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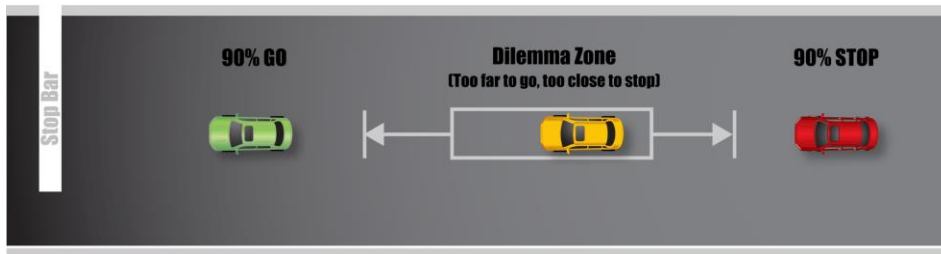
Vantage® Vector®

Hybrid Solution for

Stop Bar & Advanced Detection

What is the Dilemma Zone?

- Driver Indecision
  - When the signal turns YELLOW
    - Do I stop? or Should I go?
  - 2.5 to 5.5 seconds from the stop bar

- Why is solving the Dilemma Zone a big deal?
  - Reduce crashes!

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Traditional Dilemma Zone Detection (Loops)

This very typical multiple-loop-based solution is taken from Standards issued by the Texas DOT
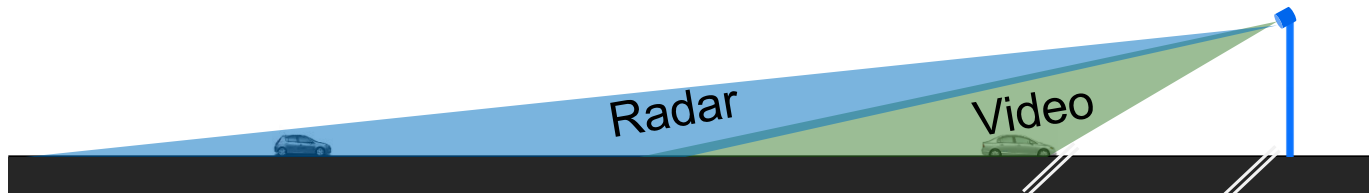
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Issues with Inductive Loops for Dilemma Zone

- Cost
  - Multiple loops
  - Multiple detectors
  - Long cable runs

- Loop placement based on speed
  - But can't determine vehicle speed

- Inefficiency
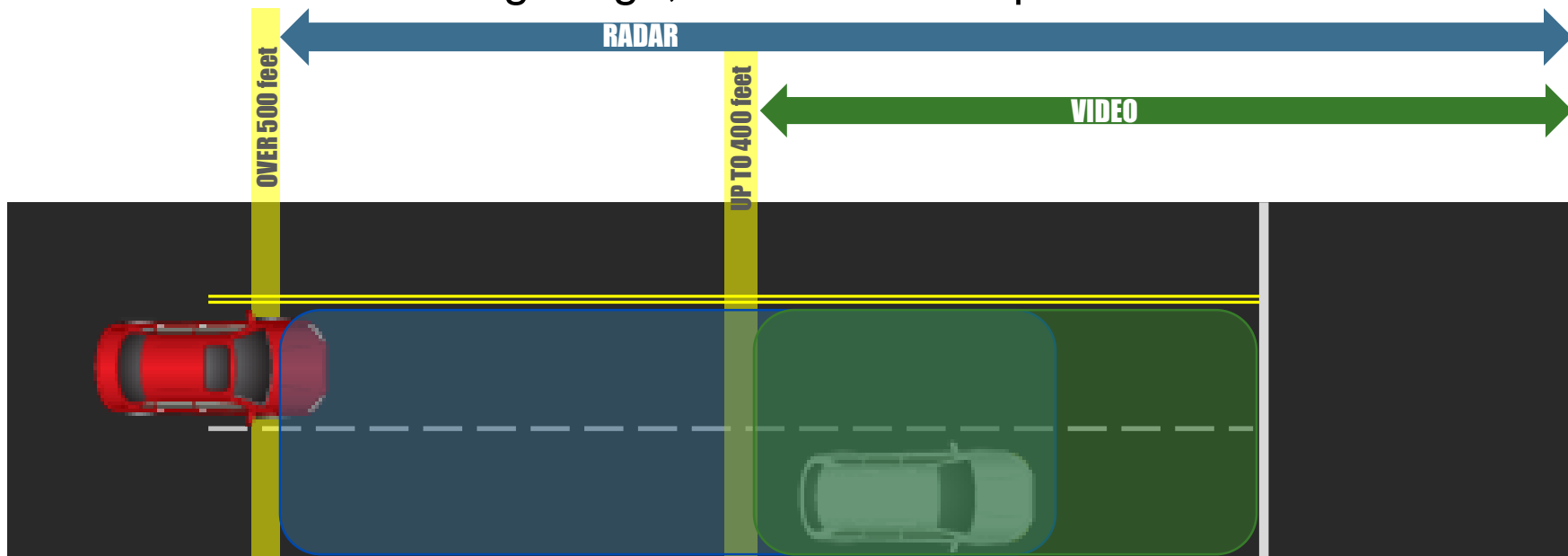 - Controller doesn't gap-out easily

