



# Connected Corridors Face-to-Face Meeting

Tuesday, May 22nd , 2018

1:30 – 3:30 pm

District 7 - Downtown

May 22<sup>nd</sup>, 2018



# Agenda

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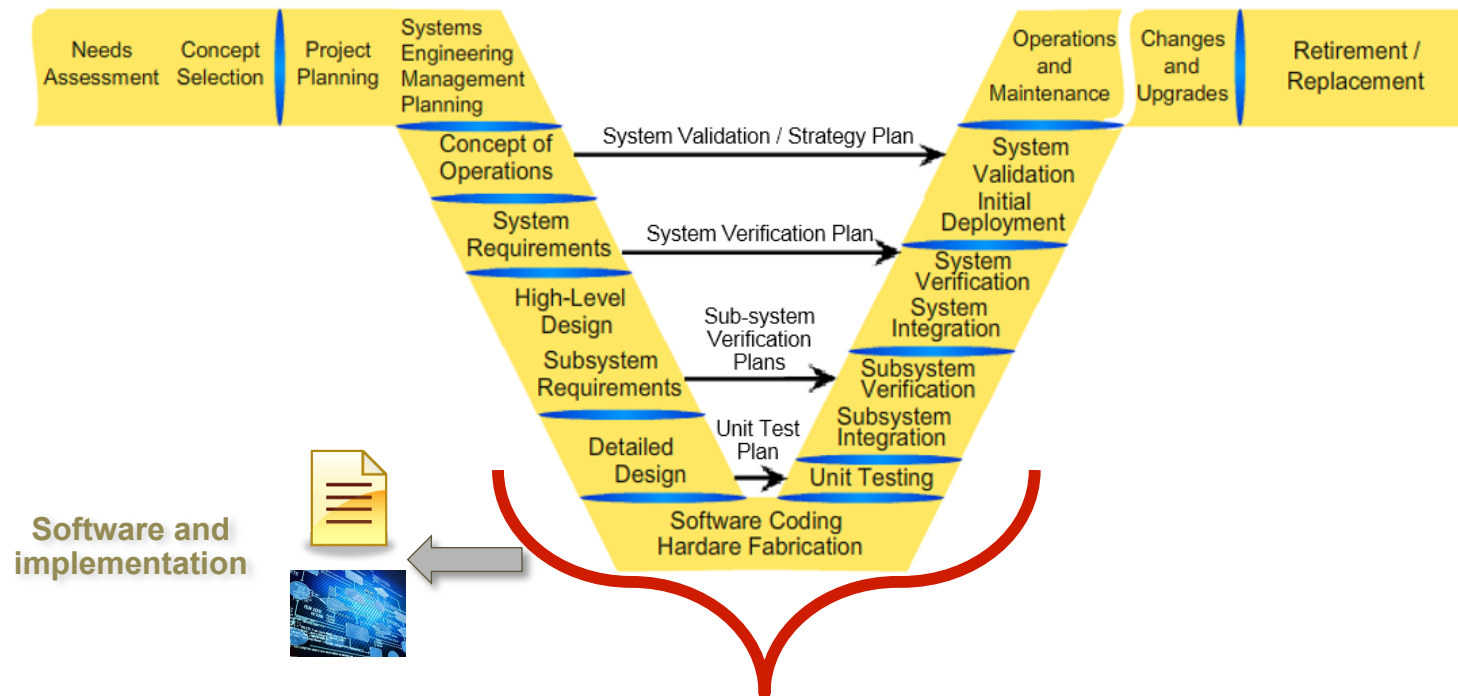
- ❑ **1:30-2:10 - Summary of program - Joe**
- ❑ **2:10-2:30 – MOU - Mort**
- ❑ **2:30-2:40 – Call for Projects update - Parsons**
- ❑ **2:40-2:50 – Update on communications - Kali**
- ❑ **2:50-3:00 – System Partitioning – Joe**
- ❑ **3:00-3:15 – System Testing - Joe**
- ❑ **3:15-3:30 – Closing**
  - ▣ **Next Meeting at Arcadia – July 17<sup>th</sup>**



