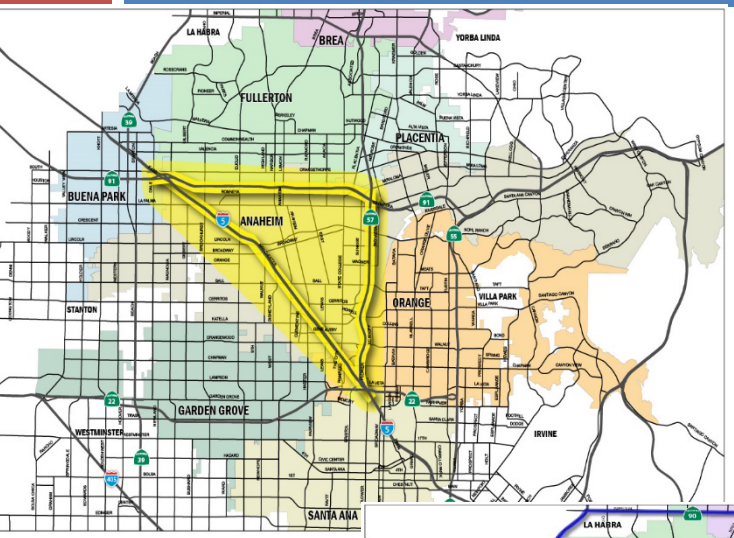
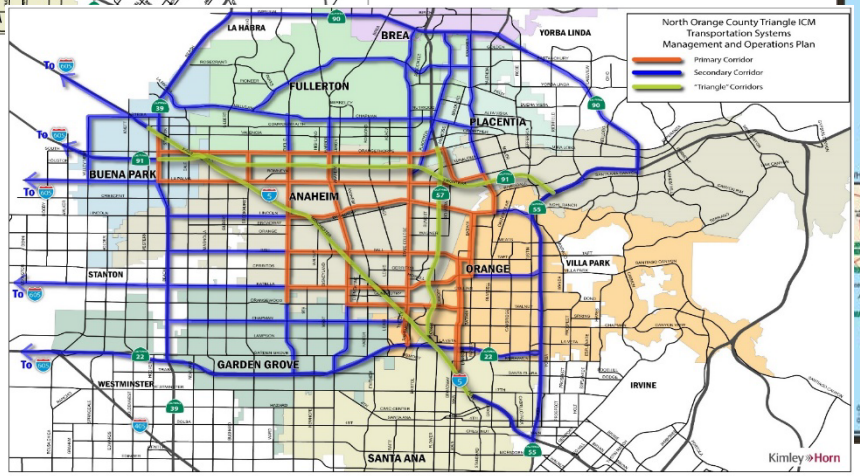
Orange County Triangle ICM

