



*Public Works*  
LOS ANGELES COUNTY

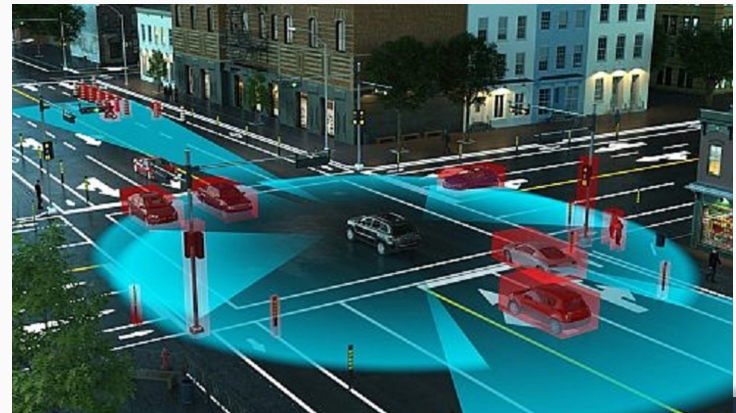
# Connected Vehicle Pilot Project El Camino Village

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Traffic Safety and Mobility Division

SBCCOG IWG Meeting  
April 13, 2022

# Introduction

- **What is ITS anyway?**
- **What are connected vehicles?**
- **Overview of the Pilot Project**
- **Kapsch Connected Vehicle System and Video Demonstration of the system in action**



# What is ITS?

My Definition: Transportation systems that have the ability to adapt in order to increase capacity and/or enhance safety of the System.

According to the US Department of Transportation:

“Intelligent Transportation Systems (ITS) technologies advance transportation safety and mobility and enhance American productivity by integrating advanced communications technologies into transportation infrastructure and into vehicles.”

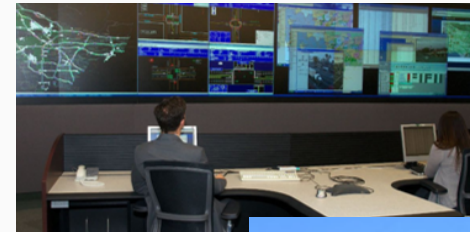
Key component to the above explanation is communications.

- The system must “know” and communicate when it needs to adapt

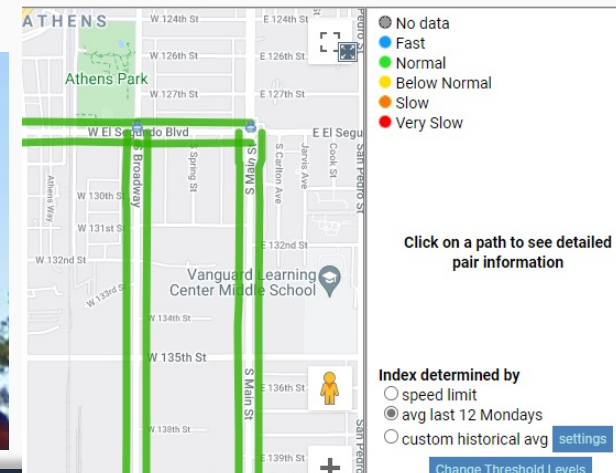
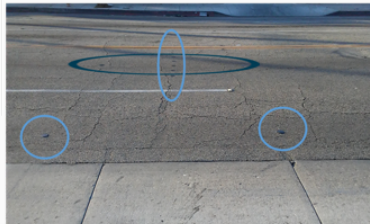
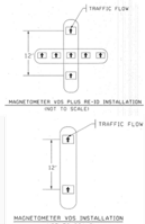
# ITS Examples Currently in Use

## Examples currently in use by LA County DPW

- Traffic Management Center in Alhambra
- Changeable Message Signs
- 42 CCTV Cameras



