CENTRAL FLORIDA TSM&O CONSORTIUM MEETING SUMMARY

Meeting Date:	March 3, 2022 (Thursday)	**Time**: 10:00 AM – 12:00 PM
Subject:	TSM&O Consortium Meeting	
Meeting Location:	Teleconference FDOT RTMC 4975 Wilson Rd. Sanford, FL 32771	

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.

I. I-4 EXPRESS LANES

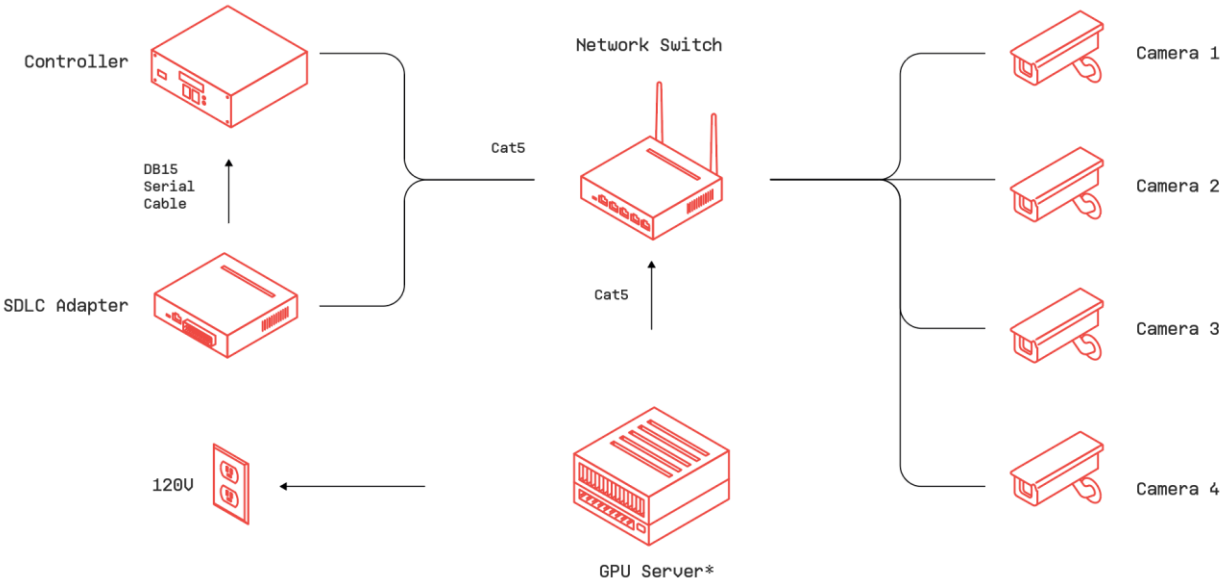
Jeremy Dilmore gave a short introduction and briefly discussed the I-4 Express Lanes.

- I-4 Express Lanes are now tolling at $0.50 per segment
- will look at volumes now
- 10,000 vehicles per day so far
- developing SOGs for ramp metering effort
    - not looking to deploy during event management yet; may change
    - working with Lynx on holding greens for buses to help them keep their speeds up the ramps

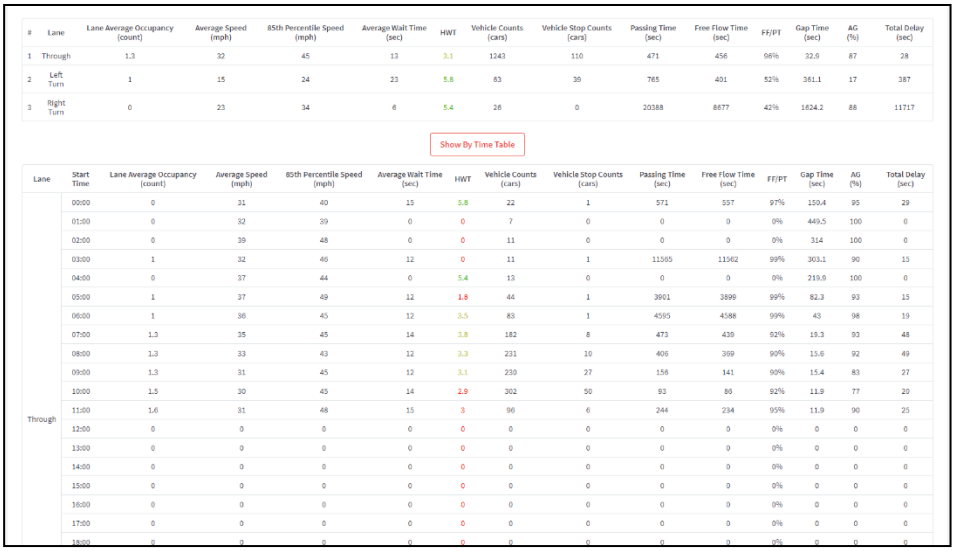
II. CURRUX VISION AI - TAKEAWAYS

Hazem El Assar (Orange County) described Orange County's experience, lessons learned, and takeaways from their Currux Vision intersection deployment.

- Use Case Examples:
    - 95%+ accurate big data collection and analytics
    - traffic safety / near miss detection
    - detecting traffic violations
    - NTCIP/SDLC detection and adaptive control (including ped and bike detection)
- Currux Vision System Components
    - "Brain" – Smart City AI-Vision Computer Vision AI System for Smart Cities based on NVIDIA GPU multi-core processors (Linux OS), with wide temperature operating range and resistance to shock/vibration
    - System Architecture



- Currux Vision works with any existing or new camera system
- Functionality
    - SDLC Detection – unlimited number of dection zones; SDLC calls can be placed from the cabinet or remotely
    - Advanced Traffic Analytics Reports
        - Lane Occupancy
        - Counts with classification
        - Counts and speed by lane
        - Wait times
        - Average speed by lane
        - Total delay
        - 85th percentile speed by lane
        - Passing time
        - Free flow/passing time ratio
        - Time gap
        - Arrivals on green



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3	Right Turn	0	23	34	6	5.4	26	0	20388	8677	42%	1624.2	88	11717

Show By Time Table

Lane	Start Time	Lane Average Occupancy (count)	Average Speed (mph)	85th Percentile Speed (mph)	Average Wait Time (sec)	HWT	Vehicle Counts (cars)	Vehicle Stop Counts (cars)	Passing Time (sec)	Free Flow Time (sec)	FF/PT	Gap Time (sec)	AG (%)	Total Delay (sec)
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	14:00	0	0	0	0	0	0	0	0	0	0%	0	0	0
	15:00	0	0	0	0	0	0	0	0	0	0%	0	0	0
	16:00	0	0	0	0	0	0	0	0	0	0%	0	0	0
	17:00	0	0	0	0	0	0	0	0	0	0%	0	0	0
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Date labeled	Cars	Light truck	Bus	Heavy truck	Motorcycle	Bicycle	Pedestrians	N/A
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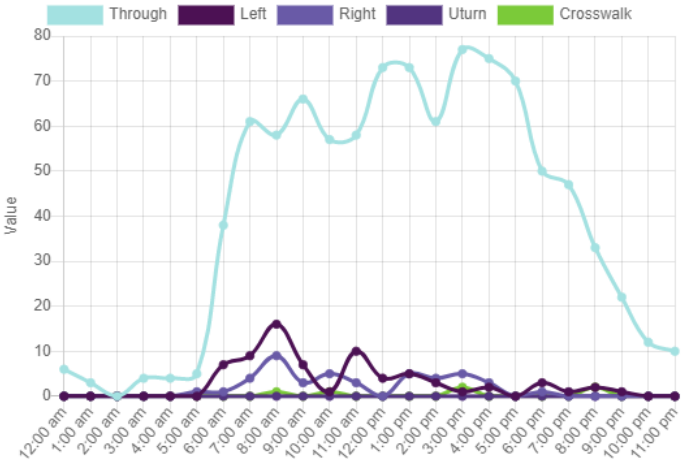
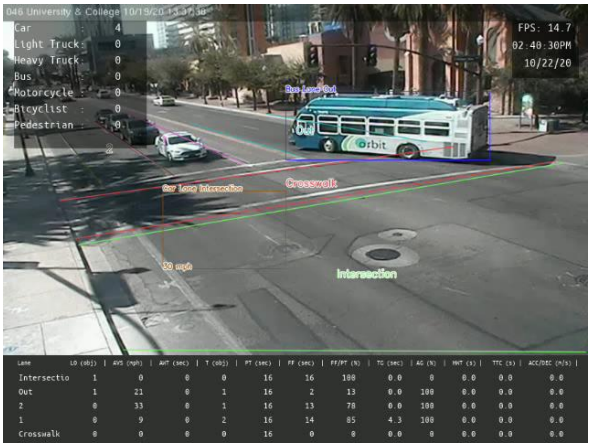
  - Real-time notifications with photo evidence
- Intersection Adaptive / Green Utilization
  - Single intersection or corridor level adaptive system using data collected by Currux Vision
  - model can be trained on data for the previous day/week/month
  - automatically calculates intersection split times in under 30 seconds to reduce the total delay at the intersection
  - differentiates between week/weekend
  - weighting applied to various approaches
  - system recommends the new split times or automatically upload the calculated split times to the controller using NTCIP
- Turn Count Analytics
  - Vehicle counts by turn type and class
  - 5 to 60 minutes time bins
  - Ped and bike counts in crosswalk
  - PDF & Excel reports export
- Pedestrian Detection & Tracking
  - Track in any direction
  - accurate counts
  - PED speed
  - red extension
  - passive ped detection





- Other features
  - Existing detection auditing – missed/false calls
  - Red light runner detection

Discussion:

- **Q:** Rich Ataman – Where are the videos stored?
  - **A:** Hazem – On the device itself.

- Q: Rich – How does that work with public records?
  - A: We don't retain the video outside the device itself.
- Q: If you moved into this long-term, would you develop a more long-term retention plan?
  - A: Yes.
- Q: Does it adjust left turn?
  - A: It does not make any recommendations, it just provides data
- Q: Bryan Homayouni – Does it make predictive analytics?
  - A: Only in real time; not over long timeframe.
- Q: Bryan – How long was the pilot?
  - A: 2 months.
- Q: Bryan – What is your confidence in the system?
  - A: confirmed their claim of 95% accuracy
    - can't really say what level of accuracy it has on false alerts
  - Jeremy – trying to determine a metric/system to verify accuracy of system; setting up test with UCF
  - need to develop a minimal accuracy threshold
  - near-miss has promise for arterial & freeway
  - if we're using good underlying data, it has a lot of use cases
- Q: Bryan – is there a list of vendors being tested?
  - A: Bosch, InNovo, Currux, Derq
- Q: Nabil Muhaisen – is 5-minute interval the shortest option?
  - A: Most likely
  - Jeremy –
    - Iteris can do 15 minutes
    - Gridsmart 1 minute
    - Miovision 1 minute
    - InNovo 1 minute
  - use 1-minute intervals for predictive analytics
- Q: Aware of any other regions using this system?
  - extensively in California; contract with D7
- Q: Are we going to complement the system with anything?
  - cannot replace existing systems because its not approved by TERL; supplementing standard systems
- Q: Only on fixed focal camera? Not 360° camera?
  - Must be fixed camera; 1 per approach

III. CFMPOA TSMO NETWORK

Eric Hill briefly discussed the latest coordination with the Central Florida MPO Alliance (CFMPOA) regarding *TSMO Regional Projects*.

- Regional TSMO project impacts two contiguous cities/counties
- Set of integrated strategies to optimize the performance of operations on existing/new infrastructure

- Serves regional transportation needs such as access to and from the area outside the region
    - freight service and parking; evacuation; security and privacy
- Some caveats
    - Problem statement
    - MPOs/TPOs may not have projects that meet the working definition
    - TSMO is a dynamic discipline
    - Low technology to High technology
- Presented *TSMO Regional Project* definition to CFMPOA in February; received concurrence
- Potential examples
    - SR 40 Rural Signalized Intersections Collison Warning System (SR 40 through Volusia and Marion Counties)
    - Beach Parking Information System (Flagler, Volusia, Brevard)
- Next Steps
    - FDOT Support
    - Prioritization
    - Advisory Team
    - Coordination with FDOT D1 (Polk TPO)

IV. DRONE WORKSHOP

Eric Hill gave a brief explanation of the upcoming Drone Workshop at the RTMC.

- Eric has been working with Sheryl to determine how drones are used in transportation
- will hold a workshop on March 31
    - half day at RTMC
    - half of meeting will be classroom style; other half will be live demo
- will send out an email for a survey and for more information

V. CONSIDERATIONS AND APPLICATIONS FOR INTEGRATING CAV INTO COMPLETE STREETS

David Williams provided a brief summary of the *Considerations and Applications for Integrating CAV into Complete Streets* technical memo published by FDOT Central Office.

