Connected Corridors
Face-to-Face Meeting

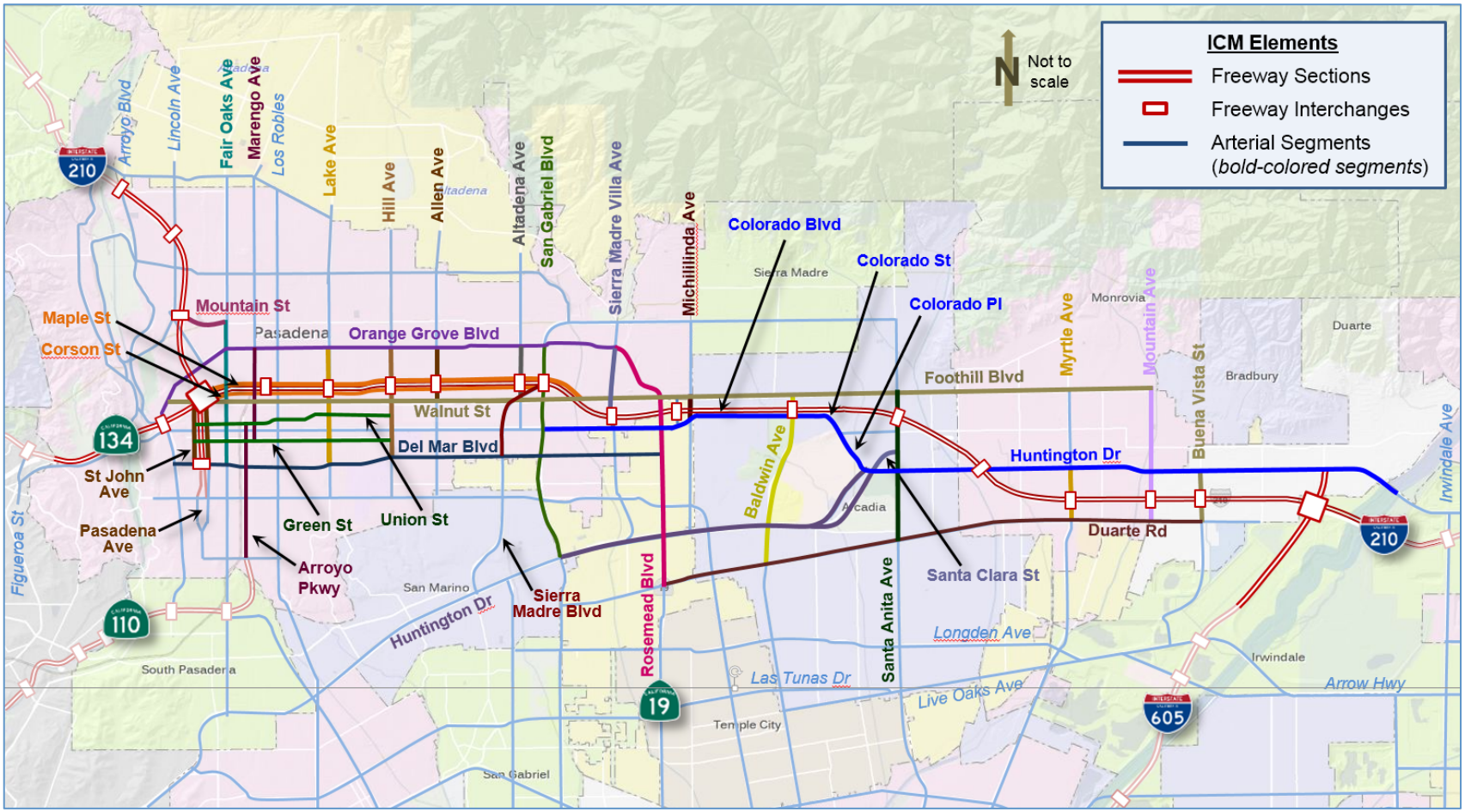
Tuesday, Dec 8th, 2015 – 1:30 – 3:30 pm
Caltrans D7 HQ

Dec 8th, 2015

Agenda

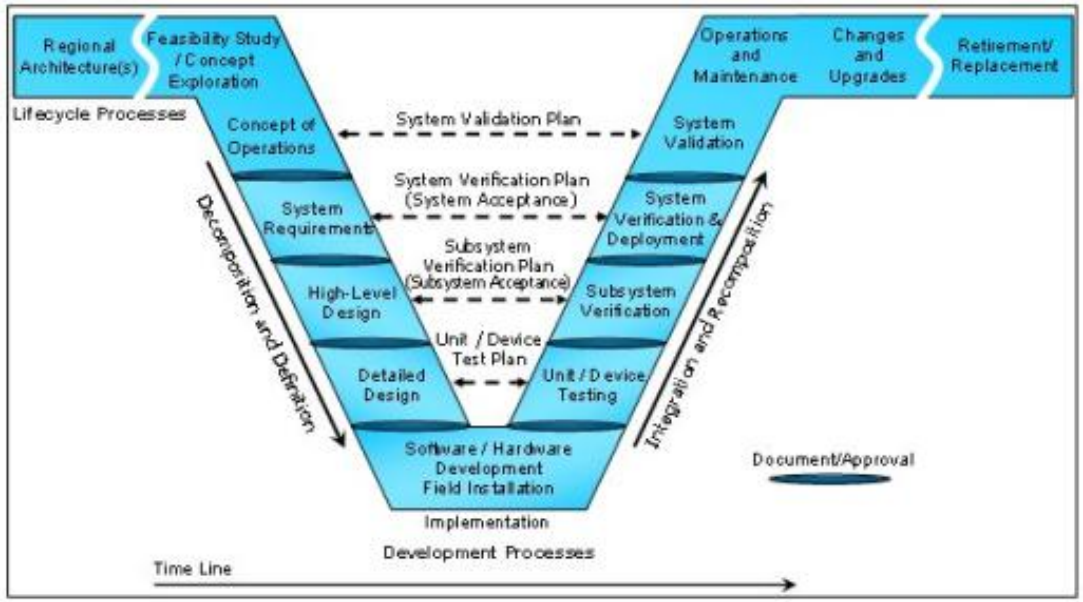
- Introductions
- Overall Connected Corridors Schedule
- ICM Phased Implementation
- Outreach
- Schedules of Associated Projects
- Metro Funded Project Details
- Requirements Update
- Response Plan Generation
- Evaluation Plan
- Action Items and Closing