- And then comes remilling…

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Solution: *Vantage®* *Vector®*

- Vantage Vector is a combination of video detection and radar detection in a single sensor

- It provides both stop line and advanced sensing in a single cost effective unit
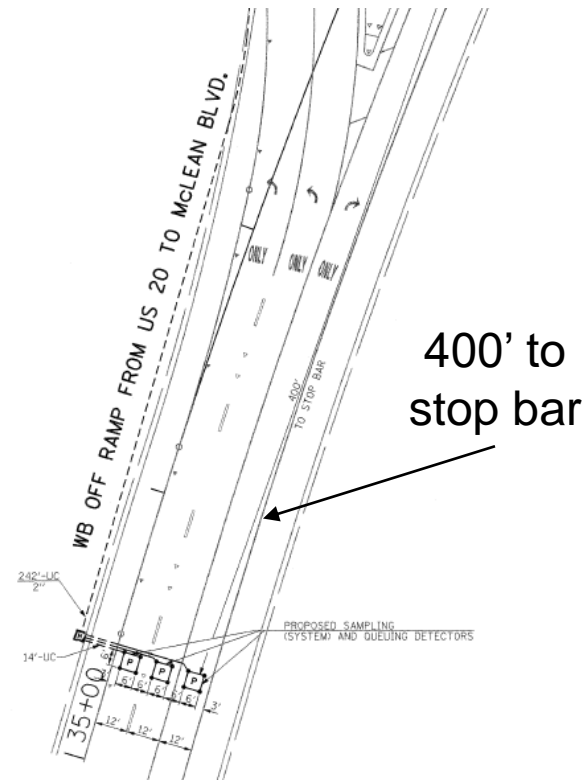
Radar   Video

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Video + Radar Hybrid Action

- Radar detects long range; video detects up close

Vector is highly flexible!

- If a specification asks for loops, and specifies roadway locations, Vector can meet it!

- Vector can meet a myriad of applications
  - Dilemma Zone
  - Advance Detection
  - Collision Avoidance
  - Adaptive Systems

400' to stop bar

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What Makes the Vector Special

- Reduce Dilemma Zone conflicts

- Reduce intersection crashes

- Spread sensor budget further
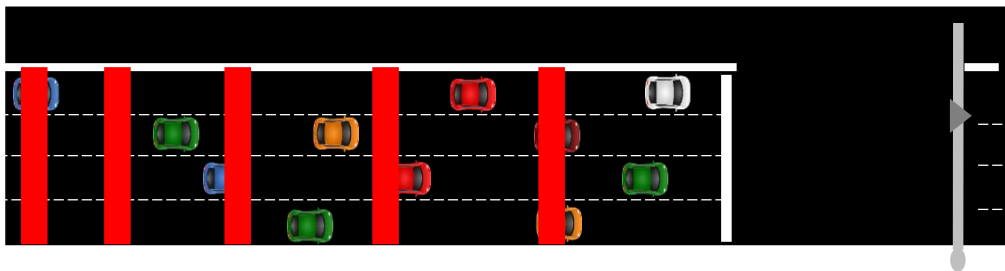
- No surprises from the field

- Move more traffic

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How Does the Radar Work?

