System for Quiet Zones
- Dynamic Envelopes
- Escape Lanes
- Delineators, RPMs and Striping
- Human Behavior Motivators
- Radar Actuated Flashing R8-8 Sign Assemblies
- Innovative Rail-Light Systems (RLS)

Preemption, Pre-signal, and Queue Cutter Technology

- MUTCD Clear Storage Distance
- 200 – 500ft preemption is required unless determined otherwise by an engineering study

Preemption



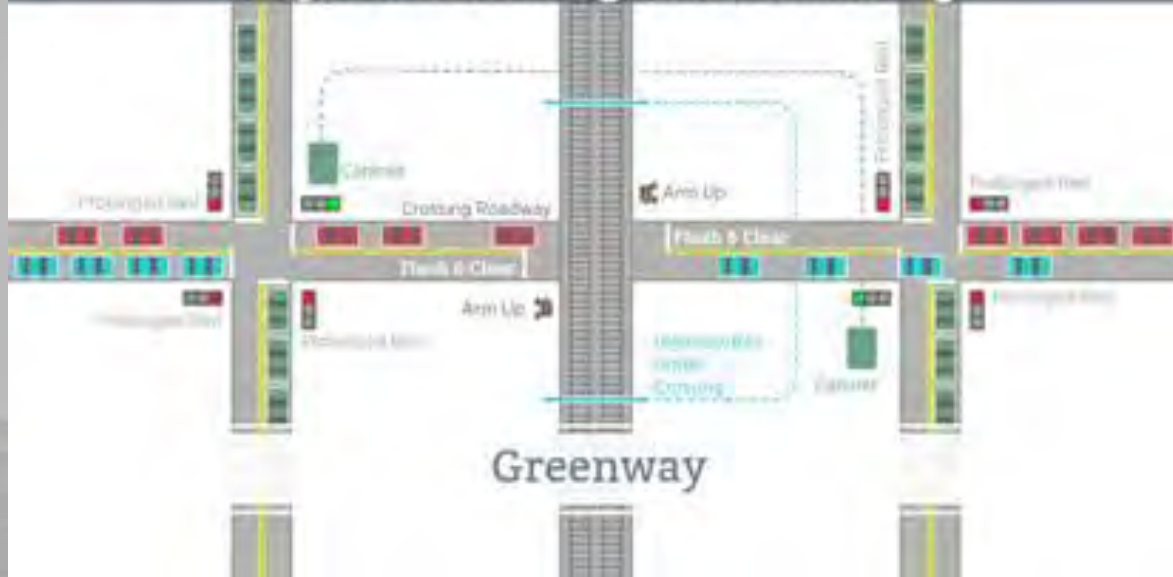
Queue Cutter Signal



Pre-Signal

Adaptive Traffic Signal Interface

System Extends Red Light Cycles and Stops Traffic Moving Towards Crossing



Greenway

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



Greenway

- Positive Train Control (PTC)
- Integration of regional management
- Train positioning system
- Pre-preemption (flushing)
- Pilot underway in Seminole County

Integrated Alert Systems:

Advanced Warning User Interfaces

- Hands-free alert/warning system
- Complies with DOT/FHWA



**REPORT PROBLEM
OR EMERGENCY
DIAL *RRX**

**YOU ARE HERE DOT# 622157Y
CFRC A785.64**

Enhanced Emergency Notification System (ENS)

- *FHP system enhancement
- Unique grade crossing identifier
- Automatically routes emergency calls to appropriate dispatch

Intelligent Grade Crossing Systems

Automated Video Data Collection

- Detect/collect vehicles queued over tracks
- Integrated real-time system controls to support management subsystems:
 - queue-cutter signals, preemption, integrated alert systems, etc.
- Exit Gate Smart Sensor

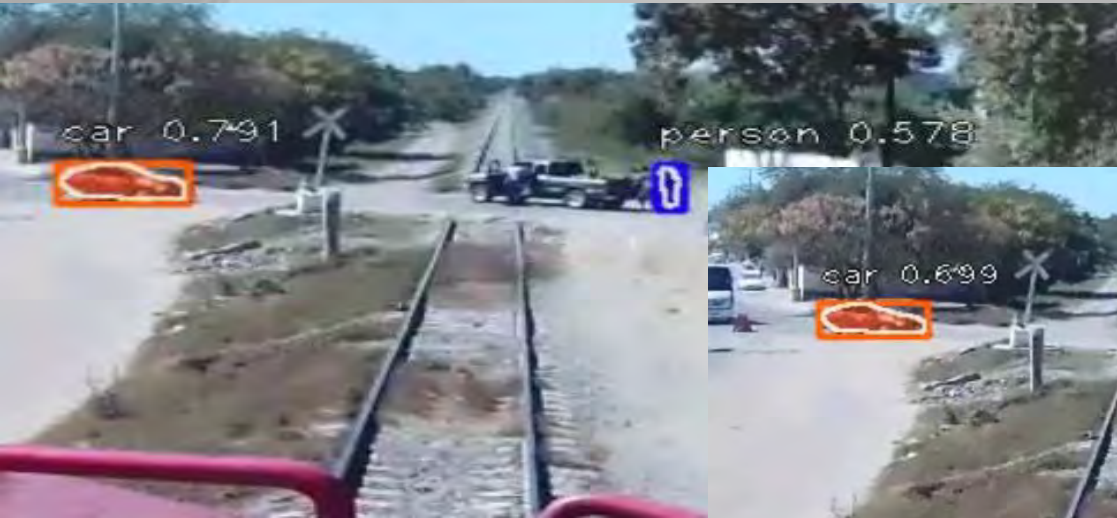


Wayside Horns

- Audible Warning System
- Meets requirement for audible warning

Artificial Intelligence & Machine Learning

- Automated reporting, tracking, and decision-making
- Integrated alert/notification (SMS, email, etc.)
- Identification of close-calls
- Web-supported data metrics





Dynamic Envelopes

- Highly visible pavement markings
- Planned implementation for all FDOT- owned at-grade crossings.

Escape Lanes

- For trapped vehicles on tracks
- Applicable for locations >500 ft from intersection
- Queuing mitigation strategy





Delineators, RPMs, and Striping

- Dissuades illegal maneuvers
- Effective, low-cost solution

Human Behavior Motivators

- Outreach and Training
- Enforcement
- Local Collaboration



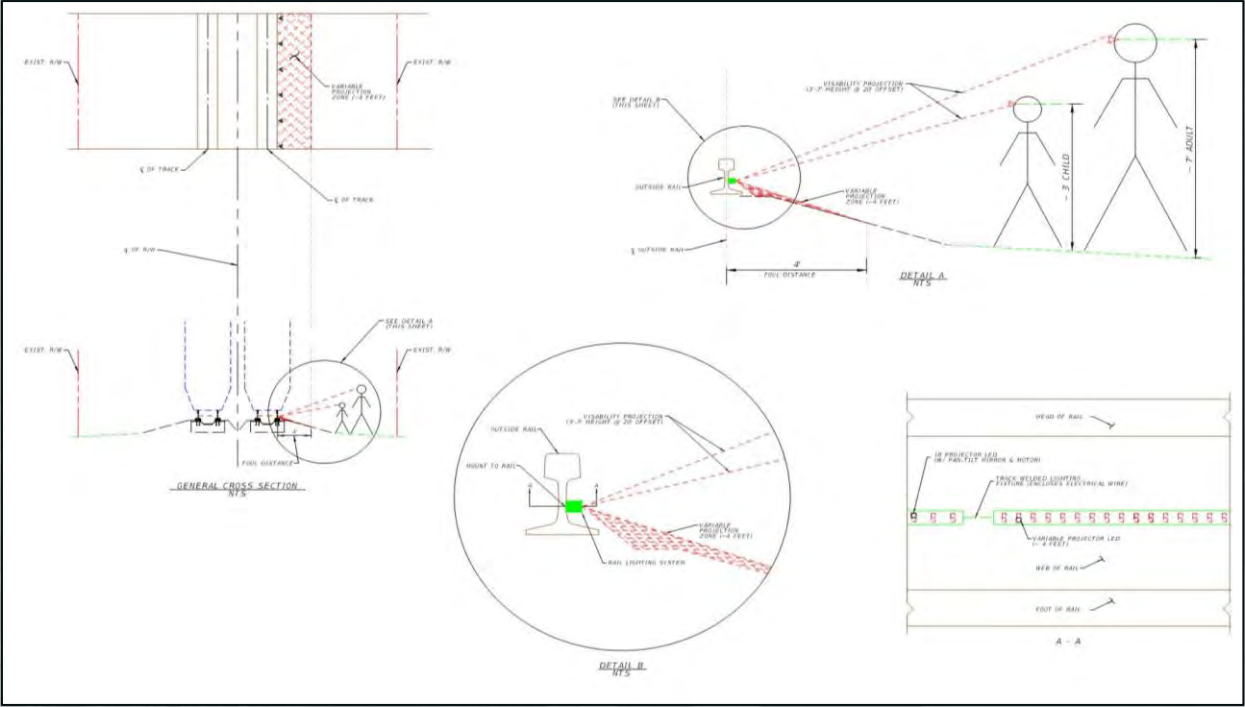
Actuated Flashing-Enhanced R8-8 “Do Not Stop on Tracks”

- Radar-activated LED sign
- Pilot implemented at SR 50/Colonial Drive
- Additional crossing locations coming...



Rail Light Systems (RLS)

- Innovative Industry Design
- State Adoption Consideration
- Social Collaborative Solution
- Integrated Visual Warning System
- Augmentation of Proven Civil Solution



We want to hear from you!!!

Next Steps

- Stakeholder Questionnaire
- Feedback by **March 8th**
- Next Consortium Meeting **April 8th**

FDOT Project Manager

Noemí S Rodríguez Bonilla, P.E.

Noemi.RodriguezBonilla@dot.state.fl.us

Study Project Manager


Carlo Adair, P.E.

cadair@hntb.com

Phase I

- Data Collection
- Rail Crossing Prioritization
- Stakeholder Involvement Plan
- Literature Review
- Stakeholder Coordination

Phase II

- Refine Rail Crossing Prioritization List
- **Evaluation of Prioritized Crossing Locations** 
- Recommend Solutions
- Stakeholder Coordination

Phase III

- Refine Recommended Solutions
- Develop Concept Level Plans
- Develop SE Documentation
- Develop Implementation Plan
- Stakeholder Coordination

Thank You!

Highway Rail Notification & Arterial Approach Clearance

Survey

Agency Stakeholder Coordination Meeting 1 of 3
FDOT D5 TSM&O Consortium Meeting
February 4, 2021

Thank you for participating in this meeting, we want to hear from you!!

The assessment of the priority rail crossing locations across the District are reasonable.

The methodology in evaluating severity of safety risk is acceptable for your agency/jurisdiction.

The mitigation strategies presented are comprehensive of the regional safety challenges at rail crossings.