Farid Nowshiravan

March 8, 2018

OC Triangle ICM Project





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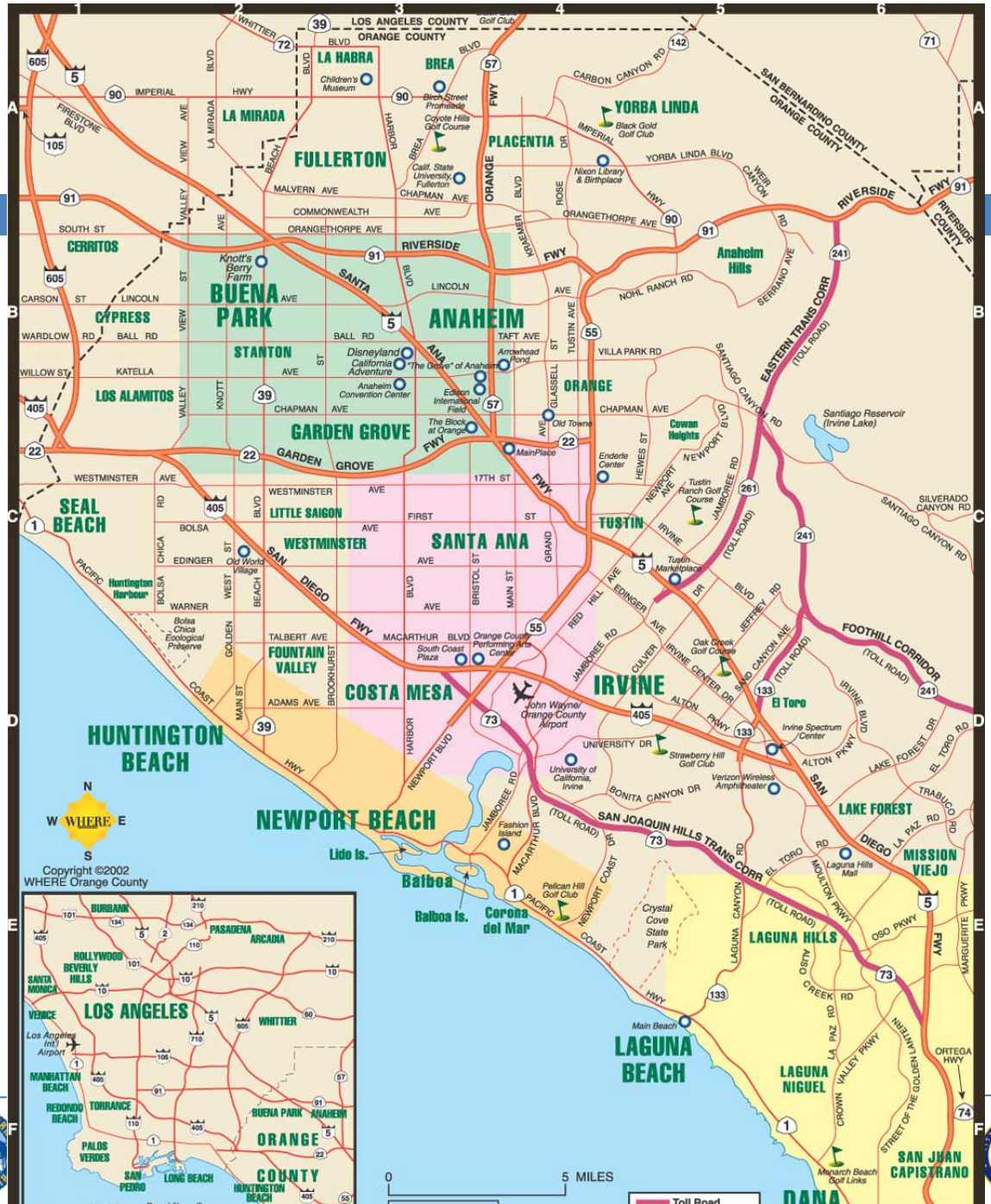
LOS ANGELES COUNTY
ORANGE COUNTY
LA HABRA
BREA
YORBA LINDA
LA MIRADA
FULLERTON
PLACENTIA
CERRITOS
BUENA PARK
ANAHEIM
Anaheim Hills
CYPRESS
STANTON
ORANGE
LOS ALAMITOS
GARDEN GROVE
SEAL BEACH
LITTLE SAIGON
WESTMINSTER
SANTA ANA
TUSTIN
FOUNTAIN VALLEY
COSTA MESA
IRVINE
HUNTINGTON BEACH
NEWPORT BEACH
LAKE FOREST
MISSION VIEJO
LAGUNA HILLS
LAGUNA BEACH
LAGUNA NIGUEL
SAN JUAN CAPISTRANO
DANA
Disneyland
California Adventure
Knott's Berry Farm
Anaheim Convention Center
Edison International Field
The Block at Orange
MainPlace
Old Towne
Arrowhead Pond
"The Grove" of Anaheim
Children's Museum
Birch Street Promenade
Coyote Hills Golf Course
Calif. State University Fullerton
Black Gold Golf Club
Nixon Library & Birthplace
Cowan Heights
Enderle Center
Tustin Ranch Golf Course
Tustin Marketplace
Old World Village
Huntington Harbour
Bolsa Chica Ecological Preserve
South Coast Plaza
Orange County Performing Arts Center
John Wayne/ Orange County Airport
Oak Creek Golf Course
El Toro
Irvine Spectrum Center
Strawberry Hill Golf Club
University of California, Irvine
Verizon Wireless Amphitheater
Fashion Island
Lido Is.
Balboa
Balboa Is.
Corona del Mar
Pelican Hill Golf Club
Crystal Cove State Park
Laguna Hills Mall
Main Beach
Monarch Beach Golf Links
Santiago Reservoir (Irvine Lake)
Santiago Canyon Rd
Silverado Canyon Rd