- Radar "sees" individual vehicles
  - Accurate distance and speed data of each vehicle

- Up to 5 trip lines can be set

- Min/Max speed settings for each trip line

- Adjustable trip line width
  - From +/- 6 ft to +/- 20 ft

- Presence/Delay/Extension settings for each trip line

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Reduce Dilemma Zone Conflicts

- Up to 5 trip lines can be configured
  - We can better determine when drivers are in or out of the Dilemma Zone as they approach the intersection
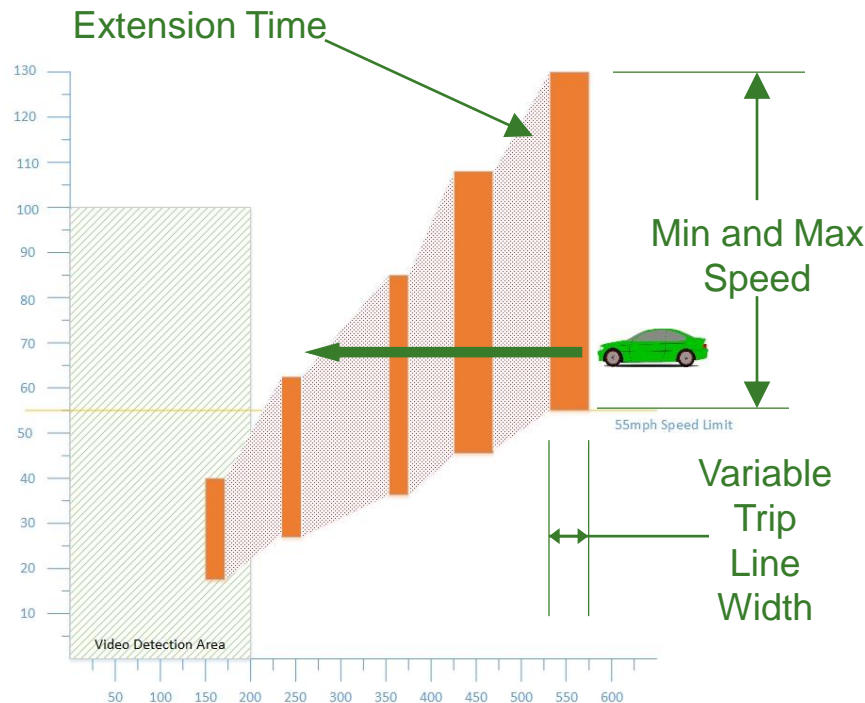

