ITS and Safety at Intersections

It's all in the Data

ITE SoCal & ITS-CA Joint Meeting

June 16, 2021

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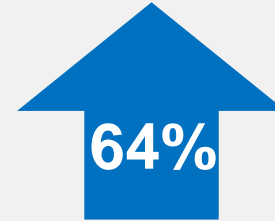# The Case to Make Intersections Safer

2.5 MILLION
Intersection crashes occur each year

Since 2000…

12%
Bicycle/pedestrian fatalities

64%
Number of bicyclists commuting to work

6,205
pedestrians killed in traffic accidents in 2019

50%
of serious crashes happen at intersections

165,000 crashes occur annually caused by **red-light runners** resulting in **700-800 fatalities at year**.

Approximately
3,350 FATALITIES
occur per year at **intersections**

Embracing Pedestrian and Bicycle Crash Data - Police Data Initiative

Overview of the 2019 Crash Investigation Sampling System (dot.gov)

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Intersection Pain Points

1. Crashes

2. Bike and Pedestrian safety

3. Integrating various solutions and tools

4. Balancing safety and mobility

5. Analysis

   - Need real time identification of areas of concern
   - Need to support Engineering, Enforcement, Education

Did you know
40% OF ALL CRASHES
occur at or near intersections?

Aware
- ✓ Advanced Sensors
- ✓ Multimodal Detection
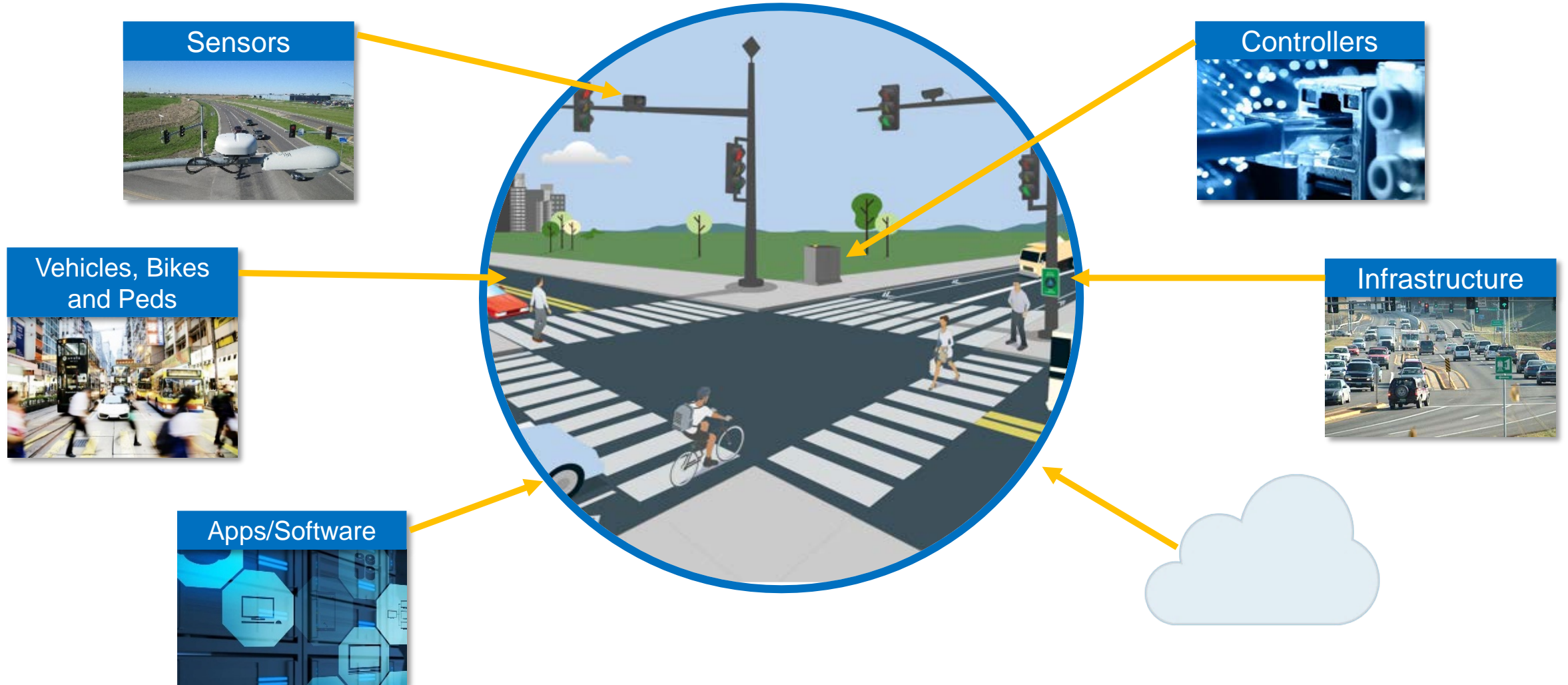- ✓ Automatic Data Collection