Our Corridor: The I-210



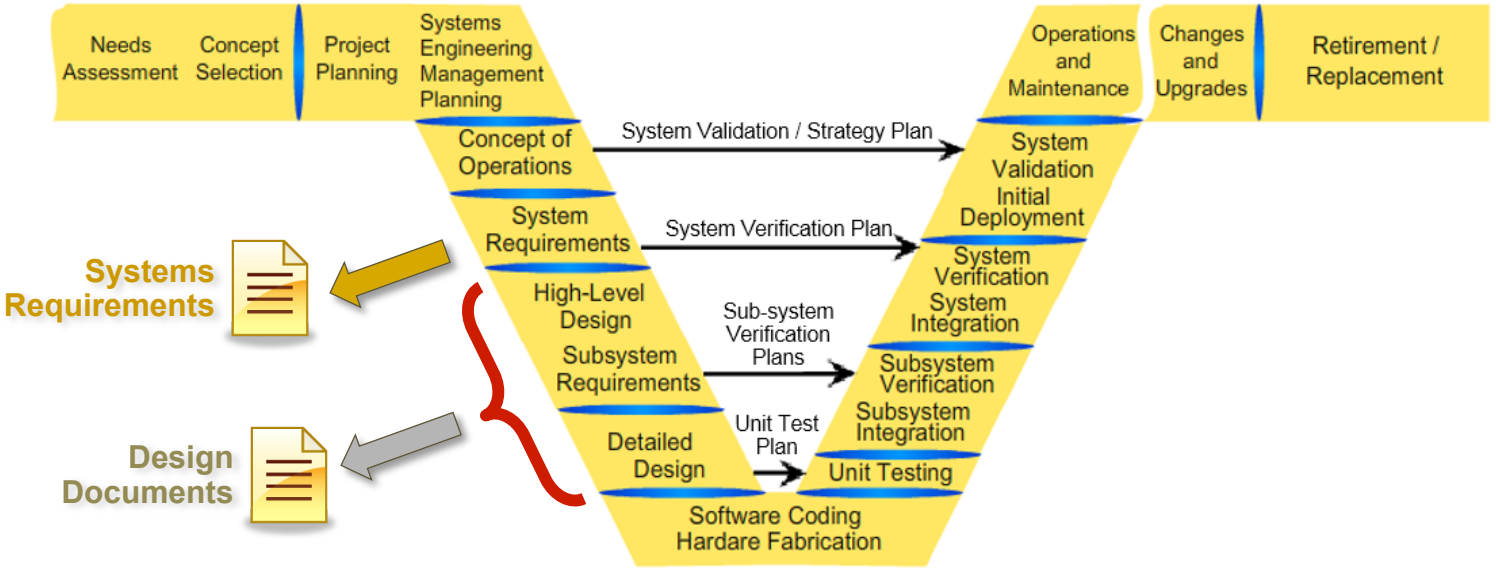
System Engineering "Vee" diagram

- **Planning:** **Resource Allocation and Concept Refinement**
- **Definition:** **Requirements, System Architecture and Response Strategies**
- **Build:** **System Implementation and Testing**
- **Operation:** **Deployment, Operation and Evaluation**

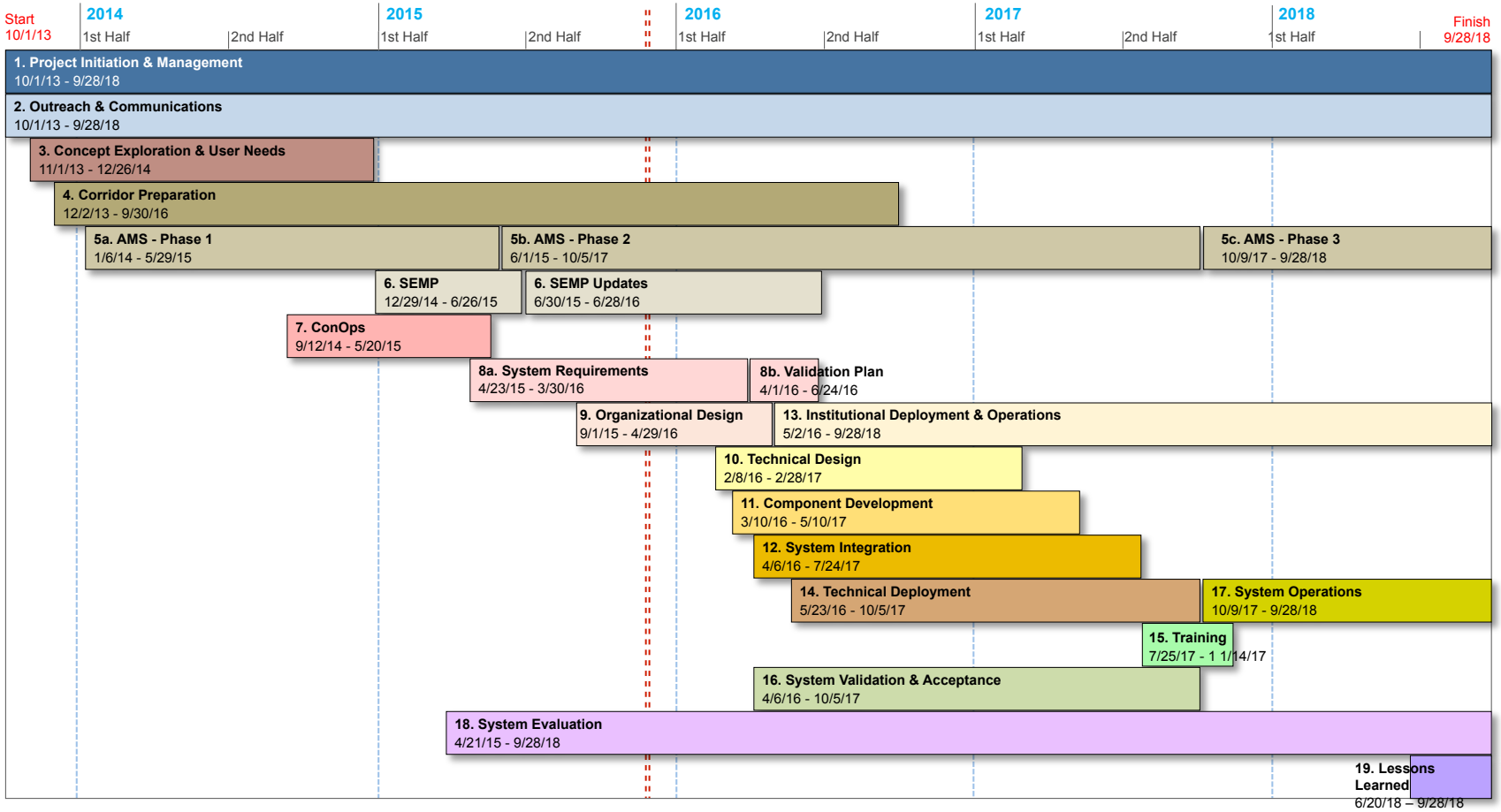


Systems Engineering Next Steps

- **Systems Requirements – What should the ICM system do**
- **Design Documents – How will the requirements be met**



