



Connected Corridors (Virtual) Face-to-Face Meeting

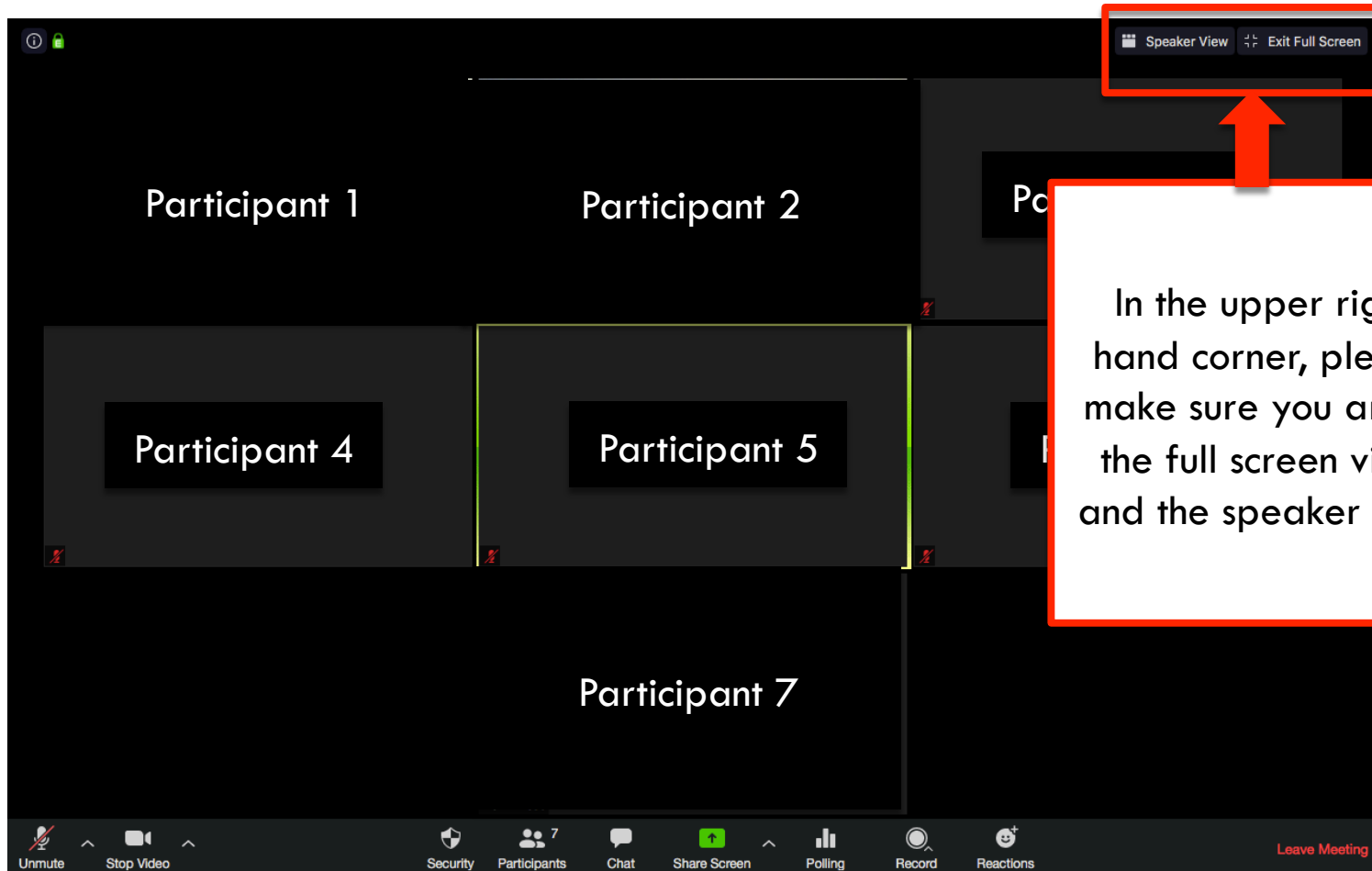
Tuesday, June 9th, 2020
1:30 – 3:30 pm
via Zoom Video Conferencing

June 9th
2020



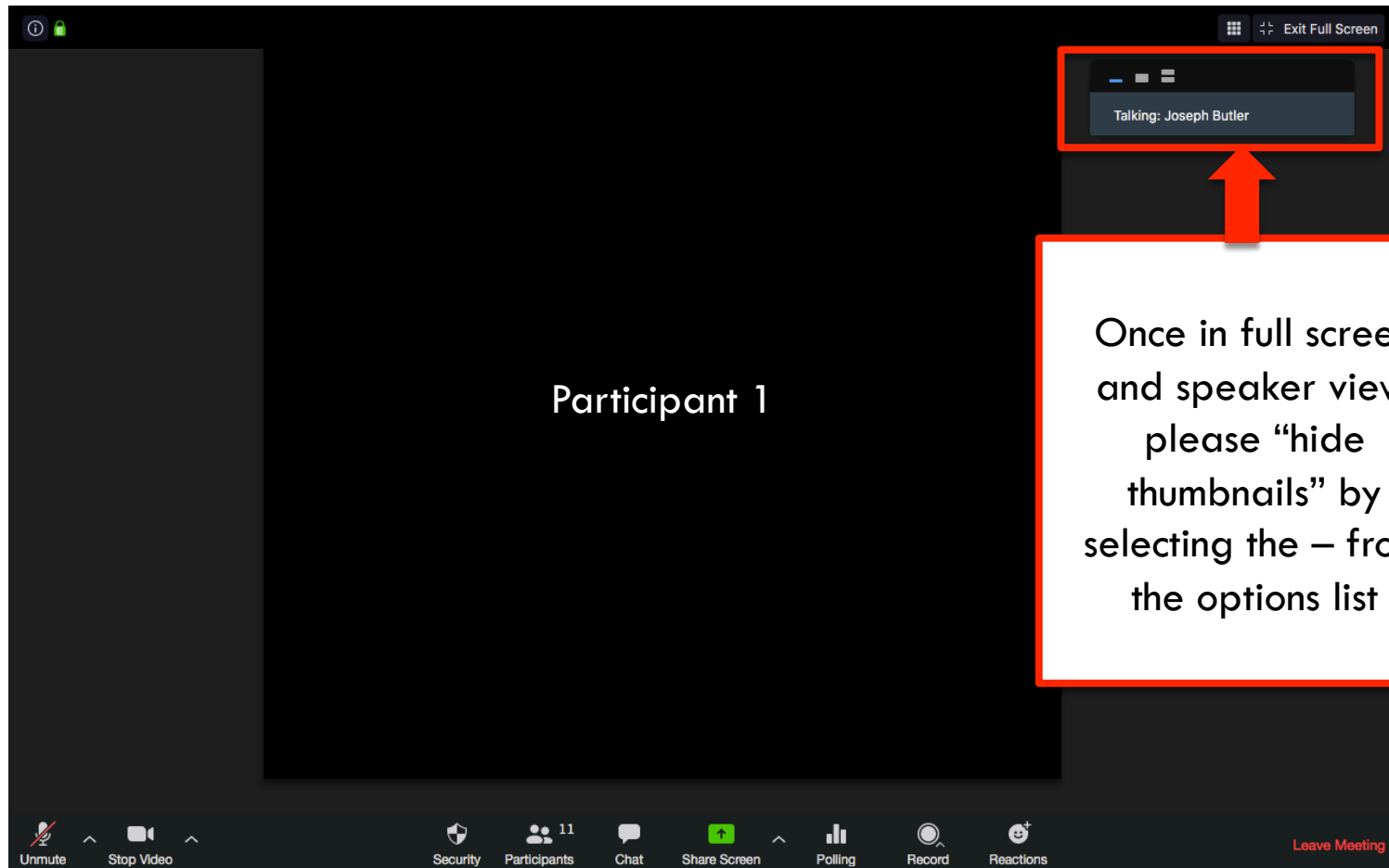
Zoom Tips

2



Zoom Tips

3

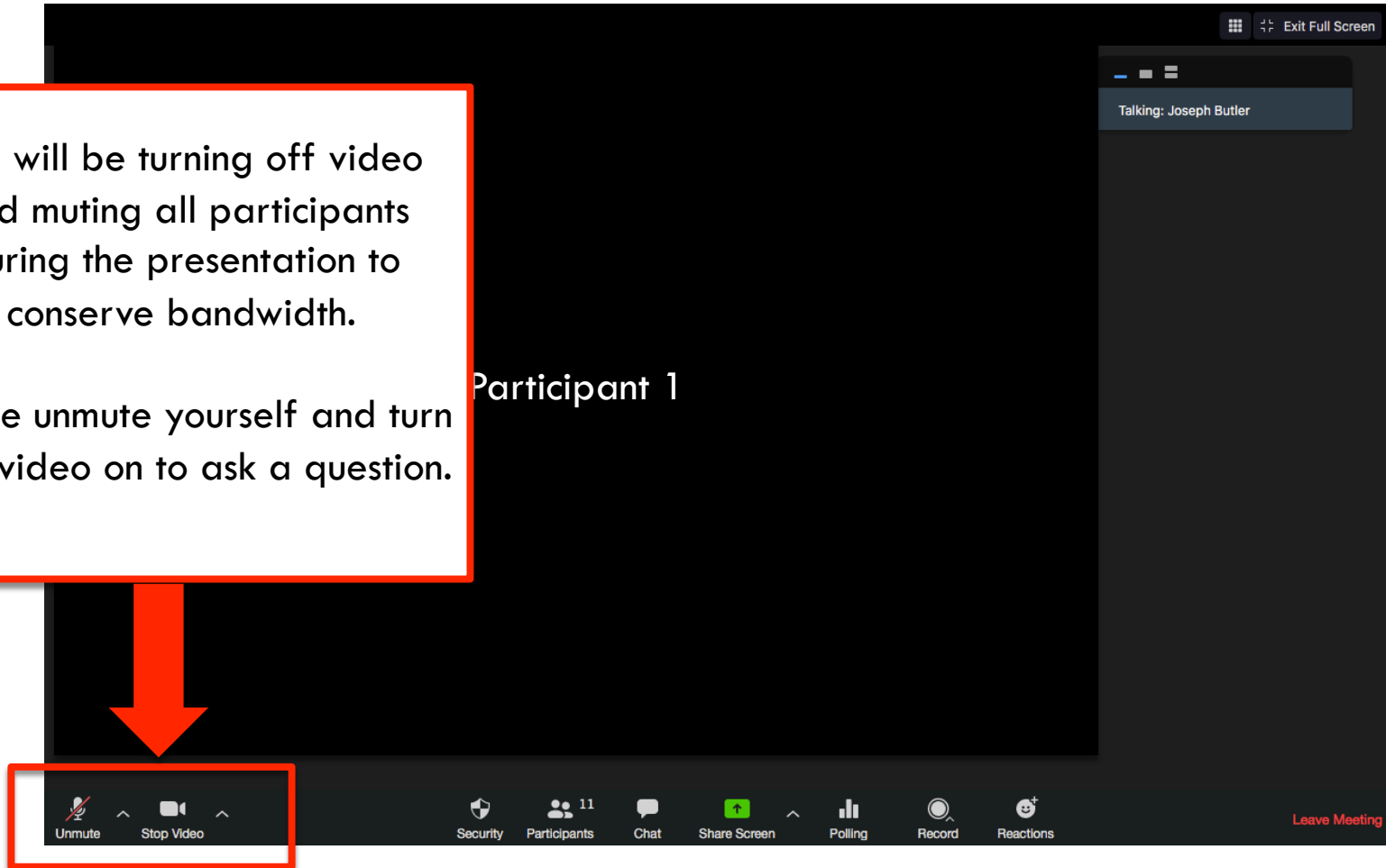


Zoom Tips

4

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

5

- **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

6

□ 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

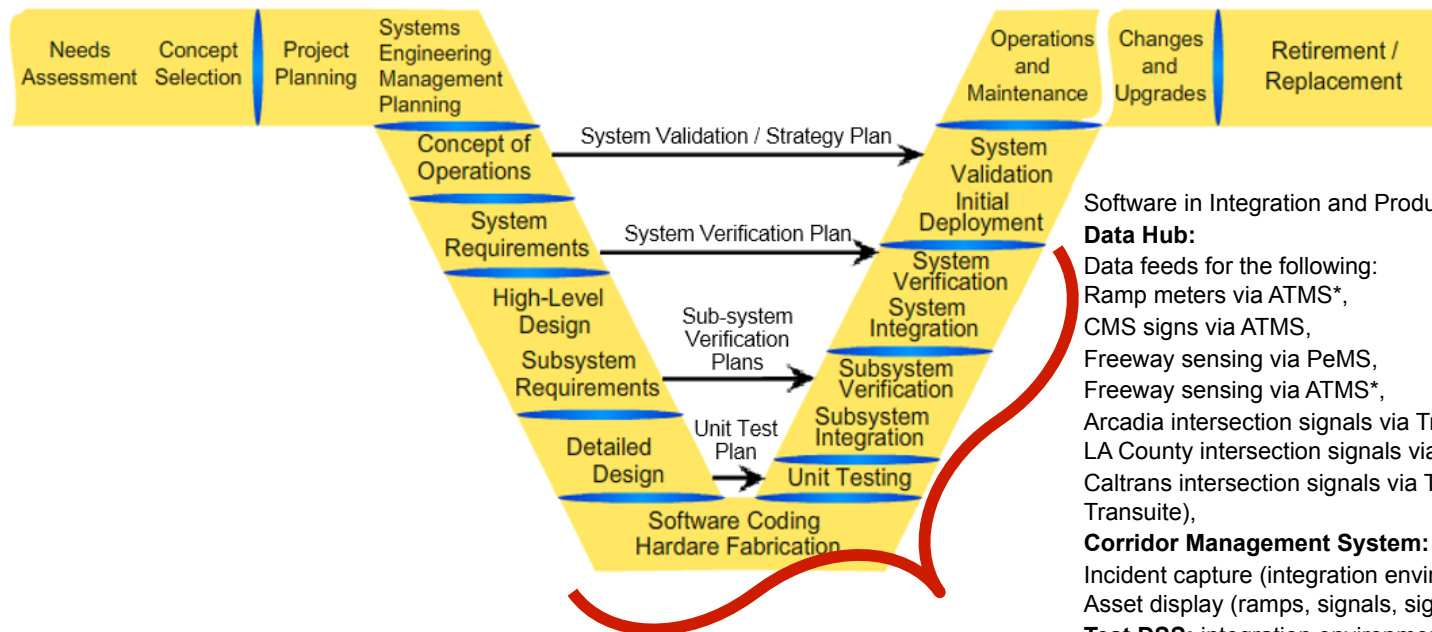


7

I-210 Pilot Implementation Project Progress Summary

Systems Engineering Status

8



Note: * These still need to be verified in production.