Connected
- ✓ Connected Intersections
- ✓ Connected to the Cloud
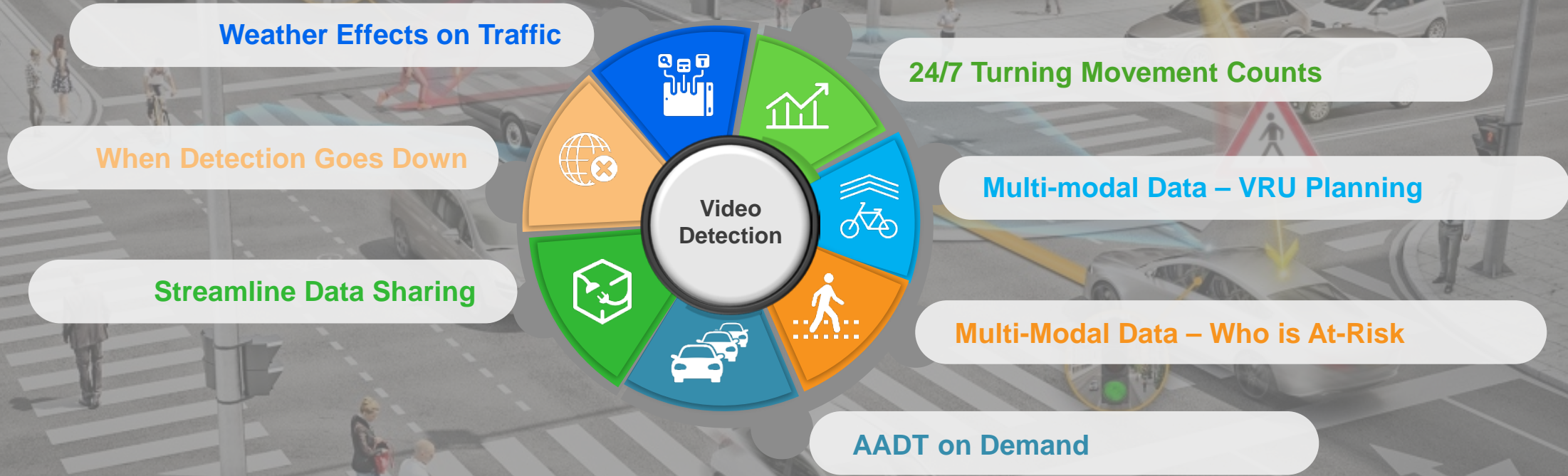- ✓ Connected to CAV

Data-Driven
- ✓ Advanced Applications
- ✓ Data-Driven Planning
- ✓ Data-Driven Operations