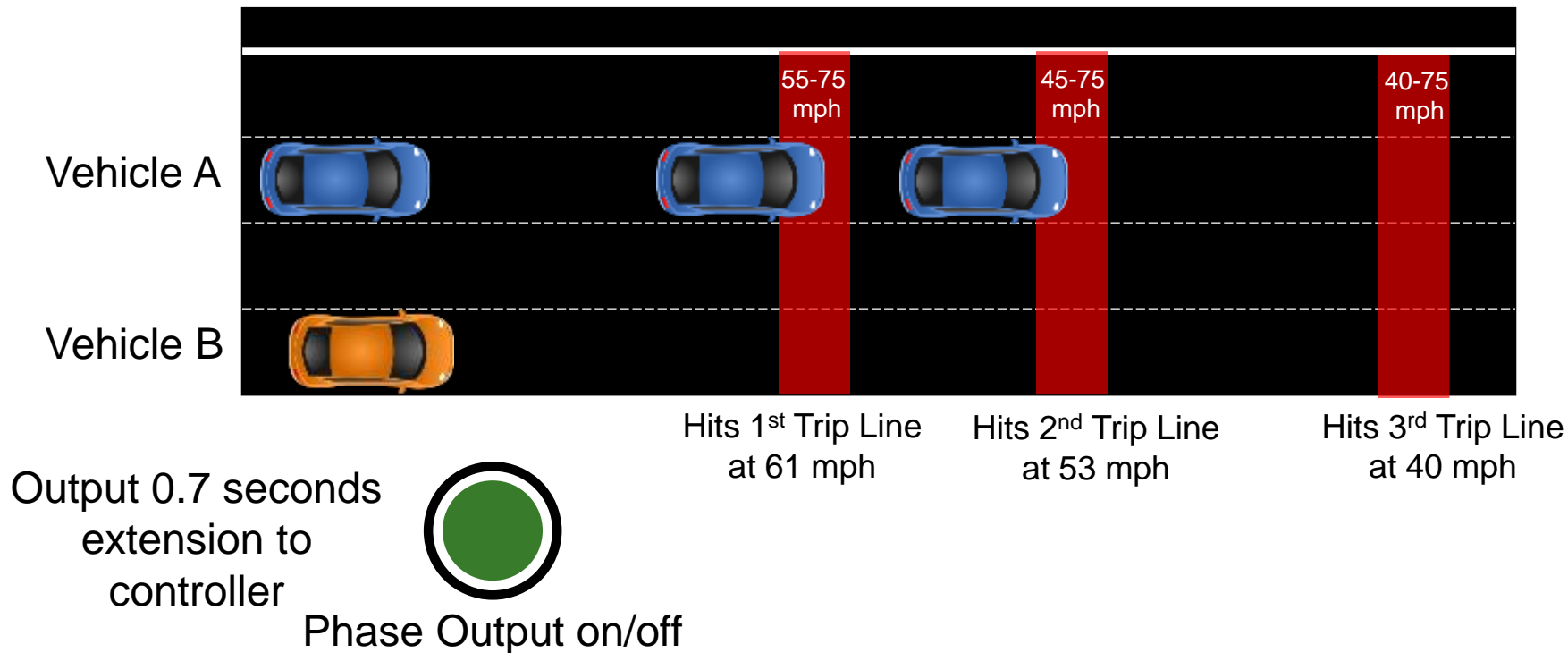**Cars may slow down or speed up between trip lines**

