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UNIVERSITY OF MICHIGAN

LEADING THE TRANSFORMATION
TO CONNECTED AND AUTOMATED VEHICLES

Smart Intersections and Ann Arbor Connected Environment 2.0 (AACE)

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Connected**Environment**

Paving the way for safer, greener, and smarter roads

Since 2012, the U-M Transportation Research Institute has served as a leader in connected vehicle research, creating a one-of-a-kind testing environment for all.

Safety Pilot

$30.3M

Safety Pilot Model Deployment launched in August of 2012 as the world's first large-scale real-world deployment of CVs.

AACVTE

$15.2M

The Ann Arbor Connected Vehicle Test Environment built upon SPMD to become the gold standard for a national deployment.

SIP

$19.9M

The Smart Intersections Project will deploy infrastructure-based technology to accelerate CAV deployment and build a roadmap for its commercialization.

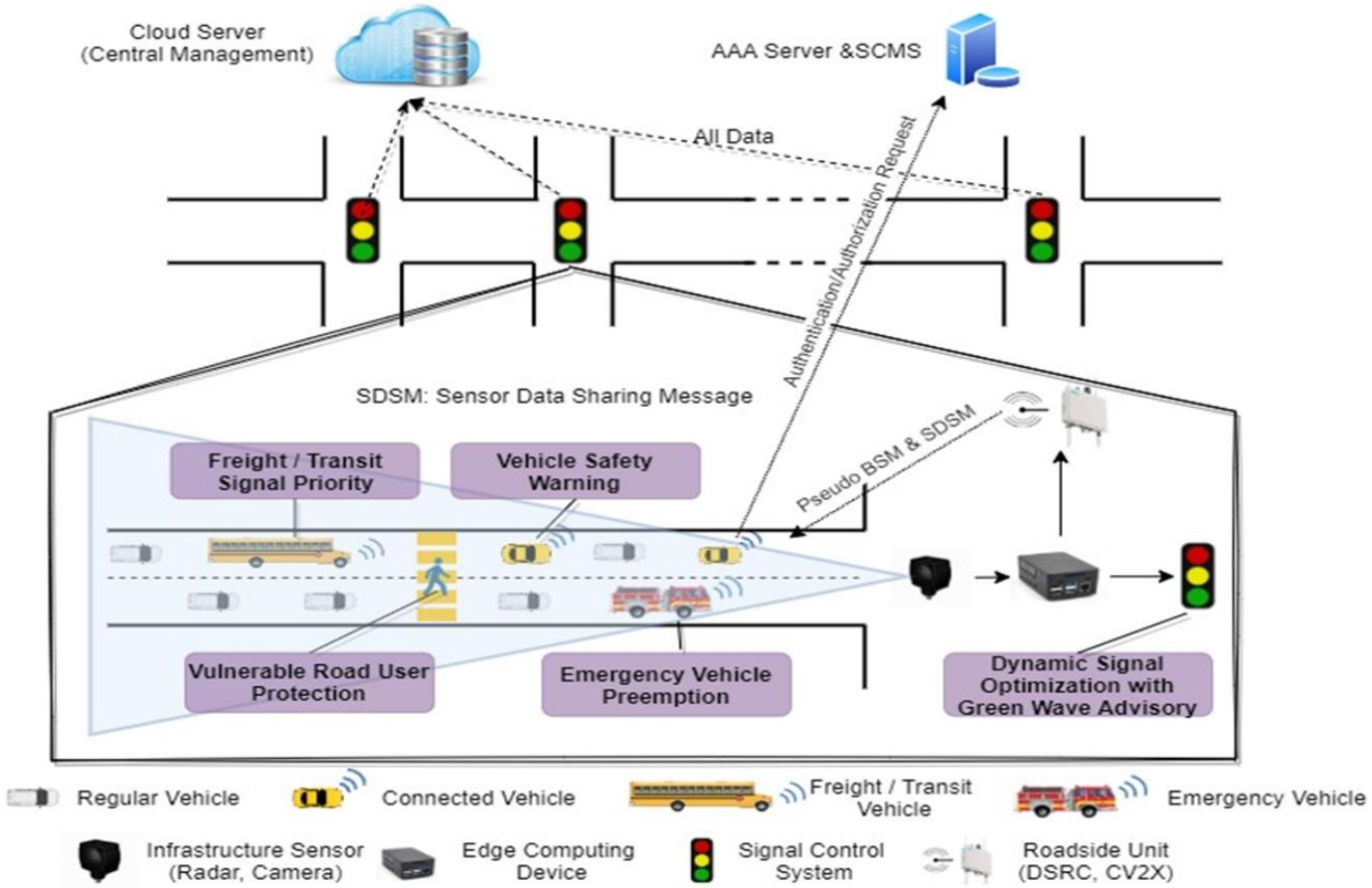
AACE 2.0

$12.7M

The Ann Arbor Connected Environment 2.0 will convert the existing connected vehicle deployment to C-V2X.

Smart Intersections Project

Develop an infrastructure-assisted cooperative driving automation ***testbed*** to accelerate CAV deployment



