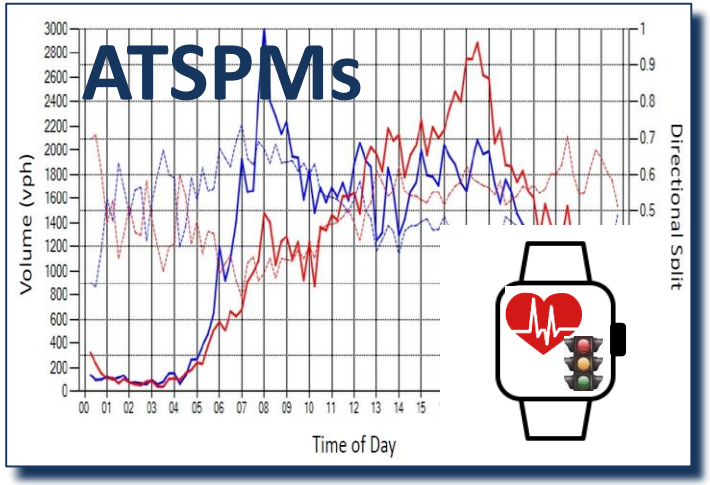
Innovative Deployments to Enhance Arterials (IDEA) Grant Program



Regional Workshops:

- September 7 (1pm - 3pm) – Contra Costa Transportation Authority (CCTA), Walnut Creek (Focus: Category 2 Projects)
- September 12 (1pm - 3pm) – Valley Transportation Authority (VTA), San Jose (Focus: Category 2 Projects)

Meeting Agenda

1. **Introductions**
2. **Innovative Deployments to Enhance Arterials (IDEA) Overview**
   a. Category 1: Mature, Commercially-available Advanced Technologies
   b. Category 2: Connected and Autonomous Vehicle Technologies
3. **Program Guidelines**
   a. Eligible Projects
   b. Funding / Match Requirements
   c. Working with Private Sector Partners
   d. Application Requirements
   e. Evaluation Criteria
4. **Example Projects**
5. **Schedule and Next Regional Workshop**
6. **Discussion Period**

IDEA Grant Program Overview

What is the IDEA Grant Program?

An old grant program combined with a new grant program

Program Goal

To support cities, counties and transit agencies in the deployment of advanced technologies along arterials to enhance mobility, sustainability and safety across all modes

Eligible Projects

- Category 1 (the "Old"):
  - ✓ Formerly referred to as the Next Generation Arterial Operations Program (NGAOP)
  - ✓ Deployment of mature, commercially-available advanced technologies

- Category 2 (the "New"):
  - ✓ Deployment of new technologies
  - ✓ Focus on Connected/Automated Vehicle technologies
  - ✓ Includes potential projects with private partner participation

Total Grant Funding Available

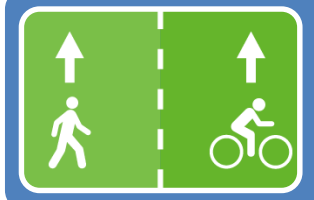
- $13 million

Program Guidelines

Eligible Projects: Category 1

Mature, Commercially-available Advanced Technologies

Signal System Improvements
- Automated Traffic Signal Performance Measures (ATSPM)
- Adaptive Signal Systems



Bicycle or Pedestrian Improvements
- Automated bicycle or pedestrian detection technology for real-time operations
- Bicycle Green Waves

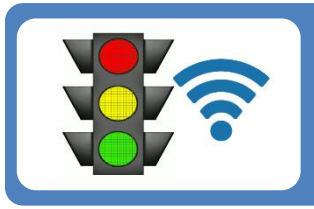
Transit Improvements for Arterials
- Transit Signal Priority (TSP) Expansion
- Queue Jump Lanes

Other Improvements
- Emergency Vehicle Pre-emption (EVP) Expansion
- Dynamic Lane Assignment at Signalized Intersections
- Coordination of Arterial Signals with Ramp Meters

Eligible Projects: Category 2

Connected and Automated Vehicle Technologies

Bicycle or Pedestrian Improvements
- Innovative Signal Priority for Active Travelers
- Vulnerable Road User Protection



Multi-Modal Intelligent Transportation Signal Systems (MMITSS)
- DSRC Transit Signal Priority (TSP)
- DSRC Emergency Vehicle Pre-emption (PREEMPT)
- Intelligent Traffic Signal System (ISIG)