- Complete Street – prioritizes travel and safety for all users of the right-of-way, regardless of mode
- Two primary topics in the Technical Memo:
    - Complete Streets Planning Considerations for CAV
    - Applications of CAV technology to enhance Complete Streets
- Complete Streets Planning Considerations
    - Emerging modes of travel may affect Complete Streets
    - Curb management
    - Impacts on parking
    - Land use considerations
- Applications of CAV to enhance Complete Streets

  - Infrastructure-based strategies
  - Vehicle-based strategies
  - Bike/Ped/Micro-based strategies
- Next Steps beyond the white paper
  - Identify crossovers between CAV and Complete Streets programs
  - Develop CAV/Complete Streets toolbox for practitioners
  - Conduct CAV/Complete Streets training webinar for FDOT staff and consultants
  - Identify opportunities for pilot project(s)

VI. TAKING TIME TO FLEX

Garrett Popovich briefly discussed the TSMO eLearning platform FLEX.

- What's new?
  - Updated design
  - New courses available
    - ITS Fiber Design
    - RTMC Phone System
    - BlueToad/BlueARGUS Training
    - RICMS Response Plan Training
  - Active Users – 318
  - Courses completed – 231
  - Most popular
- Upcoming courses
  - Adaptive Signal Control Technology (ASCT) Training
  - ITS CEI Dynamic Message Sign
  - ITS CEI Road Weather Information System
  - Manual on Uniform Traffic Studies (MUTS)

VII. STROZ PROJECT UPDATE

Jeremy Dilmore gave an update on the Signal Training for Regional Optimization Zone (STROZ) traffic signal training site at the RTMC.

- STROZ is a fully equipped training site located at the RTMC
- Purpose – to provide a real-world scenario for training, demonstrations, and testing to occur
- The STROZ platform will enable FDOT to:
  - Host hands-on training for local agency staff (signal technicians)
  - Host vendors so they can demonstrate new technologies

  - Teach best practices for maintenance, repairs, and troubleshooting
- Status
  - 90% of infrastructure is completed and installed
  - Remaining work includes installation of various roadside devices
  - Target completion – end of March 2022
  - Updated design

VIII. CURRENT INITIATIVES

Jeremy Dilmore briefly provided an update on the current work efforts throughout District Five.

- PedSafe – Construction mostly completed
- Kiosks at UCF – isntalled and will be tested on 3/10
- AV Shuttle – commissioned both routes; power issue affected one
- Event Management – hoping to finish integration/testing soon
- I4 FRAME – plans completed
- TAPS-LA Osceola – RFP completed; ad through Osceola in February
- Orlando AID SODA TOP – in procurement now
- Maintenance Contract – currently in Procurement
- ATTAIN
  - switched from Siemens to Intelight
    - would that include ASCT
      - there were plans for some updates, but not sure detection/adaptive was a part of it
      - it was intended to just be IMCs, not necessarily detection
- If anyone has issues with hardware/contractors, please let us know

IX. NEXT MEETING

- May 19, 2022

X. 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.*

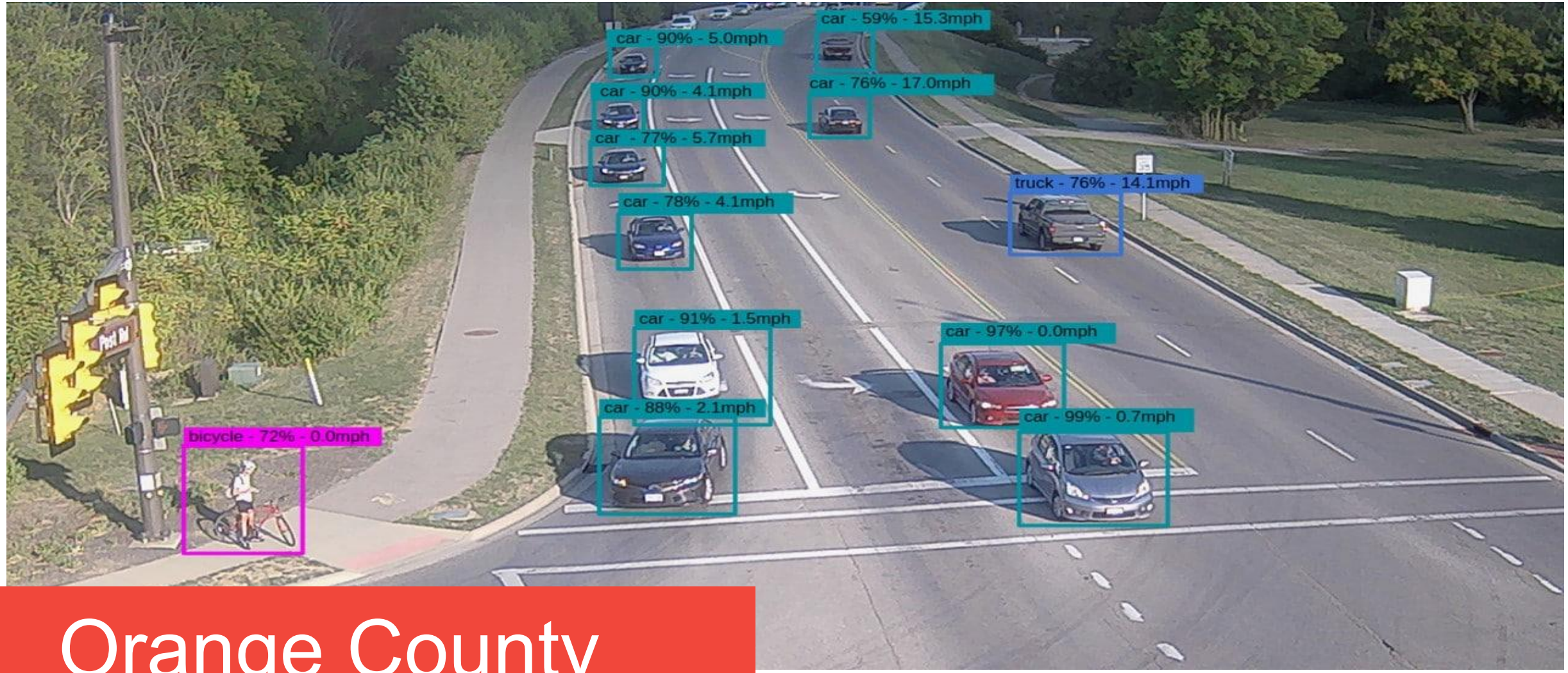
Welcome to the TSM&O Consortium Meeting

March 3, 2022

Transportation Systems Management & Operations

Meeting Agenda

1. Welcome
2. Currux Vision AI
3. Regional TSM&O Prioritized Projects
4. Drone Workshop Information
5. Integrating CAV into Complete Streets
6. Taking Time to FLEX – What's New in Training
7. STROZ Training Platform – Update
8. Current Initiatives

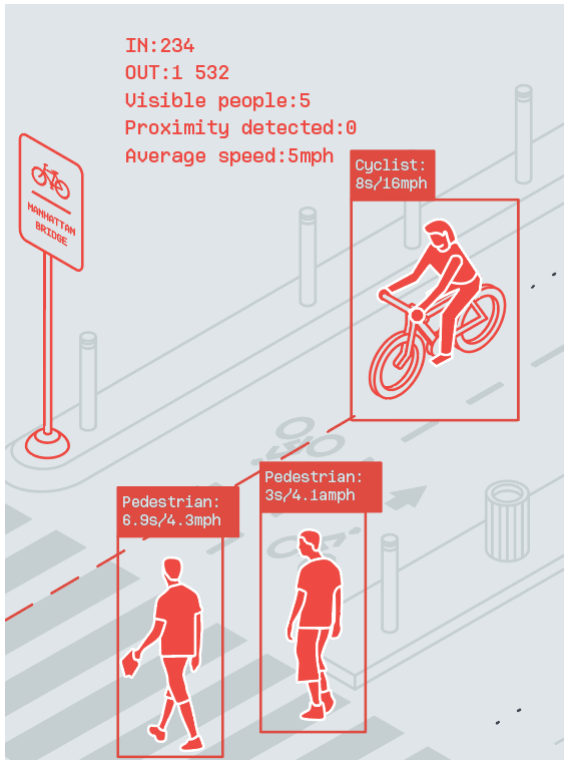


Orange County

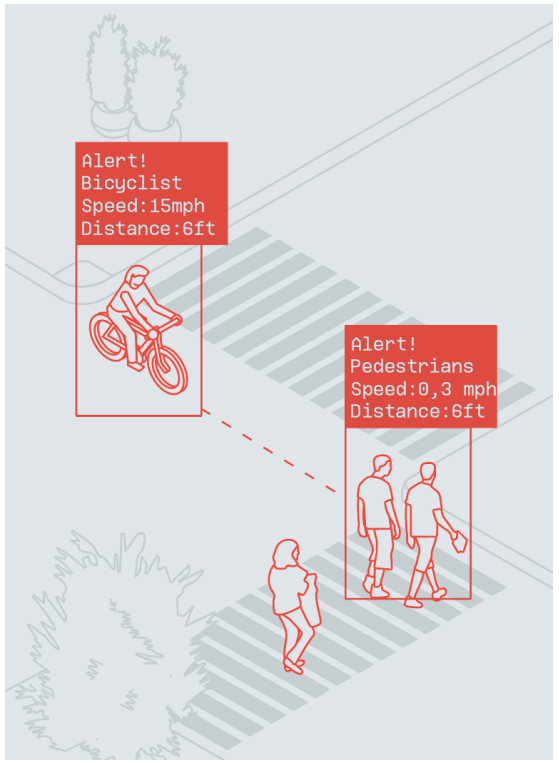
Artificial Intelligence for Intersections

Based on Currux Vision Data

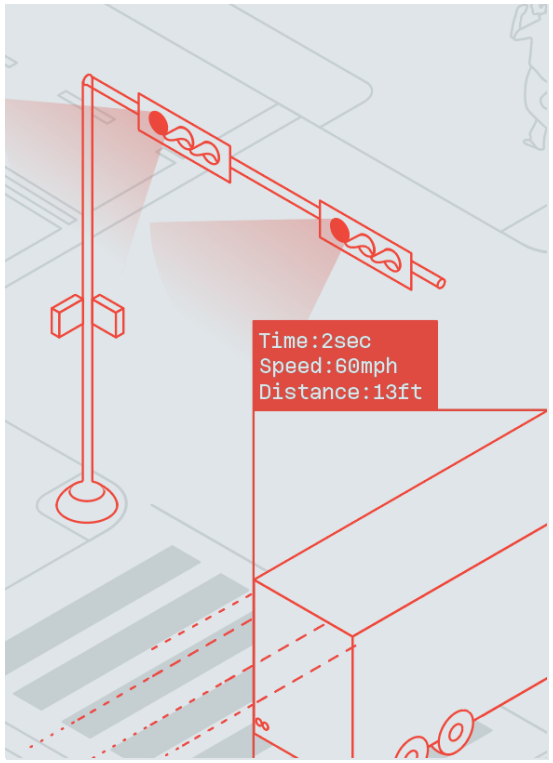
Example of Use Cases:



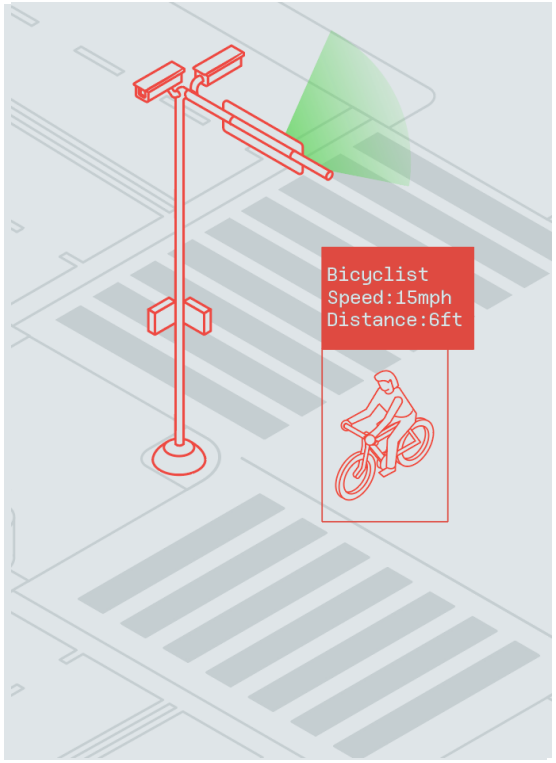
95%+ accurate big data collection and analytics



Traffic Safety / Near Miss Detection



Detecting traffic violations



NTCIP/SDLC Detection and Adaptive (including Ped and Bike detection)