With 5 trip lines, we have better resolution to provide outputs based on accurate speed measurements
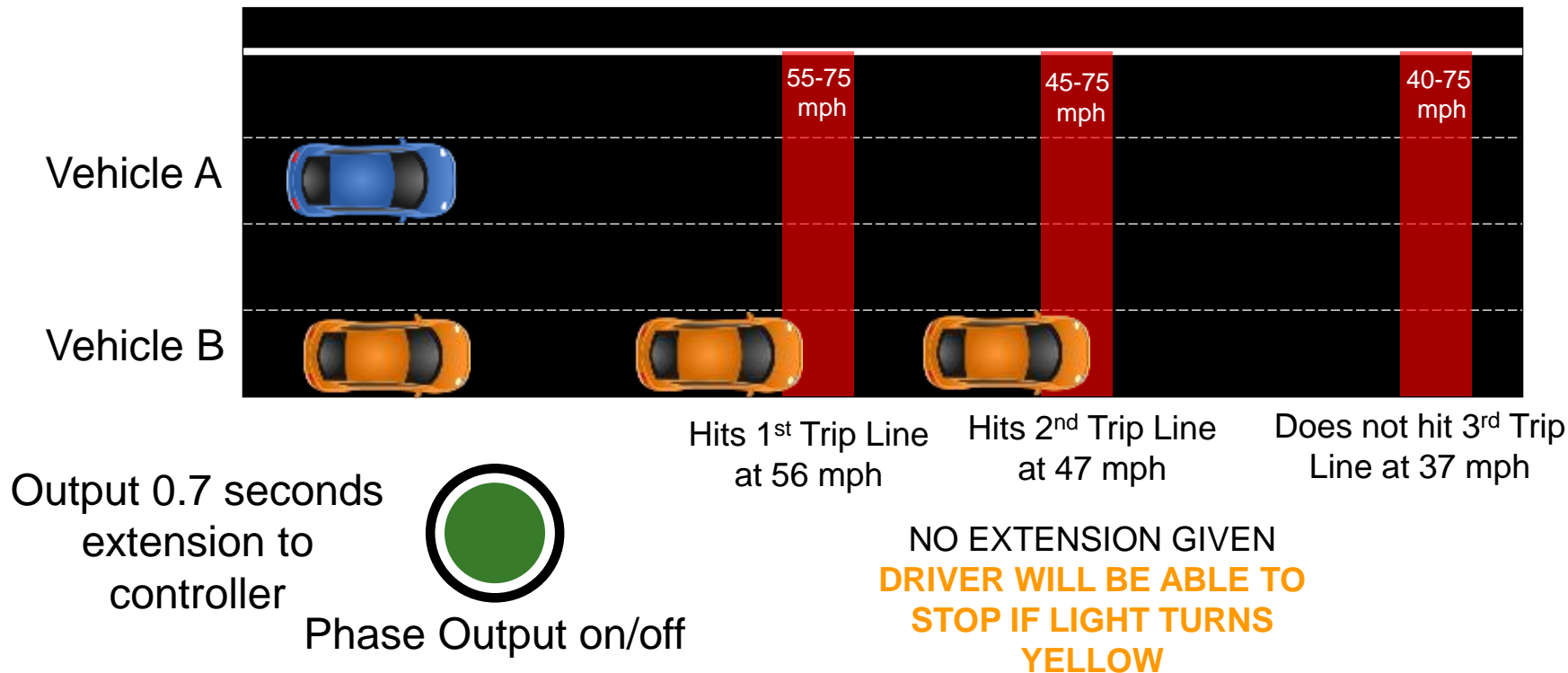
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Total Dilemma Zone Coverage

- Variable Trip Line Width

- Min/Max Speed Configuration

- Programmable extension timing for each trip line

Extension Time

Min and Max Speed

55mph Speed Limit

Variable Trip Line Width

Video Detection Area

130
120
110
100
90
80
70
60
50
40
30
20
10

50 100 150 200 250 300 350 400 450 500 550 600

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DZ Example – Speed Limit 55 mph

Vehicle A

Vehicle B

55-75 mph

45-75 mph

40-75 mph

Hits 1st Trip Line at 61 mph

Hits 2nd Trip Line at 53 mph

Hits 3rd Trip Line at 40 mph

Output 0.7 seconds extension to controller

Phase Output on/off

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DZ Example – Speed Limit 55 mph

