Connected Corridors
(Virtual) Face-to-Face Meeting

Tuesday, June 9th, 2020
1:30 – 3:30 pm
via Zoom Video Conferencing
Zoom Tips

In the upper right hand corner, please make sure you are in the full screen view and the speaker view.
Zoom Tips

Once in full screen and speaker view, please “hide thumbnails” by selecting the – from the options list.
We will be turning off video and muting all participants during the presentation to conserve bandwidth.

Please unmute yourself and turn your video on to ask a question.
Agenda

- 1:30 - 2:00 – Introduction and Progress Summary
- 2:00 - 2:20 – Call for Projects Update
- 2:20 – 2:40 – Kapsch Update and Demo
- 2:40 – 3:15 – AMS & CC ICM System Demo
- 3:20 – 3:30 – Closing

Next Meeting - Tuesday July 21th

Note: Meeting location sequence Monrovia, Duarte, LA Metro, Caltrans TMC, County, Arcadia, Pasadena
Caltrans HQ Changes – Welcome Said Ismail

- **Said Ismail:**
  Deputy Division Chief, System Management (Acting)
  Division of Traffic Operations, Caltrans HQ

- Zhongren Wang’s new assignment is only till the end of 2020
Systems Engineering Status

Software in Integration and Production environments:

**Data Hub:**
- Data feeds for the following:
  - Ramp meters via ATMS*,
  - CMS signs via ATMS,
  - Freeway sensing via PeMS,
  - Freeway sensing via ATMS*,
  - Arcadia intersection signals via Transcore Transuite,
  - LA County intersection signals via KH Kits,
  - Caltrans intersection signals via TSMSS (Transcore Transuite),

**Corridor Management System:**
- Incident capture (integration environment only),
- Asset display (ramps, signals, signs).

**Test DSS:** integration environment only.

Note: * These still need to be verified in production.
Schedule – Till Launch (Page 1 of 2)

- Complete Call for Projects Procurement – Jan 2020
- ATMS with CC modifications deployed to Production – March 2020
- Major functions of the Test DSS work with production ATMS incident data (demonstrated) – May 2020
- Data Hub configuration and deployment management functions (deployment/release hardening) – May 2020
  (conducted incremental releases with containers, further hardening as we go through the pilot)
- Complete ATMS Modifications – October 2020
  (received the estimate, need to verify and coordinate the timeline)
- Prediction (Aimsun) running in the cloud – July 2020
- Complete McCain Transparity C2C interface (Pasadena) – July 2020
- Rules Engine (Drools) running in the cloud – October 2020
  (full rules engine; no hardening)
- All ITS Elements Installed in Field – Q3-4 2020
  (see 20200520_SLD_I210ASI_MonthlyStatusMeeting_v1_PARSONS.pptx)
## Schedule – Till Launch (Page 2 of 2)

<table>
<thead>
<tr>
<th>Task</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrate Lane Closure System*</td>
<td>September 2020</td>
</tr>
<tr>
<td>All data (except new arterial DMS signs) being received</td>
<td>November 2020</td>
</tr>
<tr>
<td>(i.e. all ITS elements are installed and sending data through their C2C interfaces)</td>
<td></td>
</tr>
<tr>
<td>Estimation running in the cloud</td>
<td>December 2020</td>
</tr>
<tr>
<td>Performance Management System Available</td>
<td>December 2020</td>
</tr>
<tr>
<td>Complete C2C DMS Sign Interfaces</td>
<td>February 2021</td>
</tr>
<tr>
<td>Complete Version 1.0 System Production Deployment/Release</td>
<td>February 2021</td>
</tr>
<tr>
<td>System Operational Test and Validation</td>
<td>March-May 2021</td>
</tr>
<tr>
<td>Before Study</td>
<td>March to May 2021</td>
</tr>
<tr>
<td>Launch Pilot</td>
<td>May 2021</td>
</tr>
</tbody>
</table>

**Note:**
* To reach out to Caltrans HQ IT
# Schedule — Pilot Launch to Pilot Completion

<table>
<thead>
<tr>
<th>Event</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Pilot Launch</td>
<td>May 2021</td>
</tr>
<tr>
<td>Kapsch</td>
<td>May 2021 – September 2021</td>
</tr>
<tr>
<td>Parsons</td>
<td>September 2021 – January 2022</td>
</tr>
<tr>
<td>Interim Benefits Analysis</td>
<td>January 2022</td>
</tr>
<tr>
<td>Telegra</td>
<td>January 2022 – May 2022</td>
</tr>
<tr>
<td>After Study</td>
<td>March to April 2022</td>
</tr>
<tr>
<td>Kapsch</td>
<td>June 2022 – September 2022</td>
</tr>
<tr>
<td>Procurement of CMS system</td>
<td>August 2022</td>
</tr>
<tr>
<td>Procurement of Aimsun</td>
<td>August 2022</td>
</tr>
<tr>
<td>Pilot complete</td>
<td>September 2022</td>
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</tbody>
</table>
Planned Accomplishments for June 2020