# Systems Engineering Next Steps

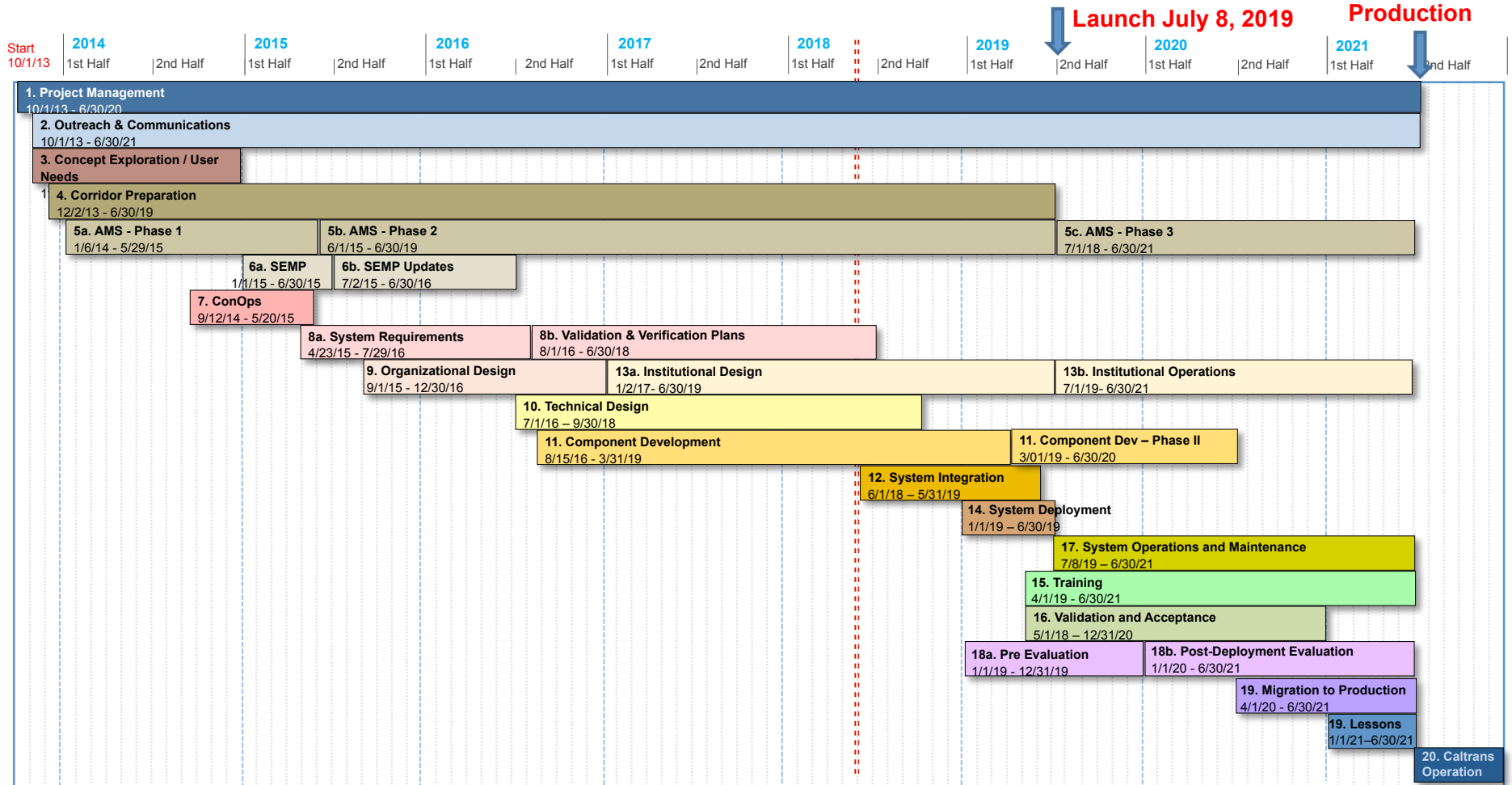
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- Design Documents
  - Details of interfaces and implementations
- Hardware/Software
  - Building the system
- Integration
  - Subsystems will come on line this year



# Updated Schedule

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# Summary

# Analysis, Modeling and Simulation (AMS)

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## □ Timing Plans

- We have created over 400 plans (out of 1000)
  - They are being loaded into Aimsun for testing
  - Already finding small adjustments that need to be made
  - Would like to meet with stakeholders for review in August
- 
- **We are gathering data from the recent big rig accident that went over the barrier so we can analyze exactly what traffic diversions occurred**
- 
- **We are using the model to estimate delay for a proposed truck barrier installation on the 210**