The rail crossings presented are reasonably prioritized for further evaluation to identify safety improvements.

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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We want to hear from you!!



ATTAIN
CENTRAL FLORIDA
advanced transportation technology

TSM&O Consortium Update

February 4, 2021

Agenda:

District Needs

Program Goals

Project Manager Updates

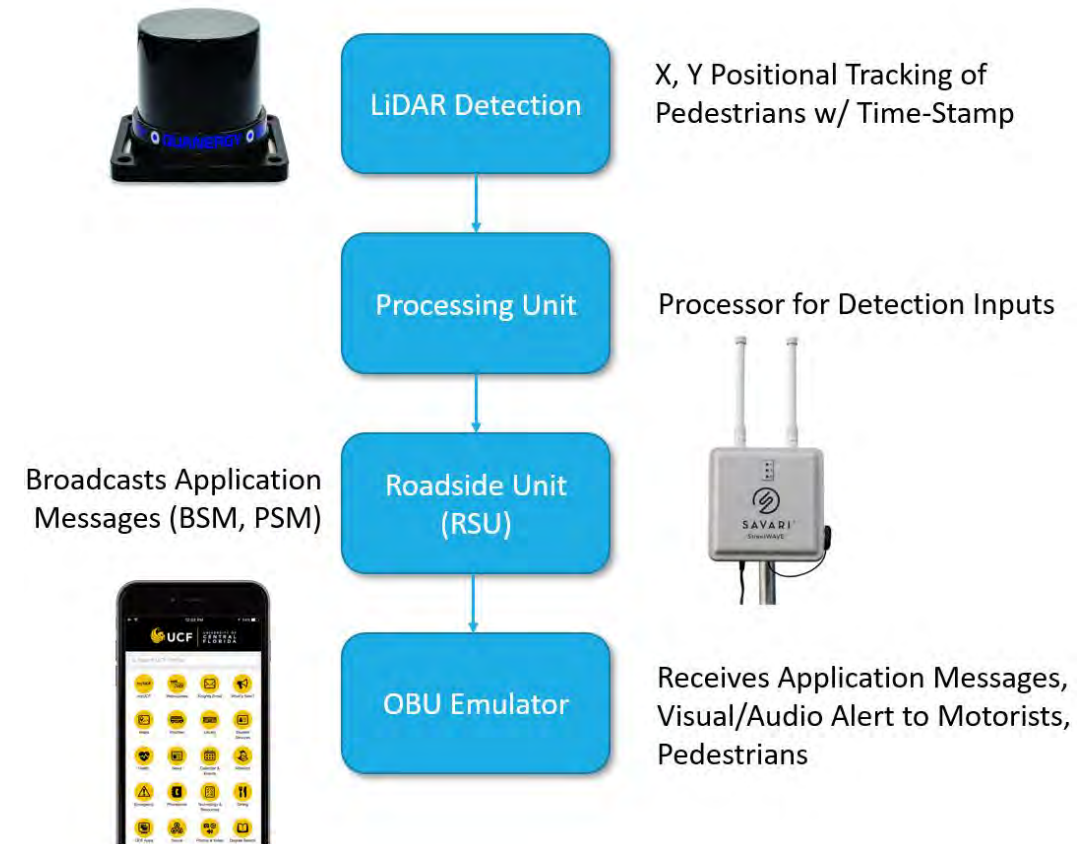
Feedback From the Team



PedSafe

Need: Improve pedestrian safety; reduce vehicle crashes with vulnerable road users (e.g., pedestrians, cyclists).

- Deployment for advanced Connected Vehicle (CV) applications (e.g., *Ped. in X-Walk*, *Personal Safety Messages*)
- Ability to detect, classify, and track pedestrian movements



PedSafe

Field infrastructure includes:

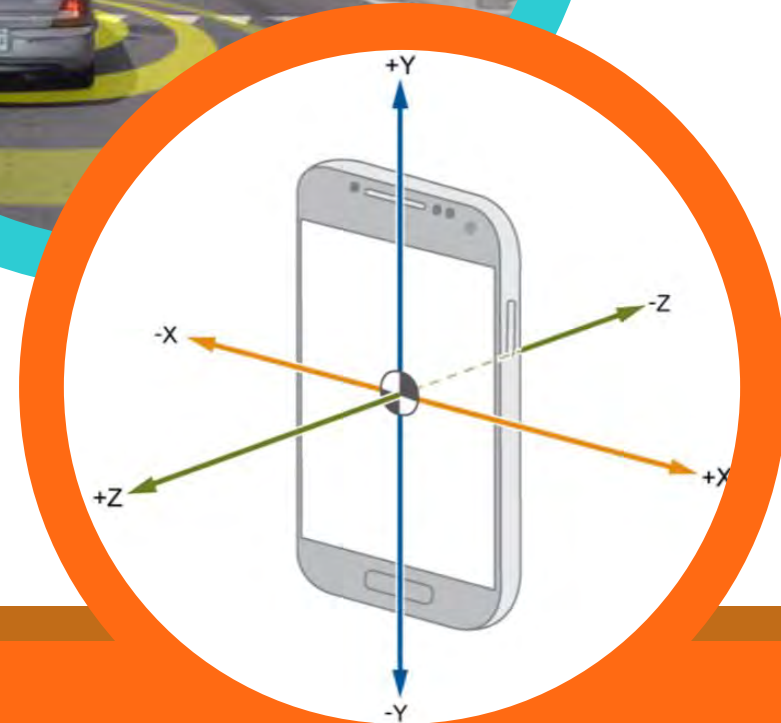
- LiDAR Sensors
- CV Roadside Units (RSU)
- Central Processing Unit



PedSafe

Need: Improve pedestrian safety; reduce vehicle crashes with vulnerable road users (e.g., pedestrians, cyclists).

- Custom development of mobile application; Regional Application Just-on-your Phone (RAJ-P)
- Internal phone mechanisms used for current location, speed, heading
- Ability to generate proxy Personal Safety Messages (PSM)



Greenway

Need: Reduce congestion and increase reliability of all regional mobility options.

- Providing regional users with multimodal / transportation choice:
 - Transit Signal Priority (TSP)
 - Multimodal Trip Planner



Greenway

Need: Reduce congestion and increase reliability of all regional mobility options.

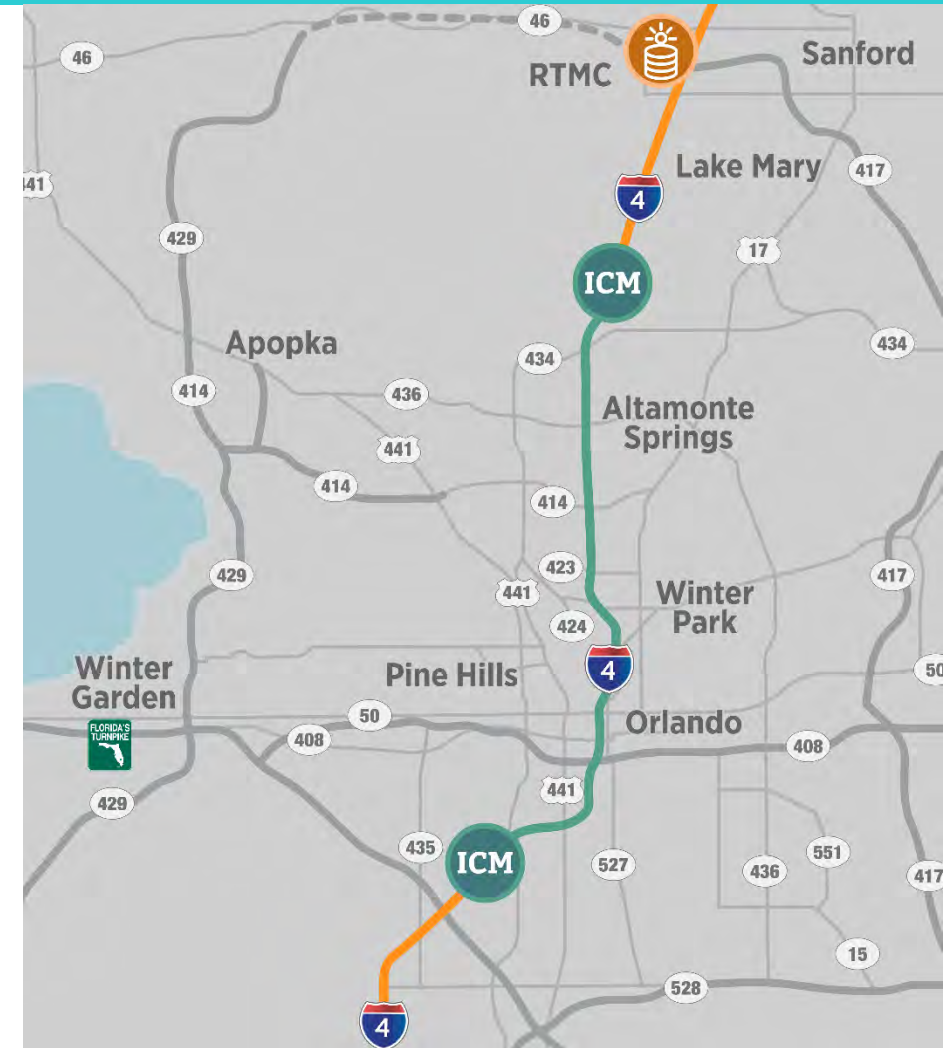
- Improving arterial corridor operations via technology deployments and strategies:
 - Active Arterial Management (AAM)
 - ATSPM
 - Intersection Movement Counts (IMC) cameras
 - Signal Optimization Tools



Greenway

Need: Reduce congestion and increase reliability of all regional mobility options.