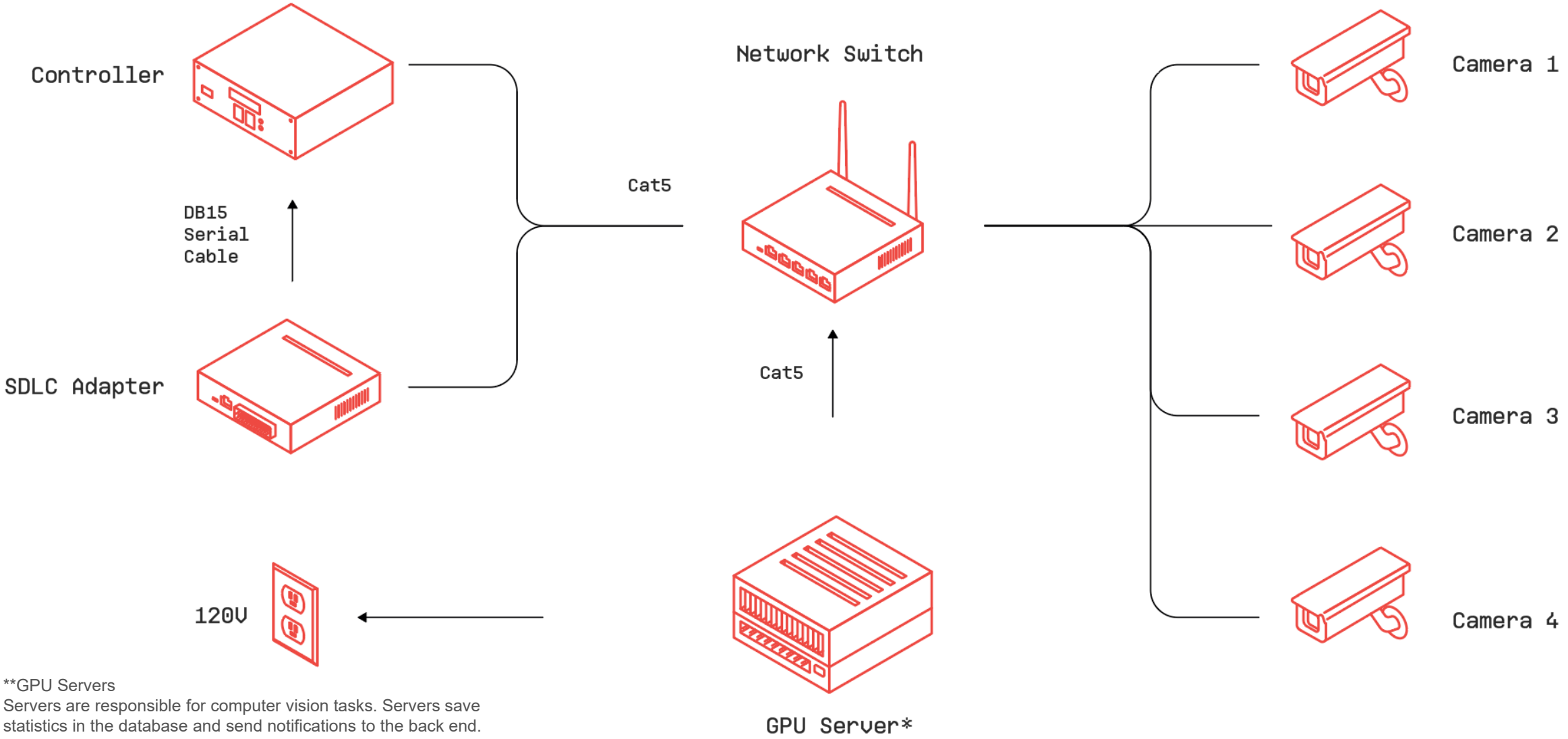
The Brain

SMART CITY AI-VISION Computer
Vision AI System for Smart Cities

- **Based on NVDIA GPU**
  Multi Core Processors
- Linux Operating System
- Small Size 4.1” x 4.1” x 2.5”
- Wide temperature operating range and resistance to shock and vibration

Optimization of Traffic / Safety AI models

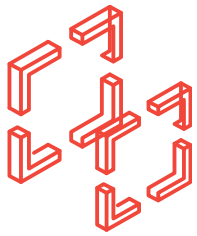
System architecture overview



**GPU Servers
Servers are responsible for computer vision tasks. Servers save statistics in the database and send notifications to the back end.

Works With Any Existing Camera System - Or New!

Functionality Overview

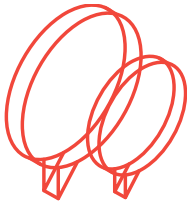


SDLC Detection

- Unlimited number of detection zones
- SDLC calls can be placed from inside the cabinet or remotely (via network switch)
- Accurate Vehicle, Ped and Bike detection

Advanced Traffic Analytics Reports

- Lane Occupancy (Queue Length)
- Counts with classification by size category
- Counts and Speed by lane
- Wait times
- Average speed by lane
- 85th Percentile speed by lane
- Passing time
- Free flow / passing time ratio
- Time gap
- Arrivals on Green
- Total Delay



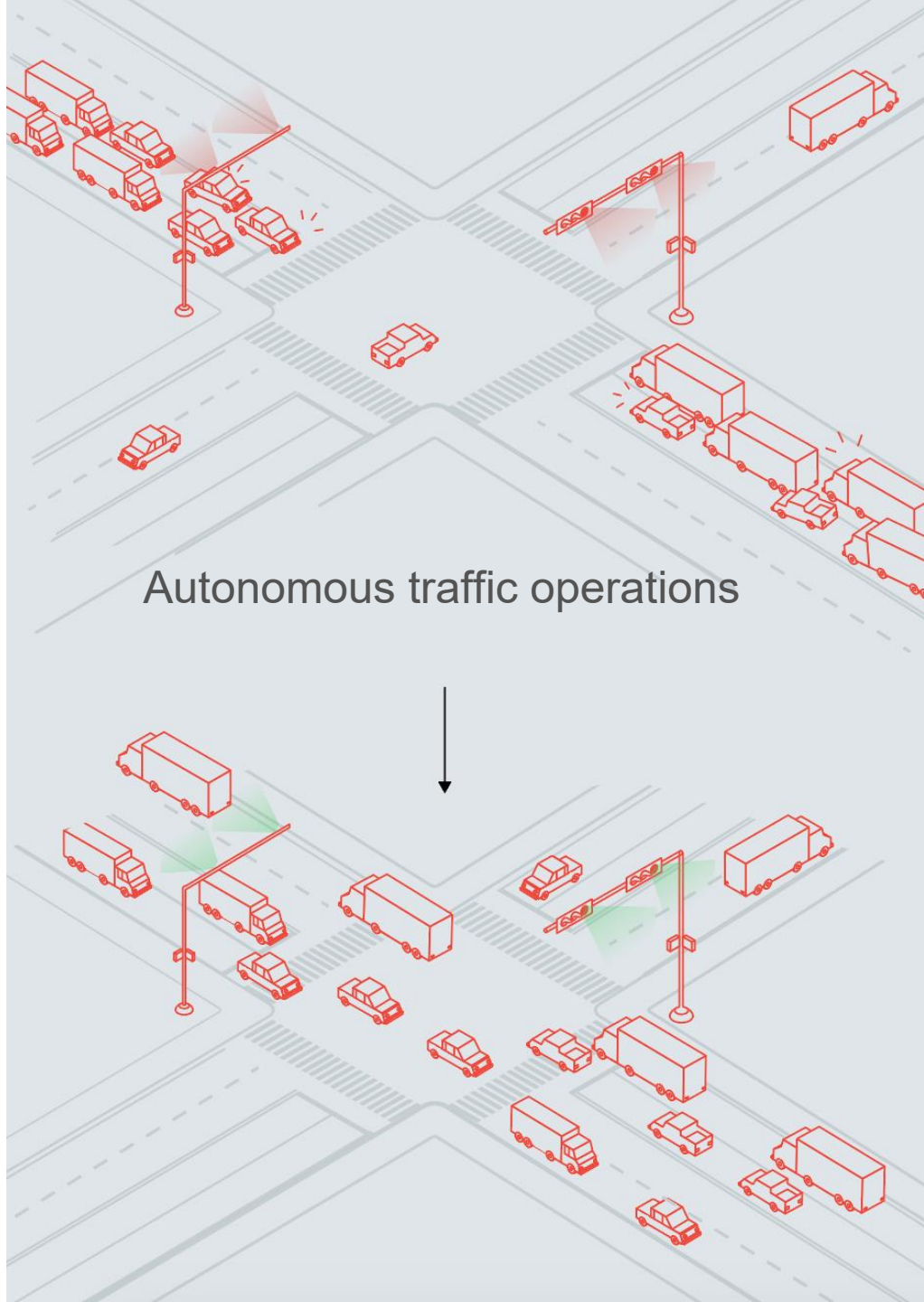
Real Time Notifications with Photo Evidence

- Wrong Way
- Slow and Stopped Traffic
- Stopped Car
- Pedestrian Detection
- Speeding
- Heavy Truck Alert
- Double Line Crossing
- Stop Sign Violation
- Red light Violation
- Near Misses
- False Detection Calls

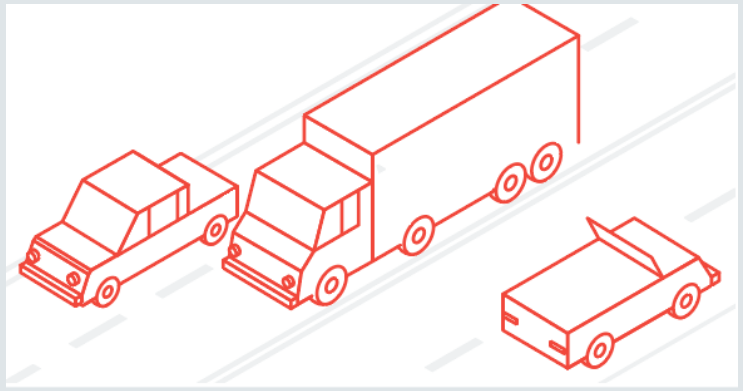
Intersection Adaptive / Green Utilization

CAPABILITIES OVERVIEW

- Single intersection and corridor level adaptive system using data collected by Currux Vision (queue length, delay times, counts, & speed)
- **Model can be trained on data for the previous day /week / month**
- **Automatically calculates intersection split times in under 30 seconds to reduce the total delay at the Intersection**
- **10 min to 4 hours split time table update**
- **Differentiates between week and weekend**
- **Weighting applied to various approaches**
- System recommends the new split times or automatically upload the calculated split times to the controller using NTCIP
- System can automatically recalculate split times daily, weekly, monthly to capture the latest changes in traffic patterns and upload them to the controller.

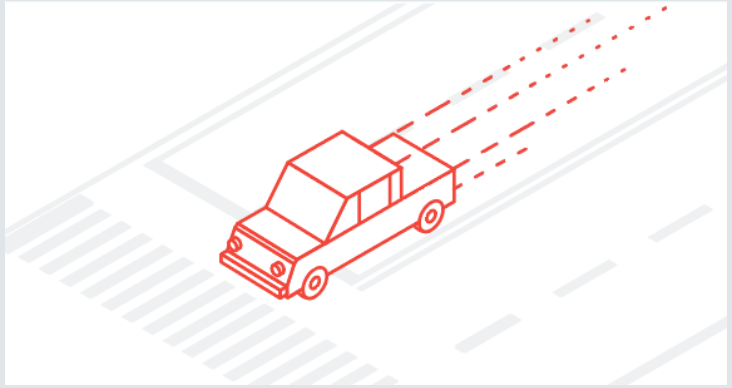


Standard Traffic Analytics Reports

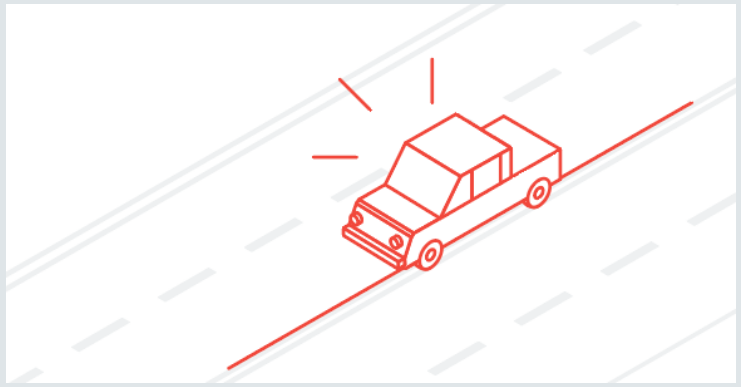


Vehicle counts by class, type, lane

Pedestrian and bicyclist counts



Average speed by lane



Event counts

- Vehicle counts by class, type, lane
- Pedestrian and bicyclist counts
- Average speed by lane
- Turn counts
- Event counts

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Advanced Traffic Analytics

- Lane Occupancy (Queue Length)
- Average Speed
- 85th Percentile Speed
- Average Wait Time
- HWT – Contact Car in Front
- Vehicle Counts
- Vehicle Stop Counts
- Passing Time
- Free Flow vs Sat Flow
- Gap Time
- Arrivals on Green
- Total Delay