- **Software Development**
  - Begin stand up and automation of Cloud AMS environment
  - Complete McCain C2C Interface testing for Pasadena
  - Full deployment of load balancers and containerized readers in all environments

- **Analysis Modeling and Simulation (AMS)**
  - Filter bad data from arterials for improvement of estimation results
  - Improve processes for asset inventory change and data quality assessment
  - Collaborate with Kapsch for visualization of response plans
  - Move forward with cloud deployment of prediction
Networking and Center to Center Connectivity

- **Caltrans C2C network connectivity for Data Readers**
  - Monitoring to be introduced for production to detect network connection problems involving that VPC
    - Should detect straightforward application outages similar to some seen with production ATMS

- **Iteris data feed**
  - Began work to establish experimental connection from the Datahub to an Iteris broker; Datahub to push subset of data streams to the Iteris broker
  - Waiting on networking connectivity with Iteris box(es) across the D7 network

- **Pasadena C2C**
  - Looking forward to testing the connectivity between the Data Hub and Pasadena’s servers in support of McCain Transparity application C2C
  - McCain anticipating deployment into D7 network in mid-July
Networking and Center to Center Connectivity

- **ICM User Secure System Access (via Kapsch application)**
  - Kali working with Pat Smith (LA County) to complete configuration for network access

- **Ongoing weekly meetings between RIITS and PATH**
  - D7 Caltrans continues to be available as needed

- **Field asset monitoring**
  - Metro and Caltrans leading the effort *(Ed would you like to add?)*
  - Bi-weekly calls are being held
  - PATH provided ITS element location and type information
C2C Connectivity good since last Face-to-Face

Notes:
Chart Legend: Green – OK, Yellow – Down, Blue – Untested.
We stopped testing some connections (in blue) as we are putting the load balancers in front of the readers to enhance performance and thus these monitoring checks have to be updated accordingly.
C2C Interface Implementations - Status

Legend:
Green border – Done; Blue border – In Progress (thickness commensurate with progress)
Systems Integration

- **Pasadena**
  - McCain/Transparity C2C interface – Continuing testing. McCain is adding additional test data to produce messages. Expect to be deploying to Pasadena in mid-July.

- **Dynamic Message Signs – Pasadena, LACO, Caltrans**
  - Continuing coordination with Parsons on sign C2C interfaces. Reviewed and provided comments on C2C requirements.

- **Caltrans**
  - Required ATMS fixes identified. Parsons has provided a proposal and estimate. We are currently reviewing the proposal.

- **Iteris/PeMS**
  - Beginning effort to demonstrate capabilities to push data to State repository. Data hub is ready and we are awaiting network connectivity.
Systems Development

- **Production system initial stand-up**
  - CMS – latest version of EcoTrafiX deployed to production. Receiving production incidents from ATMS.

- **Improve release frequency – goal is new release to test every week**
  - Incremental releases capability with clusters has been completed in development, test, and integration environments. Load balancing added as well as automated failure recovery with container services.
  - Improved test capabilities to get more accurate test results

- **Updates**
  - Currently working to add automated deployment of test DSS components to AWS
Shall we review the system architecture and design at the next F2F? Including Amazon Web Services (AWS) servers, databases, security, automated deployment, configuration management, monitoring, etc.?
PARSONS - Agenda

- I-210 CC Arterial Systems Improvement Project
  System Consulting Services - Overview