Eastern Trans Corr (Toll Road)
Foothill Corridor (Toll Road)
San Joaquin Hills Trans Corr (Toll Road)
Riverside Fwy
San Bernardino County
Orange County
Riverside County
Santa Ana Fwy
San Diego Fwy
Garden Grove Fwy
Riverside Fwy
Imperial Hwy
Pacific Coast Hwy
Carbon Canyon Rd
Yorba Linda Blvd
Orangethorpe Ave
Nohl Ranch Rd
Villa Park Rd
Chapman Ave
Malvern Ave
Commonwealth Ave
Taft Ave
Lincoln Ave
Westminster Ave
17th St
First St
Edinger Ave
Warner Ave
Talbert Ave
Adams Ave
Macarthur Blvd
University Dr
Alton Pkwy
Bonita Canyon Dr
Jamboree Rd
Newport Blvd
Harbor Blvd
Main St
Brookhurst
Beach Blvd
Magnolia
Knott
Valley View
Tustin Ave
Glassell St
Red Hill Ave
Culver Dr
Irvine Center Dr
Jeffrey Rd
Irvine Blvd
Trabuco Rd
El Toro Rd
La Paz Rd
Moulton Pkwy
Laguna Canyon
Aliso Creek Rd
Crown Valley Pkwy
Ortega Hwy
Street of the Golden Lantern
Serrano Ave
Weir Canyon Rd
Firestone Blvd
Whittier Blvd
Harbor Blvd
Brea Blvd
Orange Blvd
Rose Dr
Newport Ave
Hewes St
Jamboree Rd
Irvine Blvd
Lake Forest Dr
Alton Pkwy
Oso Pkwy
Margueirte Pkwy
Los Angeles Int'l Airport
Long Beach
Whittier
Pasadena
Arcadia
Burbank
Hollywood
Beverly Hills
Santa Monica
Venice
Manhattan Beach
Redondo Beach
Torrance
Palos Verdes
San Pedro
Buena Park
Anaheim
Orange
County
Huntington Beach
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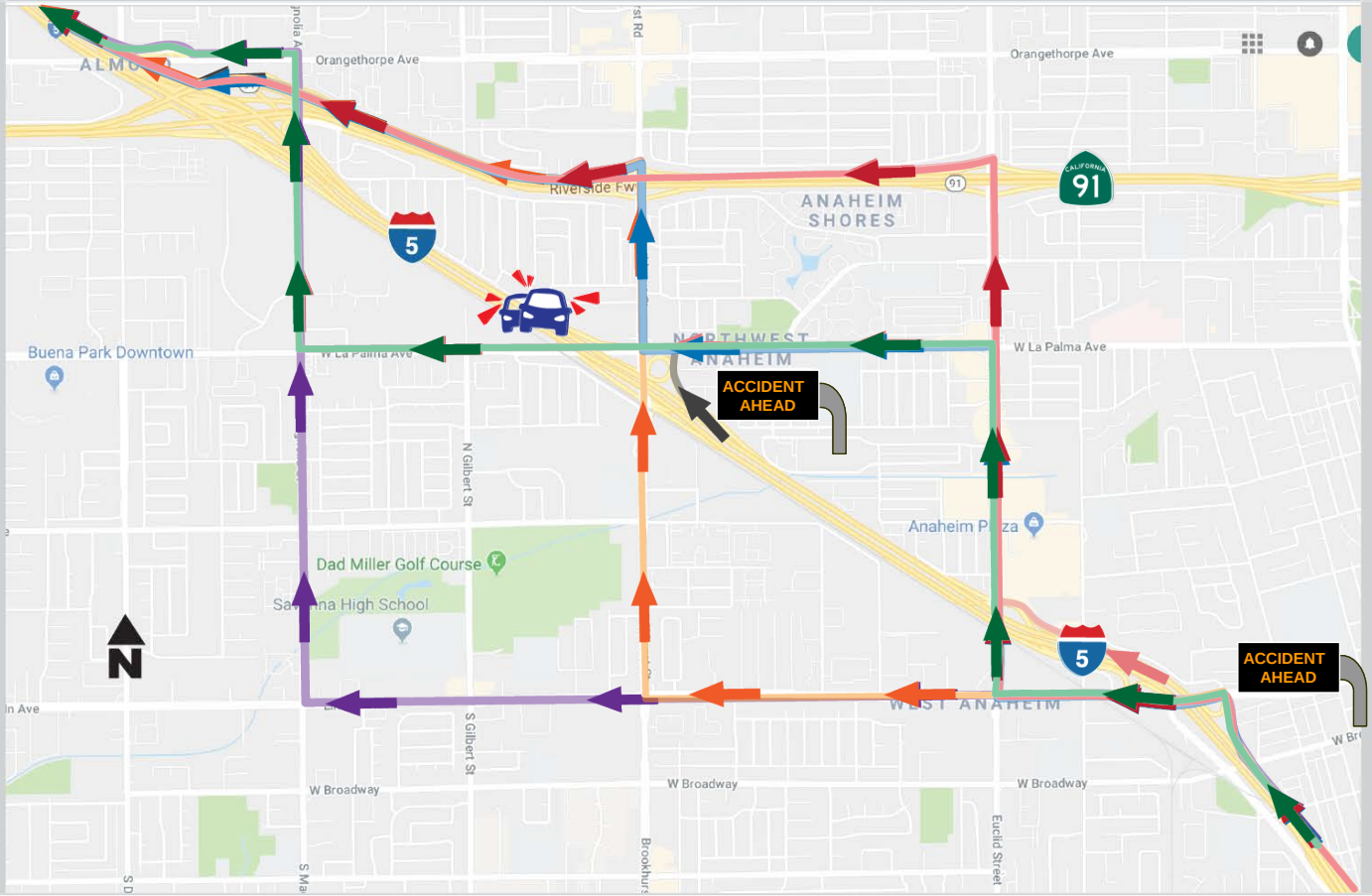
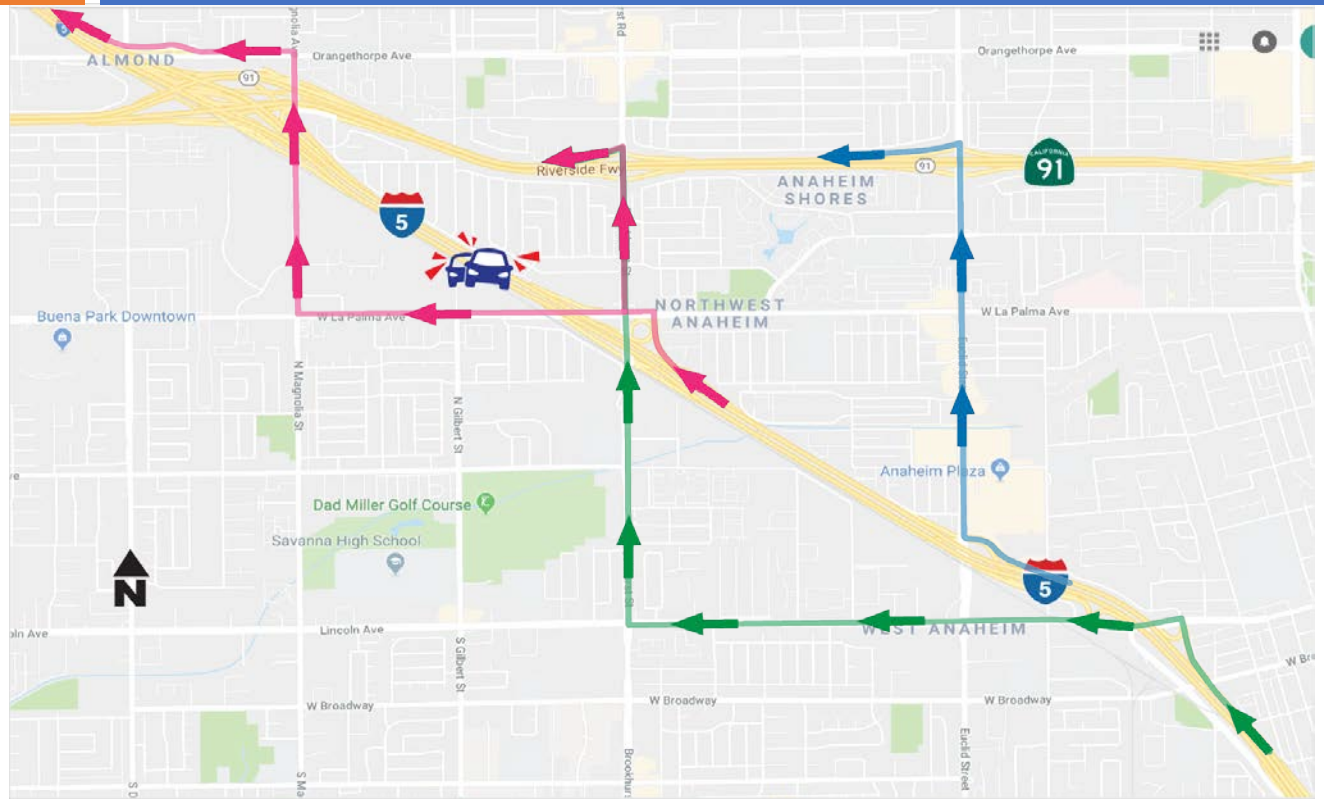
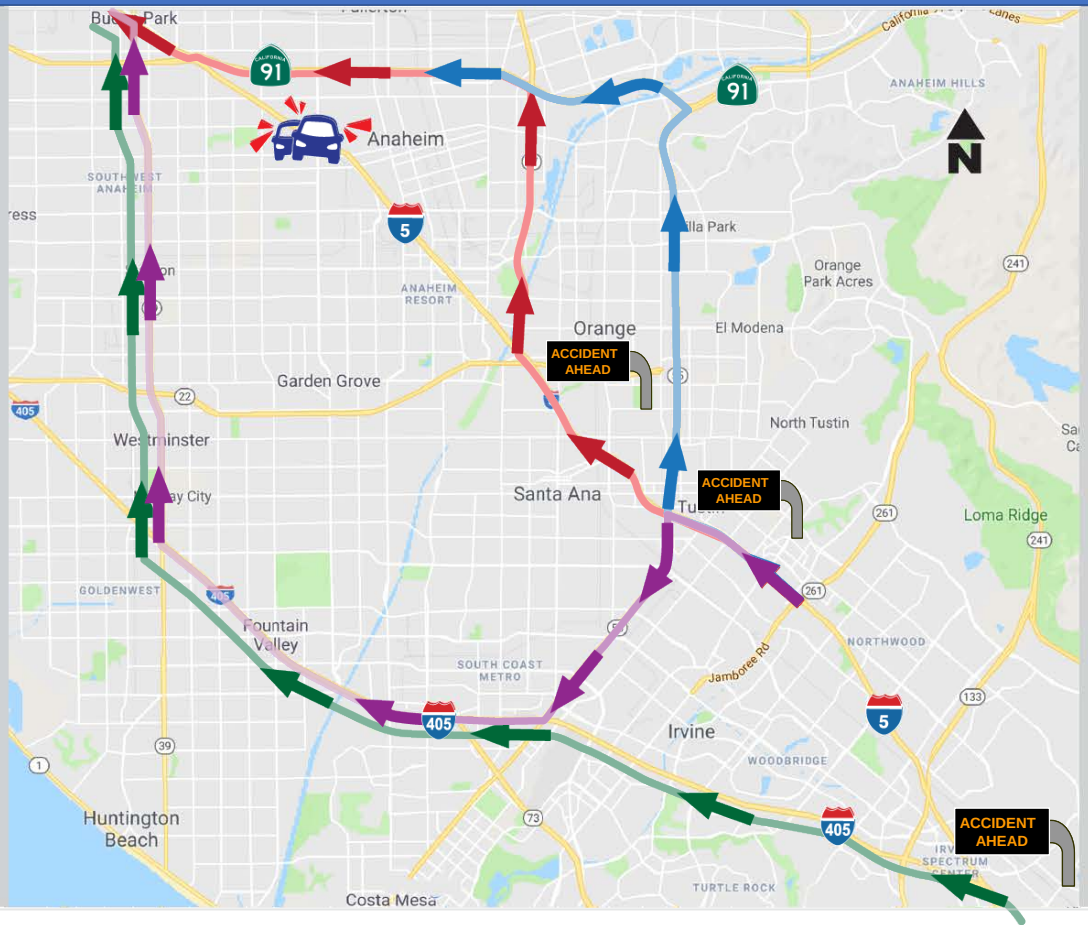
WHERE Orange County
0
5 MILES
Toll Road

