

SMART SIGNALS

Safety and Mobility on ARTerials

Contra Costa Transportation Authority Board

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John Hoang
Director, Planning



CONTRA COSTA
transportation
authority

SMART SIGNALS Goals



**IMPROVE SAFETY,
MINIMIZE CRASHES,
ELIMINATE
INJURIES + FATALITIES,
VISION ZERO**



**OPTIMIZE MOBILITY,
RELIEVE CONGESTION +
MANAGE EVACUATION
ROUTES**



**ADVANCE THE
SMART COUNTY
SYSTEM /
PREPARE ARTERIALS
FOR THE FUTURE**



Key Benefits

- Supports multi-modal transportation for all users
- Increases safety
- Increases transit reliability
- Improves emergency vehicle response time
- Relieves congestion

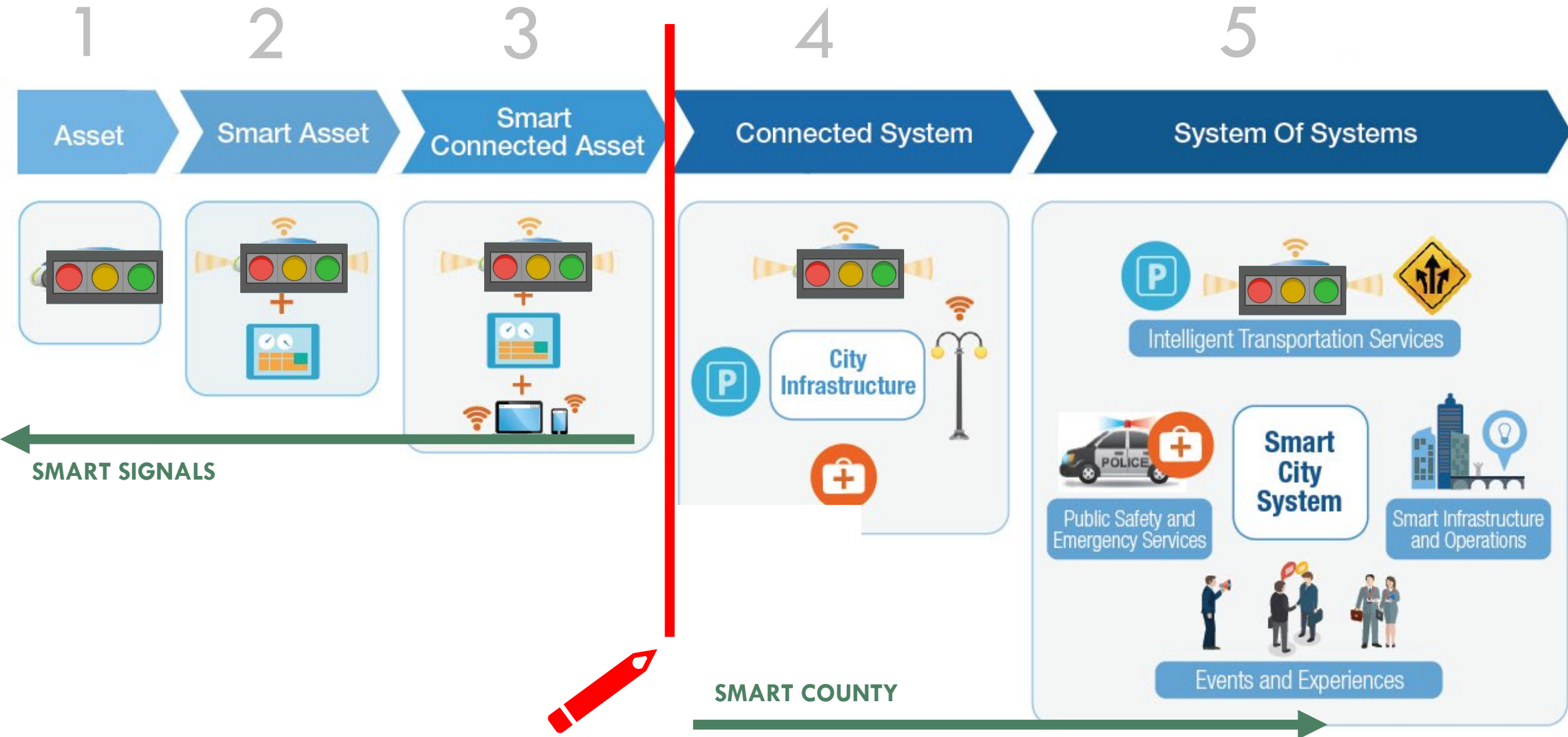


How does the **SMART Signal System** work?



- Pedestrian and bicycle detection system supports proactive identification and prevention of “near miss” situations
- Signal Synchronization controls and smooths traffic flow
- Signal Control and Prioritization (SCP) to
 - Reduce emergency vehicle response time
 - Increase transit reliability
 - Effectively manage arterial traffic during day-to day operations, major incidents on freeway, evacuations, or major events
- Real-time monitoring of traffic conditions allows CCTA/cities/Caltrans access to monitor all videos and signals to optimize operations
- Connected infrastructure to support deployment of connected and autonomous vehicles (V2X, V2I, V2P)