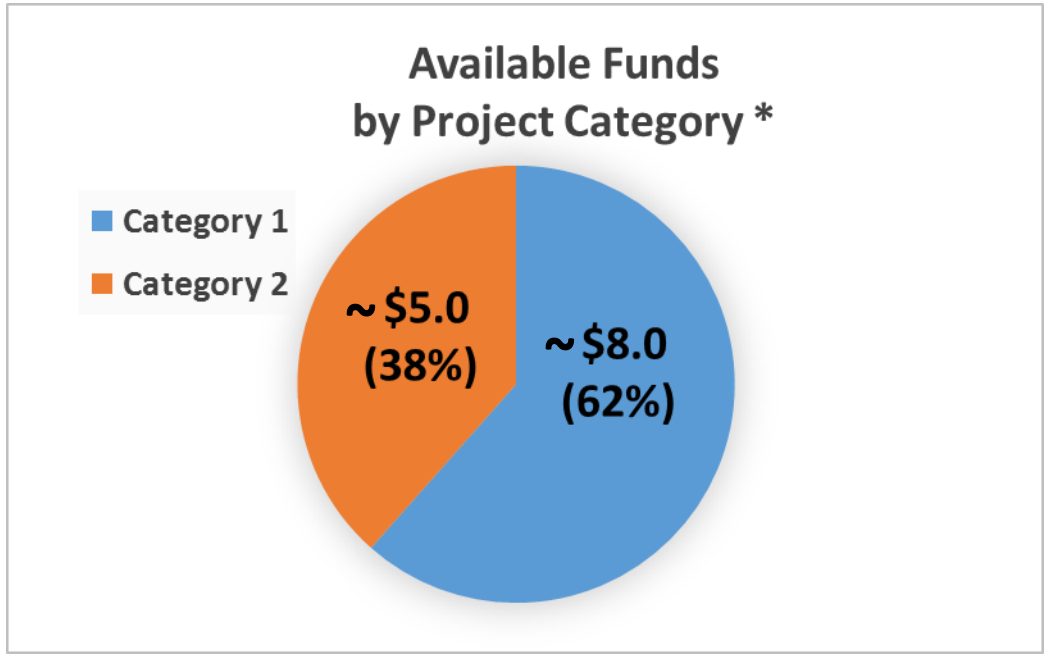
Driving Optimization
- Eco-Approach and Departure and Signalized Intersections

Integrated Dynamic Transit Operations (IDTO)
- Transit Connection Protection (T-Connect)
- Dynamic Transit Operations (T-DISP)

Connected and Automated Vehicles (CAV)
- Piloting AV technology with or without CV applications
- Eco-driving
- Collision avoidance

Funding / Match Requirements

Total Funding Available = $13 million



**Note: Funding distribution for each category will depend on the pool of candidate projects*

- **Minimum Grant Amount:**
  - ✓$250,000
- **Maximum Grant Amount:**
  - ✓$3,000,000
- **Minimum Match Requirements:**
  - ✓Local Cash Match = 15% of total project cost*
  - ✓In-Kind Match = 10% of total project cost
- **Fund Sources:**
  - ✓Surface Transportation Program/ Congestion Mitigation and Air Quality (STP/CMAQ)

** For projects with private sector sole sources, of the total 15% cash match requirement, the private sector partner(s) must provide at least a third of this requirement (i.e., 5% of the total project cost as cash).*

Match Requirements – Detailed Example

Total Project Cost = $1,000,000

	Federal funds (no sole source allowed)	Local funds	Agency staff time, goods, services rendered
Category 1 Project	$750,000	$150,000	$100,000 value
Category 2 Project (with Private Partner)	$750,000	$100,000 (agency) $50,000 (private partner)	$100,000 value (agency and/or private partner)

Working with Private Sector Project Partners (Category 2 only)

MTC supports private participation in Category 2 projects but there are rules and considerations:

- **MTC's (federal) IDEA funds cannot be used in a sole source – a procurement is required**

- **Local funds used to match IDEA can be used for sole sources with a private partner <u>but:</u>**
  - Firms receiving funds through a sole source must collectively contribute 5% of the project cost as cash match.
  - Agencies should carefully consider needs and available solutions before committing to a particular solution
    - The federal systems engineering process will require that the project solutions match documented needs

- **Pledged in-kind contributions from firms can be applied to 10% match requirement**
  - MTC encourages agencies to not overly rely on funds tied to a particular solution, prior to systems engineering

Application Requirements

Part 1: General Information

- Project sponsor
- Project partner(s), if applicable
- Consent

Part 2: Project Category

- Category 1 only
- Category 2 only
- Combination Category 1 and Category 2

Part 3: Brief Project Description

- Project Title
- Brief Description and Purpose
- Project Location

Part 4: Cost and Funding

- Total Project Cost
- Grant Request
- Match: Local cash, in-kind, private sector (if applicable)