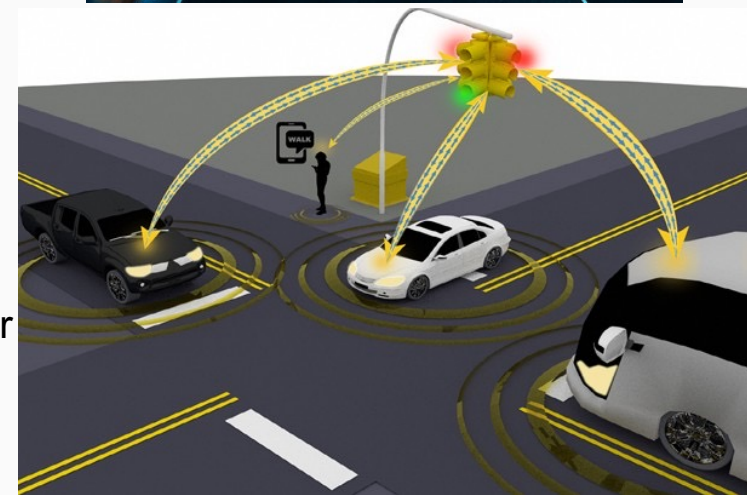
- Traffic Signal Performance Measurement Devices
  - Bluetooth readers
  - Wireless Magnetometers
  - Radar sensors
  - Video detection traffic counters



