Rural Applications of Adaptive Traffic Control

Dr. Reggie Chandra, PE, PTOE

InSync®

RHYTHM ENGINEERING

InSync is protected by U.S. Patent Nos. 8,050,854 and 8,103,436, and other patents-pending.

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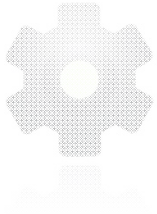
REAL-WORLD RESULTS



HOW AND WHY IT WORKS

AFFORDABILITY and ROI

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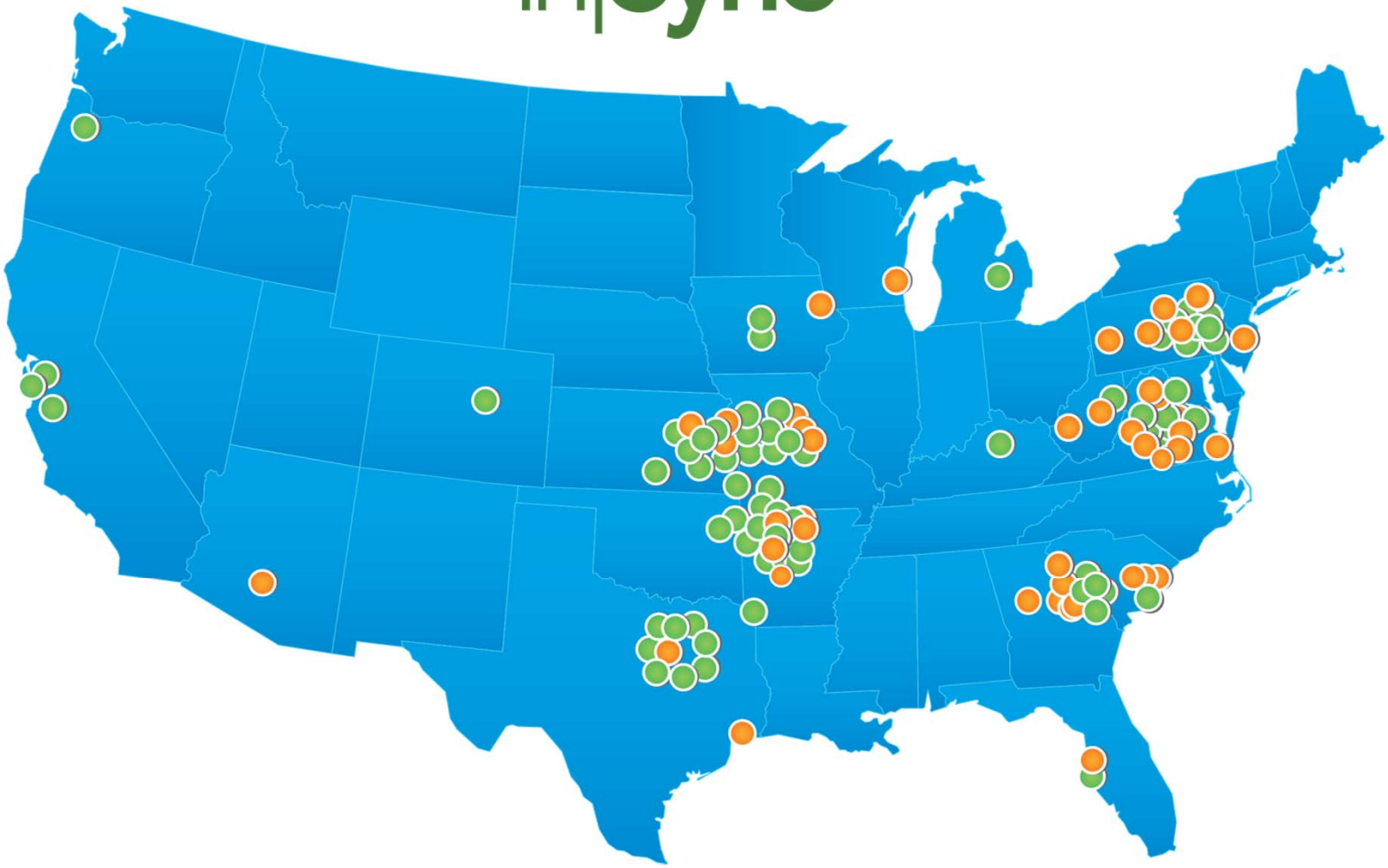
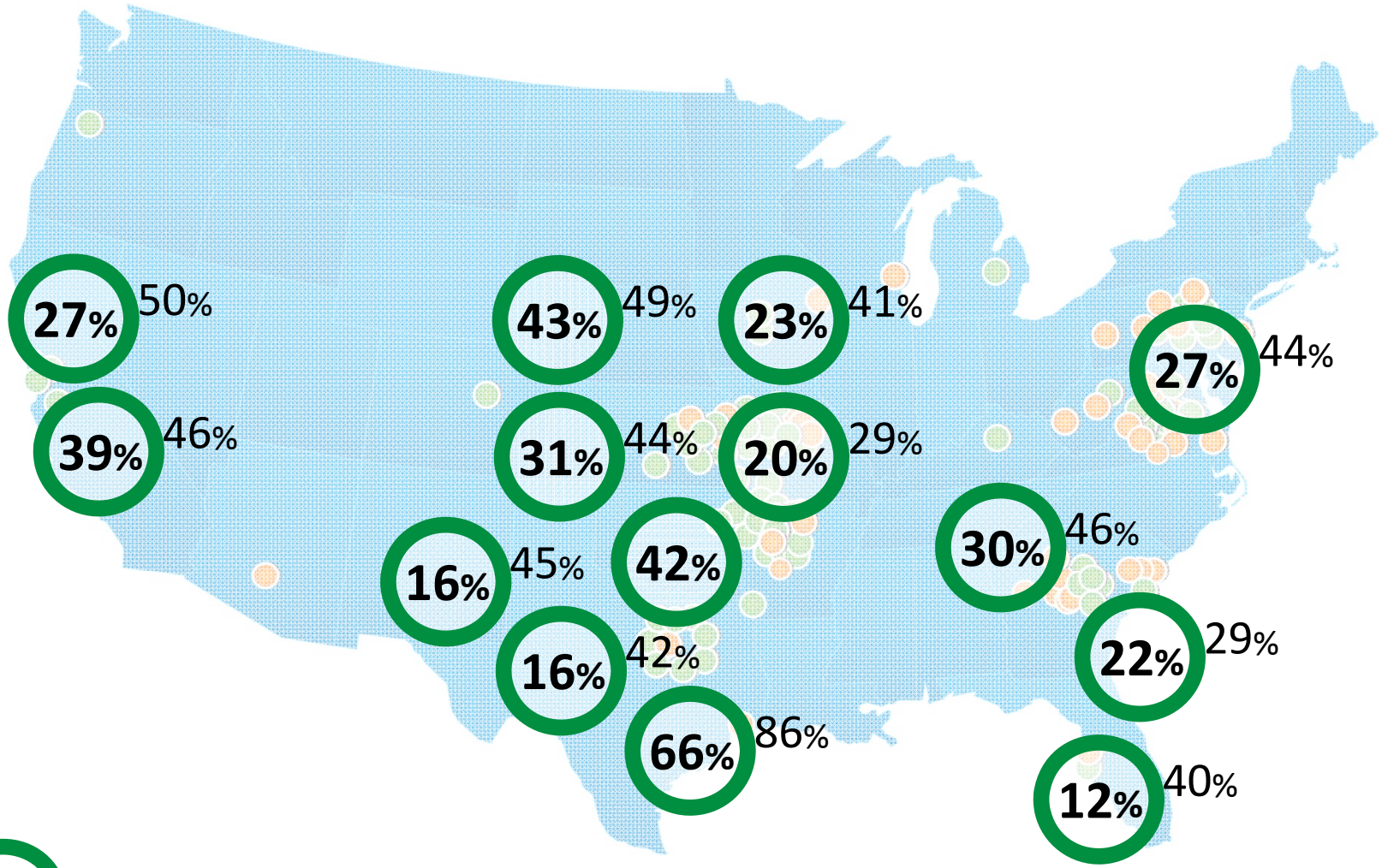


Nationwide travel time reductions



Avg Best Peak

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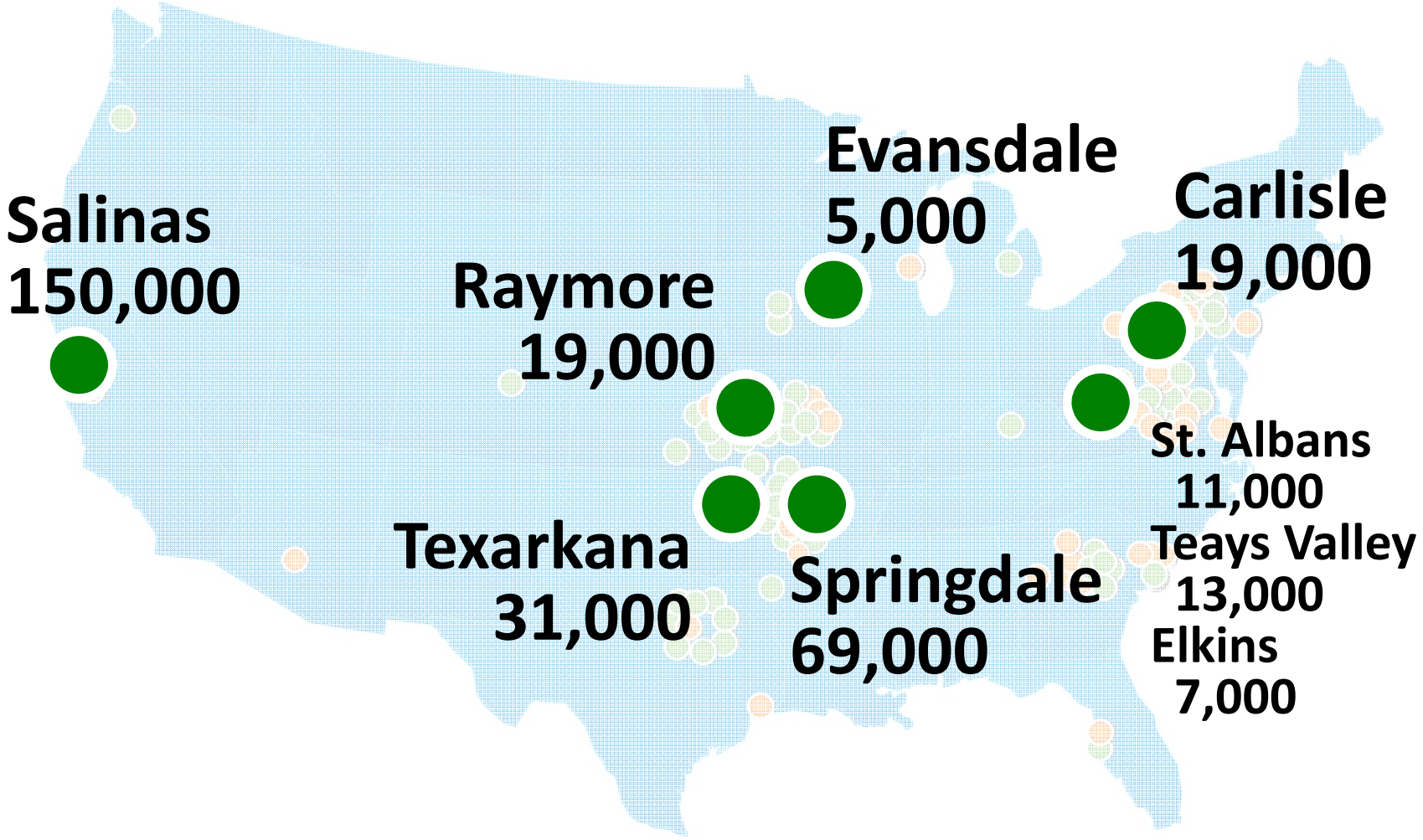
Rural deployments and applications



