



# Lowering the barriers to state wide implementation of Integrated Corridor Management

Joe Butler – UC Berkeley PATH  
Friday, March 8<sup>th</sup> – Joint ITE Workshop

March 8<sup>th</sup>, 2019



# Connected Corridors State Wide Program

2

- ❑ **A state wide program focused on:**
  - ❑ Bringing ICM to major corridors in California
  - ❑ Growing Caltrans leadership in corridor based transportation management
  - ❑ Showcasing new technologies and processes
  - ❑ Delivering an ICM implementation on the I-210 in LA
  - ❑ Providing a solution that is affordable, replicable and scalable
  
- ❑ **Lowering the barriers to ICM adoption, operation, and maintenance:**
  - ❑ Funding and Costs
  - ❑ Work force skills
  - ❑ Technical Complexity and Risk



# How will we do this?

3

- ❑ Help with access to and management of funding
- ❑ Provide system engineering documents and process templates
- ❑ Provide guidance on workforce skills, training and organization
- ❑ Enable the consulting ecosystem
- ❑ Provide a cloud based reference implementation architecture with data quality
- ❑ Provide a cloud based replicable and scalable intelligent data hub and DSS (Decision Support System)



# How will we do this?

4

- ❑ **Certify ICM and TCS vendors by enabling plug in play data exchange interfaces**
- ❑ **Ensure Caltrans is actively leading this effort and integrating it with TSM&O**
- ❑ **Prove the viability of our solutions through a pilot on the I-210**
- ❑ **Caltrans and PATH freely sharing our work products through downloadable documents, software and training**



# Funding

5

## □ State

- ▣ Worked with legislature to ease approval of “Congested Corridors”
- ▣ Working with legislature to define standards for approval
- ▣ Broadening the SHOPP program

## □ Regional

- ▣ Caltrans, through its work with LA Metro, has established a Caltrans approved method for managing regional funds as part of an ICM

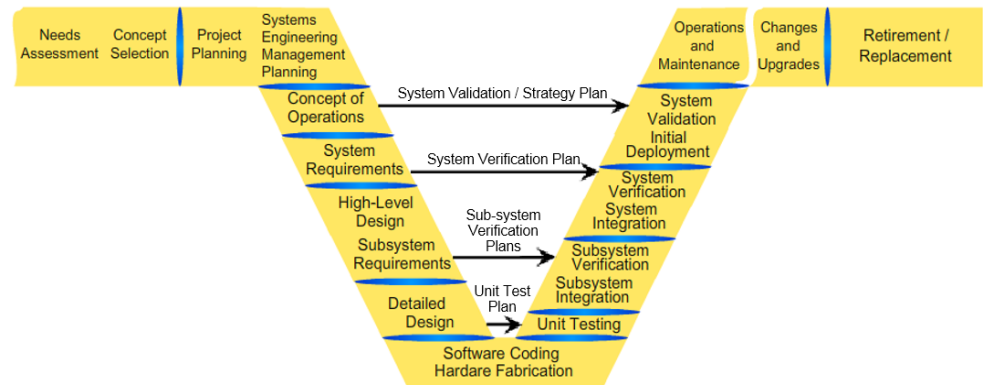
## □ Examples of applications for SHOPP and regional funding



# Templates, standards, and processes

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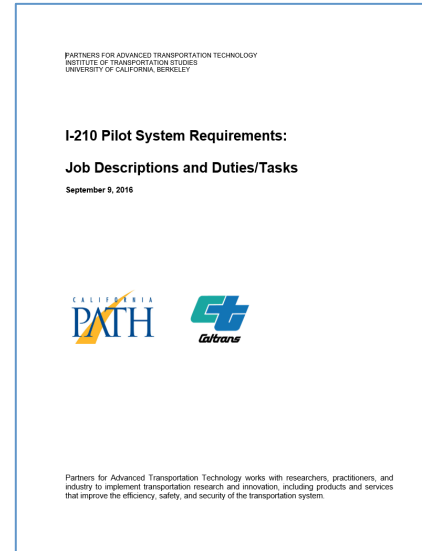
- ❑ **High quality system engineering documents**
- ❑ **These include technical, human and organizational requirements**
- ❑ **Examples of MOUs and charters**
- ❑ **Data Quality Standards**
- ❑ **Model Calibration guidance**
- ❑ **Organized for tailoring by each ICM effort**



# Workforce skills, training and organization

7

- ❑ **KSA (Knowledge, Skills and Abilities) developed by Kimley Horn**
- ❑ **Organizational structures developed by SMG**
- ❑ **ICM Duties and Tasks (Human Requirements) developed by PATH**

