Connected Vehicle Ecosystem

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Connected Vehicles

Vehicles are becoming mobile sensor platforms

Growing importance of digital infrastructure in addition to physical

Connectivity can improve safety and mobility

Connectivity can support road usage charging

Connected Vehicle Ecosystem (CVE)

Third-Party Data Sources

Existing Infrastructure

Oregon CVE

Data Fusion, AI/ML, Normalization, Big Data
For
Planning, Operations, Analysis, and Reporting

Traffic Management

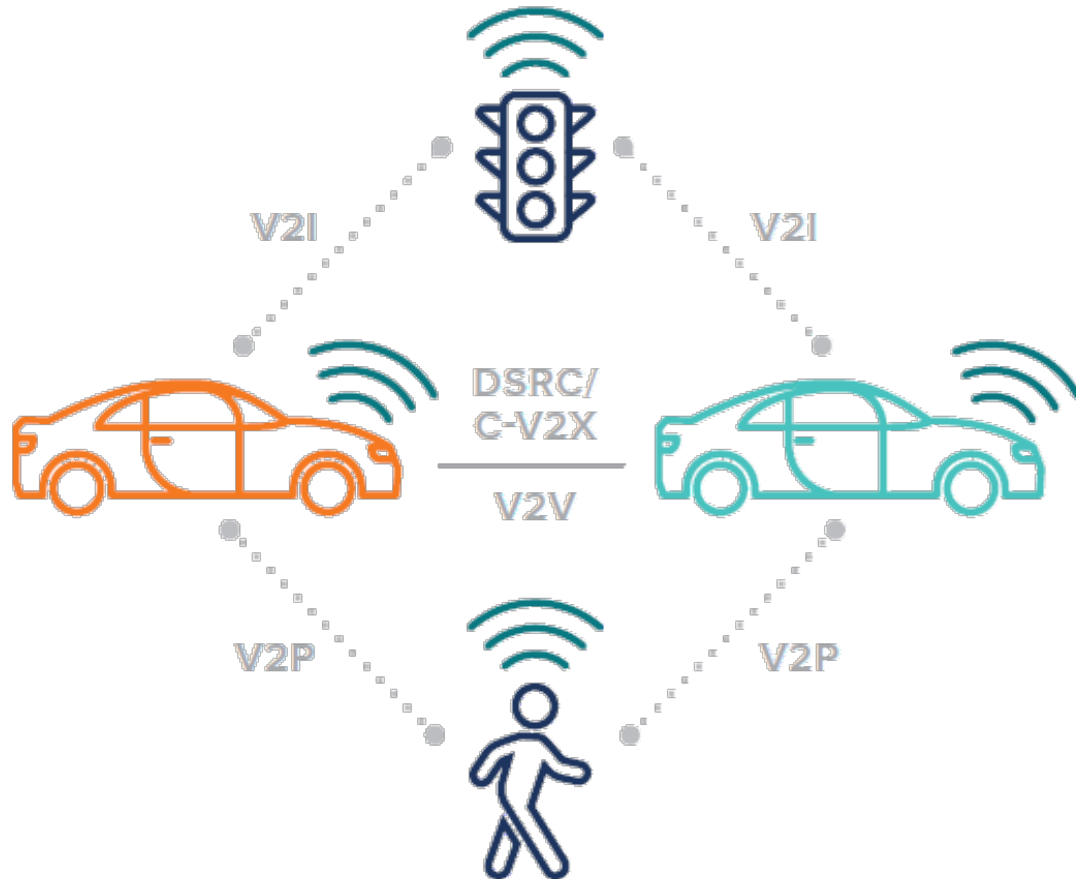**Local Agency Operations**

Incident Management

Maintenance

Road Usage Charge

CVE Communication

V2X VEHICLE-TO-EVERYTHING

V2I

V2I

DSRC/
C-V2X

V2V

V2P

V2P

DIRECT COMMUNICATIONS
- USES DSRC/C-V2X
- OPERATES IN THE ITS BAND (5.9 GHz)