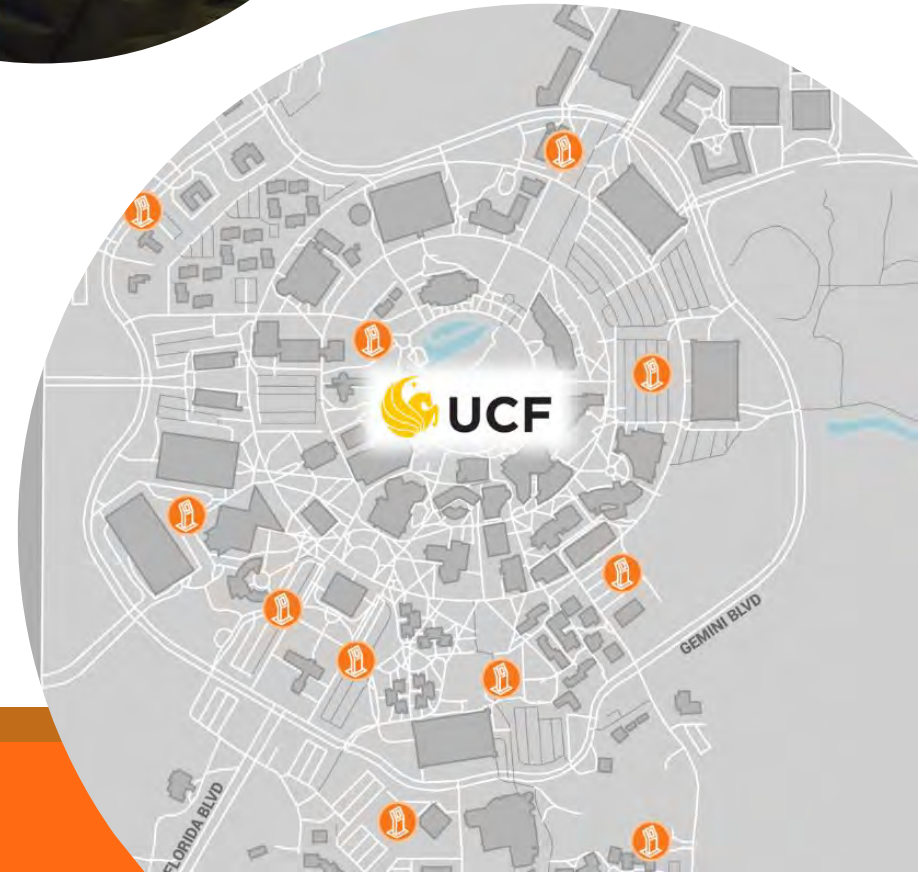
- Bridging the operational gap between arterial and limited access corridors
 - Regional Integrated Corridor Management (R-ICMS) software
 - Real-time ICM operations



SmartCommunity

Need: Link communities by connecting people to frequented destinations and necessary services.

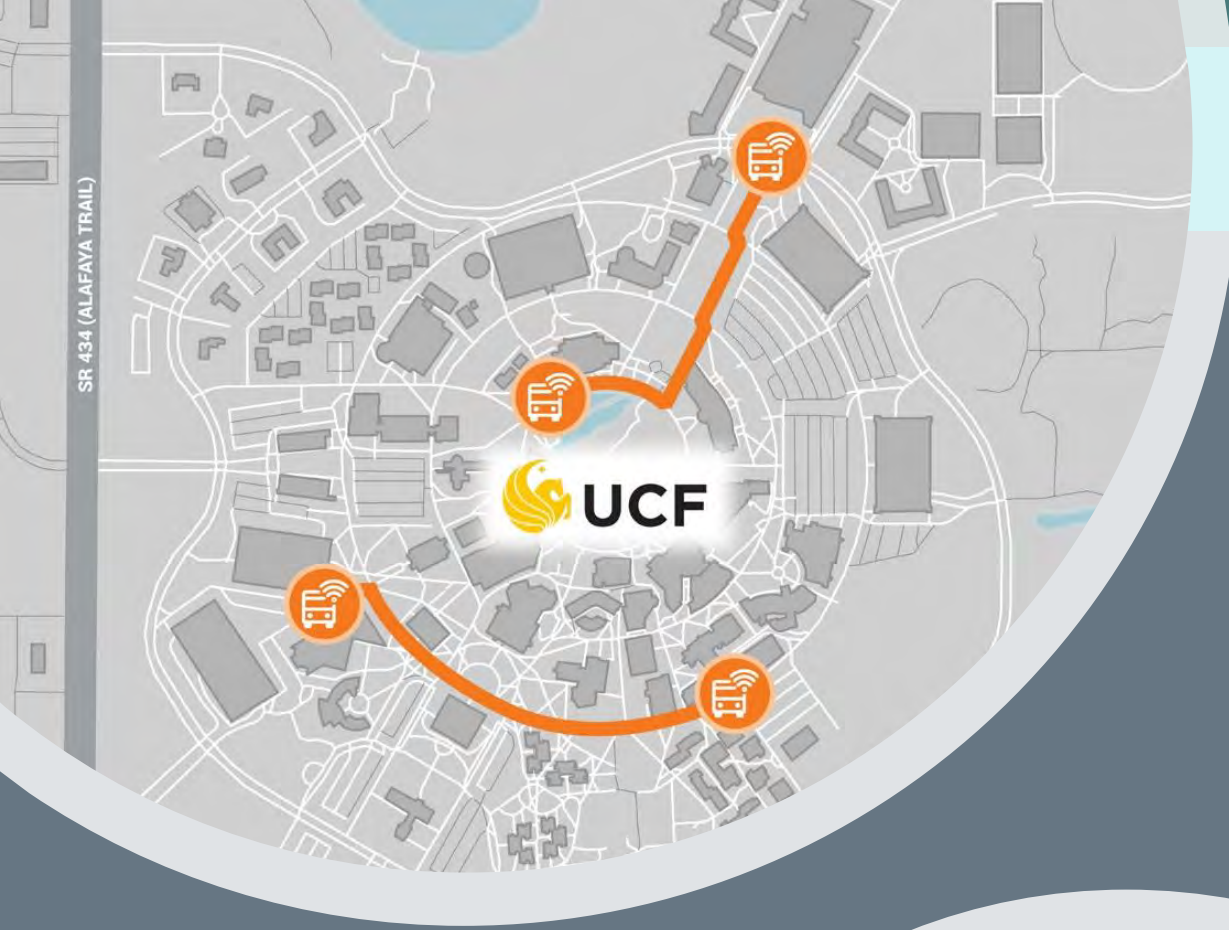
- Smart transit kiosks provide future equity in transportation; scalable
- Provide real-time information for users to make informed mobility decisions



SmartCommunity

Need: Link communities by connecting people to frequented destinations and necessary services.

- Autonomous shuttle pilot service on University of Central Florida campus
- Provides equity w/ ADA requirement



SmartCommunity

Need: Link communities by connecting people to frequented destinations and necessary services.

- Parking Availability Systems detect either ingress/egress or individual stalls and inform motorists of vacancies
 - Implementations for surface lots
 - Additional research conducted for garage facilities



SunStore

Need: Ability to connect, manage and integrate data sources and make data available to third-party entities.

- Created API to District Five data
- Provide metadata to developers for application development
- Collaborate w/ universities for pilot runs



Alignment with FHWA

District Five's program naturally aligns w/ the strategic goals of both FHWA and US DOT Strategic Goals...

- **Goal:** Reduced costs and improved return on investments, including through the **enhanced use of existing transportation capacity**.
- **Goal:** Delivery of environmental benefits that alleviate congestion and streamline traffic flow.
- **Goal:** Measurement and improvement of the operational performance of the applicable transportation networks.

Alignment with FHWA

District Five's program naturally aligns w/ the strategic goals of both FHWA and US DOT Strategic Goals...

- **Goal:** Reduction in the number and severity of traffic crashes and an increase in driver, passenger, and pedestrian safety.
- **Goal:** Collection, dissemination, and use of real-time transportation related information to improve mobility, reduce congestion, and provide for more efficient and accessible transportation, including access to safe, reliable, and affordable connections to employment, education, healthcare, freight facilities, and other services.

Alignment with FHWA

District Five's program naturally aligns w/ the strategic goals of both FHWA and US DOT Strategic Goals...

- **Goal:** Monitoring transportation assets to improve infrastructure management, reduce maintenance costs, prioritize investment decisions, and ensure a state of good repair
- **Goal:** Delivery of economic benefits by reducing delays, improving system performance and throughput, and providing for the efficient and reliable movement of people, goods, and services;

Alignment with FHWA

District Five's program naturally aligns w/ the strategic goals of both FHWA and US DOT Strategic Goals...

- **Goal:** Accelerated deployment of vehicle-to-vehicle, vehicle-to-infrastructure, and automated vehicle applications, and autonomous vehicles and other advanced technologies;
- **Goal:** Integration of advanced technologies into transportation system management and operations;

Alignment with FHWA

District Five's program naturally aligns w/ the strategic goals of both FHWA and US DOT Strategic Goals...

- **Goal:** Demonstration, quantification, and evaluation of the impact of these advanced technologies, strategies, and applications towards improved safety, efficiency, and sustainable movement of people and goods;
- **Goal:** Reproducibility of successful systems and services for technology and knowledge transfer to other locations facing similar challenges;

Program Approach



Management of such a large program can be complex.

Mitigation tactics employed by District Five include...

- Divided program into many smaller projects
- Encumbered high management overhead, but reduced overall risk
- Each project broken into smaller vee diagrams

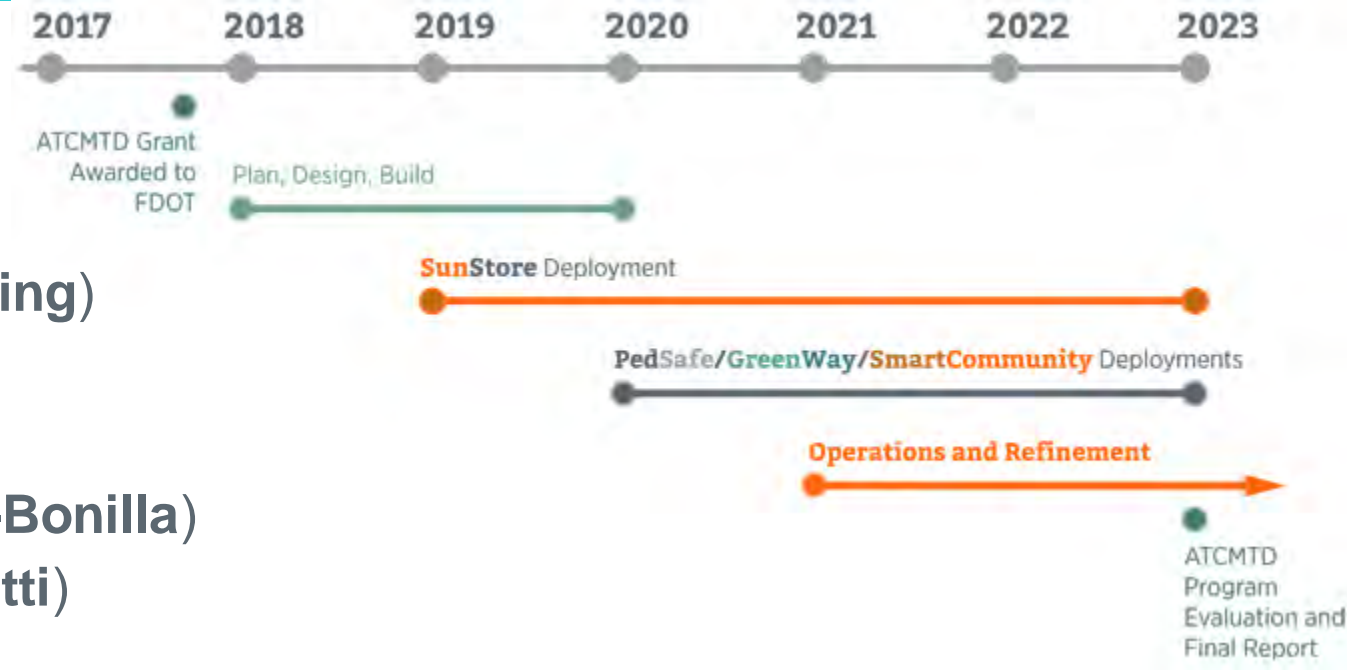
Looking Forward

1. Project Manager Updates

- R-ICMS (**Clay Packard**)
- Route and Mode Choice / RAJ-P (**Katie King**)
- Autonomous Vehicle Shuttle (**Katie King**)
- SunStore (**Katie King**)
- Transit Signal Priority (**Noemi Rodriguez-Bonilla**)
- Intersection Improvements (**Ravi Sabbiseti**)
- PedSafe / Greenway (**Nathan Mozeleski**)
- UCF Activities (**Ryan Cunningham**)