- Status of 9 procurement packages

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

STATUS OVERVIEW

Jun 6, 2020
## Project Objective

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

<table>
<thead>
<tr>
<th>#</th>
<th>Package Description</th>
<th>Contract #</th>
<th>Contract Status</th>
<th>Target</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Bluetooth – Iteris Velocity</td>
<td>07A4470</td>
<td>Completed, Contract Closed</td>
<td>May 2019</td>
</tr>
<tr>
<td>2</td>
<td>Bluetooth – BlueToad</td>
<td>07A4477</td>
<td>Final System Testing Phase</td>
<td>6/30/2020</td>
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<tr>
<td>3</td>
<td>New Controller Cabinets</td>
<td>07A4761</td>
<td>Material Review Phase</td>
<td>Q3-4,2020</td>
</tr>
<tr>
<td>4</td>
<td>Communication Upgrades</td>
<td>07A4479</td>
<td>Contract to be Closed</td>
<td>6/30/2020</td>
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<tr>
<td>5</td>
<td>Firmware/Timing Plan Updates/Controller Upgrades</td>
<td>07A4480</td>
<td>Material Procurement Phase</td>
<td>Q3-4,2020</td>
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<tr>
<td>6</td>
<td>Video Detection System</td>
<td>07A4481</td>
<td>Contract to be Closed</td>
<td>6/30/2020</td>
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<tr>
<td>7</td>
<td>Data Communication Module and Video Detection Software Upgrade</td>
<td>07A4755</td>
<td>Material Procurement Phase</td>
<td>Q3-4,2020</td>
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<tr>
<td>8-1</td>
<td>DMS Procurement</td>
<td>07A4792-3</td>
<td>in Progress</td>
<td>Jul 2020</td>
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<tr>
<td>8-2</td>
<td>DMS Integration</td>
<td>07A4794</td>
<td>Design &amp; Development Phase</td>
<td>Feb 2021</td>
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<tr>
<td>8-3</td>
<td>DMS &amp; Static Sign Installation</td>
<td>N/A</td>
<td>To be handled by stakeholders</td>
<td>Q3-4,2020</td>
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<td>9</td>
<td>Environmental Stations with Air Quality Sensors and Open Data Systems</td>
<td>07A4388</td>
<td>in Progress</td>
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## Project Area

<table>
<thead>
<tr>
<th>#</th>
<th>Package Description</th>
<th>Contract #</th>
<th>Metro &amp; Caltrans</th>
<th>City of Pasadena</th>
<th>City of Arcadia</th>
<th>City of Monrovia</th>
<th>City of Duarte</th>
<th>LA County</th>
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<td>07A4755</td>
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<tr>
<td>9</td>
<td>Environmental Stations with Air Quality Sensors and Open Data Systems (ODS)</td>
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Project Area (cont.)
UPDATE ON

PACKAGES 1-9

Jun 6, 2020
## Package Status – Pkg # 1

<table>
<thead>
<tr>
<th>Pkg. #</th>
<th>Pkg.</th>
<th>Contract #</th>
<th>Project Status</th>
</tr>
</thead>
</table>
| 1      | Bluetooth – Iteris Velocity 07A4470 PTM | • NTP: 7/10/2018  
• Kick-off Meeting: 7/30/2018  
• Submittal Approved: 8/16/2018  
• Installation & Testing Completed on 5/29 & 5/30/2019  
• Accepted by Arcadia, Documents Submitted  
• Completed |
## Package Status – Pkg # 2

<table>
<thead>
<tr>
<th>Pkg. #</th>
<th>Pkg.</th>
<th>Contract #</th>
<th>Project Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Bluetooth – BlueToad</td>
<td>07A4477 DBX</td>
<td></td>
</tr>
</tbody>
</table>

- **NTP**: 7/10/2018
- **Kick-off Meeting**: 7/30/2018
- **Submittal Approved**: 10/12/2018
- **Field Installation & Testing**: Completed (May 2020)
  - LACo, Monrovia, Duarte: 10 locations
  - Caltrans: 1 location without existing comms. Equipment delivered to LA County
  - Pasadena: 11 locations completed
- **TMC Server Installation & Configuration**: Completed (May 2020)
  - LACo TMC: completed
  - Pasadena TMC: completed
- **System Acceptance Testing**:
  - Working on LA Co-Pasadena TMC VPN connection
  - To be scheduled: middle June 2020
  
- **Expected to be completed**: 6/30/2020 (95%)
Package Status – Pkg # 2

- **P2 - BlueToad Travel Time System – Comm. Architecture**

![Diagram of P2 system architecture](image)

**Future**

3rd Party System

V1: 10/9/2019
V2: 2/19/2019
## Package Status – Pkg # 3

<table>
<thead>
<tr>
<th>Pkg. #</th>
<th>Package Name</th>
<th>Contract #</th>
<th>Project Status</th>
</tr>
</thead>
</table>
| 3      | New Controller     | 07A4761 Crosstown | **Advertised:** 9/26/19  
**Awarded:** 2/11/2020  
**NTP:** 2/19/2020  
**Kick-off Meeting:** 2/25/2020  
**Material Submittal Review**  
  • Arcadia (1 locations): Approved  
  • Pasadena (7 locations): To submit missing cutsheets  
**Installation:**  
  • Arcadia: target – June 2020  
  (using city-furnished controller and cabinet first)  
  • Pasadena: 4 locations are on Caltrans overpass structure with limited space to install adapter base foundations for new 332 cabinets  
  Pasadena to identify new cabinet locations  
  • Pasadena: City permit requires plan drawings for all 7 locations  
**Discussion:** All 9 packages are service (not PS&E) contracts that do not have plans included. Previous POC at Pasadena DPW agreed that plans will not be required just like other stakeholders.  
How will the contractor proceed?  
• Expected to be completed: Q3-Q4, 2020 |
## Package Status – Pkg # 4