I-210 Pilot Schedule



Caltrans Metro SGVCOG Foothill Transit

ICM Step by Step Implementation

Capability Maturity Matrix (CMM) for ICM

		Level 1: Silo	Level 2: Centralized	Level 3: Partially Integrated	Level 4: Multi-modal Integrated	Level 5: Multi-modal Optimized
Institutional Integration	Inter-agency Cooperation	Agencies do not coordinate their operations	Some agencies share data but operate their networks independently	Agencies share data, and some cooperative responses are done	Agencies share data, and implement multi-modal incident response plans	Operations are centralized for the corridor, with personnel operating the corridor cooperatively
	Funding	Single Agency	Lead Agency tracks funding	Coordinated funding through Lead Agency	Cooperatively fund deployment projects	Cooperatively fund deployment and operations and maintenance projects
Technical Integration	Traveler Information	Static information on corridor travel modes	Static trip planning with limited real-time alerts	Multi-modal trip planning and account-based alerts	Location-based, on-journey multi-modal information	Location-based, multi-modal proactive routing
	Data Fusion	Limited or Manual	Near real-time data for multiple modes	Integrated multi-modal data (one-way)	Integrated multi-modal data (two-way)	Multi-source multi-modal data integrated and fused for operations
Operational Integration	Performance Measures	Some ad hoc performance measure based on historical data	Periodic performance measures based on historical data	High-level performance measures using real-time data	Detailed performance measures in real time for one or more modes	Multi-modal performance measures in real time
	Decision Support System	Manual coordination of response	Pre-agreed incident response plans	Tool selection of pre-agreed plans	Model-based selection of pre-agreed plans	Model-based creation of incident response plans

Where we started

Where we are now if different from where we started

Where we want to be

1) Should not jump too many levels at once

2) Should not have processes at very different levels

Implementation Guidelines

- **CMM Implementation Guidelines**
  - Should be careful in jumping too many maturity levels
  - Should try to be near the same level in each category
- **By moving step by step through this map we codify our current strategy and provide a structure for it**
  - Continuing to build our relationships/communication through common activities
  - Building out our solutions manually and in gradual automation
  - Trying out our solutions to discover what works well and what can be improved – Before we fully automate them
  - Provide time for people to absorb and adapt to the changes in corridor management

Moving up the Maturity Levels

- We will begin planning how to move step by step through the maturity levels as we plan for our final goals
- Of Note:
  - Samson's team is ready to start meeting with the CC stakeholders to discuss and develop intersection timing plans as part of the response planning exercise
  - D7's CMS system is now ready to display multi modal travel time information in real time, we need to discuss targets and work out other details
  - TMS pilot effort will start on January 1st, and provide focus on the up keep and monitoring of TMS elements functionality in the corridor.
  - Lisa is working on agreements/MOU frameworks

Where do we want to be on Traveler Info

- Level 1 - Static information on corridor travel modes
- Level 2- Static trip planning with limited real-time alerts
- Level 3- Multi-modal trip planning and account-based alerts
- Level 4- Location-based, on-journey multi-modal information
- Level 5 - Location-based, multi-modal proactive routing

- 511 Would do this?

Outreach and Communications

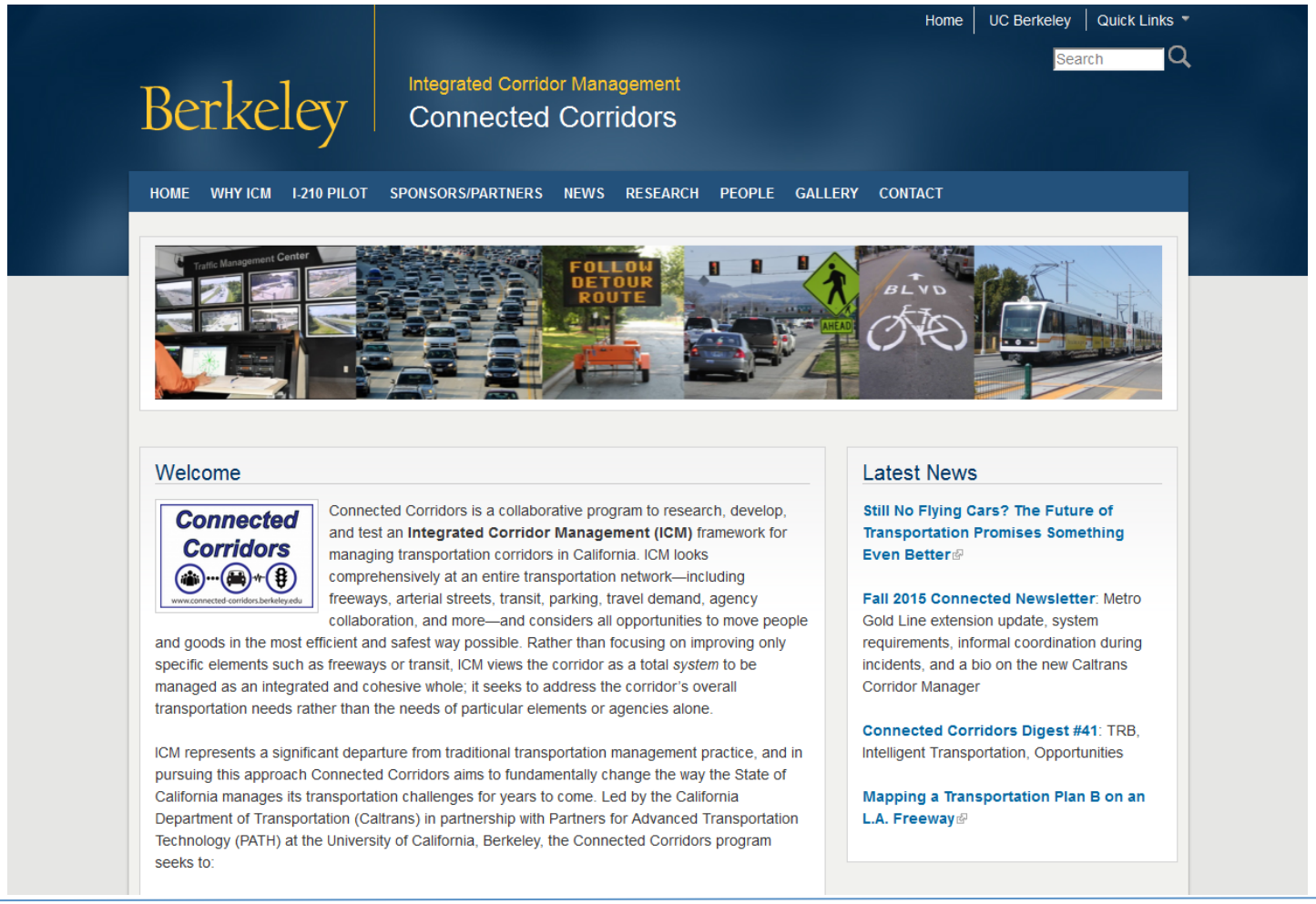
Outreach and Communications

- **Traffic Executive Committee Meeting with Mike Antonovich on Dec 16th**
  - Ali to present the latest version of the newsletter and give a brief summary on the status of the CC Pilot and DCCM
  - Lisa will attend
- **Continuing discussions with Sacramento Assembly Transportation Committee on 1st quarter 2016 hearing**
- **SCAG has included the I-210 Pilot in the 2016 RTP/SCS draft document**