Vehicle A

Vehicle B

| 55-75 mph | 45-75 mph | 40-75 mph |

Hits 1st Trip Line at 56 mph

Hits 2nd Trip Line at 47 mph

Does not hit 3rd Trip Line at 37 mph

Output 0.7 seconds extension to controller

Phase Output on/off
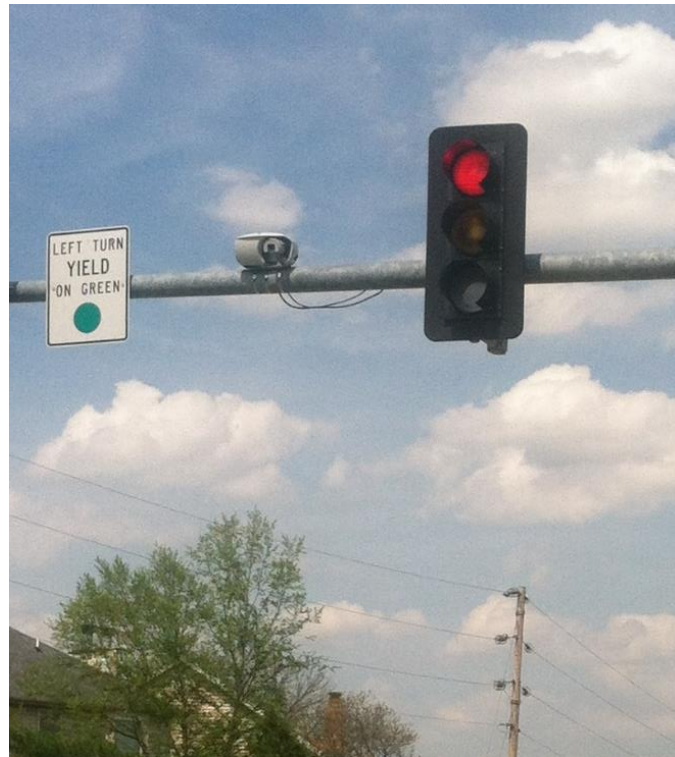
NO EXTENSION GIVEN
DRIVER WILL BE ABLE TO STOP IF LIGHT TURNS YELLOW
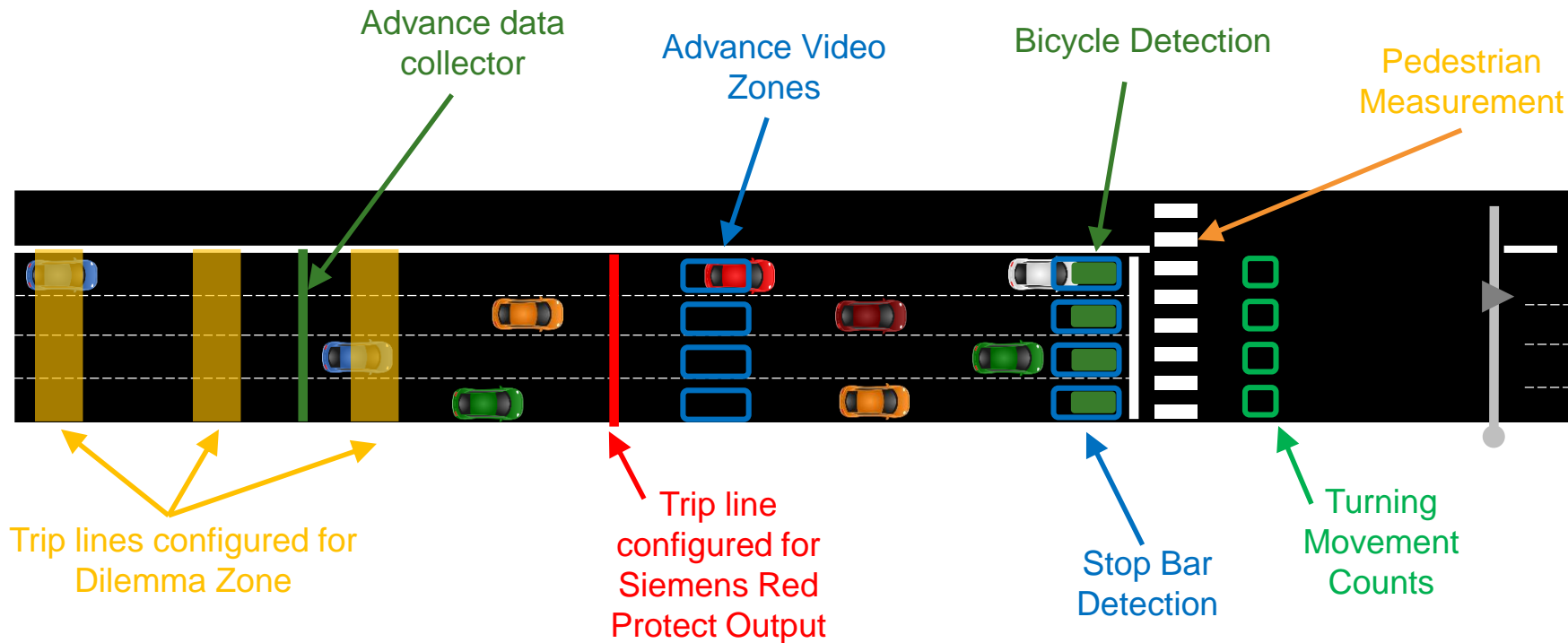
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Advance Detection