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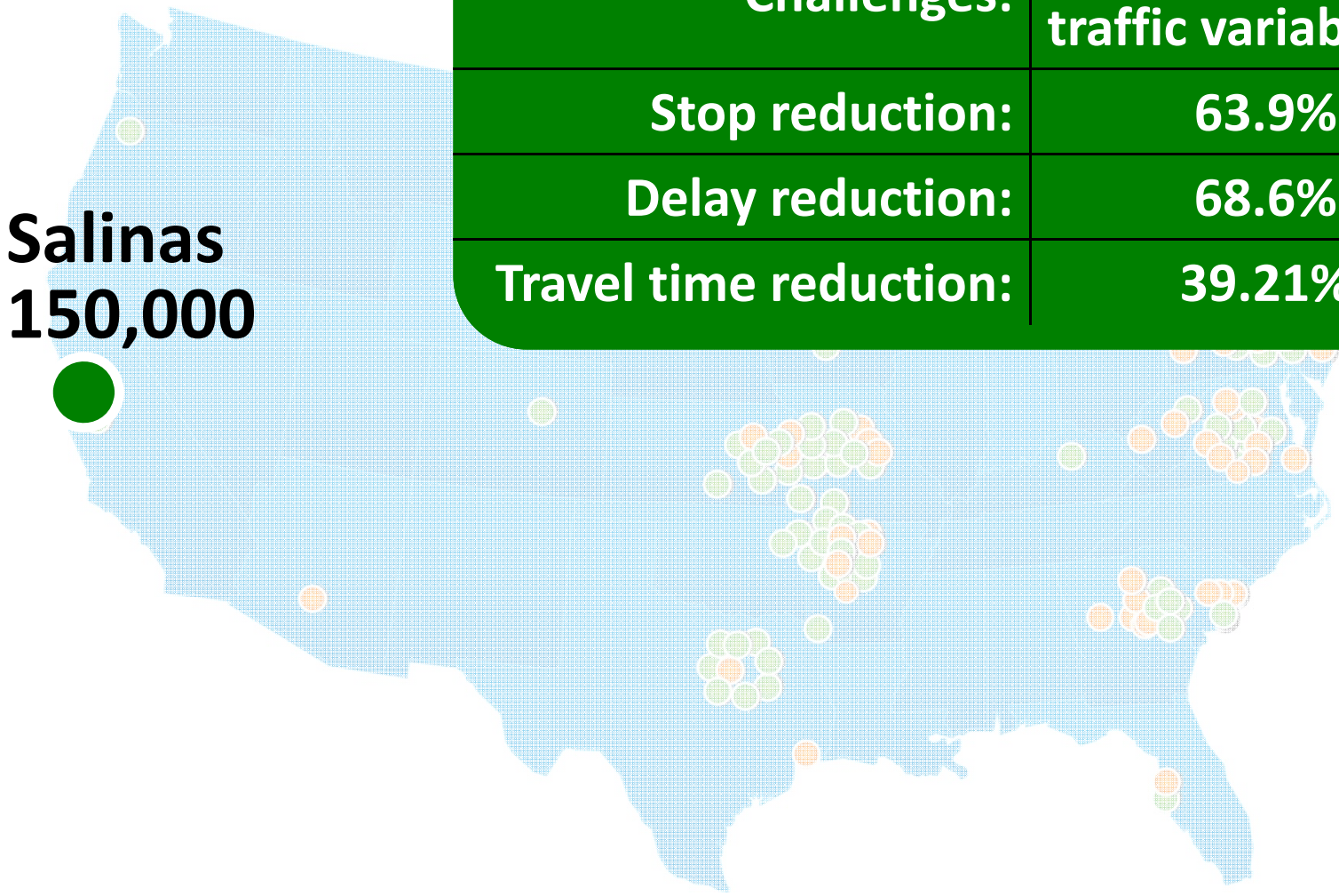

Challenges:	Pedestrians, traffic variability
Stop reduction:	63.9%
Delay reduction:	68.6%
Travel time reduction:	39.21%

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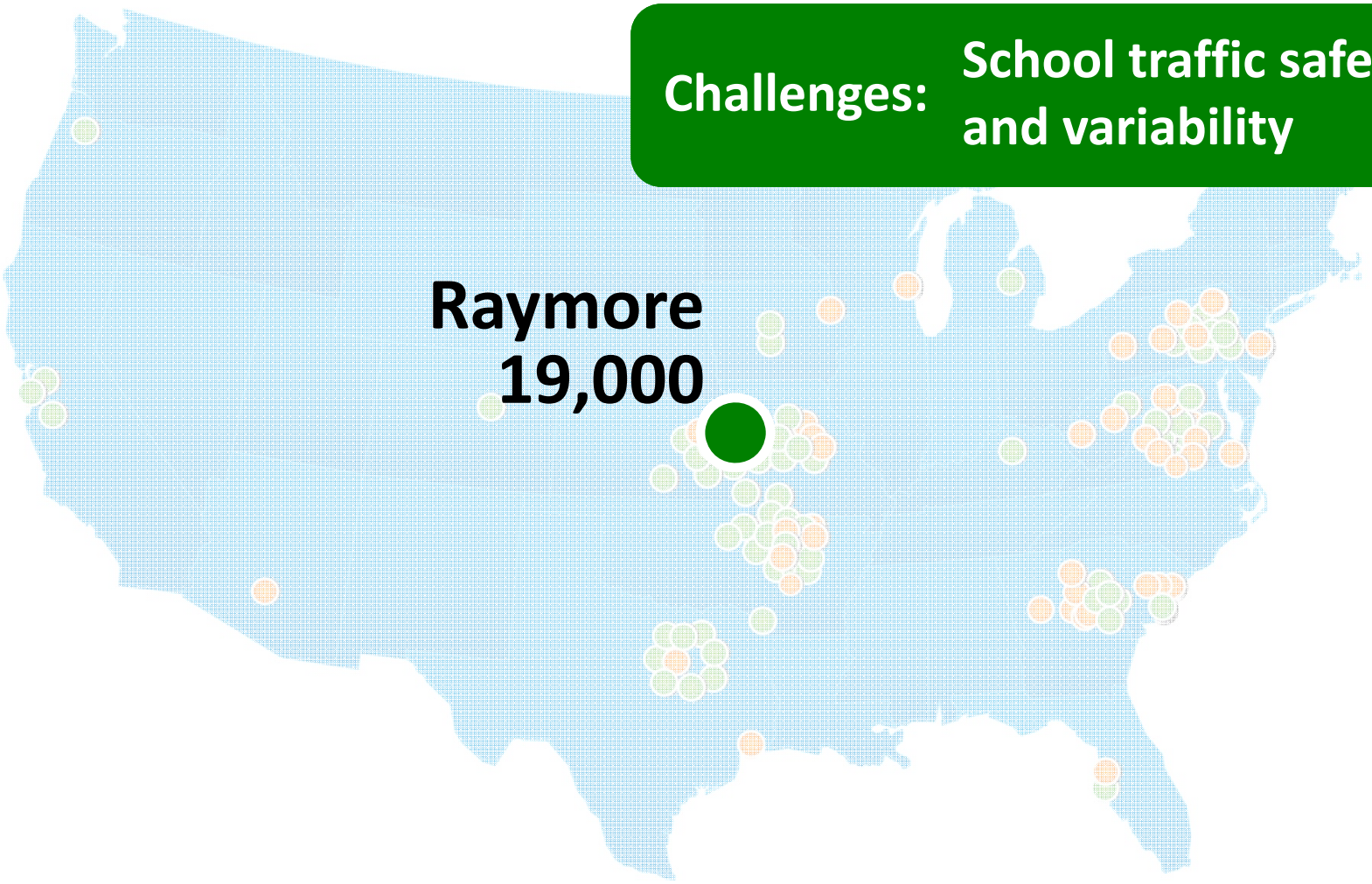
Challenges:
School traffic safety and variability
Raymore
19,000