<table>
<thead>
<tr>
<th>Pkg. #</th>
<th>Package Name</th>
<th>Contract #</th>
<th>Project Status</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>Communication Upgrades</td>
<td>07A4479</td>
<td>• NTP: 7/13/2018&lt;br&gt;• Kick-off Meeting: 7/30/2018&lt;br&gt;• Submittal &amp; RFI Approved: 5/6/2019&lt;br&gt;• Equipment procured&lt;br&gt;• Installation of 35 locations: completed&lt;br&gt;• Testing &amp; Acceptance: completed (1/13/2020 &amp; 4/14/2020)&lt;br&gt;• Contract to be Closed: 6/30/2020</td>
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<tr>
<td></td>
<td>Kanaan Construction</td>
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</table>
## Package Status – Pkg # 5

<table>
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<th>Package Name</th>
<th>Contract #</th>
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</thead>
<tbody>
<tr>
<td>5</td>
<td>Firmware/ Timing Plan Updates/ Controller Upgrades</td>
<td>07A4480 CPE, Inc</td>
<td>- NTP: 7/17/2018</td>
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<tr>
<td></td>
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<td></td>
<td>- Kick-off Meeting: 7/30/2018</td>
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<tr>
<td></td>
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<td></td>
<td>- Submittal Reviewed but Required hardware/firmware changed per Stakeholder Comment</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>- Contractor revised price estimate ($124,971) lower than original amount ($171,600) – reviewed &amp; approved by stakeholders</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>- Material Submittals – approved</td>
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<tr>
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<td></td>
<td>- Materials Procurement – order placed, lead time 16-20 weeks</td>
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<td></td>
<td></td>
<td></td>
<td>- Material Est. delivery – 8/5/2020 (POC confirmed)</td>
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<td></td>
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<td></td>
<td>- Installation Permits Application – in progress</td>
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<td></td>
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<td></td>
<td>- Expected to be completed: Q3-Q4, 2020</td>
</tr>
</tbody>
</table>

**Risk:** Staff & resource availability, logistic/travel/supply chain challenges associated with COVID-19 could impact schedule.

McCain’s production facility in Tijuana is closed temporarily from 4/13/2020 to 5/4/2020 due to COVID-19.
## Package Status – Pkg # 6

<table>
<thead>
<tr>
<th>Pkg. #</th>
<th>Package Name</th>
<th>Contract #</th>
<th>Project Status</th>
</tr>
</thead>
</table>
| 6      | Video Detection System        | 07A4481    | • NTP: 7/10/18  
        |                               | Traffic    | • Kick-off Meeting: 7/30/18  
        |                               | Loops      | • 10/9/18: Conducted Site Survey  
        |                               | Crackfilling, Inc | • 10/18/18: Submittal approved  
        |                               |             | • Installation: all 22 locations completed (Mar 2020)  
        |                               |             | • Installation (22 locations):  
        |                               |             | • 22 locations: all completed  
        |                               |             | • Installation of conduit: completed  
        |                               |             | • Acceptance Testing: Completed  
        |                               |             | • As-built & Test Reports: Completed  
        |                               |             | • To close the contract: 6/30/2020 |
## Package Status – Pkg # 7

<table>
<thead>
<tr>
<th>Pkg. #</th>
<th>Package Name</th>
<th>Contract #</th>
<th>Project Status</th>
</tr>
</thead>
</table>
| 7      | Data Communication Module and Video Detection Software Upgrade | 07A4755 Crosstown | • Advertised: 1/2/2020  
• Awarded: 2/11/2020  
• NTP: 2/19/2020  
• Kick-off Meeting: 2/25/2020  
• Materials Submittal: Approved  
• Material Procurement: On-going  
• Installation: Applying permit  
  Expected to be completed: Q3-Q4, 2020 |

### 28 Locations:
- 4 locations in LA County
- 1 location in City of Duarte
- 3 locations in City of Monrovia
- 6 (8) locations City of Pasadena
- 14 locations in City of Arcadia