Existing Condition – Rerouting During an Accident




ALMOND
Orangethorpe Ave
Orangethorpe Ave
Riverside Fwy
ANAHEIM SHORES
91
5
NORTHWEST ANAHEIM
Buena Park Downtown
W La Palma Ave
W La Palma Ave
N Magnolia St
N Gilbert St
Anaheim Plaza
Dad Miller Golf Course
Savanna High School
N
5
Lincoln Ave
S Gilbert St
WEST ANAHEIM
W Broadway
W Broadway
W Broadway
Euclid Street
Brookhurst

ICM Strategy – Rerouting During an Accident



Regional Opportunities

- Event Management System
- Transportation Demand Management
- Integration of Internal and External Systems, Data, Videos & Operations
- Countywide Information Exchange Network
- Integrated Corridor Management System
- Enhanced Traveler Information System
- Application of Advanced Technologies & Analytics
- Support of Smart Community (City, Regional & County)

ANAHEIM
OCTA
Caltrans

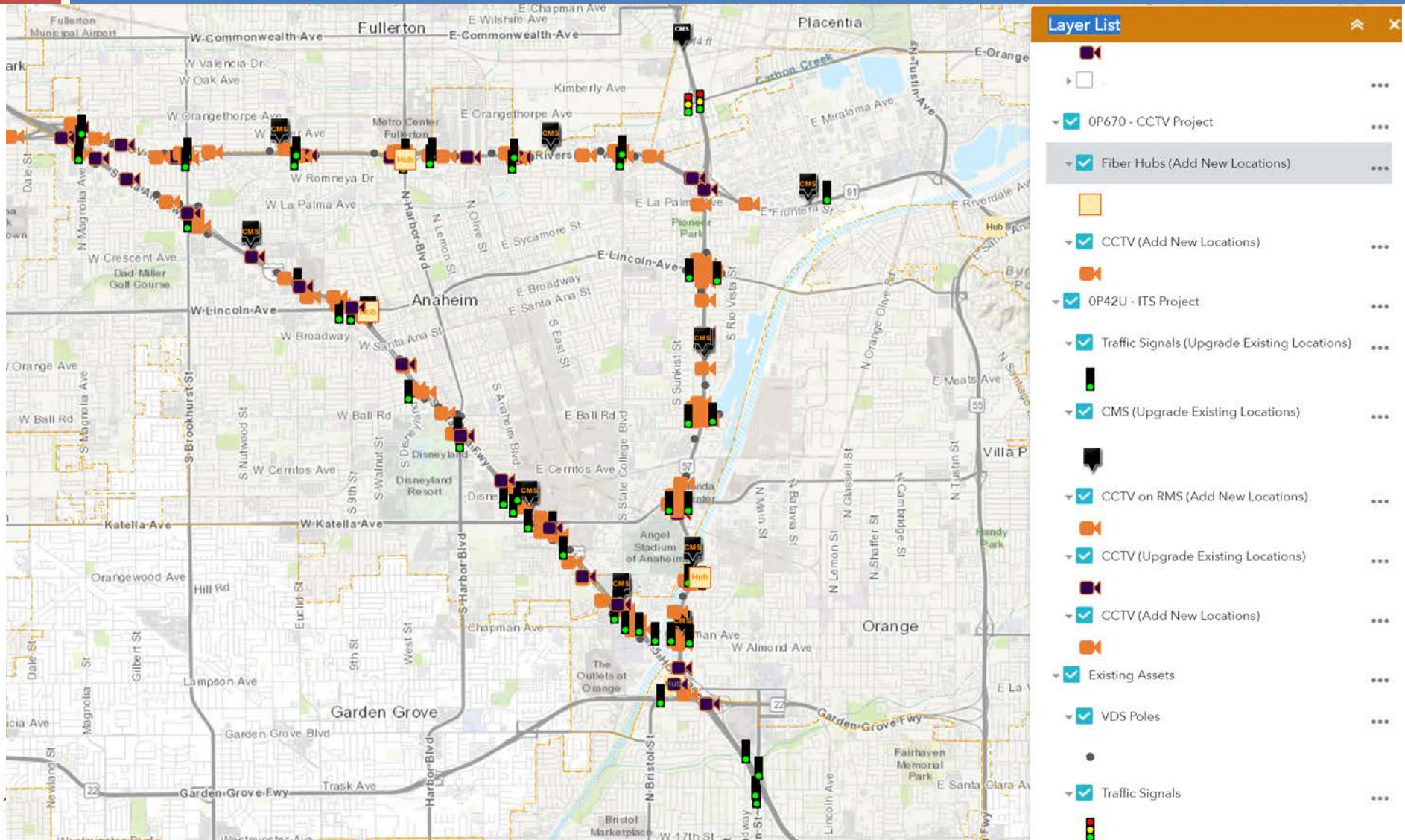
BUENA PARK
CALIFORNIA
CITY OF ORANGE
ORANGE COUNTY CALIFORNIA
CITY OF PLACENTIA
Garden Grove
Youth & Ambition
ANAHEIM
CITY OF FULLERTON
CALIFORNIA
BREA
CALIFORNIA
OCTA
Caltrans
SCAG
METROLINK
U.S. Department of Transportation
Federal Highway Administration
CHP