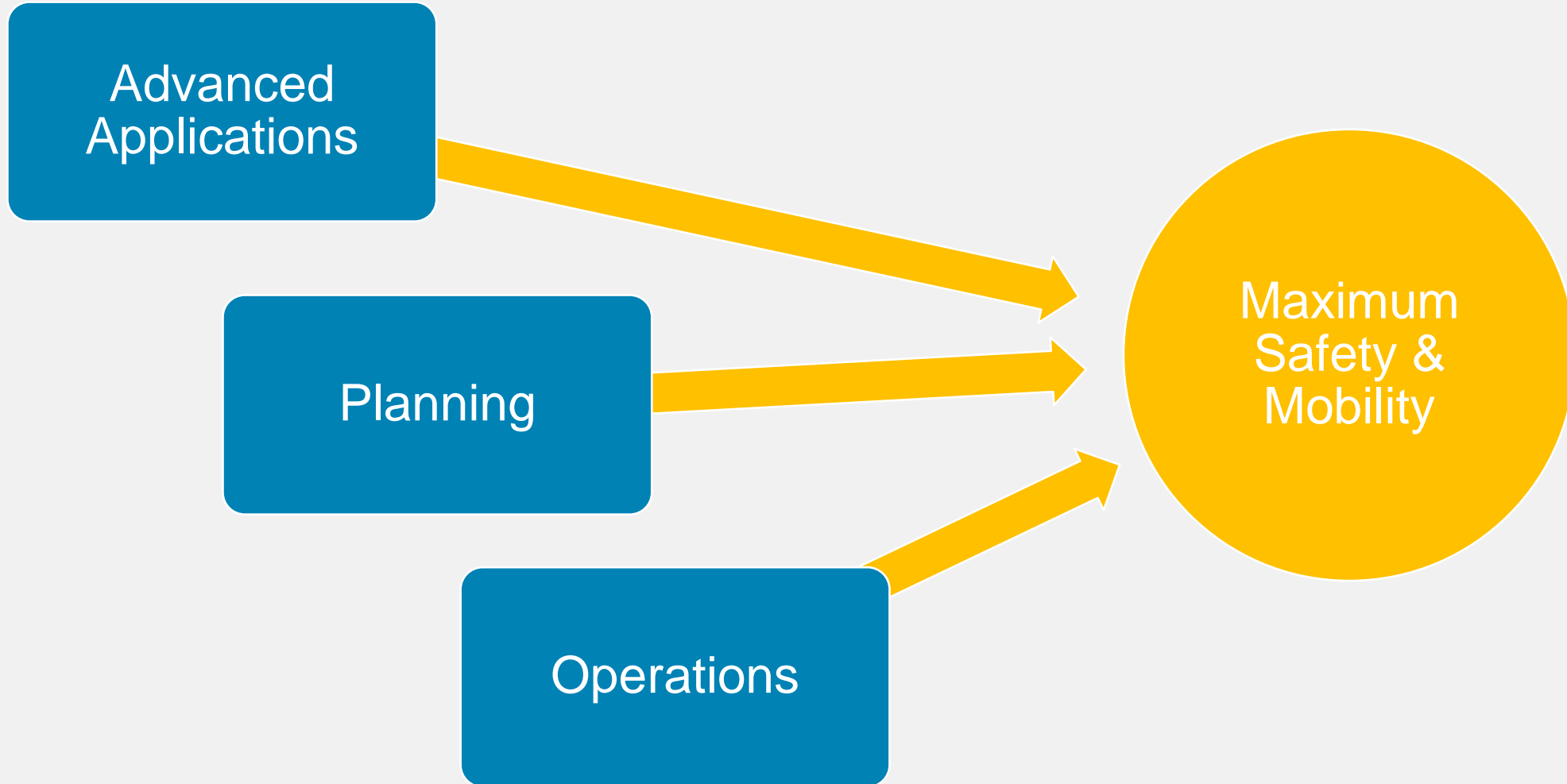# Intersections Generate and Attract Data

Sensors

Controllers

Vehicles, Bikes and Peds

Infrastructure

Apps/Software

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The BENEFITS of Data at the Intersection

Advanced Applications

Planning

Operations

Maximum Safety & Mobility

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Advanced Applications

Advanced Safety, ITS and TSM&O Applications

- Dilemma zone protection
- Red-light running collision avoidance
- Enhance adaptive traffic signal control systems
- Near-miss analysis
- Real-time intersection management and adjustment for bike / peds
- Real-time CV messages
- Construction / work zone network management
- Predict crash risk