PATH’s latest detour routes does not include 2 locations in Pasadena (S Arroyo Pkwy & Del Mar Blvd; S Arroyo Pkwy & California Blvd). Work at these 2 locations is to be removed from initial launch, consider to handle in later stage.
## Package Status – Pkg # 8-1, 8-2, 8-3

<table>
<thead>
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<th>Year</th>
<th>2020</th>
<th>2021</th>
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<tr>
<td>Month</td>
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<td>DMS Procurement</td>
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<td>DMS Delivery</td>
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April 2021, Hard Launch of I-210 CC System (Est.)
## Package Status – Pkg # 8-1

<table>
<thead>
<tr>
<th>Pkg. #</th>
<th>Package Name</th>
<th>Contract #</th>
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</thead>
<tbody>
<tr>
<td>8-1</td>
<td>Advanced Traveler Information Systems: DMS Procurement</td>
<td>07A4792-3</td>
<td>• Advertised: 10/25/19&lt;br&gt;• Awarded: 12/2/ 2019&lt;br&gt;• Kickoff meeting: 12/19/2019&lt;br&gt;• Material Submittals &amp; procurement: in progress&lt;br&gt;• Expected to be completed: July 2020</td>
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# Package Status – Pkg # 8-1

<table>
<thead>
<tr>
<th>Item</th>
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<th>LACO</th>
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<td>2</td>
<td>17</td>
<td>3/27/20</td>
<td>Late July 2020 (impacted by COVID19)</td>
</tr>
<tr>
<td>DMS Poles</td>
<td>19</td>
<td>0</td>
<td>2</td>
<td>17</td>
<td>2/21/20</td>
<td>Source Inspection: Passed 5/13/20</td>
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<tr>
<td></td>
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<td>Est. Shipping Date: 6/12/20</td>
</tr>
<tr>
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<td>Est. Delivery Date: 7/1/20</td>
</tr>
<tr>
<td>Pull boxes</td>
<td>19</td>
<td>0</td>
<td>2</td>
<td>17</td>
<td>4/30/20</td>
<td>2 Pull boxed for LACo: Delivered 5/21/20</td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>(to be confirmed)</td>
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<tr>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td>17 Pull boxes for Pasadena: 6/1/20</td>
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<tr>
<td>Power &amp; Comm Cables</td>
<td>11,000</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td>4/23/20</td>
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<td></td>
<td></td>
<td></td>
<td>(shipping date not confirmed yet)</td>
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<tr>
<td>Radios</td>
<td>12</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>5/5/20</td>
<td>Delivered: 6/1/20</td>
</tr>
<tr>
<td>Sign Control System with API</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3/27/20</td>
<td>Late July 2020</td>
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<tr>
<td>Servers</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>LACo: VM</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td>Caltrans: Physical Server</td>
</tr>
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*Note: Calculations and decisions are based on the provided data.*
## Package Status – Pkg # 8-2

<table>
<thead>
<tr>
<th>Pkg. #</th>
<th>Package Name</th>
<th>Contract #</th>
<th>Project Status</th>
</tr>
</thead>
</table>
| 8-2    | Advanced Traveler Information Systems: DMS Integration | 07A4794 Parsons | • Advertised: 11/14/19  
• Awarded: 1/3/2020  
• Kickoff meeting: 1/14/2020  
• Working on  
  • Installation QC checklist: Submitted  
  • System Diagrams:  
    • Overall - ready  
    • LA County TMC – ready  
    • Pasadena TMC – in stakeholder review  
    • LARTMC – ready  
  • C2C Interface Development:  
    • Requirement: Revising to address review comments  
    • Entering Design & Development Phase: late Jul 2020  
• D7 ATMS Modification:  
  • Requirement: Submitted  
  • Entering Design & Development Phase: late Jul 2020  
  • Testing: start in Aug 2020  
  • Expected to be completed: Q1 2021 |
## Package Status – Pkg # 8-3

<table>
<thead>
<tr>
<th>Pkg. #</th>
<th>Package Name</th>
<th>Contract #</th>
<th>Project Status</th>
</tr>
</thead>
</table>
| 8-3    | Advanced Traveler Information Systems: DMS & static sign Installation | N/A to be handled by Caltrans, LAPDW, & Pasadena | • DMS Installation:  
  • Installation QC Checklist distributed  
  • Installation: handled by stakeholder  
    • LA County: Est. Aug – Oct/Nov 2020  
    • Pasadena: Est. Aug – Oct/Nov 2020  
  • Static Signs Installation:  
    • Installation QC Checklist distributed  
    • Material Inspection: passed 6/4/2020  
    • Material Delivery: July-Aug 2020  
    • Installation: handled by stakeholder  
      • Aug – Oct 2020  
    • Expected to be completed: Q4, 2020 |