Five Steps to a SMART City System



SMART Signal Improvements



SMART MOBILITY/V2X/CAV
**BENEFIT: Signal Control And
Prioritization (TSP/EVP)**



VULNERABLE ROAD USER PROTECTION
BENEFIT: Pedestrian Safety and Health

VIDEO / DATA
ANALYTICS

**BENEFIT: Safety
Monitoring
and Alerts**



VIDEO DETECTION

**BENEFIT: Unobtrusive Monitoring
and Managing of the Road Network**



FIBER OPTIC/CELLULAR
COMMUNICATION

**BENEFIT: Better Capacity and
Reliability**

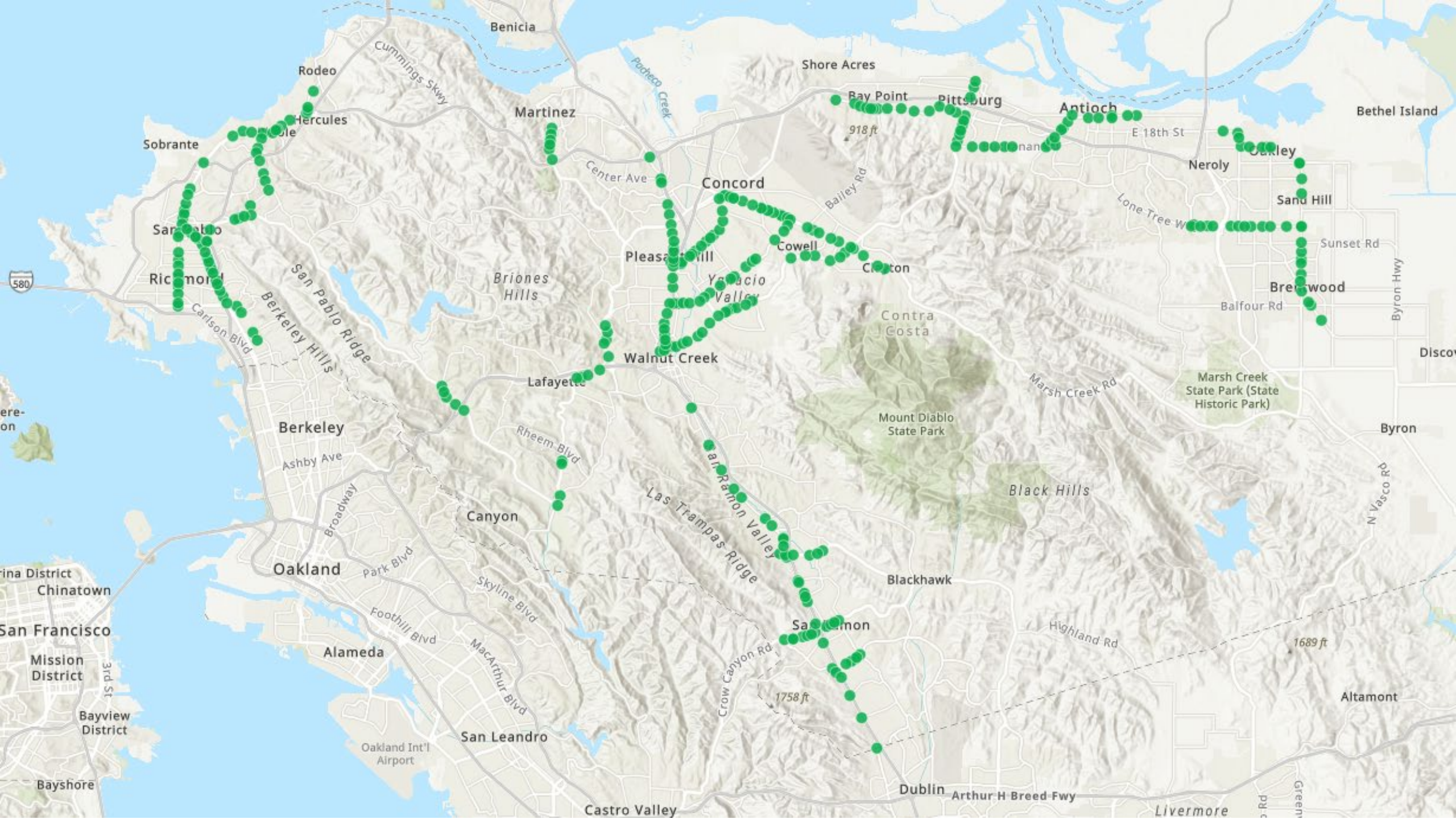
UPGRADE TO ADVANCED
CONTROLLERS & ATC CABINETS
BENEFIT: ADVANCED MOBILITY

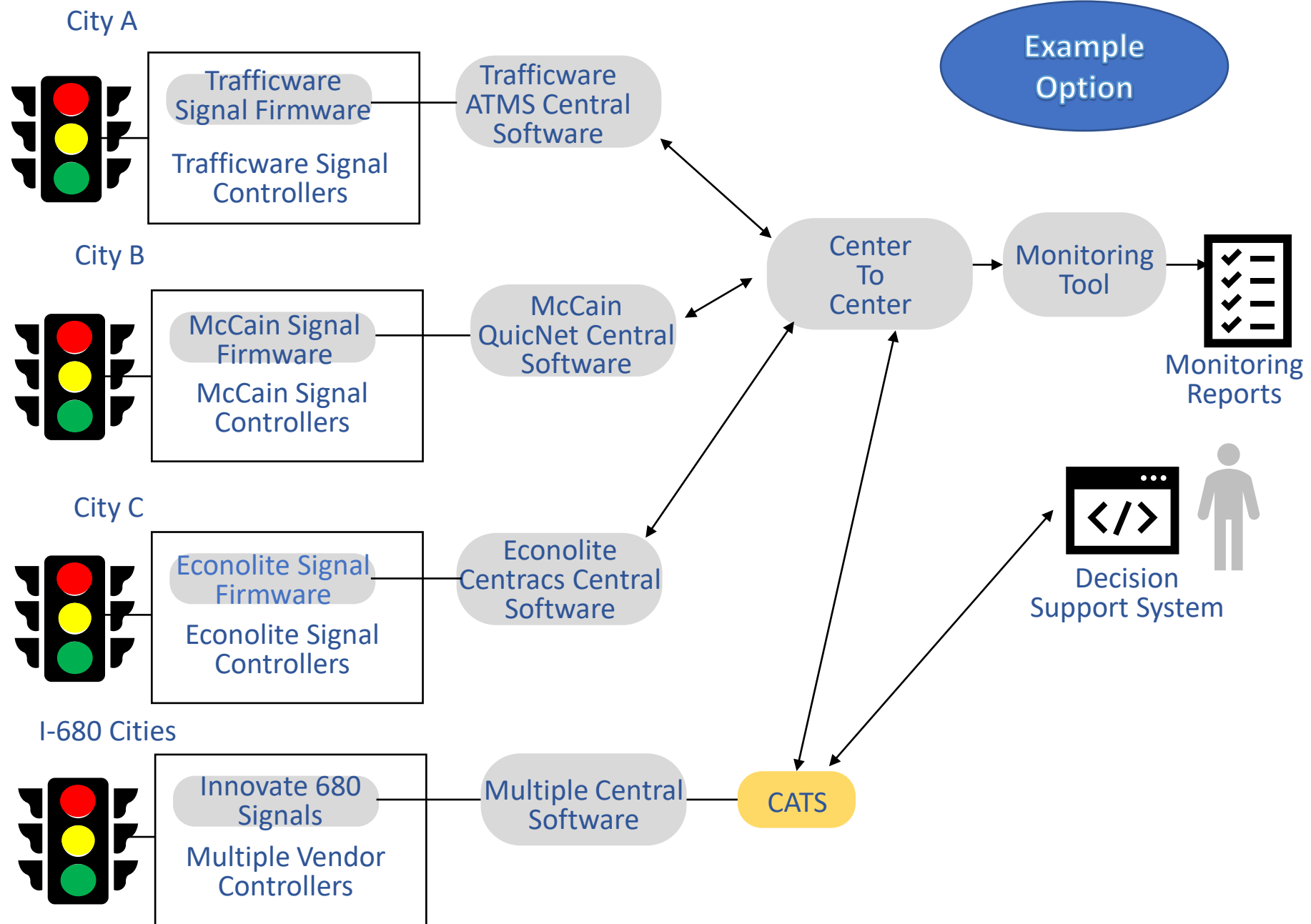