2. Are We Hitting the Mark?

3. Importance of Maintenance / Operations

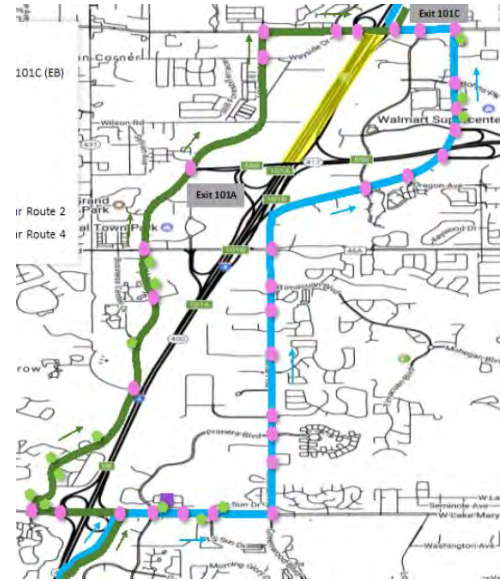


Regional Integrated Corridor Management System (R-ICMS)

- Objectives:
 - Nonrecurring congestion on freeways
 - Recurring congestion on Arterials



Incident Detection



Response Plan w/ Diversion Route



Data Fusion Environment



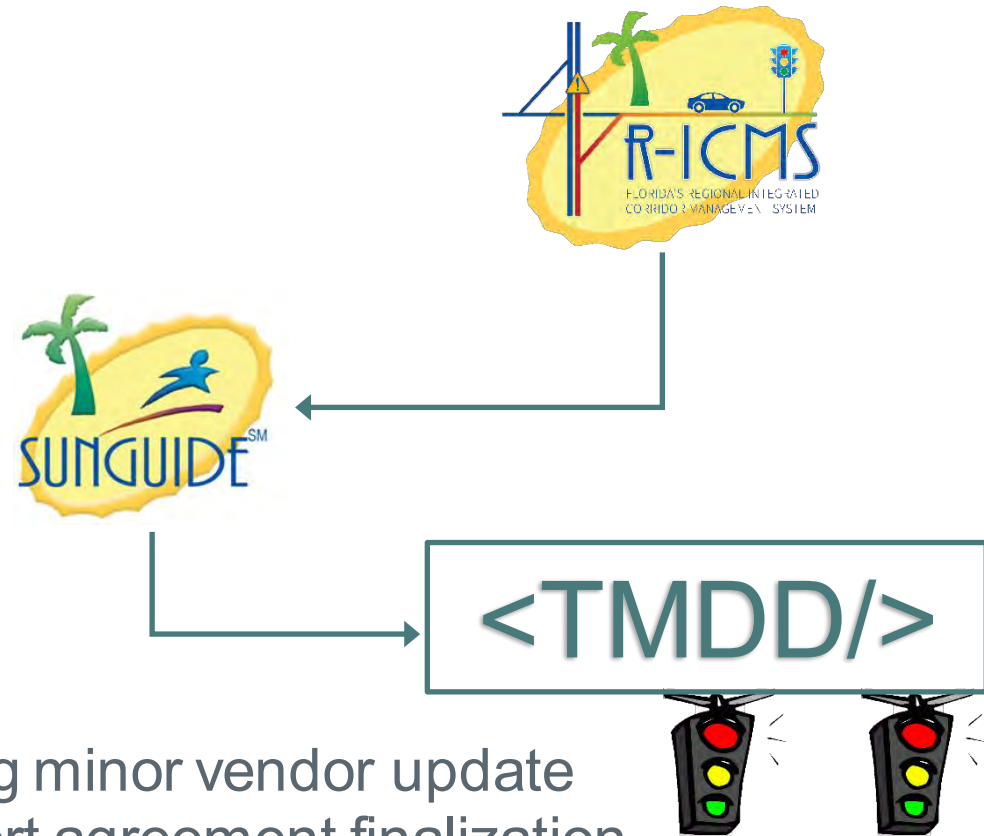
Signal Pattern Selection and Optimization



Mesoscopic Simulation for 30 Minute Forecasting

R-ICMS System Development and Status

- R-ICMS Software Development Project
 - Development Complete
 - Independent Testing Underway
 - Soft launch in March
 - Training in February
- SunGuide Enhancements
 - development underway; anticipated Feb.
- TMDD Deployment Status
 - Seminole County – deployment complete
 - City of Orlando – deployment underway
 - Orange County – deployment started; pending minor vendor update
 - Osceola County – deployment pending support agreement finalization



Route and Mode Choice

Project Background:

- **Part of the ATTAIN CFL Smart Community Program**

Focus on new technologies that connect people with the places they want to go and services they need.

- **What is Route and Mode Choice**

The Route and Mode Choice project is the software development project that is building the underlying data engine for Multimodal Trip Planning.

Software based on the open-source software OpenTripPlanner (OTP)

Route and Mode Choice

- **System Development**

- OTP Routing Engine
 - OTP Routing API, Transit Index API, and Geocoding API
 - OTP Middleware for trip monitoring
 - OTP Web UI and Administrative Dashboard

- **Where we are now**

- Internal System Testing

- **Up Next**

- System Acceptance Testing and System Build Complete

- **Public Launch and Training**

- Scheduled August 2021.



FDOT

28.51335, -81.39753

4931 New Broad Street, Orlando, FL, USA

Today Leave now

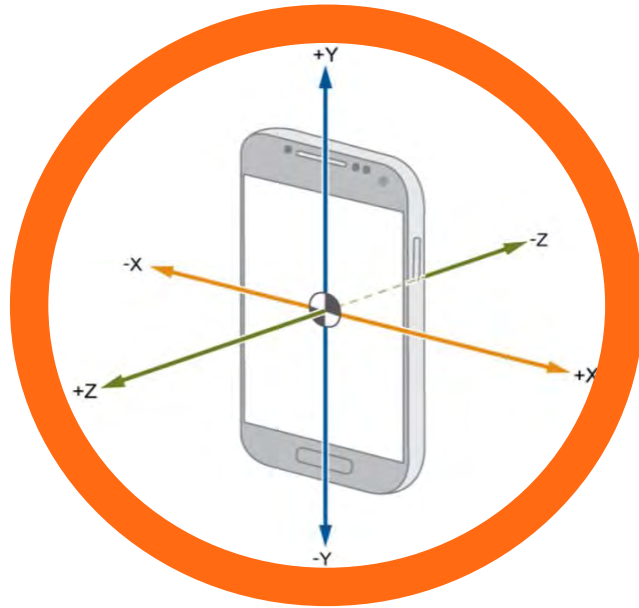
11 ITINERARIES FOUND. All modes Best option

<p>Walk to bus</p> <p>1 hr, 9 min</p> <p>9:57 am—11:07 am</p> <p>\$1.50</p> <p>14 min</p> <p>click to view details</p>	
<p>Walk to bus</p> <p>1 hr, 9 min</p> <p>9:57 am—11:07 am</p> <p>\$1.50</p> <p>14 min</p>	
<p>Bike to bus</p> <p>1 hr, 11 min</p> <p>9:46 am—10:57 am</p> <p>\$1.50</p> <p>4 min</p>	
<p>Walk to bus</p> <p>1 hr, 23 min</p> <p>10:43 am—12:07 pm</p> <p>\$1.50</p> <p>14 min</p>	
<p>Bike</p> <p>43 min</p> <p>9:46 am—10:29 am</p> <p>50.00</p> <p>43 min</p>	
<p>Bikeshare</p> <p>1 hr, 24 min</p> <p>9:46 am—11:10 am</p>	

• <https://fdot-otp.ibi-transit.com/>

Regional Application Just-on-your Phone (Raj-P)

Raj-P (the project formally known as the On-Board Unit Emulator)



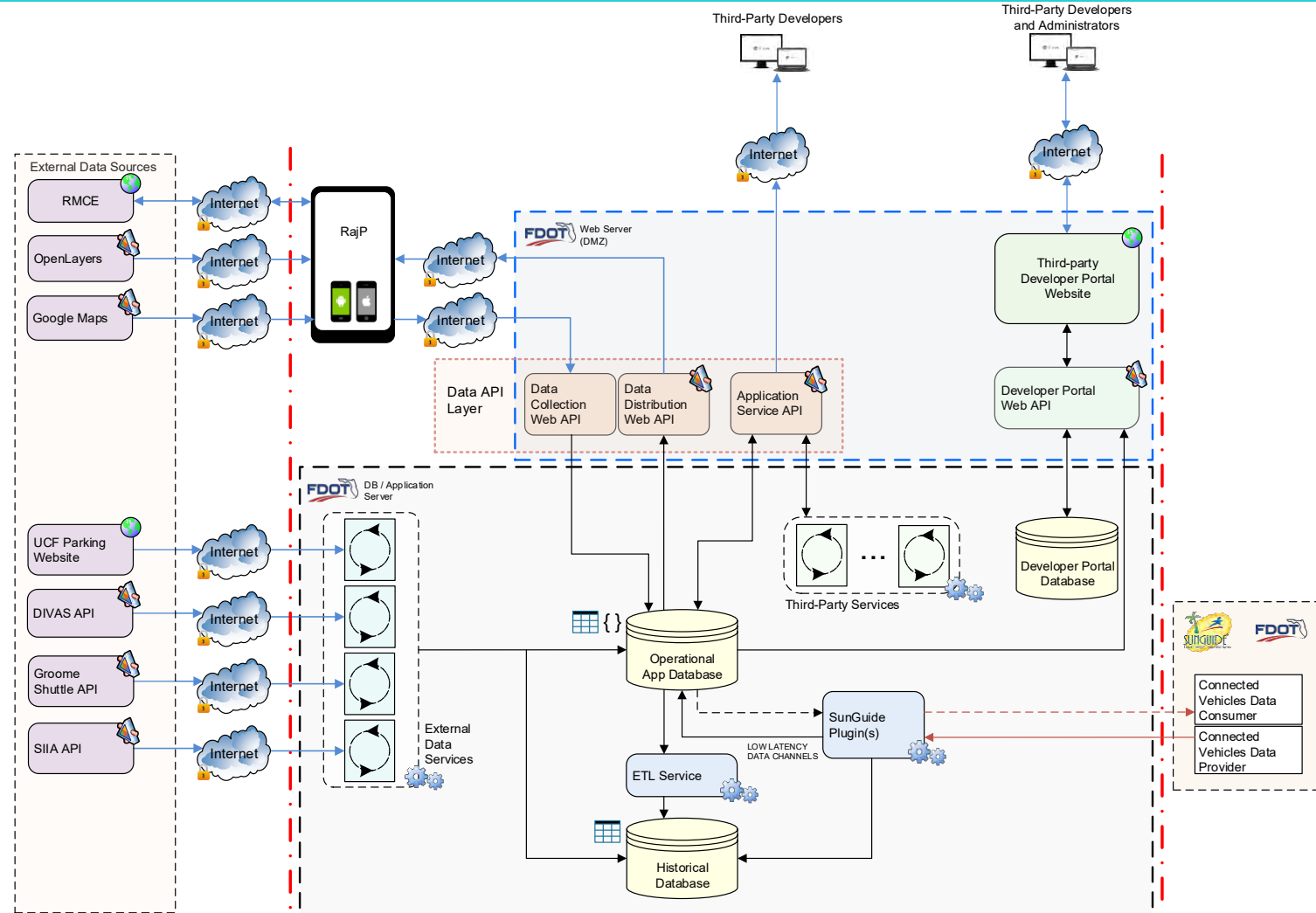
Raj-P

- **Where we are now**

Concept of Operations update with Alternative Analysis

- **Up Next**

Update scope and schedule based on alternative analysis.