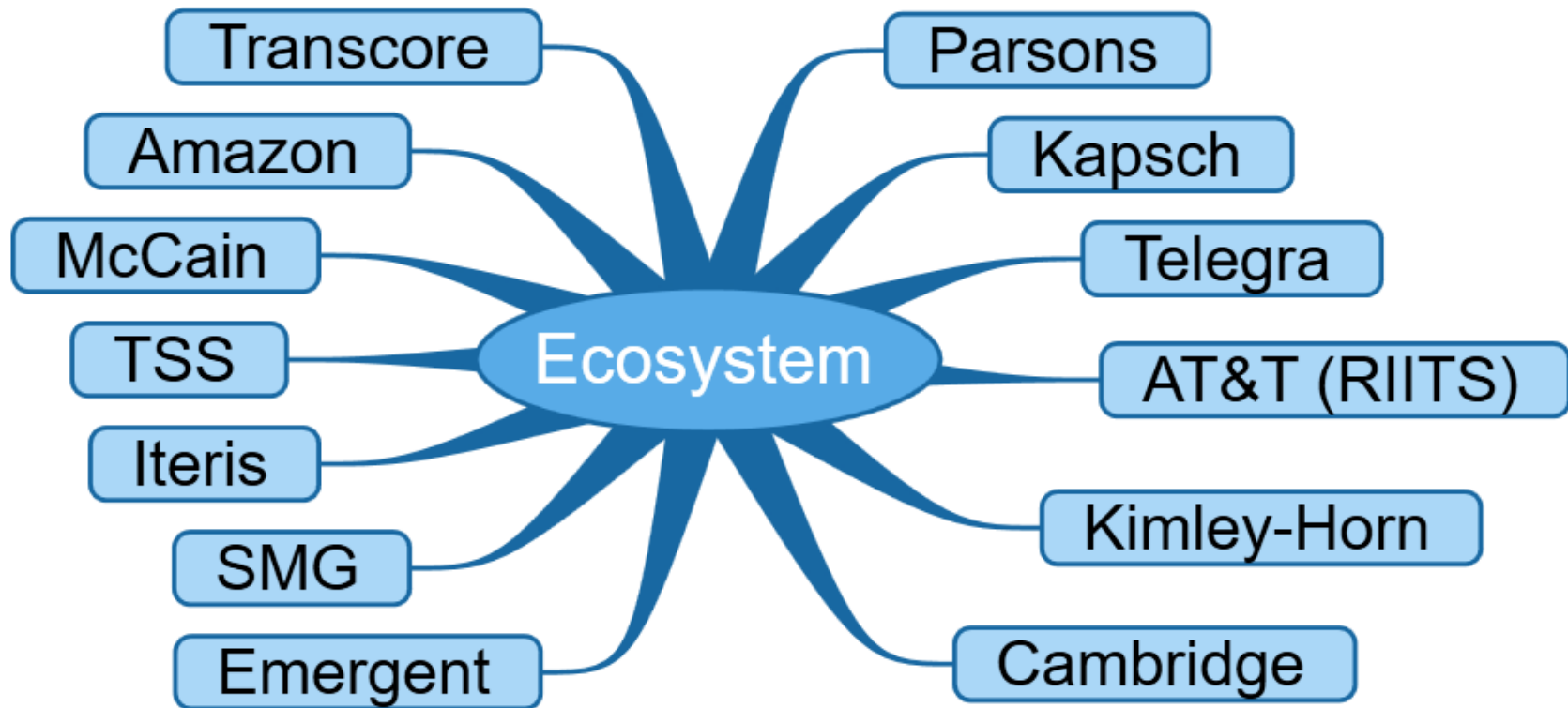


- Corridor Champions
- Corridor Manager
- Corridor Technical Manager
- Corridor Data Analyst
- Traffic Engineers
- Data Analysts
- Software Engineers
- Electrical Engineers
- Database Administrators
- Stakeholders
- Maintenance Staff
- Information Technology Support
- Information Technology Security
- TMC/TCS Operators
- Transit Field Supervisors
- Public Information Officers
- First Responders
- Outreach and Communications Manager

- ❑ **Presenting to AASHTO Center of Excellence on workforce**
- ❑ **Wrote a white paper for the Ca legislature on work force skills required for TSM&O**