Detailed Traffic Analytics By Lane and Approach

#	Lane	Lane Average Occupancy (count)	Average Speed (mph)	85th Percentile Speed (mph)	Average Wait Time (sec)	HWT	Vehicle Counts (cars)	Vehicle Stop Counts (cars)	Passing Time (sec)	Free Flow Time (sec)	FF/PT	Gap Time (sec)	AG (%)	Total Delay (sec)
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	14:00	0	0	0	0	0	0	0	0	0	0%	0	0	0
	15:00	0	0	0	0	0	0	0	0	0	0%	0	0	0
	16:00	0	0	0	0	0	0	0	0	0	0%	0	0	0
	17:00	0	0	0	0	0	0	0	0	0	0%	0	0	0
	18:00	0	0	0	0	0	0	0	0	0	0%	0	0	0

Queue length is calculated and displayed under Lane Occupancy = Cars Stopped

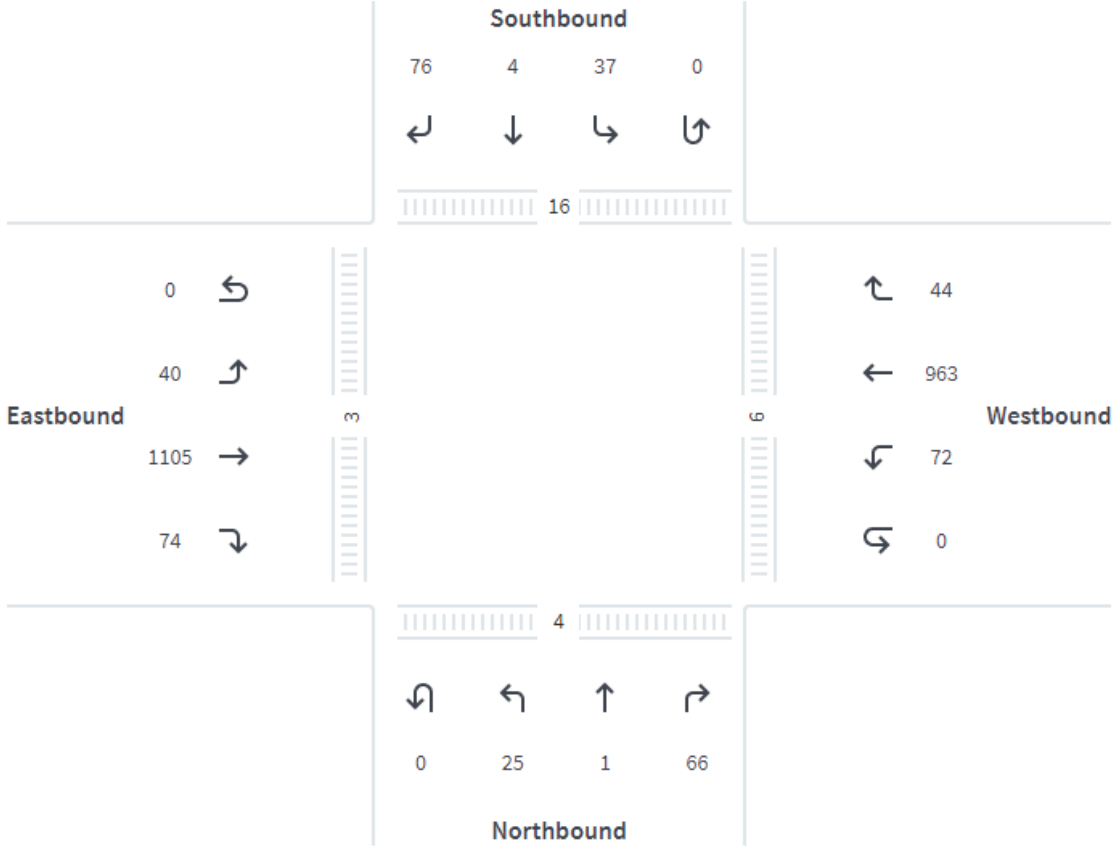
Turn Count Analytics

Vehicle counts by turn type and class

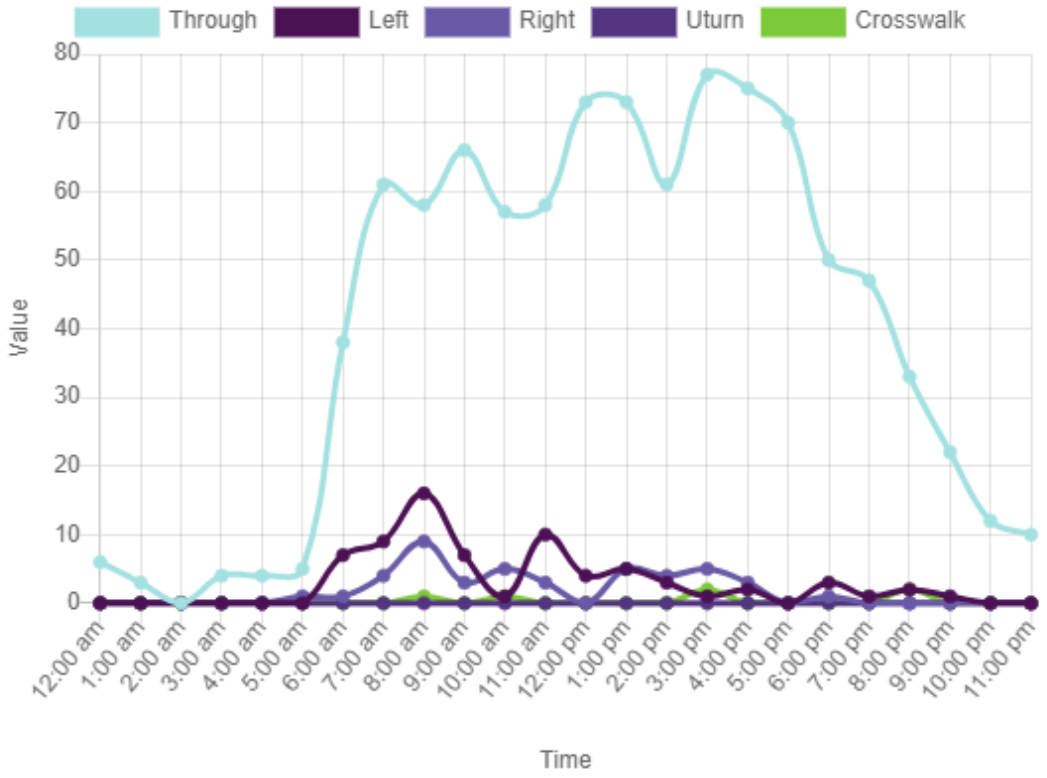
5 to 60 minutes time bins

Ped and bike counts in crosswalk

PDF and Excel reports export



Turn Count Analytics



Detailed Traffic Analytics By Turn Type and Approach

Start Time	Southbound					Westbound				
	Through	Left	Right	Uturn	Crosswalk	Through	Left	Right	Uturn	Crosswalk
12:00 am	0	1	0	0	0	6	0	0	0	0
1:00 am	0	0	0	0	0	3	0	0	0	0
2:00 am	0	0	0	0	0	0	0	0	0	0
3:00 am	0	0	0	0	0	4	0	0	0	0
4:00 am	0	0	0	0	0	4	0	0	0	0
5:00 am	0	1	0	0	0	5	0	1	0	0
6:00 am	0	0	0	0	1	38	7	1	0	0
7:00 am	0	0	1	0	3	61	9	4	0	0
8:00 am	0	0	2	0	0	58	16	9	0	1
9:00 am	0	2	7	0	0	66	7	3	0	0
10:00 am	0	4	6	0	0	57	1	5	0	1
11:00 am	1	4	9	0	0	58	10	3	0	0
12:00 pm	1	4	4	0	1	73	4	0	0	0
1:00 pm	0	3	4	0	0	73	5	5	0	0
2:00 pm	0	4	8	0	0	61	3	4	0	0
3:00 pm	0	2	12	0	1	77	1	5	0	2
4:00 pm	2	6	14	0	0	75	2	3	0	0
5:00 pm	0	5	5	0	1	70	0	0	0	0
6:00 pm	0	0	1	0	1	50	3	1	0	0
7:00 pm	0	1	1	0	0	47	1	0	0	0
8:00 pm	0	0	0	0	0	33	2	0	0	2
9:00 pm	0	0	0	0	8	22	1	0	0	0
10:00 pm	0	0	2	0	0	12	0	0	0	0
11:00 pm	0	0	0	0	0	10	0	0	0	0
Total	4	37	76	0	16	963	72	44	0	6

Near Miss Trajectories Analytics / Report

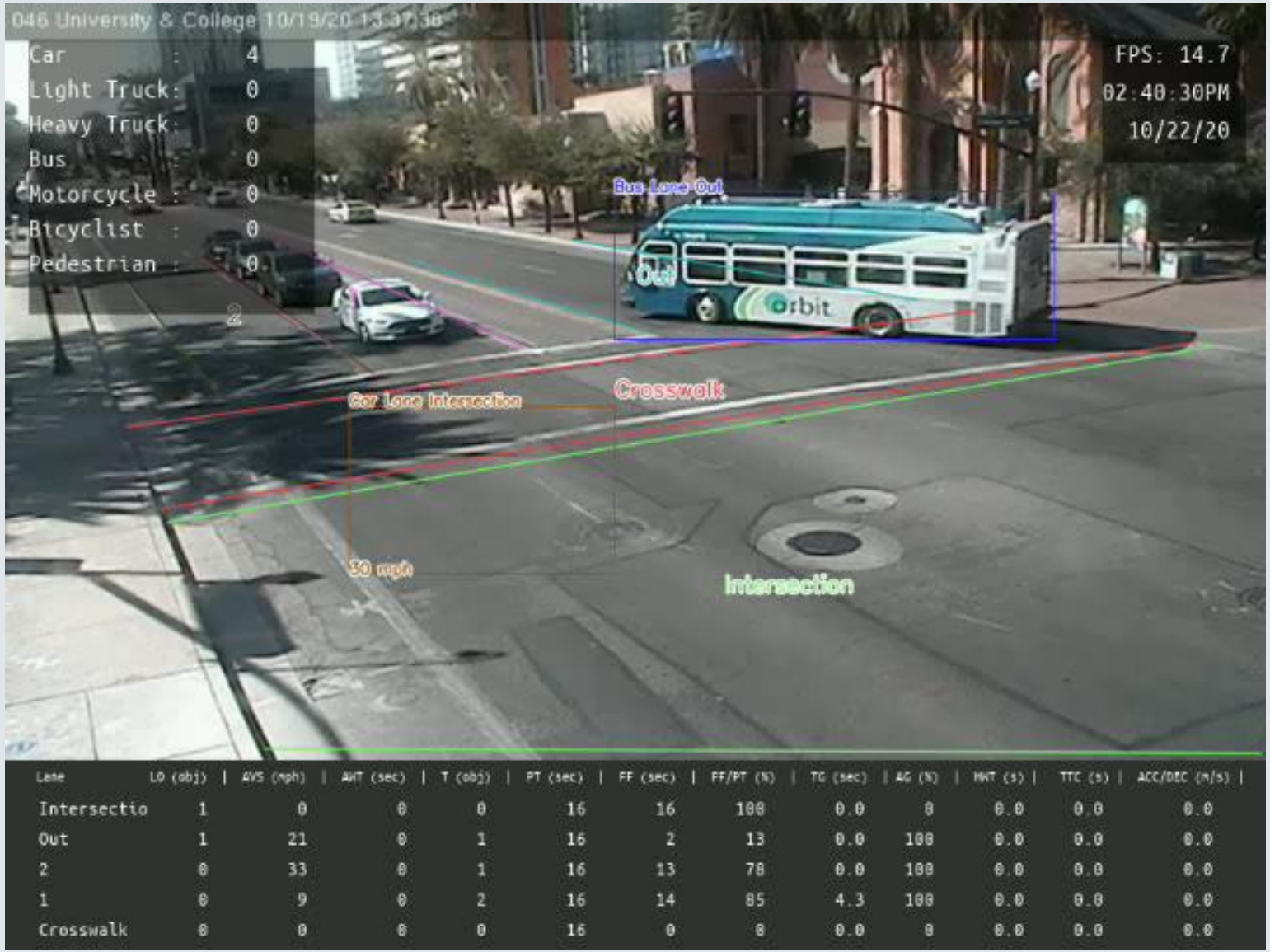
Full trajectory based near miss analysis – Near Miss Trajectories – that will display the trajectories of objects with TTC below 1.5 seconds (or whatever the camera setting is)

#	Lane	Number of Vehicles	Crosswalk Violations	Car Stopped at Intersection	HWT	Red Light Crossing	Near Misses	Lane Stopped	85th Percentile Speed(mph)	Speeding	% of Cars Speeding
1	Through	2146	0	0	2.8	0	0	0	44	200	0.09%
2	Left Turn	154	0	0	4.9	0	0	0	4	0	0%
3	Right Turn	50	0	0	4.7	0	0	0	32	0	0%

Pedestrian Detection and Tracking

Identifies and Track Pedestrians in Crosswalks

- Track in any direction
- Accurate Counts
- PED Speed
- Red Extension
- Passive PED Detection