- Vector is the perfect solution for providing advance detection
  - No loops needed
  - No other sensors needed
  - Accurate detection to over 500 feet

- Maximize intersection efficiency
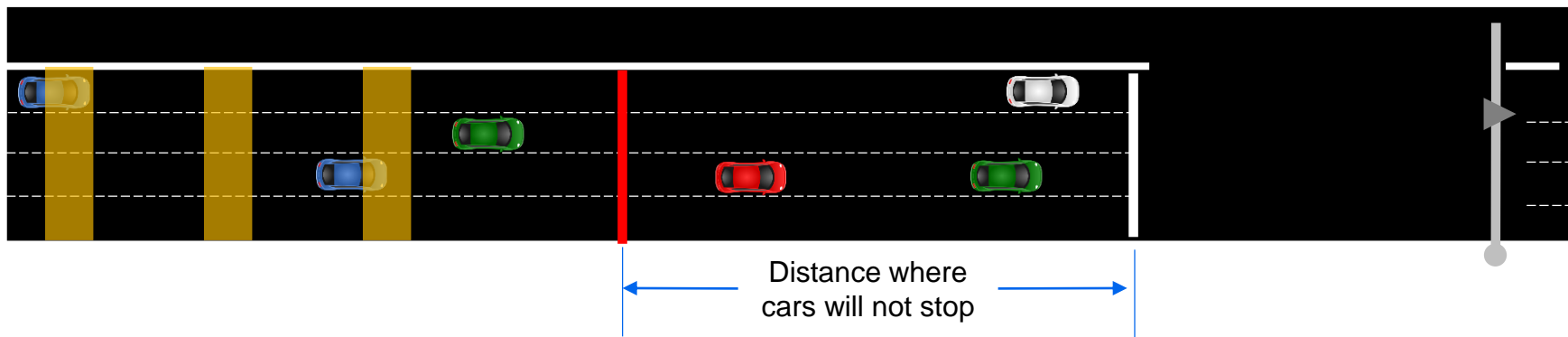
- Utilize standard camera for side streets

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Simultaneous Applications Available

Advance data collector

Advance Video Zones

Bicycle Detection

Pedestrian Measurement

Trip lines configured for Dilemma Zone

Trip line configured for Siemens Red Protect Output

Stop Bar Detection

Turning Movement Counts

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Increased Safety – Collision Avoidance

- Collision Avoidance Integration with Siemens
  - Monitors vehicle speed at the end of the dilemma zone
  - Controller applies a **all-red extension** that is set for time it takes for vehicle to travel from trip line to stop bar in anticipated minimum speed

Distance where cars will not stop

We provide enough extension time to clear this distance

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Siemens RDP with Michigan DOT

- 55 mph approach

- Heavy truck traffic

- High crash rate intersection

- Formal study being completed for before/after crash analysis
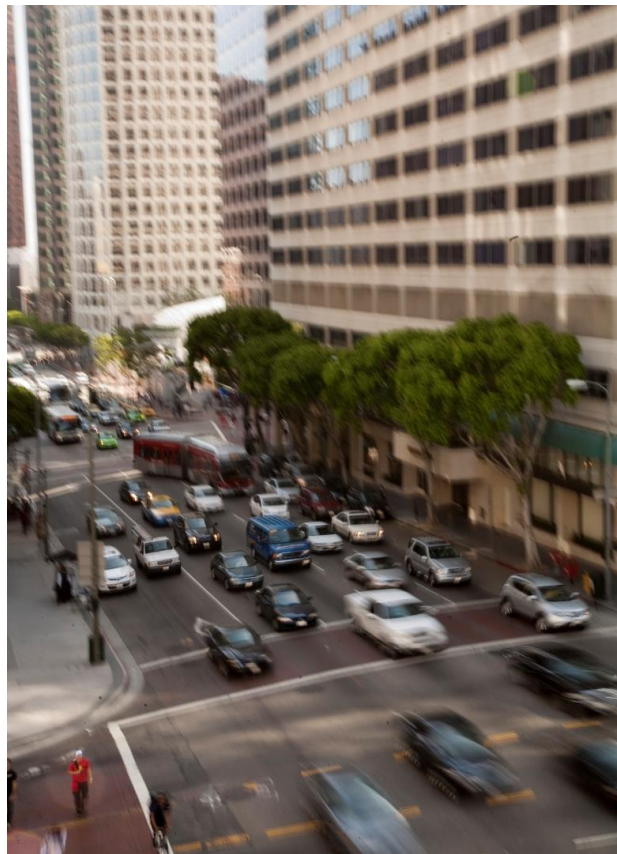
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What ELSE Makes the Vector Special