# Communication

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- **Amazon Cloud to/from Caltrans – Working Well**
- **Close to having VPN connection to Arcadia**
- **In discussions with Pasadena and County**
  - ▣ PATH to setup meeting with McCain and Pasadena to discuss network data path
- **Kali to discuss later in the presentation**



# TMDD Interfaces to Data Hub

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## □ **Traffic Control Systems**

### ▣ TransCore – Arcadia and Caltrans

- Going well
- Installation in Arcadia now scheduled for late June
- Installation at Caltrans scheduled for July

### ▣ McCain - Pasadena

- Kick off meeting three weeks ago, follow up meeting last Wednesday
- Goal is to be done by end of year
- PATH to setup meeting with McCain to provide specs and begin the development process

### ▣ Kimley Horn – LA County, Monrovia and Duarte

- Kick off tomorrow
- Goal is to be done by end of year

## □ **ATMS – Caltrans (CMS Signs, Ramps)**

- ▣ On track for a July delivery
- ▣ We are focusing on ensuring we can accurately characterize an incident
- ▣ We are in discussions on the test plan – Want to make sure the C2C interface is well tested





# COTS (Purple Box) - ICMS

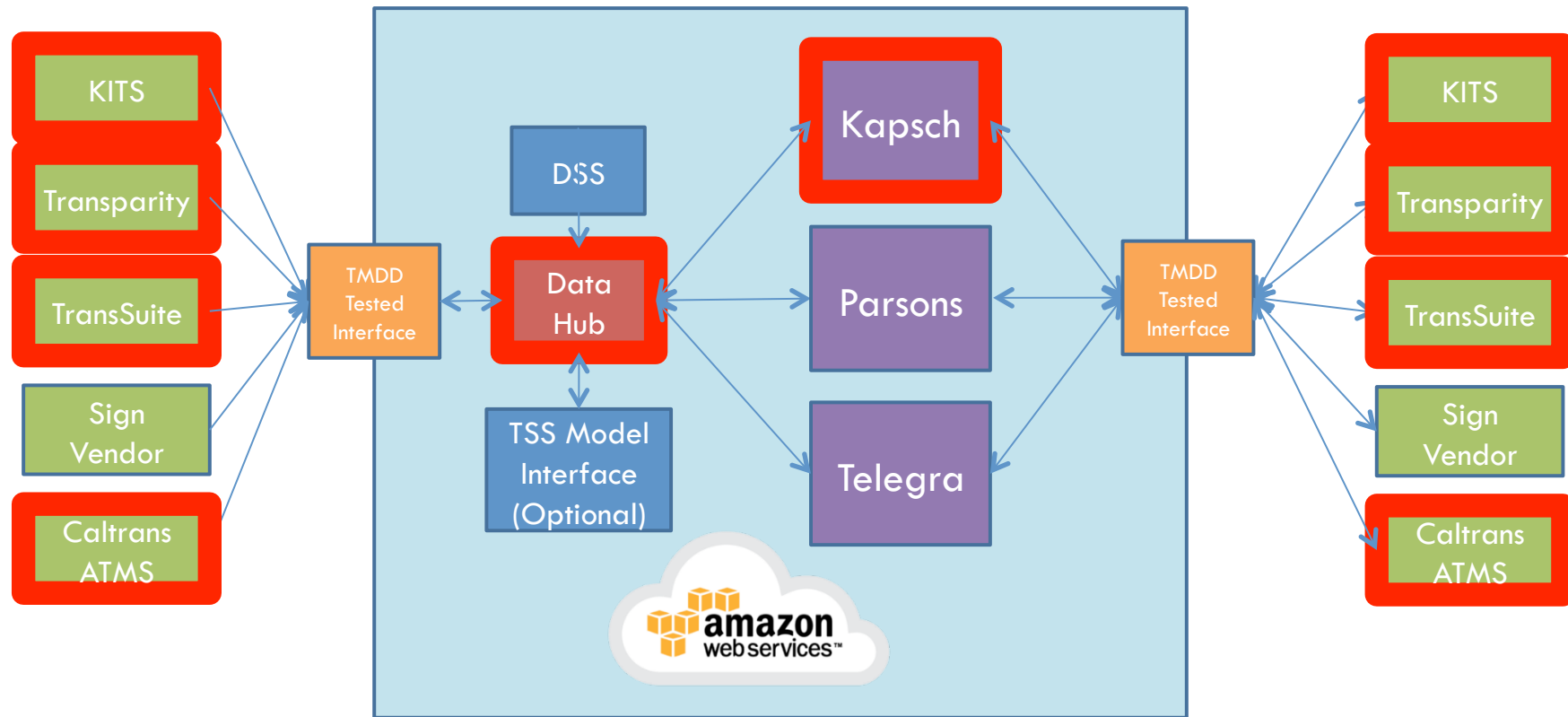
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- ❑ **Kapsch – Effort is officially underway**
- ❑ **Telegra – Planning to participate in testing of Transcore and ATMS interfaces**
- ❑ **Parsons – Awaiting results of Transcore testing**



