U²C Project Update

Jacksonville Transportation Authority

November, 2018

U²C Overview

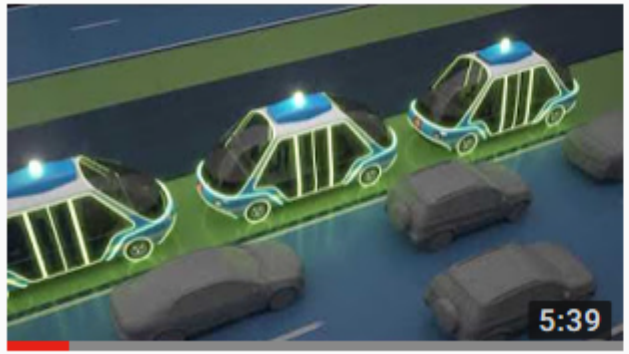
U²C = Ultimate Urban Circulator

www.u2cjax.com

YouTube:

U2C Skyway Video

JTAFLA • 4.4K views • 11 months ago



2018 JTA State of the Authority - Vision for the Future

JTAFLA • 363 views • 4 months ago

This video represents JTA vision for the future. Watch and find out where Jacksc will be in 2, 5, or 10 years ...

ULTIMATE URBAN CIRCULATOR

U²C SYSTEM PLAN

ULTIMATE URBAN CIRCULATOR

PROJECT HIGHLIGHTS

- 10 miles of Route coverage (20 miles of “track lanes”)
- 100 vehicles
- 2-3 minute headways
- “On Demand” upgrades
- Mixed Traffic, Dedicated Lanes, Elevated Lanes
- Permanent Vehicle Stops
- TOD
- Private Investment

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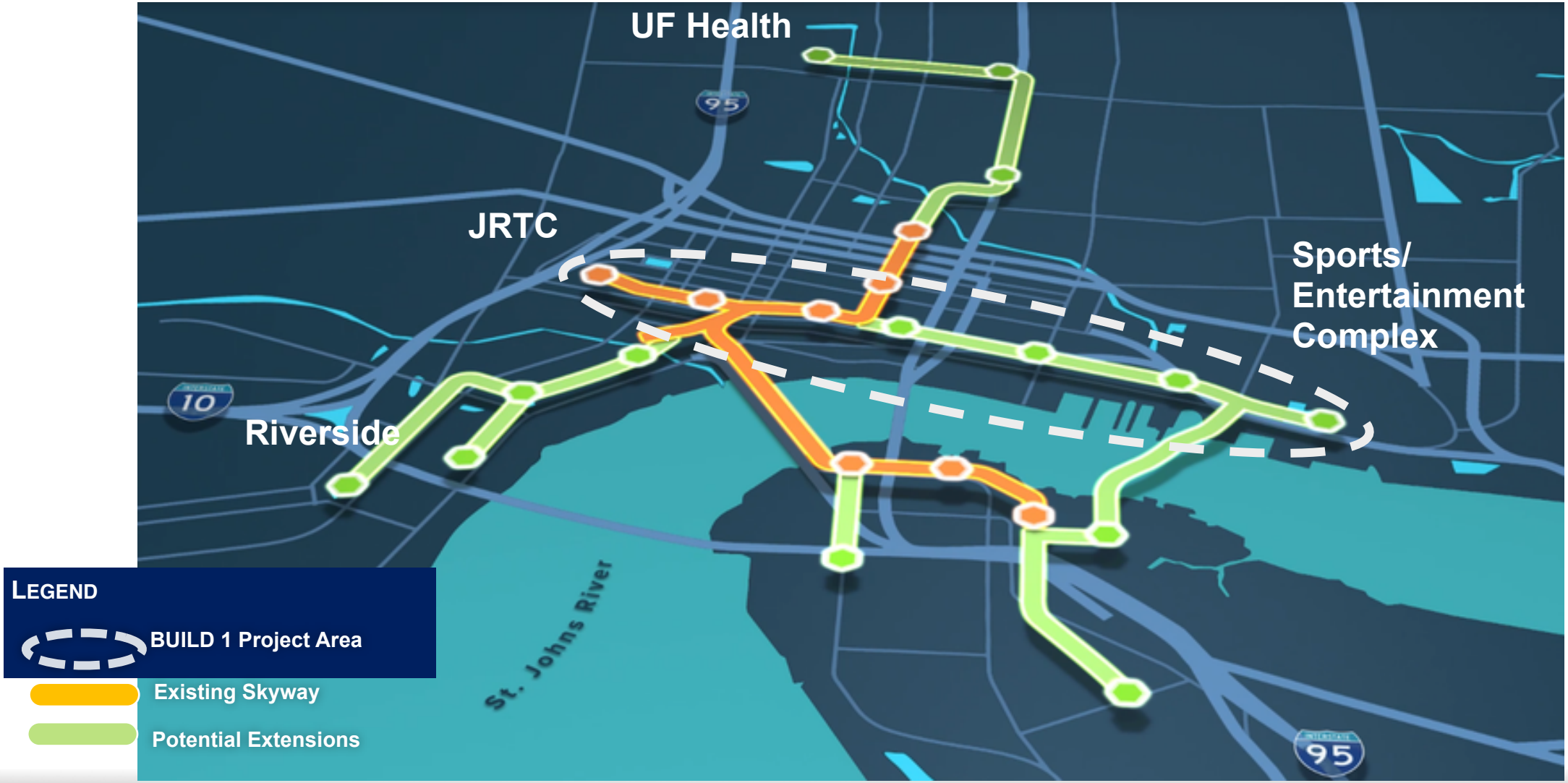
PROPOSED U²C BUILD 1 PROJECT



