

Michigan Smart Corridor

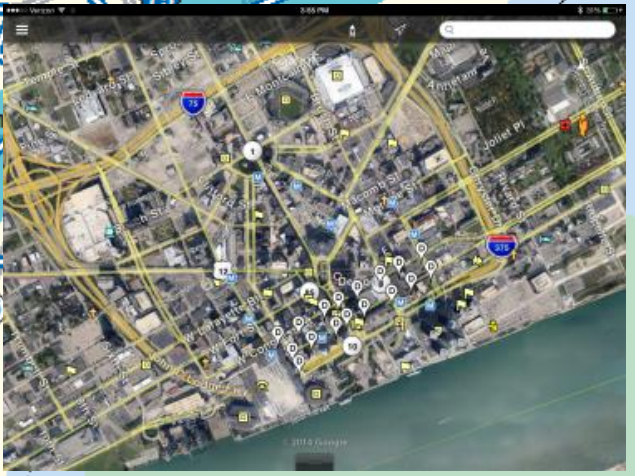
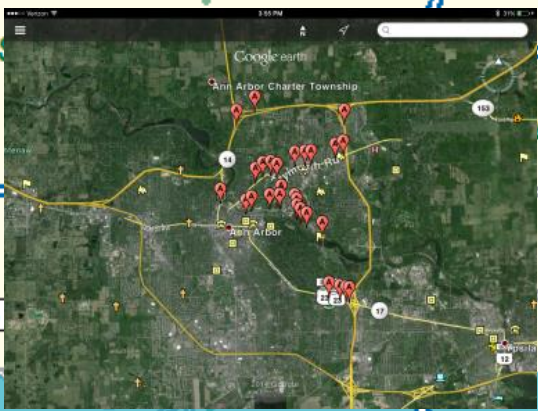
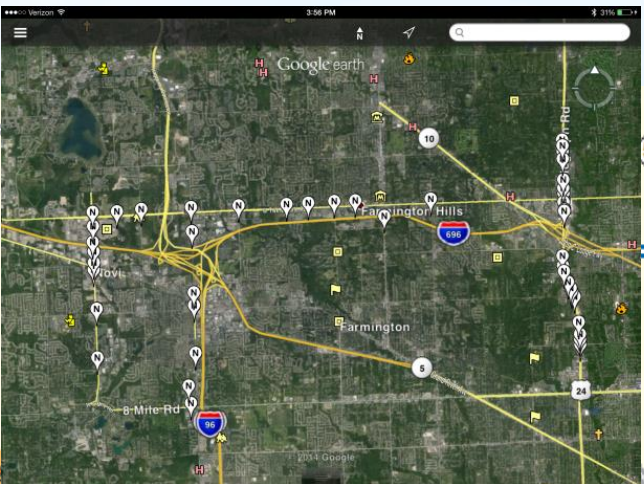
Matt Smith, PE