# Industry and Consulting Eco System

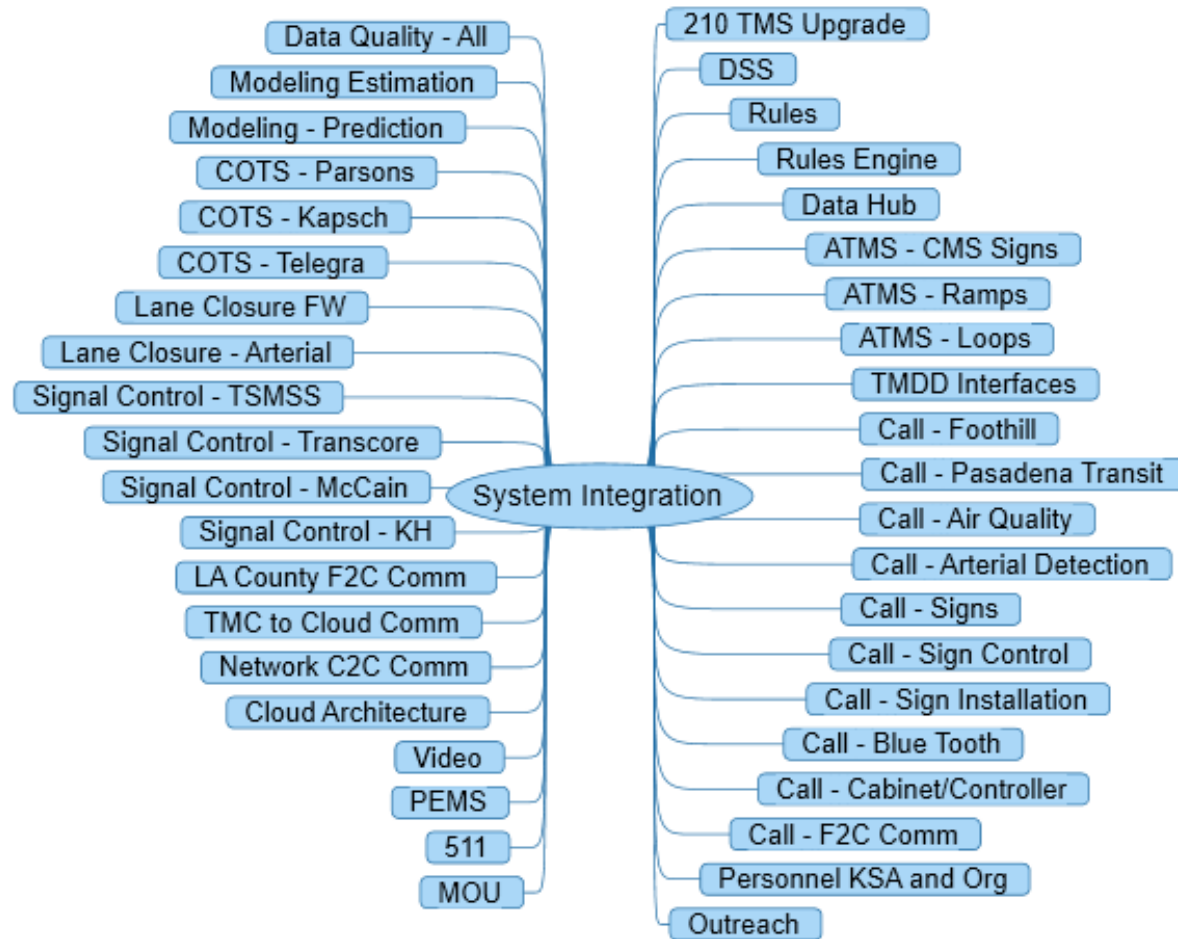