Inland Freight

Triangle ICM Project Scope

- Improve Roadway Surveillance and Traveler Information
- Upgrade the Ramp Metering System
- Upgrade TMC Components
- Install Additional Communications Hubs & Connecting TMCs
- Acquire Countywide Real-Time Roadway Condition Data & Triangle Area Probe Data
- Deploy Countywide Information Exchange Network (IEN)
- Deploy Integrated Corridor Management System
- Deploy Connected Vehicles Technology at Intersections & Along Highways

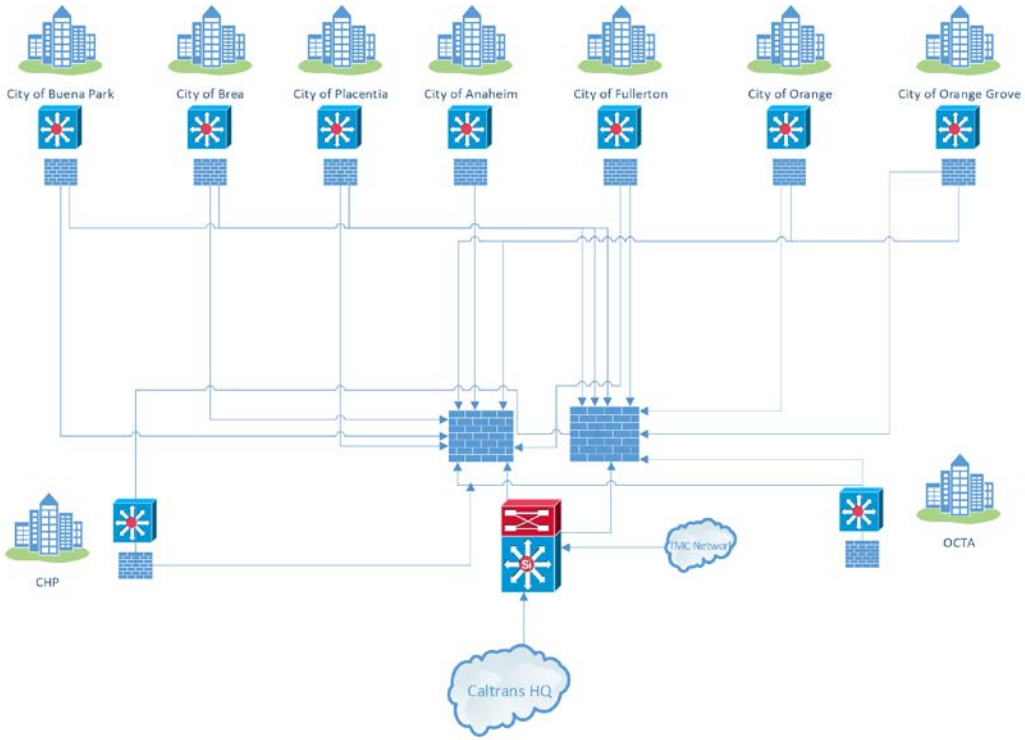
Expansion of ITS Assets



Upgrade TMC Components

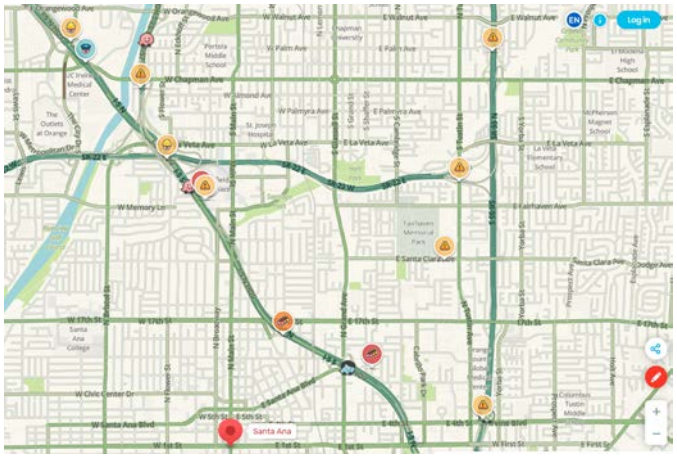
- New Video Wall
- Interim ATMS
- Adaptive Ramp Metering Application
- Upgrade Hardware & Networking

Connecting Agencies Network



Acquire Real-Time Data

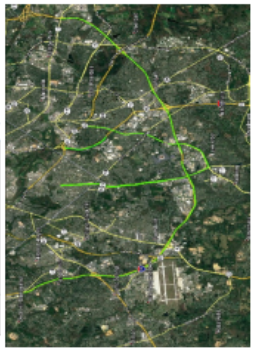
- Countywide Real-Time Speed Data
- Major Routes Probe-based Speed, Travel Time and O/D Data
- WAZE Data
- Weather Data
- Others



Traffic Data Services – Origin-Destination

- Identify where people come from & where they go
- Analyze mobility patterns of the people caught in the congestion
- Determine main contributors for congestion through specific areas
- Leverage data to evaluate effectiveness of changes