Outreach and Communications

- **PIO requirements meeting is under development; likely will take place the week of December 14th**
- **Next "agreement" is under development; draft prior to next Face-to-Face for stakeholder review**
- **Ongoing discussions on which system engineering documents to share with public on the web site**
- **Connected Corridors website undergoing update**

Updated Connected Corridors Home Page



Schedules of Related Efforts

Goals in re Related Efforts

- **Considerations**
  - Maintain consistency with the LA County Regional ITS Architecture
  - Maintain consistency with Caltrans Strategic Systems
  - Maintain consistency with existing and planned organizational structures

- **Existing systems/interfaces**
  - Information Exchange Network (IEN) – LA County DPW
  - Regional Integration of ITS (RIITS) – Metro
  - 511 – Metro
  - PEMS (Performance Management System) – Caltrans
  - Caltrans Reorganization around Corridors

City and County Schedules

- **Duarte and Monrovia on KITS** — **Completed**
- **County to bring KITS onto IEN** — **December 2015**
- **IEN Contractor Selection** — **Spring 2016**
- **Pasadena i2 intersection change-over** — **December 2016**
- **Caltrans Signals on TSMSS** — **June 2017**
- **IEN Replacement System operational** — **October 2017**

Metro Related Efforts

- **511 Upgrade**
  - Issue RFP — Completed
  - Upgraded system installed — IVR: 11/16; Apps: 6/17
- **RIITS Upgrade**
  - Issue RIITS Modernization RFP — Completed
  - Updates to RIITS — Late 2016
- **Metro – (More detail later in presentation)**
  - Call for Projects Approval — Completed
  - Projects to begin — 2016
- **INRIX Data**
  - Currently available (limited data set) — Completed
  - Future purchase planned? — TBD
- **Work with Waze** — TBD

Caltrans Related Efforts

☐ Rules Engine (DCCM/RSCS)	Dec	2016
☐ Organizing around Corridors		2016
☐ 210 Improvements (3 good bids)	June	2017
☐ Caltrans Signals on TSMSS	June	2017
☐ PEMS Updates		TBD
☐ Data Hub		TBD

Metro Funded Projects Update

I-210 Pilot - Status Summary

- CT, Metro, cities and LA County met on Nov 10, 2015 to refine scope of work that can be constructed with the $6.45 million in Measure R Funds
- Awaiting confirmation from cities and LA County of the current state of their systems in order to develop a priority list of corridor improvements
- CT PM has submitted Finance Letter to HQ on Dec 3, 2015 to obtain approval from DOF to administer the construction contract on city streets
- LA County may want to administer the IEN upgrade for the corridor, which will require a separate agreement with Metro
- Scope of project will be detailed in the Funding Agreement which can be executed in July 2016 after the Metro Board vote

Metro Project Updates

- **Letter of No Prejudice drafted and submitted by Caltrans to Metro; next step**

- **Matching funds:**

Item	Total Quantity	Qualified?	Costs	Comments
Install CCTV (for Signal)	41	31 locations are qualified on or adjacent to the ramps.	$1,860,000	There are 41 CCTV cameras to be installed to view the traffic signals and intersection traffic flows 150,000$ each.
Replace Existing Loop Detectors	1	Part of ramp intersections (terminus)	$270,000	Not all RMSs will have loop detectors replaced at the on or off ramps or mainline due to recent projects in the area.
Upgrade Existing Signal Det System	45	Part of ramp intersections (terminus)	$2,700,000	There are 41 State owned, maintained and operated traffic signals in the project area that will have the loop detectors replaced at the intersections.
Total			**$4,830,000**	

Metro Funding Improvements

- **Detailed spreadsheet showing proposed ITS improvements to be funded using funds received from Metro**
  - Additional detection to capture approaching/turning flow rates
  - Ability to send collected data back to TMC
  - Signal controller improvements (mostly for Monrovia and Duarte)
  - New traffic signal required for a freeway off-ramp in Duarte
  - Bluetooth devices for measuring travel times

Metro Project Update – Request Proposal

LA County (Arterial Corridors - Rosemead, Colorado, Foothill)	Units	Cost	Subtotal
System detection improvements at County intersections	9	$270,000	$362,000
video detection communication modules	4	$10,000	
Bluetooth readers to monitor travel times	4	$32,000	
Environmental sensor station with air quality sensors	1	$50,000	
Duarte (Arterial Corridors - Huntington, Duarte, Buena Vista, Central, Evergreen)	**Cost**	**Cost**	**Subtotal**
Install new intersection traffic signal at Central/Buena Vista	1 location	$300,000	$474,000
Controller firmware/communication improvements	2	$24,000	
Signal detection upgrades at key intersections	2	$60,000	
Bluetooth readers to monitor travel times	5	$40,000	
Environmental sensor station with air quality sensors	1	$50,000	
Monrovia (Arterial Corridors - Huntington, Duarte, Foothill, Myrtle, Mountain, Live Oak)	**Cost**	**Cost**	**Subtotal**
Controller firmware/communication improvements	28	$336,000	$1,156,000
Signal detection upgrades at key intersections	7	$210,000	
Bluetooth readers to monitor travel times	4	$32,000	
Environmental sensor station with air quality sensors	1	$50,000	
Fiber optic comm along Huntington for city trunkline and video (Gateway to Duarte)	2.5 miles	$528,000	
Arcadia (Arterial Corridors - Foothill, Colorado, Santa Anita, Baldwin, Duarte, Live Oak/Las Tunas, Huntington)	**Cost**	**Cost**	**Subtotal**
Controller firmware (2070)/communication improvements	10	$120,000	$502,000
Signal detection upgrades at key intersections	10	$300,000	
Bluetooth readers to monitor travel times	4	$32,000	
Environmental sensor station with air quality sensors	1	$50,000	
Pasadena (Arterial Corridors - Orange Grove, Corson/Maple, Walnut, Union/Green, Del Mar, Colorado, Huntington, St John, Pasadena, Arroyo Pkwy, Fair Oaks, Marengo, Lake, Hill, Allen, Sierra Madre, San Gabriel)	**Cost**	**Cost**	**Subtotal**
Real-time data communications capabilities (i2 and QuicNet Pro to collect flow data)	LS	$600,000	$1,560,000
Flow data retrieval capability from existing sensors (configuration, detection enhanced)	LS	$600,000	
Bluetooth readers to monitor travel times	20	$160,000	
Environmental sensor station with air quality sensors	1	$50,000	
Communication with Pasadena ARTS	LS	$150,000	
Other arterial systems	**Cost**	**Cost**	**Subtotal**
Foothill Transit - Communication with Foothill Transit management system	LS	$150,000	$2,650,000
Upgrades to IEN for count data exchange and system interface	LS	$500,000	
Advanced traveler information system (ATIS - e.g., CMS, mobile device & application, etc.)	LS	$2,000,000	
Other arterial highway system	**Cost**	**Cost**	**Subtotal**
Ramps & ramp intersection integration improvements (CCTV, signal detection system)	35	$4,830,000	**$4,830,000**

Metro:
$6,704,000

Caltrans:
$4,830,000
(*SHOPP Cost share*)