# What are Connected Vehicles?

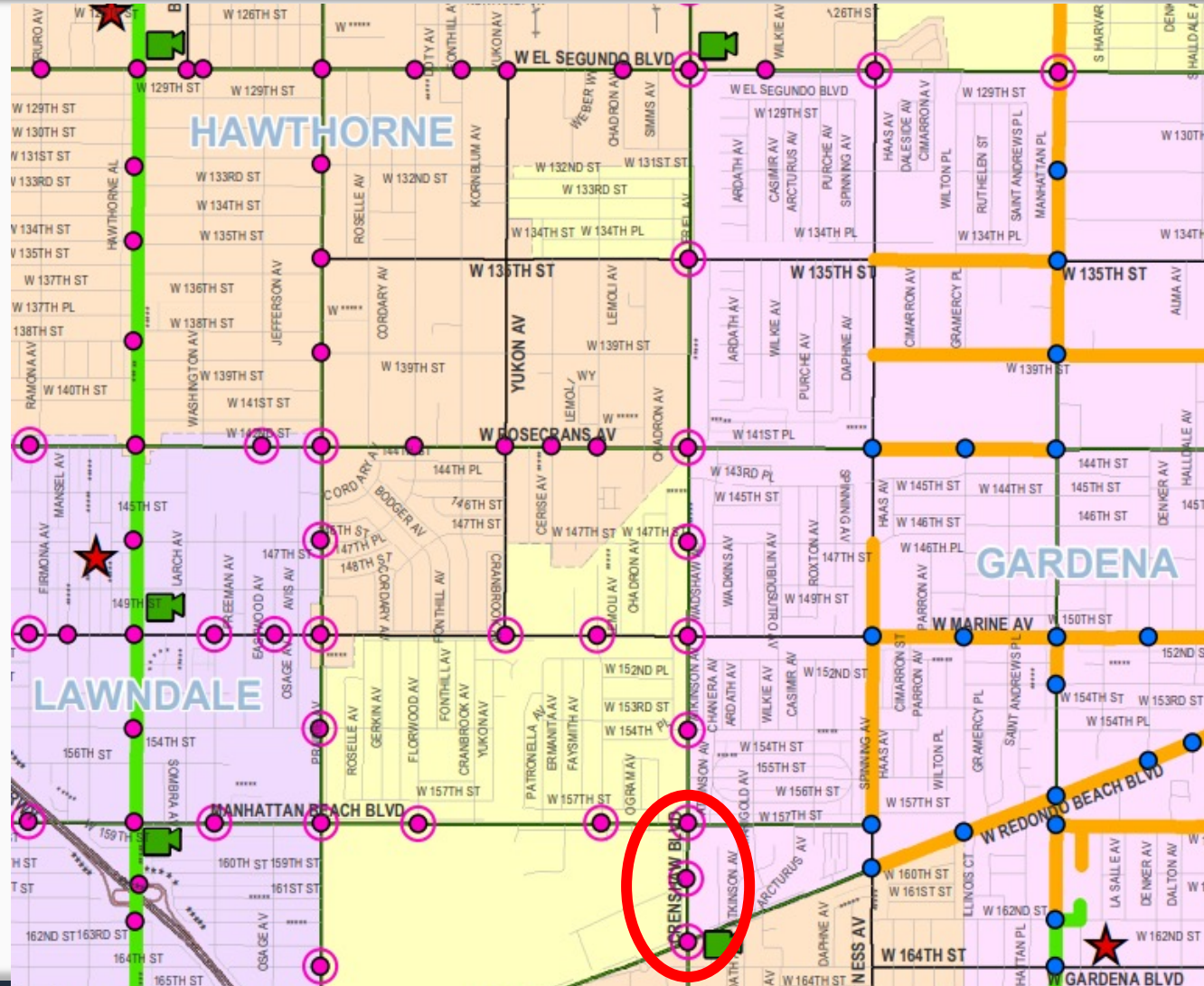
## Different Types of CV systems

- V2I (Our Pilot): Vehicle to Infrastructure
  - Example: Vehicle that connects to traffic signal controller to get Signal Phase and Timing (SPAT) data
- P2I (Our Pilot): Pedestrian to Infrastructure
  - Example: Pedestrian can activate walk sign without physically touching infrastructure
- V2V : Vehicle connects to other vehicles
  - Example: Short range communication between a car and a bus
- V2X : Vehicle connects to Anything
  - Example: Vehicle with cellular based internet connectivity can connect to cars, signals, pedestrians



# Project Overview

- Project Location
  - Crenshaw Blvd Between Gardena, Hawthorne, and Torrance



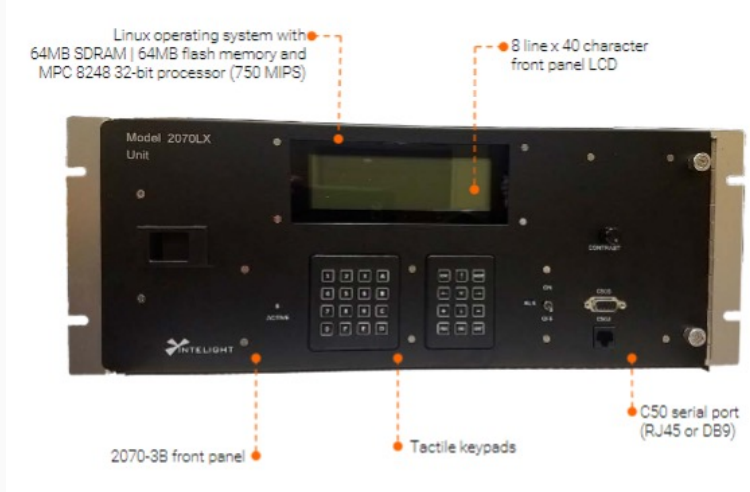
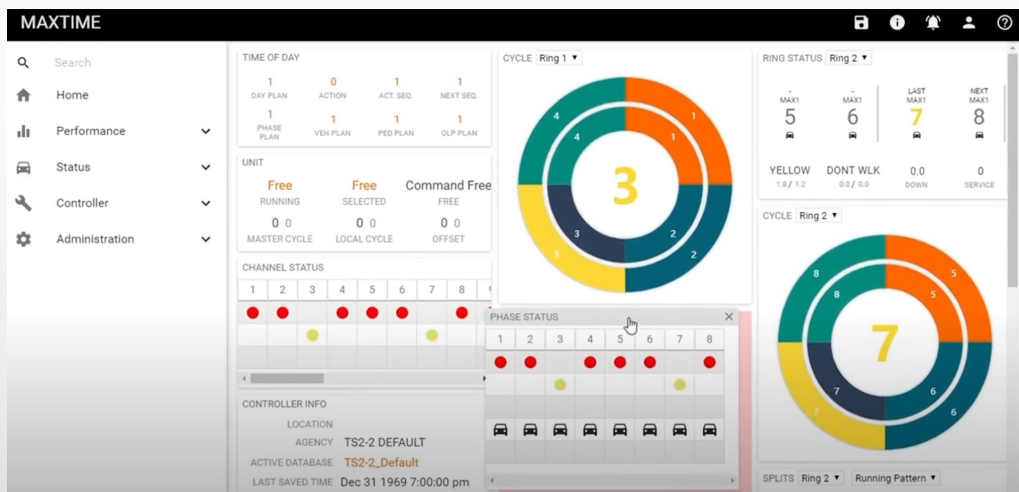
# Project Overview

- Funding by Metro ExpressLanes Net Toll Revenue Reinvestment Funds
  - Our Project is parallel to the 110 Freeway as required by the grant
- Elements of Project
  - Advanced Transportation Controllers (ATC)
  - Miovision TrafficLink Advanced Video Detection
  - Kapsch Connected Vehicle – eWalk Pedestrian Project



# Project Overview

- Intelight Advanced Transportation Controllers (ATC)
  - New type of 2070 pilot for County Traffic Signal Operators
  - Advertised as user friendly interface/dashboard accessed from web browser connection
    - Intelight Maxtime software doesn't require local software on the computer
  - Challenge: Integrating the Countywide Signal Priority (CSP) system





# Project Overview

## Miovision Traffic Link Video Detection

- Next Level Video Camera System with built-in communications
  - SmartSense video detection
    - One camera system “fisheye”
    - Uses object tracking to detect and classify vehicles and bicycles
    - Capable of machine learning and processing complex algorithms
  - Smartlink Box
    - This device transmits the data from the camera to the TMC.
    - Software in TMC enables the user to access Travel Time/Origin Destination data, and Automated Traffic Signal Performance Measures (ATSPMs).