AV Shuttle



Sustainable Transportation Autonomous Ride (STAR)

- The AV shuttles will operate on the following schedule:
 - Monday – Friday, 9:00 AM to 9:00 PM
 - Saturday, 10:00 AM to 6:00 PM
 - Sunday, no operations
 - Excluded are University observed holidays and all other non-classroom days of the year, including spring break

AV Shuttle

- **Where we are now**

Operator Training at COAST Facility

- **Up Next**

On Campus Testing and Training week of February 9th.

- **Route Commissioning**

Verification/Validation Plan Test Witnessing scheduled February 12th.



SunStore



District 5
SunStore

Data Sets:

114 Datasets Currently

<https://sunstore.cflsmartroads.com/>

RTMC Map

<https://sunstore.cflsmartroads.com/RTMC/>

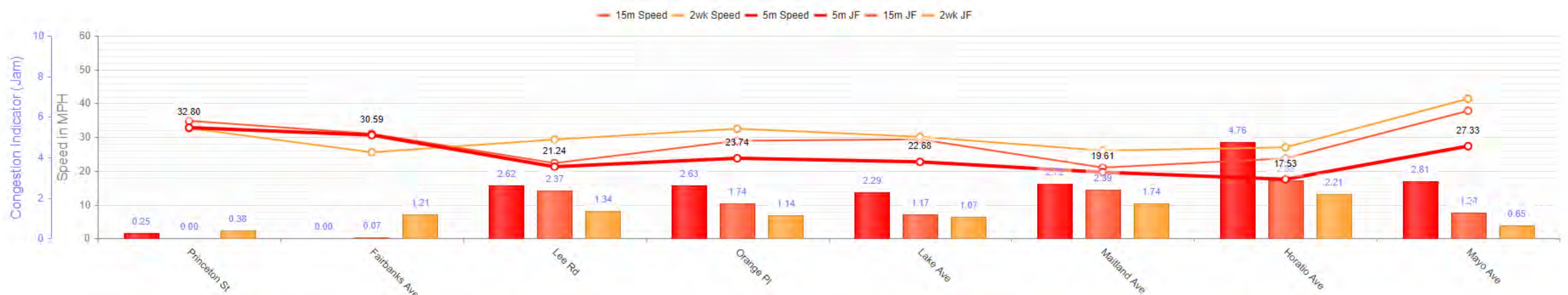
Congestion and Speed Exceeding Normal Conditions
 Click On a Roadway to View Details
 > 50% Above Normal Conditions
 20% to 49% Above Normal Condition
 10% to 19% Above Normal Condition
[Click Here to Learn More about Conditions](#)

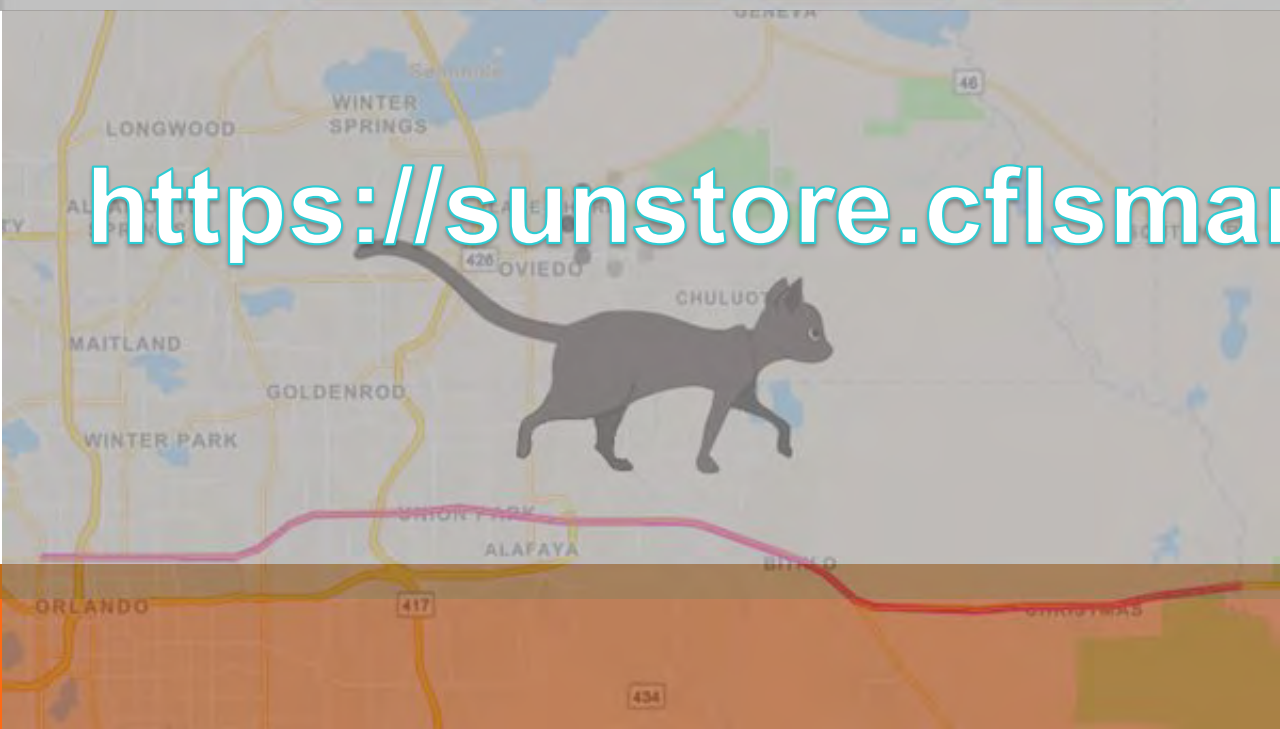
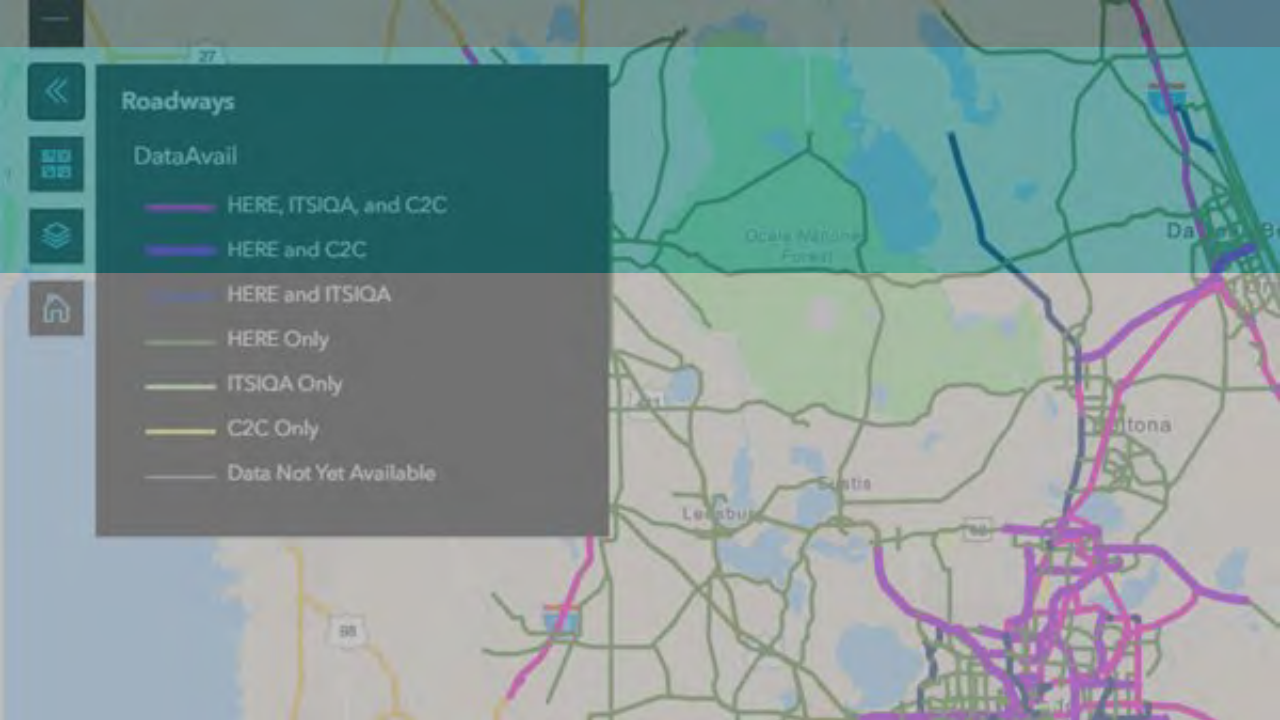
[Get Corridor Data](#)