Total:
$11,534,000

List of Proposed Corridor ITS Improvements

Intersection Detection Improvements (Video-Based Systems)

	Network	Jurisdiction Location ID	Location		Traffic Control Type	Ownership		Signal Controller					Communication											
			Main Street	Cross Street		Ownership	Maintenance	Cabinet Type	Controller	Firmware	Manufacturer	Traffic Control System	TMC Connection	TMC Communication Type	IEN Communication	Timing Sheets Available?	Design Date	Number of Plans	Min Cycle Length	Max Cycle Length	Coordination Phases	Coordination Group	Transit Signal Priority
	Intersections with FULL video detection (in all directions)																							
1	LA County	LAC 3373	Rosemead Blvd	Colorado Blvd	Signal	LA County	LA County	?	170	LACO-4E	LA County	KITS	Yes	?	No	Yes	2014-01-13	3	120	120	6 Only	?	No
2	LA County	LAC 3376	Rosemead Blvd	Huntington Dr	Signal	LA County	LA County	?	170	LACO-4E	LA County	KITS	Yes	?	No	Yes	2011-09-22	3	120	120	6 Only	?	No
3	LA County	LAC 3375	Rosemead Blvd	California Blvd	Signal	LA County	LA County	?	170	LACO-4E	LA County	KITS	Yes	?	No	Yes	2013-10-17	3	120	120	2/6	?	No
4	LA County	LAC 3377	Rosemead Blvd	Duarte Rd	Signal	LA County	LA County	?	170	LACO-4E	LA County	KITS	Yes	?	No	Yes	2011-11-12	3	120	120	2/6	?	No
1	Monrovia	MO 006	Duarte Rd	Myrtle Ave	Signal	Monrovia	ss. Electric Construction Co.	?	170	Bi Tran 233E	McCain	KITS	Yes	?	No	Yes	1997-03-18	3	80	90	4/8	?	No
1	Arcadia	AR 5143	Santa Anita Ave	Live Oaks Ave	Signal	Arcadia	Arcadia	332	2070	D4	th Dimension T	TransSuite	Yes	Fiber	?	Yes	As of 05/05/2014	8	70	120	2/6	None	No
2	Arcadia	AR 5081	Huntington Dr	Colorado Pl	Signal	Arcadia	Arcadia	332	2070	Omni eX	McCain	TransSuite	Yes	Fiber	Yes	Yes	2012-10-03	12	90	240	2/6	None	Planned
3	Arcadia	AR 5131	Santa Anita Ave	Longden Ave	Signal	Arcadia	Arcadia	332	2070	D4	th Dimension T	TransSuite	Yes	Fiber	?	Yes	As of 05/05/2014	6	70	120	2/6	None	No
1	Pasadena	PA 139	Orange Grove Blvd	Sierra Madre Blvd	Signal	Pasadena	Pasadena	332	170	233P	Bi Tran	I2	Yes	Fiber	No	Yes	2013-09-24	3	110	110	4/8	5	No
2	Pasadena	PA 153	Maple St	Los Robles Ave	Signal	Pasadena	Pasadena	332	170	233P	Bi Tran	I2	Yes	TWP	No	Yes	2013-05-22	3	80	80	2/6	16	No
3	Pasadena	PA 157	Corson St	Los Robles Ave	Signal	Pasadena	Pasadena	332	170	233P	Bi Tran	I2	Yes	TWP	No	Yes	2013-05-22	3	80	80	2/6	16	No
4	Pasadena	PA 283	Lake Ave	Del Mar Blvd	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	I2	Yes	Fiber	No	Yes	2013-05-22	3	80	90	2/6	3	No
5	Pasadena	PA 127	Fair Oaks Ave	Orange Grove Blvd	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	I2	Yes	Fiber	No	Yes	2014-01-21	4	90	120	2/6	1	No
6	Pasadena	PA 163	Fair Oaks Ave	Walnut St	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	SCATS	Yes	Fiber	Yes	Yes	2011-03-22	7	90	120	4/8	34	Yes
7	Pasadena	PA 215	Fair Oaks Ave	Colorado Blvd	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	SCATS	Yes	Fiber	Yes	Yes	2009-09-23	7	80	120	2/6	1	Yes
8	Pasadena	PA 276	Fair Oaks Ave	Del Mar Blvd	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	SCATS	Yes	Fiber	Yes	Yes	2007-01-22	5	90	90	4/8	1	Yes
9	Pasadena	PA 625	Arroyo Pkwy	Colorado Blvd	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	QuicNet Pro	Yes	Fiber	Yes	Yes	2014-01-21	9	80	120	2/6	19	Yes
10	Pasadena	PA 626	Arroyo Pkwy	Green St	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	QuicNet Pro	Yes	Fiber	Yes	Yes	2006-02-01	5	60	90	2*	19	No
11	Pasadena	PA 628	Arroyo Pkwy	Del Mar Blvd	Signal	Pasadena	Pasadena	332	170C	233P	Bi Tran	QuicNet Pro	Yes	Fiber	Yes	Yes	2008-08-11	6	80	90	4/8	19	No
12	Pasadena	PA 197	Fair Oaks Ave	Union St	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	SCATS	Yes	Fiber	Yes	Yes	2006-07-17	7	80	120	2/6 (6 first)	1	Yes
13	Pasadena	PA 250	Fair Oaks Ave	Green St	Signal	Pasadena	Pasadena	332	2070	2033	Bi Tran	SCATS	Yes	Fiber	Yes	Yes	2006-07-17	7	80	120	2/6	30	Yes
14	Pasadena	PA 265	Green St	Hill Ave	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	I2	Yes	Fiber	No	Yes	2013-05-22	3	90	90	2/6	34	No
15	Pasadena	PA 199	Arroyo Pkwy	Union St	Signal	Pasadena	Pasadena	332	170	233P	Bi Tran	I2	Yes	Fiber	No	Yes	2011-03-08	7	60	90	2*	27	No
16	Pasadena	PA 629	Arroyo Pkwy	California Blvd	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	QuicNet Pro	Yes	Fiber	Yes	Yes	2005-07-21	6	90	90	4/8	19	No
17	Pasadena	PA 280	Del Mar Blvd	Los Robles Ave	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	I2	Yes	Fiber	No	Yes	2013-05-22	3	80	90	4/8	2	No
18	Pasadena	PA 372	Foothill Blvd	Kinneloa Ave	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	I2	Yes	TWP	No	Yes	2011-12-05	3	90	90	2/6	9	Planned
19	Pasadena	PA 203	Union St	Los Robles Ave	Signal	Pasadena	Pasadena	332	2070	2033P	Bi Tran	I2	Yes	Fiber	No	Yes	2013-05-22	3	70	70	2/6 (2 first)	27	No
	Intersections with PARTIAL video detection (video detection in not all directions)																							
1	LA County	LAC 3374	Rosemead Blvd	Del Mar Blvd	Signal	LA County	LA County	?	170	LACO-4E	LA County	KITS	Yes	?	No	Yes	2013-10-29	3	120	120	2/6	?	No
2	LA County		Del Mar Blvd	Madre St	Signal	LA County	LA County	332	170	LACO-4	LA County	KITS	No	n/a	No	No	?	?	?	?	2/6	33	No
1	Monrovia	MO 008	Duarte Rd	Mountain	Signal	Monrovia	ss. Electric Construction Co.	?	170	Bi Tran 233E	McCain	n/a	No	?	No	Yes	1997-12-03	3	80	90	2/6	?	No