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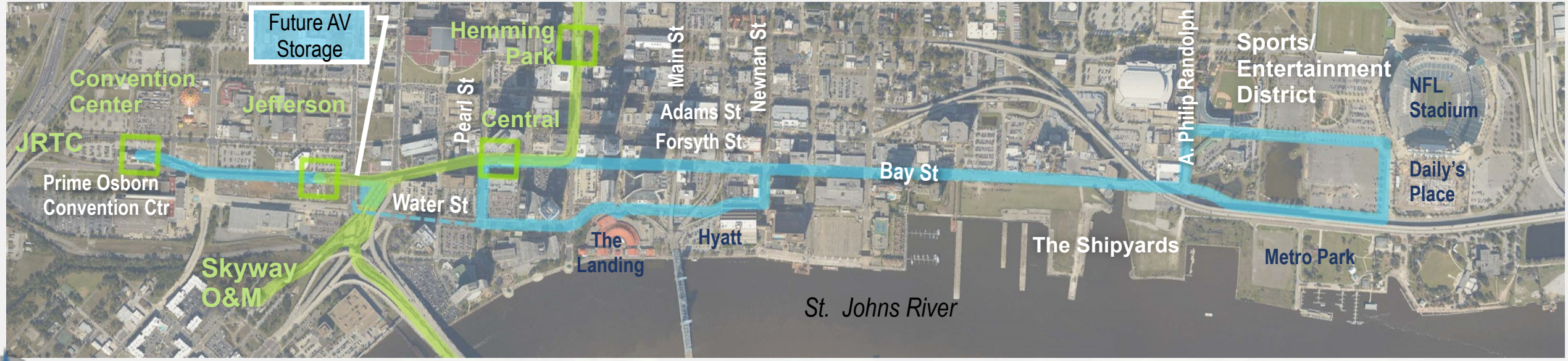
FIRST PROJECT BUILD – "BUILD 1"

- Creating approximately 3 miles of elevated and at-grade service along Bay Street from the Jacksonville Regional Transportation Center (JRTC) east to the Sports Complex near TIAA Bank Field



- Partnership with JTA, City of Jacksonville, Jacksonville Chamber of Commerce, North Florida TPO

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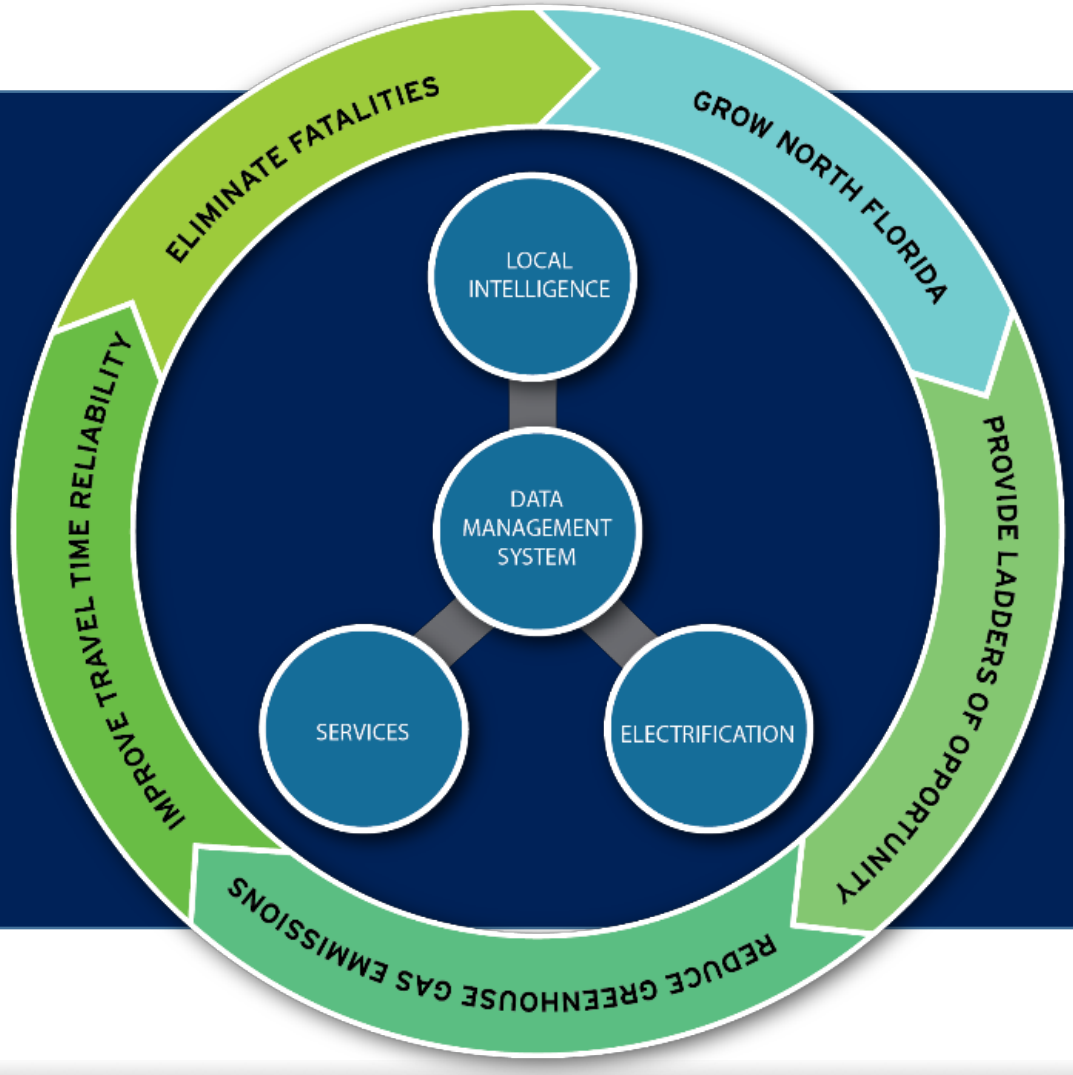
PROJECT COMPONENTS

SMART CORRIDOR TECHNOLOGY

- Dynamic Signals
- Connected Intersections
- Integrated Data Exchange
- Pedestrian Sensors
- Flood Warning Sensors
- Power Consumption Reduction



