

# Next Generation Traffic Management in California



Tab 15

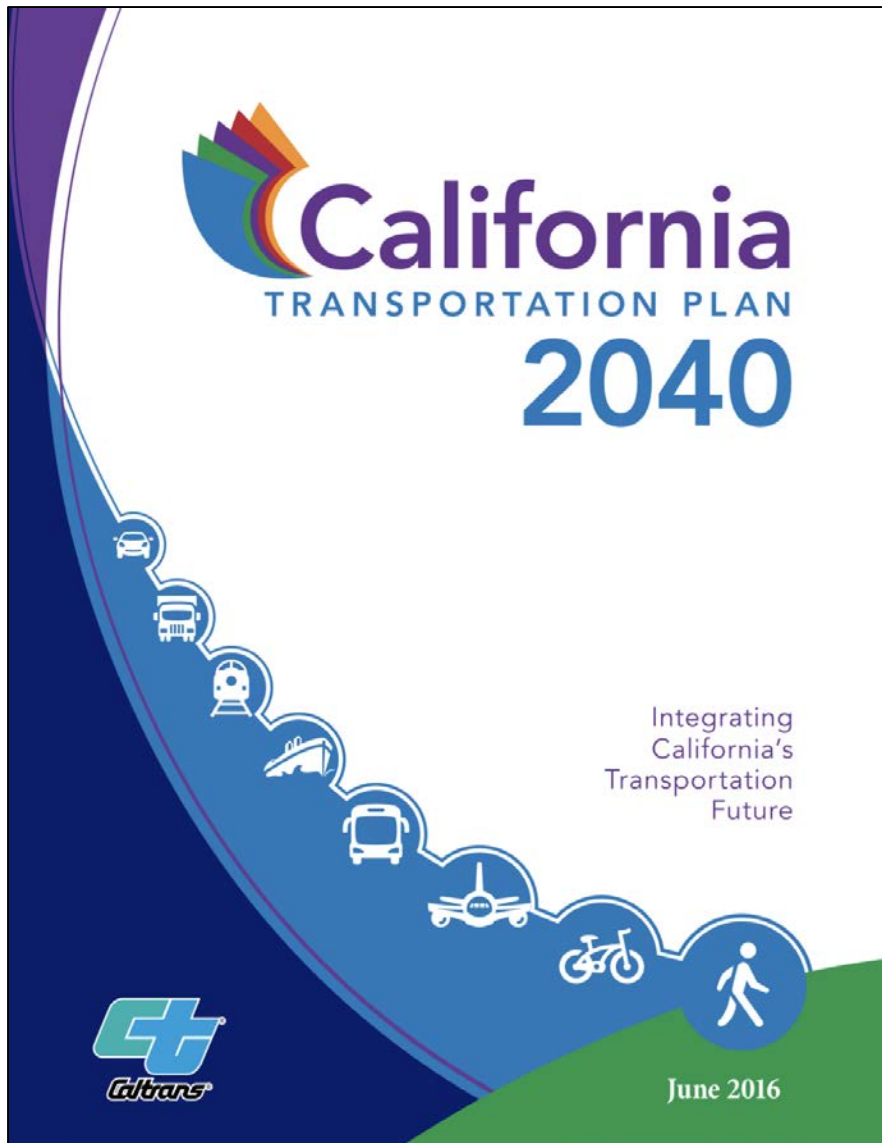
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Director, Institute of Transportation Studies  
Faculty Scientist, LBNL

**California Transportation Commission**  
**Jan. 31, 2018**



# TFM in California 2040



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California Transportation Plan 2040

### GOAL 1: IMPROVE MULTIMODAL MOBILITY AND ACCESSIBILITY FOR ALL PEOPLE

People want a transportation system that gets them where they need to go—safely, reliably, and at a reasonable cost, without sacrificing the environment, public health, or community character. Efficient delivery of goods and services are vital to the State's interests. Goal 1 aims to improve multimodal mobility and accessibility, which is best achieved by providing well-integrated multimodal options and well-managing the existing transportation systems to optimize performance.

To optimize performance of the existing system, specifically the local network component, the transportation sector should support efficient, well-designed, walkable communities at density levels sufficient to support reliable transit. To maximize the efficiency of the SHS, a broad suite of strategies must be utilized that improve congestion management, fund life-cycle costs, and provide resources to fund alternative travel options in congested corridors. Targeted capacity increases should use a multimodal, corridor-wide approach and include various strategies such as adding high occupancy vehicle (HOV) and high occupancy toll (HOT) lanes, managed lanes, ramp metering, and other ITS treatments.