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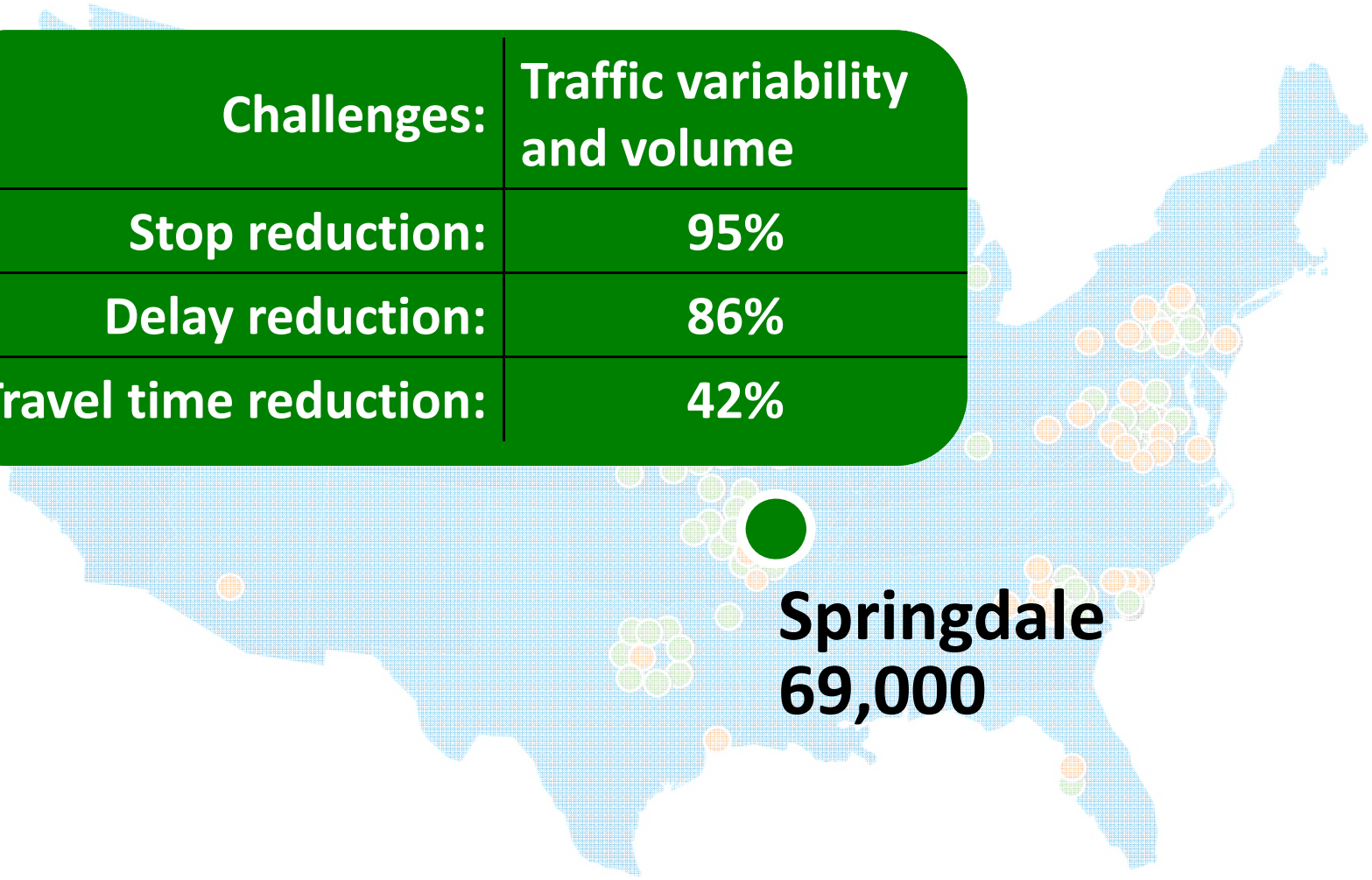
Challenges:	Traffic variability and volume
Stop reduction:	95%
Delay reduction:	86%
Travel time reduction:	42%



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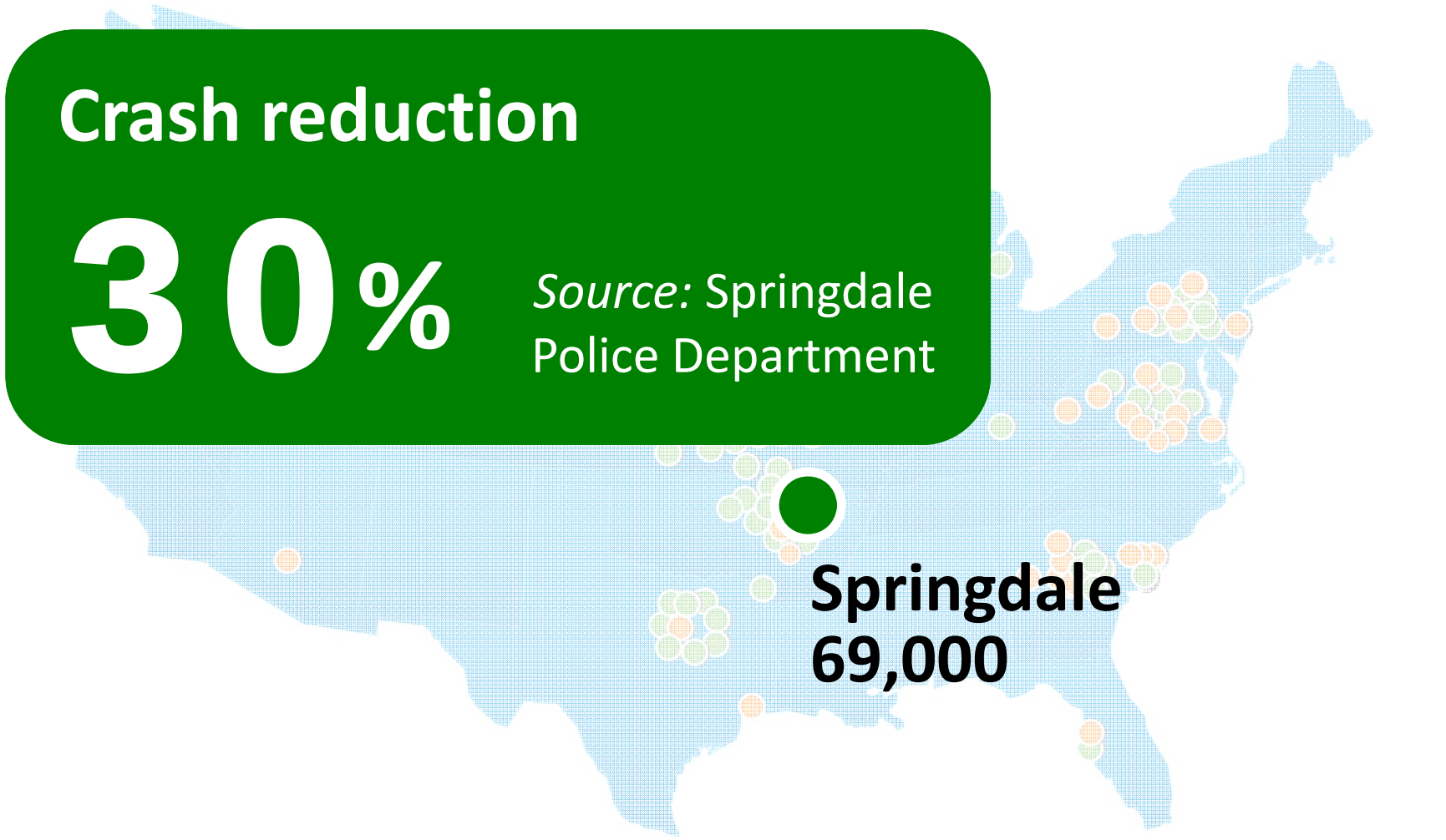
Crash reduction
30%
Source: Springdale Police Department
Springdale
69,000

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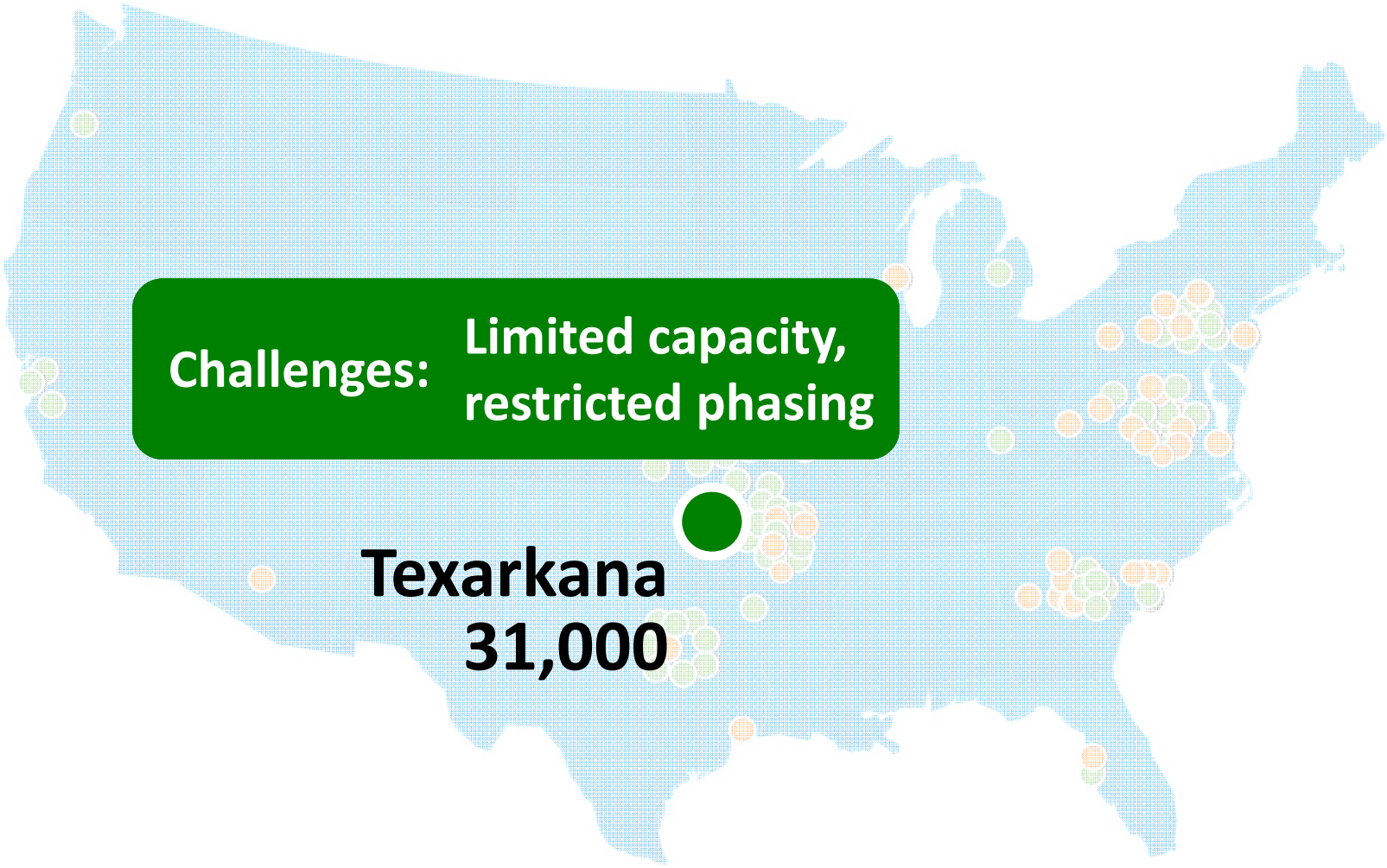
Challenges:
Limited capacity,
restricted phasing
Texarkana
31,000