UMTRI

Ford Qualcomm TOYOTA

City of Ann Arbor Michigan · Continental · iteris

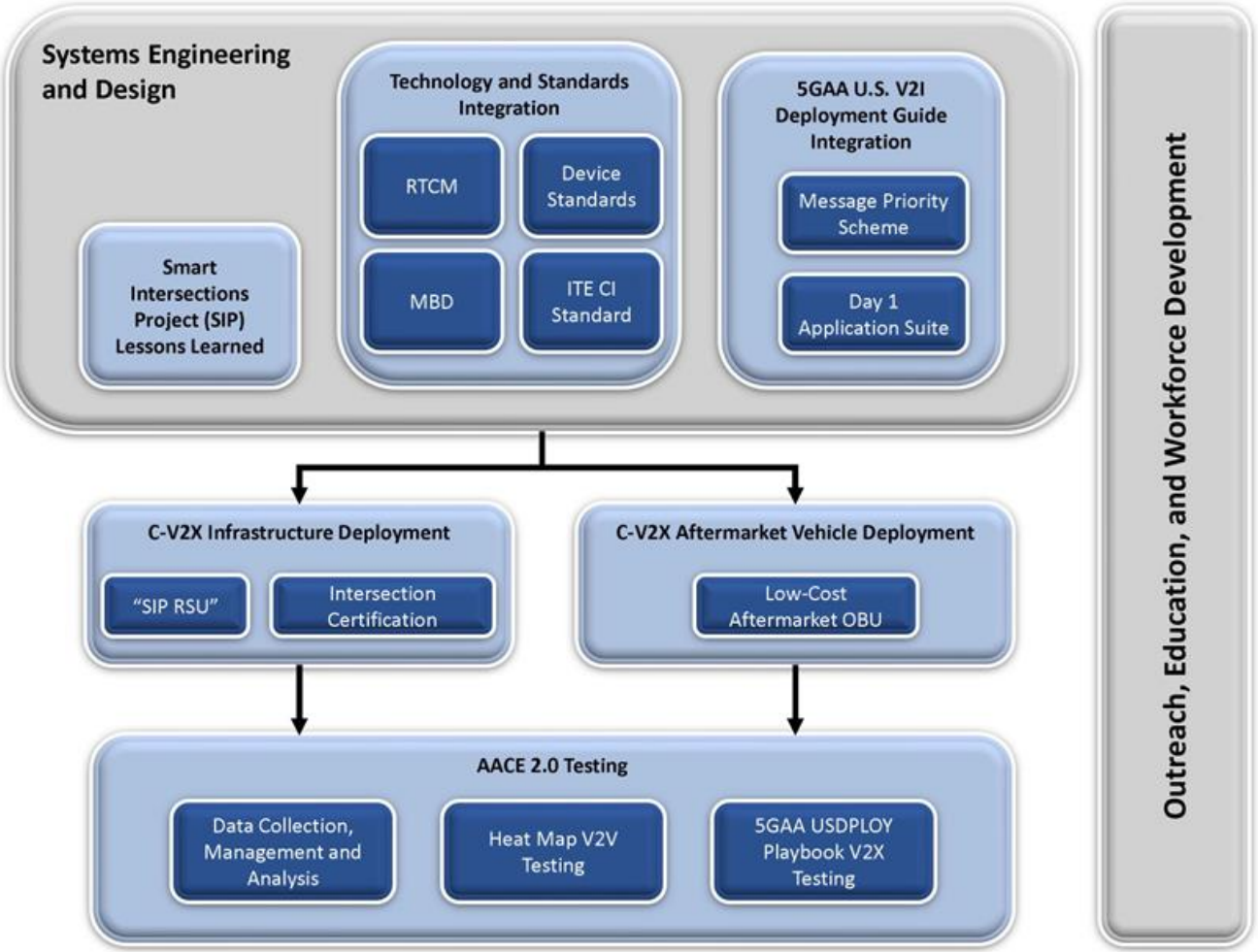
ECONOLITE

P3M · PURDUE UNIVERSITY · WSP

Funded by USDOT

Ann Arbor Connected Environment 2.0

Support OEMs and Tier 1s to implement 5GAA Day-1 Applications for US V2I Deployment