### CONNECTED CORRIDORS PROGRAM

In collaboration with University of California, Berkeley's Partners for Advanced Transportation Technology, Caltrans is developing the Connected Corridors Program. The program will integrate new transportation management technologies with existing approaches for a coordinated transportation network with diverse traffic management options. A pilot site will assess the technical actions and policy changes needed to improve performance in congested State transportation corridors.



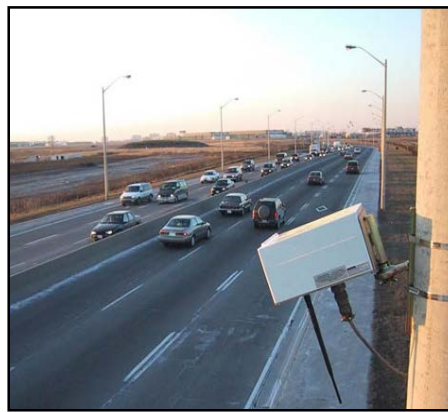
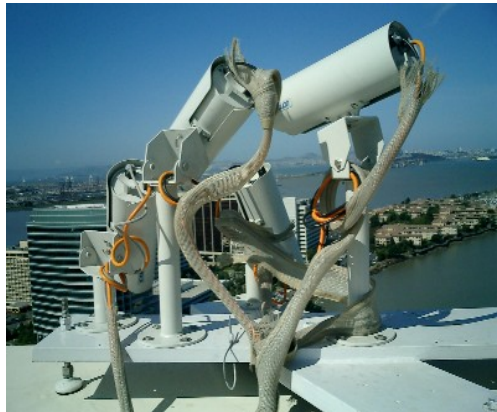
# Classical sensing infrastructure (1960' – present)

## Dedicated traffic monitoring infrastructure (since the 1960'):

- Self inductive loops
- Wireless pavement sensors
- FasTrak, EZ-pass transponders
- Cameras
- Radars
- License plate readers
- Traffic tubes

## Issues with this traditional infrastructure

- Installation and maintenance costs
- Reliability
- Sparse coverage



# Classical control infrastructure (1960 – present)

## Dedicated traffic control infrastructure (since the 1960's):

- City traffic lights
- Metering lights
- Changeable message signs
- HOV lanes, HOT lanes, reversible lanes
- Bridge metering
- Variable speed limits

## Issues with this traditional infrastructure

- Limited control over motorists
- Virtually no control over routing
- Limited availability of demand and forecast
- Fragmentation of systems