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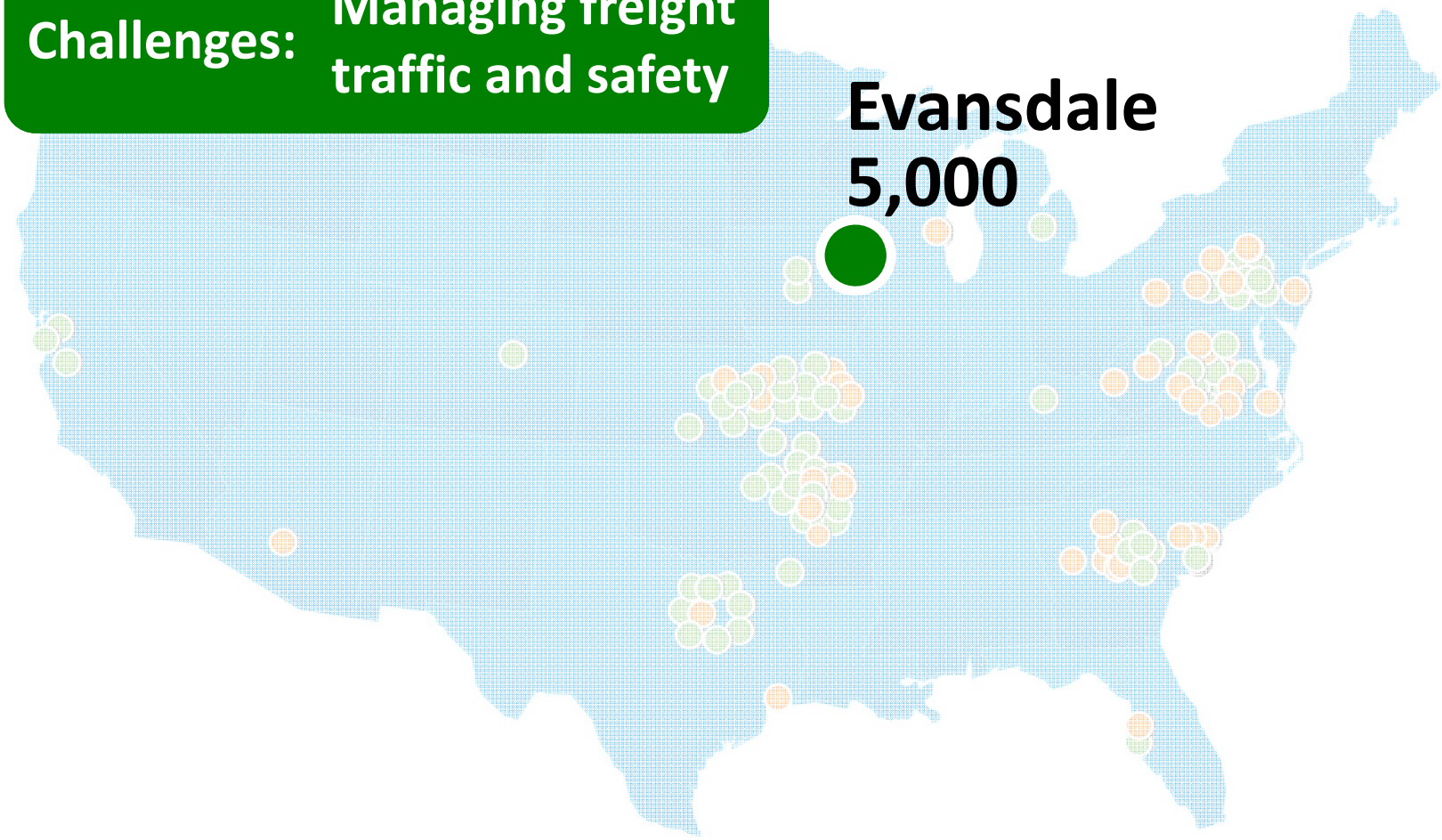
Challenges: Managing freight traffic and safety



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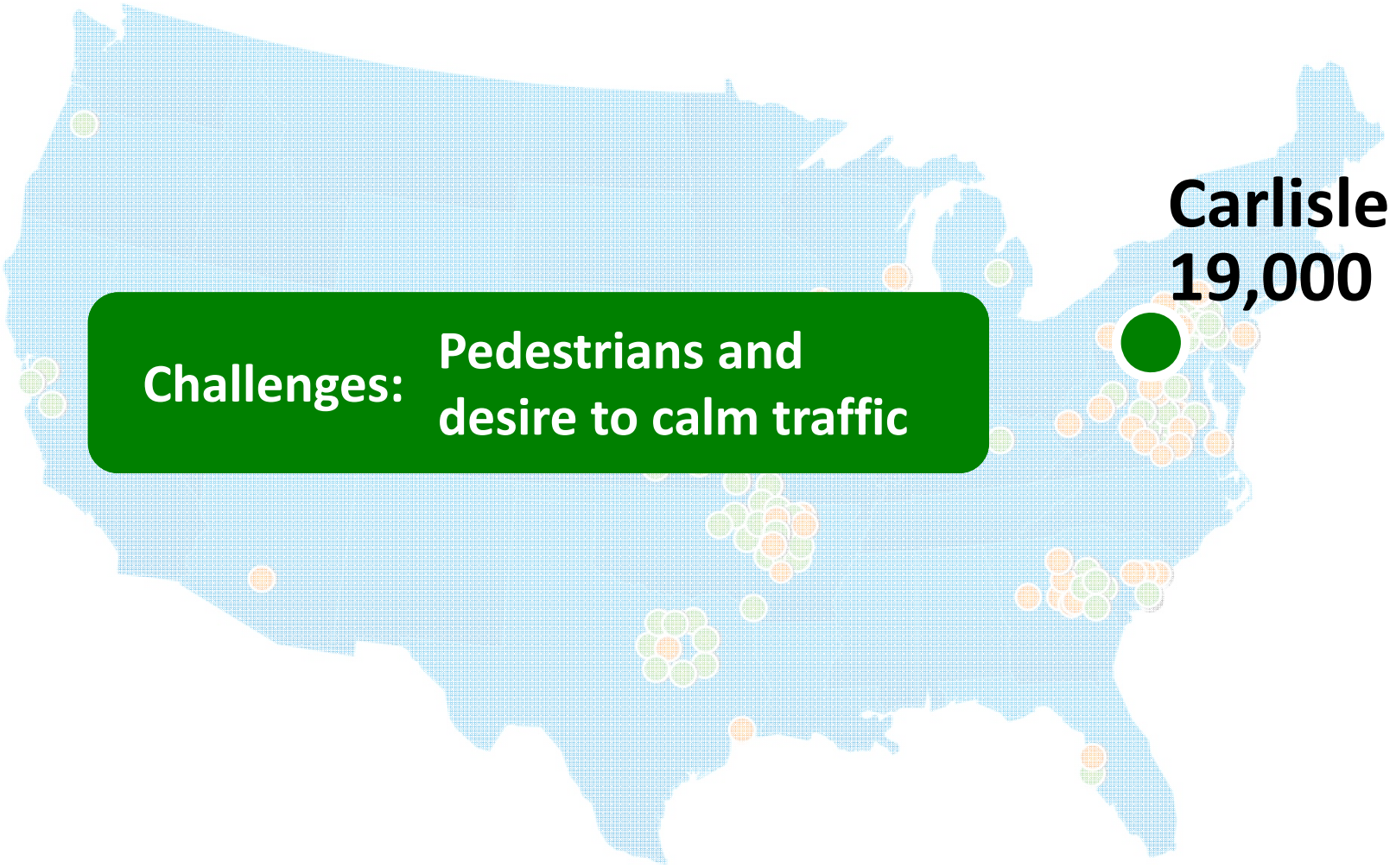
Carlisle
19,000
Challenges:
Pedestrians and
desire to calm traffic

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REAL-WORLD RESULTS

HOW AND WHY IT WORKS

AFFORDABILITY and ROI

InSync is protected by U.S. Patent Nos. 8,050,854 and 8,103,436, and other patents-pending.

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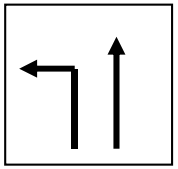
Detection Inputs

Optimizes

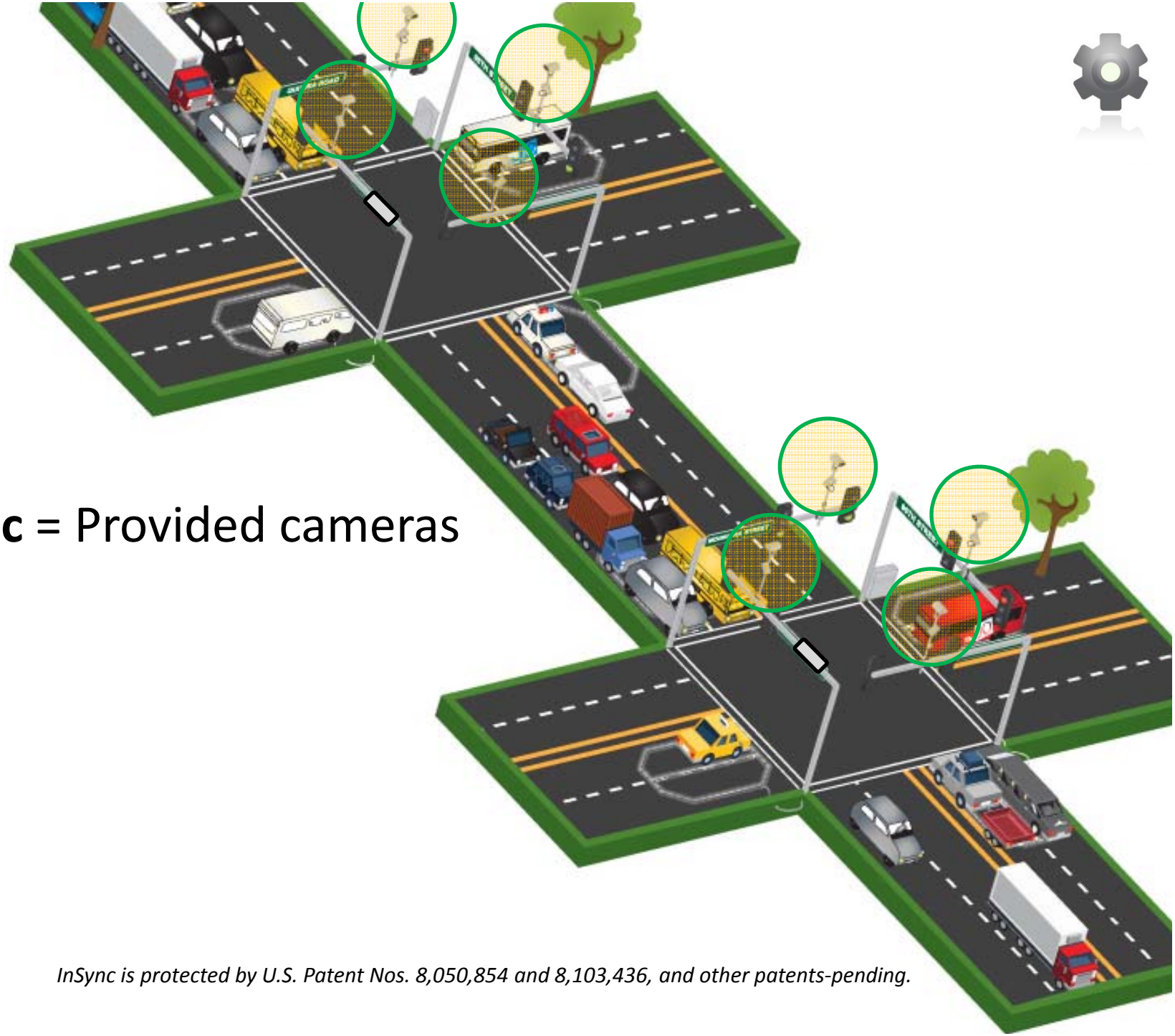
Picks state (or phase pair)



Inputs detector calls

InSync is protected by U.S. Patent Nos. 8,050,854 and 8,103,436, and other patents-pending.