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# Data Hub and DSS Software

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- **Focus on the all the C2C interfaces**
  - ▣ Management
  - ▣ Design, test, deployment discussions
  - ▣ Building out of the data pipelines to support testing
  - ▣ Refinement of response plan TMDD structure
- **Automated release 0.1 completed**
- **Continuing work on DSS and its interfaces**
  - ▣ Can now incorporate Greg's spreadsheets



# Design and Construction

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- ❑ **210 TMS Upgrade - Allen**
- ❑ **Call for Projects (ITS Elements) – Parsons to discuss**
- ❑ **Call for Projects – Signs and Sign Software**
  - ▣ In processing at Caltrans
  - ▣ Contract should be released for procurement soon



# Set Date for Design Review

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- **Set date for the design review by Brian Peterson**



# PEMS

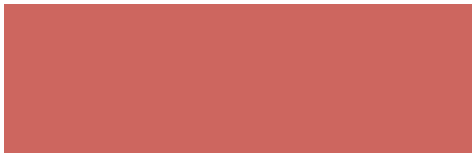
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- **Held a good meeting to discuss the PEMS requirements in late April**
- **Awaiting refinement of requirements before next steps**



**MOU**

**Mort**



# Call for Projects

## Parsons





# Agenda

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- ❑ **I-210 CC Arterial Systems Improvement Project  
System Consulting Services – Scope**
- ❑ **Status of 9 procurement package**
- ❑ **Project Progress**
  - ❑ Current Status
  - ❑ On-going Tasks
  - ❑ 30-Day Look Ahead