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Improve Performance Management
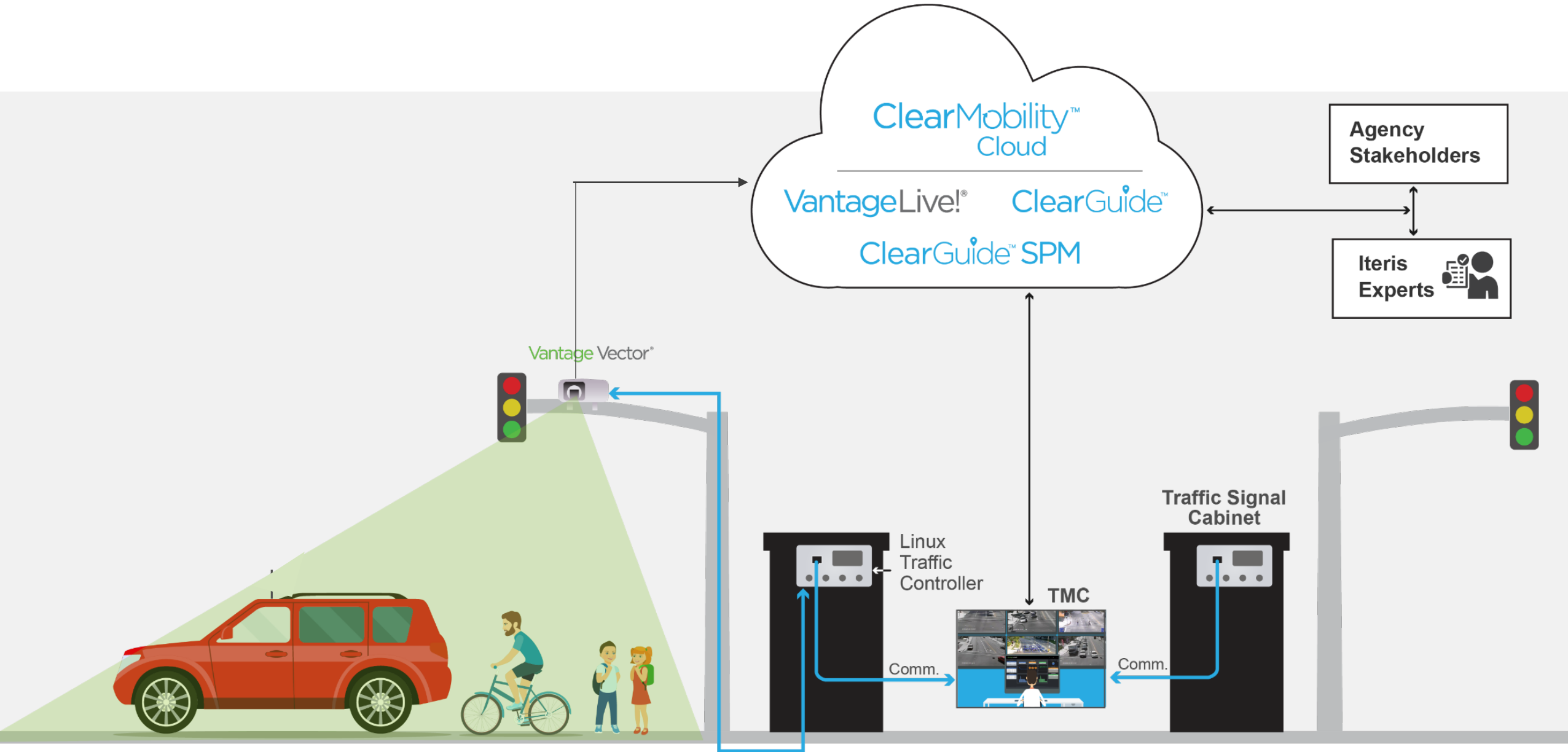
Data-Driven Planning

- Before and after analysis – signal retiming
- Prioritize corridors for signal retiming
- Bottleneck analysis
- Identify and confirm traffic anomalies
- Report / visualize mobility and safety performance
- Prepare actionable reports
- Corridor delay reports
- Signal performance trend analysis

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Operate Arterials Efficiently

Data-Driven Operations

- Monitor and optimize intersections and the entire transportation network
- Utilize existing infrastructure and resources more efficiently
- Identify faulty equipment
- Validate and address complaints
- Respond to traffic conditions in real-time
- Optimize traffic signal performance
- Address congestion areas
- Receive actionable alerts
- Signal timing and synchronization

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Detect and determine location and speed of bicycles, pedestrians and motorists in real time

Monitor movement, counts and infrastructure

Analyze detection, controller and other contextual data

Report insights and identify potential problem areas

Recommend & **Implement** data-driven solutions to increase safety and mobility

DETECT

MONITOR

ANALYZE

REPORT

RECOMMEND

IMPLEMENT

An end-to-end approach to proactively improve safety at intersections

Addresses ➔ Avoidable Crashes | Pedestrian Fatalities | Congestion & Delay

N-MISS Project

Goal:

To provide a Near-Miss Identification Safety System (N-MISS) with innovative solutions using both traditional and emerging technologies

FDOT is testing a shift in road safety management by supplementing 'reactive' approaches that rely on collecting crash data over periods of years, with 'proactive' approaches

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Intersection Collision Safety Program - iCASP

- Program to prevent Red Light Running (RLR) Crashes
- Predict RLR vehicle
- Verify RLR vehicle meets criteria
- Extend "All-Red" / Delay "Green"
- Resume normal operations
- Partnership study

Video Clip of News

https://www.fox13news.com/news/sensors-can-predict-red-light-runners-delay-green-light-for-cross-traffic

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Questions?

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