Part 5: Narrative/Cost Proposal

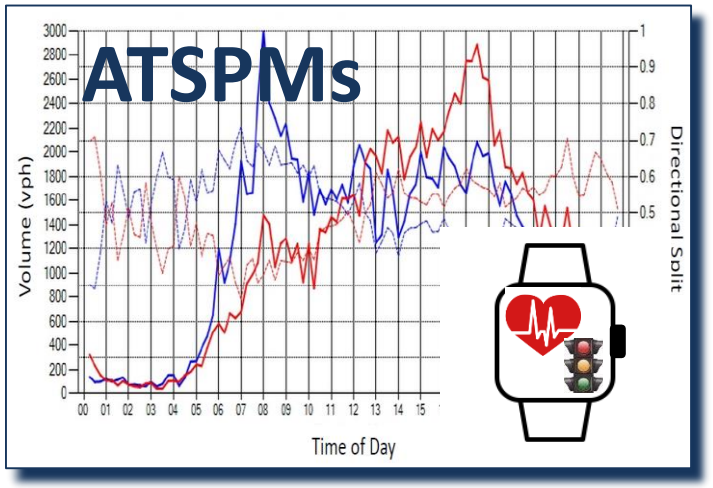
- Detailed project description, justification, roles
- Project Readiness
- Cost Proposal
- Vicinity Map
- Letters of Support
- Other Information

Part 6: Corridor Information

- Signal owner/operator
- Communications, controller, detection information
- Advanced technologies
- Arterial characteristics (e.g., reliever route, Route of Regional Significance, transit route, etc.)
- Volume data (e.g., ADT, peak period, bike/ped, etc.)

Example Projects

Example Project 1: ATSPMs



What are ATSPMs?

- A fitness tracker for traffic signal systems to monitor performance
- A cost-effective way to improve traditional retiming processes by providing continuous performance monitoring capability using high-resolution data

What are the System Requirements?

- Controller with high-resolution data logger (built-in or stand-alone)
- Communications
- Server
- Data analytics software
- Detection (optional)

What Could Grant Funds Cover?

- Consultant technical assistance
- ATSPM hardware and/or software
- Some infrastructure upgrades/repairs

ATSPM Solutions:

- Econolite
- Live Traffic Data
- Miovision
- Reno A&E
- Sensys Networks
- Trafficware
- Utah DOT's open source firmware

Example Project 2: Bicycle Green Wave

What are Bicycle Green Waves?

- Signal timing coordination for bicycle progression
- Implemented in one or both directions along heavily-traveled bike corridors

Who Has Implemented Green Waves?

- San Francisco (Valencia St, Folsom St, 14th St)
- Portland (N. Williams Ave and N. Vancouver Ave)

What are Good Candidates for Green Waves?