V2N VEHICLE-TO-NETWORK

V2N

V2N

NETWORK COMMUNICATIONS
- LTE/5G FOR V2N
- OPERATES IN LICENSED CELLULAR SPECTRUM AND OVER THE INTERNET

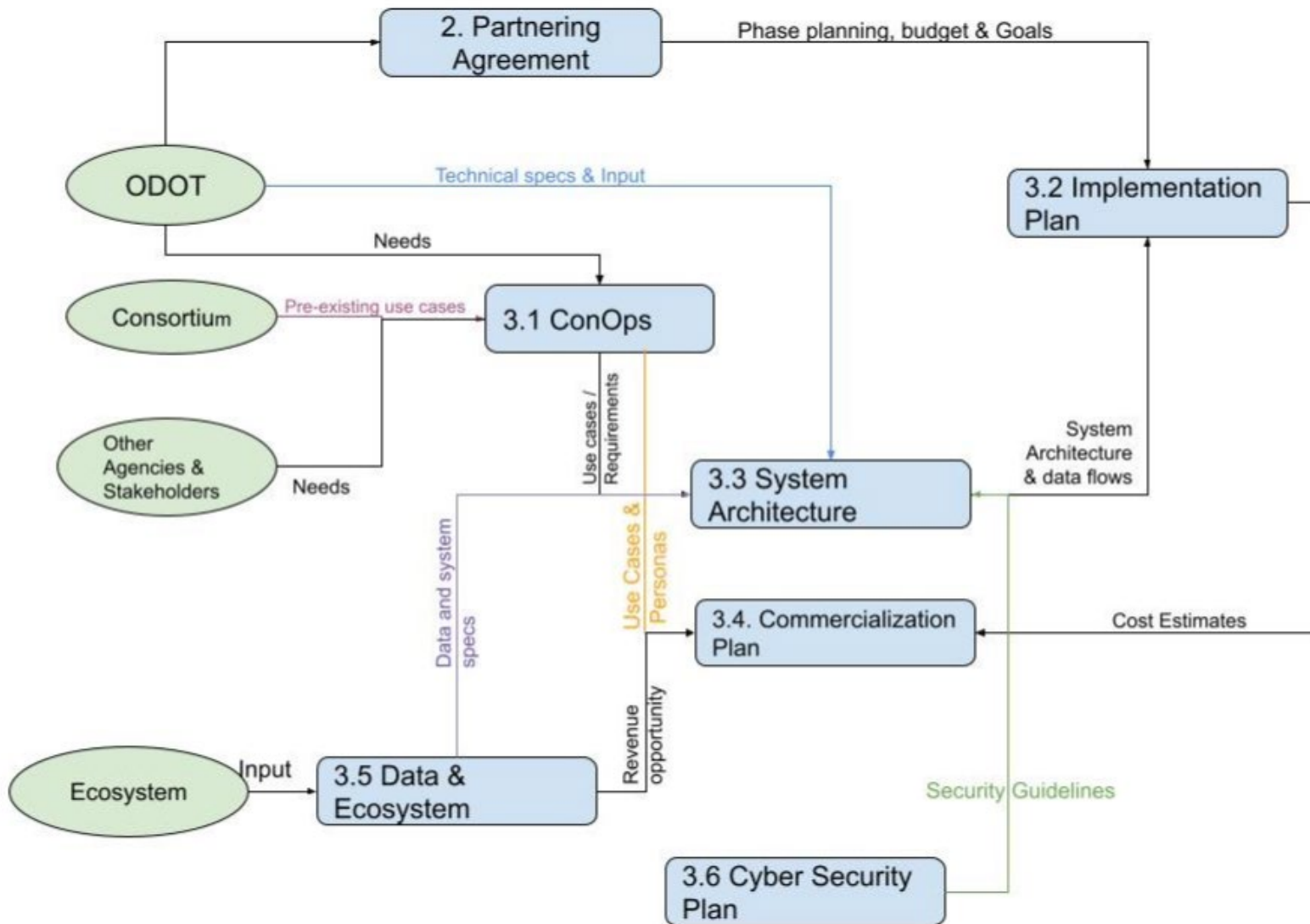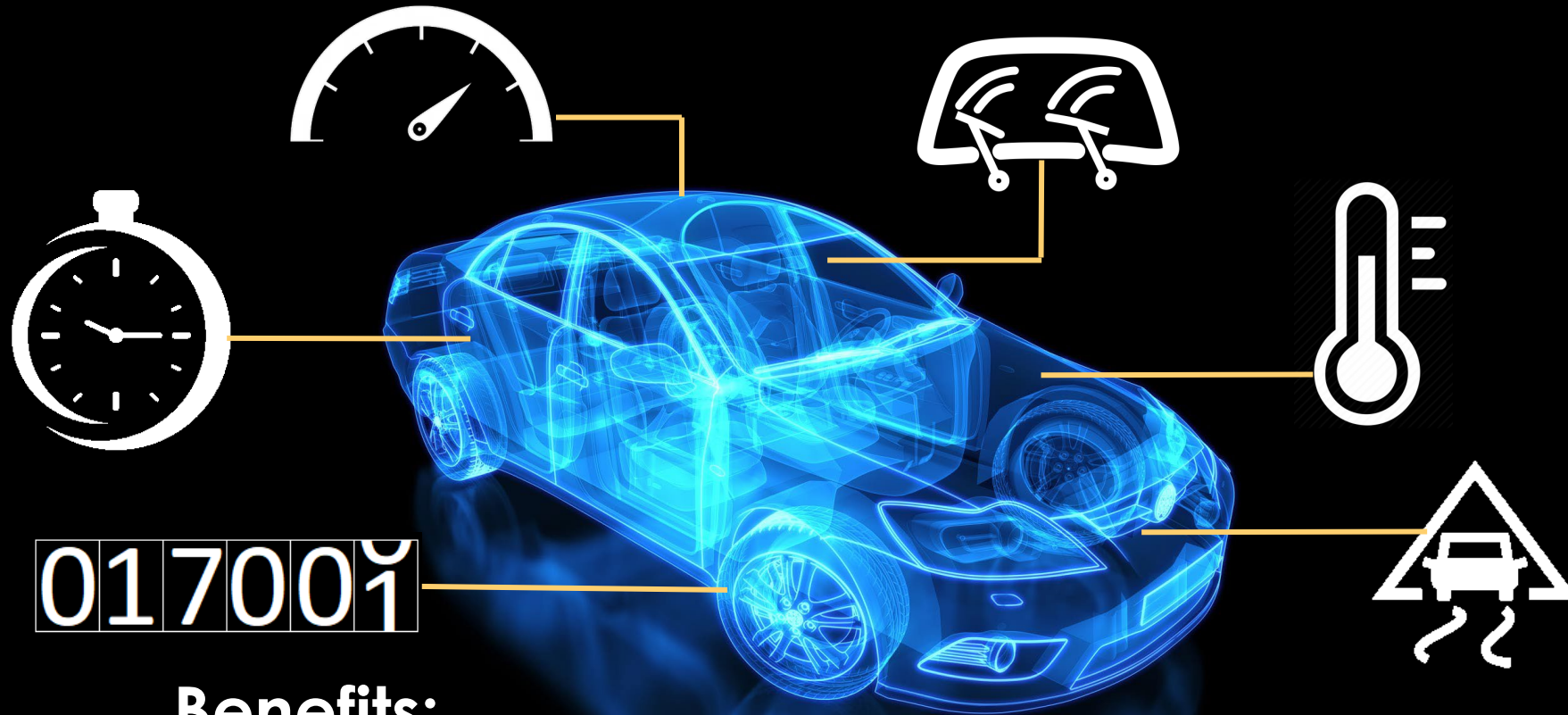# Connected Vehicle Ecosystem – Partnership