- **InSync** = Provided cameras



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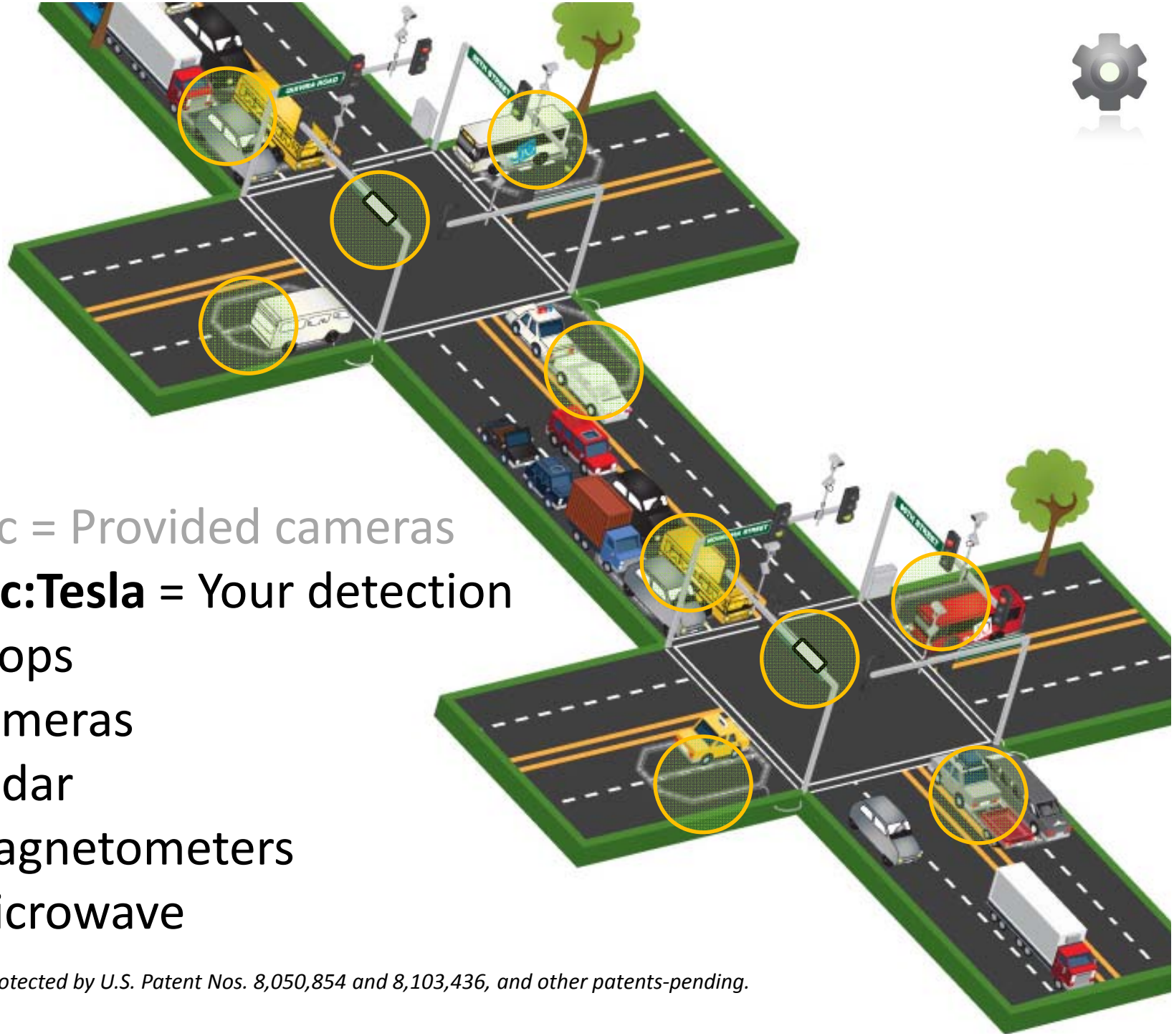
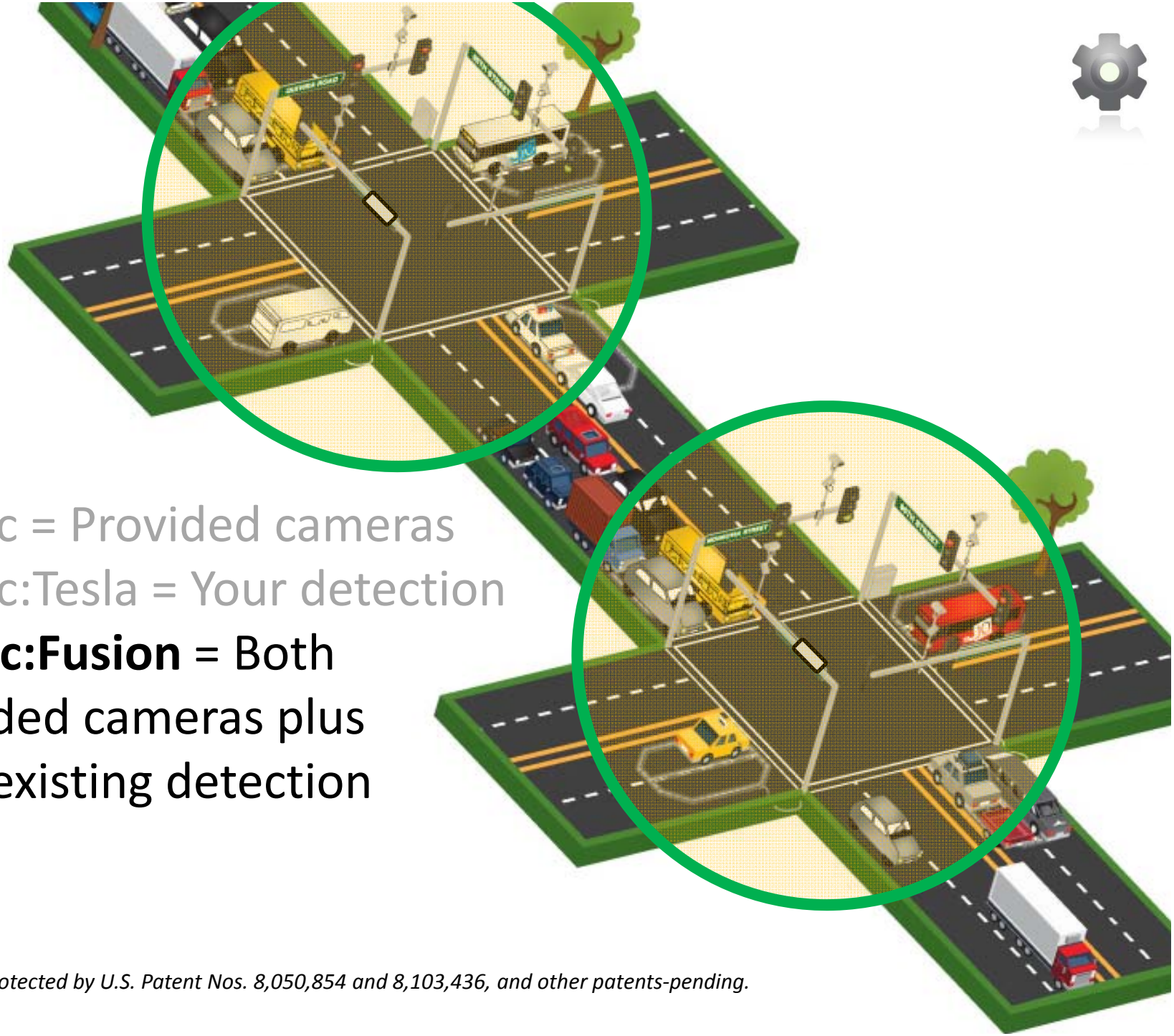


- InSync = Provided cameras
- **InSync:Tesla** = Your detection
  - Loops
  - Cameras
  - Radar
  - Magnetometers
  - Microwave

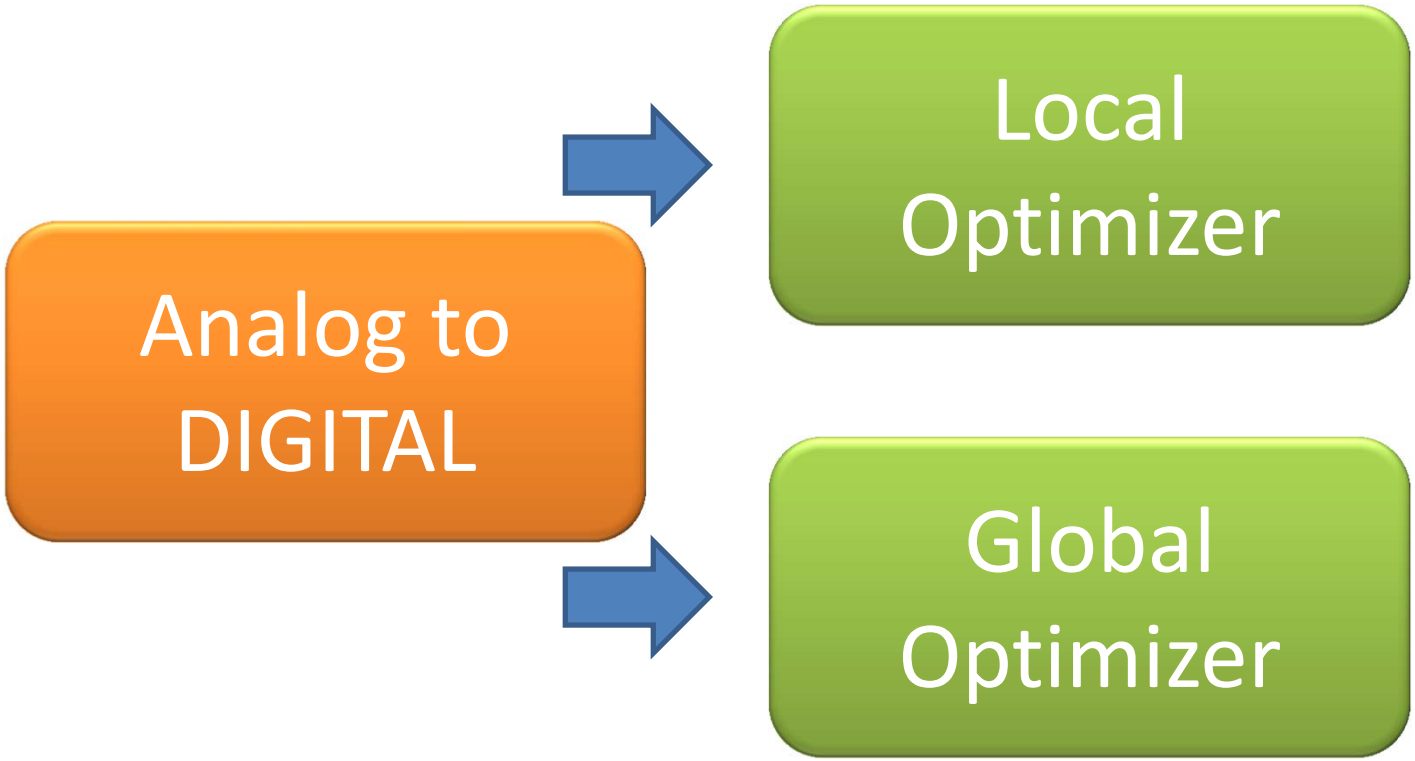
InSync is protected by U.S. Patent Nos. 8,050,854 and 8,103,436, and other patents-pending.