SMART Signal - Intersection Prioritizing

- ▶ On regional routes of significance
- ▶ In Priority Development Area (PDA) or access to PDA + Downtown and Commercial Districts
- ▶ Presence of transit routes and connection to BART
- ▶ Presence of bicycle lanes
- ▶ Bicycle and pedestrian collisions
- ▶ Connection to Shared Mobility Hubs
- ▶ Traffic volume







FUNDING PLAN

Project Phases	Total Cost	Secured Funds	
		Amount	Fund Sources
Planning/ Conceptual	\$ 250,000	\$ 250,000	<i>Measure J</i>
Environmental Studies (PA&ED)	\$ 440,280	\$ 440,280	<i>Measure J</i>
Design Engineering (PS&E)	\$ 1,651,050	\$ 189,375	<i>City Local Match</i>
		\$ 1,461,675	<i>OBAG</i>
Right-of-way Construction	\$ 28,433,092	\$ 3,339,767	<i>City Local Match</i>
		\$ 25,093,325	<i>OBAG 3</i>
Total	\$ 30,774,422	\$ 30,774,422	

PROJECT TEAM

Design & Management Team

Internal CCTA staff, AMG, consultants/contractors performing day-to-day activities.

(bi-monthly meetings)

Core Advisory Committee (CAG)

Technical Staff from CCTA , local cities, Contra Costa County and transit agencies

(Monthly meetings a week prior to Stakeholder meetings)

Stakeholders

Traffic engineer and public work staff from all agencies, including Cities, County, CHP, and Transit agencies.