- Single-Sensor for 2 functions

- Live Video

- Bicycle Differentiation

- Pedestrian Measurement/Counting

- Improved Intersection Efficiency

- Total Dilemma Zone Coverage
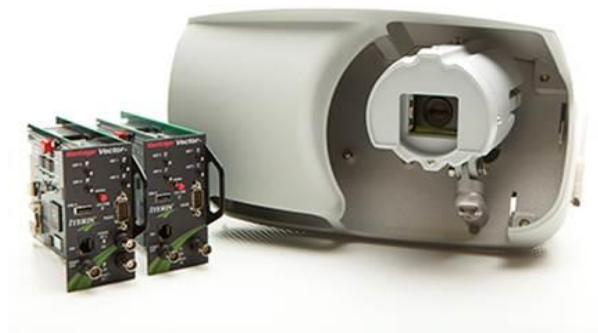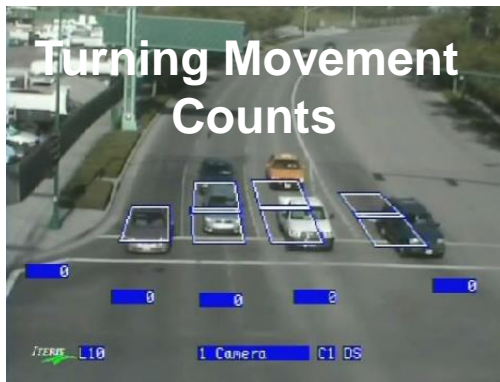
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Moving More Traffic

- Vector can provide a grouping function

  - Similar to **platoon detection**

- Identifies when a set number of vehicles are approaching the intersection

- Can be used with:

  - Peer-to-peer controller communication
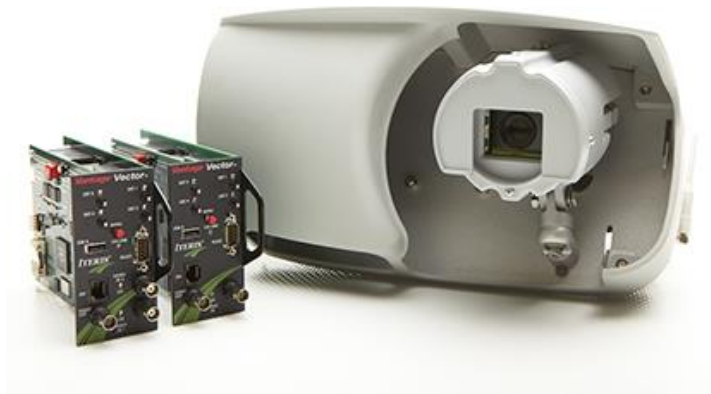
  - Adaptive control

  - Free operation

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Unprecedented Data Outputs

Turning Movement Counts

Iteris

Why Vantage Vector?

- Unique Offering in the Market

  - Proven video detection at the stop bar

  - Precision radar for advanced detection

  - Single sensor at intersection

- Multiple Applications

  - Traffic signal actuation

  - Dilemma Zone

  - Data Collection

  - Platoon recognition

- It is truly one of a kind!

Vantage® Vector®

The Power of Video and Radar Sensor Fusion

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Thank You!

Questions?

W Stokes Wallace

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