Schedule – Till Launch (Page 1 of 2)

9

- **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 Transparency 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)

10

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

Note:

* To reach out to Caltrans HQ IT



Schedule – Pilot Launch to Pilot Completion

11

- **Pilot Launch** – **May 2021**
- **Kapsch** – **May 2021 – September 2021**
- **Parsons** – **September 2021 – January 2022**
- **Interim Benefits Analysis** – **January 2022**
- **Telegra** – **January 2022 – May 2022**
- **After Study** – **March to April 2022**
- **Kapsch** – **June 2022 – September 2022**
- **Procurement of CMS system** – **August 2022**
- **Procurement of Aimsun** – **August 2022**
- **Pilot complete** – **September 2022**



Planned Accomplishments for June 2020

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□ **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

13

- **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 Transparency application C2C
 - ▣ McCain anticipating deployment into D7 network in mid-July



Networking and Center to Center Connectivity

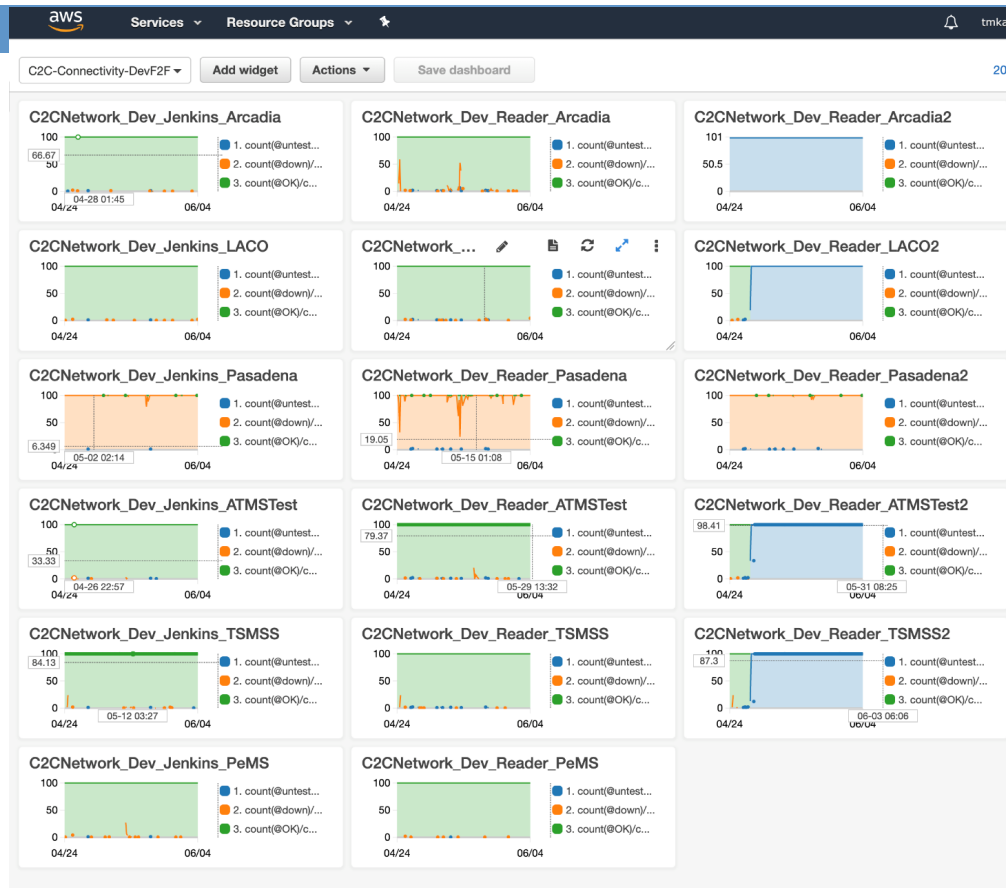
14

- ❑ **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

15



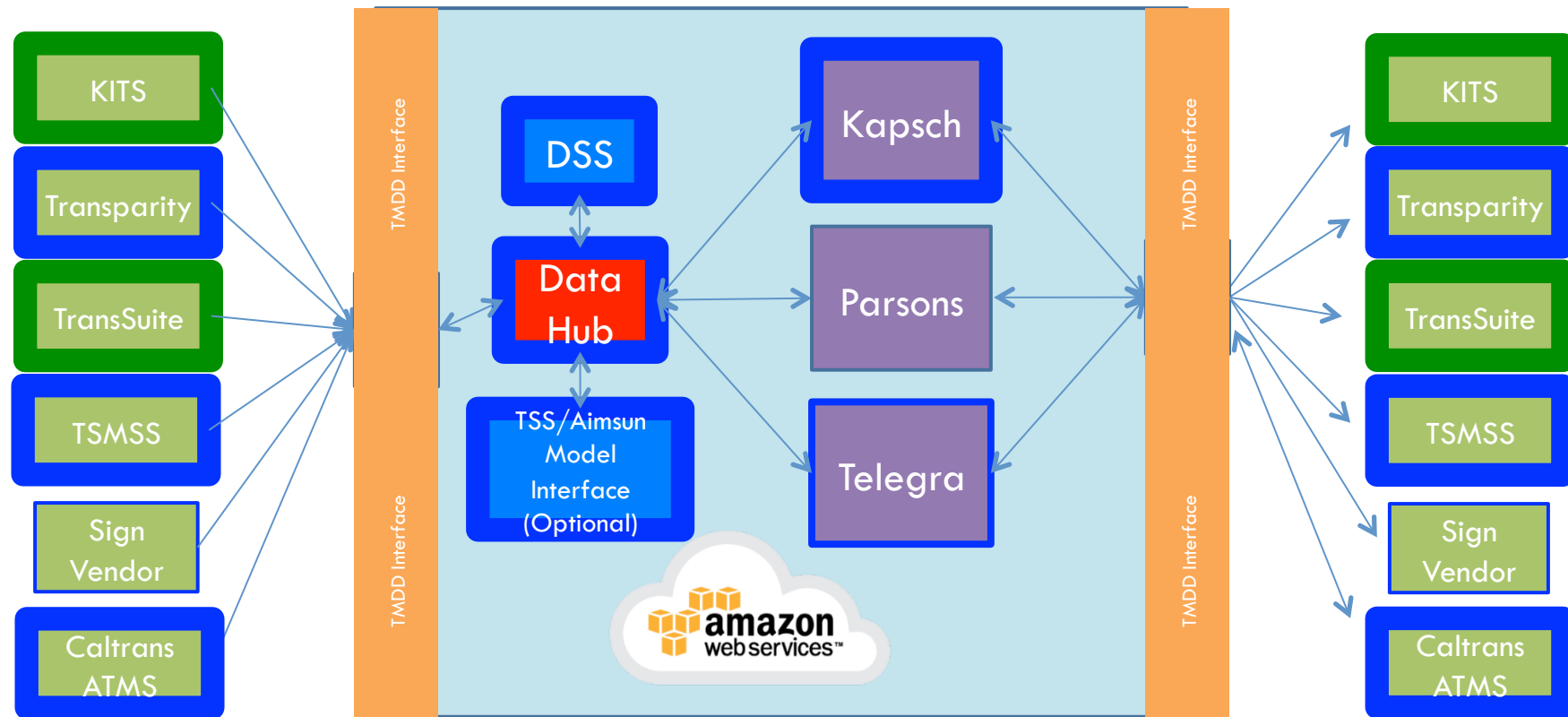
Notes:

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

16



Legend:

Green border – Done; Blue border – In Progress (thickness commensurate with progress)



Systems Integration

17

□ **Pasadena**

- ▣ McCain/Transparency 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

18

□ Production system initial stand-up

- ▣ CMS – latest version of EcoTrafIX deployed to production. Receiving production incidents from ATMS.

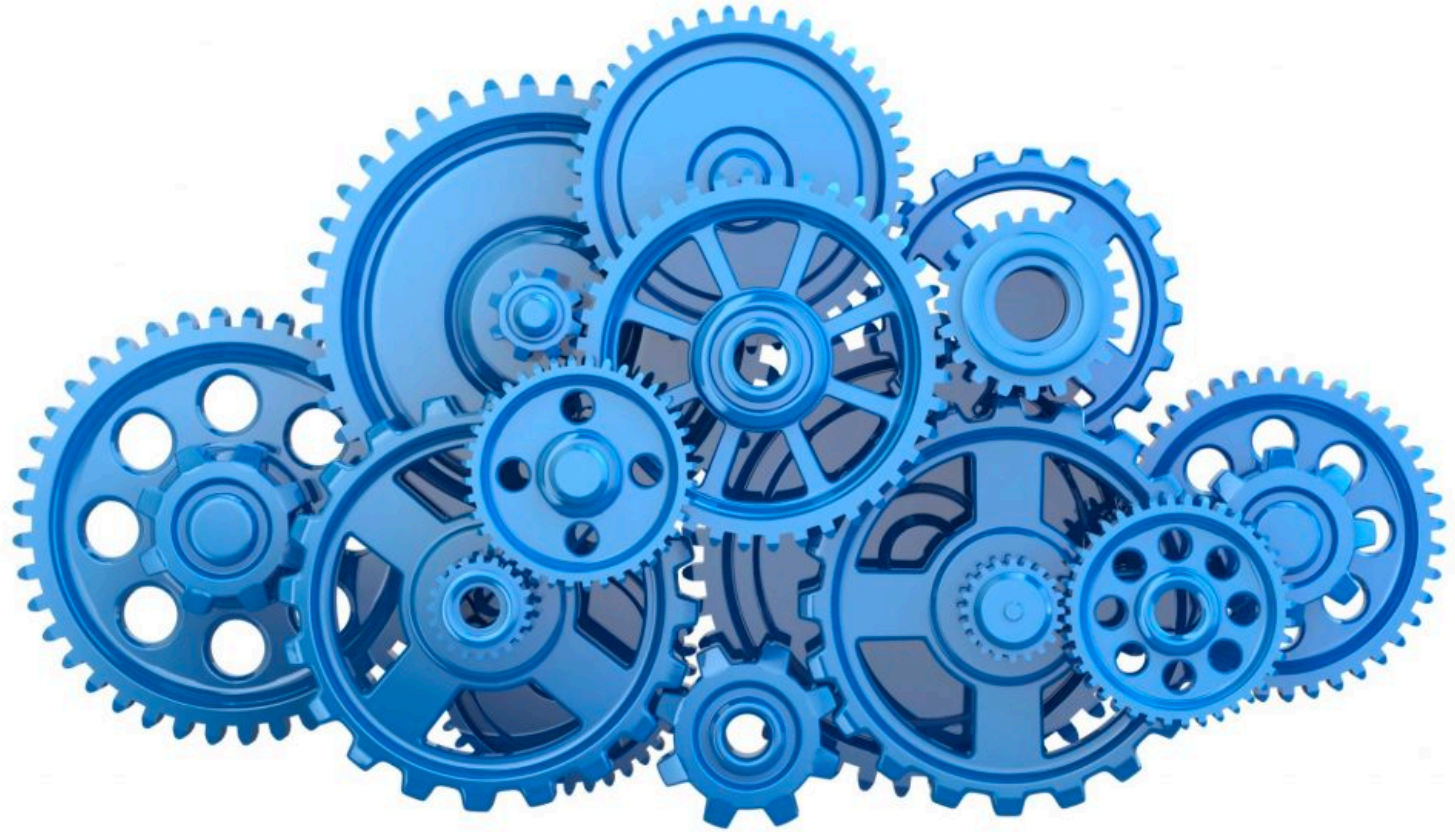
□ Improve release frequency – goal is new release to test every week

- ▣ 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





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Cloud Implementation of ICM System

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

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- **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

22

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

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



Project Area

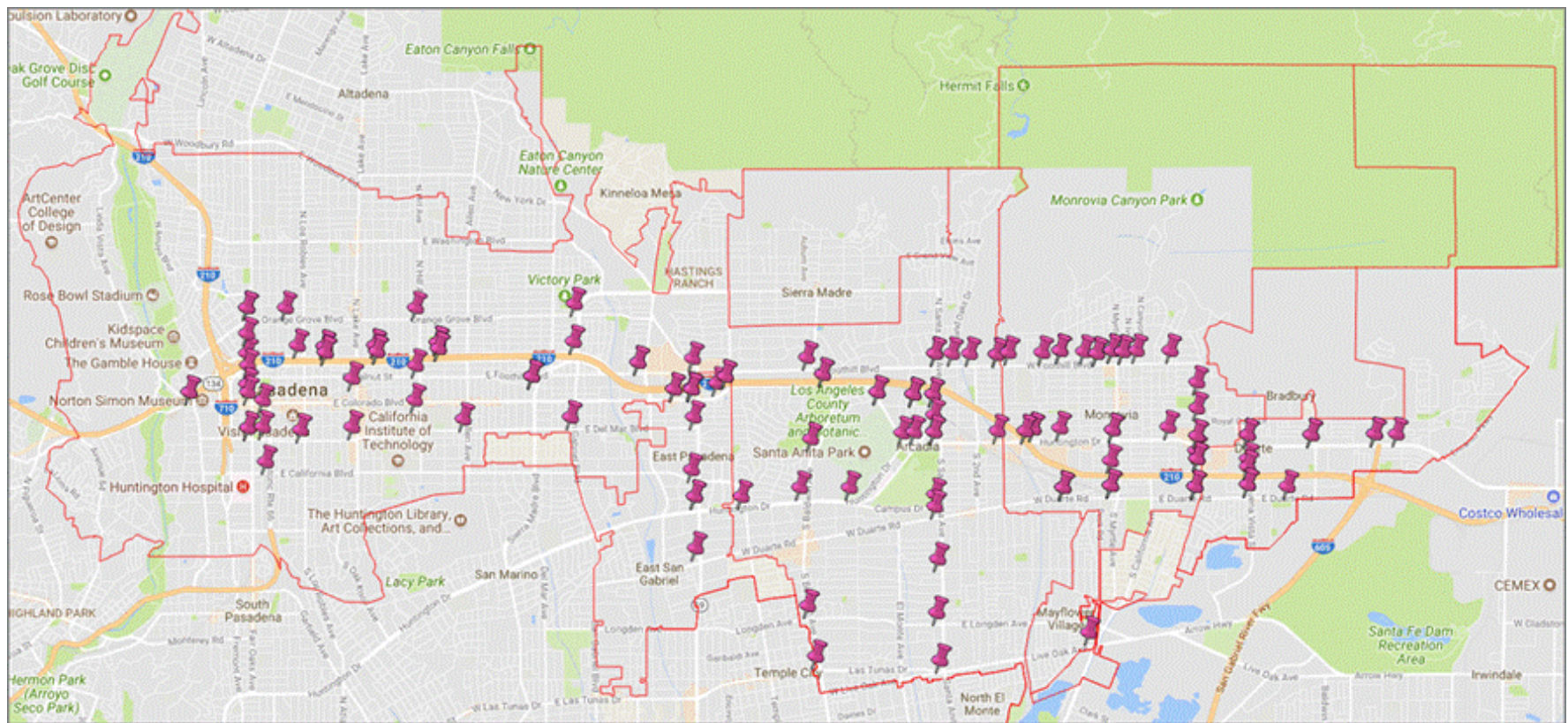
23

#	Package Description	Contract #	Metro & Caltrans	City of Pasadena	City of Arcadia	City of Monrovia	City of Duarte	LA County
1	Bluetooth – Iteris Velocity	07A4470	√		√			
2	Bluetooth – BlueToad	07A4477	√	√		√	√	√
3	New Controller Cabinets	07A4761	√	√	√			
4	Communication Upgrades	07A4479	√		√	√	√	√
5	Firmware/Timing Plan Updates/ Controller Upgrades	07A4480	√	√	√	√		√
6	Video Detection System	07A4481	√	√	√	√	√	√
7	Data Communication Module and Video Detection Software Upgrade	07A4755	√	√	√	√	√	√
8-1	DMS Procurement	07A4792-3	√	√				√
8-2	DMS Integration	07A4794	√	√				√
8-3	21 DMS Installation	Stakeholders	√	√				√
	11 Static Sign Installation	Stakeholders	√	√	√	√	√	
9	Environmental Stations with Air Quality Sensors and Open Data Systems (ODS)	07A4388	√					



Project Area (cont.)