(Monthly meetings a week after CAG meetings)

PROJECT SCHEDULE

Systems Engineering

← SPRING 2023 - SPRING 2024

Plan, Specifications, & Estimate

← SPRING 2024 - FALL 2025

Construction

← FALL 2025 – FALL 2026

Systems Integration

← FALL 2026 – FALL 2027

Project Close Out

← FALL 2028

CCTA 4.0

Innovate 680

ADVANCE TECHNOLOGY

- Part-time Transit Lanes
- ELCompletion
- Shared Mobility Hubs
- MaaS
- ADS
- SAV
- CARM
- Innovation

2021 – Innovate 680 Completed Concept of Operations

CATS

Module within Innovate 680 decision support system to manage arterials.

2023 – CATS Con Ops Completion

digitalMOTIONS

Digital Management of Traffic Infrastructure Optimizing Network Systems

Upgrades infrastructure for future proof of traffic signal system (controllers, video detection, communication, etc.)

IDEA

Implements a cloud-based TSP demonstration.

2023 - Deployment

SMART Signals

Initial funded phase of Smart Signals. 328 Signals

2024 – Con Ops & System Engineering
2025 – Design
2027 – Construction & Deployment

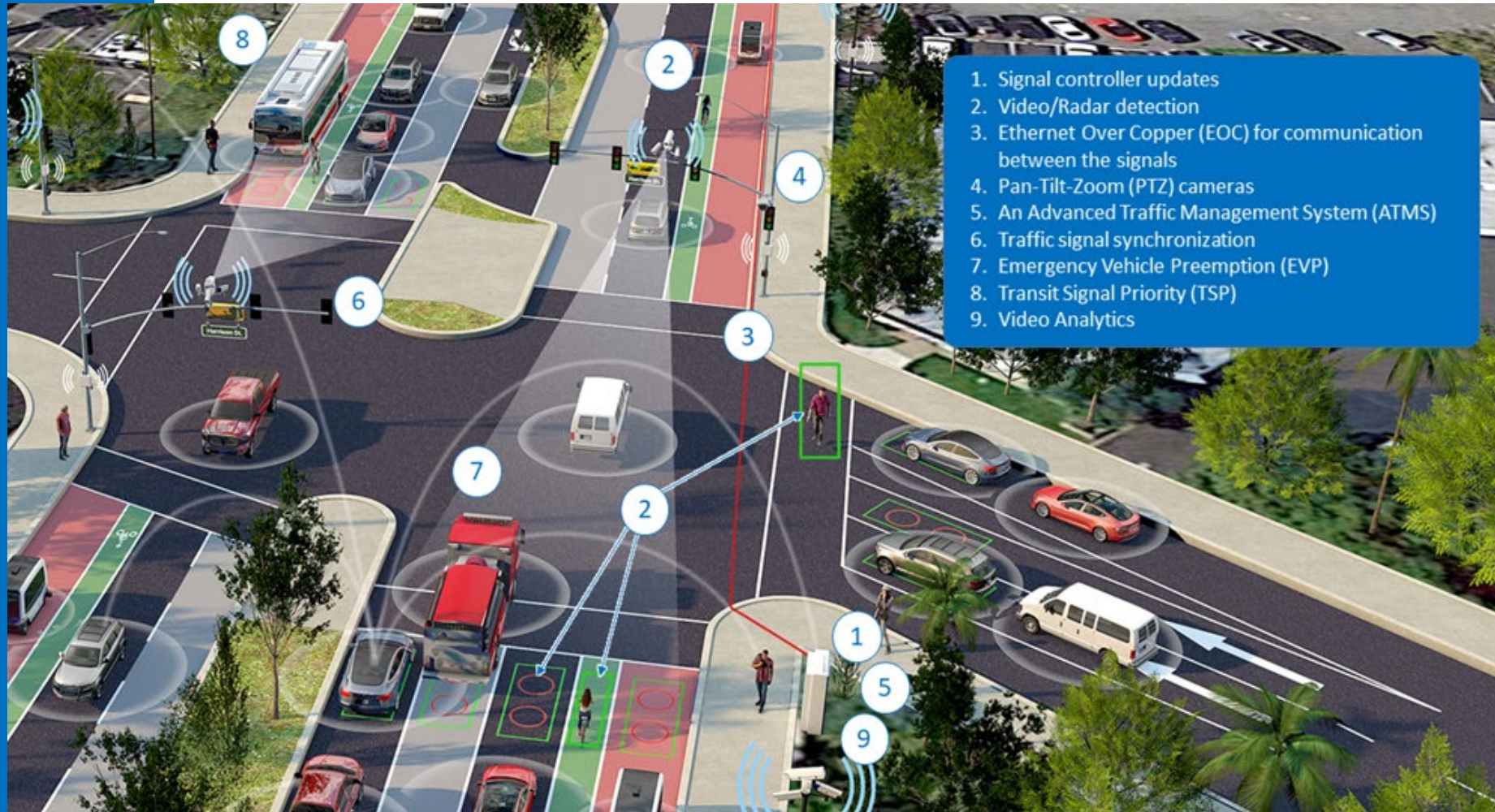
Earmarks

(Concord, Danville, Lamorinda)
Subset of Smart Signals, implemented in advance of full countywide system.