- WAZEdata
- Signals with Congestion
- CCTVCameras

Speed and Congestion Indicator (Jam) North/EastBound





<https://sunstore.cflsmartroads.com/datapicker>



SunStore

- **Where we are now**

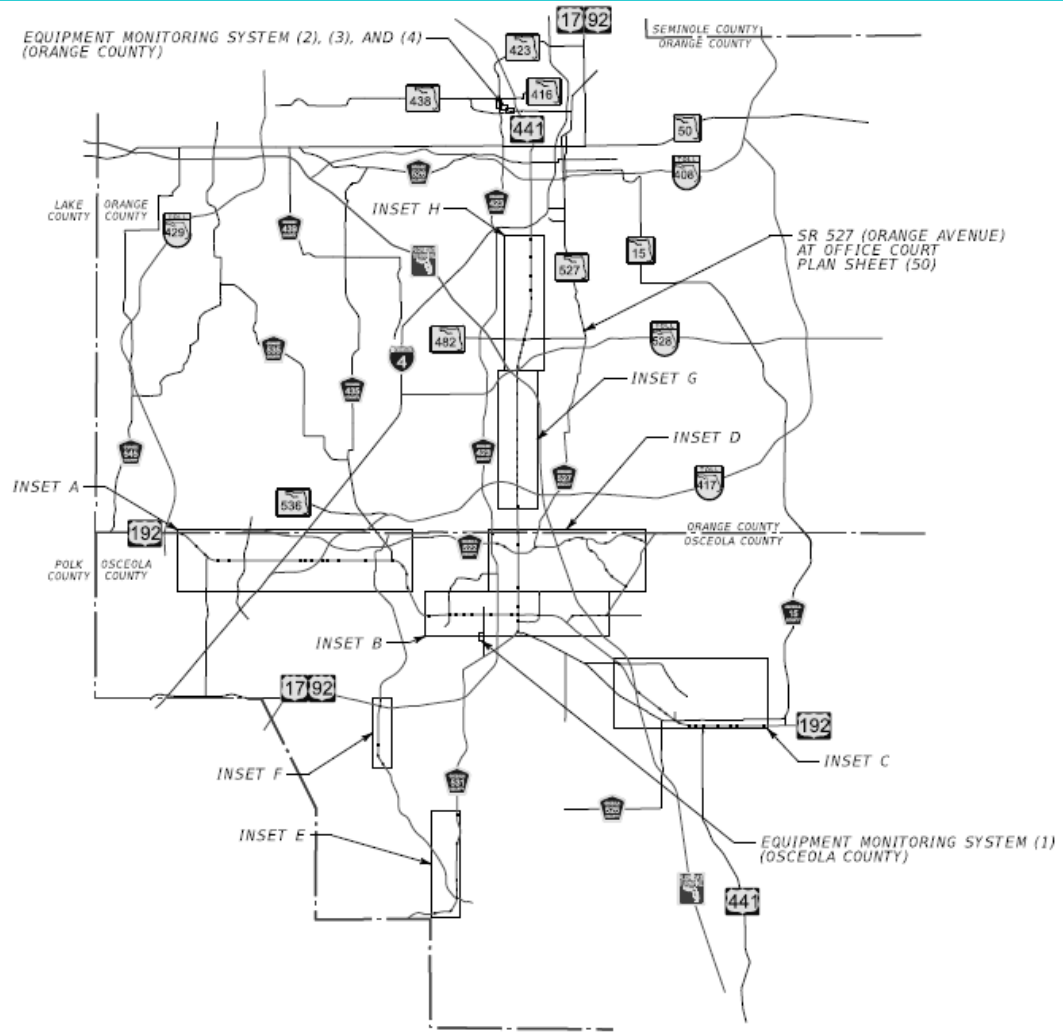
New Contract Executed in August 2020
Bringing in new Data Sets
TMDD

- **Up Next**

CV Data
Video Stream Playground for Analytics
Turning Movement Counts



Transit Signal Priority



Transit Signal Priority

GPS Opticom devices installed at a series of signalized intersection in Orange and Osceola County and Lynx Buses.

The system will be integrated with the RTMC and Lynx Transit Management Center. Including Lynx existing Automatic Vehicle Location(AVL) and Bus Scheduling Software.

Transit Signal Priority

- **Where are we now**

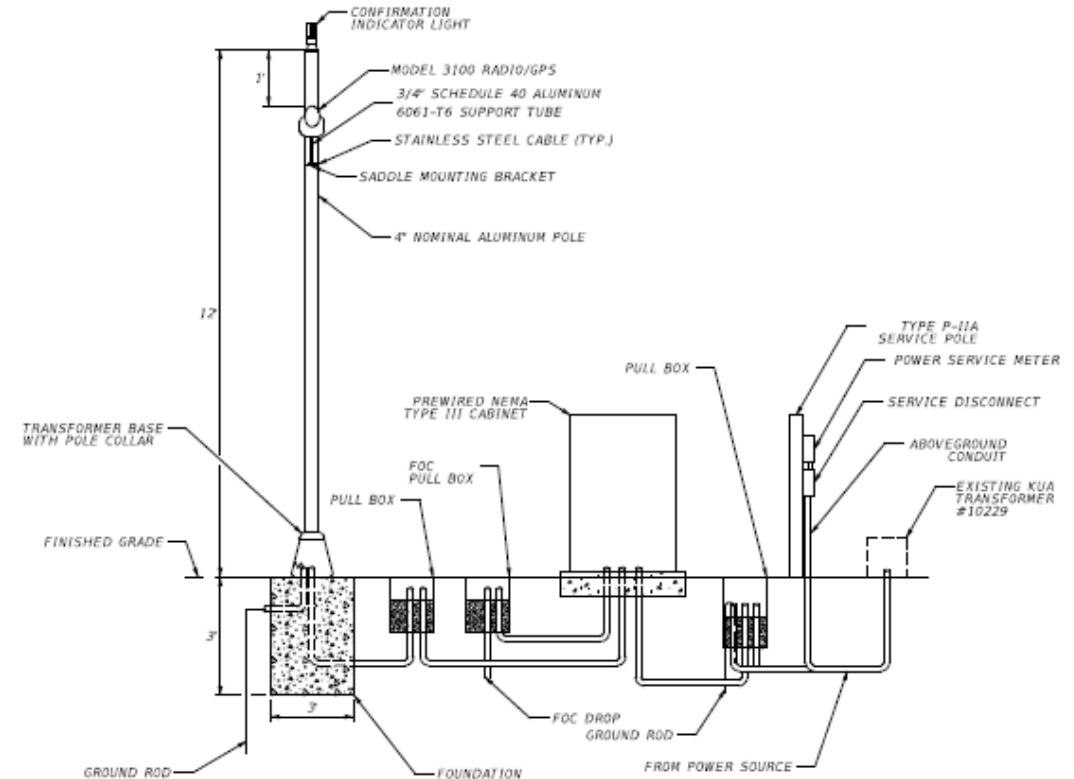
City of Orlando is repairing Communication at John Young Parkway and Lynx Ln

- **Up Next**

Operational Testing will start after the repairs are finalized

- **Projected End**

First quarter of 2021



NOTES

1. FOR 12 FOOT POLE, USE STANDARD FOUNDATION OF 3'-0" X 3'-0" WIDE, AT A DEPTH OF 3'-0", PER STANDARD PLANS INDEX 695-001.
2. MOUNTING BRACKET SHALL MEET DEVICE MANUFACTURER'S RECOMMENDATIONS.
3. INSTALLATION PROCEDURES FOR GPS SHALL MEET MANUFACTURER'S RECOMMENDATIONS.

Intersection Improvements

- Several equipment upgrades at signalized intersections have been completed and more programmed
 - Deploy the latest ATC controllers;
 - Increase available detection channels and available space in traffic signal cabinets;
 - Expand CCTV coverage; and
 - Establish communication and bring in several off-system intersections that are critical for diversion routes.

Intersection Improvements

- Coordination is critical between all parties involved to have a streamlined workflow
 - Signal Maintaining Agencies
 - Maintenance / Deployment Crew
 - Other FDOT Departments
 - Ongoing Construction Projects
 - Vendors

PedSafe / Greenway Deployment

Project Background

Deployment of various cutting-edge technology focused on improving user road user safety and operational efficiency

Installation of technologies include:

- Connected Vehicle hardware (e.g., RSU, LiDAR sensors, processing unit)
- Passive Pedestrian Detection
- Intersection Movement Count (IMC) cameras
- Smart Transit Kiosks
- Parking Availability System for Surface Lots



PedSafe / Greenway Deployment



Where are we now

- Installations for CV hardware is complete (e.g., RSU, LiDAR)
- IMC cameras are installed for all locations aside from City of Orlando

Up Next

- Integration and testing of CV applications (e.g., SPAT, Ped. In X-Walk)
- Finalize data flows between end devices and user systems (e.g., IMC)