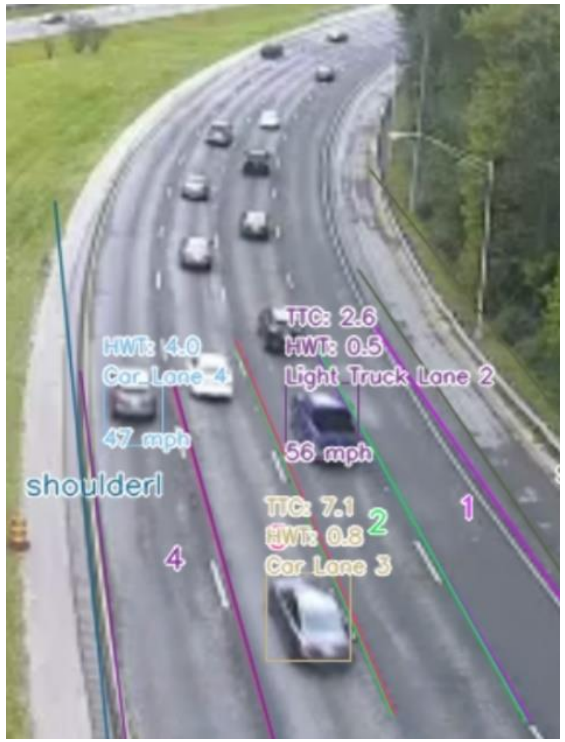


ITS Notifications Examples

Real-time notification examples

- Detection in inclement weather
- Speeding notification
- Stopped Lane
- Car Stopped

PED and Vehicle Violations



HWT: time it takes to hit car in front if that car stops immediately

TTC-time to collision if current speed of both cars is maintained

Illegal Pedestrian

Vehicle PED Violation

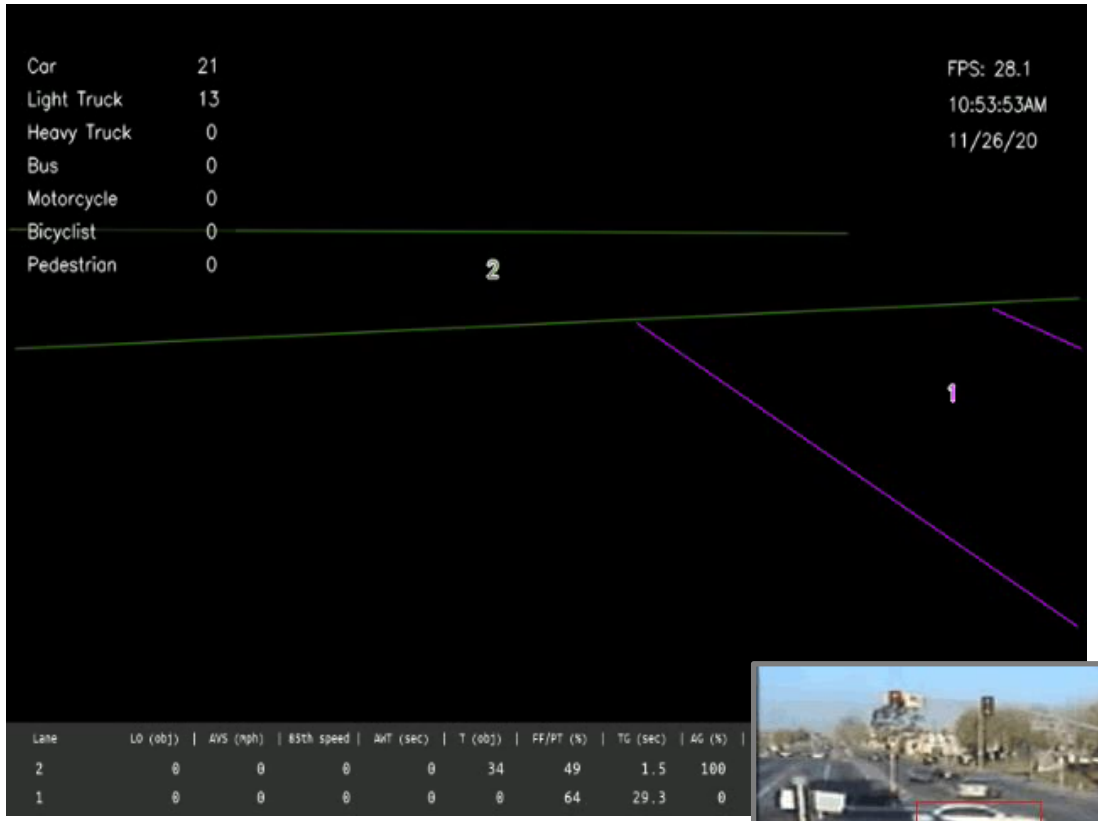
Stopped In Median

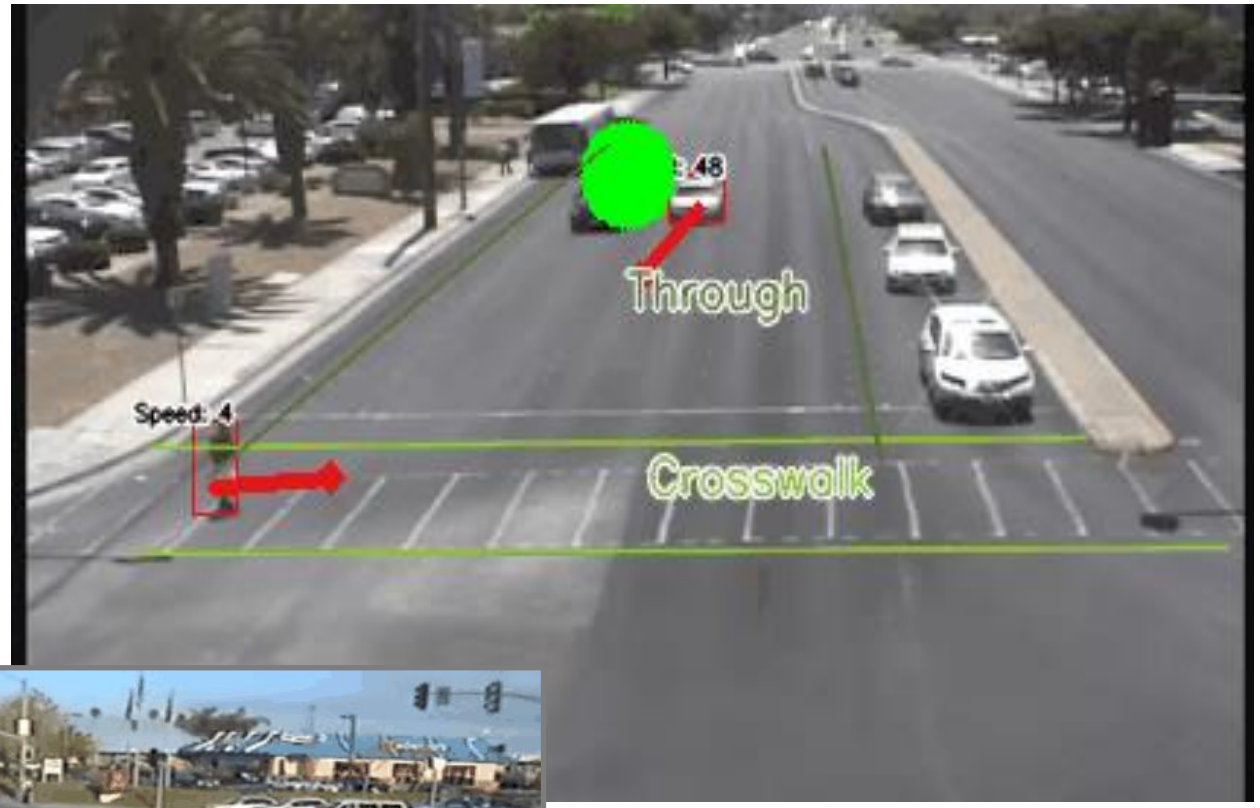
Stopped In Intersection

Vehicle PED Violation

Wrong Way Detection

Near Miss Feature



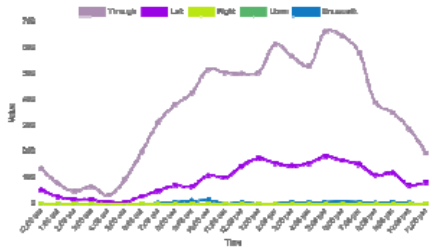


Orange County Data

TURN COUNT ANALYTICS
Intersection Name: International Drive @ Central Florida Parkway
Selected date: 2022-01-03
Report created on: 01/10/2022 12:38:59 pm

Southbound

	Through	Crosswalk Left	Right	Uturn	
car	8258	0	2136	0	0
light_truck	212	0	53	0	0
bus	49	0	2	0	0
heavy_tru	93	0	12	0	0
motorcycle	13	0	2	0	0
N/A	0	2	0	0	0
bicycle	0	72	0	0	0
pedestrian	0	0	0	0	0
Bicyclists a	0	0	0	0	0



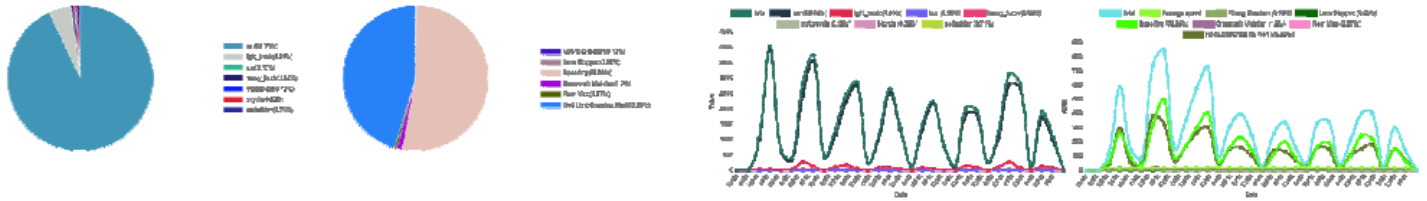
Turning Movement Counts

Report created on: 09/08/2021 01:17:56 pm

Orange County Data

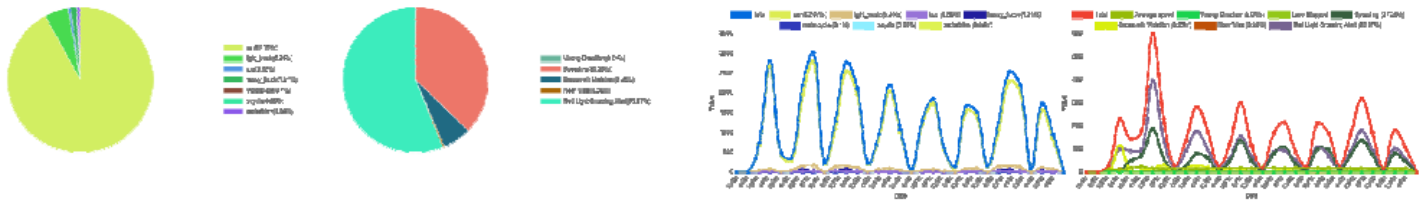
Camera: Westbound

Lane	Date Labeled	Car	Light truck	Bus	Heavy truck	Motorcycle	Bicycle	Pedestrian	N/A	Total	Average Speed	Wrong Direction	Lane Stopped	Car Stopped at Intersection	Speeding	Crosswalk Violation	Near Miss	Red Light Crossing Alert
Left Turn	2021-09-0:	10257	568	14	74	9	0	0	0	10922	14	10	0	0	140	0	12	2650
Through	2021-09-0:	23729	1147	34	134	28	0	0	0	25072	19	1	2	0	4137	0	6	398
Right Turn	2021-09-0:	7476	443	22	70	15	0	0	0	8026	15	0	0	0	165	0	0	779
Crosswalk	2021-09-0:	0	0	0	0	0	230	318	0	548	13	0	0	0	0	101	18	0
Intersectio	2021-09-0:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
Total		41462	2158	70	278	52	230	318	0	44568	17	11	2	0	4442	101	48	3827



Camera: Southbound

Lane	Date Labe	Car	Light truck	Bus	Heavy truc	Motorcycl	Bicycle	Pedestrian	N/A	Total	Average Sp	Wrong Dir	Lane Stop	Car Stopp	Speeding	Crosswalk	Near Miss	Red Light Crossing Alert
Left Turn	2021-09-0:	9626	516	19	141	19	0	0	0	10321	13	2	0	0	327	0	0	2393
Through /	2021-09-0:	17355	966	171	283	17	0	0	0	18792	16	0	0	0	1331	0	0	102
Right Turn	2021-09-0:	6462	422	21	51	0	0	4	0	6960	10	0	0	0	0	0	8	0
Crosswalk	2021-09-0:	0	0	0	0	0	22	230	0	252	3	0	0	0	0	278	0	0
Intersectio	2021-09-0:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0
Total		33443	1904	211	475	36	22	234	0	36325	14	2	0	0	1658	278	17	2495