### Item

<table>
<thead>
<tr>
<th>Item</th>
<th>Total</th>
<th>Caltrans</th>
<th>Arcadia</th>
<th>Pasadena</th>
<th>Duarte</th>
<th>Monrovia</th>
<th>LA County</th>
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<tbody>
<tr>
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<td>17</td>
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<td>2</td>
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<tr>
<td># of Static Signs</td>
<td>31</td>
<td>3</td>
<td>12</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>3</td>
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<td>Static Signs Locations</td>
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<td>3</td>
<td>4</td>
<td>1</td>
<td>1</td>
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<td>Installation</td>
<td></td>
<td>Caltrans</td>
<td>Arcadia</td>
<td>Pasadena</td>
<td>Duarte</td>
<td>Monrovia</td>
<td>LA County</td>
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## Package Status – Pkg # 9

<table>
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<tr>
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<td>Pomona</td>
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</tr>
</tbody>
</table>

**Environmental Stations with Air Quality Sensors and Open Data Systems (ODS)**

- NTP: 6/29/18
- Kick-off Meeting: 7/12/18
- Environmental stations
  - Roadside study done
  - Field installation done – 6/7/19
  - Collect data and analyze data - ongoing
- ODS
  - Coordination w/ Foothill Transit & Pasadena Transit
  - Coordination w/ PATH
    - Reviewed Response Plan Sample Data
    - Reviewed ICD v1.2
    - Received Inventory of Road Network from PATH
    - Inventory of Signal ID & Ramp Meter ID – to be discussed with Caltrans
    - Waiting for PATH’s automated data – **Timeline?**

- Expected to be completed: Q3-Q4 2020 (70%)
Next Steps

- General: Need all stakeholders’ prompt response on RFIs & submittal reviews to keep the project on schedule.
- Package 2: Complete VPN connection & conduct system acceptance testing (Pasadena & LACo)
- Package 3: Complete installation in Arcadia; resolve cabinet locations and plan issues in Pasadena
- Package 5: Track material delivery (Aug 2020), prepare for installation
- Package 7: Procure materials; prepare for installation
- Package 8-1: Continue procurement; coordinate with 8-2
- Package 8-2: Finalize requirements, complete design, start development
- Package 8-3: Track status; deliver static signs
- Package 9: Support system testing
Thank You and Questions?
Kapsch Update and Demo
CC ICM System Overview

External Data Sources
- KITS, (LA County), (Duarte/Monrovia)
- Transparity, (Pasadena)
- TransSuite, (Arcadia)
- DMS Sign Vendors
- TSMSS
- ATMS Caltrans CMS, DMS and Ramp Meters
- Other...

Connected Corridors ICM Core System
- Decision Support System (DSS)
- Data Hub
- CMS (Kapsch) Local Agency Interface

Response Plan Execution in the Field
- KITS, (LA County), (Duarte/Monrovia)
- Transparity (Pasadena)
- TransSuite (Arcadia)
- DMS Sign Vendors
- TSMSS
- ATMS Caltrans CMS, DMS and Ramp Meters
- Other...

Interface for cities:
1. To see global view of entire corridor
2. To enter arterial events
3. To approve/disapprove response plans

Interface for Caltrans:
1. To enter freeway incidents
2. To approve/disapprove response plans
I-210 Integrated Corridor Management
Kapsch Update

Tim O’Leary
June 9, 2020
EcoTrafiX Product Status

- EcoTrafiX V3.2 scheduled for June 2020

- In progress:
  - Improve roadway link incident creation
  - Waze integration
  - Regional Map device filters
  - Regional Map transparent layers
EcoTrafiX Interface Status

Good progress:

- EcoTrafiX receiving Response Plans from DSS
- EcoTrafiX receiving events from ATMS
- EcoTrafiX forwarding ATMS events to PATH’s Data Hub
- EcoTrafiX deployed to production
EcoTrafiX Interface Status

**Interface**

- **Integrated**
- **Ready to integrate**
- **In development**

**TMCs**

Arcadia

LA County

Others

**Caltrans ATMS**

- Ramp Meter Commands
- Voting
- Response Plans

**EcoTrafiX (CMS)**

- Events
- Ramp Meters
- DMS
- Signal Controllers
- Response Plans

**PATH HUB**

- Events
- DMS
- Signal Controllers
- Detectors
EcoTrafiX Status

Next Steps

- Prepare for ITS World Congress remote demonstration
- DSS send Response Plans to EcoTrafiX
- Request TMCs execute device commands
- EcoTrafiX send Response Plans to ATMS
- EcoTrafiX exchange Voting with ATMS
Analysis Modeling & Simulation and ICM System Demo
## CC ICM System Overview

### External Data Sources
- KITS, (LA County), (Duarte/Monrovia)
- Transparity, (Pasadena)
- TransSuite, (Arcadia)
- DMS Sign Vendors
- TSMSS
- ATMS Caltrans CMS, DMS and Ramp Meters
- Other...