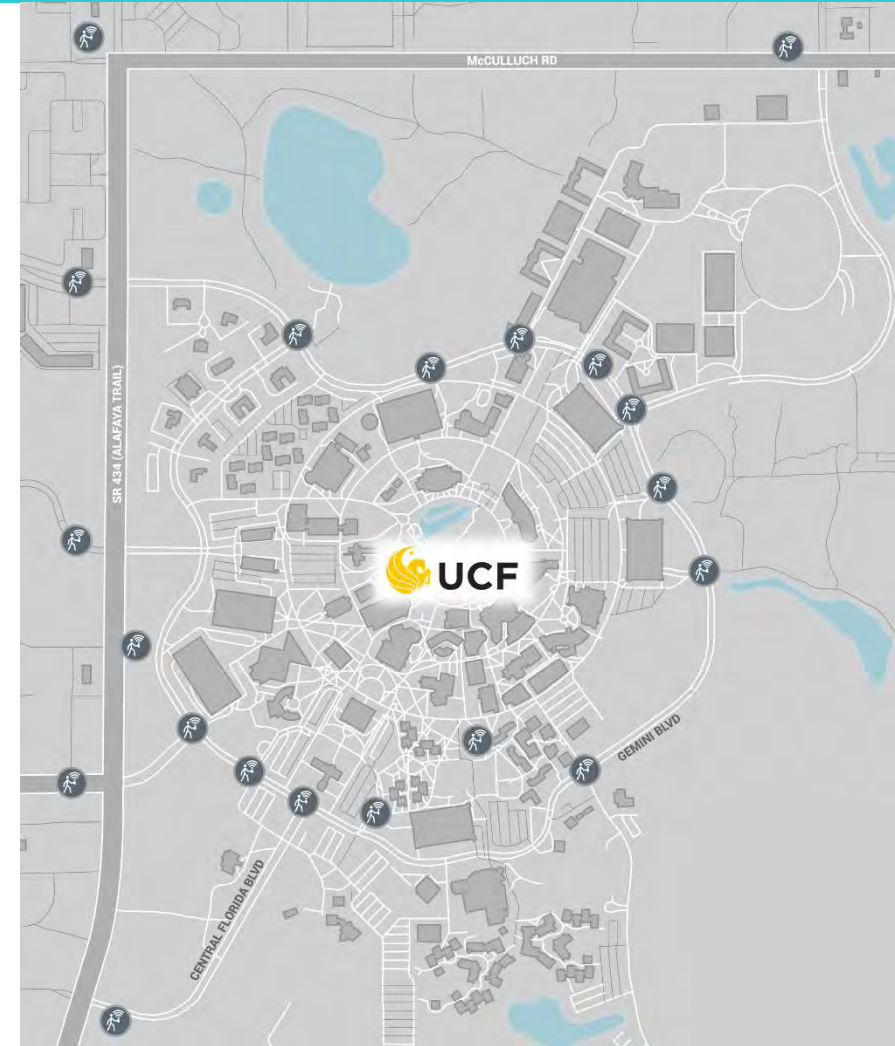
Projected End

Second quarter of 2021



UCF Activities

- Pre-Deployment Study
- ATTAIN Phase 1
- ATTAIN Phase 2
- ATTAIN Phase 3

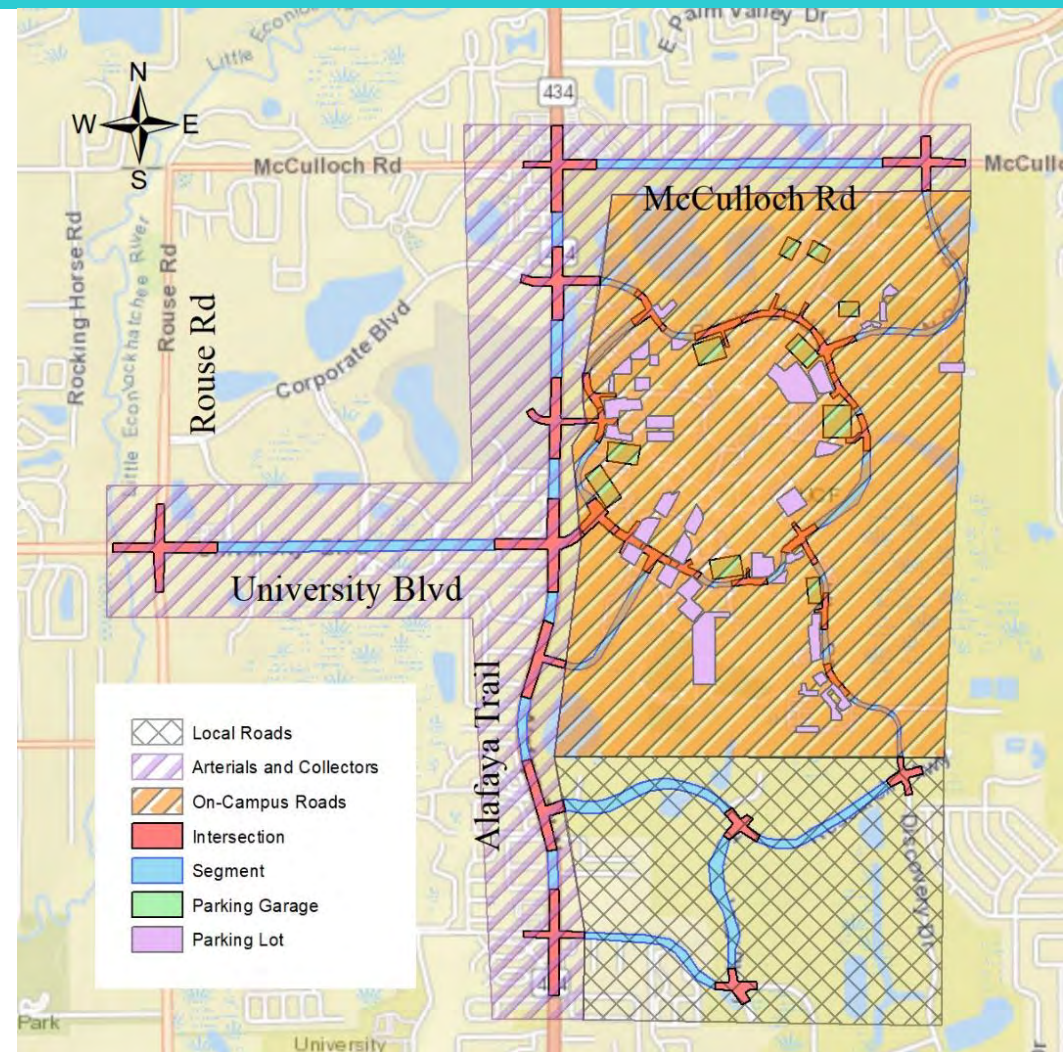




UCF Activities

Pre-Deployment Study

- Established performance measures to meet intended goals
- Collected baseline “before” data
- Foundation for the before/after evaluation

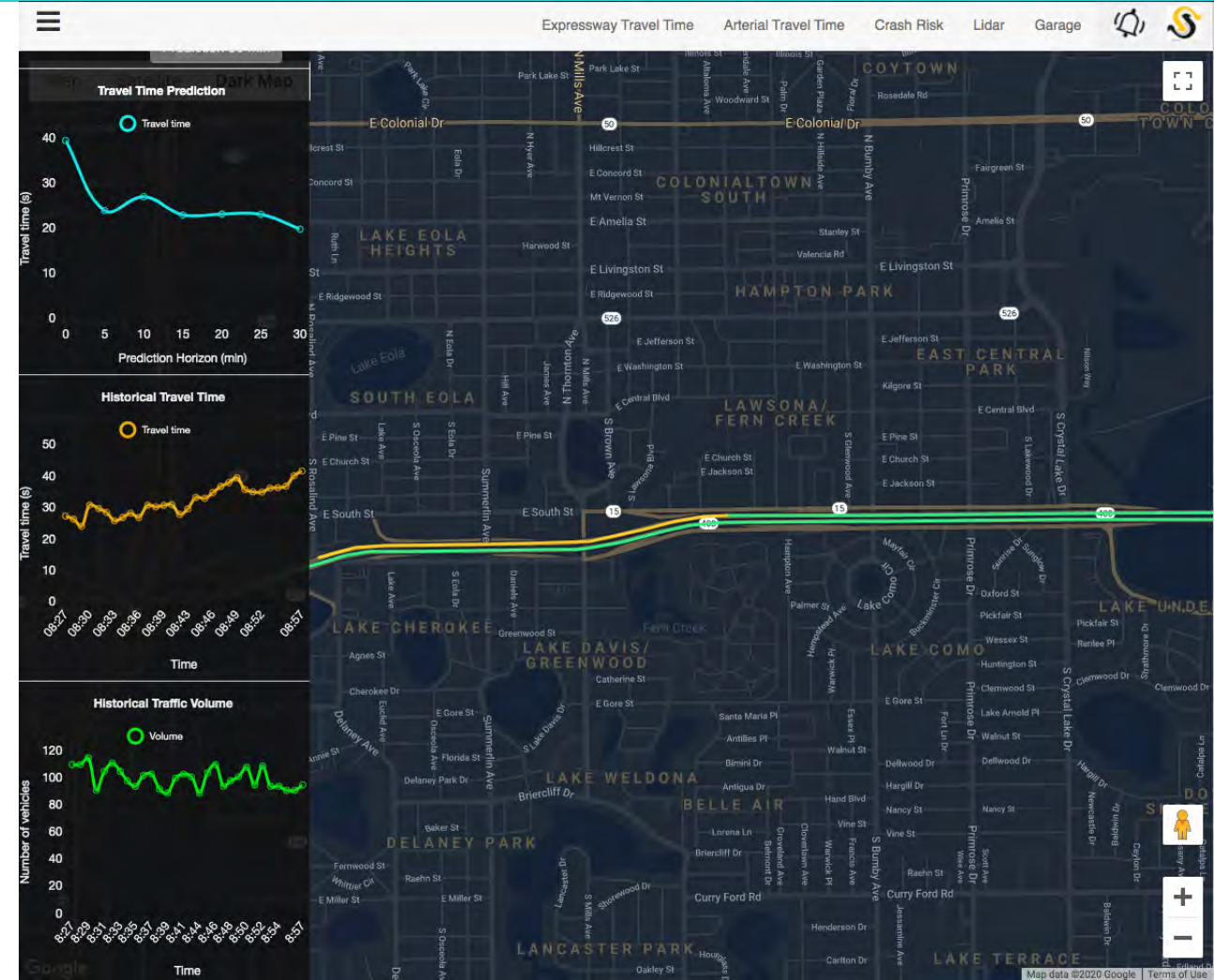




UCF Activities

ATTAIN Phase 1

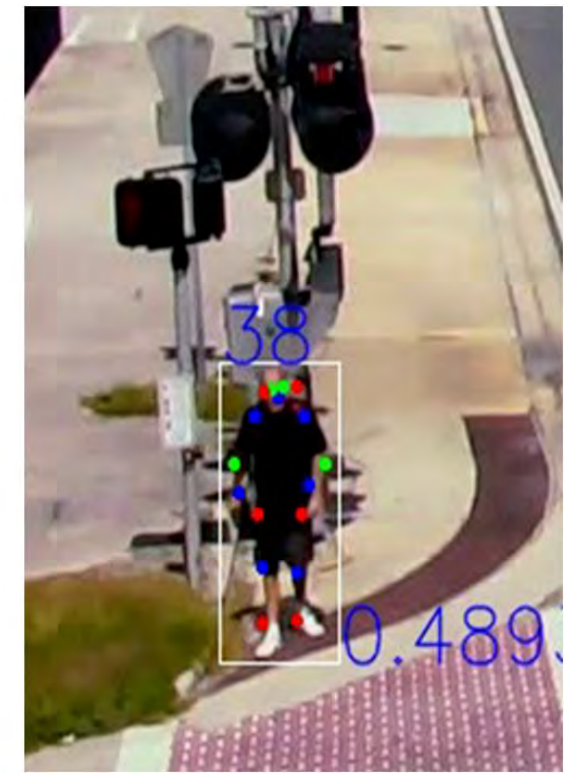
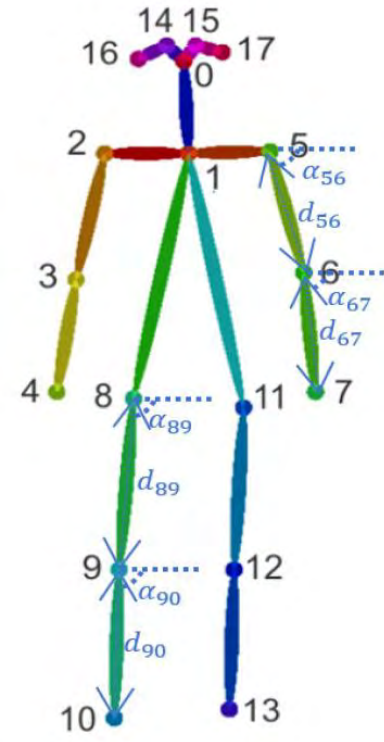
- Develop a smart garage system
- Apply LiDAR to detect real-time traffic status at intersections
- Predict travel time on expressways and arterials in real time
- Predict crash risk on arterials using connected vehicle emulated data





ATTAIN Phase 2

- Develop architecture to obtain road users' trajectories and conduct traffic analysis
- Pedestrian crossing behavior analysis and conflict prediction
- Expedited freeway crash verification using CCTV cameras