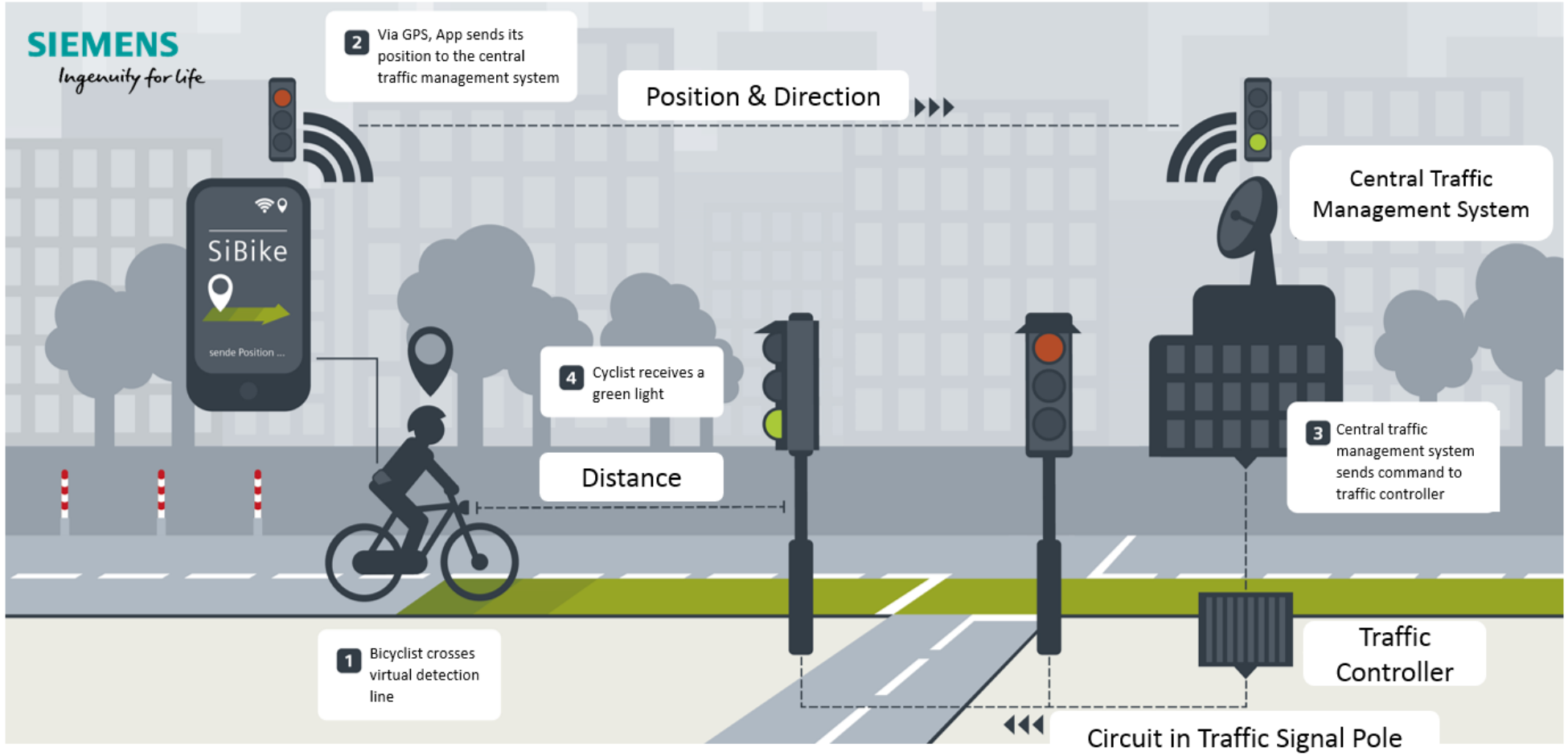
- High bicycle demand
- More than 5 signals
- No existing coordination
- No existing Transit Signal Priority

What Could Grant Funds Cover?

- Consultant technical assistance
- Signage, pavement markings, and/or LED lights, etc.
- Construction

Example Project 3: Bicycle Signal Priority