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UPDATE ON PACKAGES 1-9

Jun 6, 2020



Package Status – Pkg # 1

26

Pkg. #	Pkg.	Contract #	Project Status
1	Bluetooth – Iteris Velocity	07A4470 PTM	<ul style="list-style-type: none"> • 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

27

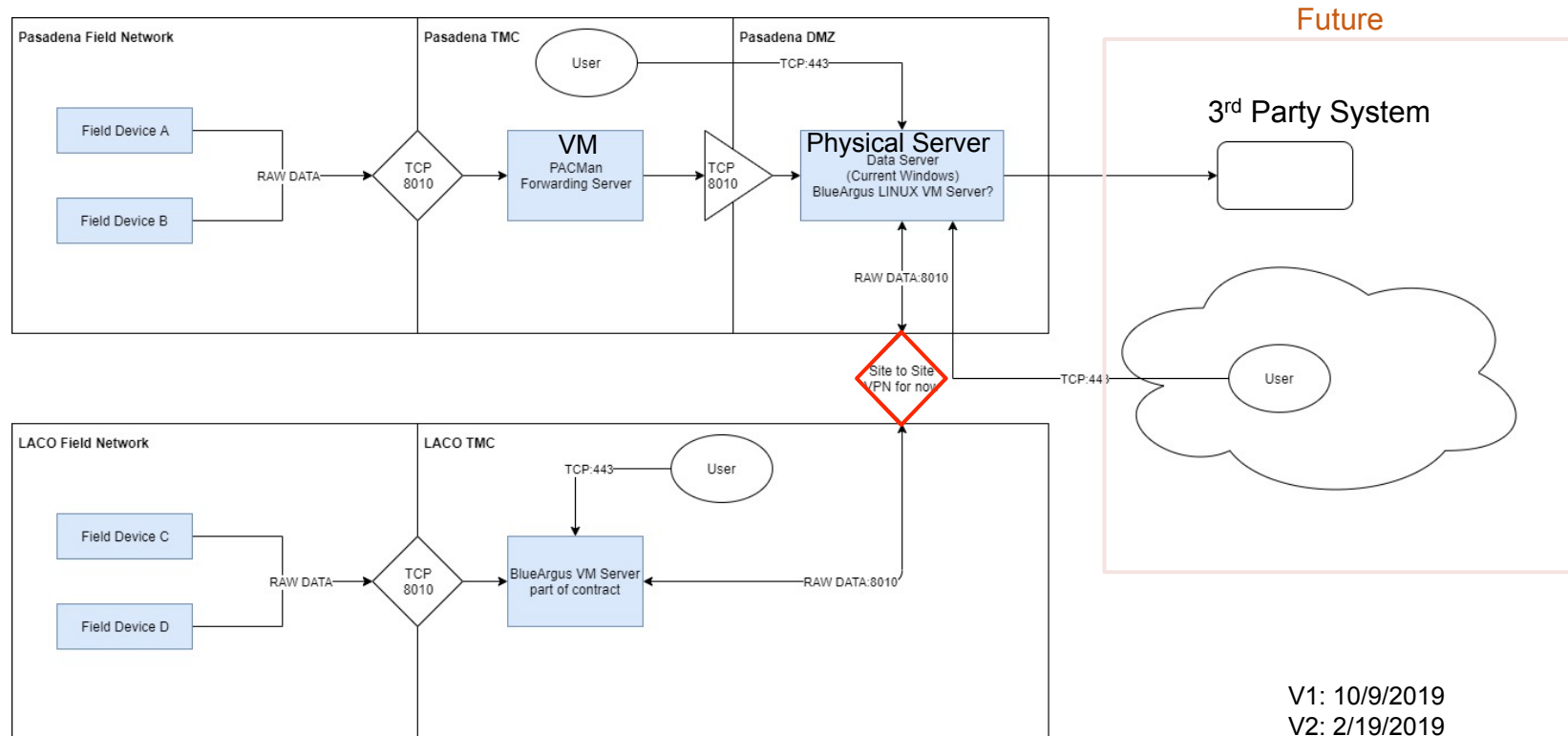
Pkg. #	Pkg.	Contract #	Project Status
2	Bluetooth – BlueToad	07A4477 DBX	<ul style="list-style-type: none"> NTP: 7/10/2018 Kick-off Meeting: 7/30/2018 Submittal Approved: 10/12/2018 Field Installation & Testing: Completed (May 2020) <ul style="list-style-type: none"> LACo, Monrovia, Duarte: 10 locations Caltrans: 1 location without existing comms. Equipment delivered to LA County Pasadena: 11 locations completed TMC Server Installation & Configuration: Completed (May 2020) <ul style="list-style-type: none"> LACo TMC: completed Pasadena TMC: completed System Acceptance Testing: <ul style="list-style-type: none"> 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

28

□ P2 - BlueToad Travel Time System – Comm. Architecture



Package Status – Pkg # 3

29

Pkg. #	Package Name	Contract #	Project Status
3	New Controller Cabinets	07A4761 Crosstown	<ul style="list-style-type: none"> • Advertised: 9/26/19 • Awarded: 2/11/2020 • NTP: 2/19/2020 • Kick-off Meeting: 2/25/2020 • Material Submittal Review <ul style="list-style-type: none"> • Arcadia (1 locations): Approved • Pasadena (7 locations): To submit missing cutsheets • Installation : <ul style="list-style-type: none"> • 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

30

Pkg. #	Package Name	Contract #	Project Status
4	Communication Upgrades	07A4479 Kanaan Construction	<ul style="list-style-type: none"> NTP: 7/13/2018 Kick-off Meeting: 7/30/2018 Submittal & RFI Approved: 5/6/2019 Equipment procured Installation of 35 locations: completed Testing & Acceptance: completed (1/13/2020 & 4/14/2020) Contract to be Closed: 6/30/2020



Package Status – Pkg # 5

31

Pkg. #	Package Name	Contract #	Project Status
5	Firmware/ Timing Plan Updates/ Controller Upgrades	07A4480 CPE, Inc	<ul style="list-style-type: none"> • NTP: 7/17/2018 • Kick-off Meeting: 7/30/2018 • Submittal Reviewed but Required hardware/firmware changed per Stakeholder Comment • Contractor revised price estimate (\$124,971) lower than original amount (\$171,600) – reviewed & approved by stakeholders • Material Submittals – approved • Materials Procurement – order placed, lead time 16-20 weeks • Material Est. delivery – 8/5/2020 (POC confirmed) • Installation Permits Application – in progress • Expected to be completed: Q3-Q4, 2020

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

32

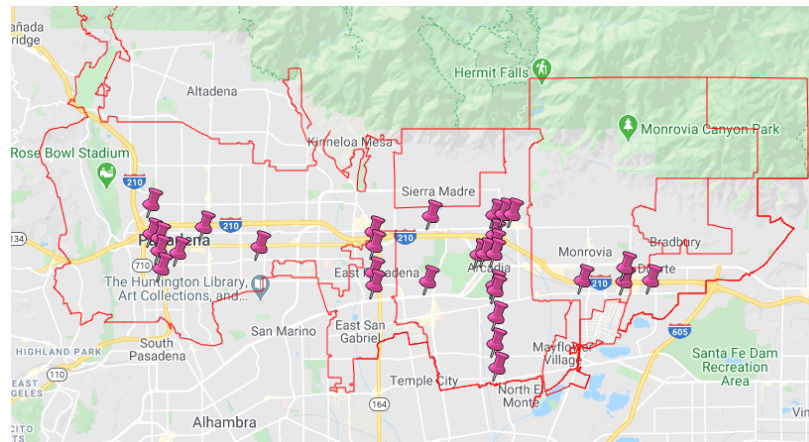
Pkg. #	Package Name	Contract #	Project Status
6	Video Detection System	07A4481 Traffic Loops Crackfilling, Inc	<ul style="list-style-type: none"> NTP: 7/10/18 Kick-off Meeting: 7/30/18 10/9/18: Conducted Site Survey 10/18/18: Submittal approved Installation: all 22 locations completed (Mar 2020) Installation (22 locations): <ul style="list-style-type: none"> 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

33

Pkg. #	Package Name	Contract #	Project Status
7	Data Communication Module and Video Detection Software Upgrade	07A4755 Crosstown	<ul style="list-style-type: none"> 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 <p>Expected to be completed: Q3-Q4, 2020</p>



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

34

Year	2020												2021						
Month	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7
DMS Procurement																			
DMS Delivery																			
DMS Installation																			
DMS Integration																			
DMS System Testing																			
Training																			



April 2021, Hard Launch of I-210
CC System (Est.)



Package Status – Pkg # 8-1

35

Pkg. #	Package Name	Contract #	Project Status
8-1	Advanced Traveler Information Systems: DMS Procurement	07A4792-3 Elan Moyal	<ul style="list-style-type: none"> • Advertised: 10/25/19 • Awarded: 12/2/ 2019 • Kickoff meeting: 12/19/2019 • Material Submittals & procurement: in progress • Expected to be completed: July 2020



Package Status – Pkg # 8-1

36

Item	Total	Caltrans	LACO	Pasadena	Ordered	Delivery
DMS	21	2	2	17	3/27/20	Late July 2020 (impacted by COVID19)
DMS Poles	19	0	2	17	2/21/20	Source Inspection: Passed 5/13/2020 Est. Shipping Date: 6/12/2020 Est. Delivery Date: 7/1/2020
Pull boxes	19	0	2	17	4/30/20	2 Pull boxed for LACo: Delivered 5/21/2020 (to be confirmed) 17 Pull boxes for Pasadena: 6/1/2020
Power & Comm Cables	11,000 ft	TBD	TBD	TBD	4/23/20	Ordered: Est. Delivery Date: Early Jun 2020 (shipping date not confirmed yet)
Radios	12	0	0	12	5/5/20	Delivered: 6/1/2020
Sign Control System with API	3	1	1	1	3/27/20	Late July 2020
Servers	2	1	0	0		LACo: VM Pasadena: VM (to be confirmed) Caltrans: Physical Server



Package Status – Pkg # 8-2

37

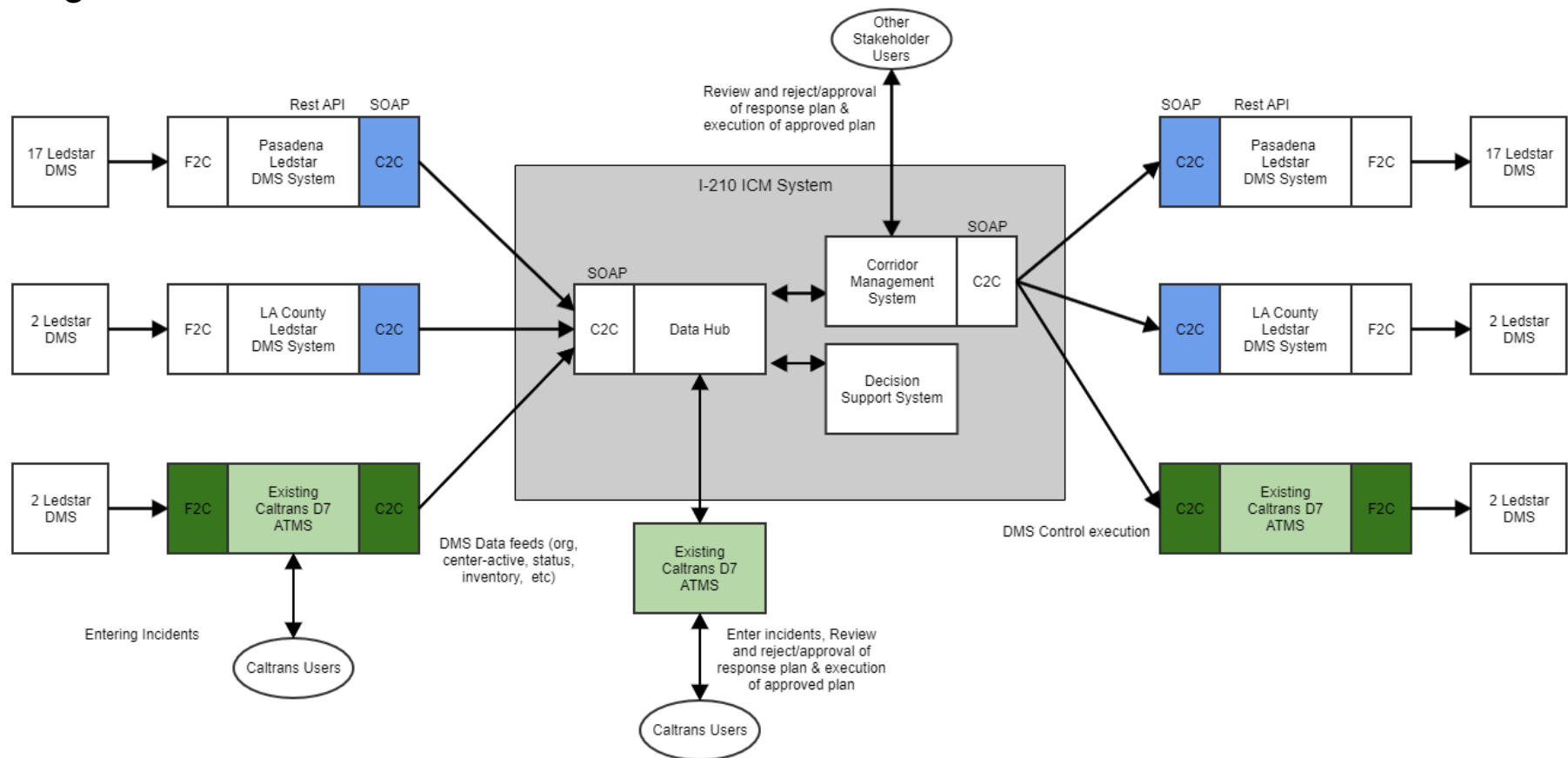
Pkg. #	Package Name	Contract #	Project Status
8-2	Advanced Traveler Information Systems: DMS Integration	07A4794 Parsons	<ul style="list-style-type: none"> Advertised: 11/14/19 Awarded: 1/3/ 2020 Kickoff meeting: 1/14/2020 Working on <ul style="list-style-type: none"> Installation QC checklist: Submitted System Diagrams: <ul style="list-style-type: none"> Overall - ready LA County TMC – ready Pasadena TMC – in stakeholder review LARTMC – ready C2C Interface Development: <ul style="list-style-type: none"> Requirement: Revising to address review comments Entering Design & Development Phase: late Jul 2020 D7 ATMS Modification: <ul style="list-style-type: none"> Requirement: Submitted Entering Design & Development Phase: late Jul 2020 Testing: start in Aug 2020 Expected to be completed: : Q1 2021