Detection System



Camera on  
"Candy Cane"

# Project Overview



# Project Overview

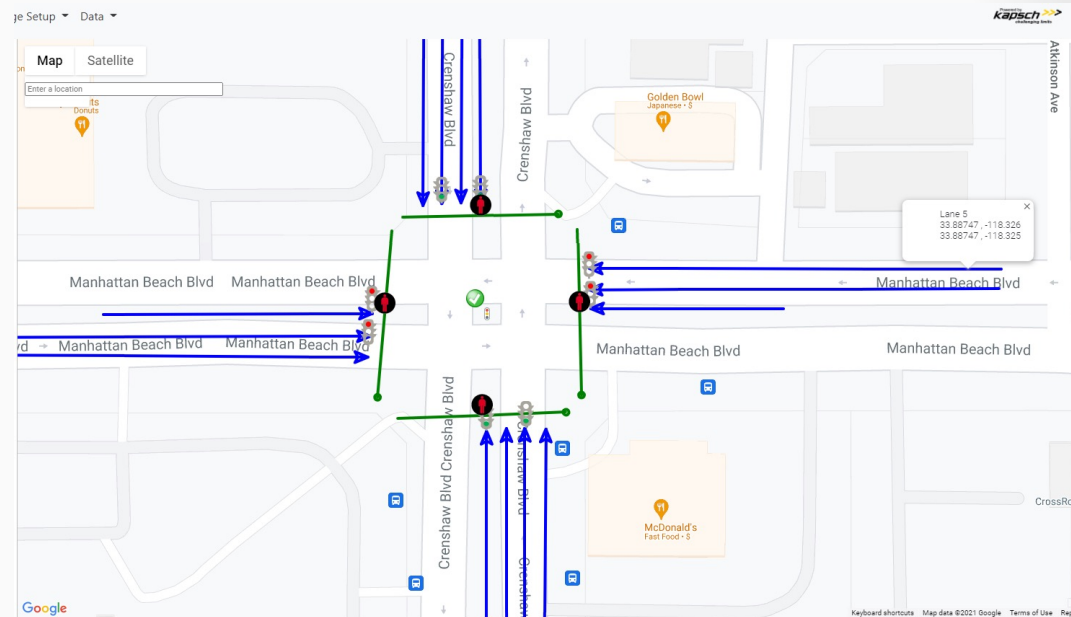
Kapsch Connected Vehicle – eWalk Pedestrian Project  
Consists of 4 main components

1. Connected Mobility Control Center (CMCC) (Internet based Software)
2. Road Side Unit (RSU) (Hardware)
3. On Board Unit (OBU) (Hardware)
4. Pedestrian Cellular phone application (Software)

# Components of Kapsch System

## 1. Connected Mobility Control Center (CMCC)

- Web-based solution
- Allows management and visualization of Road Side units (RSU) and for other CV uses
  - ★ Only one CMCC needed for the County



# Components of Kapsch System

## 2. Road-Side Unit (RSU)

- RIS-9160 provides IEEE 802.11p wireless communication for ETSI ITS G5 and IEEE WAVE for applications within Cooperative Intelligent Transportation Systems (C-ITS) and ITS based apps on general wireless communication technology
- RIS-9160 provides fast data exchange between vehicles, infrastructure, and signal controllers



# Components of Kapsch System

## 3. OBU Option Added for Testing

- The OBU was installed in TSMs Toyota Prius under the passenger seat courtesy of Fleet Management Division
- Connects to a Dedicated Short-Range Communications (DSRC) antenna that sticks to roof of car
- Pairs with a tablet or smartphone mounted in the vehicle (via Bluetooth) using Kapsch V2X Assist application available on Google Play



# Components of Kapsch System

## 4. eWalk Smartphone Application

- Available through the Google Play or other App stores
- Connects the smartphone user to the traffic signals and vehicles through the cellular service, RSU, CMCC, and GPS in the phone
- Tells pedestrian when and where to cross depending on where the phone is located and what angle the top of the phone is facing
- Was not working for Apple IOS devices during testing in November but was updated March 2022 and now works for both Android and Apple devices