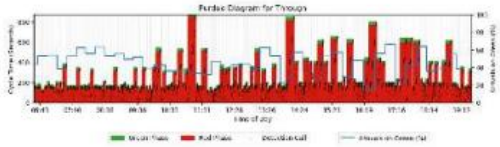


Volume by Type by Lane; Average Delay

VISION

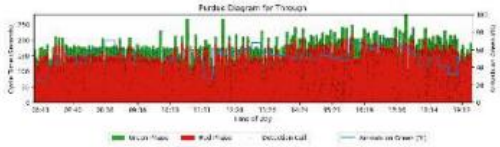
Camera: NB

Lane	Lane Average Occupancy	Average Speed (mph)	Average Wait Time (sec)	HWT	Vehicle Counts (cars)	Vehicle Stop Counts (cars)	Passing Time (sec)	Free Flow Time (sec)	FF/PT (%)	Gap Time (sec)	AG (%)	85th Percentile Speed(mph)	Total Delay (sec)
Left Turn	5.5	21	37	0	5179	1979	55	16	30	9	45	38	191131
Through	5.7	23	30	0	6025	2145	36	18	49	7.7	54	4	181426
Right Turn	4.9	26	13	0	8230	2597	72	45	63	5.7	59	44	105618



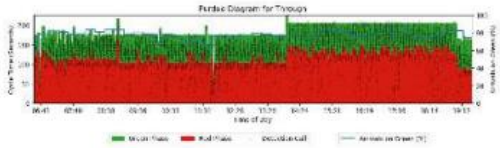
Camera: SB

Lane	Lane Average Occupancy	Average Speed (mph)	Average Wait Time (sec)	HWT	Vehicle Counts (cars)	Vehicle Stop Counts (cars)	Passing Time (sec)	Free Flow Time (sec)	FF/PT (%)	Gap Time (sec)	AG (%)	85th Percentile Speed(mph)	Total Delay (sec)
Left Turn	5.8	19	32	0	5420	1892	39	17	44	8.6	54	35	175766
Through	3.2	20	26	0	3918	1109	48	26	55	11.9	64	35	103248
Right Turn	3.2	17	34	0	2470	887	49	29	59	18.9	57	32	83514
Right Turn	0	12	30	0	1146	382	0	0	0	40.7	61	19	33903



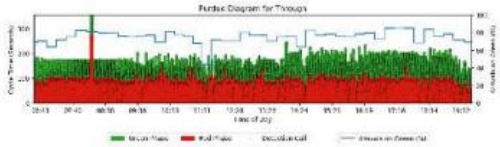
Camera: EB

Lane	Lane Average Occupancy	Average Speed (mph)	Average Wait Time (sec)	HWT	Vehicle Counts (cars)	Vehicle Stop Counts (cars)	Passing Time (sec)	Free Flow Time (sec)	FF/PT (%)	Gap Time (sec)	AG (%)	85th Percentile Speed(mph)	Total Delay (sec)
Left Turn	3.7	20	48	0	2226	1181	48	30	62	20.9	39	37	107520
Through	6.5	27	13	0	12450	2143	68	32	48	3.8	77	39	167062
Right / Thr	4	22	15	0	4224	913	74	51	69	11.1	72	34	64307
Right Turn	0	10	12	0	3197	550	0	0	0	14.6	78	8	37874



Camera: WB

Lane	Lane Average Occupancy	Average Speed (mph)	Average Wait Time (sec)	HWT	Vehicle Counts (cars)	Vehicle Stop Counts (cars)	Passing Time (sec)	Free Flow Time (sec)	FF/PT (%)	Gap Time (sec)	AG (%)	85th Percentile Speed(mph)	Total Delay (sec)
Left Turn	6.4	20	24	0	8627	2136	46	19	41	5.4	66	32	207666
Through	6.5	28	12	0	12469	2221	74	43	58	3.8	78	40	155044
Right / Thr	2.7	22	17	0	3305	848	92	66	72	14.2	69	36	56647
Right Turn	0	6	7	0	4484	525	0	0	0	10.4	85	8	31110



Intersection Totals

Lane	Lane Average Occupancy	Average Speed (mph)	Average Wait Time (sec)	HWT	Vehicle Counts (cars)	Vehicle Stop Counts (cars)	Passing Time (sec)	Free Flow Time (sec)	FF/PT (%)	Gap Time (sec)	AG (%)	85th Percentile Speed(mph)	Total Delay (sec)
Median	4.2	21	22	0	4868	1270	56	26	50	10.4	66	35	99613
Mean	4	20	24	0	5616	1484	47	26	44	12.1	63	29	116327

Orange County Data

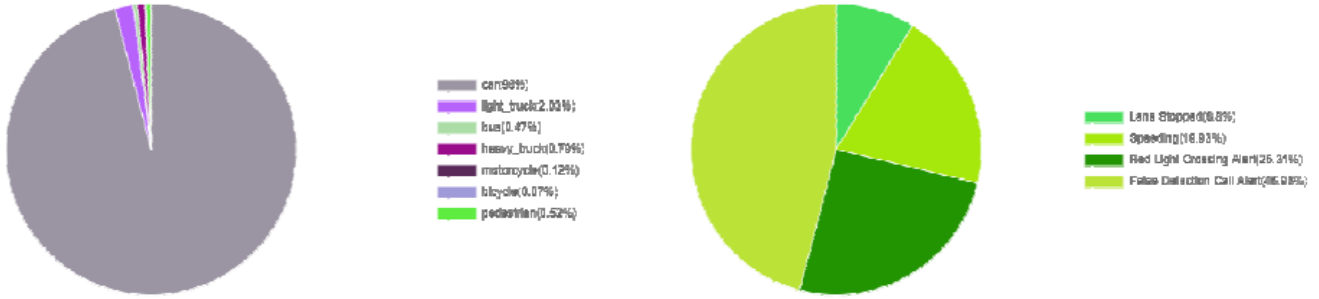
Headway, 85th percentile, Total Delay

CURRUX VISION

REPORT
Report Name: Standard Report
Selected date: 2021-11-26 00:00 - 2021-11-29 23:59
Report created on: 11/29/2021 10:59:50 am

Camera: NB Int Drive

Lane	Date Label	Car	Light truck	Bus	Heavy truc	Motorcycl	Bicycle	Pedestrian	N/A	Total	Average Sp
Left Turn	2021-11-19	6577	188	64	70	3	0	0	0	6902	12
Through	2021-11-19	24630	432	164	149	40	0	0	0	25415	16
Right Turn	2021-11-19	24067	551	42	233	26	0	0	0	24919	16
Crosswalk	2021-11-19	0	0	0	0	0	39	299	0	338	5
Total		55274	1171	270	452	69	39	299	0	57574	15



Volume by Type by Lane; Average Speed by Lane

Existing Detection Auditing – Missed Call

Existing Detection Auditing – False Call

Red Light Runner

00:00	weekend 00:00	weekend 01:00	01:00	02:00	weekend 02:00	weekend 03:00	03:00	weekend 04:00	04:00	05:00	weekend 05:00	weekend 06:00	06:00	07:00	weekend 07:00	weekend 08:00	08:00	09:00	weekend 09:00	weekend 10:00	10:00
11:00	weekend 11:00	12:00	weekend 12:00	weekend 13:00	13:00	14:00	weekend 14:00	weekend 15:00	15:00	16:00	weekend 16:00	weekend 17:00	**17:00**	18:00	weekend 18:00	weekend 19:00	19:00	weekend 20:00	20:00	21:00	weekend 21:00
weekend 22:00	22:00	23:00	weekend 23:00																		

Phase	Movements	Previous Split Time (sec)	New Split Time (sec)
1	EBL	30	55
2	WBT WBR	45	60
3	SBL	30	20
4	NBT NBR	45	55
5	WBL	30	55
6	EBT EBR	45	60
7	NBL	30	20
8	SBT SBT	45	55

Previous Total Delay (sec)	Expected Total Delay (sec)	Expected Difference (sec)	Expected Difference Total (sec)	Avoided CO2 Emissions (lbs)
1520257	1405564	-114692	-132761	216

Orange County Data

Signal timing adjustment recommendation based on real time Count Data

Questions?

CFMPOA TSMO Network

Network

- Regional TSMO project impacts two contiguous cities/counties

- Set of integrated strategies to optimize the performance of operations on existing/new infrastructure

- Serves regional transportation needs such as access to and from the area outside the region
  - freight service and parking; evacuation; and security and privacy

Caveats

- Problem statement
- MPOs/TPOs may not have projects that meet the working definition
- TSMO is a dynamic discipline
- Low tech. to high tech.

Network

- Regional ITS Architecture
- Functional classification of roadways
- Arterials that cross jurisdictional lines
- Utilization thresholds for the non-SOV modes (transit routes, stops and stations, trails, bike/ped corridor usage)

Value Proposition

- Strengthening and guiding regional transportation operations collaboration and coordination
  - Vision and Direction
  - Commitment
  - Linkage: planning and operations

Examples

- SR 40 Rural Signalized Intersections Collision Warning System (SR 40 through Volusia and Marion Counties)

- Beach Parking Information System (Flagler, Volusia, Brevard)

Next steps

- FDOT support
- Prioritization
- Advisory Team
- Coordination with FDOT D1

Thank You

MetroPlanOrlando.com | 407-481-5672
250 South Orange Ave., Suite 200, Orlando, FL 32801

Drone Workshop

Eric Hill, MetroPlan Orlando

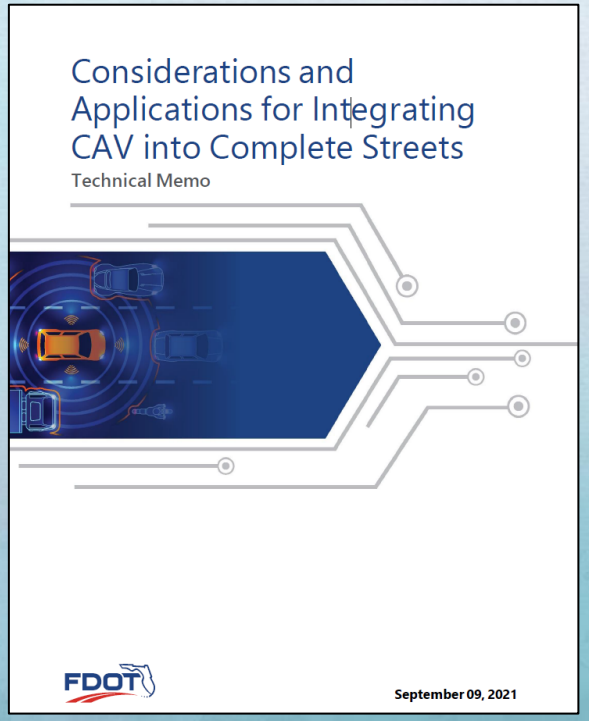
Transportation Systems Management & Operations

Considerations and Applications for Integrating CAV into Complete Streets

David Williams, VHB

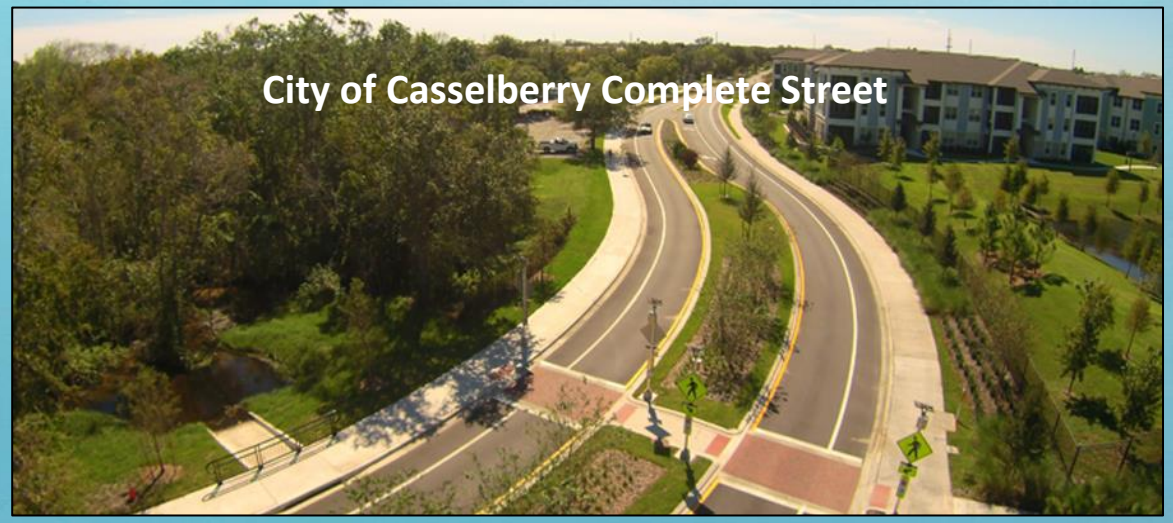
Integrating CAV into Complete Streets

- Technical memo published by FDOT Central Office
- Two primary topics:
  - Complete Streets Planning Considerations for CAV
  - Applications of CAV technology to enhance Complete Streets
- Next Steps