UMTRI

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WSP

ite A Community of Transportation Professionals

INTEGRAL BLUE
COMMUNICATIONS ENGINEERING & SYSTEMS INTEGRATION

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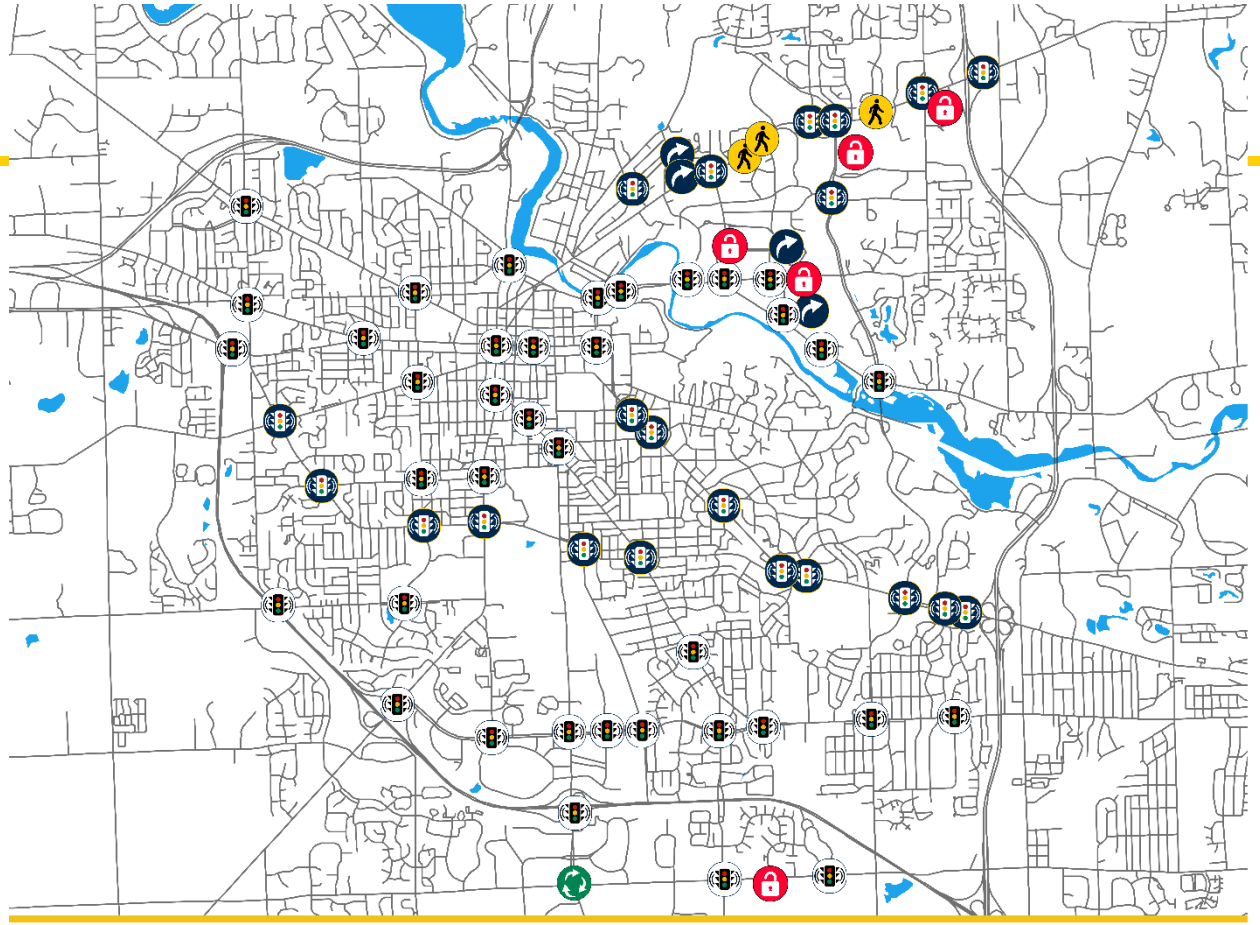
AACE 2.0 Deployment Sites