# I-210 CONNECTED CORRIDORS ARTERIAL SYSTEMS IMPROVEMENT PROJECT SYSTEM CONSULTING SERVICES

## SCOPE OF WORK

Apr 10<sup>th</sup>, 2018

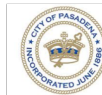


# Project Objective

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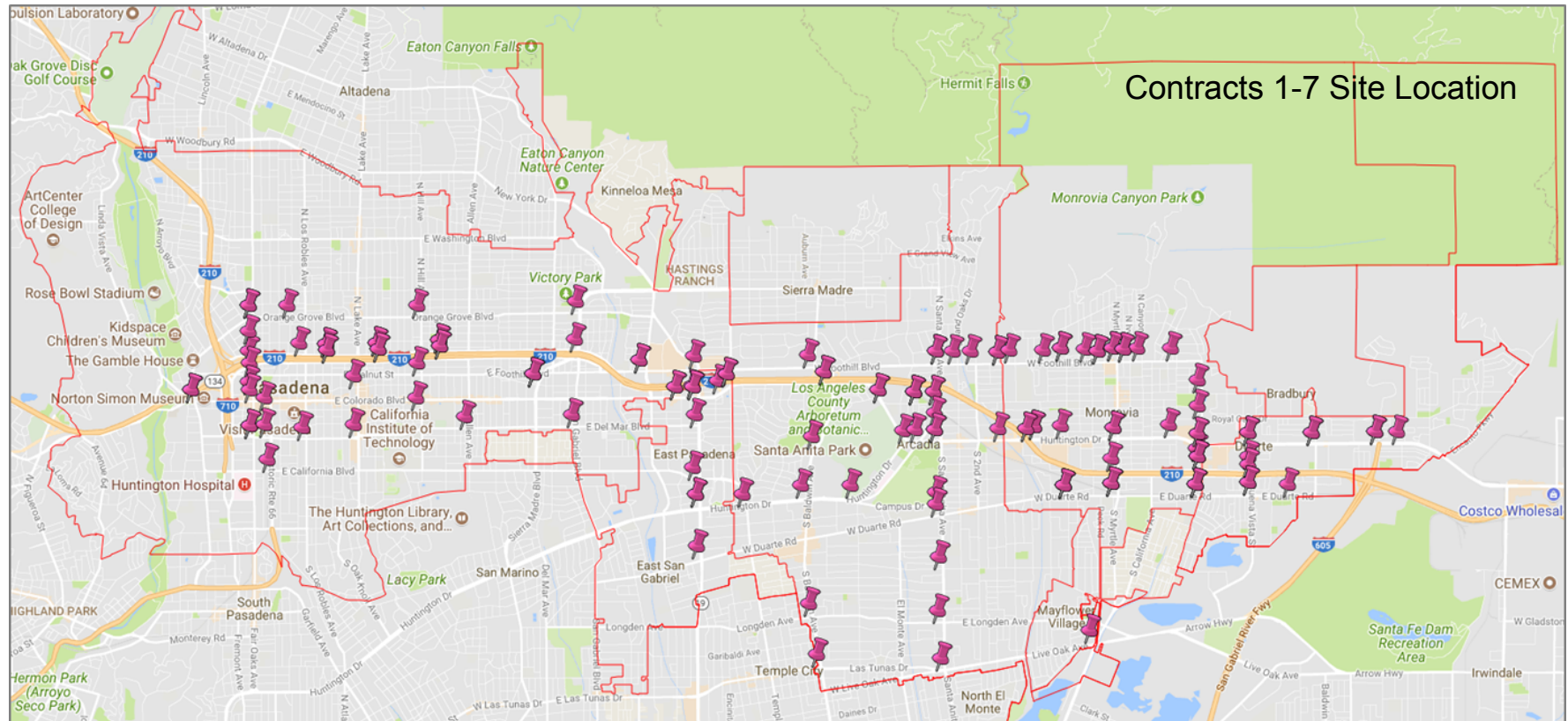
- Assist Caltrans D7 to manage and coordinate the execution of the 9 arterial ITS improvement projects

#	Package Description
1	Bluetooth – Iteris Velocity
2	Bluetooth – BlueToad
3	New Controller Cabinets
4	Communication Upgrades
5	Firmware/Timing Plan Updates/Controller Upgrades
6	Video Detection System
7	Data Communication Module and Video Detection Software Upgrade
8	Advanced Traveler Information Systems
9	Environmental Stations with Air Quality Sensors and Open Data Systems (ODS)



# Project Area

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# UPDATE ON PROCUREMENT PACKAGES 1-9

Apr 10<sup>th</sup>, 2018



# Update on Procurement Packages

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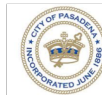
## Timeline

- Procurement Packages
- Advertisement
- Awarding

In Progress

Mid June 2018

Jul – Aug 2018





# PROJECT PROGRESS

Apr 10<sup>th</sup>, 2018



# Current Status

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## □ Stakeholder Outreach and Coordination

### ▣ Points of Contact

Jurisdiction	General	Permit Request Submission	Installation	Inspection	Comms. Connection
Arcadia	Kevin Merrill Kmerrill@arcadiaca.gov	Jennifer Nishida jnishida@arcadiaca.gov	Kevin Merrill Kmerrill@arcadiaca.gov	Kevin Merrill Kmerrill@arcadiaca.gov	To be Updated
Duarte	Teresa Renteria Renteriat@accessduarte.com	Teresa Renteria Renteriat@accessduarte.com	Teresa Renteria Renteriat@accessduarte.com	Teresa Renteria Renteriat@accessduarte.com	To be Updated
Monrovia	Alex Tachiki Atachiki@ci.monrovia.ca.us	Christian Cabrales, 626-932-5536 ccabrales@ci.monrovia.ca.us	Manny Garcia, 626-256-8202 mgarcia@ci.monrovia.ca.us	Richard Cortez, 626-932-5572 rcortez@ci.monrovia.ca.us	To be Updated
Pasadena	Arnold Dichosa 626-744-7402 ADichosa@cityofpasadena.net	Bob Sulistio, 626-744-4265 bsulitio@cityofpasadena.net	Assigned Public Works (PW) Inspector	Assigned Public Works (PW) Inspector	To be Updated
LA County	Jonathan Lu JLU@dpw.lacounty.gov	County Website Assigned Permit Write	Assigned Inspector	Assigned Inspector	To be Updated





# Permit Info - City of Arcadia

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## □ **Equipment**

- ▣ City needs to review the equipment's specifications
- ▣ Waterproofing of the Bluetooth antenna installation is critical.