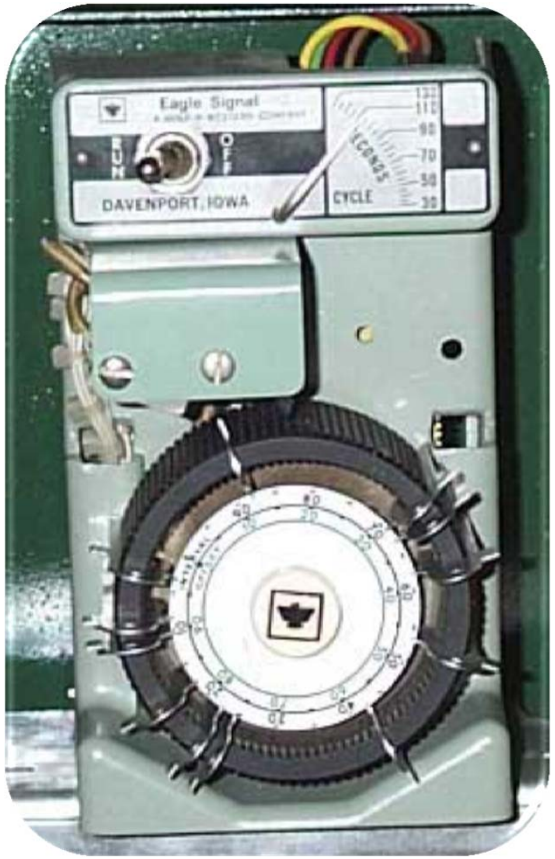
- InSync = Provided cameras
- InSync:Tesla = Your detection
- **InSync:Fusion** = Both provided cameras plus your existing detection

InSync is protected by U.S. Patent Nos. 8,050,854 and 8,103,436, and other patents-pending.

InSync®



Analog vs. Digital



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State machine

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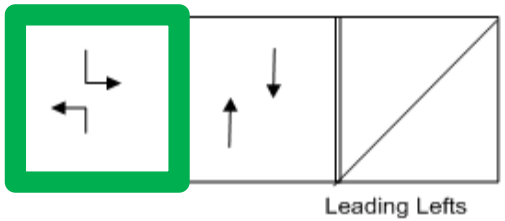
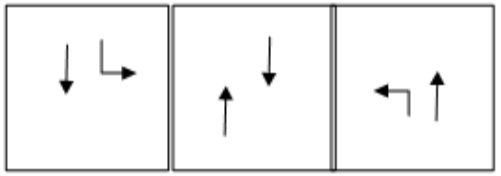
Local Optimizer

A



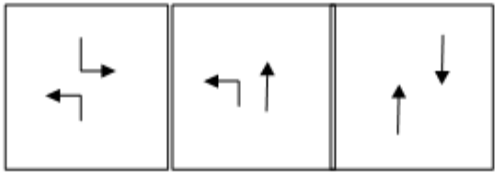
Leading Lefts

B



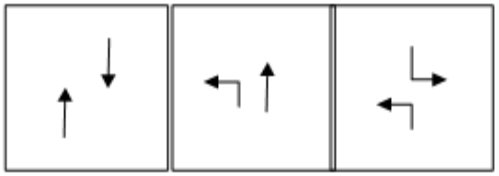
Lead-Lag

C



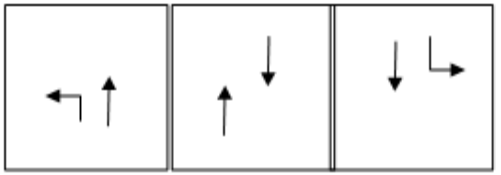
Leading Left with Overlap

D



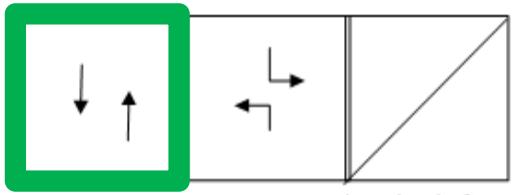
Lagging Left with Overlap

E



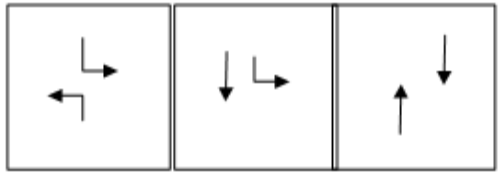
Lead-Lag

F



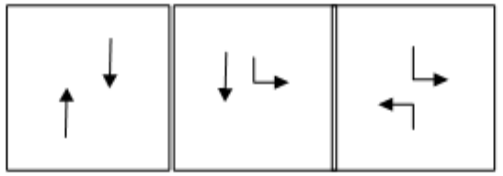
Lagging Lefts

G



Leading Left with Overlap

H



Lagging Left with Overlap

Washington and N Belair Rd - TraVis - Windows Internet Explorer
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Live Search
Washington and N Belair Rd - TraVis
Page
Tools
RHYTHM ENGINEERING
Cameras
Statistics
Log Off
Help
Standard View
2 FPS
Pause
North Bound (day) 1/17/11 12:14:46 150
phase 8: 2/7, 0.29
CUTOFF 17:13
Ped Phase 8
EBThru_WBThru 14:43-15:27 O
EBThru_EBLeftTurn 15:27-15:58 O
EBLeftTurn_WBLeftTurn 15:58-16:12 LO
Market Place_Bollinger
0.90/4256.30
East Bound (day) 1/17/11 12:14:48 150
phase 2: 8/9, 0.89 CALL 38/44
20 [s] to START <12:15:08>19
phase 5: 0/9, 0.00
CUTOFF 17:13
Ped Phase 2
EBThru_WBThru 14:43-15:27 O
EBThru_EBLeftTurn 15:27-15:58 O
EBLeftTurn_WBLeftTurn 15:58-16:12 LO
Market Place_Bollinger
1.26/4256.30
South Bound (day) 1/17/11 12:14:50 150
phase 4: 0/3, 0.00
CUTOFF 17:13
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EBThru_EBLeftTurn 15:27-15:58 O
EBLeftTurn_WBLeftTurn 15:58-16:12 LO
Market Place_Bollinger
1.75/4256.30
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phase 6: 4/13, 0.31 CALL 37/44
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phase 1: 2/13, 0.15
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Ped Phase 6
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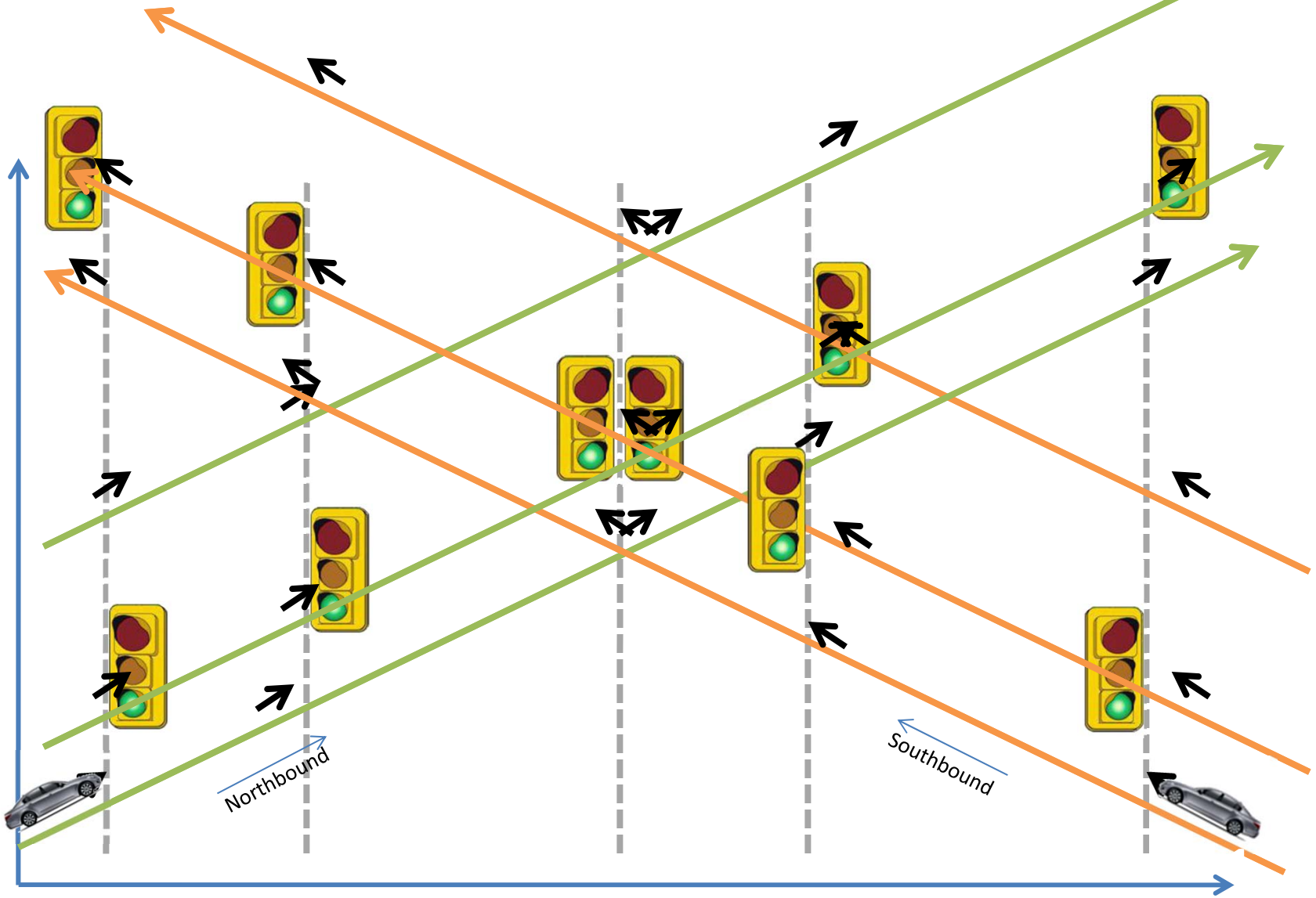
EBThru_EBLeftTurn 15:27-15:58 O
EBLeftTurn_WBLeftTurn 15:58-16:12 LO
Market Place_Bollinger
1.42/4256.30
v1.1843
(1 item remaining)
Internet
100%

InSync®

Global Optimizer



InSync is protected by U.S. Patent Nos. 8,050,854 and 8,103,436, and other patents-pending.