Michigan Department of Transportation

November 17, 2014







Supporting Organizations



★ MDOT Facilities

★ Member HQ or Key Facility

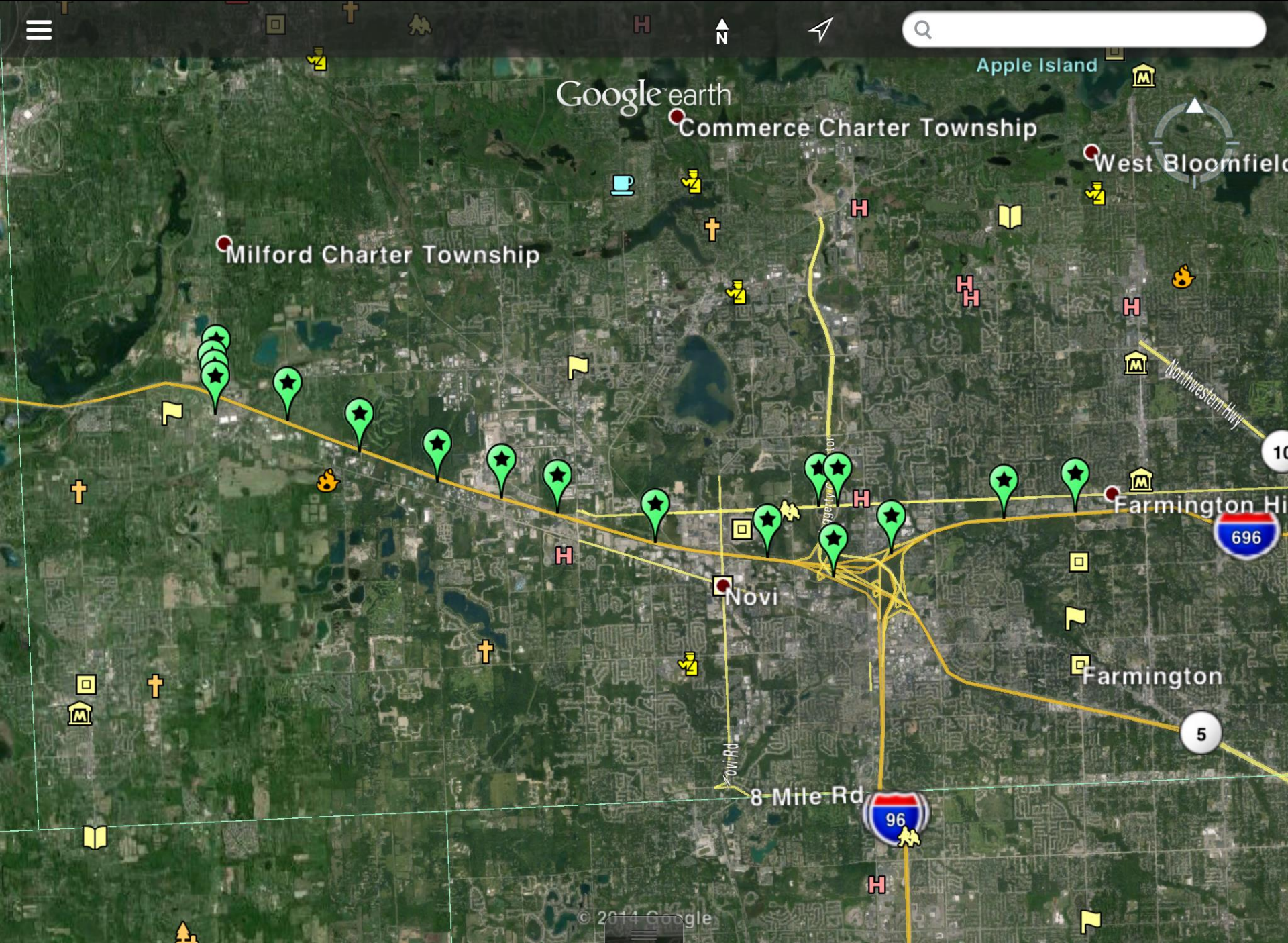
⊙ Connected Vehicle Test Beds

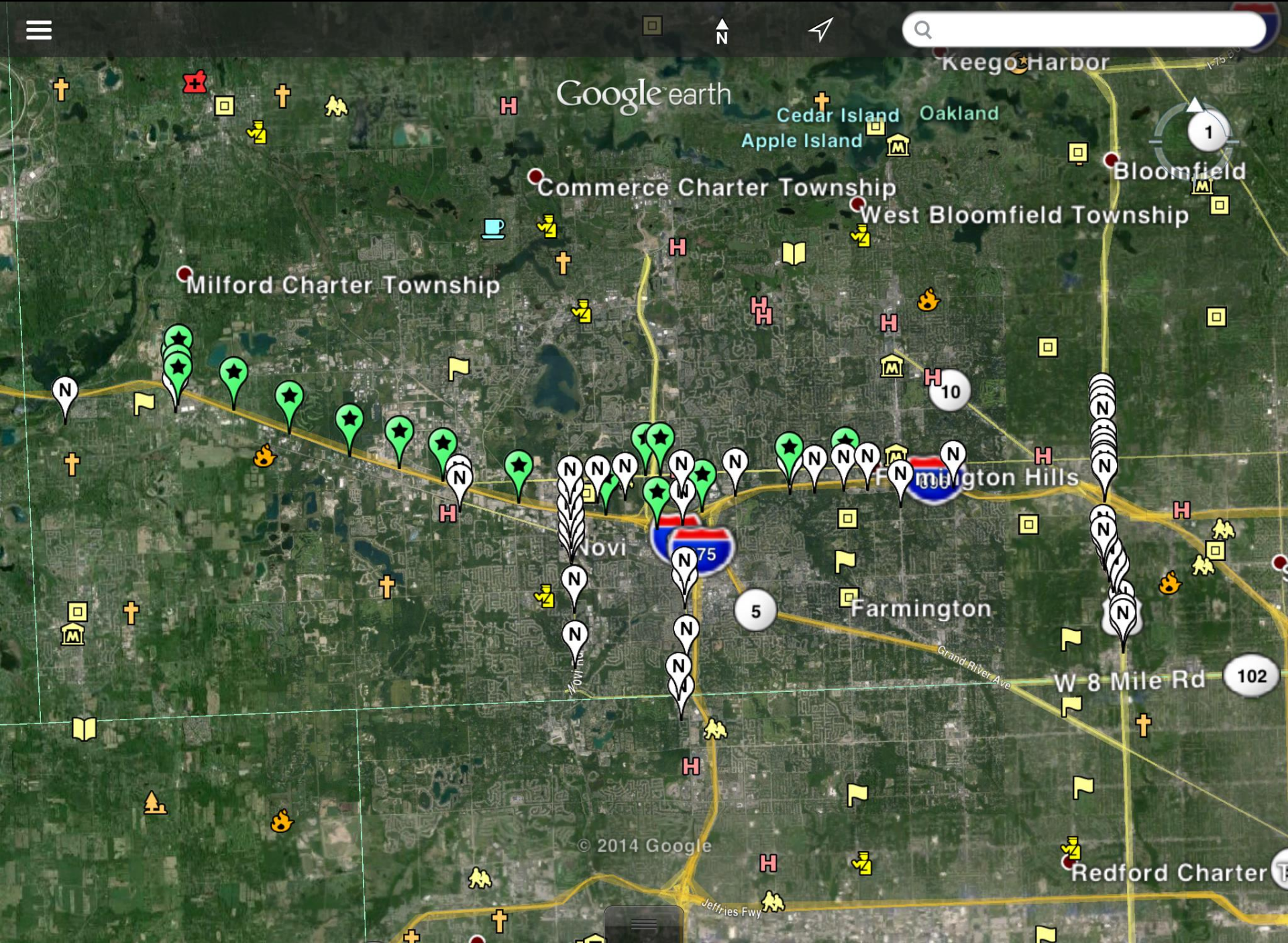
7:45 AM - March 03, 2014 through March 07, 2014

The map displays the Detroit metropolitan area with a highlighted marathon route. The route begins on the western edge near I-96, passes through Farmington Hills, Royal Oak, Warren, and ends near Saint Clair Shores. Major highways shown include I-75, I-94, I-96, I-275, and I-12. Labeled cities and areas include South Lyon, Farmington Hills, Farmington, Livonia, Westland, Garden City, Dearborn Heights, Dearborn, Inkster, Detroit, Warren, Royal Oak, Berkley, Beverly Hills, Troy, Pontiac, Rochester Hills, Sterling Heights, Fraser, Saint Clair Shores, Grosse Pointe Woods, and Grosse Pointe Park. The route is color-coded with green and red segments, indicating different stages or conditions of the race.

5:30 PM - March 03, 2014 through March 07, 2014

The map displays the Detroit metropolitan area with a highlighted route from Farmington Hills to Warren, Michigan. The route is color-coded to show traffic conditions: green for light traffic, yellow for moderate traffic, and red for heavy traffic. The route starts in Farmington Hills, travels east through Southfield and Royal Oak, and ends in Warren. Major highways shown include I-75, I-94, I-96, and I-275. Other labeled areas include Pontiac, Troy, Sterling Heights, Fraser, Saint Clair Shores, Grosse Pointe Woods, Grosse Pointe Park, Detroit, Dearborn, Dearborn Heights, Garden City, Westland, Wayne, Inkster, and Livonia.





*Also must accommodate:

- *BSM Forwarding

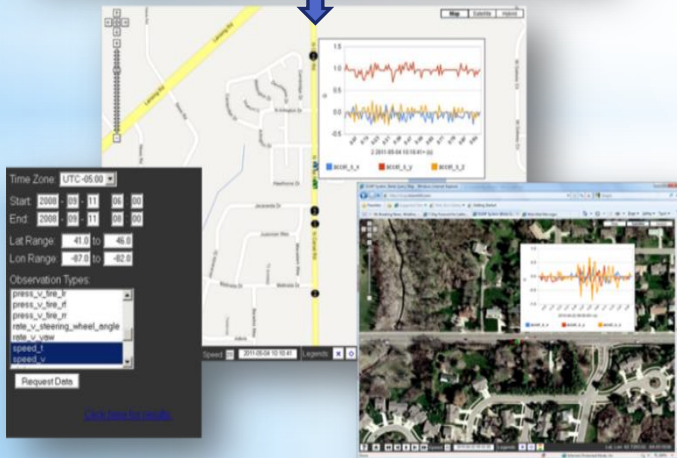
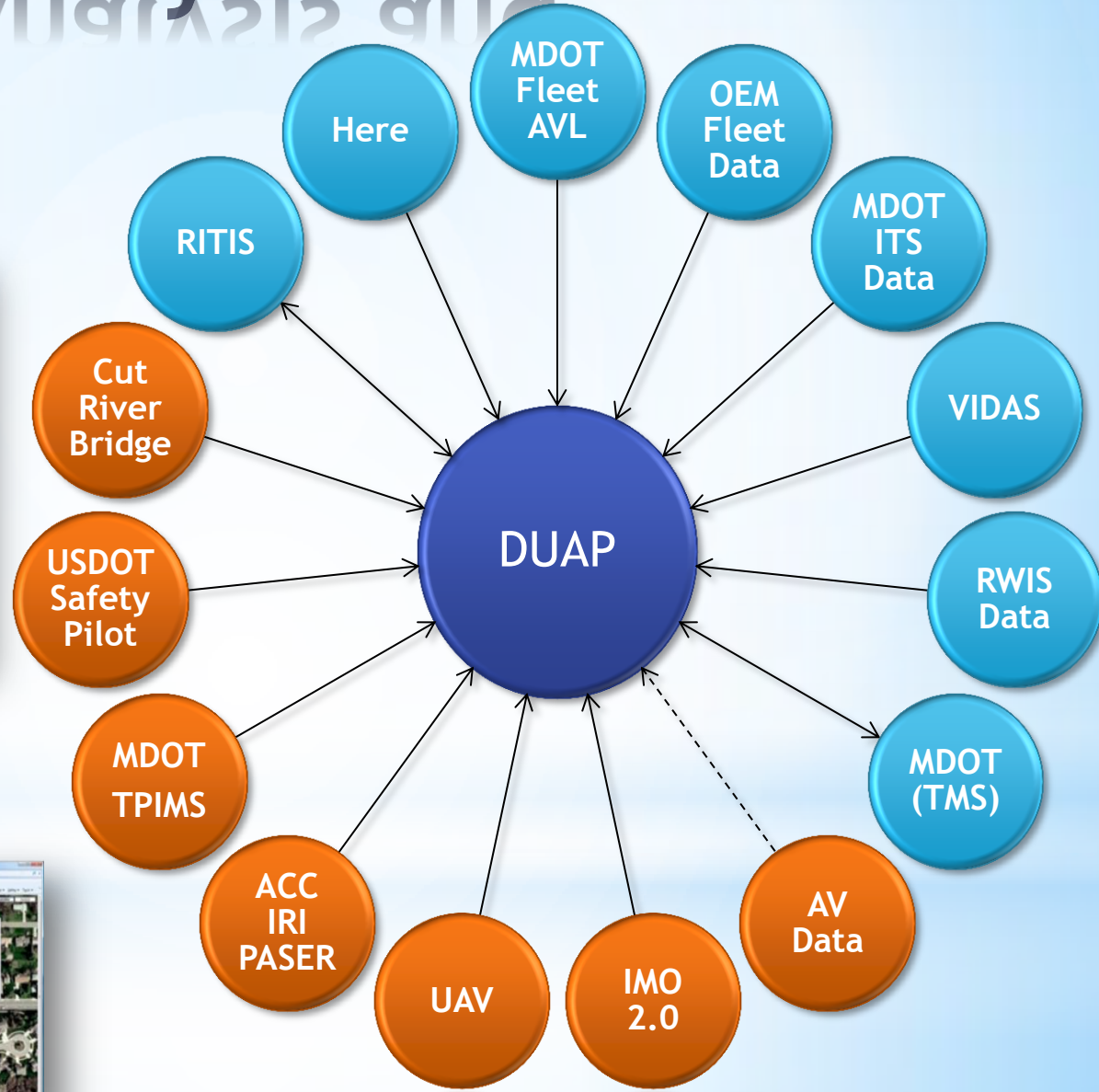
- *SIT Tunneling (IPv6 through IPv4)