Smartphone-initiated cyclist signal priority



Source: Siemens

Example Project 4: Eco-Approach and Departure Pilot

What is Eco-Approach and Departure?

- Connected vehicle application that utilizes intersection and signal data to optimize vehicle acceleration/braking for emissions

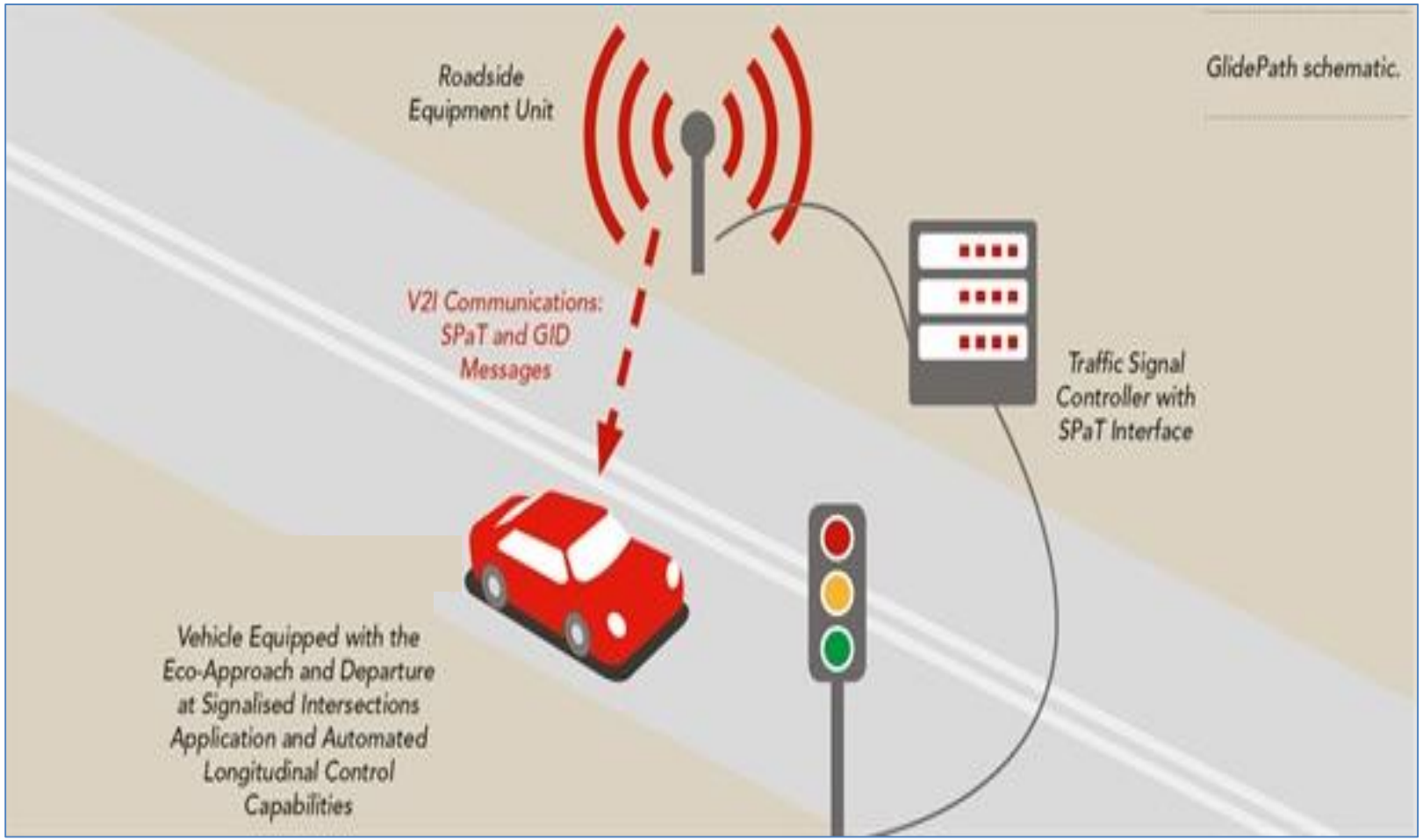
- Automated driving is an optional element