Smart Intersection Site

Intersection Site

Pedestrian Mid-Block Crosswalk

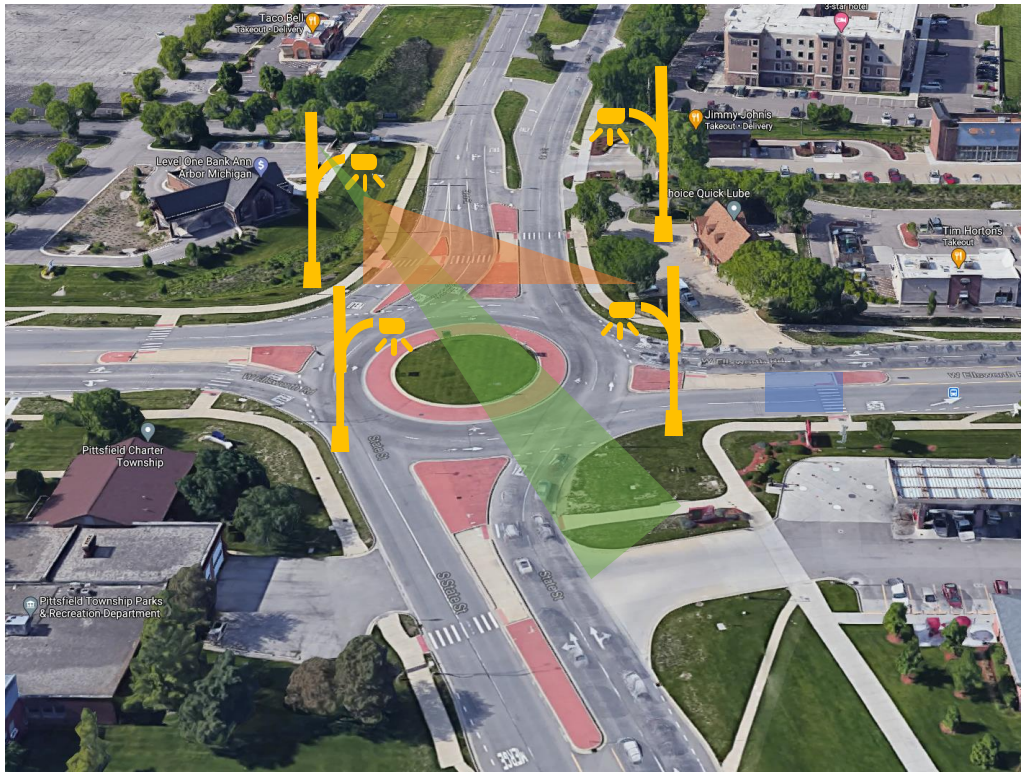
Testing Site without Security Enabled

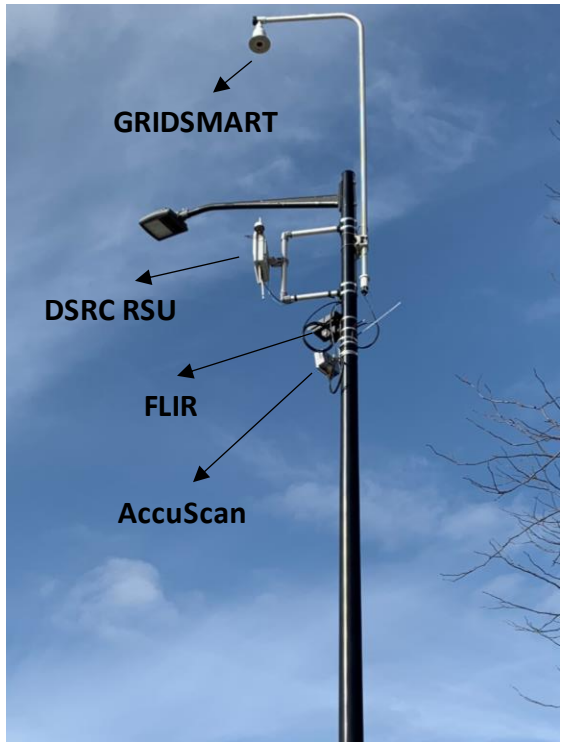
Roundabout

Curve Speed Warning