Caltrans' Office of Technology

Caltrans HQ and the Requirements Process

- **Bi-weekly coordination meetings between Headquarters functional areas, D7 and PATH**
- **Traveling to D4 to better understand reusability of their systems**
- **Began reviewing possible schedules and funding for**
  - Data Hub
  - Corridor PEMS for LA
- **Continue to research possible use of common Lane Closure System**
- **HQ to review CMM and NCHRP Data Slides**
- **HQ preparing to review overall requirements**

Requirements/Constraints Definition

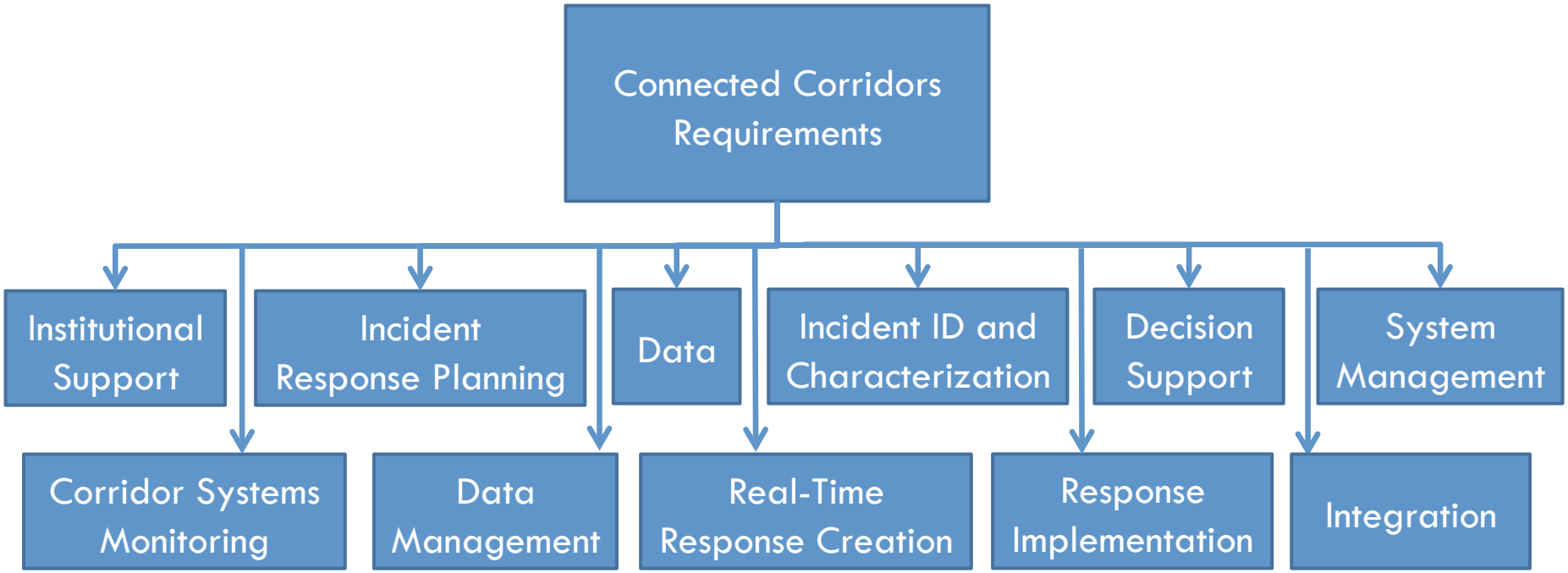
Requirements Gathering

- **Our "system"**
  - Composed of people, organizations, software and hardware
  - All must work together to accomplish our goals
  - Requirements must specify expectations for each component
- **Requirements gathering**
  - Both an educational and a definitional process
  - Requirements are emergent from interactions among users

Goals and Challenges

- **Goals**
  - Educate stakeholders on what is ICM
  - Reduce risk by refining the scope of the system
  - Obtain agreement among stakeholders on the requirements for the system
  - Ensure that all requirements needed for ICM are listed so that none are overlooked.
  - Provide guidance to funders of the system
  - Provide direction to implementers of the system
  - Ensure we can test the system
  - Provide a template for future ICM efforts
- **Challenges**
  - What level to express the requirements – Breath and Depth
  - Difference between a requirement and a design decision
  - The corridor is alive and changing, how to write requirements reflecting this
  - Stakeholders are new to ICM and can have difficulty specifying certain requirements