State of Development

- Still in development: simulation tests and testing on a closed track

What Corridors might be Good Candidates for Eco Driving?

- Good detection
- Regular use by fleets (e.g., transit vehicles, city maintenance vehicles, etc.)
- More than 5 signals
- Stop and go traffic but not oversaturated
- Imperfect coordination along corridor
- No active signal priority applications



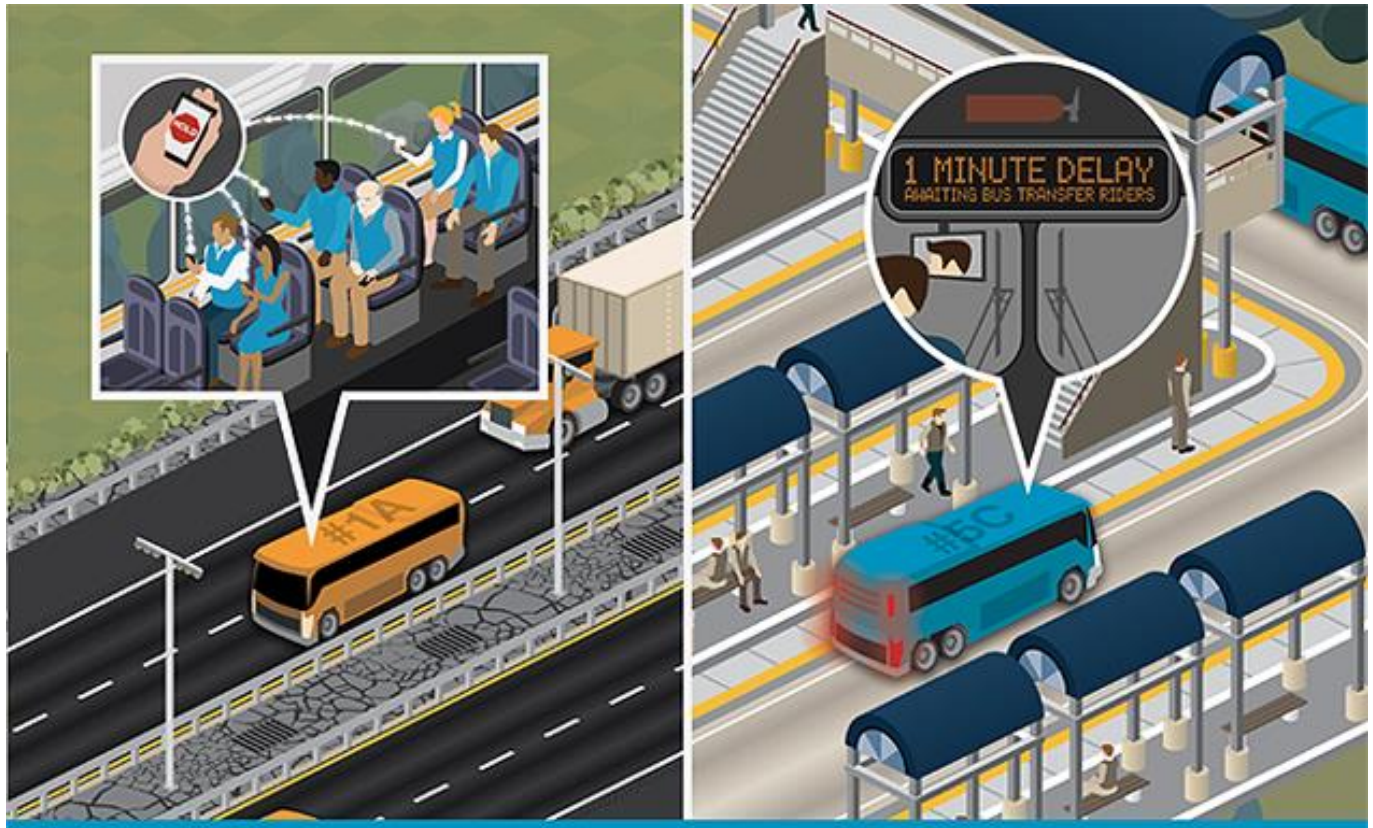
Source: UC Riverside

Intro: Integrated Dynamic Transit Operations

Dynamic Transit Operations (T-DISP)

Dynamic Ridesharing (D-RIDE)

Transit Connection Protection (TCONNECT)



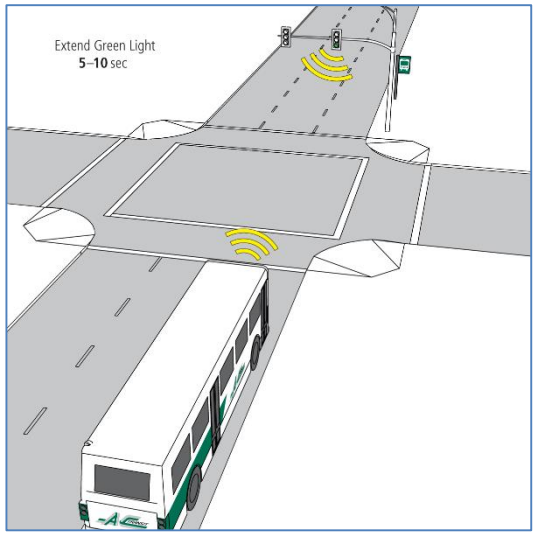
Connection Protection

Gives passengers real-time transit information to more accurately predict whether they will make their next connection. A passenger can use their personal mobile device to initiate a request for a connection to wait. If multiple people on a delayed transit vehicle will miss their next connection, transportation providers can adjust departures to enable the passengers to make their next connection.

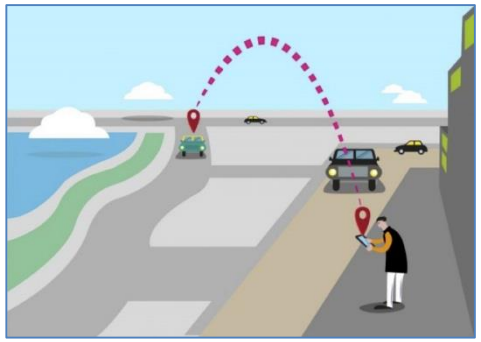
Example Project 5: Integrated Dynamic Transit Operations

- **Rider requests connection protection to destination via interface or smartphone**
- **If desirable, system grants signal priority to transit vehicle to facilitate connection to other transit line**
- **If connection will be missed, system messages driver offering alternative trip options, potentially including:**
  - Real-time carpool options
  - Ride-hailing service
  - Flexible public transit option
  - Private microtransit option
- **HOVs verified by system could receive signal priority**