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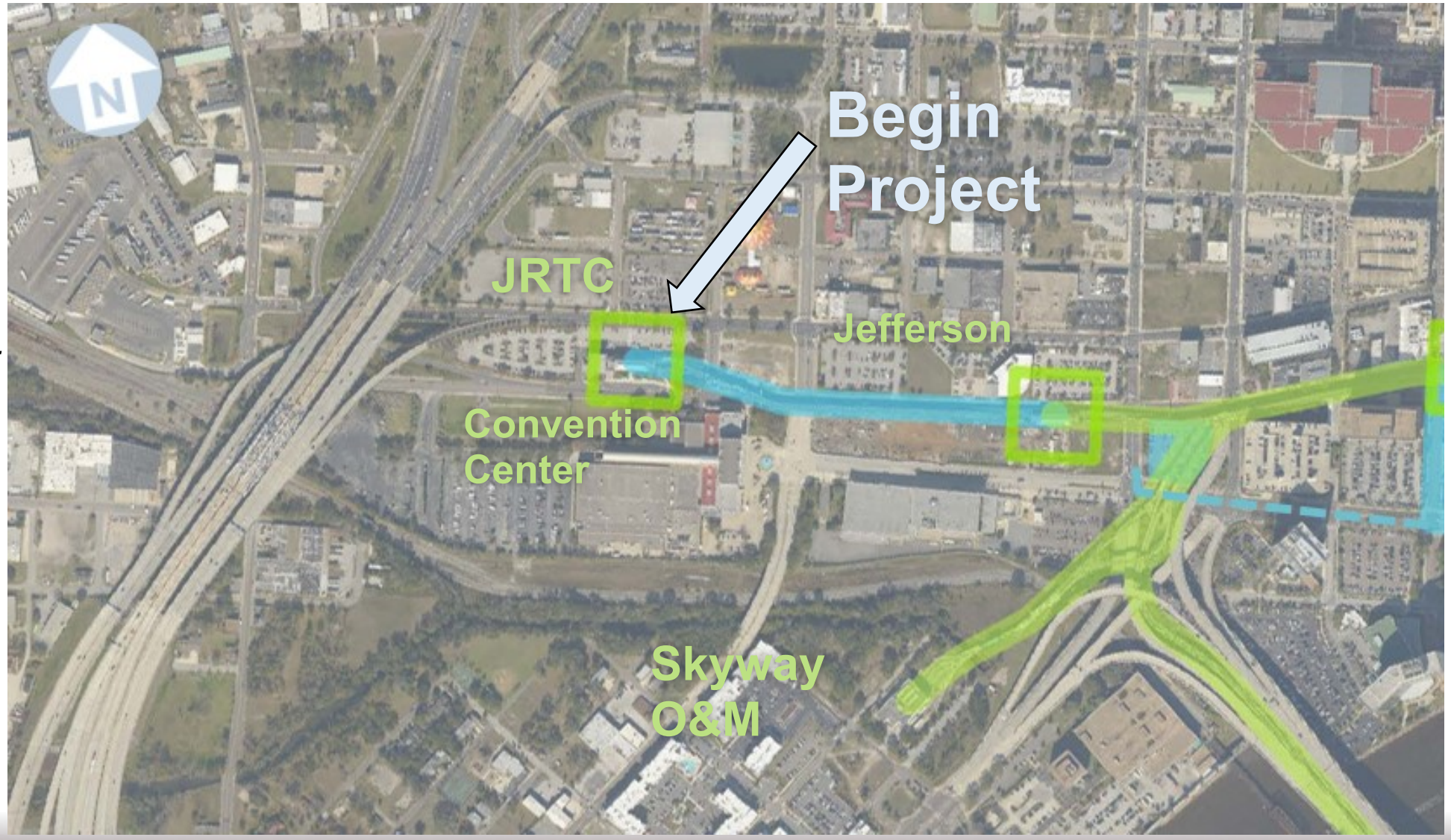
ELEVATED CONVERSION

West segment of proposed project



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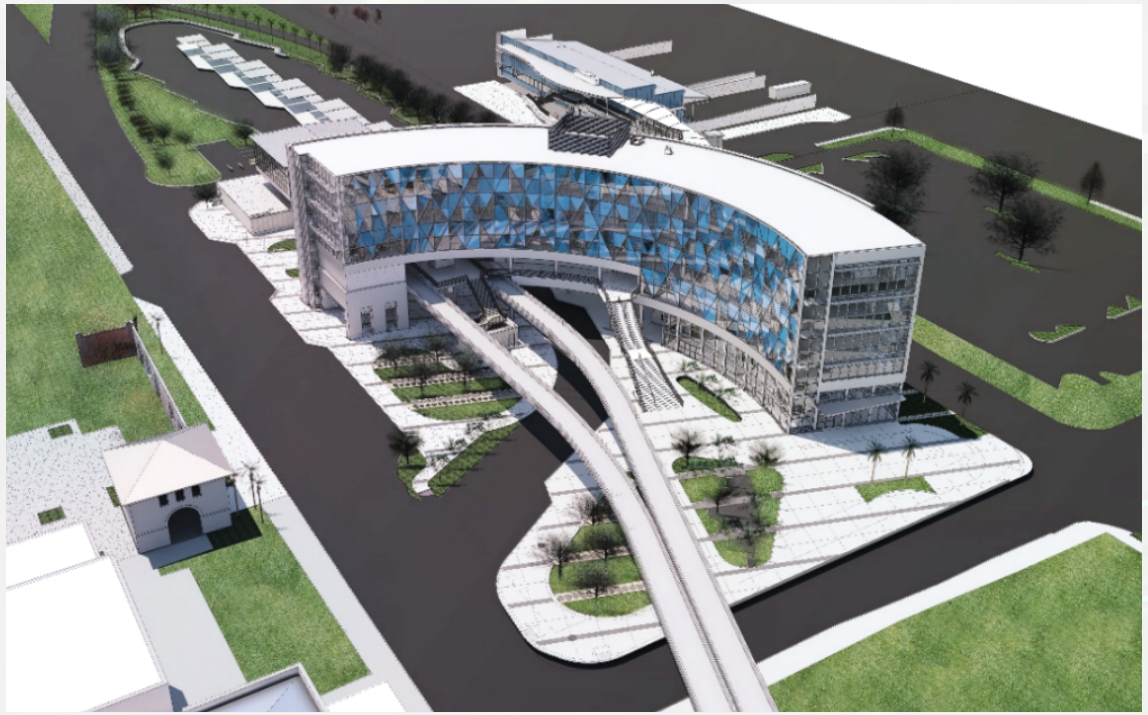
ELEVATED CONVERSION