### Connected Corridors ICM Core System
- Decision Support System (DSS)
- Data Hub
- CMS (Kapsch) Local Agency Interface
- ATMS Caltrans User Interface

### Interface for cities:
1. To see global view of entire corridor
2. To enter arterial events
3. To approve/disapprove response plans

### Interface for Caltrans:
1. To enter freeway incidents
2. To approve/disapprove response plans

### Response Plan Execution in the Field
- KITS, (LA County), (Duarte/Monrovia)
- Transparity (Pasadena)
- TransSuite (Arcadia)
- DMS Sign Vendors
- TSMSS
- ATMS Caltrans CMS, DMS and Ramp Meters
- Other...
Demonstration Overview
This is the map that illustrates data flows

- **Data Hub**:
  - **Kapsch**
  - **Response Plan Generator**
  - **Prediction**
  - **Estimation**

- **DSS**:
  - Generates response plans and scorecards for review
  - Evaluates response plan effectiveness
  - Provides situational awareness

- **External traffic data on freeways and arterials**

- **Reports freeway incident**

- **Caltrans ATMS**

- **TMDD** Interface
Estimation was demonstrated last time

- Reports freeway incident
- External traffic data on freeways and arterials
- Data Hub
  - Response Plan Generator: Generates response plans and scorecards for review
  - Prediction: Evaluates response plan effectiveness
  - Estimation: Provides situational awareness
- TMDD Interface
- Caltrans ATMS
- Kapsch
An ATMS incident triggers response plan generation

- Freeway Incident
- Caltrans ATMS
- Kapsch
- Data Hub
- Response Plan Generator
- Prediction
- Estimation

External traffic data on freeways and arterials
Today’s Demonstration Overview

- Scorecard is now automatically generated

![Diagram showing the integration of external traffic data on freeways and arterials through Kapsch, TMDD, and Data Hub to Response Plans & Scorecard.]

- Provides situational awareness
- Evaluates response plan effectiveness

Kapsch ATMS

External traffic data on freeways and arterials

Data Hub

Response Plan Generator

Prediction

Estimation
Goal for Next Time (Not Today)

- **Future goal:** Show communication in other direction

Diagram:
- Coltrans ATMS
- Kapsch
- Data Hub
- Response Plan Generator
- Prediction
- Estimation
- Evaluates response plan effectiveness
- Provides situational awareness
- External traffic data on freeways and arterials
Recent Accomplishments
Accomplishments

- **Automatic scorecard generation – new capability**
  - Last time required manual intervention

- **New Pasadena timing plans**
  - Updated in the model
  - Updated in response plan spreadsheets

- **Achieved excellent match between simulated and historical flows and speeds on freeways and arterials**
  - Confirms that the model is well calibrated for freeways and weekdays on arterials
  - Confirms that the model is likely to provide correct assessments of candidate response plans
Next Steps

- Exercising the model with incidents up and down the corridor to confirm scoring procedures for best initial response plans
  - Now enabled by automatic scorecards
- Progress toward cloud deployment
- Test communication pathway to provide response plans to Kapsch CMS
- Integrate with Kapsch CMS EcoTrafiX
Historical Incident
Historical Incident Location

- Car Fire, I-210 WB @ Michillinda, 3 lanes blocked
Historical Incident During AM Peak

- Traffic impacts clearly seen in PeMS
  - ATMS Incident Start: 8:15
  - Sig Alert: 8:27
  - Lanes Open: 9:12 – 9:19
  - CHP Left Scene: 9:19
  - ATMS Incident End: 9:24
Historical Incident Freeway Queue