- *Ability to maintain settings during reboot

- *NEMA TS2 suppression / grounding (include in existing traffic control cabinets)

*Additional Requirements

*Data Use Analysis and Processing



* Freeway

- * Advanced Traveler Information
- * Queue Warning
- * Lane Management
- * Incident and Work Zone Lane Closures
- * Emergency Responder Guidance and Staging

* Arterial

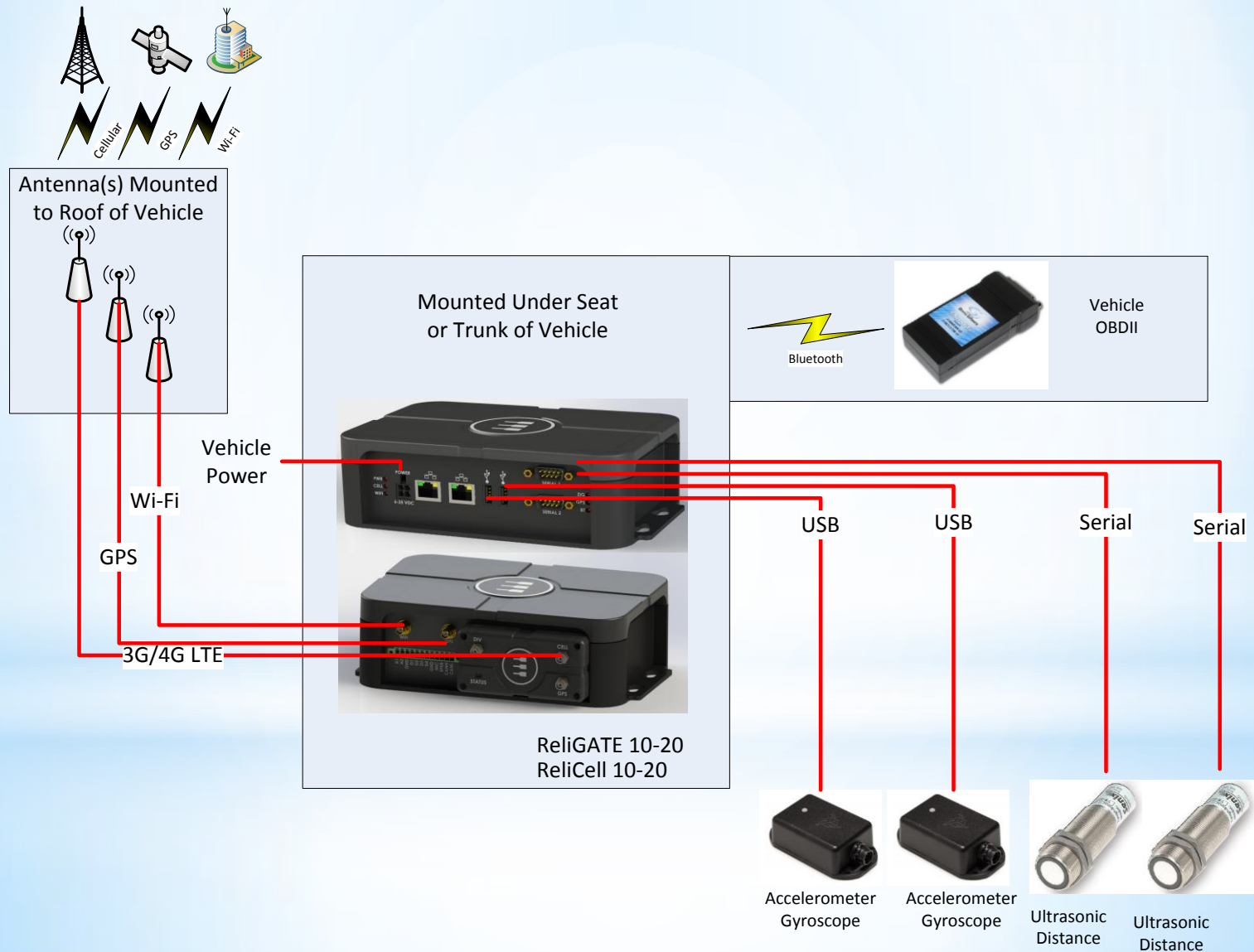
- * Advanced Traveler Information
- * Signal Phase and Timing
- * Incident and Work Zone Lane Closures
- * Emergency Responder Guidance and Staging