Source: Moscow Times



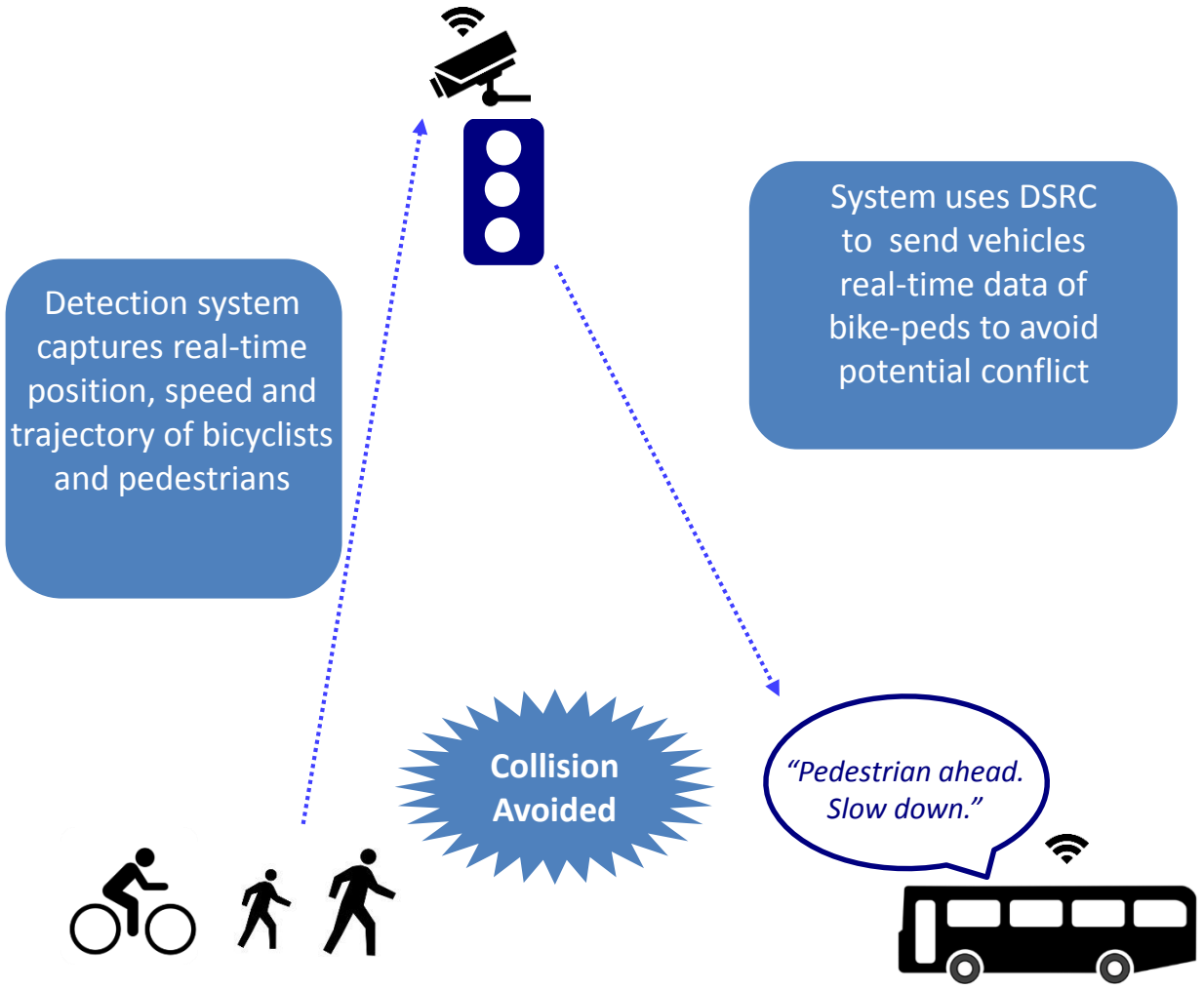
Source: AC Transit



Source: SYB Magazine

Source: Chariot, Facebook

Example Project 6: Vulnerable Road User Collision Warnings



Source: Jacobs Engineering

- **Objective:** Improve pedestrian and bicycle safety in multi-modal corridors
- Smart detection system captures detailed real-time data on pedestrians and bicyclists
- A Personal Safety Message (PSM) is disseminated through DSRC to vehicle system
- System provides warning to driver or automated system to avoid collision
- Deployment could be combined with other safety/mobility applications