Package Status – Pkg # 8-2

38

Logic Architecture



Package Status – Pkg # 8-3

39

Pkg. #	Package Name	Contract #	Project Status
8-3	Advanced Traveler Information Systems: DMS & static sign Installation	N/A to be handled by Caltrans, LAPDW, & Pasadena	<ul style="list-style-type: none"> DMS Installation: <ul style="list-style-type: none"> Installation QC Checklist distributed Installation: handled by stakeholder <ul style="list-style-type: none"> LA County: Est. Aug – Oct/Nov 2020 Pasadena: Est. Aug – Oct/Nov 2020 Static Signs Installation: <ul style="list-style-type: none"> Installation QC Checklist distributed Material Inspection: passed 6/4/2020 Material Delivery: July-Aug 2020 Installation: handled by stakeholder <ul style="list-style-type: none"> Aug – Oct 2020 Expected to be completed: Q4, 2020

Item	Total	Caltrans	Arcadia	Pasadena	Duarte	Monrovia	LA County
# of DMS	21	2		17			2
DMS Locations	21	2		17			2
# of Static Signs	31	3	12	1	6	6	3
Static Signs Locations	11	3	4	1	1	1	1
Installation		Caltrans	Arcadia	Pasadena	Duarte	Monrovia	LA County



Package Status – Pkg # 9

40

Pkg. #	Pkg.	Contract #	Project Status
9	Environmental Stations with Air Quality Sensors and Open Data Systems (ODS)	07A4388 Cal Poly Pomona	<ul style="list-style-type: none"> NTP: 6/29/18 Kick-off Meeting: 7/12/18 Environmental stations <ul style="list-style-type: none"> Roadside study done Field installation done – 6/7/19 Collect data and analyze data - ongoing ODS <ul style="list-style-type: none"> Coordination w/ Foothill Transit & Pasadena Transit Coordination w/ PATH <ul style="list-style-type: none"> 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?
			<ul style="list-style-type: none"> Expected to be completed: Q3-Q4 2020 (70%)



Next Steps

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- ❑ 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?

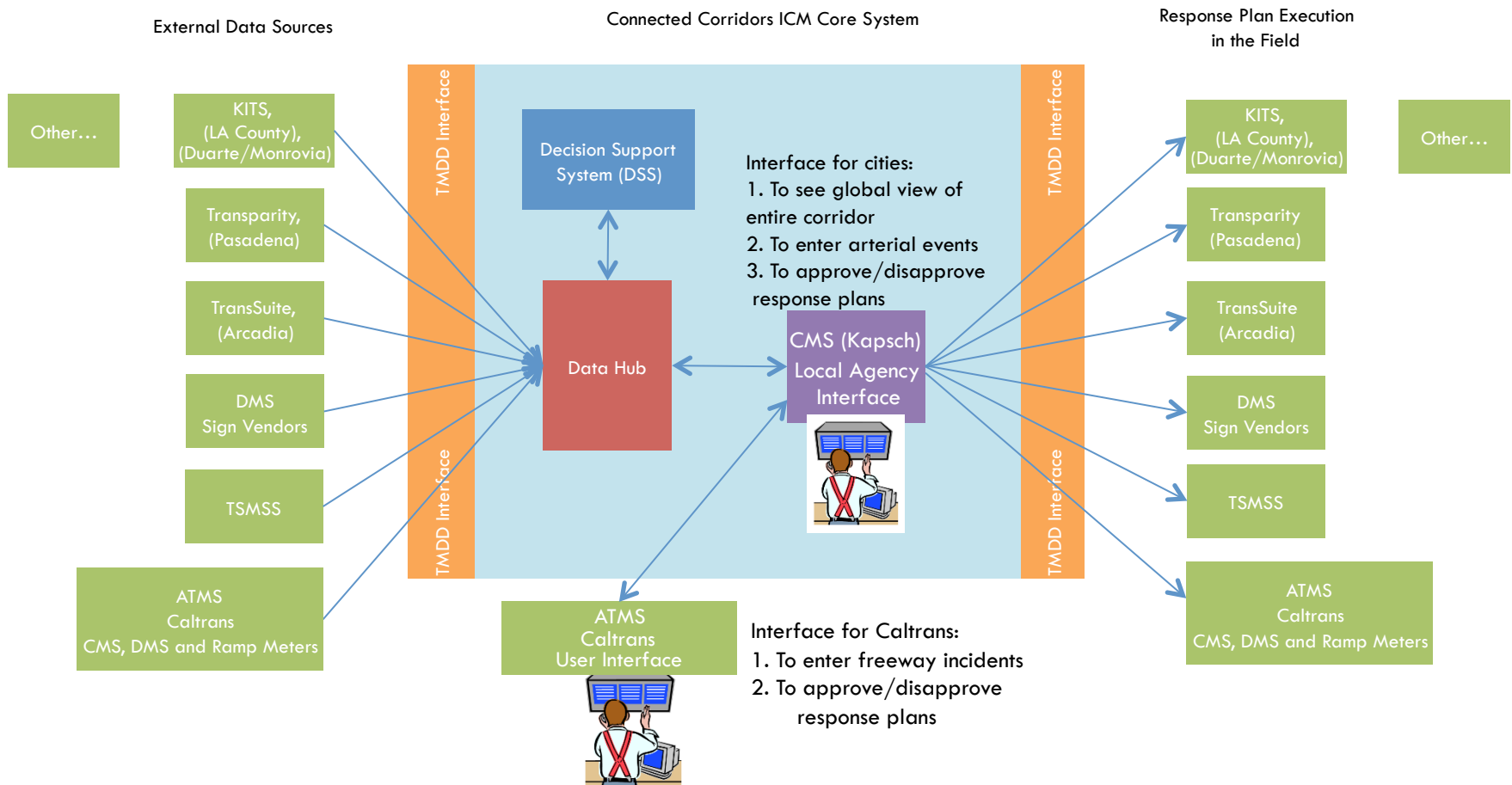
June 6, 2020

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Kapsch Update and Demo

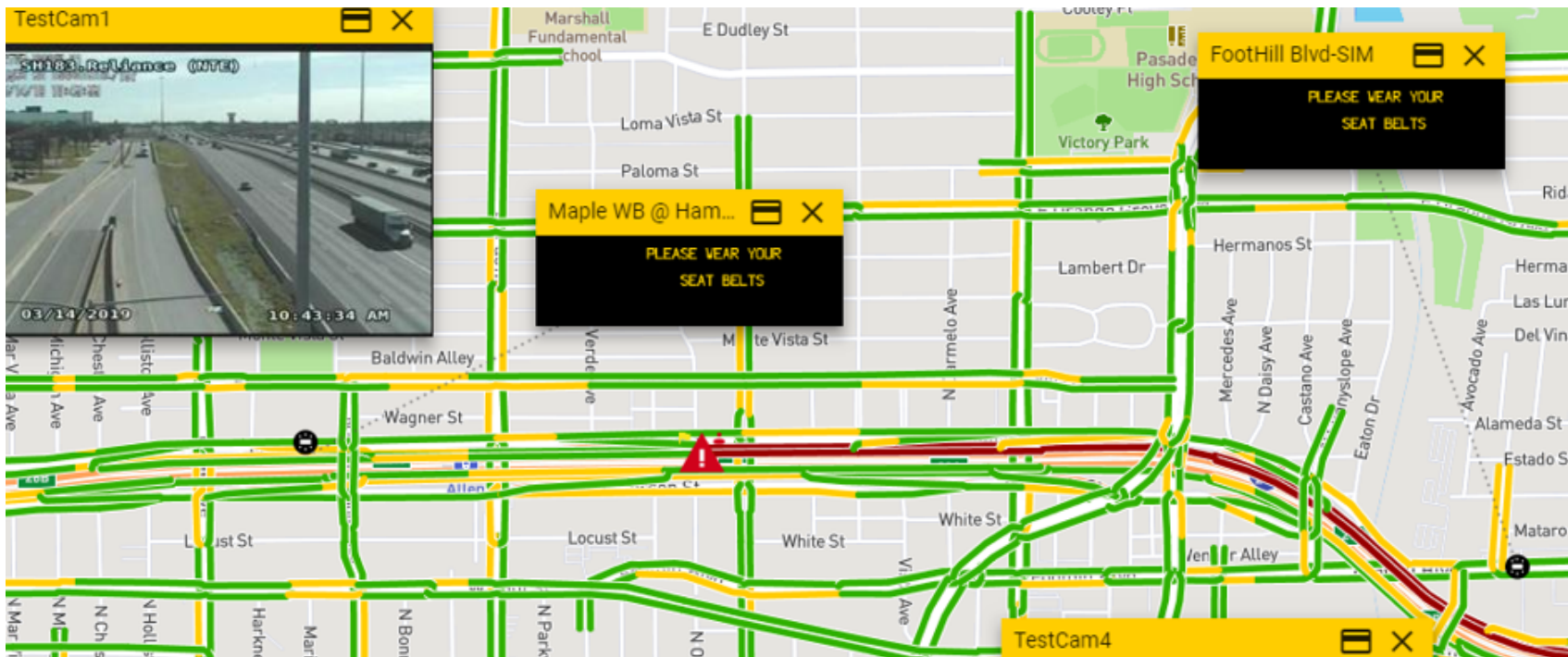
CC ICM System Overview

44



I-210 Integrated Corridor Management Kapsch Update

45



Tim O'Leary
June 9, 2020



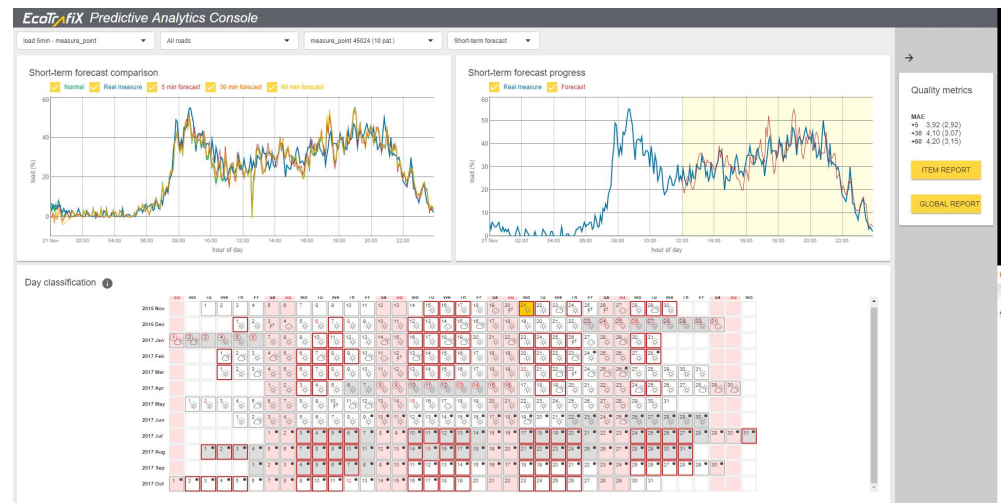
EcoTrafIX Product Status

46

❑ 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

47

Good progress:

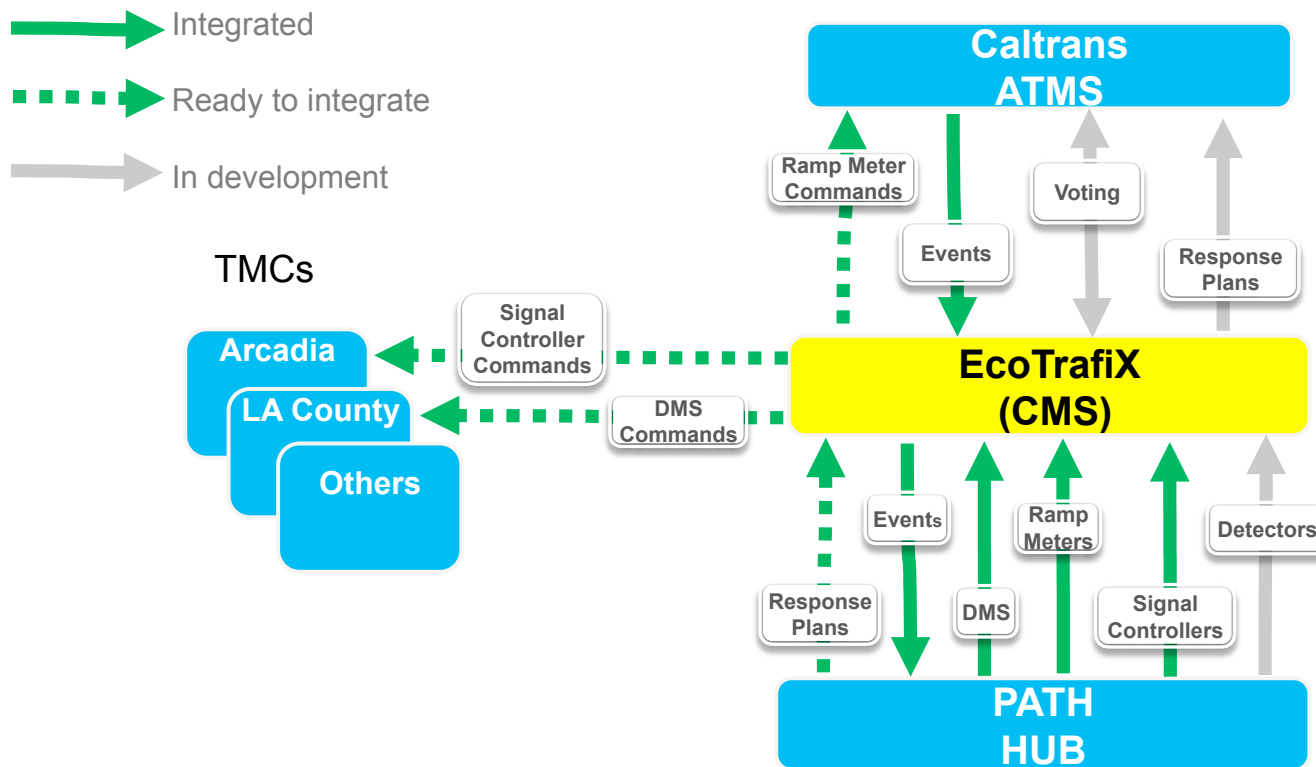
- ❑ EcoTrafIX receiving Response Plans from DSS
- ❑ EcoTrafIX receiving events from ATMS
- ❑ EcoTrafIX forwarding ATMS events to PATH's Data Hub
- ❑ EcoTrafIX deployed to production



EcoTrafIX Interface Status

48

Interface



EcoTrafIX Status

49

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



Thank You!