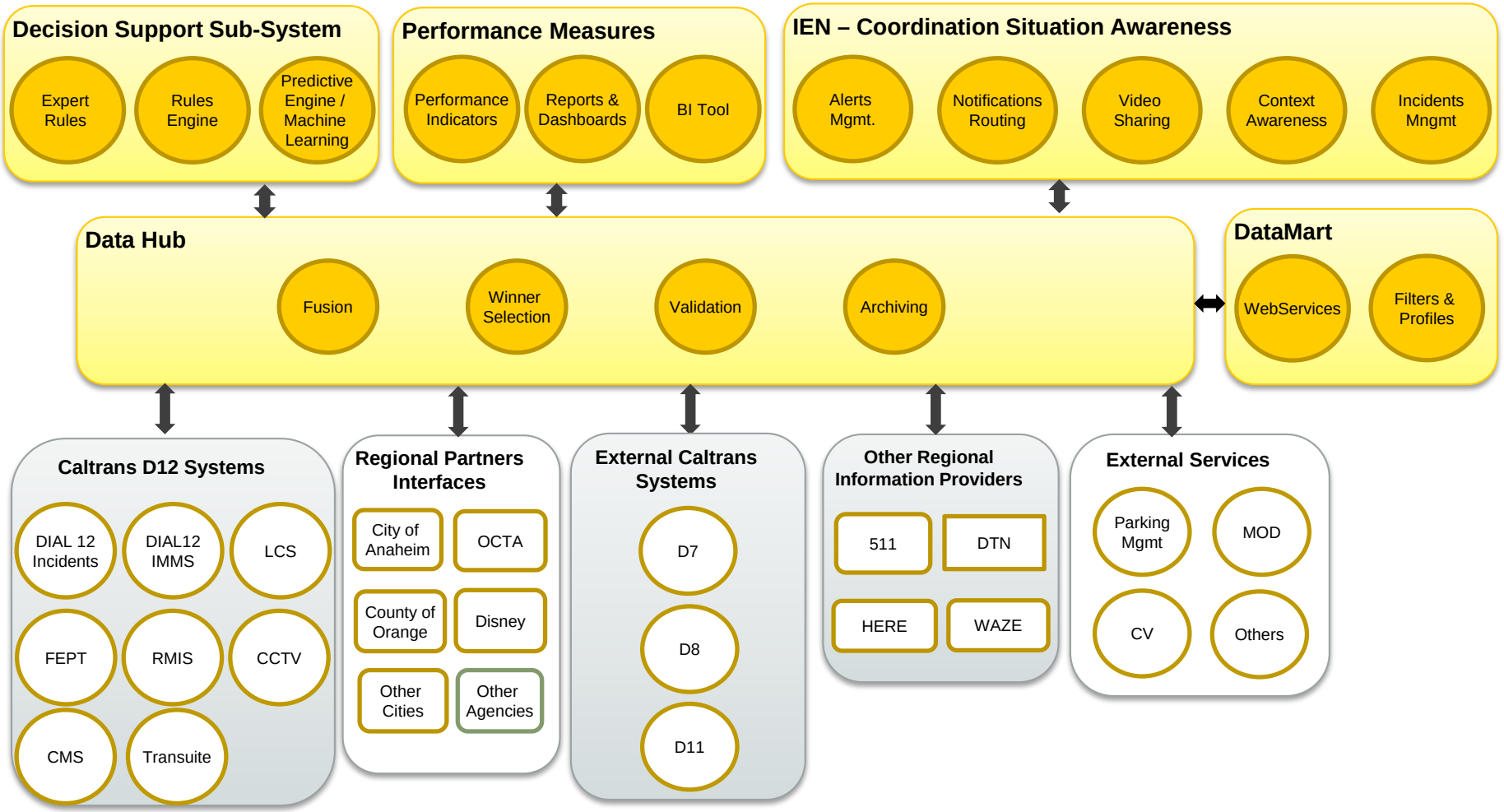
road	direction	20:30	21:00	21:30	22:00	22:30	23:00	23:30	0:00	0:30	1:00	1:30	2:00	2:30	3:00	Total
Route_50_West	Out	10.1%	11.3%	7.6%	8.0%	5.9%	10.5%	10.1%	18.5%	8.4%	6.3%	1.7%	1.3%	0.0%	0.4%	100%
Route_202_East	Out	15.2%	10.9%	2.2%	6.5%	10.9%	6.5%	17.4%	15.2%	4.3%	8.7%	2.2%	0.0%	0.0%	0.0%	100%
Route_202_West	Out	12.5%	10.4%	12.5%	4.2%	6.3%	4.2%	12.5%	25.0%	2.1%	4.2%	2.1%	0.0%	2.1%	2.1%	100%
Route_214_East	Out	11.9%	9.2%	11.0%	6.4%	8.3%	2.8%	10.1%	22.0%	10.1%	2.8%	2.8%	0.0%	2.8%	0.0%	100%
Route_214_West	Out	5.1%	6.7%	4.5%	6.2%	5.1%	6.7%	21.3%	19.7%	16.3%	2.8%	2.2%	1.7%	0.6%	1.1%	100%
Route_495_North	Out	10.9%	7.7%	6.3%	6.7%	6.4%	8.6%	14.8%	16.2%	13.7%	3.2%	1.7%	1.7%	1.2%	1.0%	100%
Route_495_South	Out	7.6%	5.9%	4.4%	5.8%	6.4%	8.5%	15.7%	21.6%	16.2%	4.3%	1.6%	0.8%	0.7%	0.7%	100%
All outgoing roads	Out	9.3%	7.2%	5.6%	6.3%	6.4%	8.3%	15.1%	19.1%	14.1%	3.9%	1.7%	1.2%	0.9%	0.8%	100%



verizon

10

High Level Overall Triangle ICM System Architecture



Systems Deployment Phases

- Phase 1 – Countywide IEN
- Phase 2 – Triangle ICM
- Phase 3 – IEN Expansion and Integration with ICM

IEN Phase 1 - Functionality

- Real Time Information Integration and Sharing
- Video Sharing
- Event Management/ Sharing
- Construction Planning & Coordination
- Alerting
- Data Archiving
- Performance Measures and Management
- Data Sharing/Data Mart Portal

High Level IEN Architecture

Regional Partners
ISPs
511
PeMS
Others

Manual
Event
Entry

Performance
Measures/ Dashboards

Data Mart
(Web
Services)

IEN Application (Interactive Map)