Integrating CAV into Complete Streets

- *Complete Street* – prioritizes travel and safety for all users of the right-of-way, regardless of mode
  - Additional priority given to bike/ped and transit to operate safely
    - Dedicated zones for different modes,
    - Intersections and crossings that manage and prioritize all users, and
    - De-prioritization of vehicular traffic



Complete Streets Planning Considerations for CAV

1. Emerging modes of travel may affect Complete Streets
   - Automated transit
   - Terrestrial drones or Personal delivery devices (PDD)
   - Automated Mobility as a Service (MaaS)
   - Automated Micromobility (shared scooters, e-bikes, etc.)
   - Aerial Drones

UPS Flight Forward Drone

Amazon Scout

Complete Streets Planning Considerations for CAV

2. Curb Management

- If automation leads a movement towards MaaS, curb management will continue to be an important element of any complete street policy

3. Impacts on Parking

- CAV may significantly affect parking demand
- Decreased parking demand may lead to opportunities for more productive land uses

Complete Streets Planning Considerations for CAV

4. Land Use Considerations

- Density
  - The more parking needed, the less building space available
  - Reduced parking demand may result in more productive, higher-density land uses
- Sprawl
  - Lowered commuting cost (time + money) can increase commuters' willingness to travel further

Applications of CAV to enhance Complete Streets

Infrastructure-based Strategies

- Bike/Ped Detection
- Adaptive Signal Management Technologies
- Vehicle-to-Infrastructure (V2I) applications
- Multi-use slow travel lanes
- Dynamic/Managed Lanes
- Smart Work Zone
- Curb Management Technologies

3.1.1 Cyclist/pedestrian detection

Infrastructure that can actively monitor and detect the presence of cyclists, pedestrians and micromobility users, coordinate their travel with traffic signals at crossings, and alert drivers of their presence.

Benefits to complete streets: Understanding who is using the ROW will increase safety for all travelers and allow the management of vehicles and travelers within the ROW. This strategy will leverage other key CAV functions, such as ROW management, ROW allocation, and coordination with CV-enabled vehicles.

Current state of practice: Pedestrian and cyclist detection systems are being deployed today, including radar-based systems to detect the presence of objects within a specified area, and optical-based systems that utilize machine vision to detect the presence, position, and classification of objects in the ROW.

FDOT role: Funding, implementation (on appropriate FDOT facilities), standards, and guidance.

Requirements: System that can detect and classify ROW users by mode, placement, speed, and communication infrastructure between signals and/or other vehicles.

Applications of CAV to enhance Complete Streets

Vehicle-based Strategies

- CV Applications
- AV Transit
- Speed Management

Bike/Ped/Micro-based Strategies

- CV communications
- Automated Micromobility

Next Steps Beyond the White Paper

1. Identify crossovers between CAV and Complete Street programs
2. Develop CAV/Complete Streets toolbox for practitioners
3. Conduct CAV/Complete Streets training webinar for FDOT staff and consultants
4. Identify opportunities for pilot project(s)

Questions / Comments?

Taking Time to FLEX – What's new in Training

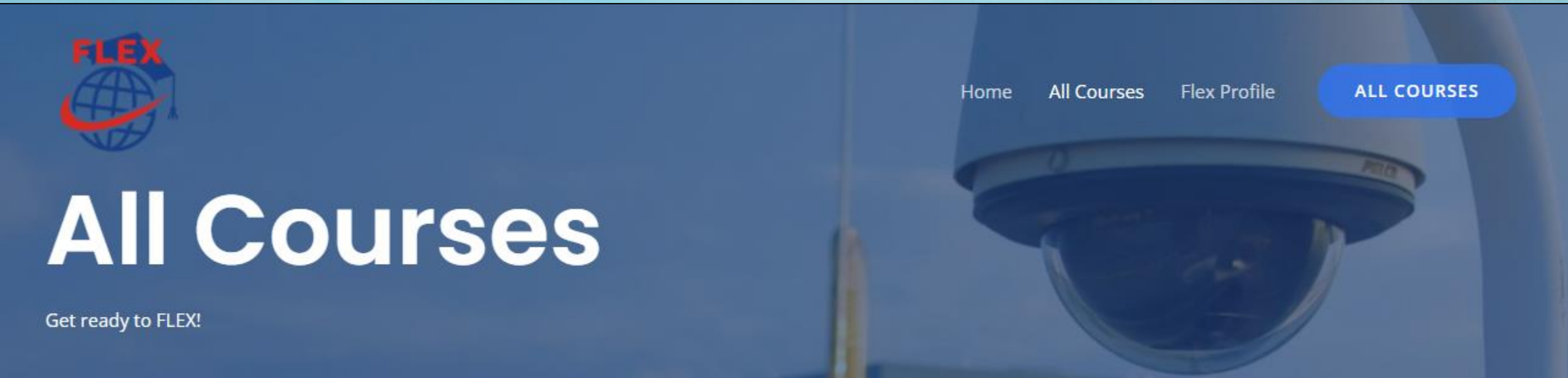
David Williams, VHB

TSM&O Focused Learning Education and Experiences (FLEX)

- Types of training in FLEX Portal
  - TSM&O concepts
  - TSM&O applications
  - Field equipment
  - How-to training videos
- FLEX Portal is available with a **free** account

What's New?

- Updated design
- New courses available
  - ITS Fiber Design
  - BlueToad/BlueARGUS Training
  - RTMC Phone System
  - RICMS Response Plan Training



TSM&O Focused Learning Education and Experiences (FLEX)

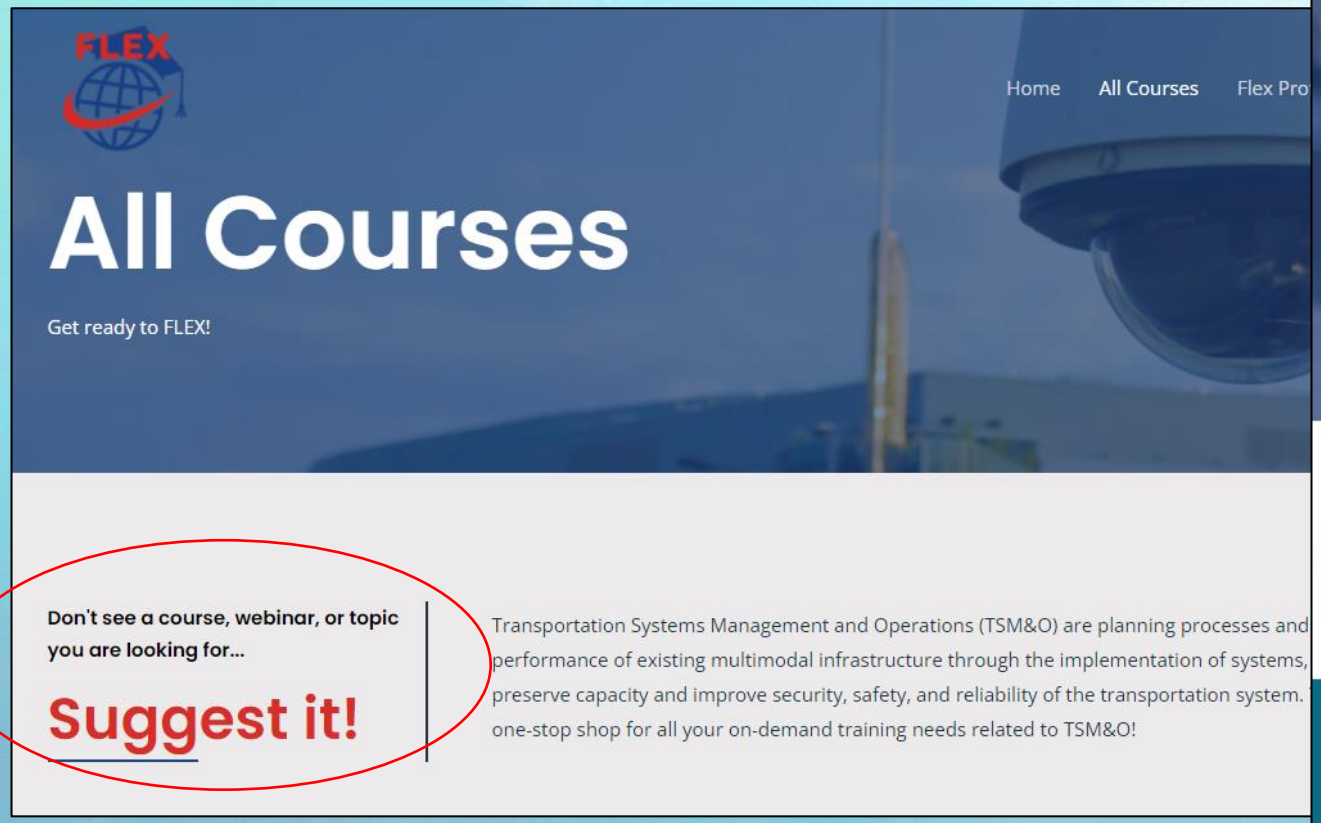
- Active Users – 318
- Courses Completed – 231
- Most Popular Course – *Traffic Signal Training (A)*

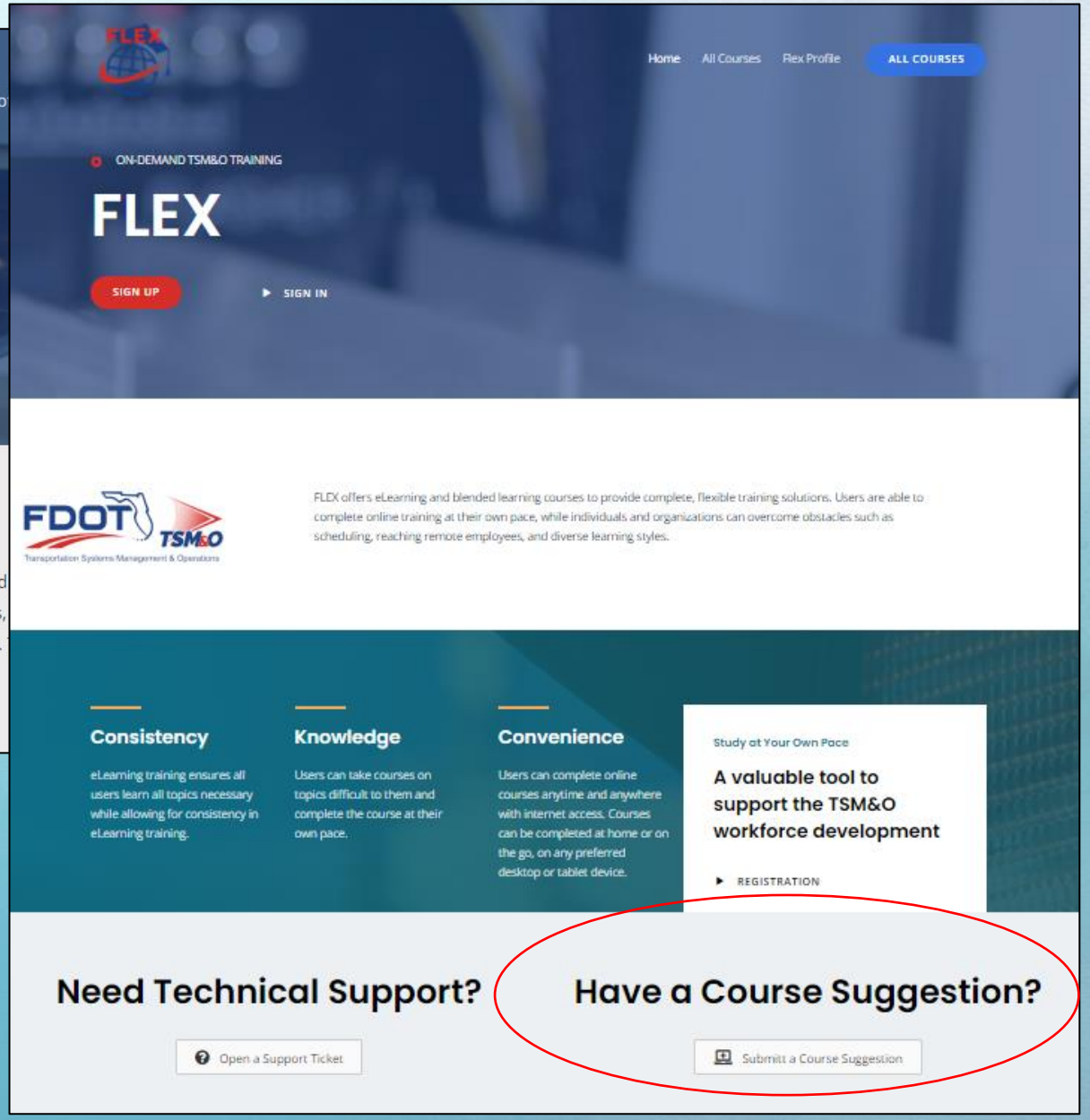
- Troubleshooting – *Request Support* button
- For more information, visit: https://elearning.cflsmartroads.com/
  - Google: “FDOT FLEX Portal”

Courses Coming Soon to FLEX Portal

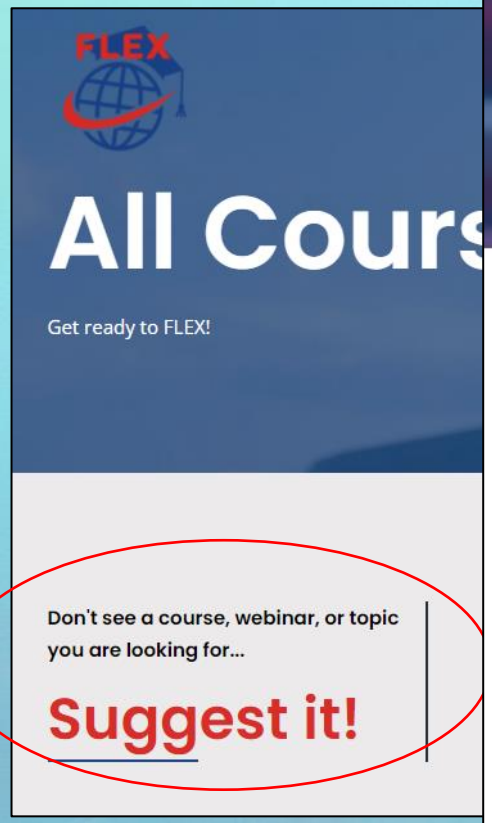
- Adaptive Signal Control Technology (ASCT) Training
- ITS CEI Dynamic Message Signs
- ITS CEI Road Weather Information System CBT
- Manual on Uniform Traffic Studies (MUTS)

Have a Suggested Training?