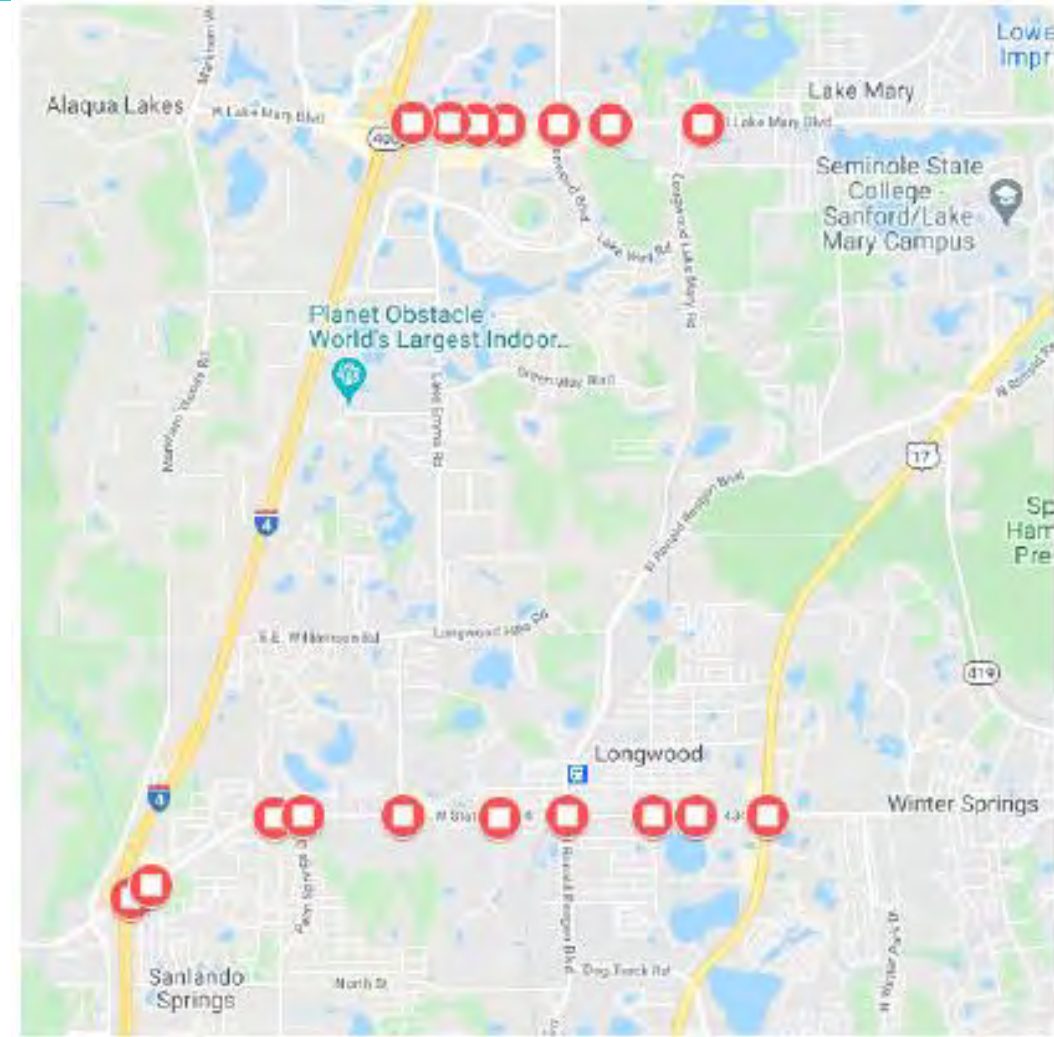




UCF Activities

ATTAIN Phase 3

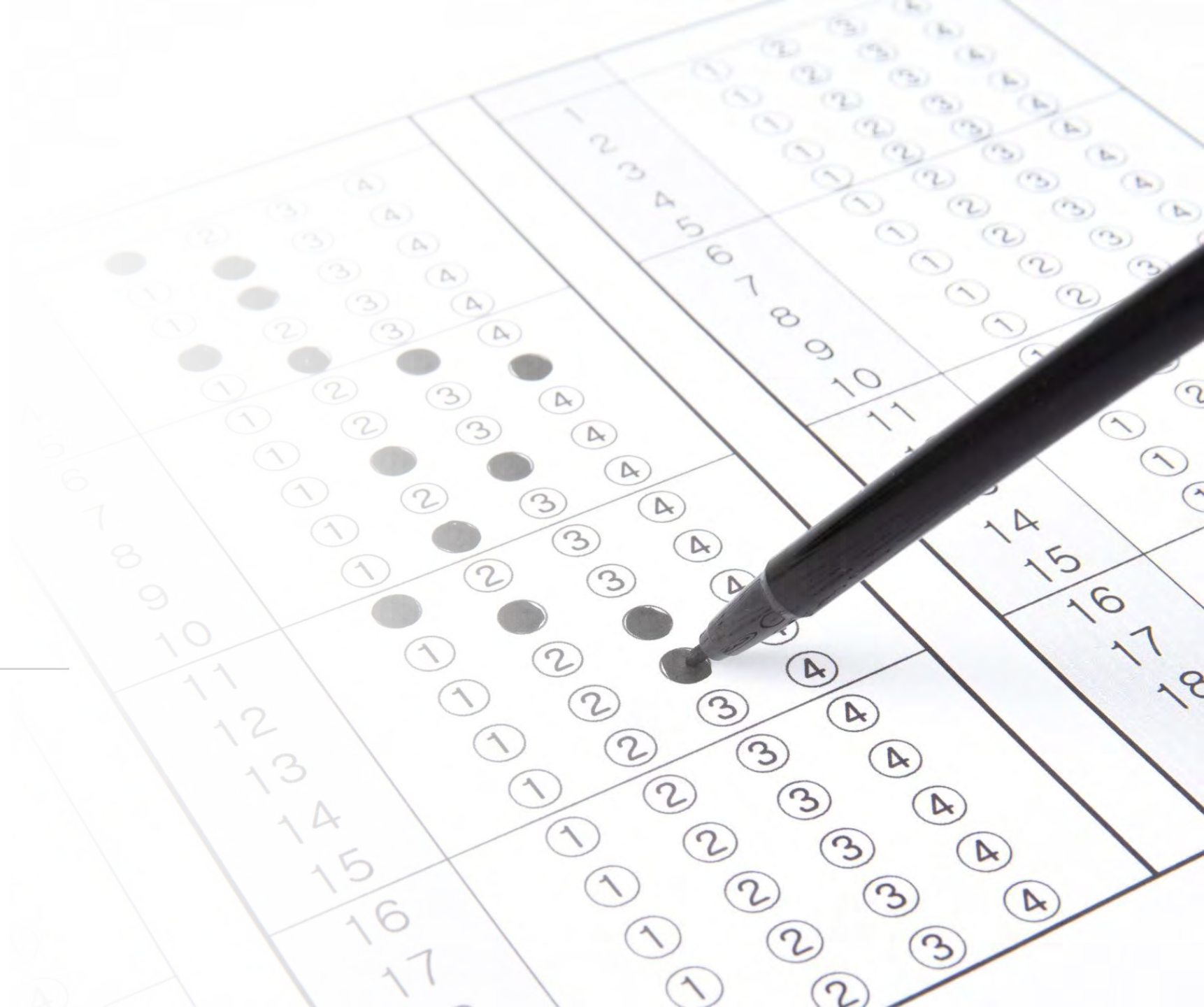
- SPaT Prediction
- Evaluate video analysis systems
- Smart Corridor Sensor Fusion
- Warning System Protocol for smartphone messages





Are We Hitting the Mark?

Program objectives vs. Reality



Importance of Maintenance / Operations

- IP address revisions
- Signalized Intersection Inventory Application (SIIA) updates
- MIMS changes

section

Maintaining Agency: Surrender Creek

ATSPM ID: 7070

Robway: 105-AT-02 @ D. 195

Intersection ID #: R29N-A0264

Intersection Type #: R29N-A0264

Intersection Name: I-4 @ I-54E 104 US-17-82

District: 3

Latitude: 26.810633

Longitude: -81.32354

Name: naucic

Type: FSD Type 1

Cabinet ID: 1

As Built Drawing No.: 99999

FDOT SIGID #: 77029

Geo Sequence: 3205

Facility Owner: FDOT

Structure Type: Concrete

Signal Type: T3

Painted: N/A

Structure Number:

Condition: Good

Power Company: Duke Energy

Power Service Address:

Power Service Type: Aerial

Communication Type: Fiber

Connection Type: SC

Fiber Type: Single-Mode

Cabinet Mount: R32

Date Operational: Thursday, February 10, 2006

Lane Closure Required For Bucket: YES

Cabinet Offset To Travel Lane [1] (ft): 26'13

Cabinet Offset To Travel Lane [2] (ft): 12'12

Railroad Preemption:

Optical Preemption:

GPS Preemption:

Coordinated System:

Leading Pedestrian Interval:

Inspector Name:

Functional Classification:

Context Classification:

FYA Supported: YES

Located in Clear Zone:

Span Wire: NO

Re-span Date:





ATTAIN
CENTRAL FLORIDA
advanced transportation technology

Thank you!

Jeremy Dilmore, PE – TSM&O Program Engineer
FDOT District Five

Current Initiatives

Jeremy Dilmore, District Five TSM&O

Technology Application Partnerships with Local Agencies (TAPs-LA)

REMINDER – proposals due to District Five DTOE by March 1, 2021

- Funds provided by FDOT's CAV Program (CO)
 - \$2,000,000 program total – up to \$500,000 per project
- CAV funds can be applied to state roads
 - Local match is suggested; local funds can be applied to state or local roads
- Projects must be funded and implemented in FY22
- Eligible Agencies – City, County, Public Transit, Port, Airport
- Eligible Roads
 - State funds can be applied to state roads; local match funds can be applied to state or local roads

TAPs-LA Schedule

Schedule Item	Due Date
Districts receive TAPs-LA document	December 8, 2020
Districts begin TAPs-LA local agency engagement	December 15, 2020
DTOEs receive proposals from local agencies	March 1, 2021
DTOEs send recommended proposals to Central Office	March 12, 2021
Brief TSM&O Leadership Team	March/April 2021
Central Office selects project proposals	April 2, 2021
Districts/CO work on getting funds into Work Program for state roads; local agency secures funding for local roads	April 4, 2021 through August 1, 2021
Districts and local agencies begin implementing awarded projects	August 15, 2021

THANK YOU!

Next Consortium – April 1, 2020



TSM&O Consortium Meeting

MEETING AGENDA

Teleconference

February 4, 2021

10:00 AM-12:00 PM

- 1) WELCOME
- 2) HIGHWAY RAIL NOTIFICATION & ARTERIAL APPROACH CLEARANCE PROJECT
 - Carlo Adair, HNTB
- 3) ATTAIN CENTRAL FLORIDA – PROGRAM UPDATE
 - Jeremy Dilmore, District Five TSM&O
 - Project Managers
- 4) CURRENT INITIATIVES
 - Jeremy Dilmore, District Five TSM&O