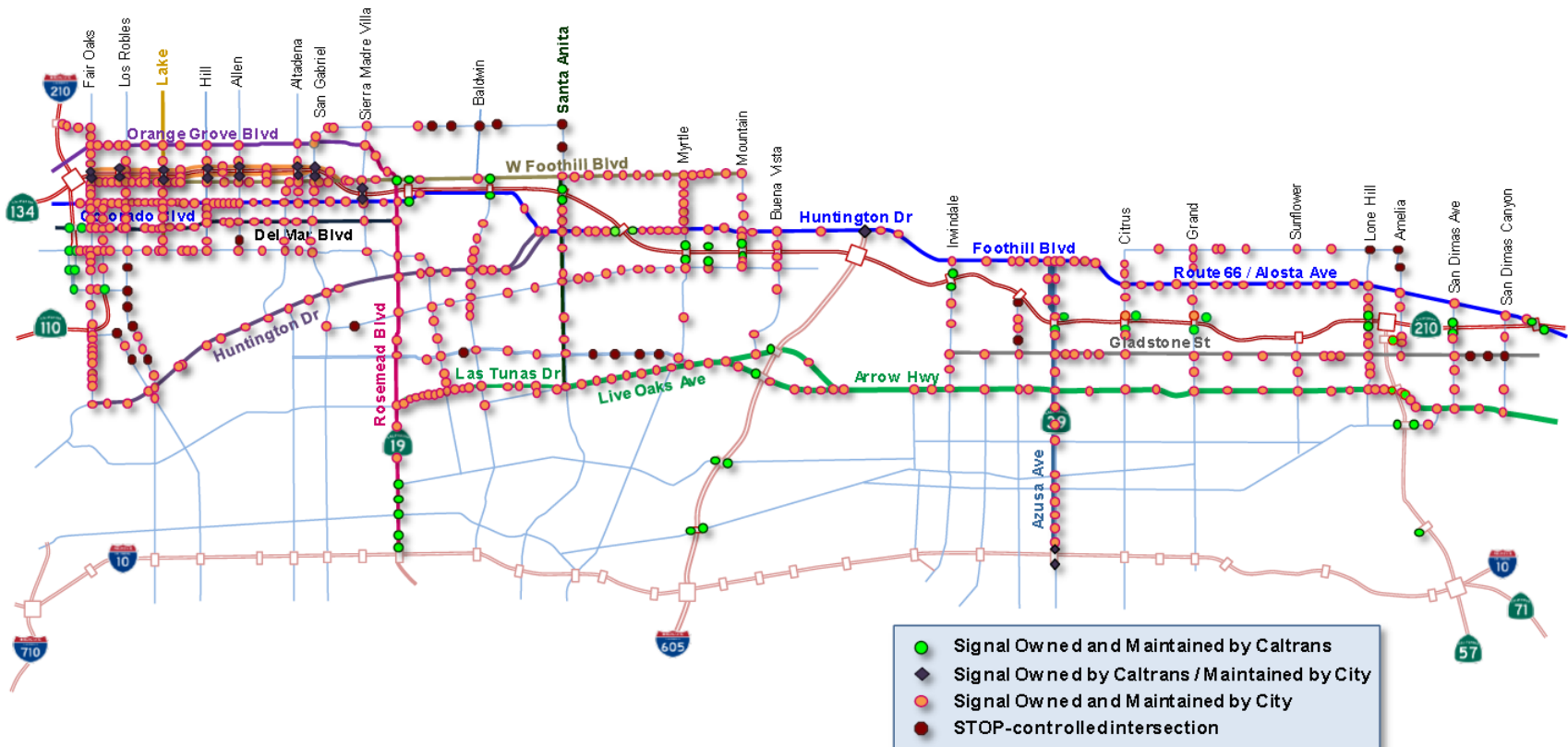




# Example: the I210 Connected Corridors testbed

## Asset inventory sample

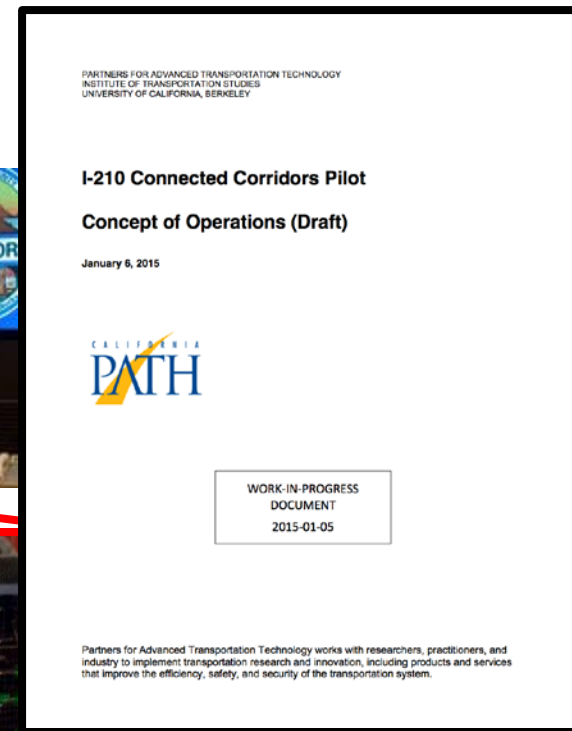
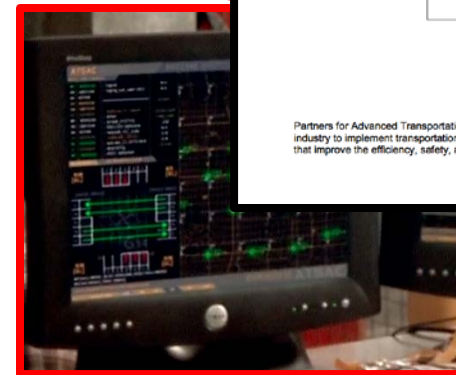
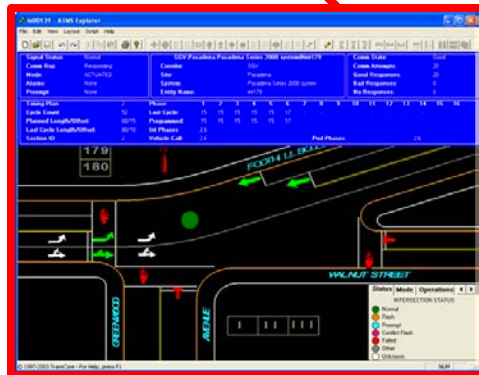
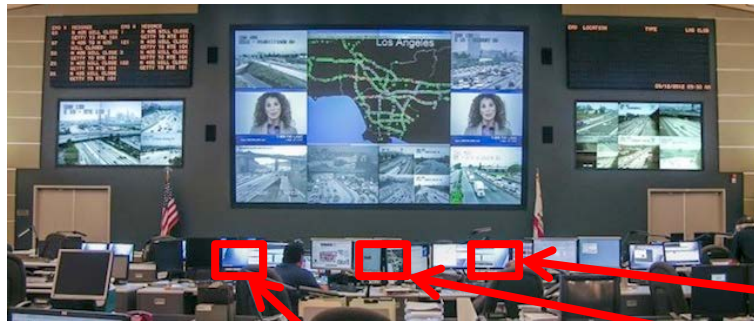
- Metering lights: 35, including I-650/I-210 freeway-to-freeway metering
- Instrumented intersections: 450 across all cities
- Changeable message signs: 4 existing + 6 Caltrans +12 Pasadena
- Wayfinding signs: 60 to be installed across corridor
- HOV lanes: 1 - On I-210 EB and WB, 2 on-ramp w. dedicated HOV lane