- Conversion of the existing elevated people mover infrastructure from the JRTC to Jefferson Station to accommodate autonomous shuttles



Rendering of Jacksonville Regional Transportation Center

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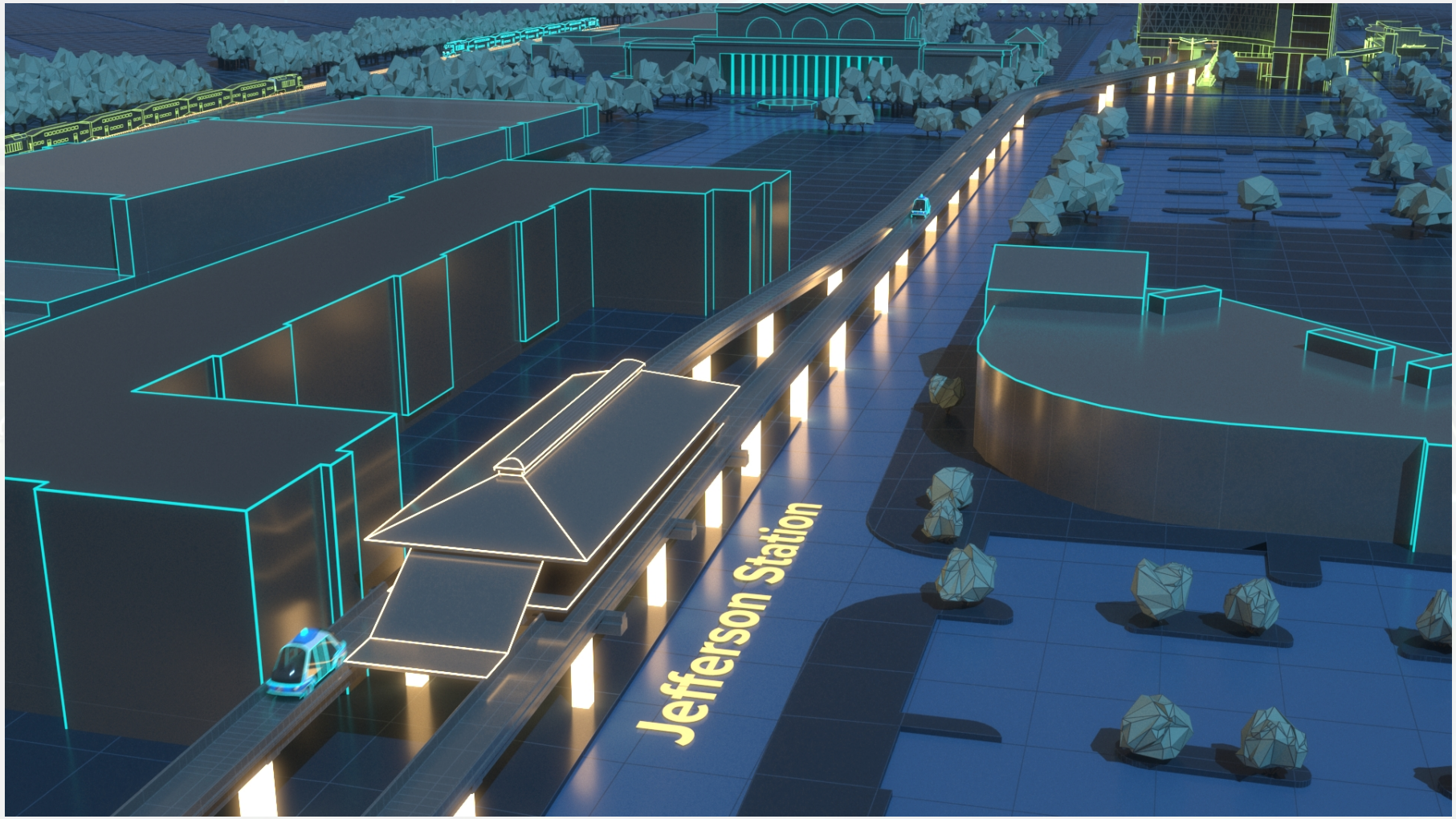
CONVERTED AERIAL STRUCTURE



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CONNECTIVITY TO CBD & ENTERTAINMENT

Middle segment of proposed project

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CONNECTIVITY TO SPORTS COMPLEX

East segment of proposed project

Example of Bay Street

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PROJECT COMPONENTS

INFRASTRUCTURE

- 3 miles of Elevated and At-grade Service
- Multiple Roadway Surfaces
- Photo Voltaic Roadway
- Pedestrian Walkway

VEHICLES

- 12 Autonomous Vehicles
- 2 minute Vehicle Headway
- Vehicle Charging Stations
- Supervisory Control System
- Vehicle-to-Infrastructure (V2I) Communications