## □ **Permit for this project**

- ▣ A no-fee permit combining Encroachment Permit and Traffic Flow Interference Permit

## □ **Combined Permit Application - Required Documents**

- ▣ City of Arcadia Permit Application Form (provided)
- ▣ Valid City of Arcadia Business License
- ▣ Valid Contractor's License (State of California Issued)
- ▣ Certificate of Liability Insurance (General, Auto, Workers Compensation & Employer's Liability, & Additional insured)
- ▣ Proposed Work Description
- ▣ Construction Plan/Design Plan
- ▣ Proposed Work Schedule
- ▣ Proposed Traffic Control Plan if lane/road closure on city streets are required (Where lane closures are not necessary, contractor shall follow the WATCH manual for traffic control measures)
- ▣ Additional information based on potential work impacts and street closure (could be required in the review process)



# Permit Info - City of Duarte

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## □ **Equipment**

- ▣ City needs to review the equipment's specifications/cut sheets

## □ **Permit for this project**

- ▣ ROW Permit for the field investigation phase
- ▣ POW Permit for the construction phase

## □ **Permit Application - Required Documents**

- ▣ Basic Contract Information
  - Contractor Name, License, Insurance
- ▣ ROW Permit for the field investigation phase
  - Plan Submittal/Map showing the locations of field investigation
  - Work to be expected (boring, survey, lane closures, etc.)
- ▣ ROW Permit for the construction phase
  - Work Plan
  - Spec/Cutsheet for Equipment to be installed



# Permit Info - City of Pasadena

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## ❑ **Equipment**

- ❑ All equipment must have submittals approved by the City prior to ordering

## ❑ **Permit for this project**

- ❑ Construction Permit

## ❑ **Construction Permit Application - Required Documents**

- ❑ Shall schedule an appointment for pre-inspection online: <https://egov1.cityofpasadena.net/apps/pwappt/>
- ❑ Valid Contractor's License (State of California Issued)
- ❑ Certificate of Liability Insurance (General, Auto, Workers Compensation & Employer's Liability, & Additional insured)
- ❑ City of Pasadena Insurance Form: the "City of Pasadena" shall be included as an additional insured on a separate endorsement page, as well as the waiver of subrogation page.
- ❑ Approved Construction Plans/Design Plan
- ❑ Coordination with the Public Works Inspectors



# Permit Info - City of Monrovia

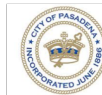
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## □ **Equipment**

- ▣ All equipment must have submittals approved by the City prior to ordering

## □ **Encroachment/Construction Permit Application - Required Documents**

- ▣ Certificate of Liability Insurance (General, Auto, Workers Comp, & Additional insured page)
- ▣ Contractor's License
- ▣ Business License
- ▣ Maintenance of Traffic (MOT) (if any) crew License (C-31)
- ▣ Proposed Work Description
- ▣ Construction Plan/Design Plan
- ▣ Proposed Work Schedule
- ▣ Proposed MOT Plan
  - If MUTCD Compliant – a print out of the MOT Plan
  - If not MUTCD compliant – signature of a licensed engineer
- ▣ Additional information based on potential work impacts and street closure (could be required in the review process)



# Permit Info - LA County

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## □ **Equipment**

- ▣ All equipment must have submittals approved by the County prior to ordering

## □ **Encroachment Permit Application - Required Documents**

- ▣ Certificate of Liability Insurance (General, Auto, Workers Comp, & Additional insured page)
- ▣ Contractor's License
- ▣ Proposed Work Description
- ▣ Construction Plan/Design Plan
- ▣ Proposed Work Schedule
- ▣ Conform to LA County Road Permit Standard Provisions
- ▣ If the proposed work is being installed in structures or facility owned by a utility company, an approval letter or permit from the corresponding agency authorizing the installation of those devices on their facilities/structures.