Requirements

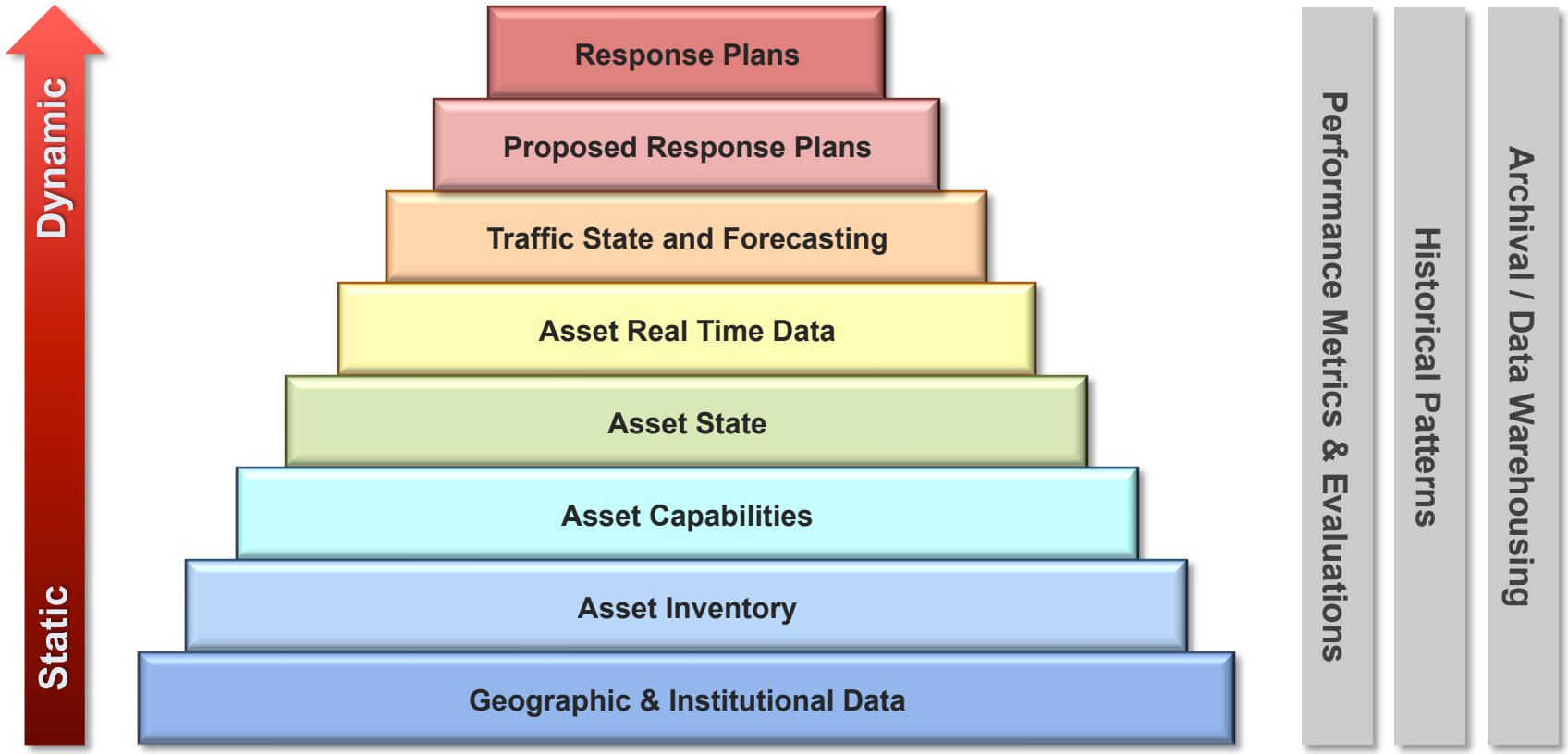


Each area includes freeways, arterials and transit

Requirements Characteristics

- **Description**
- **Quality Metrics**
- **Metric Values**
- **Problem Identification and Resolution**
- **Maintenance**
- **Automation**
- **Related**

Data Requirements – Data Pyramid



NCHRP – Data To Support Transportation

Data Category	Data Program/ Management Areas for Assessment	Sample Data Types Included
General	IT Applications, Development, Database Management and Administration	Multiple
	Transportation Data Office	Multiple
	Data Warehouse Group	Multiple
	Business Intelligence/Dashboard/Reporting Group	Multiple
	GIS Group	Geospatial Transportation Features (e.g., road centerlines, rail lines, and ferry routes), land and environmental features, multiple busi ness data layers
	Performance Management	Multiple performance measures—system condition, operations, agency efficiency
Travel Data	Traffic Monitoring	AADT, Vehicle Classification, Turning Movements, Volume, Occupancy, Speed, Intersection Level of Service, Travel Time, WIM Data
	Planning/Travel Modeling	Household Survey Data, Socioeconomic Data, Network Links and Nodes, Origin- Destination Matrices
	Planning/Freight	Commodity flows, supply chain data, bottlenecks, infrastructure
	Bicycle/Pedestrian Program	Bicycle Routes, Bicycle Paths, Bicycle and Pedestrian Counts
System Inventory and Condition Data	Road Inventory	Mileage, Classification, Geometrics, etc.— including Model Minimum Inventory Elements (MIRE)
	HPMS (typically combined with Road Inventory)	HPMS Data Elements— full extent and sample (e.g., road inventory, traffic, and pavement)
	Pavement Management	Pavement inventory, IRI, cracking, summary condition, layer history
	Bridge Management	Structure inventory and inspection
	Traffic Engineering	Traffic signal inventory, guardrail inventory, sign inventory, railroad crossing inventory
	ITS/Traffic Management Center	ITS device inventory, communications infrastructure inventory,
Facilities Data	Property, Fleet and Maintenance Management	Plant and facilities inventory and condition, fleet inventory and utilization

NCHRP – Data To Support Transportation

Data Category	Data Program/ Management Areas for Assessment	Sample Data Types Included
Financial/ Program Management Data	Capital Program/STIP	Federal Obligations, Construction Project Data, delivery performance (on-time, on-budget)
	Financial Management	Funding and Allocations, Budgets and Expenditures
	Contracts/Procurement	Contracts, bid tab s
	Operational Agreements	Project Charters, MOU, other
	Human Resources	Personnel data
Project Development Data	Design and Materials	Studies, surveys, non- destructive tests, core samples, design plans
	Right-of-Way	Property inventory, transactions, appraisals, deeds
	Environmental	Land use, water bodies, wetlands, groundwa ter, endangered species, historic sites, permits and commitments
	Construction	Materials tests, inspections, payments, civil rights, claims, as- built plans
System Operations Data	Incident Management	Incidents (real-time status, incident response time)
	Traffic Management	Real-time traffic and travel time data
	Equipment Management	Fleet/Equipment inventory, utilization , cost
	Maintenance Management	Work requests, work orders, work accomplishments, resource utilization, cost
	Road Weather Management	Weather/Road Condition (real time and historical)
	Motor Carrier	Motor Carrier safety, operating statistics, IRP, IFTA, oversize/ overweight permits
	Modal Programs (e.g., transit and ferry)	Operations Statistics (e.g., vehicle miles, passenger miles, and revenues)
Safety Data	Crash Records/FARS Reporting	FARS reports, police accident records, Crash location, Crash frequency
	Safety Planning	Enforcement data (citations and convictions), injury surveillance, road safety audits, behavioral (e.g., seat belt and helmet compliance)
Customer Relations	Public Affairs	Customer opinion surveys, website transactions, newsletters, press releases

Current Status – Requirements Meetings

- **Cities and County**
  - Arcadia
  - Pasadena
  - Duarte
  - Monrovia
- **Caltrans D7**
  - Maintenance
  - Ramps
  - Signals
  - TMT & LCS
  - TMC Operators
  - TMC Support
- **Caltrans HQ**
  - Maintenance
  - PEMS
  - Signals
  - TMT & LCS
  - Office of Technology
- **Metro**
  - Transit
- **SCAG**
  - Planning

Meeting Update

- **Meetings since last face to face**
  - Duarte - Follow up meeting including Public Safety Officer
  - Monrovia - Tina Cherry plus City Engineer and Traffic Maintenance Supervisor
  - Metro Transit
  - Pasadena Transit
  - Meeting with corridor wide first responders – CHP now attending face to face
  - Meeting with corridor wide traffic operations personnel
  - Caltrans Office of Technology – Every Two Weeks
- **To be setup**
  - Meeting with LA County
  - Meeting with PIOs
  - Follow on meetings with 511, RIITS, IEN