CURRENT HAPPENINGS

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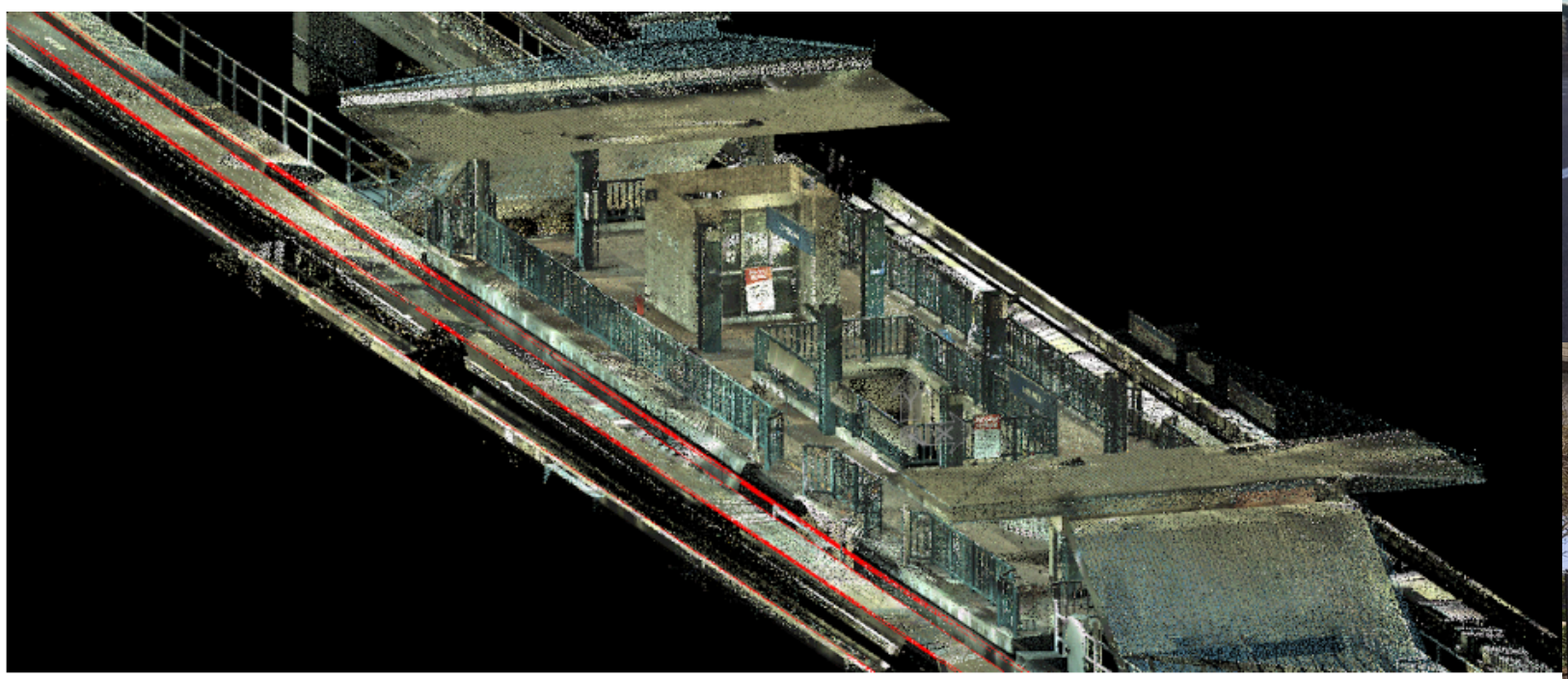
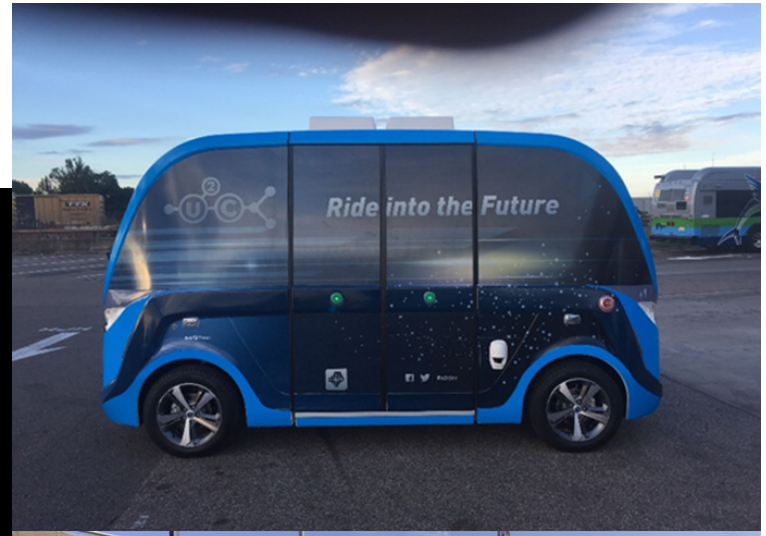
CURRENT HAPPENINGS





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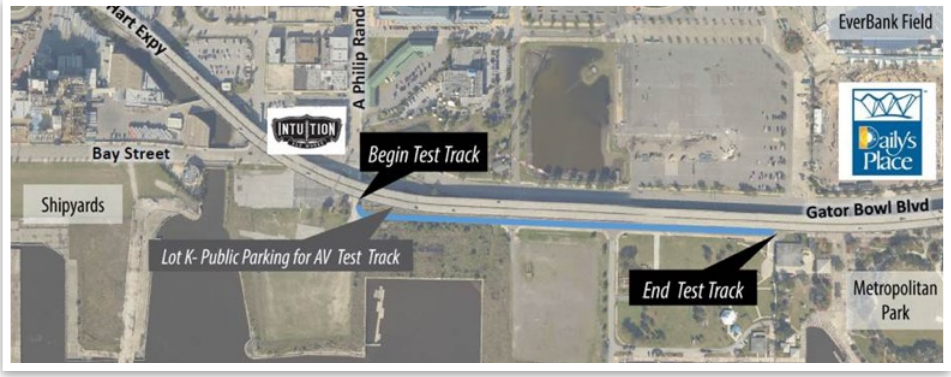
SELECT U²C TECHNICAL AREAS

- Connected Vehicles
- Cybersecurity
- Supervisory System Business Requirements

CONNECTED VEHICLES

Needed for AVs:

- Cross intersections
- Travel in traffic



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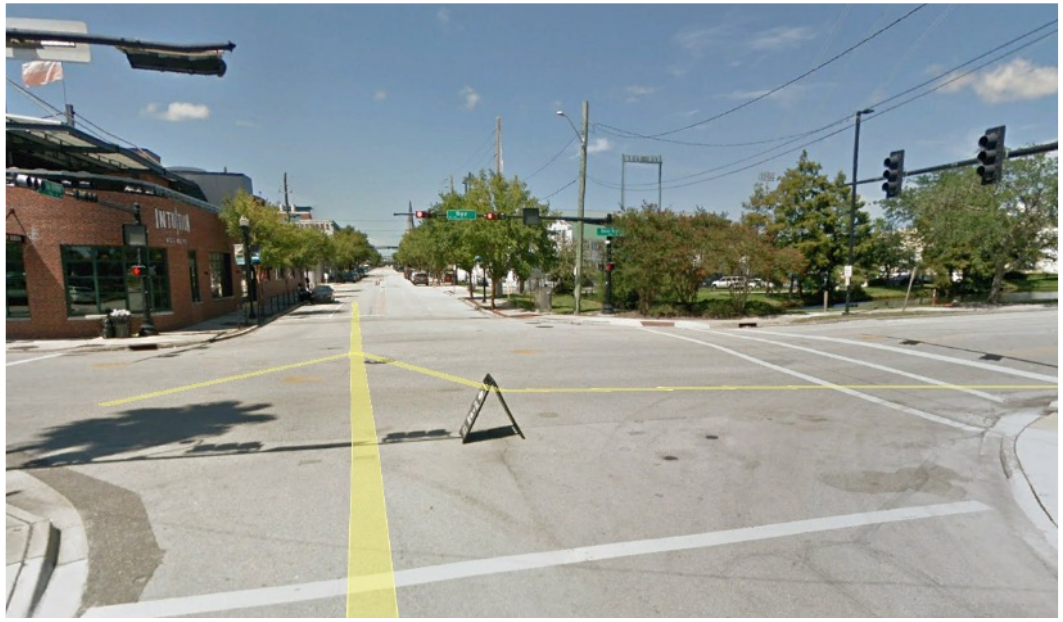
U²C SUPERVISORY SOFTWARE SYSTEM



Gator Bowl Blvd. & A. Phillip Randolph St.

CONNECTED VEHICLES: TECHNICAL CONSIDERATIONS

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2226	30.326403 , -81.643490	2,115.5 mi	16	366 cm	2 4 6 8 3 5 3 5 latency: -0.42	STOP SPAT

CYBERSECURITY: SECURE TOGETHER

JTA is part of the Community & Transportation ISAO's "National Cyber Neighborhood Watch Program" to better protect ITS and other key IT systems.

C&T-ISAO technological platform:

- Automatically identifies and manages cyber exploits
- Provides REAL threat intelligence data that can be used to understand where agencies, smart cities, and local governments (or their vendor partners) stack up against peers.

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WHO DOES JTA SHARE WITH?

- ✓ JTA shares firewall attacks with eight city governments and smart city/ connected transportation programs on the C&T-ISAO's "National Neighborhood Watch Program" platform called "Secure Together."
- ✓ TOTAL events shared: 64M/day (745/ sec)
- ✓ JTA events shared: 8.4M/day (97/sec)

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JTA METRICS CAPTURED OVER 10 CONSECUTIVE DAYS

- Where in the world the attacks are coming from
- Number of days ”saved” because of knowing about attack through information sharing
- Percent of ”shared attacks”

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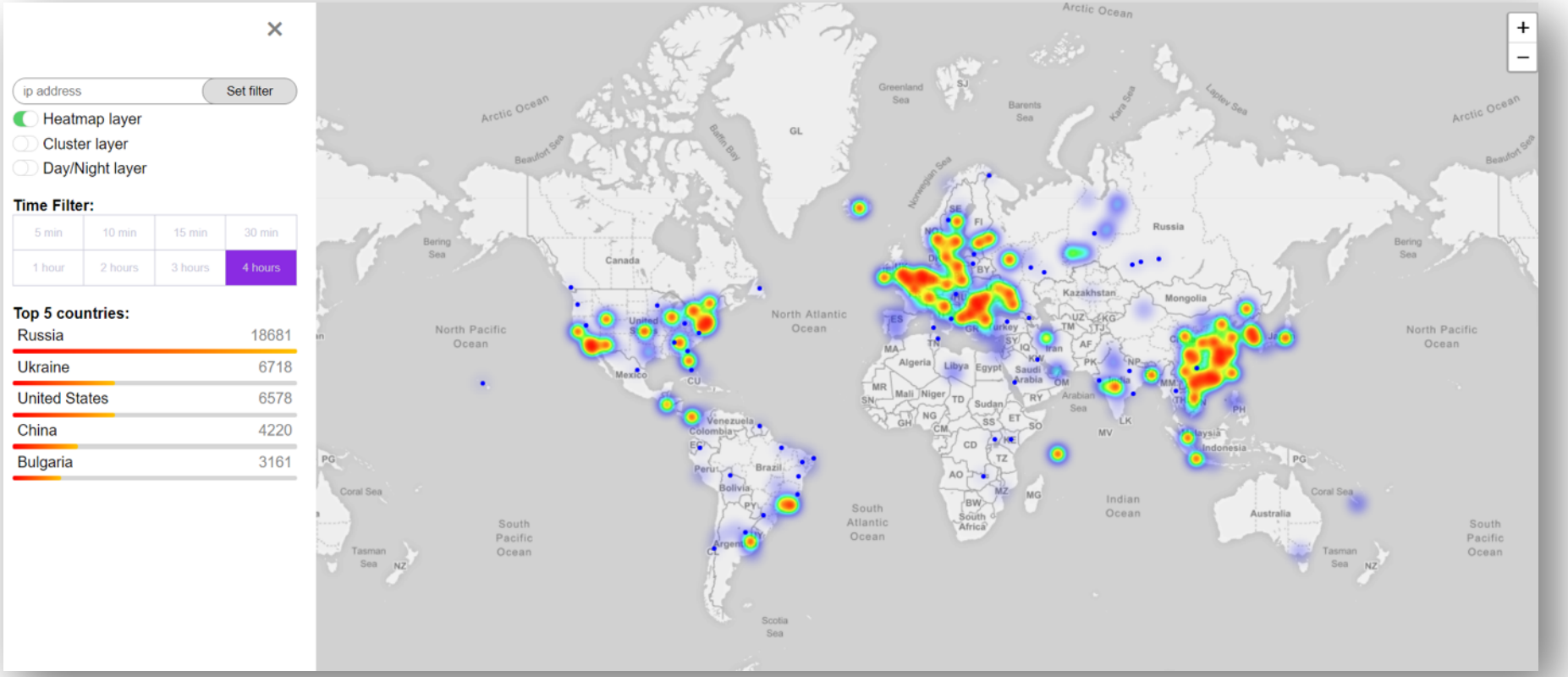
TOP FIVE ATTACK LOCATIONS OVER 10 DAYS