Resources

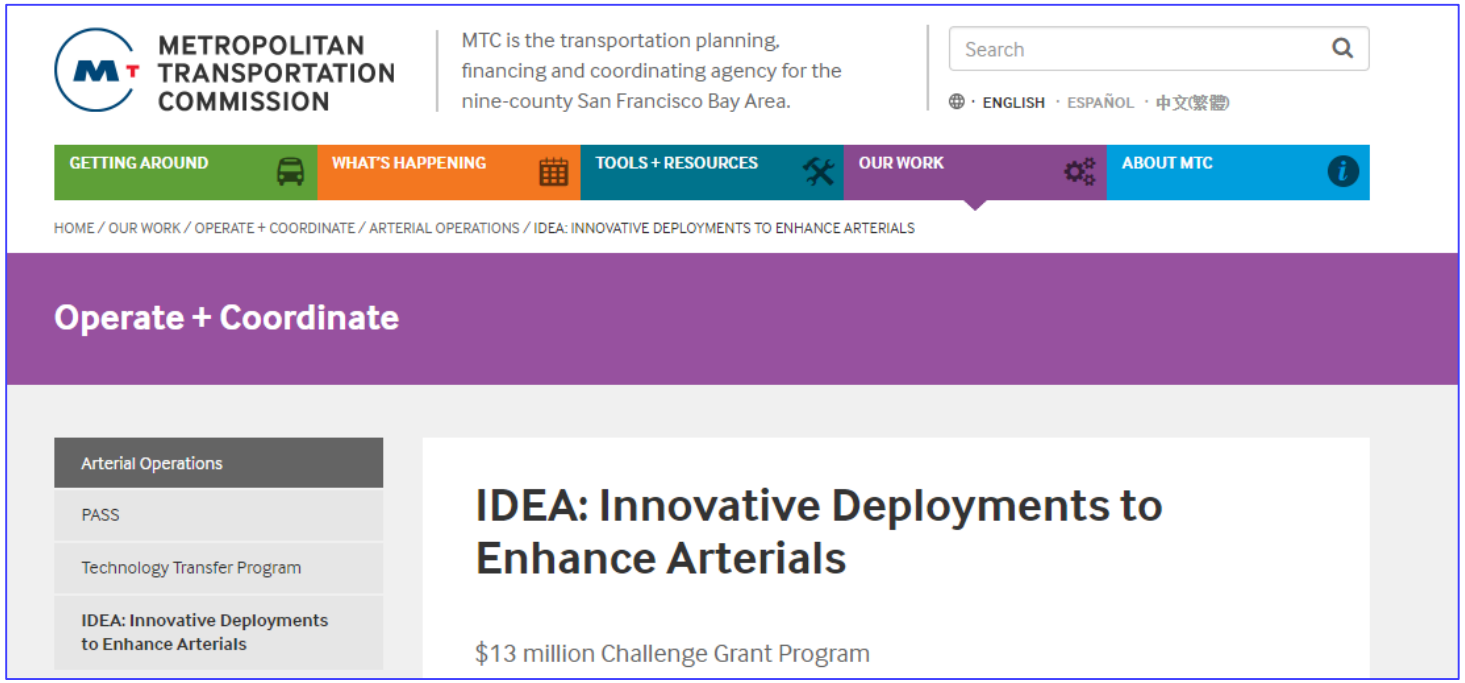
- UC Berkeley's Partners for Advanced Transportation Technology (PATH) has conceived of and/or piloted many connected, automated and arterial ITS applications
  http://www.path.berkeley.edu/

- The Open Source Application Development Portal (OSADP) contains not only the source code for many applications but also related documentation and discussion
  https://itsforge.net/

- The Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT) is designed to serve as a common 'dictionary' for ITS/CV terms and concepts. It incorporates the Connected Vehicle Reference Implementation Architecture (CVRIA)
  http://local.iteris.com/arc-it/index.html | http://local.iteris.com/cvria/

- Information on the costs and benefits of different ITS strategies can be found at
  http://www.itsknowledgeresources.its.dot.gov/

Resources



Questions & Answers from IDEA Workshops #1 through #3

(Note: Some answers contained in this Q&A document may differ slightly from what was stated at the workshops. The answers in this Q&A document supersede those from the workshop.)

http://mtc.ca.gov/our-work/operate-coordinate/arterial-operations/idea-innovative-deployments-enhance-arterials

Schedule

Activity	Date/Time
MTC Issues Call for Projects	July 17, 2017
Workshops # 1-3 for potential applicants	August 21 and August 23, 2017
Workshop #4 – CCTA Boardroom	September 7, 2017 1:00 PM – 3:00PM
Workshop #5 – VTA Auditorium, Building A 3331 N. First St San Jose	September 12, 2017 1:00 PM- 3:00PM

For applications that include only Category 1 Projects:	
Applications Due	September 29, 2017 at 4:00pm
Evaluation panel completes review of applications and recommends grant awards	October 2017 (tentative)
Committee/Commission Approvals of Grant Awards	November 2017 (tentative)

For all other applications (Category 2-only or Combination Category 1 and Category 2)	
Applications Due	November 17, 2017 at 4:00pm
Evaluation Committee completes review of applications and recommends grant awards	January 2018 (tentative)
Committee/Commission Approval of Grant Awards	February 2018 (tentative)

Discussion Period

Contact Information

General Questions about Program Requirements and Eligibility:

Linda Lee, Arterial Operations Program | llee@mtc.ca.gov, 415.778.5225

Specific Questions about Eligible Category 1 Projects:

Linda Lee, Arterial Operations Program | llee@mtc.ca.gov, 415.778.5225

Specific Questions about Eligible Category 2 Projects:

Rob Rich, Connected and Automated Vehicles Program | rrich@mtc.ca.gov, 415.778.6621