Freeway queue extends to I-605 Interchange
Comparison with model

- Excellent match between observed and predicted queuing

Observed Speeds 9:00 AM

Simulated Speeds 9:00 AM
Excellent match between observed and predicted queuing

- Observed Speeds 9:00 AM
- Simulated Speeds 9:00 AM
Two routes to be evaluated

Foothill, Michillinda → Sierra Madre

Favor off-ramp

Foothill, Baldwin → Sierra Madre

Favor Foothill over off-ramp
Today’s Demonstration Overview

- Continue to refine and integrate the system

External traffic data on freeways and arterials

Data Hub

Response Plan Generator

Prediction

Evaluates response plan effectiveness

Estimation

Provides situational awareness

Caltrans ATMS

Kapsch

Response Plan & Scorecard

TMDD Interface
Live Demonstration
Conclusion
Today’s Demonstration Overview

- Continue to refine and integrate the system

Data Hub
- Response Plan Generator
  - Evaluates response plan effectiveness
- Prediction
- Estimation
  - Provides situational awareness

External traffic data on freeways and arterials

Caltrans ATMS

Kapsch

TMDD Interface

Response Plan & Scorecard
Accomplishments

- Automatic scorecard generation – new capability
- New Pasadena timing plans updated in model
- Achieved excellent match between simulated and historical flows and speeds on freeways and arterials
Next Steps

- Exercising the model with incidents up and down the corridor to confirm scoring procedures for best initial response plans
- Progress toward cloud deployment
- Test communication pathway to provide response plans to Kapsch CMS EcoTrafiX
75 Data Quality
I-210 – Freeway Data Quality

- Excellent data availability on core I-210 and I-605
  - Over 90% in all directions
- SR-134 is under construction through June
  - It reaches its lowest availability at 20%

<table>
<thead>
<tr>
<th>Freeway Section</th>
<th>Direction</th>
<th>Sensor Availability Percentage</th>
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<tbody>
<tr>
<td>I-210 PM 22.6 - 25</td>
<td>East</td>
<td>86.7%</td>
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<tr>
<td></td>
<td>West</td>
<td>84.8%</td>
</tr>
<tr>
<td></td>
<td>East</td>
<td>92.8%</td>
</tr>
</tbody>
</table>
An aggregation interval of 2 minutes produces 95% data availability

Data available
Not available

Red horizontal streak → no data from one VDS

Red vertical streak → no data for one timestamp
Real-time I-210 Freeway Data Quality

- **Real-time feed for PeMS D7 data on I-210 corridor**
  - Data drops are typically short-lived
  - Estimation is robust to these kinds of data drops
- **Advisable to determine policy during extended outage**
  - Possible to use default initial state

Outage 5/30
6 am-noon
Arcadia Data Quality

- **Detector Inventory**
  - 636 detectors at 52 intersections (39 video and radar detectors)
  - 324 of them (at 19 intersections) are on detour routes

- **Detector Health**
  - Overall detector health rate (on detour routes) in 93% range (all time high!)
LACO, Monrovia and Duarte

- **Detector Inventory**
  - 123 detectors at 21 intersections
    - 54 from LACO, 43 from Monrovia, and 26 from Duarte
  - 107 of them (at 18 intersections) are connected to KITS and on detour routes

- **Detector health**
  - 71% in LACO and 60% in Duarte
  - 9% in Monrovia
    - Data is only available at Huntington@Mountain
    - No data from any other intersections for several weeks
Caltrans

- **Analysis of ATMS TMDD Messages**
  - 69 ramp meters: 32 in the EB, and 37 in the WB
  - 220 mainline and HOV VDSs: 105 in the EB, and 115 in the WB
  - 7 DMS signs: 3 in the EB, and 4 in the WB

- **Analysis of TSMSS detector data**
  - Detector inventory
    - 58 detectors at 13 intersections on detour routes
  - Detector health at 17%
  - Cooperate to improve detector health
Stakeholder Progress
Response Plans – Stakeholder Progress

- **Pasadena (80 CC Intersections)**
  - All intersections are programmed with Connected Corridors flush plans

- **LA County (6 CC Intersections)**
  - All 6 timing sheets completed and ready for implementation

- **Monrovia and Duarte (17 CC Intersections)**
  - 3 revised signal plans completed along Huntington
Response Plans – Stakeholder Progress

- **Arcadia** (19 CC Intersections)
  - 17 intersections are programmed with Connected Corridors flush plans on Huntington, Foothill, and Santa Anita
  - 2 additional intersections awaiting installation of 2070 controllers on Colorado

- **Caltrans TSMSS** (15 CC Intersections)
  - All signal plans loaded onto controllers
  - Ready for bench testing of system communications
Announcements

- ITS World Congress 2020 scheduled for October 4-8 in Los Angeles will not take place as an in-person event.
  - It looks like we may not have a demo opportunity (to be confirmed)

- D7 Innovation Fair (?)
Thank You
and
Next Meeting
(Suggest Tuesday July 21th @ Zoom)