1. Russia: 44.8%
2. UK: 28.6%
3. Canada: 22.4%
4. Croatia: 3.4%
5. USA: 0.33%



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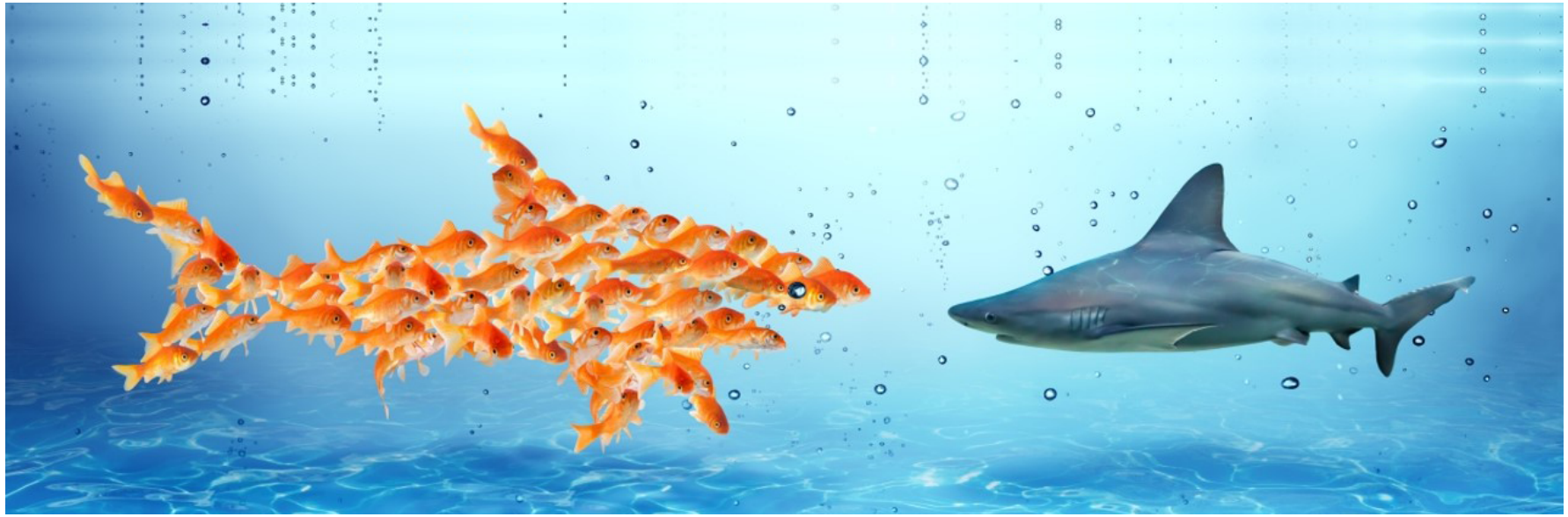
THE POWER OF INFORMATION SHARING

- **Number of days participants know of an attack before experiencing the attack because of information sharing on Secure Together:** 3 days
- **Percent of attacks that are shared by Secure Together participants:** 62%



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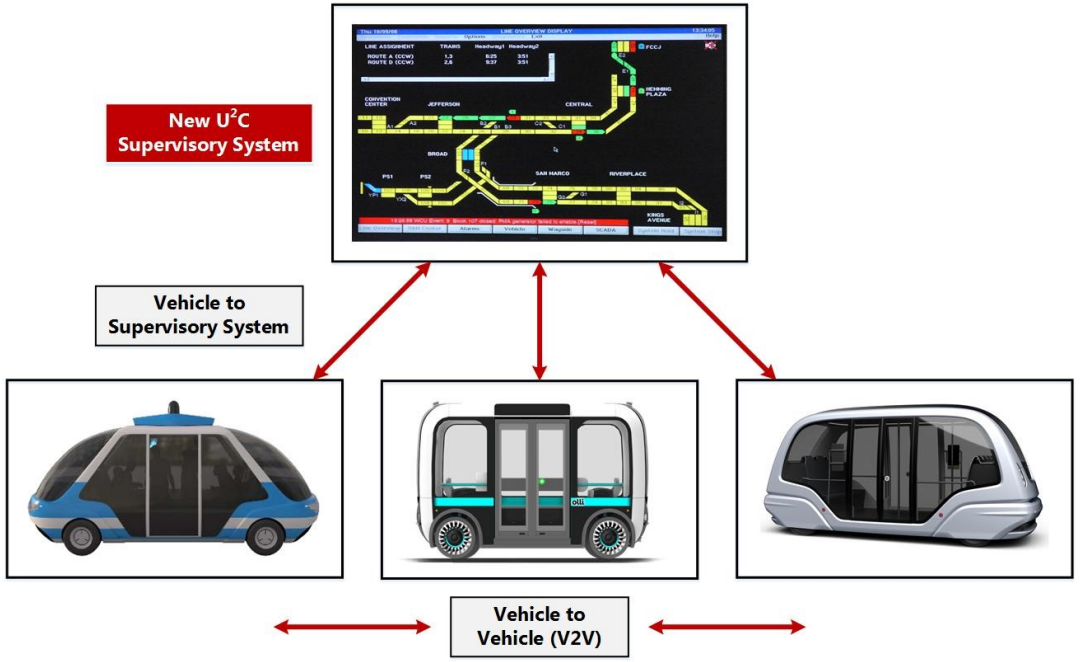
U²C SUPERVISORY SOFTWARE SYSTEM