Connected Vehicle Ecosystem – Phase 0

- ✓ **Concept of Operations**
- ❑ **System Architecture**
- ❑ **Data Flow Diagram**
- ❑ **Partnering Agreement and Guidelines**
- ❑ **Implementation Plan**
- ❑ **Data Acquisition and Ecosystem Management Plan**
- ❑ **Cybersecurity Plan**

Safety and Mobility (ITS) – Third-Party Data

Benefits:

- Reduction in roadside infrastructure
- More information for highway analysis
- Statewide Active Traffic Management

Safety and Mobility (ITS) – ODOT Data

TripCheck API

Traffic Incidents   Traffic Cameras   Construction Info   Weather Conditions

And Much More...

Resource	Refresh Rate	Description
CCTV Inventory	24 hours	Returns an inventory of all cameras currently displayed on TripCheck.
Incidents	30 seconds	Returns all traffic incidents on state highways.
Local Incidents	2 minutes	Events occurring on local roads as reported by non-ODOT government agencies (ex., Washington County, City of Eugene Public Works).
DMS Inventory	24 hours	Returns inventory and location attributes for all active Dynamic Message Signs (DMS) statewide.
DMS Status	1 minute	Returns the content being displayed on all active Dynamic Message Signs (DMS) statewide.
RWIS Inventory	24 hours	Returns inventory and location attributes for Road Weather Information System (RWIS) stations.
RWIS Status	5 minutes	Road Weather Information System data from automated weather stations collecting weather-related data.

Safety and Mobility (ITS) – Use Cases

- Agency Data
- Vehicle Data

Active Traffic Management
- Congestion Warning
- Weather Warning
- Variable Speed Limits
- Travel Time
- Curve Speed Warning

Traffic Information
- Incidents
- Closures
- Parking Management
- Chain Conditions
- Basic Safety Messages

Agency Operations
- Road Roughness
- Debris/Pothole Detection
- Sign/Striping AI Readability
- Traffic Patterns

Work Zone Data Exchange
- Active Work Zones
- Vulnerable Workers

Traffic Signal Operations
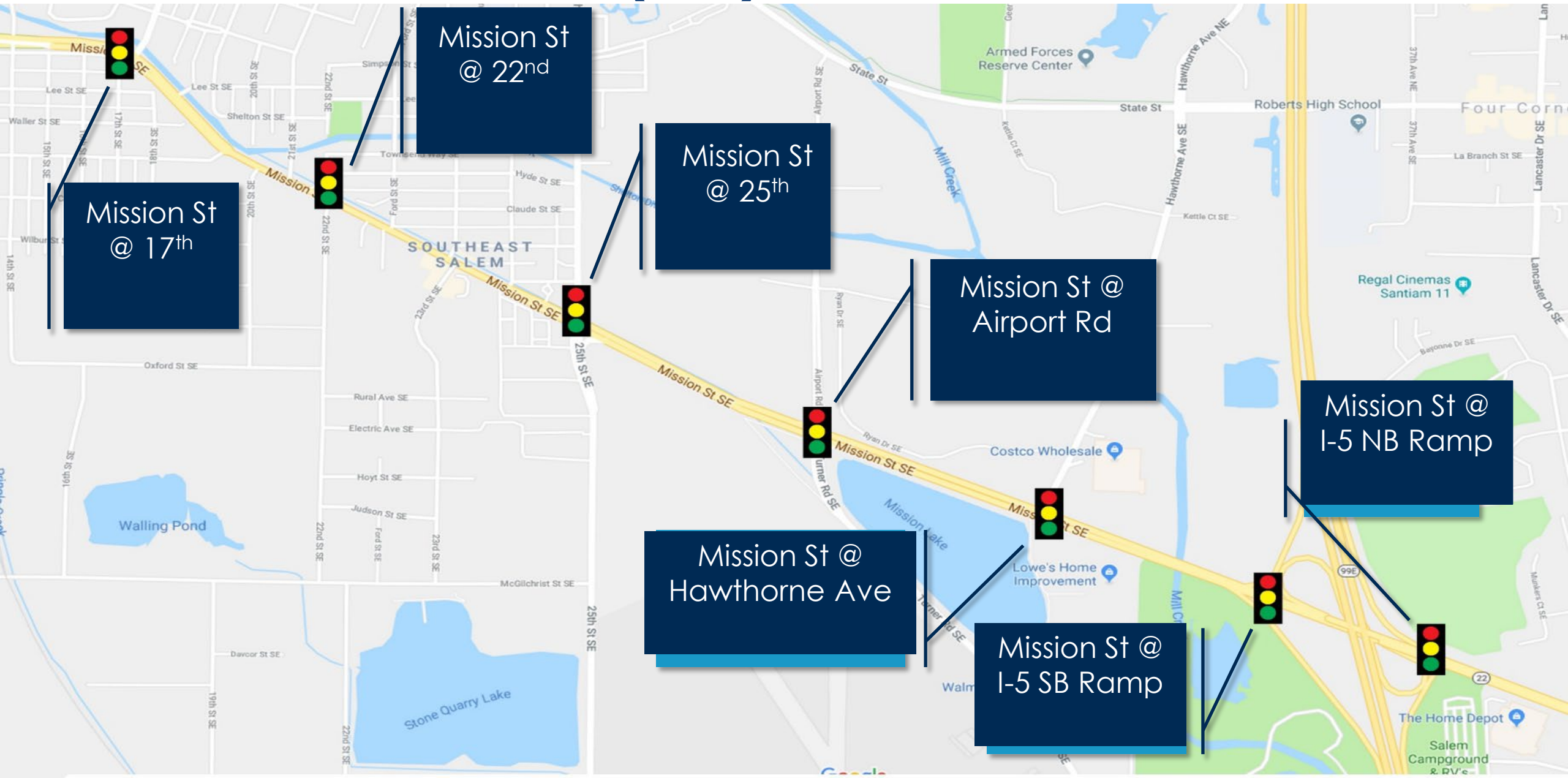- SPaT and MAP
- Signal Violations