# Next generation decision support systems

## Human in the loop for infrastructure control

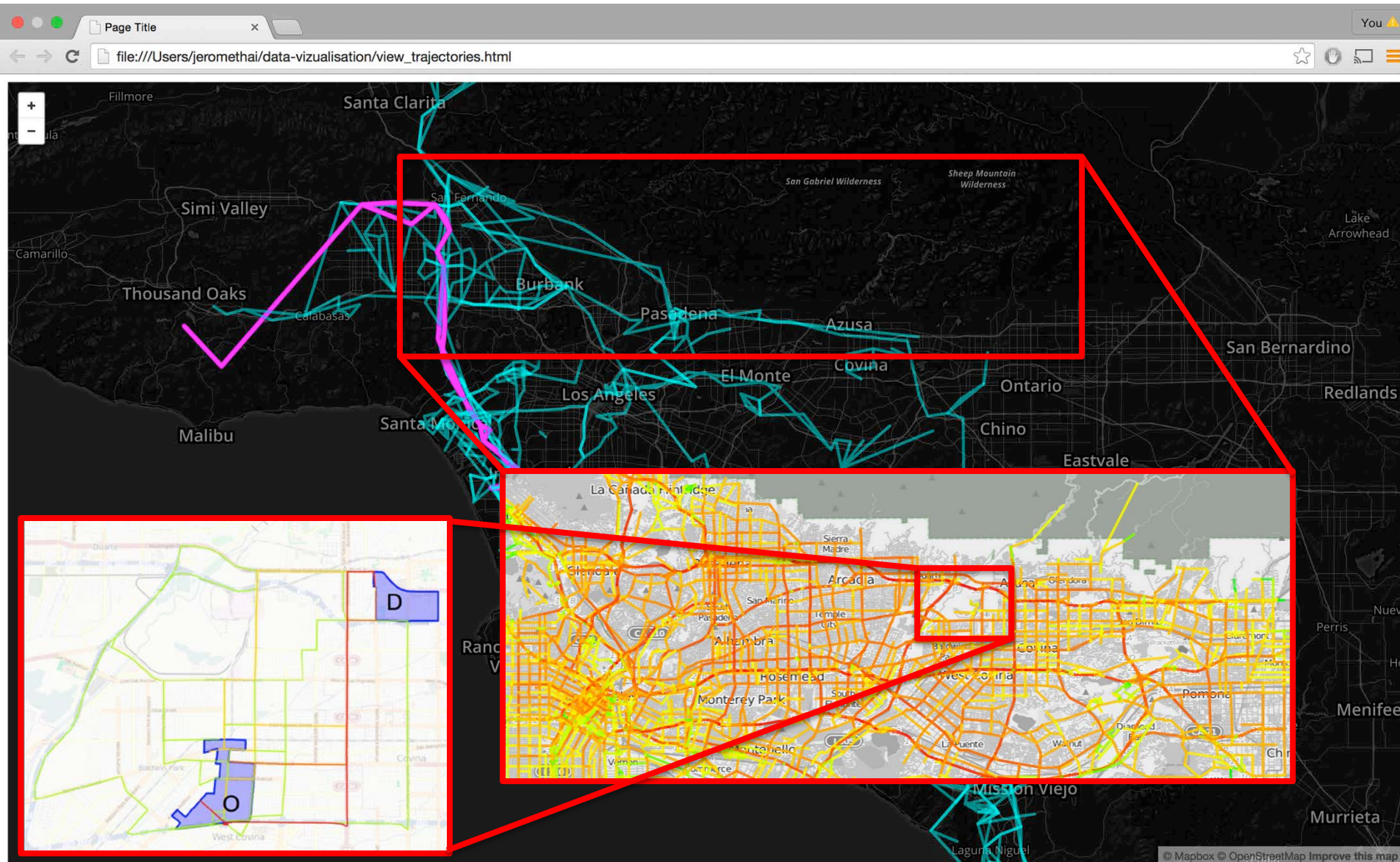
- Down to single asset level (traffic light, CMS, etc.)
- Limited ability to actuate pre-planned scenarios (system-wide)
- Difficulties to coordinate across jurisdictions removed