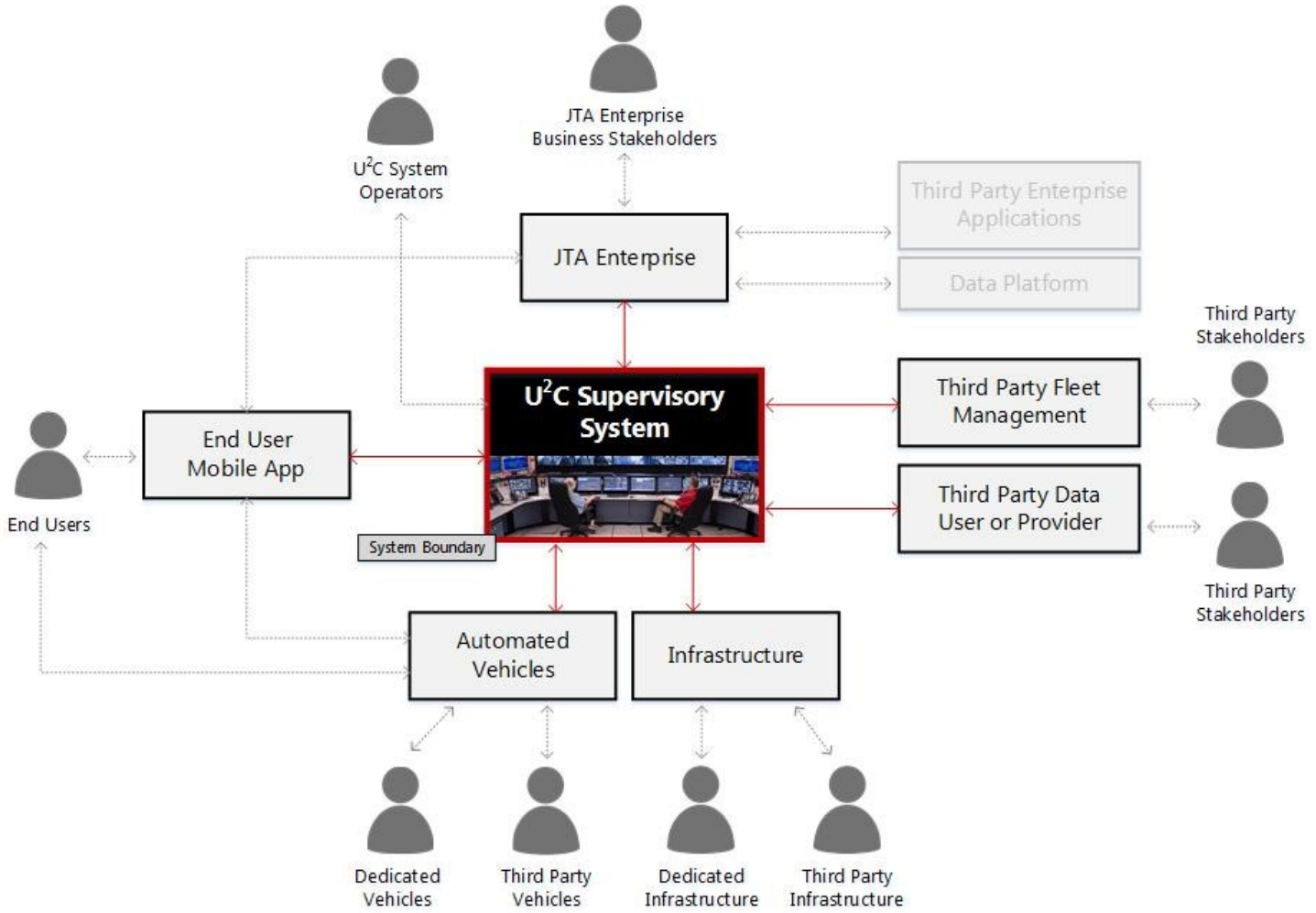
- Gathering business requirements
- Seeking input from Industry



U²C SUPERVISORY SYSTEM STAKEHOLDERS

- Customers
- Operations & Maintenance
- Safety & Security
- Information Technology
- Planning
- Capital Programs
- Engineering
- Finance
- Procurement
- Compliance
- Communications
- U2C Supervisory System Operators
- Skyway Operations
- Automated Vehicle Provider
- Infrastructure provider (i.e. RSU)

U²C SUPERVISORY SYSTEM ARCHITECTURE



EXAMPLE SUPERVISORY SYSTEM (SVS) BUSINESS REQUIREMENTS

4-02.03	The U²C SVS shall be able to interact with single C/AVs from different manufacturers using interoperable interface standards.
4-03.01	The U²C SVS (OBE) shall be able to interact with roadside equipment (RSE) using interoperable interface standards.
3.4-01.06	The U²C SVS shall provide End Users with service updates, including but not limited to: Wait/Arrival time, Vehicle real time location, and Vehicle visual identification (color, license plates)
3.2.7-01.05	The U²C SVS shall provide payment verification functionality.
3.3.1-03.02	The U²C SVS shall be able to perform traffic management, determining whether a vehicle has stopped, where, and why.
3.2.2-02.01	The U²C SVS shall enable JTA Operations and Safety & Security personel to view on-board video cameras in real time.
3.2.4-01.02	The U²C SVS shall be enable JTA Planning personnel to configure custom performance metrics.

QUESTIONS

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THANK YOU

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