Data Fusion and Data Archiving

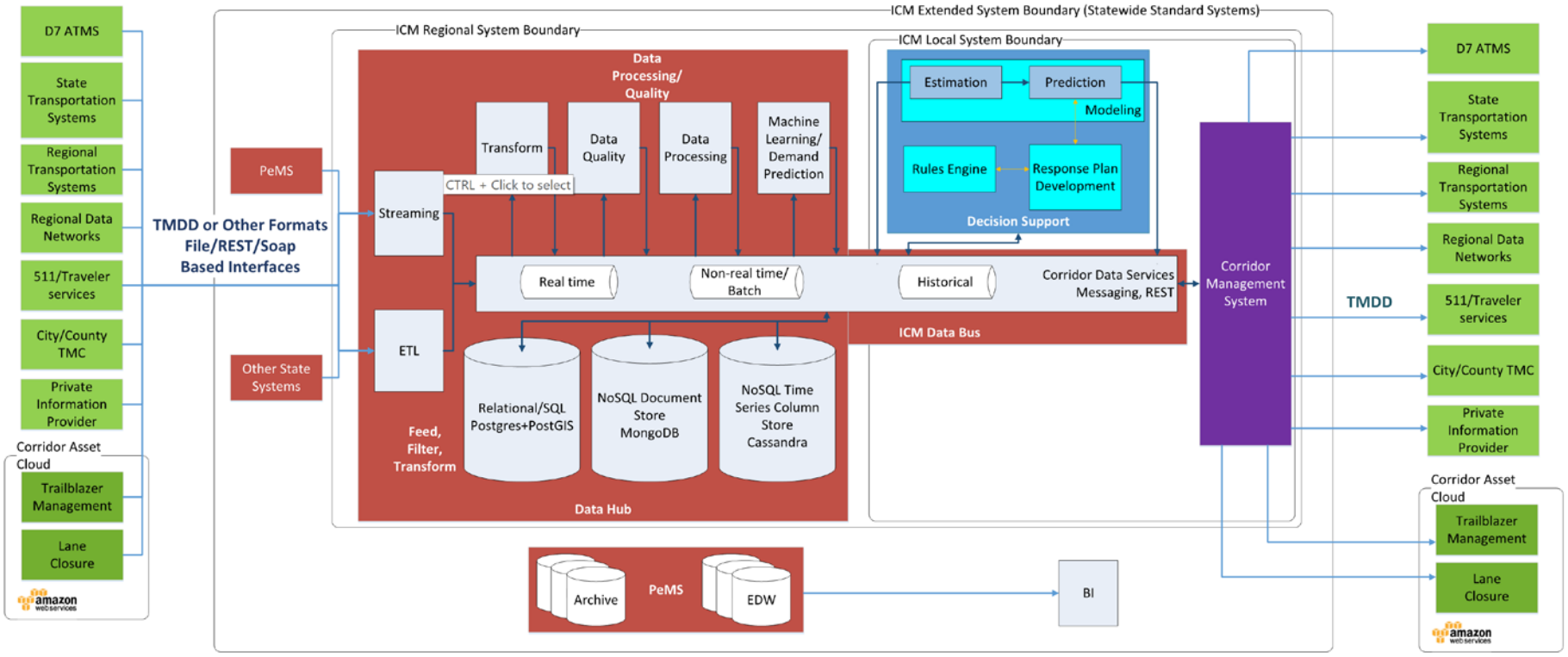
Incidents | **Construction** | Speed Volume Occupancy | CMS | CCTV

"Caltrans ATMS"