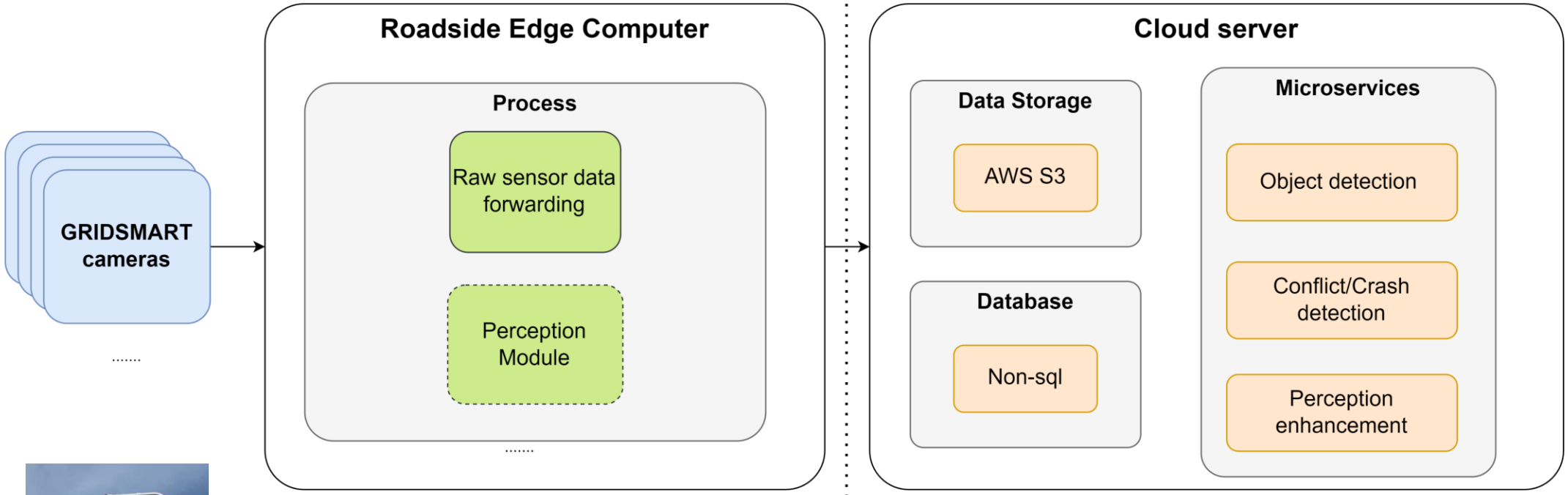
Implementation at State St./Ellsworth

- In 2020, State St./Ellsworth Rd roundabout had 69 crashes and 6 injuries and was ranked #14 for the most dangerous intersections in Michigan.