# Using novel sources of data

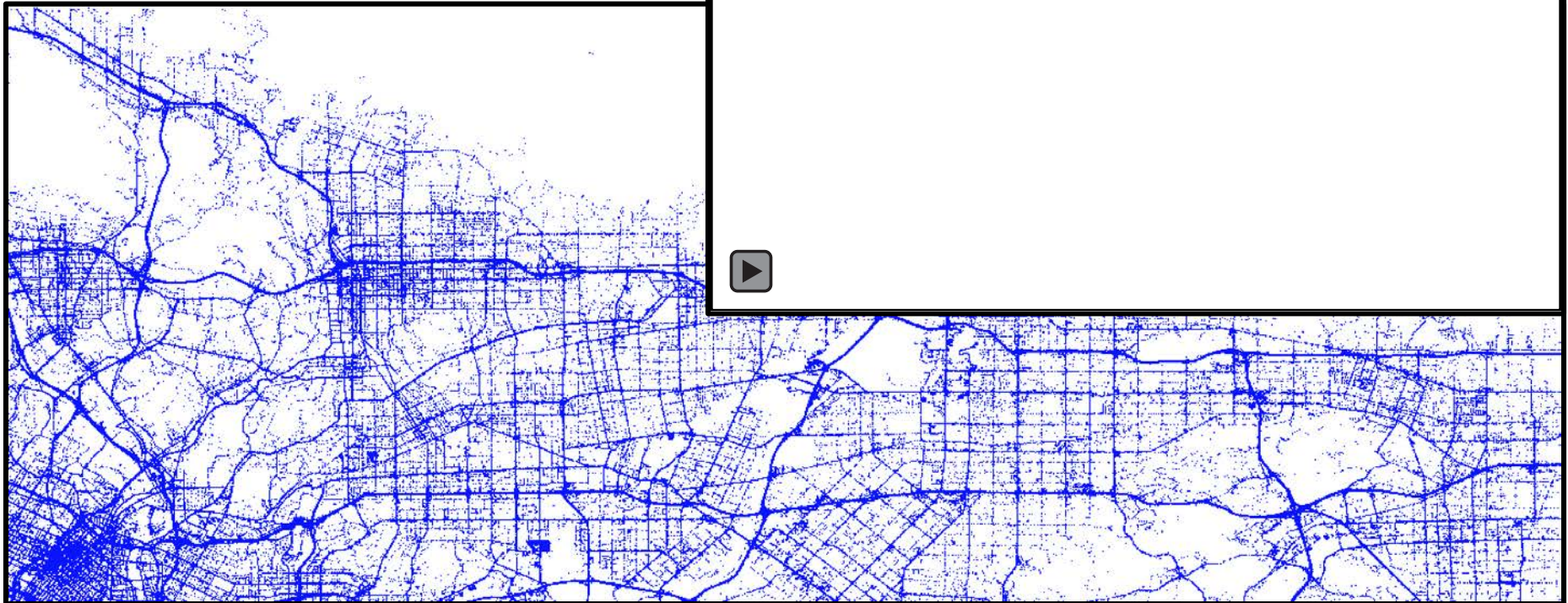




# Using novel sources of data

500 vehicles sampled at 30' intervals

One day of data, 0.5% penetration





# Connected Corridors



UC Berkeley | ITS/PATH

Search this site

## Connected Corridors Program

[Home](#) [The ICM Process](#) [The I-210 Pilot](#) [Planning the System](#) [Developing the System](#) [Resources](#) [About & Contact](#)