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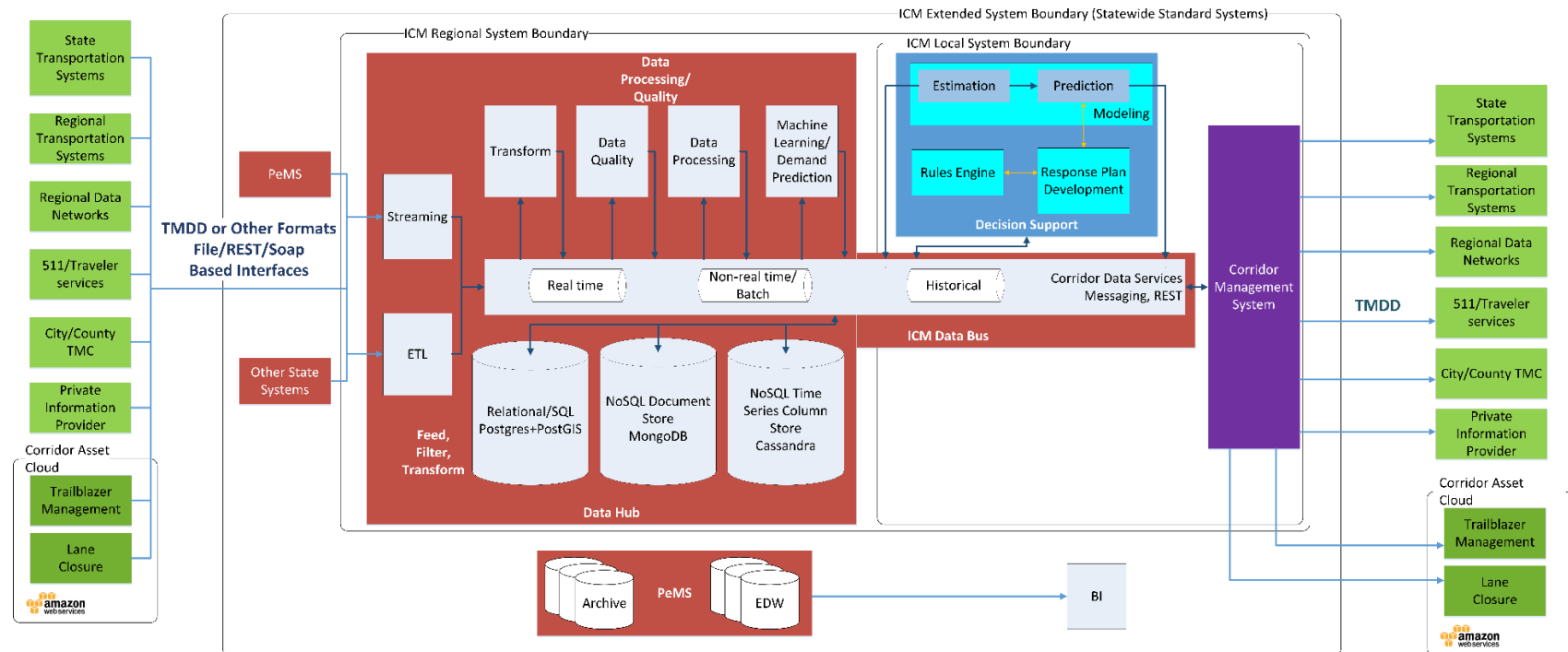
# ICM Integration – Subsystems