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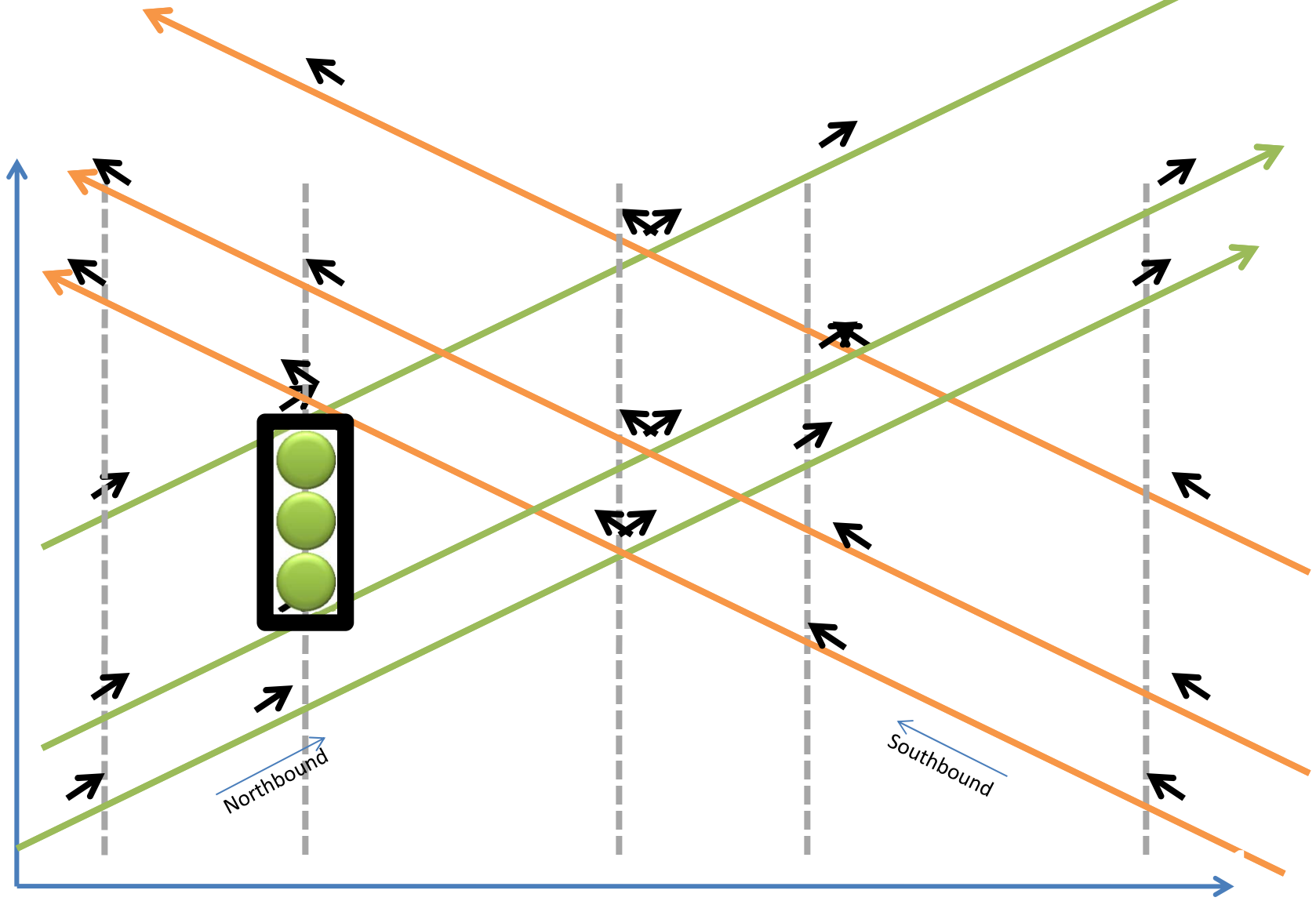
Global Optimizer



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InSync®

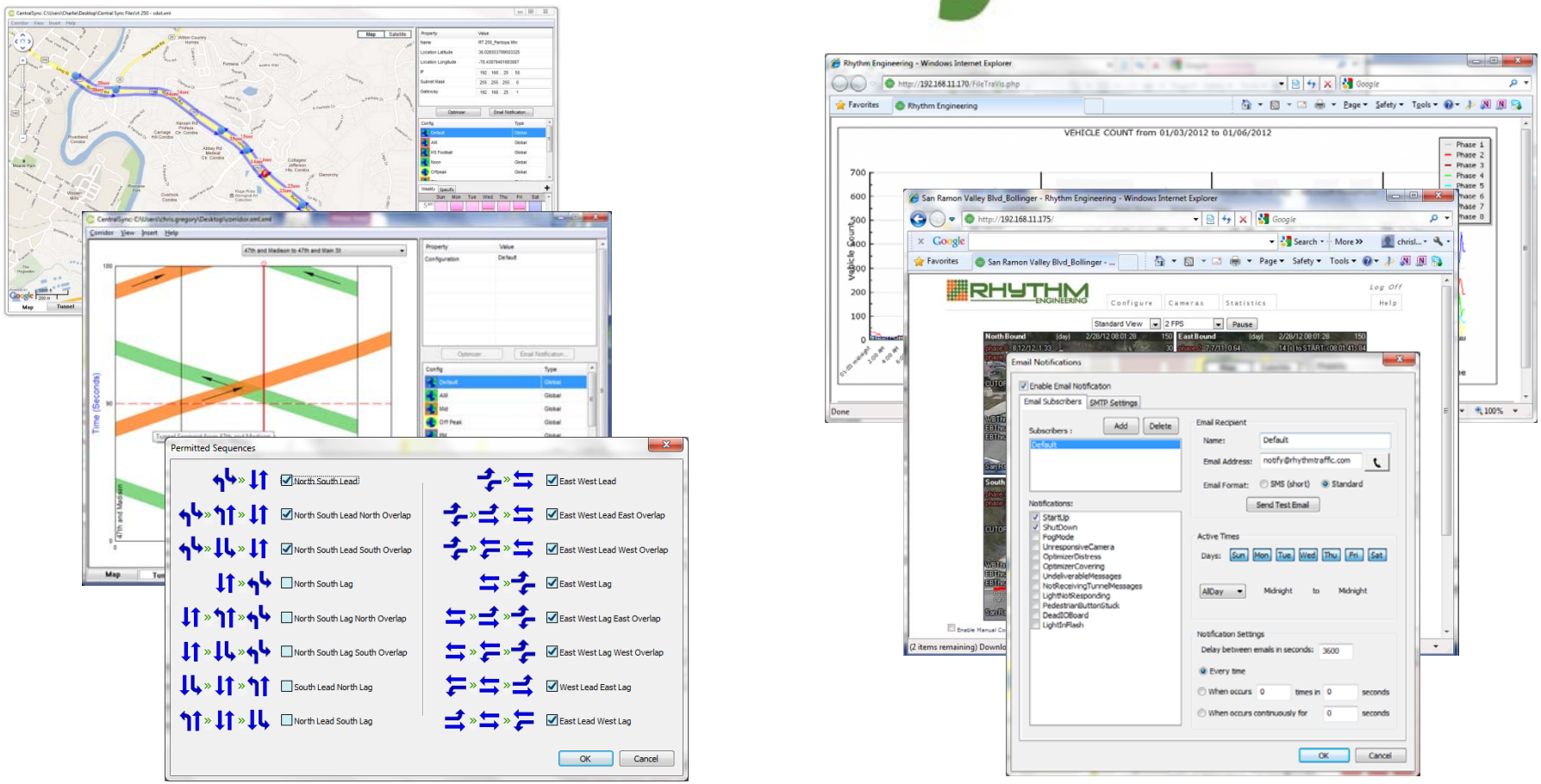
Intelligently fully-actuated intersections
to optimize all approaches

and

Coordinated progression

InSync is protected by U.S. Patent Nos. 8,050,854 and 8,103,436, and other patents-pending.

CentralSync®



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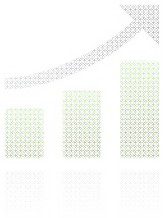
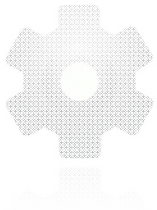
InSync®



REAL-WORLD RESULTS



MODEL and ARCHITECTURE

AFFORDABILITY and ROI

InSync is protected by U.S. Patent Nos. 8,050,854 and 8,103,436, and other patents-pending.

Product and Options	Price per Intersection	Detection
InSync	$25,000	Up to four cameras included
InSync:Tesla	$25,000	Uses your preferred detectors
InSync:Fusion	$30,000	Up to four cameras included & integrates existing detectors
Pedestrian Module	+$5,000	
Project Management	+$1,000 or less	

Prices do not include communications, installation, mounting hardware, 14-3 and Cat5e wires, shipping, taxes, spare systems, and peripherals such as in-cabinet monitors and keyboards.