### Welcome

Connected Corridors is a collaborative program to research, develop, and test an **Integrated Corridor Management (ICM)** approach to managing transportation corridors in California. ICM looks comprehensively at an entire transportation network—including freeways, arterial streets, transit, parking, travel demand, agency collaboration, and more—and considers all opportunities to move people and goods in the most efficient and safest way possible. Instead of focusing on improving only specific elements such as freeways or transit, ICM views the corridor as a total *system* to be managed as an integrated and cohesive whole; it seeks to address the corridor's overall transportation needs rather than the needs of particular elements or agencies alone.

Connected Corridors represents a significant departure from traditional transportation management practice, and in pursuing an ICM approach the program aims to fundamentally change the way the State of California manages its transportation corridors for years to come. Led by the California Department of Transportation (Caltrans) in partnership with Partners for Advanced Transportation Technology (PATH) at the University of California, Berkeley, the Connected Corridors program seeks to:

- Reduce congestion and improve mobility, travel-time reliability, safety, and system efficiency in California's most congested corridors
- Make better use of existing capacities across all transportation modes (car, bus, train, bicycle, pedestrian, etc.) to increase the throughput of vehicles, people, and goods with minimal or no new infrastructure
- Bring together corridor stakeholders to create an environment for mutual cooperation, including sharing knowledge, developing working pilots, and researching and resolving key issues
- Improve the availability and quality of data on travel conditions in the corridor to better understand corridor behavior and improve performance
- Provide corridor users with timely, accurate information so they can make informed choices about when, how, and by what route to travel
- Equip traffic managers and first responders with the information and tools to make real-time decisions and quickly improve traffic flow along the corridor
- Foster positive, collaborative, ongoing corridor management practices

Microsoft PowerPoint presentation on the effectiveness of the program to help future ICM implementations in the state and across the country

### Current News

**November 16, 2017**  
[Fall 2017 Connected Newsletter](#)

**July 28, 2017**  
[Connected Corridors Digest #61](#)

**July 27, 2017**  
[Connected Corridors Wins Amazon Web Services Award](#)

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### About Us





# Potential future challenges

The screenshot shows the official website of Mayor Eric Garcetti. The header is dark blue with navigation links: BLOG, MEDIA, GET HELP, TALK TO US, PERFORMANCE, and ABOUT. A language selector for ENGLISH is on the right. The left sidebar features the Mayor's name and the hashtag #IamMayor. The main content area has a light blue background with a palm tree image. The 'Press Releases' section highlights a post from April 21, 2015, about a data-sharing agreement with Waze. The right sidebar includes a sign-up form and a Facebook social plugin showing the Mayor's profile and a grid of photos.

**Eric Garcetti**  
#IamMayor

BLOG MEDIA GET HELP TALK TO US PERFORMANCE ABOUT ENGLISH

## Press Releases

[Home](#) → [Media](#) → [Press Releases](#) →

### Mayor Garcetti Details Agreement with WAZE to Help Reduce Congestion, Increase Safety, and Improve Driving Experience Around L.A.

Posted by Mayor Eric Garcetti on April 21, 2015 · [Flag](#)

*App will feature first-ever hit-and-run notifications and AMBER Alerts to aid public safety*

Mayor Garcetti today announced the details of a data-sharing agreement between the City of Los Angeles and Waze, an agreement he previewed in his State of the City Address last week. The Waze app is used by more than 1.3

Building the city of our dreams starts with you, sign up!

[SIGNUP](#)

or sign in with [Facebook](#).

**Mayor Eric Garcetti** [Like](#)

27,775 people like Mayor Eric Garcetti.

Facebook social plugin





# Potential future challenges



ABOUT HOW PORTFOLIO INSIGHTS CONTACT 

## Los Angeles and Waze Team Up to Combat Traffic Congestion

INSIGHTS | MOBILE DOSE

When Americans think of traffic they think of Los Angeles, even if they've never visited. So it makes sense that the LA mayor's office has announced that the city is **partnering with traffic app Waze** to help combat the congestion. The deal allows data to be shared between the two parties—the city will alert Waze about hazards, construction and crashes while the app will give the city a wealth of data to analyze how traffic moves. Ideally this will allow for changes that will improve commutes.