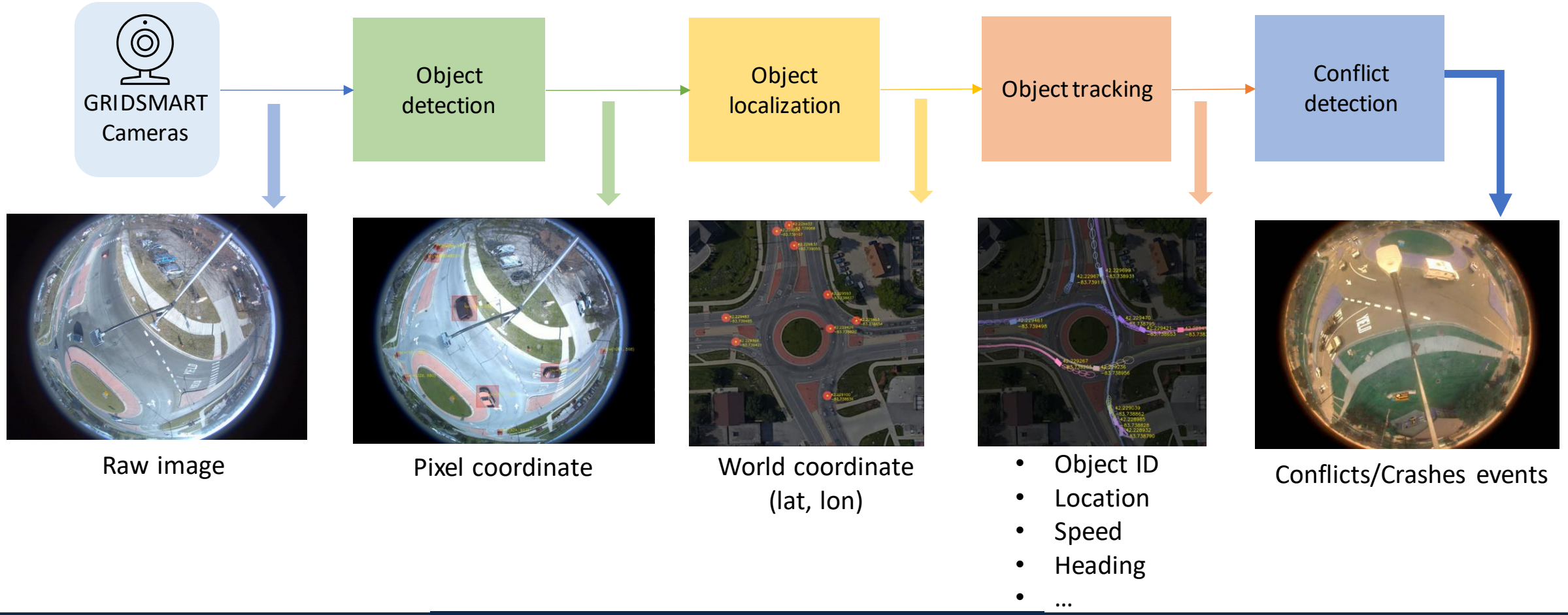


Edge-cloud system architecture

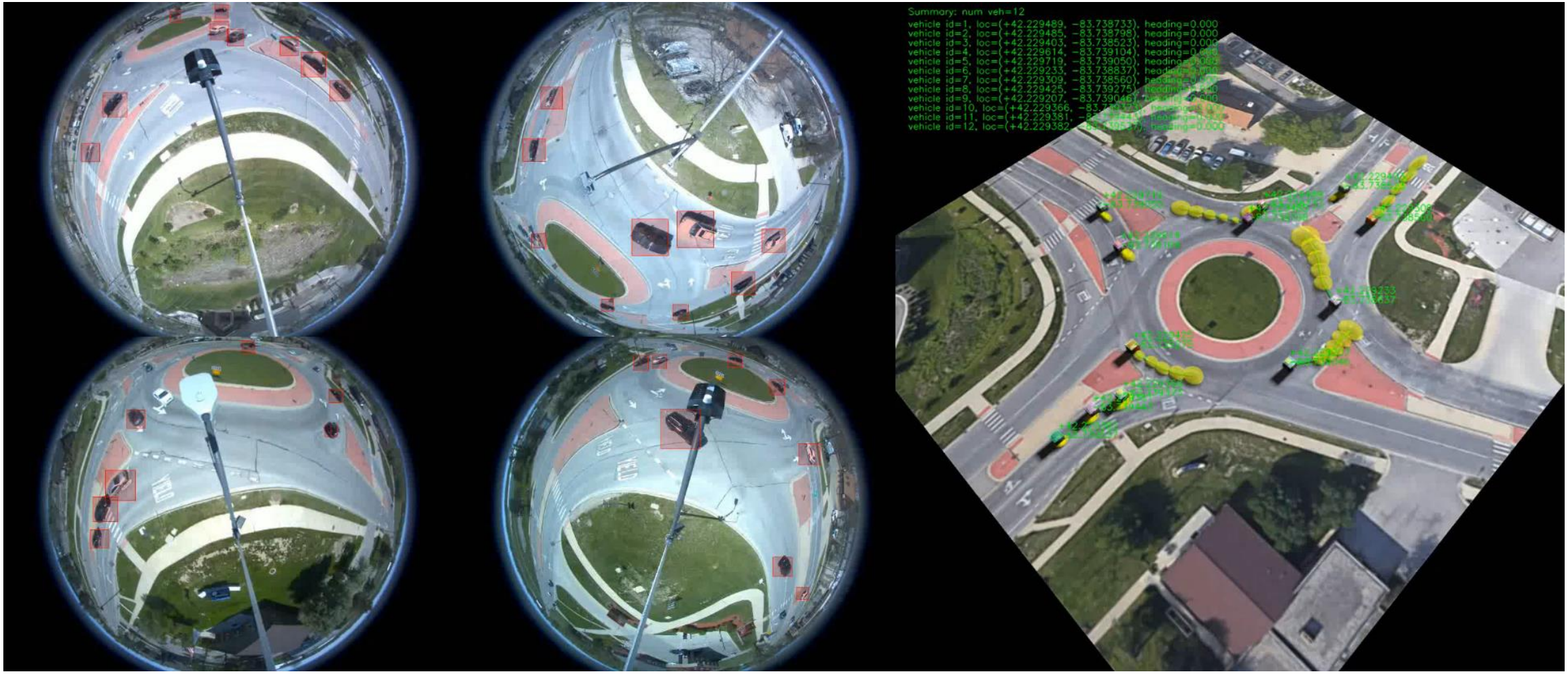


Nuvo-8108GC
rugged edge computing device

MSight Conflict/Crash detection Overall Pipeline

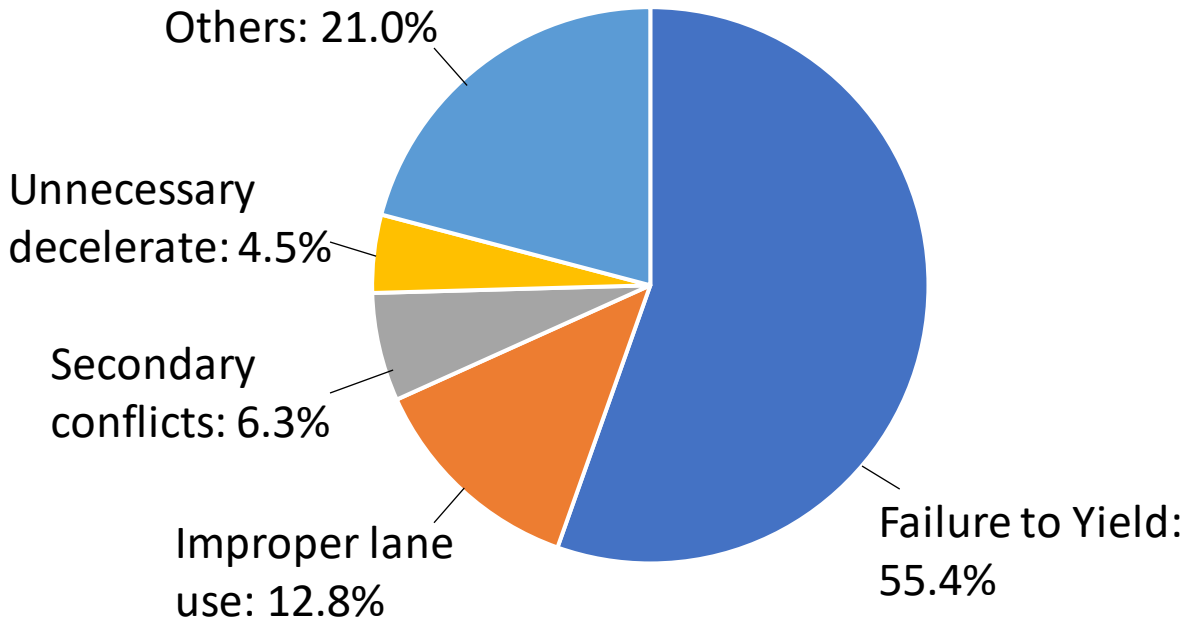


High-resolution trajectory data collection



Conflict statistics at State St./Ellsworth Rd Roundabout in Ann Arbor

- An infrastructure-based cooperative perception system is deployed at State St./Ellsworth Rd roundabout
- During 07/07/2023 – 08/07/2023:
- Statistics of 397 detected conflicts are shown as follows:



Statistics on reasons leading to conflicts

A conflict happened at 1:30pm, July 10th, 2023

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