InSync®

Save time

Save fuel

Save money

Save the environment

Save lives

COLUMBIA COUNTY, GA

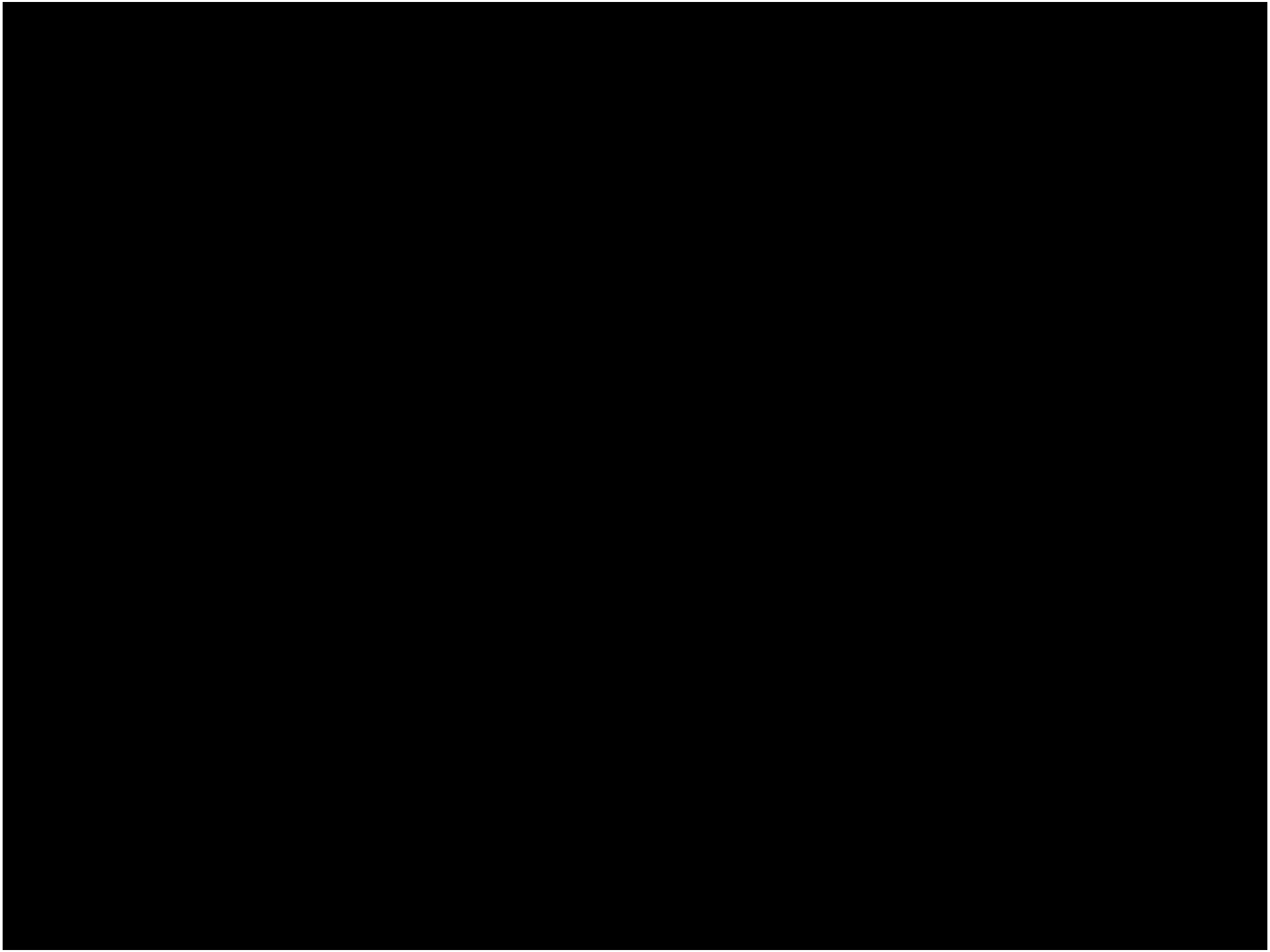
WASHINGTON ROAD

JANUARY, 2010

InSync®

Dr. Reggie Chandra, PE, PTOE
reggie@rhythmtraffic.com
913.227.0603
Studies, reports, videos, more: www.rhythmtraffic.com

RHYTHM ENGINEERING



RHYTHM ENGINEERING

Empower communities with innovative and affordable traffic solutions to save time and money, save the environment and save lives.

InSync® Promise

“If after three months of adaptive operation you do not feel our partnership has had a positive impact in terms of reduced travel times, emissions, fuel consumption and improved safety,

<u>we will issue you a full refund</u>”

InSync:Tesla

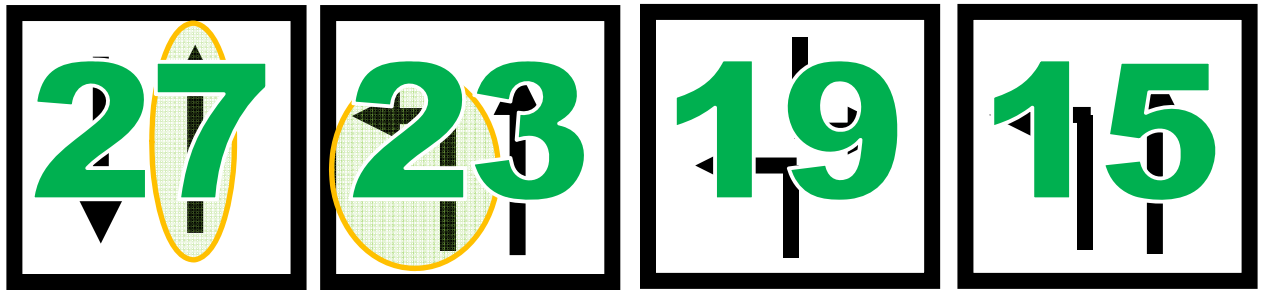
InSync:Tesla

How does InSync:Tesla determine demand and optimize service?

Demand determination and local optimization

1) Stop bar detection for each phase
2) Intelligence learns volumes for each phase, re-learns as necessary
3) Schedules green times, phases, sequences and coordination
4) Adjusts immediately during the phase and sequence to real-time demand

Demand determination and local optimization



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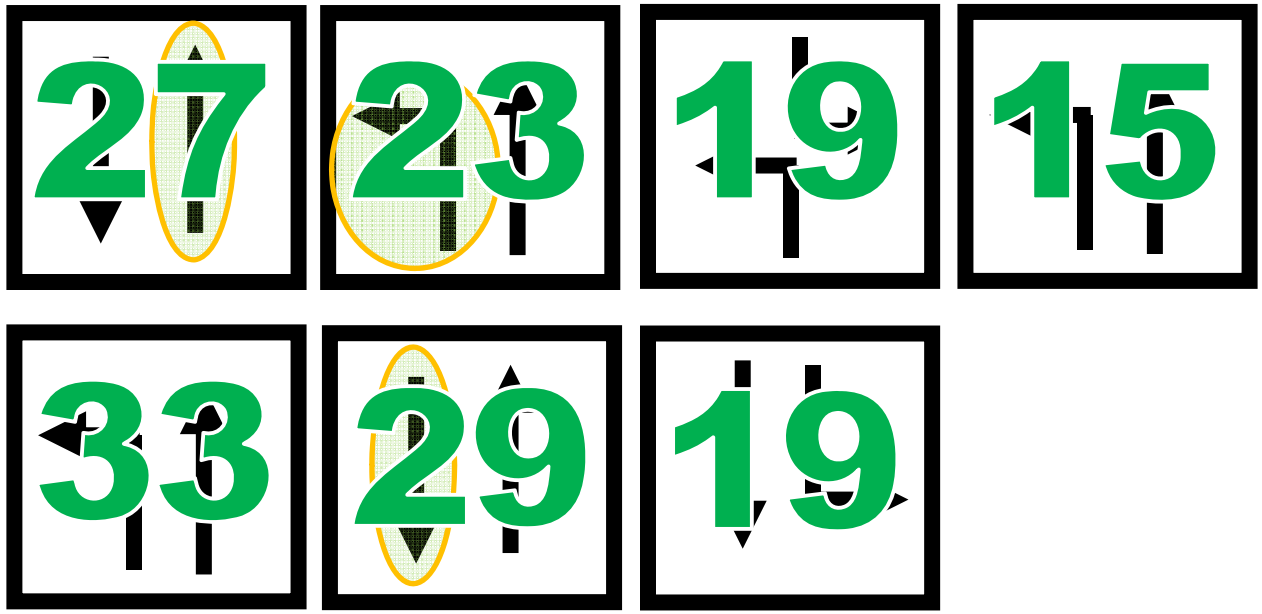
Demand determination and local optimization



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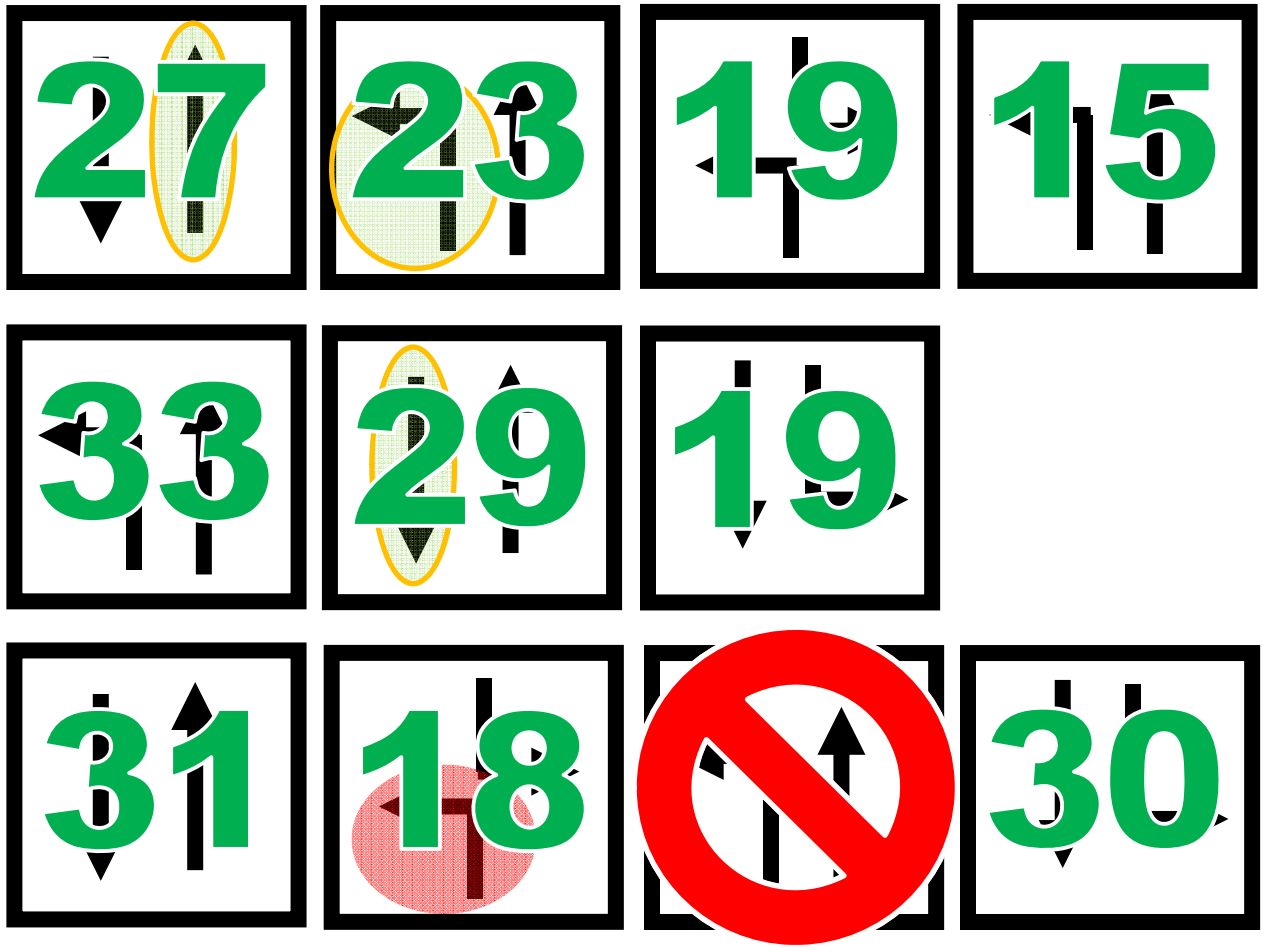
Demand determination and local optimization



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