# 30-Day Look Ahead

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- ❑ **Continue Collecting Information from Cities and County**
  - ❑ Permit
  - ❑ Communication Network Connection Guide/POC
- ❑ **Prepare written agency coordination guide for future contractors**
- ❑ **Review of final bidding documents for 9 packages once they are ready**



**Thank You  
and  
Questions?**



# Communication

## Kali





# Status Update

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- ❑ **VPN between City of Arcadia and Caltrans**
  - ▣ Draft IP management plan completed
  - ▣ Physical fiber connections statement of work draft
  - ▣ Review IP plan and complete VPN connection
- ❑ **VPN between City of Pasadena and Caltrans**
  - ▣ Complete VPN connection once Arcadia completed
- ❑ **Connection between County of Los Angeles and Caltrans**
  - ▣ Complete VPN and/or physical connection design
- ❑ **Start furnish and install procurement for network equipment**

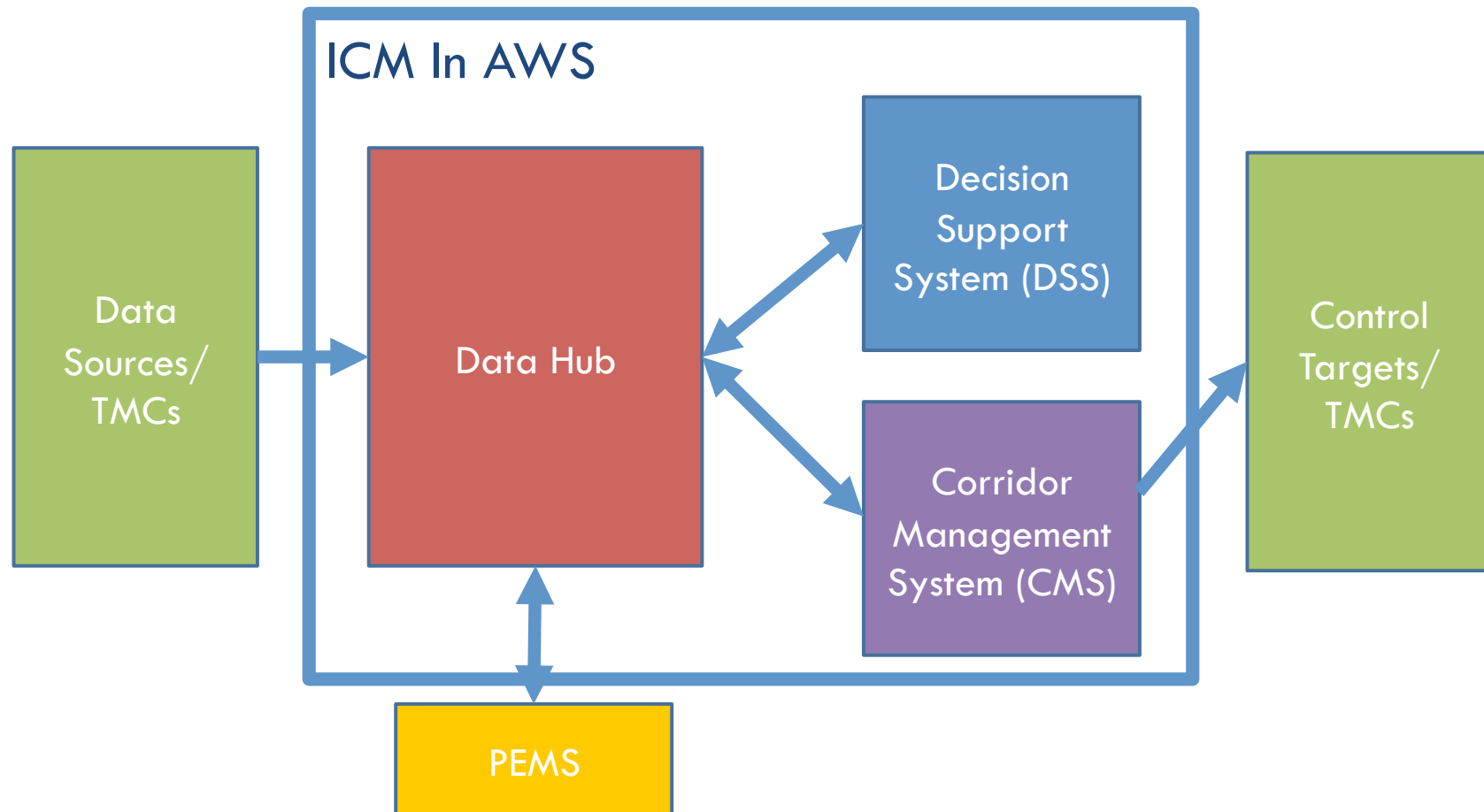


# CC System Components



# ICM Subsystems

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# Clarity on role of subsystems