* Agency Applications

* Applications

Planning & Asset Management	Design	Construction	Maintenance	Operations
Potential Applications to Enhance Performance Management and Data Sharing				
Pavement Conditions <ul style="list-style-type: none"> • IRI • PASER sufficiency ratings • Accelerometry 	Pavement Conditions <ul style="list-style-type: none"> • Measure Rutting (traction control?) • Pavement Roughness vs. Fuel Consumption 	Pavement Performance Correlation with environment <ul style="list-style-type: none"> • Long term pavement performance and cracking • Tracking pavement conditions for verification of reported vehicle damage • Cure time in environmental conditions • Trending data for cost/benefit analysis 	Pavement Conditions <ul style="list-style-type: none"> • Friction • Ride Quality • Defect Type and Location • IRI PASER • Accelerometry 	Pavement Conditions <ul style="list-style-type: none"> • Ice Forming • Tracking pavement conditions for verification of reported vehicle damage • Friction • Markings • Load Restrictions • Subsurface Impact
Traffic Planning <ul style="list-style-type: none"> • Volume Distribution • Volume Growth • Congestion Relief • Roadway System Planning 	Intelligent Construction Probes for comprehensive As - builds <ul style="list-style-type: none"> • Determine actual subgrade compaction state • Environmental conditions at time of placement 	Weather/Environment Information <ul style="list-style-type: none"> • Monitoring weather parameters • Frost depth • Best paving Conditions monitoring • Work Conditions Monitoring, i.e. Rain Delays • Greenhouse gas emissions 	Weather <ul style="list-style-type: none"> • Winter Weather Maintenance <ul style="list-style-type: none"> • Response Times • Analyzing & Tracking weather systems • Winter maintenance activities • General Year-round Maintenance 	Traffic Management <ul style="list-style-type: none"> • Volume • Occupancy • Speed • Travel Time • Seasonal Volume Changes • Route Guidance • Incident Notification • User Delay Cost
HPMS & TMS <ul style="list-style-type: none"> • Asset Location • Current Conditions • Systems Performance 	Weather stations <ul style="list-style-type: none"> • Ongoing environmental monitoring • Impact on life of pavement • Rate of degradation of pavement • Winter weather maintenance 	Work Zone <ul style="list-style-type: none"> • Traffic Conditions, i.e. speed, volume, queue lengths • Lane Departures • Worker Safety • Monitor when Active 	Incident Management <ul style="list-style-type: none"> • Time of Occurrence • Pinpoint locations • Damage tracking on infrastructure • Incident Cause • Time to repair • Damage Log • High Incident Locations 	Incident Management <ul style="list-style-type: none"> • Incident Report • First Responders Times • First Responders Guidance • Incident Locations • High Incident Locations • User Delay Cost
Reporting: <ul style="list-style-type: none"> • Volume • Speed • Occupancy • Classification • Travel Time • Origin & Destination Planning 	Mechanistic Empirical Pavement Design <ul style="list-style-type: none"> • Weather impact • Fixed Station Placement 	Site Monitoring <ul style="list-style-type: none"> • Real time site monitoring • Utility Location for Construction Equipment (DSRC), i.e. Overhead Power Lines • High precision as built mapping 	Signals <ul style="list-style-type: none"> • Cost to Operate • Phase Analysis • Volume • Incident Analysis <ul style="list-style-type: none"> • Vehicle Location • Signal Phasing • Signal Delay 	Weather Management <ul style="list-style-type: none"> • Treatment Status • Driving Conditions Status
Counts Path <ul style="list-style-type: none"> • Pedestrian • Bike 	Traffic monitoring <ul style="list-style-type: none"> • Impact of traffic on pavement over time • Classification, Load cell 	Contractor Management <ul style="list-style-type: none"> • Conditions of Temporary Pavement (Ride Quality) • Monitor Road/Lane Closures • Work Progress for Incentive Payments 	Rest areas <ul style="list-style-type: none"> • Vehicles Pulling in • Time spent • Parking availability 	
Truck Tracking <ul style="list-style-type: none"> • Freight • Light 		Topological Analysis <ul style="list-style-type: none"> • Channel Systems Migration • Land Erosions • Water levels 		

* VIDAS Platform - Base Solution



*Questions?