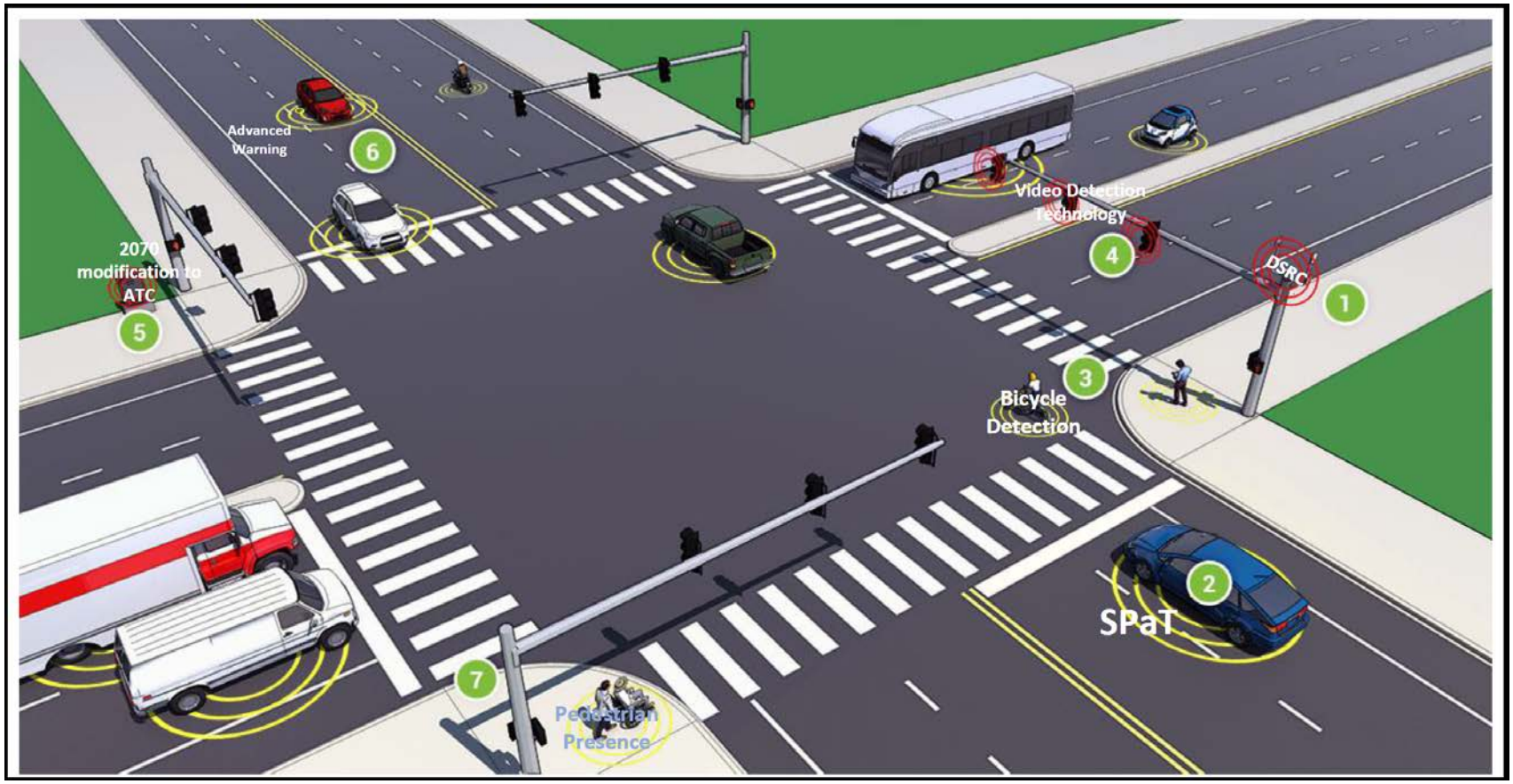
WAZE

3rd Party Speed Data Providers

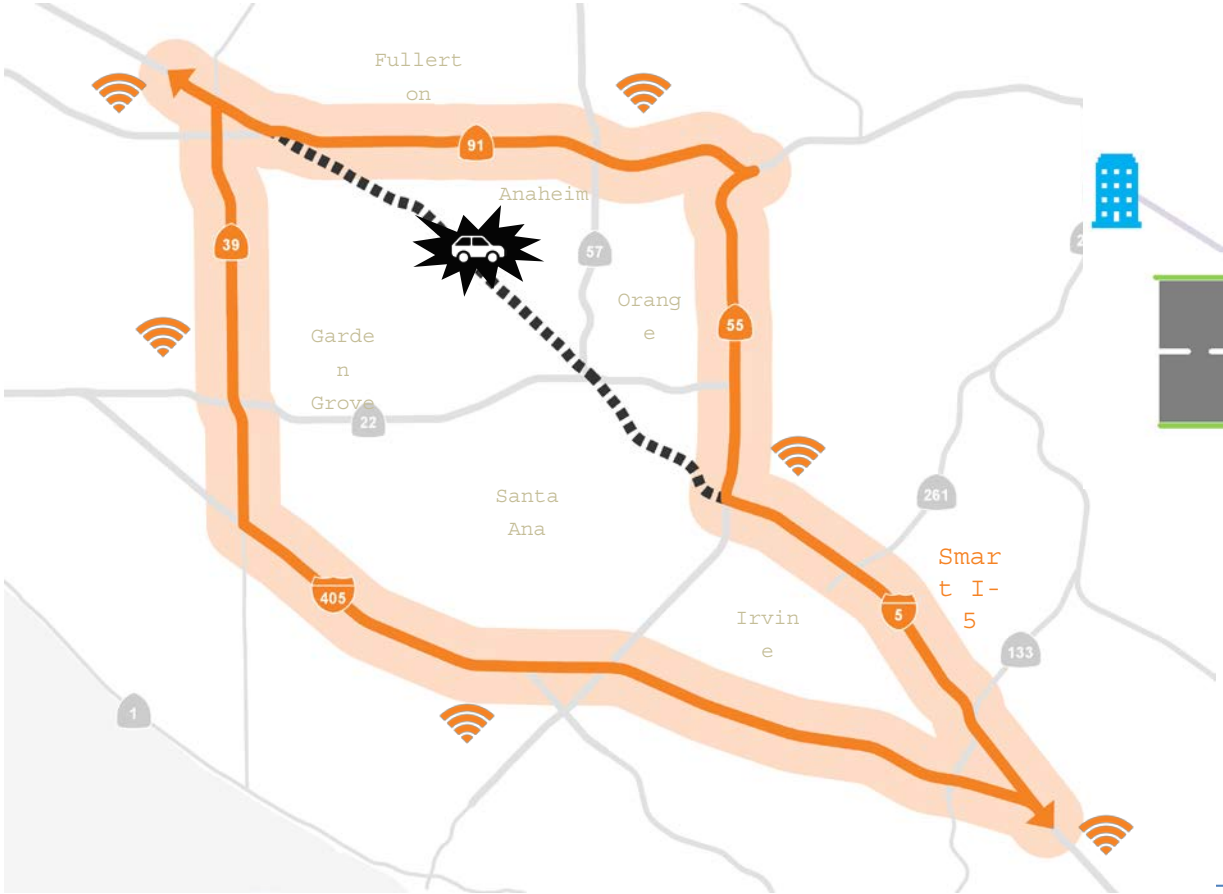
ICMS Architecture

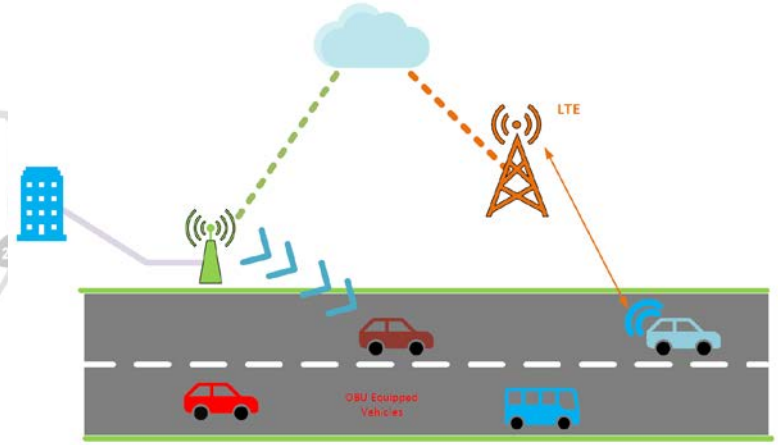


Smart Intersections



120 V2I Roadside Units





Some Thoughts…..

- Countywide Information Exchange Network
  - Traditional Operational Data and Videos
  - SPAT Data, CV, Others
- Triangle-wide Decision Support System and Strategies
  - Online Modeling, Expert Rules Engine
  - Analytics, Forecasting, Machine Learning, Others
- Performance Based Management of Corridors Operations
- Private Sector Partnership, Data and Operations
- Traveler Information Dissemination
  - 511, DMS, Third Parties
  - Mobility On Demand, V2I
- Connected Vehicles
- Others

Project Schedule

IEN Contract Award	May 2020
IEN Operational	Dec 2020
ICMS Contract Award	Oct 2020
ICMS Soft Launch	Sept 2022
ICMS Operational	May 2023

Thanks

Farid Nowshiravan Contact Info