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- **After the PEMS meeting PATH was told that there was some lack of clarity regarding the roles of the central system components**
- **The components are:**
  - ▣ DSS
  - ▣ Data Hub
  - ▣ Purple Box
  - ▣ PEMS



# Data Hub

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- ❑ **Receives data from all external sources (purple box also receives some information regarding confirmation of command receipt and incident/response plan (ATMS))**
- ❑ **Stores all data that needs to be stored – but only for 90 days**
- ❑ **Manages the flow of data and control requests between system components**
- ❑ **Performs basic data quality analysis, standardization, metrics**
- ❑ **Manages communications with external data providers**



# Decision Support

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- ❑ **Uses Rules and information from data hub (ITS element status for example) to generate response plans**
- ❑ **Can assess response plans performance impacts using corridor traffic model**
- ❑ **Ranks response plans based on model results or other criteria**
- ❑ **Provides response plans to data hub for distribution to purple box**
- ❑ **Imports rules spread sheets**
- ❑ **Performs traffic state estimation based on information from the data hub and provides traffic state estimation metrics**



# Purple Box

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- ❑ **The main User Interface for the System – (Note that Caltrans ATMS has some overlap re UI)**
- ❑ **Manages incident life-cycle for the system**
  - ▣ Incidents are created in this system (or sent to this system by the ATMS)
  - ▣ Asks data hub for a response plan by providing an incident
  - ▣ Receives Data hub response with response plan
  - ▣ Manages response plan approvals
  - ▣ Executes the response plan by sending messages to stakeholder systems
  - ▣ Manages response plan termination
- ❑ **Provides map based information on ITS Elements and response plans (reroutes for example)**
- ❑ **Provides near term metrics reporting (device up-time, traffic estimation metrics, etc.)**



# PEMS

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- ❑ **Long term storage of data**
- ❑ **Analysis and reports using long term corridor data**
- ❑ **User Interface for daily and long term reporting**
- ❑ **Daily presentation of corridor events and resulting response plans and estimated savings (if modeling is done)**



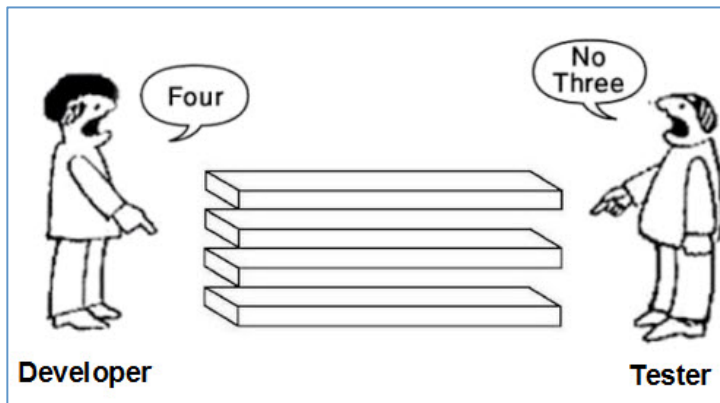


# CC Testing



# Software/System Testing

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# We Test in all Environments

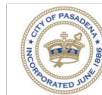
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## □ Testing Hierarchy

- Unit
- Functional Subsystem
- Communication Subsystem
- Integration
- System
- Acceptance

## □ Environment Hierarchy

- Development – developers
- Testing – Access to simulated ITS elements, simulated data, test users,
- Production – Access to real data, field ITS elements and regular users



# Keys to Ensuring Success

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- All components of a system need to be tested. This includes Core ICM and extended ICM components through the entire dev, test, production deployment cycle.
- This testing must involve ITS field elements
- This testing must involve production systems and real data
- We cannot have the first "test" of the system be running a response plan during an incident. We need a phased testing process that ensures all the individual parts function as expected, and all of the parts work together as expected.



**Thank You  
and  
Next Meeting  
(Suggest July 17th  
in Arcadia)**