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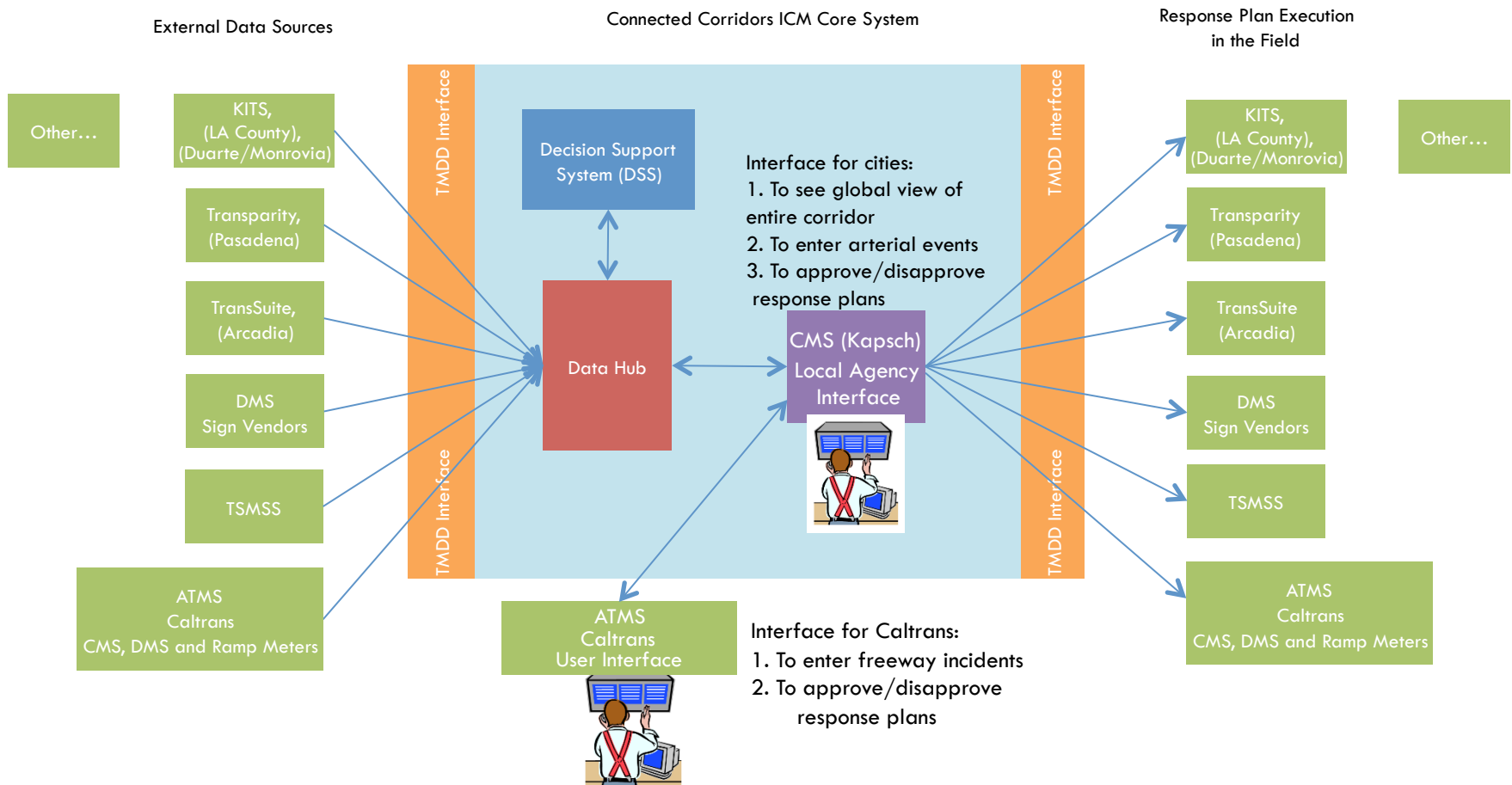


51

Analysis Modeling & Simulation and ICM System Demo

CC ICM System Overview

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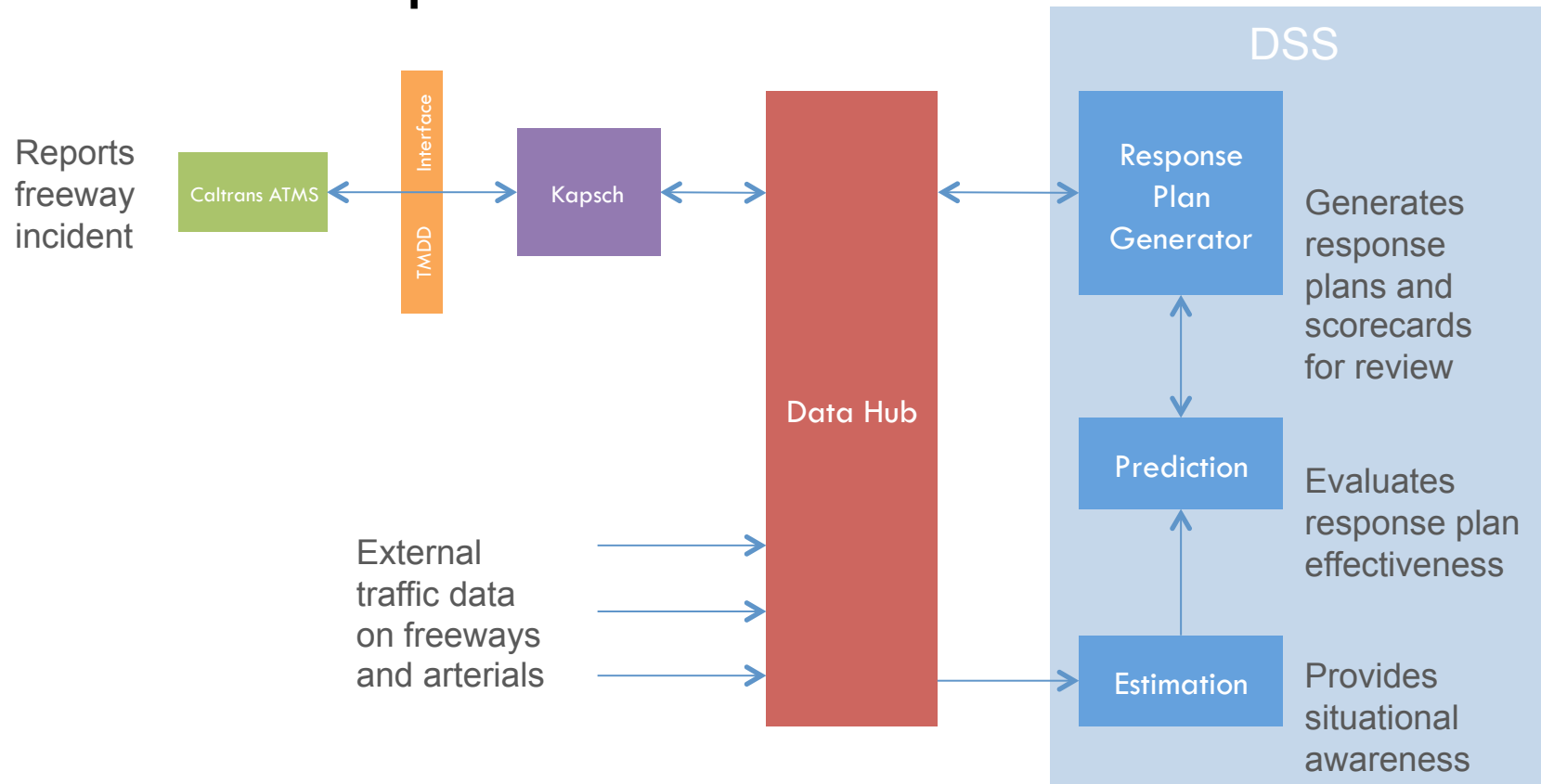
53

Demonstration Overview

Demonstration Overview

54

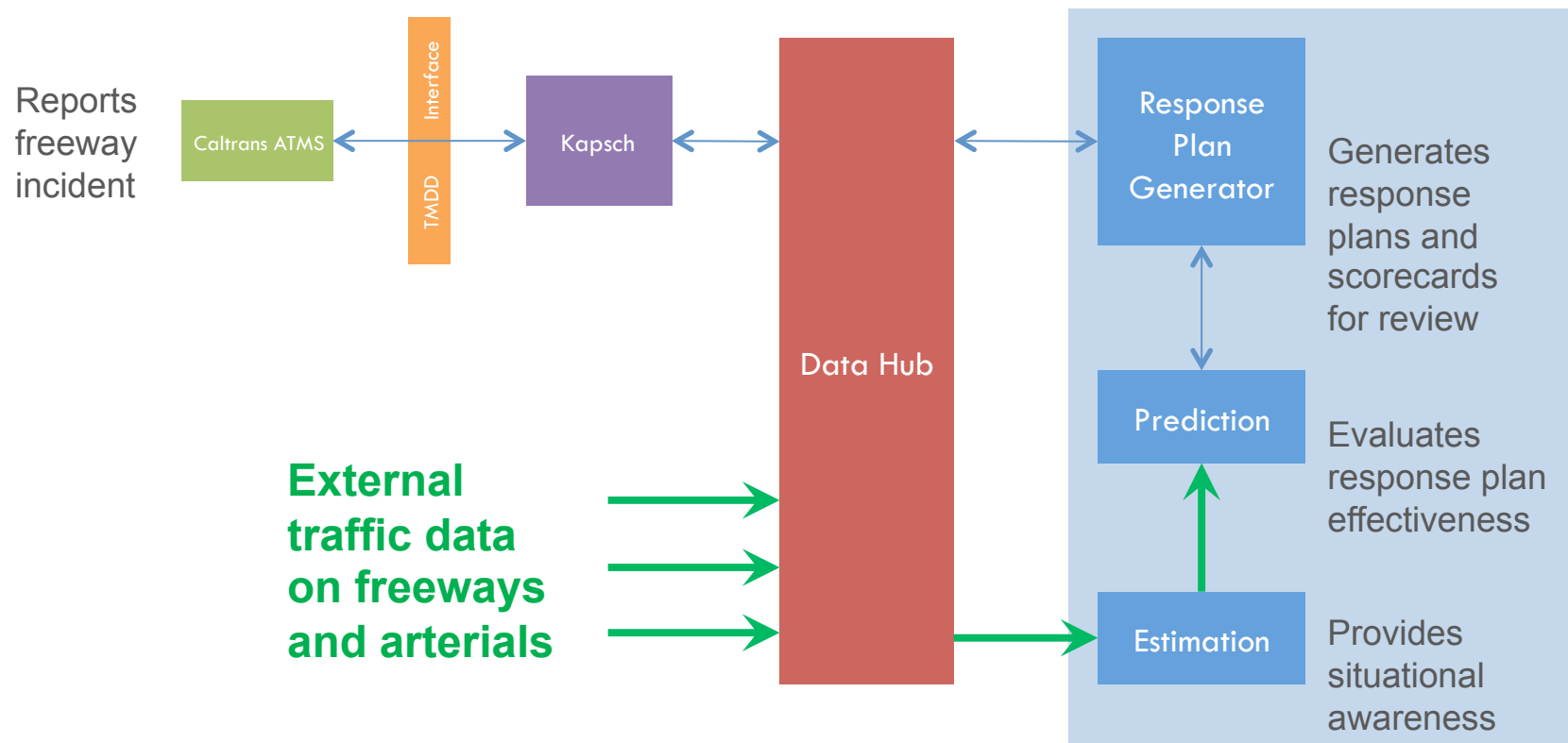
- This is the map that illustrates data flows