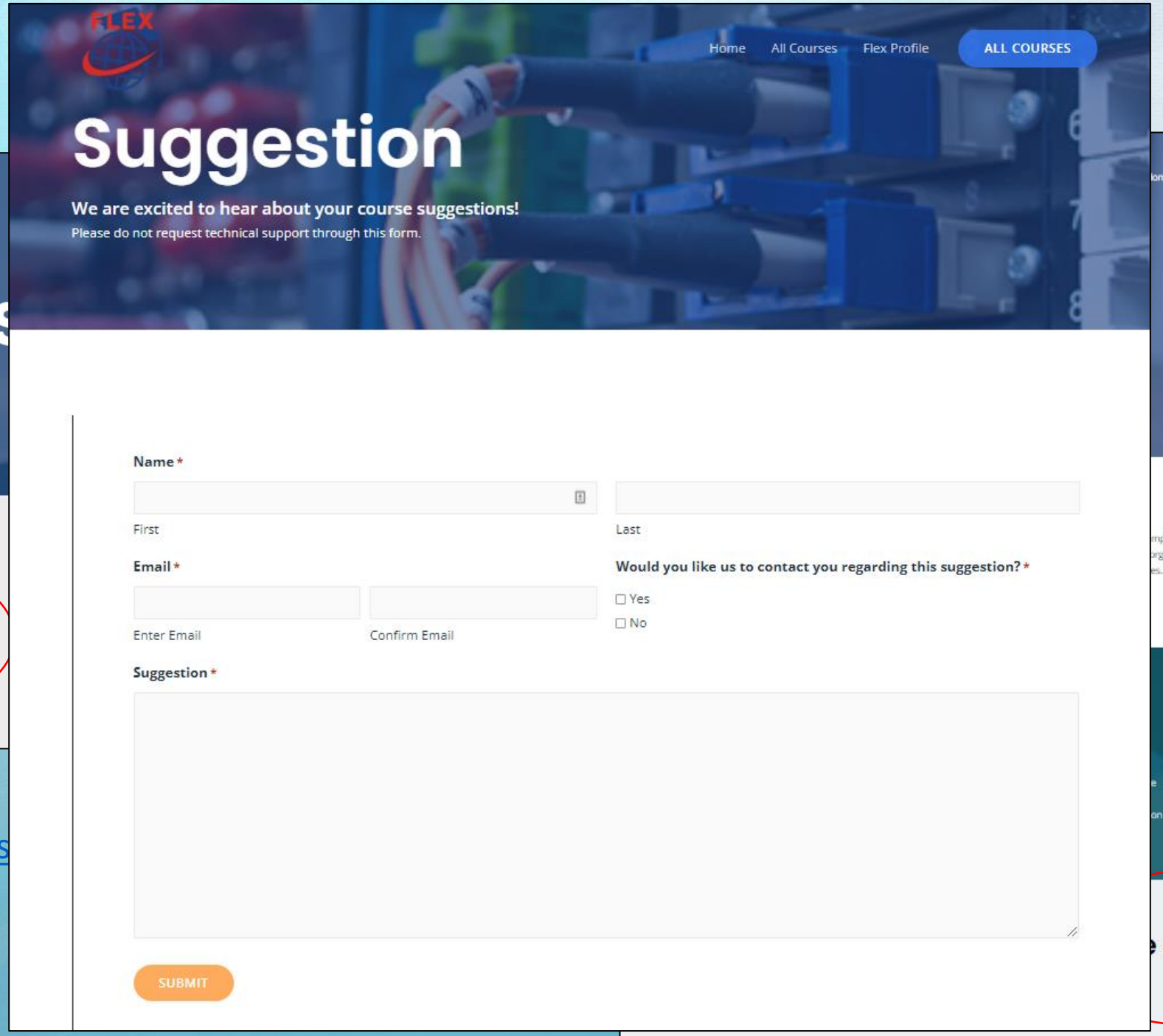


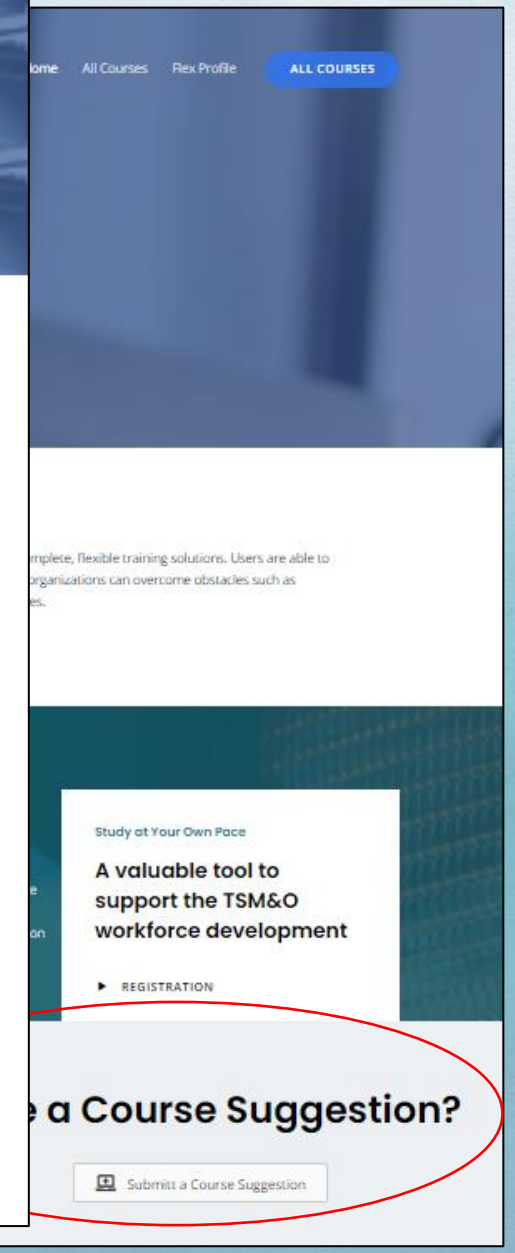


https://elearning.cflsmartroads.com/flex-suggestions/



https://elearning.cfls





STROZ Project Update

Jeremy Dilmore, District Five TSM&O

Signal Training for Regional Optimization Zone

- STROZ is a fully equipped training site located at the RTMC
- **Purpose** – to provide a real-world scenario for training, demonstrations, and testing to occur
  - (without impacting real-world operations)
- The STROZ platform will enable FDOT to:
  - Host hands-on training for local agency staff (e.g., signal technicians)
  - Host vendors so they can demonstrate new technologies
  - Teach best practices for maintenance, repairs, and troubleshooting

Signal Training for Regional Optimization Zone

- Status
  - 90% of infrastructure is completed and installed,
    - concrete strain poles, span wire, signal heads, cabling, cabinet, and service pad
  - Remaining work includes installation of various roadside devices
    - Vehicle detection, Pedestrian detection, RSUs, BT readers, CCTV
  - Target Completion – End of March 2022

Pictures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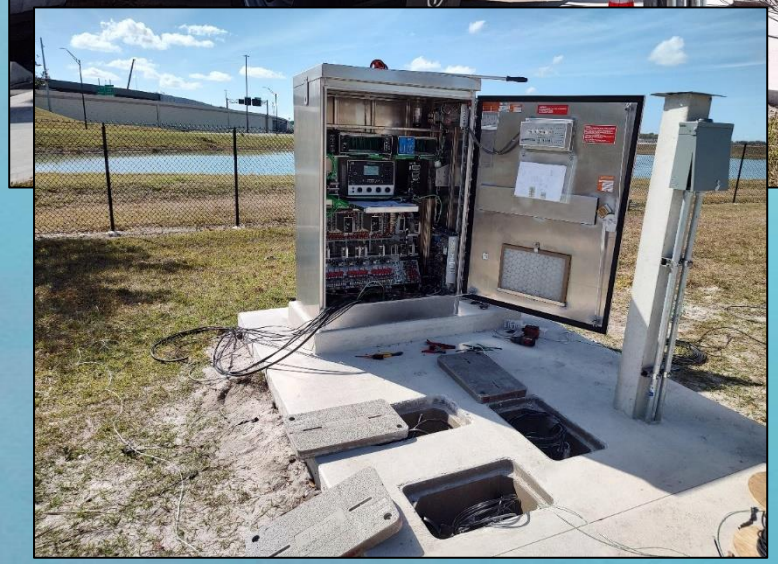


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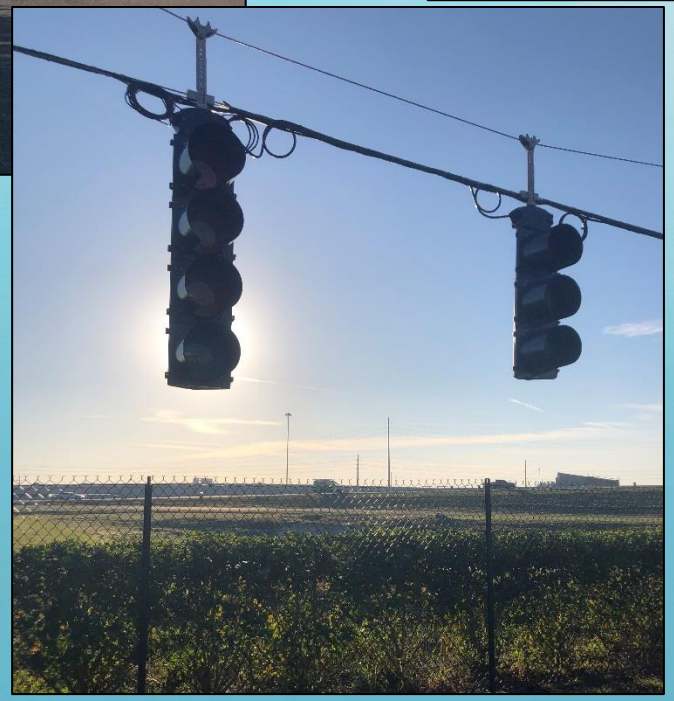

Current Initiatives

Jeremy Dilmore, District Five TSM&O

THANK YOU!

Next Consortium – May 12, 2022

TSM&O Consortium Meeting

MEETING AGENDA

Teleconference or
FDOT District 5 RTMC (4975 Wilson Rd, Sanford, FL 32771)

March 3, 2022
10:00 AM-12:00 PM

1) WELCOME
2) CURRUX VISION AI – TAKEAWAYS
   - Hazem El Assar, Orange County Traffic Engineering
3) REGIONAL TSM&O PRIORITIZED PROJECTS
   - Eric Hill, MetroPlan Orlando
4) DRONE WORKSHOP
   - Eric Hill, MetroPlan Orlando
5) INTEGRATING CAV INTO COMPLETE STREETS
   - David Williams, VHB
6) TAKING TIME TO FLEX – WHAT'S NEW IN THE TRAINING PORTAL
   - David Williams, VHB
7) STROZ PROJECT – UPDATE
   - Jeremy Dilmore, District Five TSM&O
8) CURRENT INITIATIVES
   - Jeremy Dilmore, District Five TSM&O