# Potential future challenges





# Potential future challenges



## Readers React How an app destroyed their streets: Readers count the Waze



Vehicles crowd the intersection of Cody Road and Woodcliff Road in Sherman Oaks on Jan. 5. Residents say the worsening traffic on side streets is partially to blame on Waze. (Los Angeles Times)

### Related Coverage

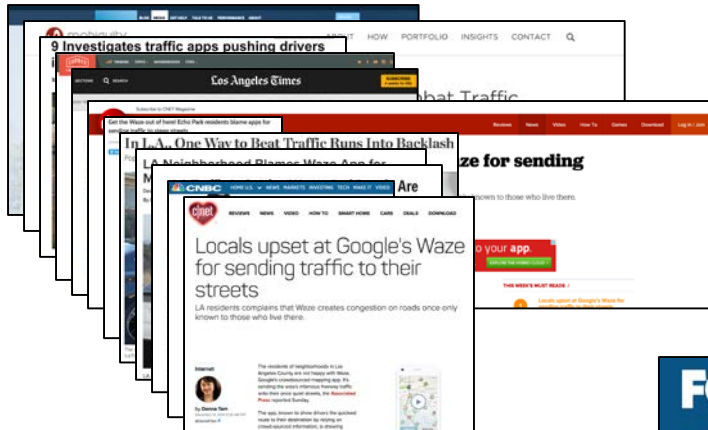


**Time to rein in California's traffic ticket surcharges**

MAY 1, 2015



# Potential future challenges



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S. HOME CRIME TERRORISM ECONOMY IMMIGRATION DISASTERS MILITARY EDUCATION ENVIRONMENT PERSONAL FREEDOMS REQ

**AUTO TECH**  

## Popular smartphone app causes traffic jam uproar in California neighborhoods

Published December 15, 2014 · Associated Press

[f](#) [t](#) [e](#) [p](#)



Dec. 9, 2014: Early morning rush hour traffic winds its way along a narrow street in Sherman Oaks section of Los Angeles. When the people whose houses hug the narrow warren of streets paralleling the busiest urban freeway in America began to see bumper-to-bumper traffic rushing by their homes a year or so ago they were baffled. When word spread that the explosively popular new smartphone app Waze was sending many of those cars through their neighborhood in a quest to shave five minutes off a daily rush-hour commute, they were angry and ready to fight back.

**More from Fox News**  


Topless mystery woman the most distracting driver ever?



Is Elizabeth Warren in political trouble in Massachusetts?







# Potential future challenges

9 Investigates traffic apps pushing drivers  
Los Angeles Times  
In L.A., One Way to Beat Traffic Runs Into Backlash  
LA Neighborhood Places Waze App for  
ze for sending  
Are  
FOX NEWS U.S.  
CNC NEWS | Technology & Science  
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TICKER LATEST  
"These are not startups." Elizabeth Warren is worried about big tech — and big banks — influencing politics  
BY DENNIS KEOHANE about an hour ago  
Seymour Hersh and the dangers of corporate muckraking  
BY MARK AMES about 4 hours ago  
Here's some of the stuff Google



# Potential future challenges

A stack of newspaper front pages from various sources, including the Los Angeles Times, Fox News, and The Daily Mail, fanned out to show multiple headlines related to traffic and technology.

**GIZMODO** | VIDEO | SPLOID | PALEOFUTURE | IO9 | SCIENCE | REVIEWS | FIELD GUIDE

**You may also like**

**Lifehacker**  
**The Harmless Items That Could Trigger a TSA Search of Checked Luggage**  
Yesterday 9:00am

**Is It Really Possible To Trick Waze To Keep Traffic Off Your Street?**

Alissa Walker  
11/18/14 4:42pm · Filed to: URBANISM

54.5K 130 9

An illustration of a Waze navigation map showing a route with a car icon, a police car icon, and a warning icon. The map is stylized with a light blue background and a white route line.

Share Tweet







# Potential future challenges







# Potential future challenges

**The Mercury News**





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**TRENDING:** OMG, you forgot?! Michael Flynn Grammy snubs Aldon Smith Westminster dog show California's best lagers

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## Is Google's Waze app making traffic worse?