Last Time: Estimation Data Flow

55

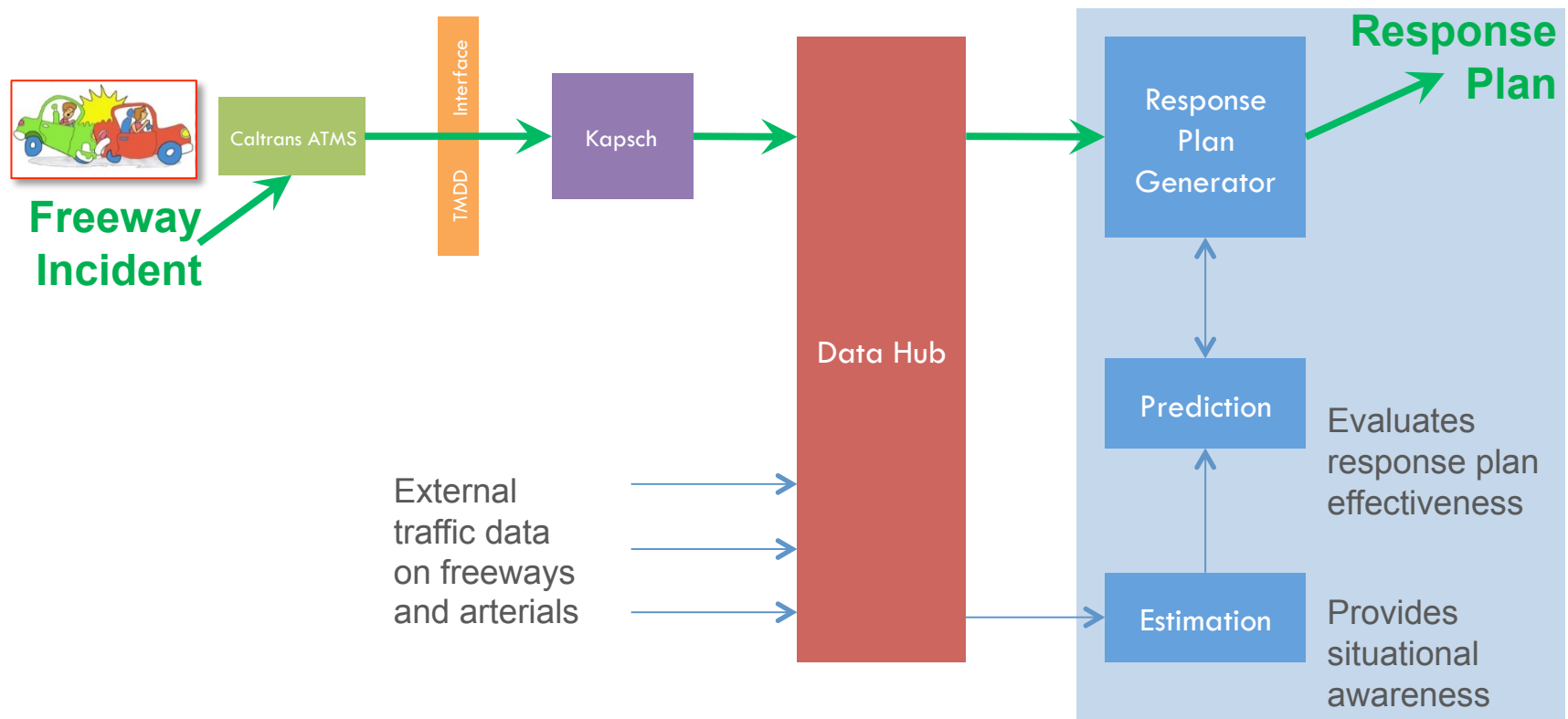
□ Estimation was demonstrated last time



Last Time: Demonstration Overview

56

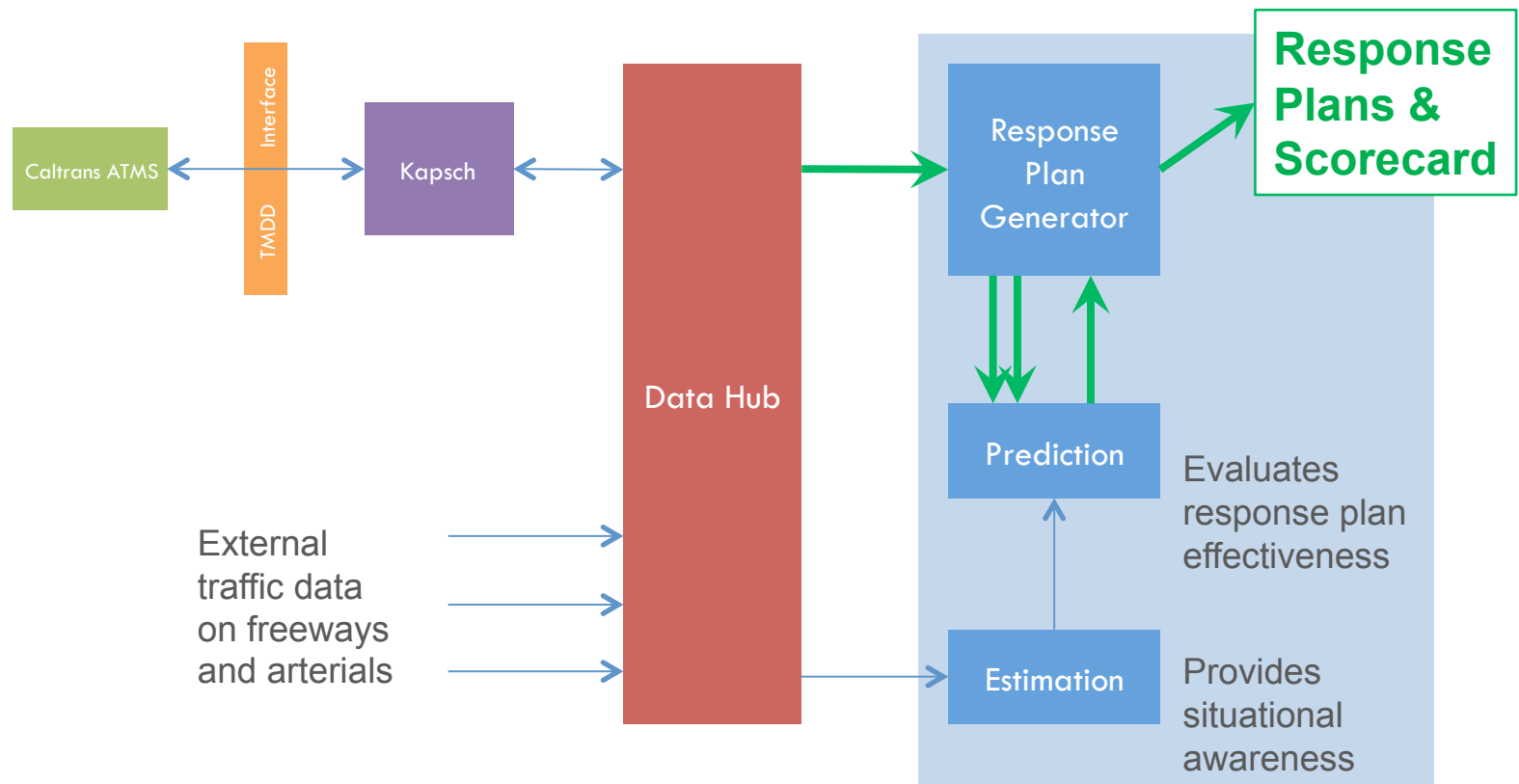
- An ATMS incident triggers response plan generation



Today's Demonstration Overview

57

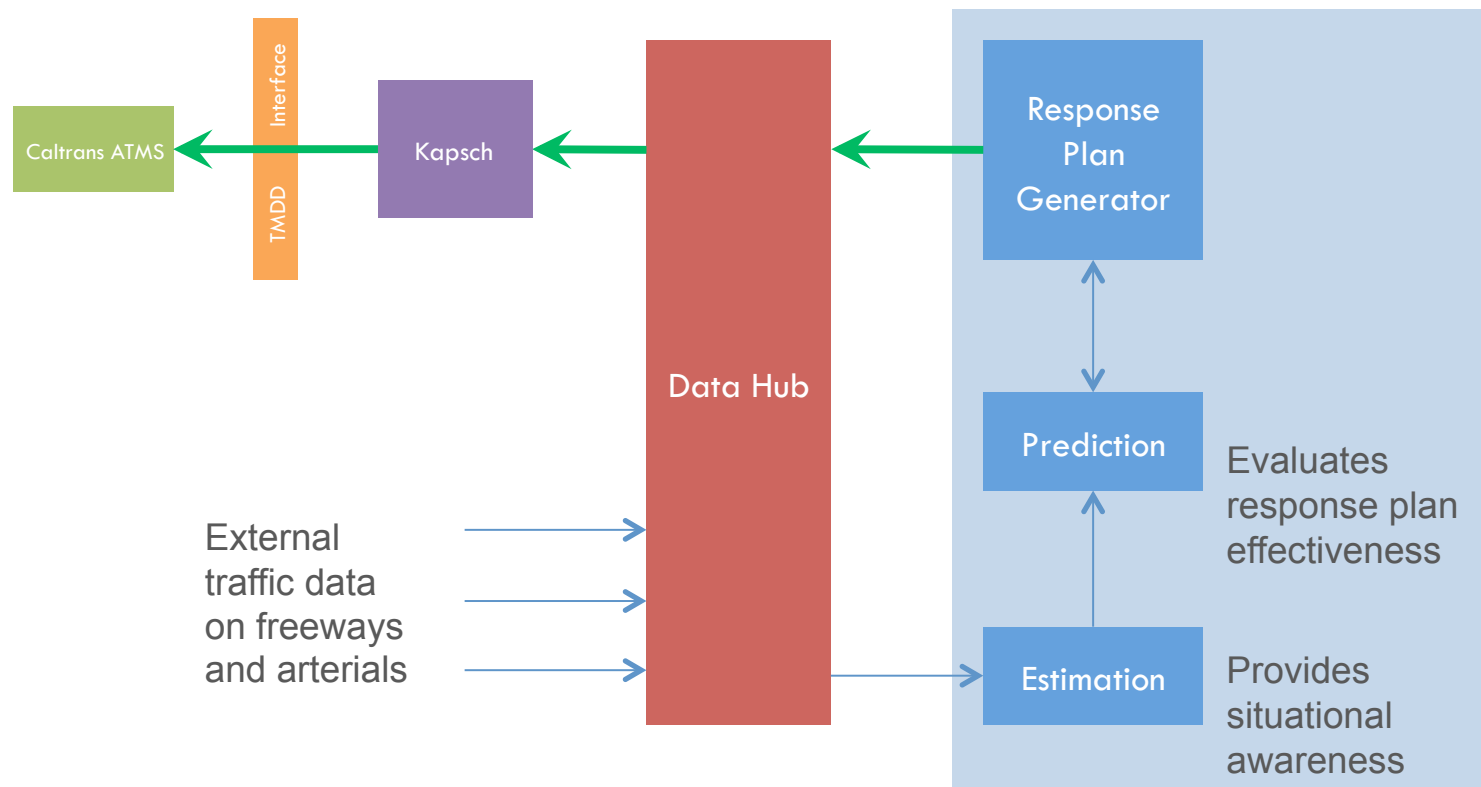
□ Scorecard is now automatically generated



Goal for Next Time (Not Today)

58

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



59

Recent Accomplishments

Accomplishments

60

- ❑ **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

61

- ❑ **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**

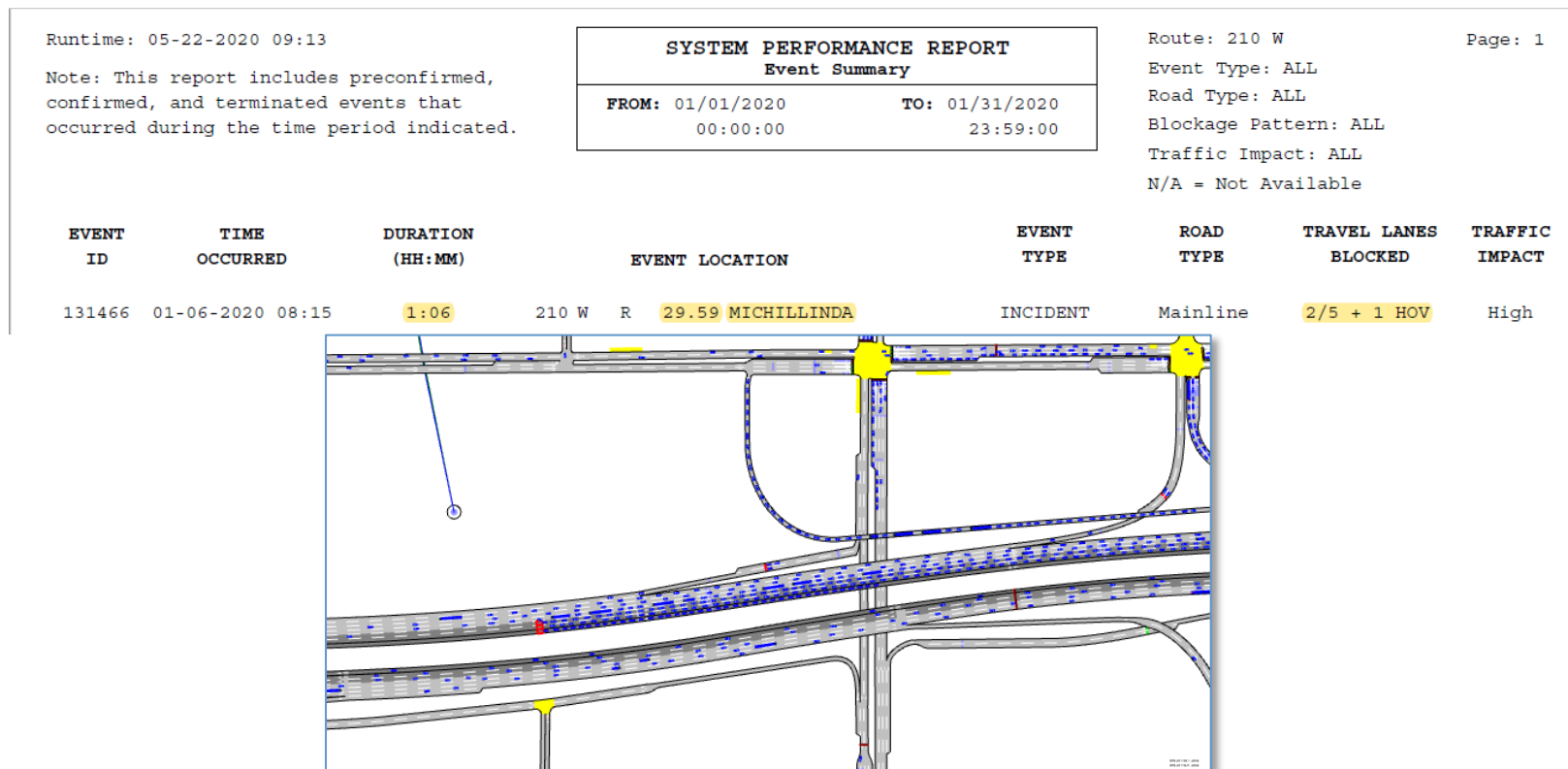
62

Historical Incident

Historical Incident Location

63

□ Car Fire, I-210 WB @ Michillinda, 3 lanes blocked



Historical Incident During AM Peak

64

□ Traffic impacts clearly seen in PeMS

□ ATMS Incident Start:

8:15

□ Sig Alert:

8:27

□ Lanes Open:

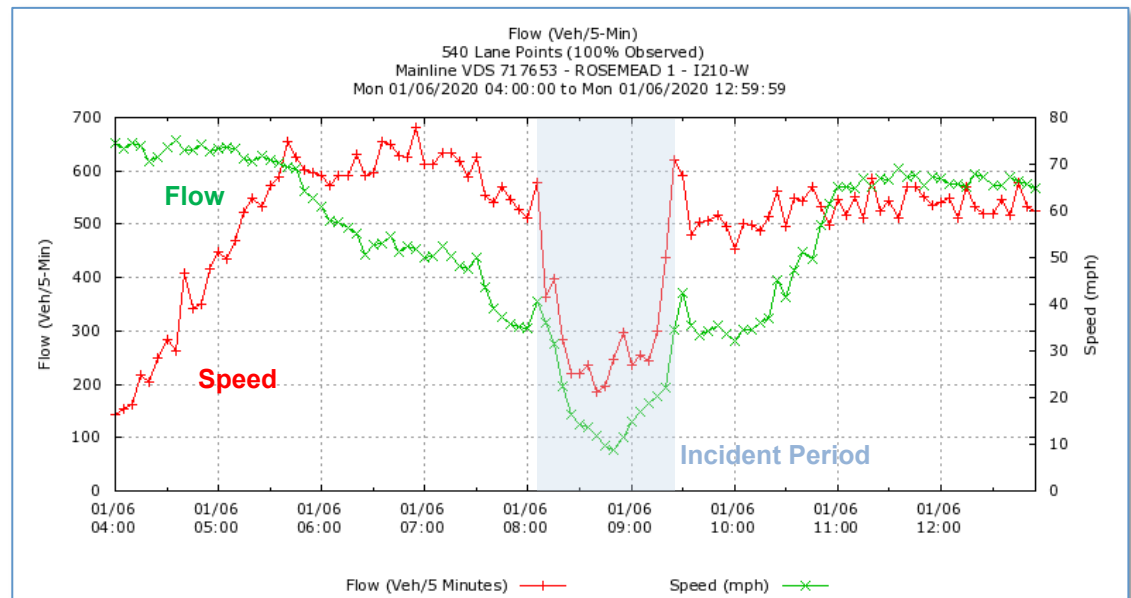
9:12 – 9:19

□ CHP Left Scene:

9:19

□ ATMS Incident End:

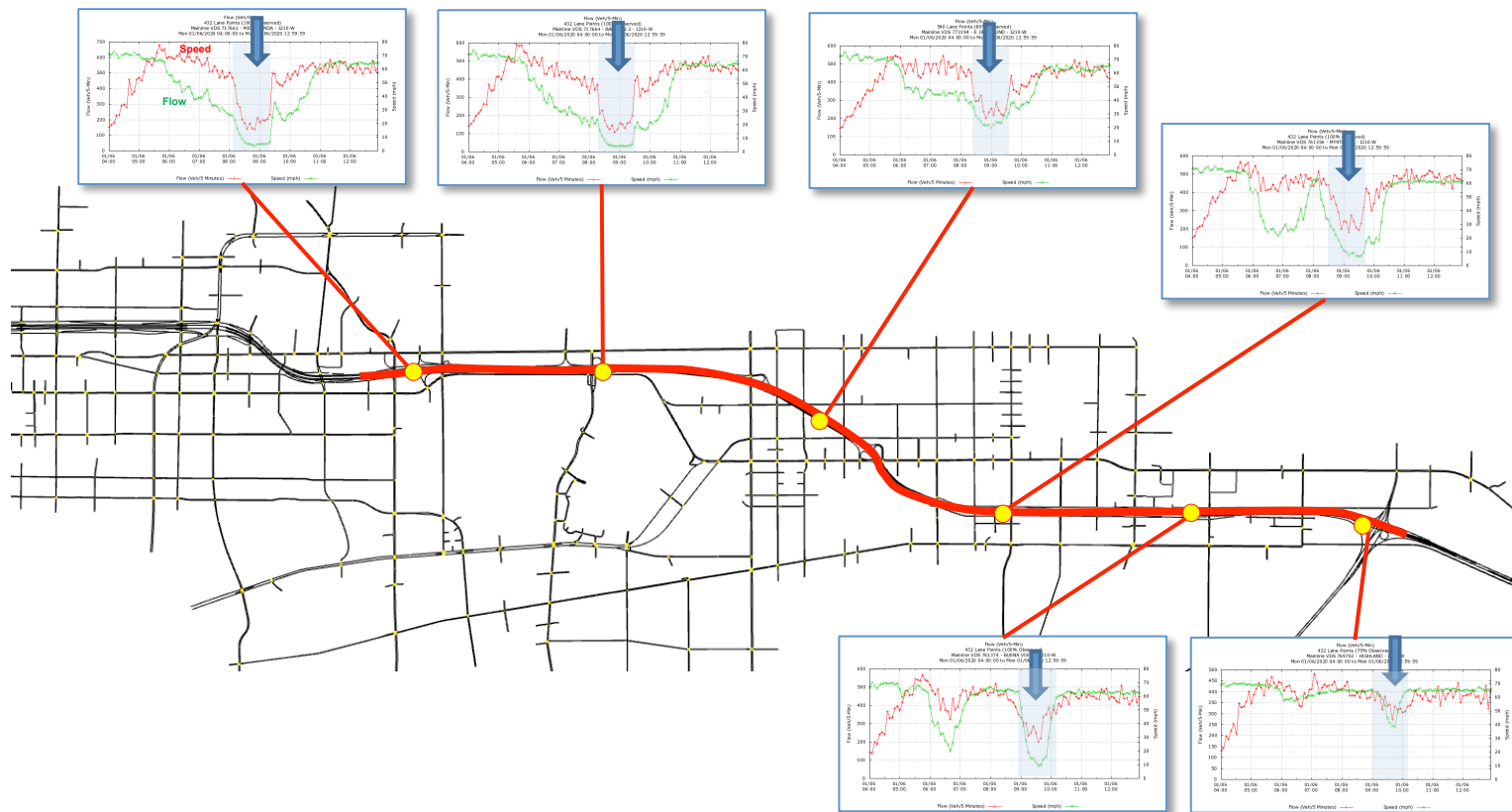
9:24



Historical Incident Freeway Queue

65

- Freeway queue extends to I-605 Interchange

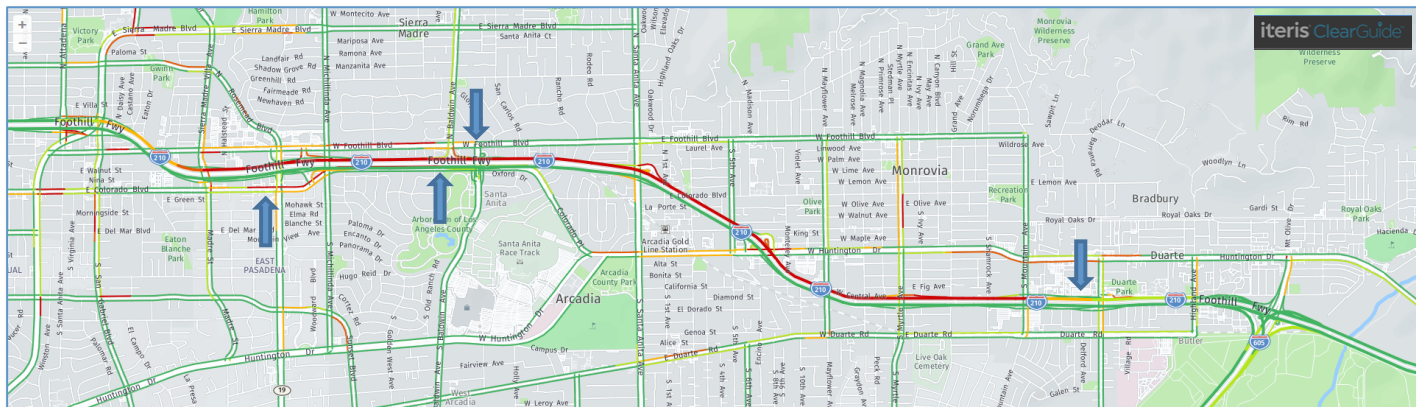


Comparison with model

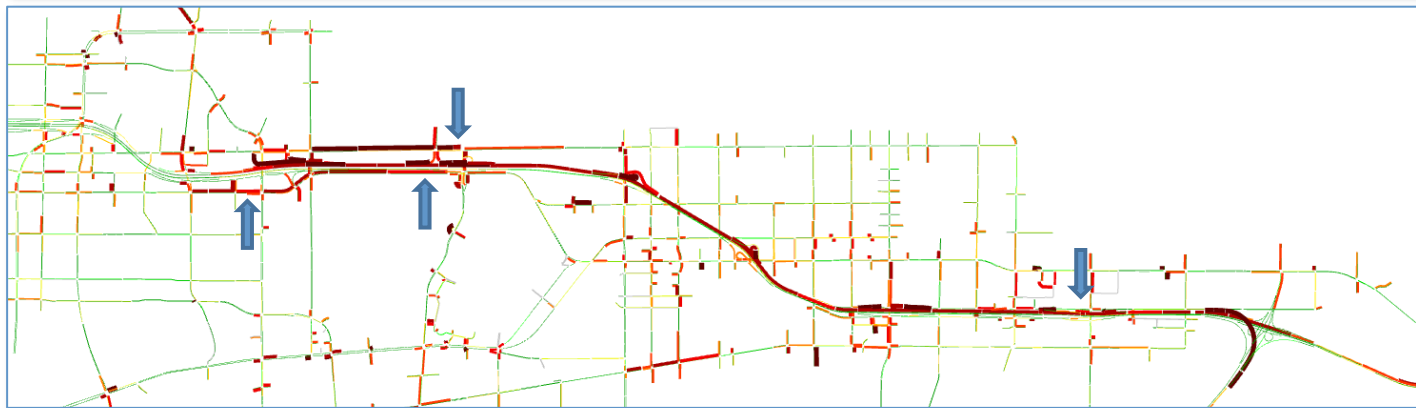
66

- **Excellent match between observed and predicted queuing**

Observed
Speeds
9:00 AM



Simulated
Speeds
9:00 AM

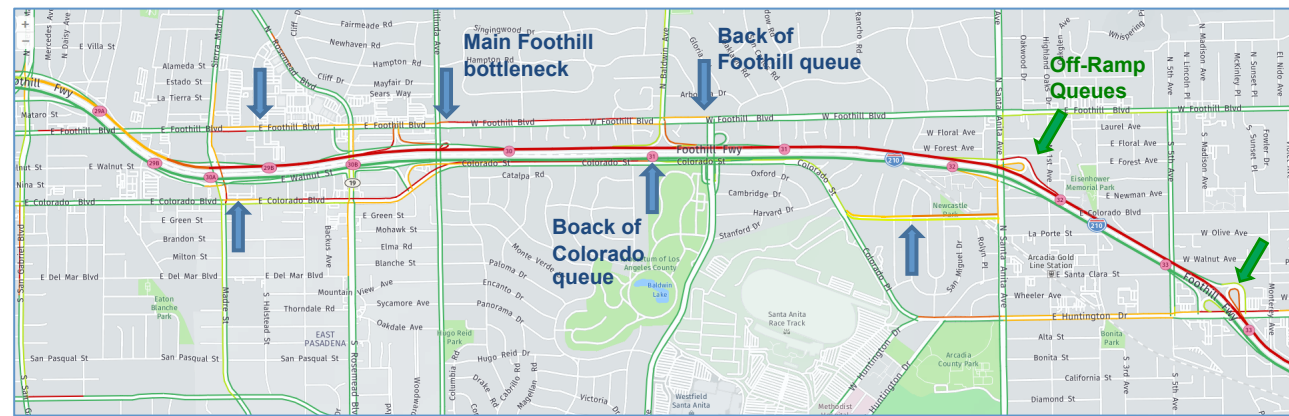


Comparison with model

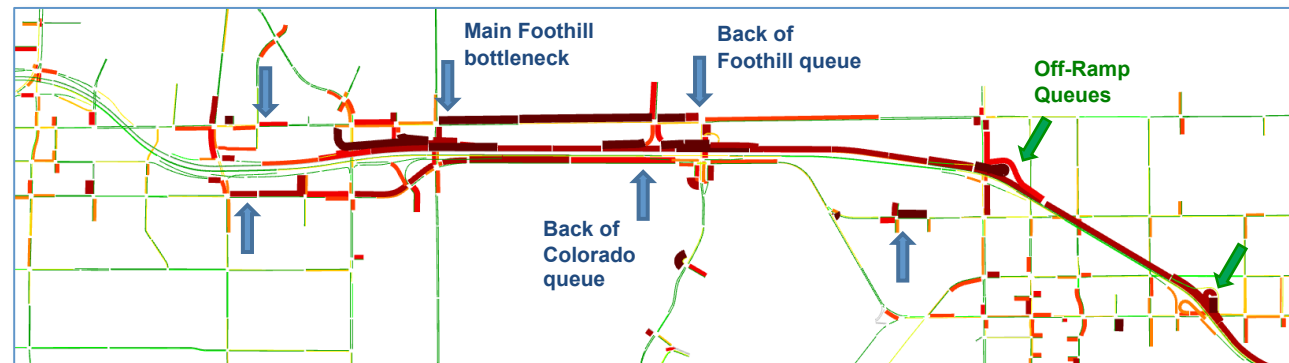
67

- **Excellent match between observed and predicted queuing**

Observed
Speeds
9:00 AM



Simulated
Speeds
9:00 AM

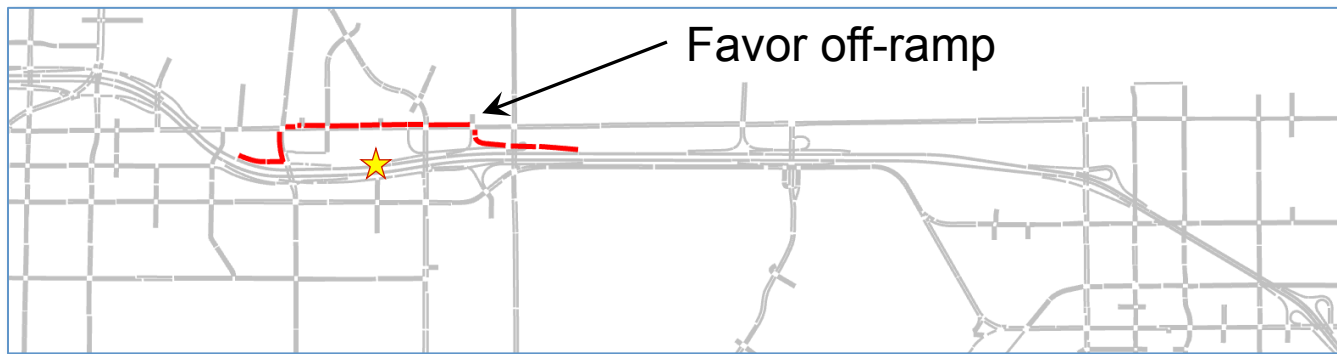


Candidate Response Plans

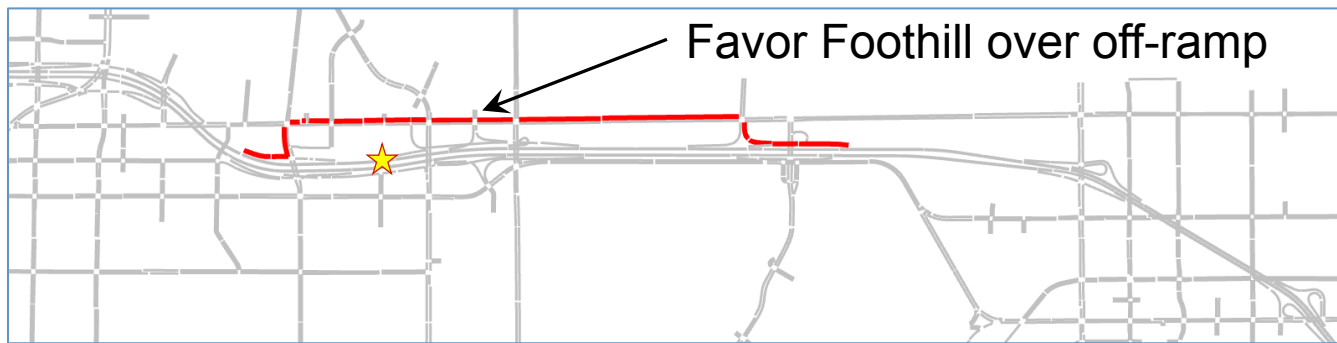
68

□ Two routes to be evaluated

Foothill, Michillinda → Sierra Madre



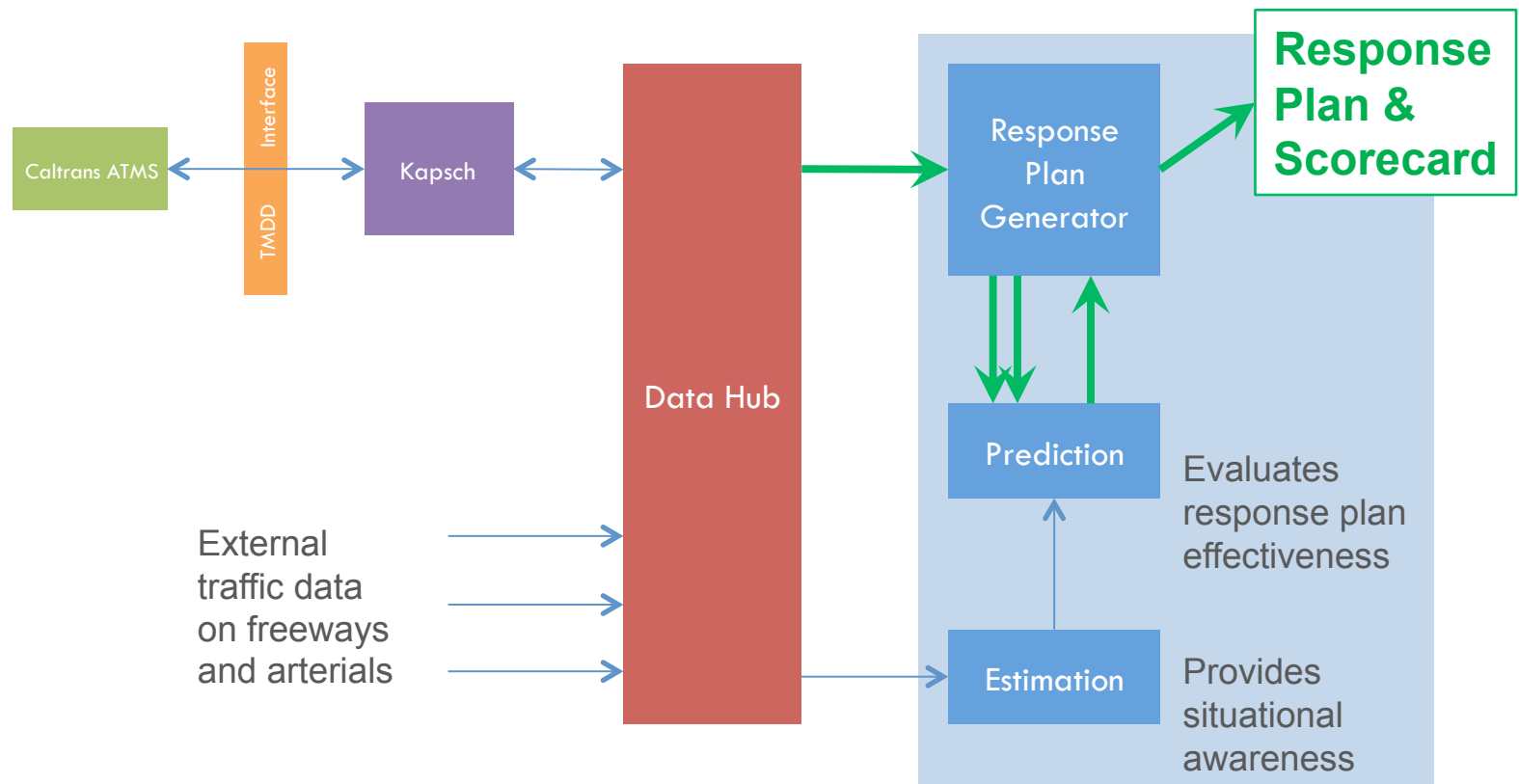
Foothill, Baldwin → Sierra Madre



Today's Demonstration Overview

69

- Continue to refine and integrate the system



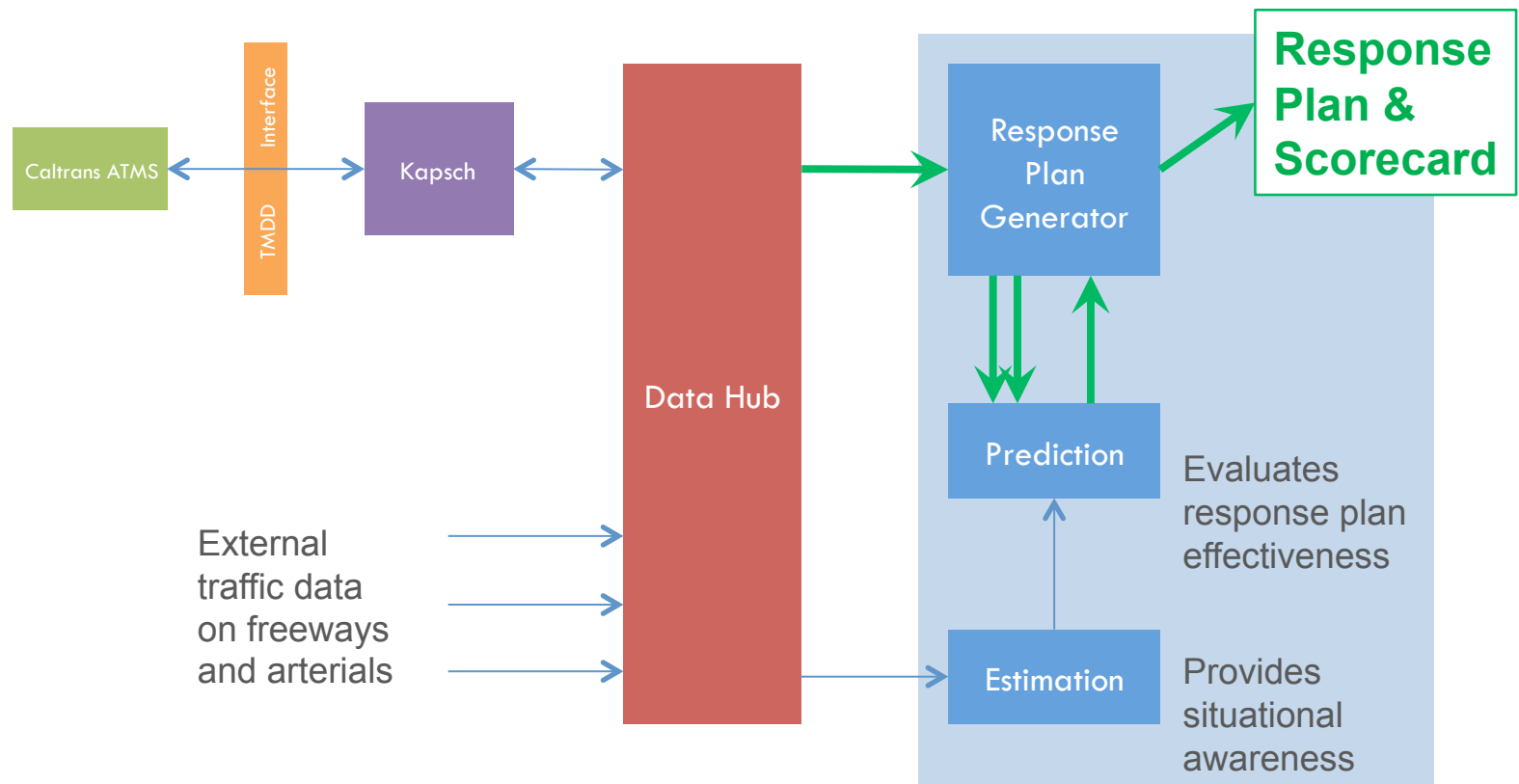
70

Live Demonstration

Today's Demonstration Overview

72

- Continue to refine and integrate the system



Accomplishments

73

- ❑ **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

74

- **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

76

- ❑ **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%

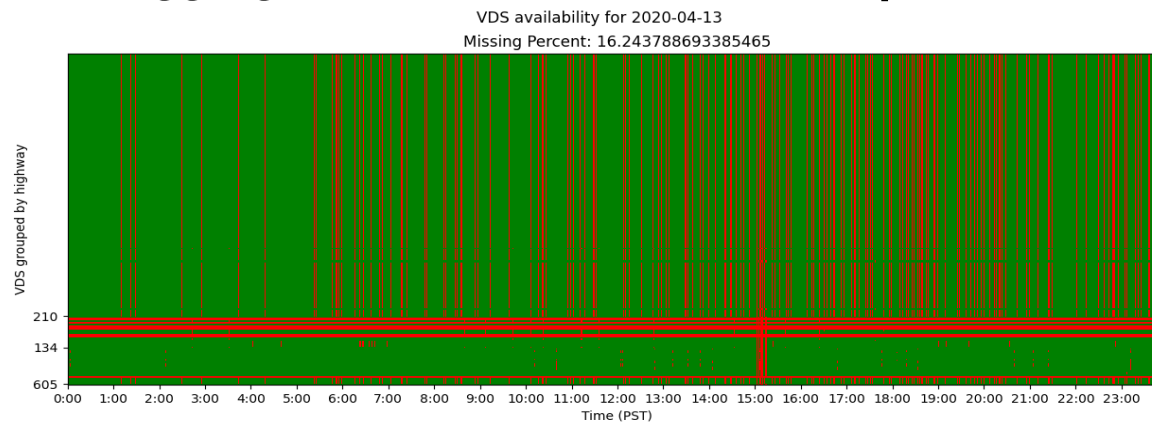
Freeway Section	Direction	Sensor Availability Percentage
I-210 PM 22.6 - 25	East	86.7%
	West	84.8%
	East	92.8%



Real-time I-210 Freeway Data Quality

77

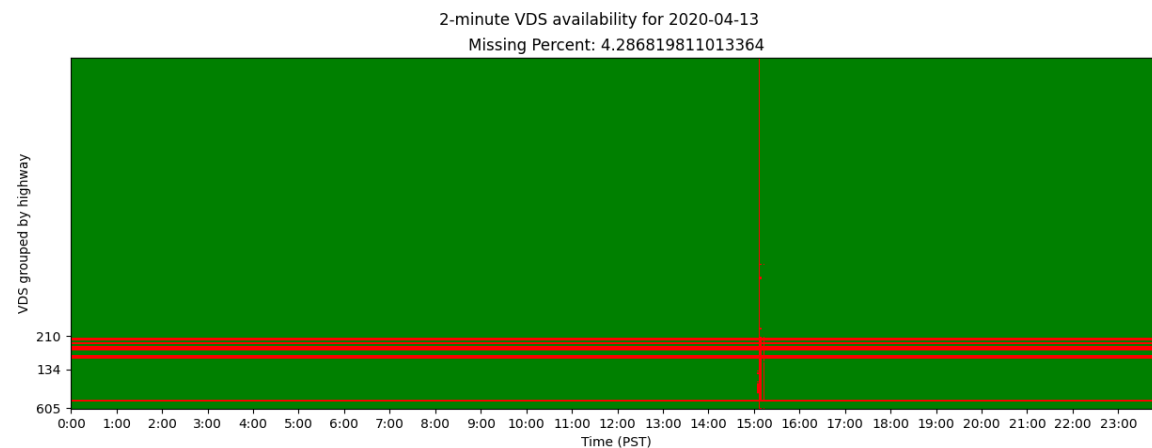
- **An aggregation interval of 2 minutes produces 95% data availability**



Data available

Not available

Red horizontal streak
→ no data from one VDS

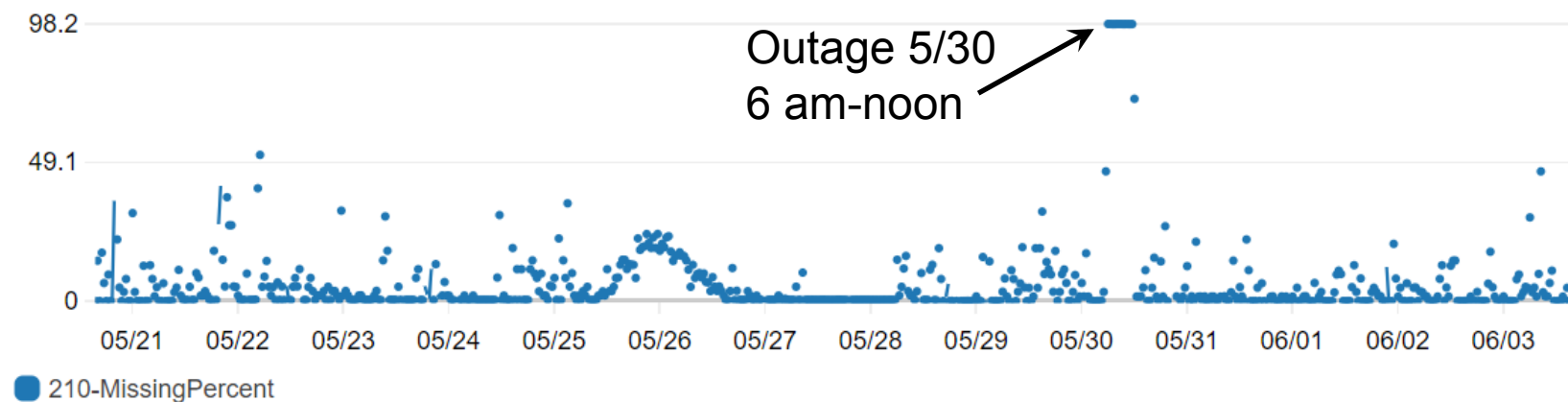


Red vertical streak
→ no data for one timestamp

Real-time I-210 Freeway Data Quality

78

- ❑ **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



Arcadia Data Quality

79

□ **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

80

□ **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



□ 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

82

Stakeholder Progress

Response Plans – Stakeholder Progress

83

- **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

84

□ **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

85

- **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)