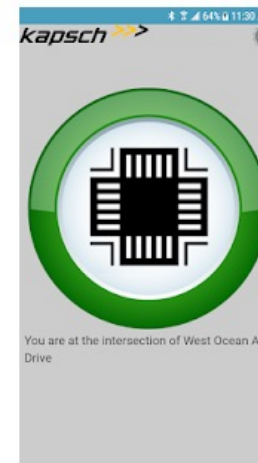


Kapsch eWalk

Kapsch TrafficCom AG Tools

Everyone

Add to Wishlist



# Why eWalk?



## What Are *Impaired Pedestrian Challenges?*



- > **Difficulty** navigating intersections and finding crosswalks
- > **Finding** the pedestrian crossing activation button
- > **Inability** to find out the status of the signal
- > **Unaware** of when it is safe to walk
- > **Difficulty** of staying within the crosswalk

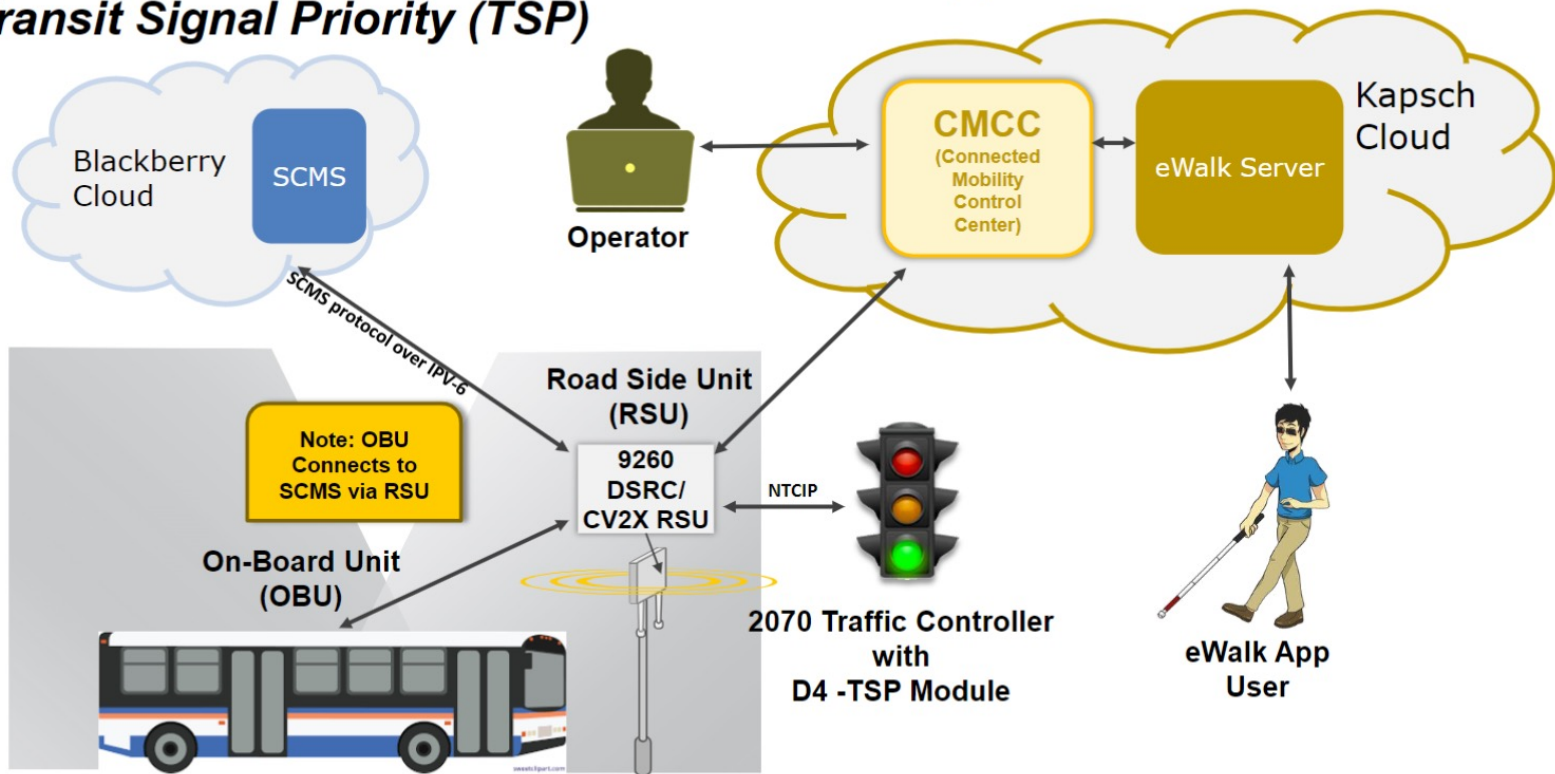


# How eWalk Works



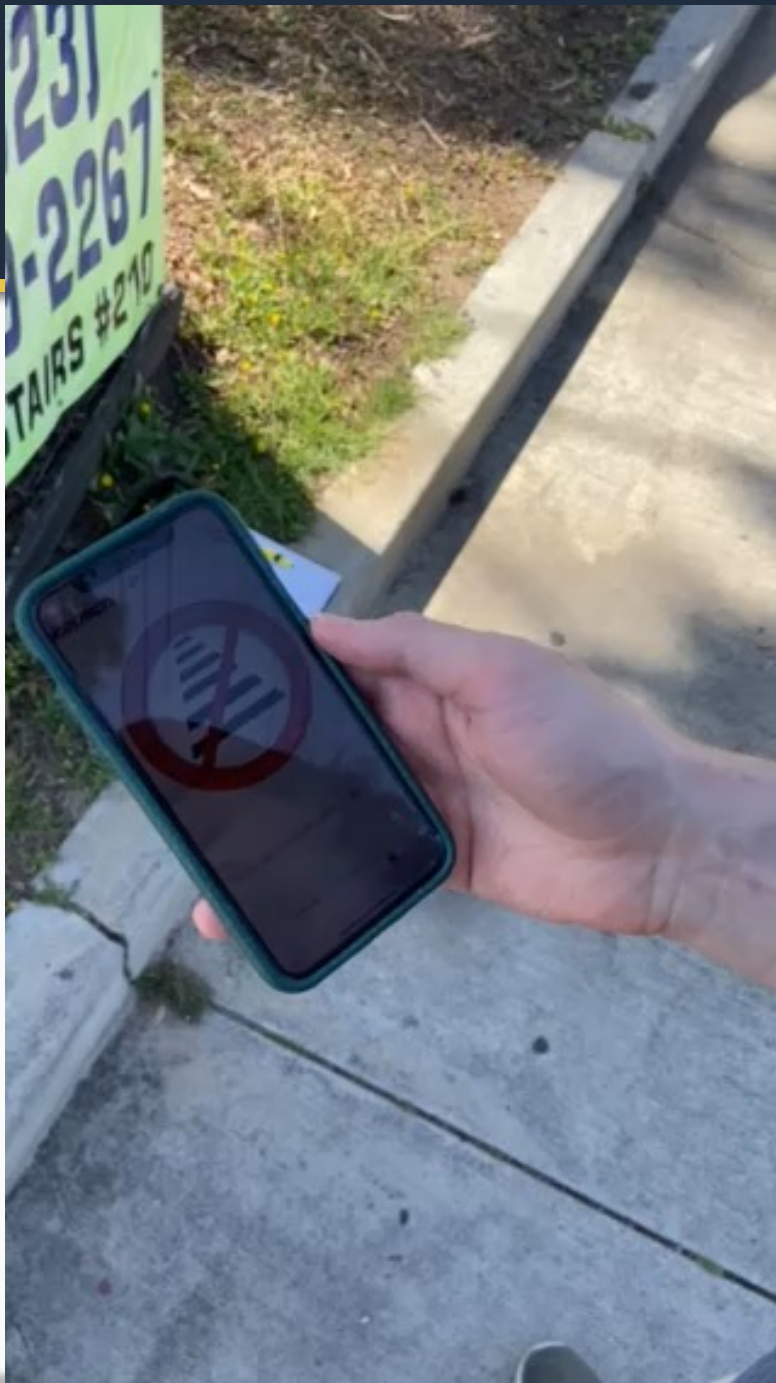
# How eWalk Works

## System Connectivity for eWalk Pedestrian App & Transit Signal Priority (TSP)



# Video of eWalk and V2X Assist Working

<https://www.youtube.com/watch?v=m32MAVDnSZM>



Walk sign comes on at  
54 sec

# Questions?



**Thank you for listening**

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