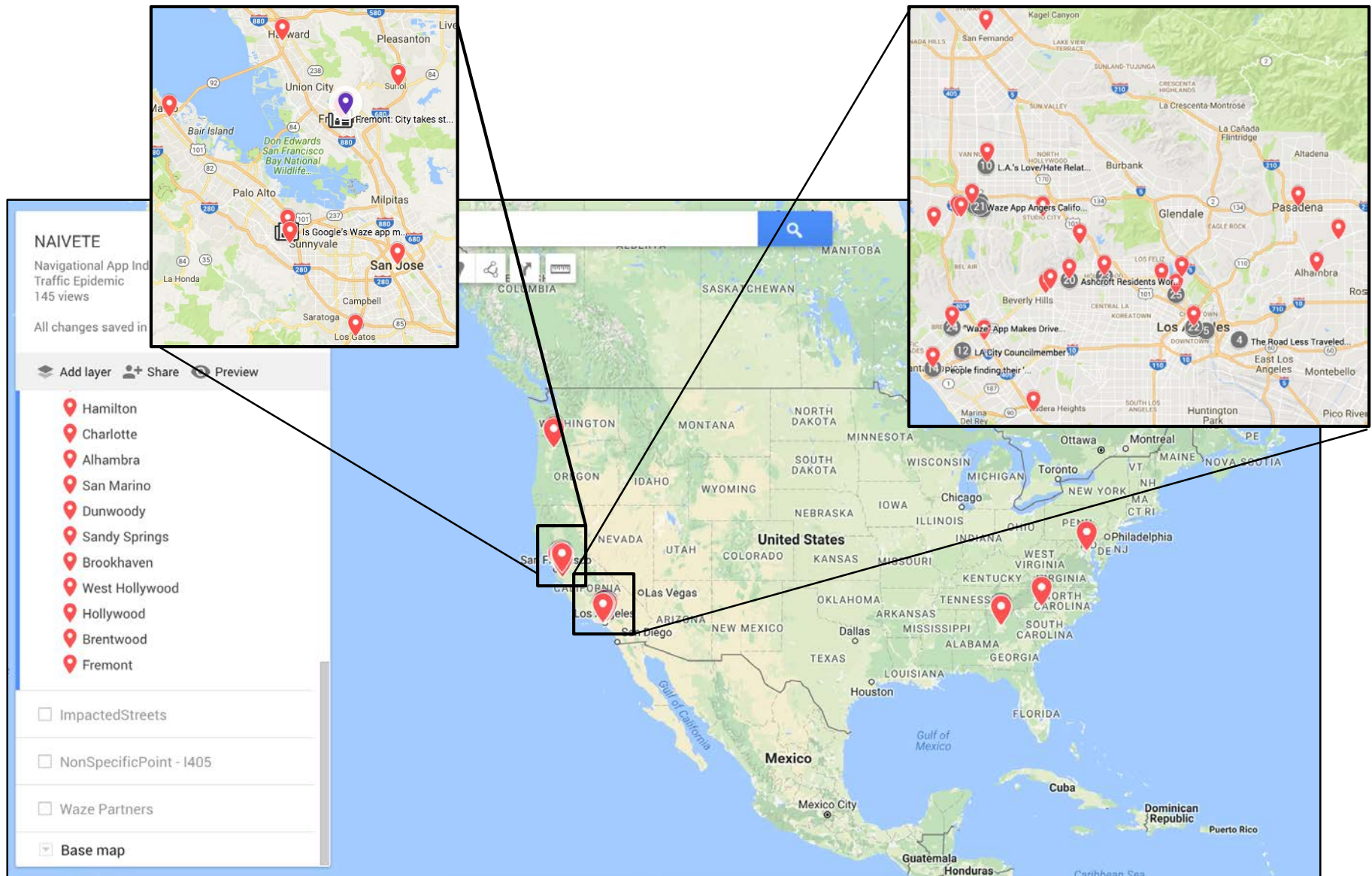
By **GARY RICHARDS** | [grichards@bayareanewsgroup.com](mailto:grichards@bayareanewsgroup.com) |  
PUBLISHED: January 21, 2016 at 6:58 am | UPDATED: August 11, 2016 at 11:04 pm

I love Waze. Absolutely love it.

It's a great traffic app for alerting drivers to everything from a major crash ahead to a guy fixing a flat on the shoulder to road crews trimming weeds. Just punch a destination into your smartphone and a Siri-like voice tells you how to skirt traffic slowdowns.

But not everyone shares my passion.

# Potential future challenges







# Practical example

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