9



# Reference Implementation Architecture

10



# ICM Vendors – TMDD Standard Interfaces

11

- **The following ICM vendors will be participating in the pilot**
  - ▣ Kapsch – EcoTrafix
  - ▣ Parsons – iNET
  - ▣ Telegra – topXview
- **Each of these vendors will provide software with interfaces built to permit exchange of data through CC defined TMDD standards**

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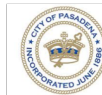


# TCS Vendors – TMDD Interfaces

12

- ❑ **The following TCS vendors will participating in the pilot**
  - ❑ Kimley-Horn – KITS
  - ❑ McCain – Transparency
  - ❑ TransCore – TransSuite
- ❑ **Each is developing TMDD data exchange interfaces defined as part of the CC standards**
- ❑ **There will also be a sign vendor (not yet selected) with data exchange**

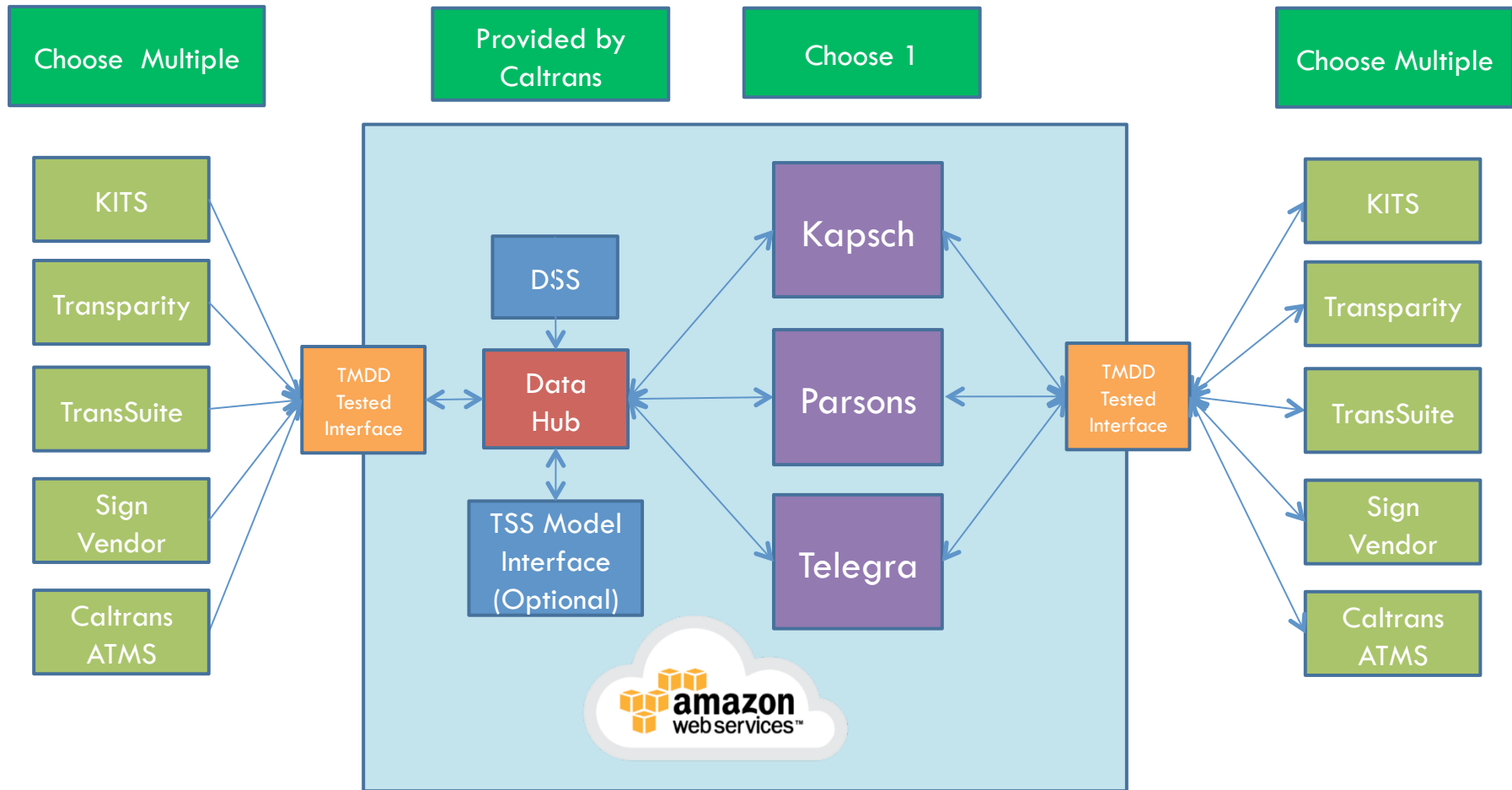
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# Mix and Match

## Standardized, tested Interfaces

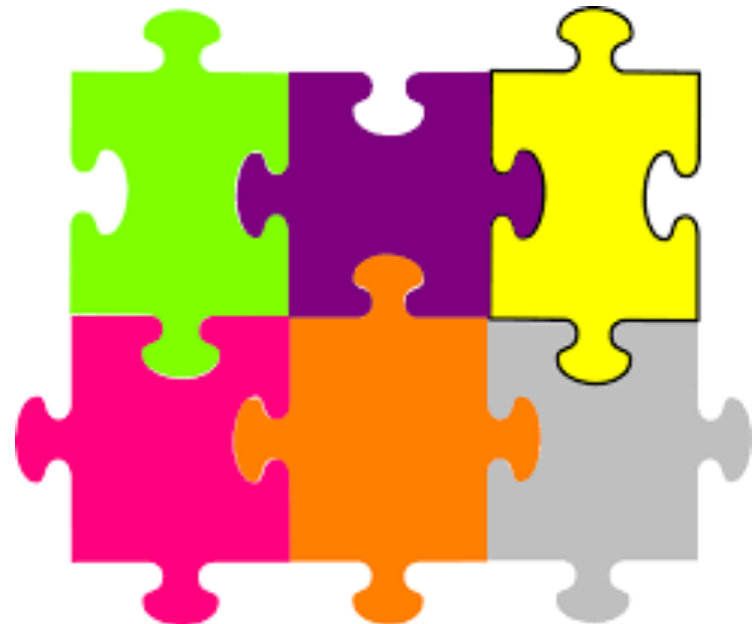
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# Other software updates and interfaces

14

- **PEMS will be updated to permit simpler integration into new corridors based on the CC architecture**
- **We are also defining interfaces for:**
  - ▣ Transit
  - ▣ 511
  - ▣ Air Quality
  - ▣ Travel Time



# Caltrans and the PATH Websites

15

## □ Website on

- [connected-corridors.Berkeley.edu](http://connected-corridors.Berkeley.edu)
- [www.dot.ca.gov](http://www.dot.ca.gov)

## □ Please contact

- Caltrans HQ – Nick Compin
- Caltrans D7 – Allen Chen
- Metro – Steve Gota
- PATH – Joe Butler



# Thank You