Truck Management
- Weigh Station Bypassing
- Truck Inspections

ODOT Roadside Unit (RSU) Pilot – Licensed for C-V2X

ODOT RSU and OBU on Price Agreement

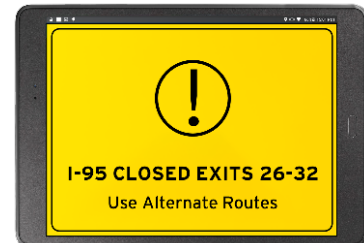Siemens Yunex Traffic
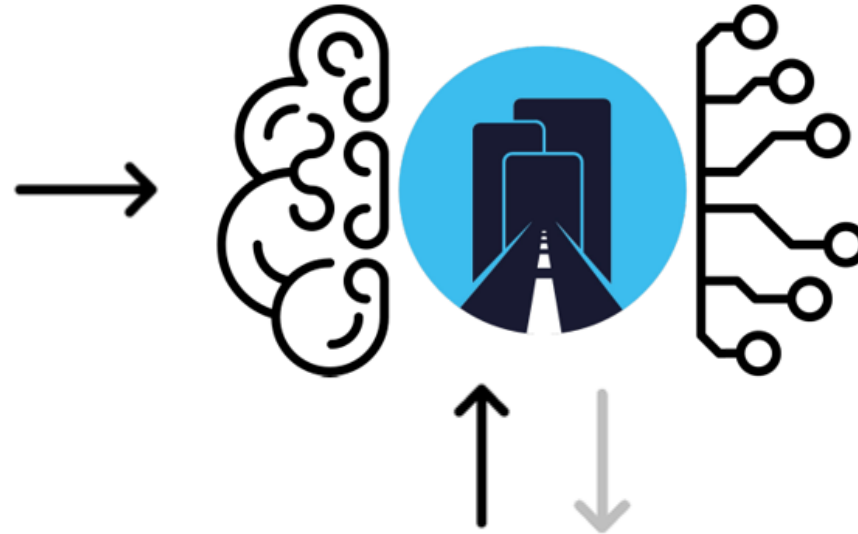Roadside Unit (RSU)

DENSO Hercules
On-Board Unit (OBU)

Advanced Transportation Technology and Innovation (ATTAIN) Grant Proposal - CVE ITS Proof of Concept

Oregon CVE

Data Provided:
- Road Roughness
- Road Obstacles
- Vehicle Weather
- Road Friction
- Harsh Braking

THANK YOU!

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