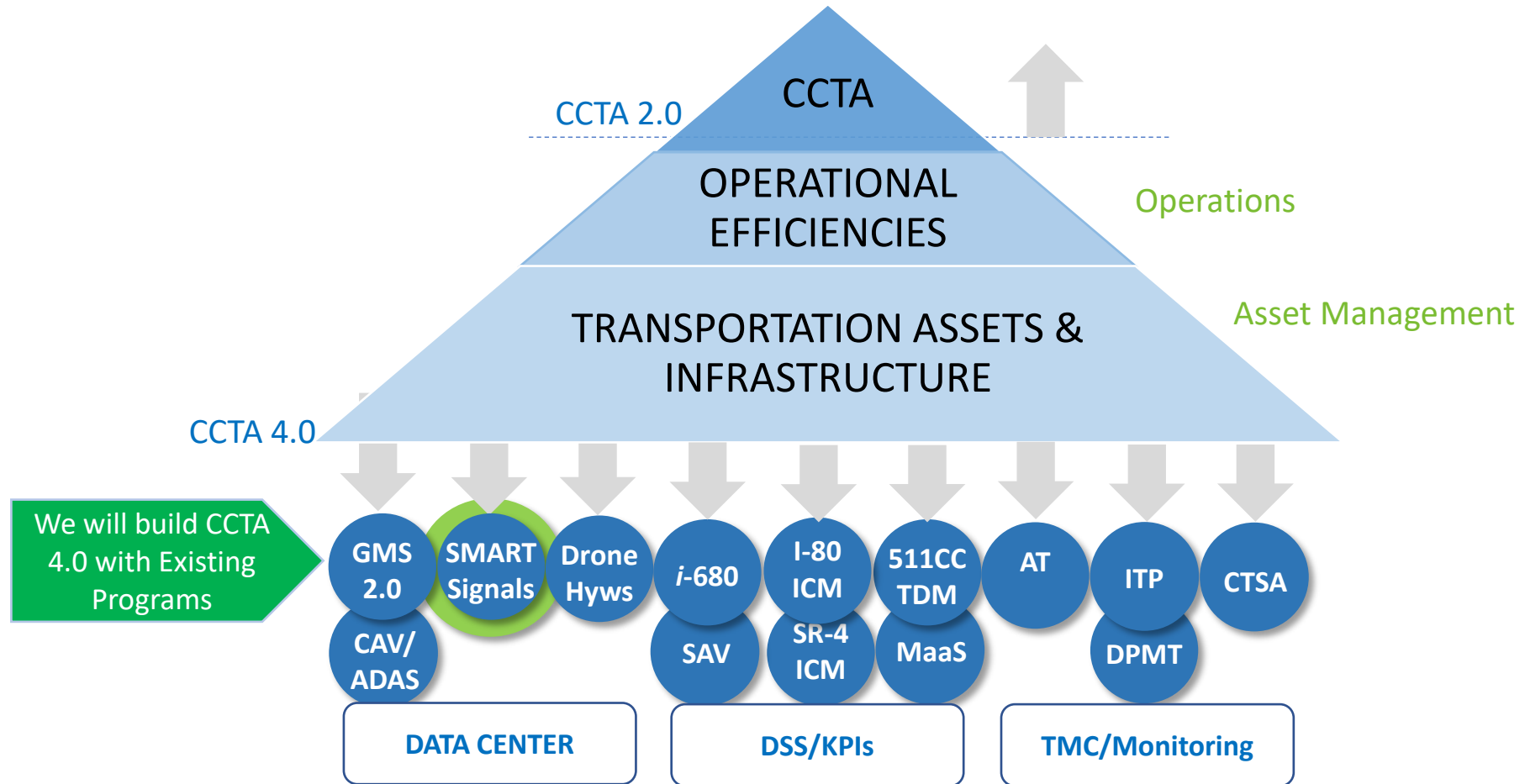
2024 – Design
2026 - Construction

digitalMOTIONS

Digital Management of
Traffic Infrastructure
Optimization Network
Systems Demonstration



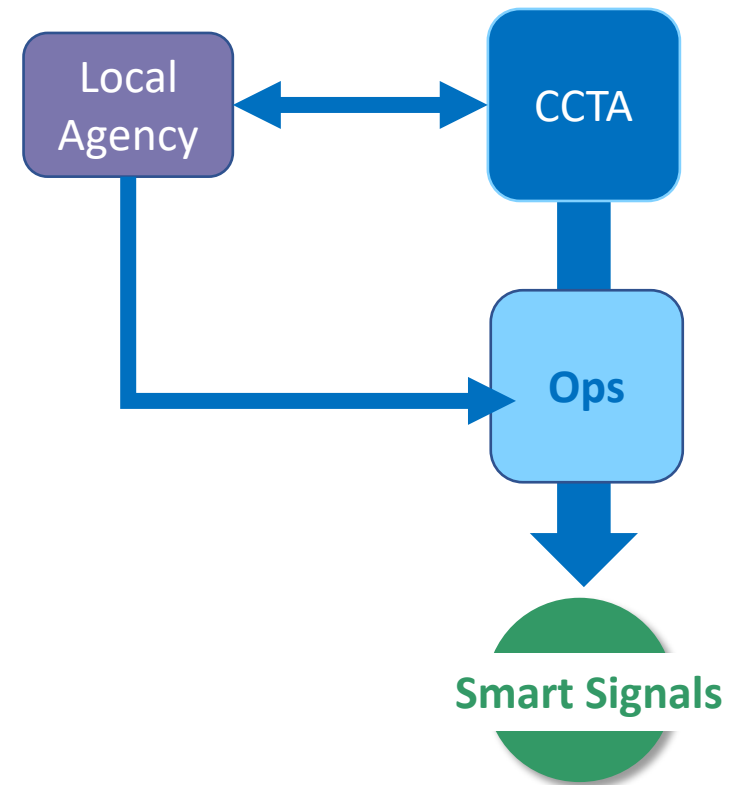
CCTA 4.0 Concept



CCTA 4.0 Concept

Use Case Connected Signal System

- Managing Entity: CCTA
- Organizational Structure: Operations



Goals and Objectives

- Continue to build on past practice and success with new initiatives/programs and new organizational structure.
- Pursue operational efficiency for County transportation infrastructure with KPIs to achieve mode shift.
- Develop new entities to support new vision and adapt to changing landscape.
- Attract and pursue new funding streams leveraging private sector funding and investments.





Questions