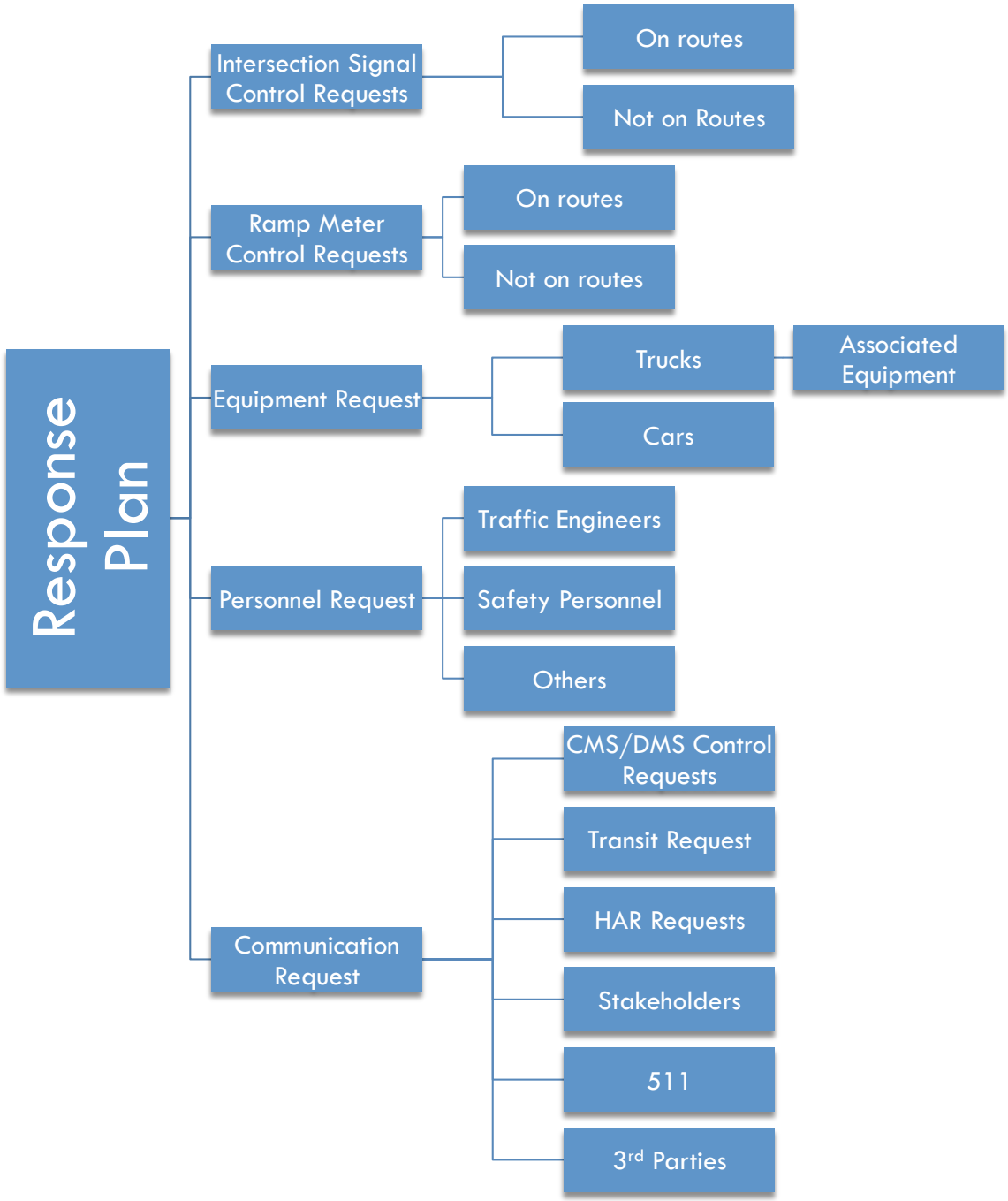
I-210 Connected Corridors

Response Plan Definition

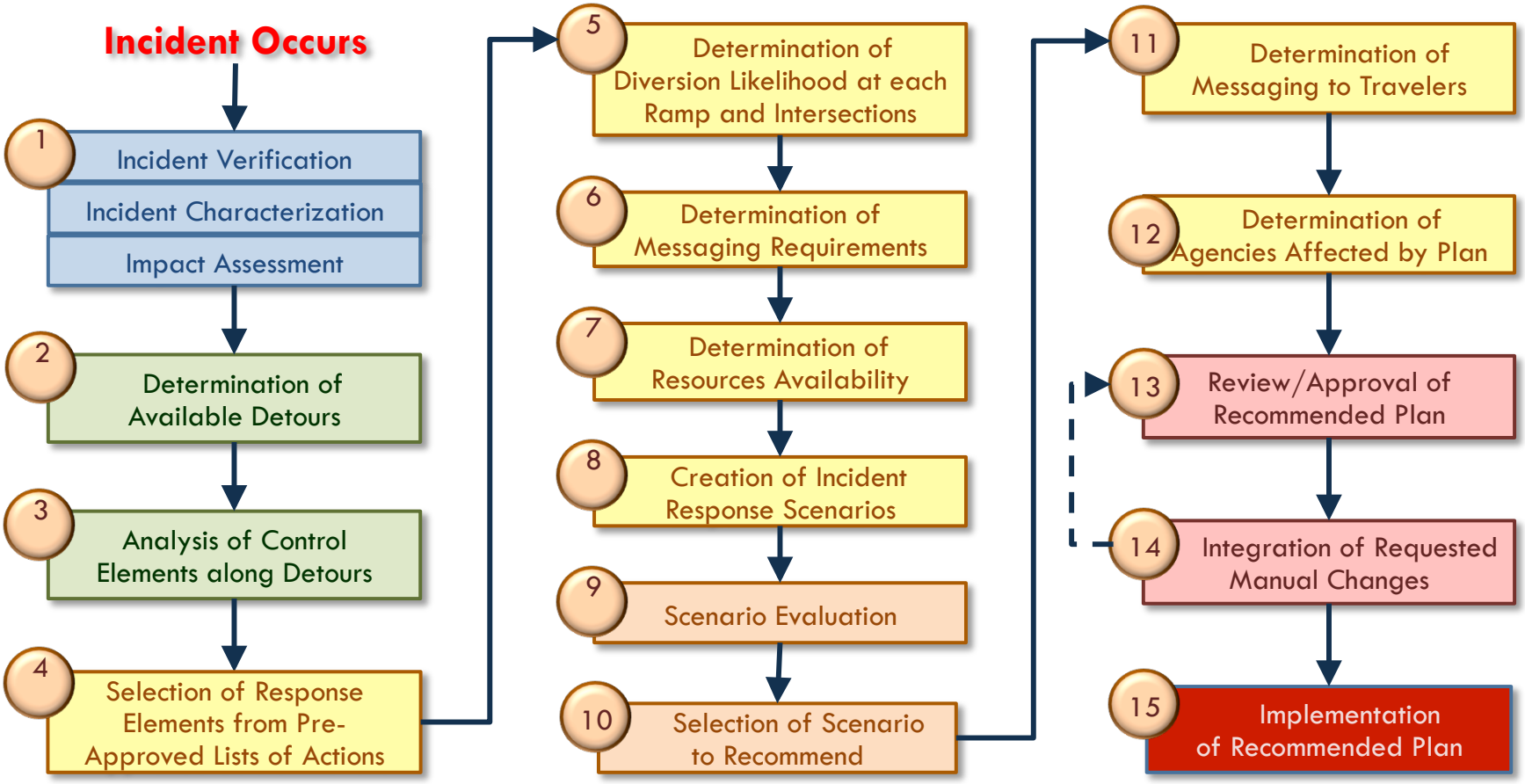
August 4, 2015

Finding a good balance

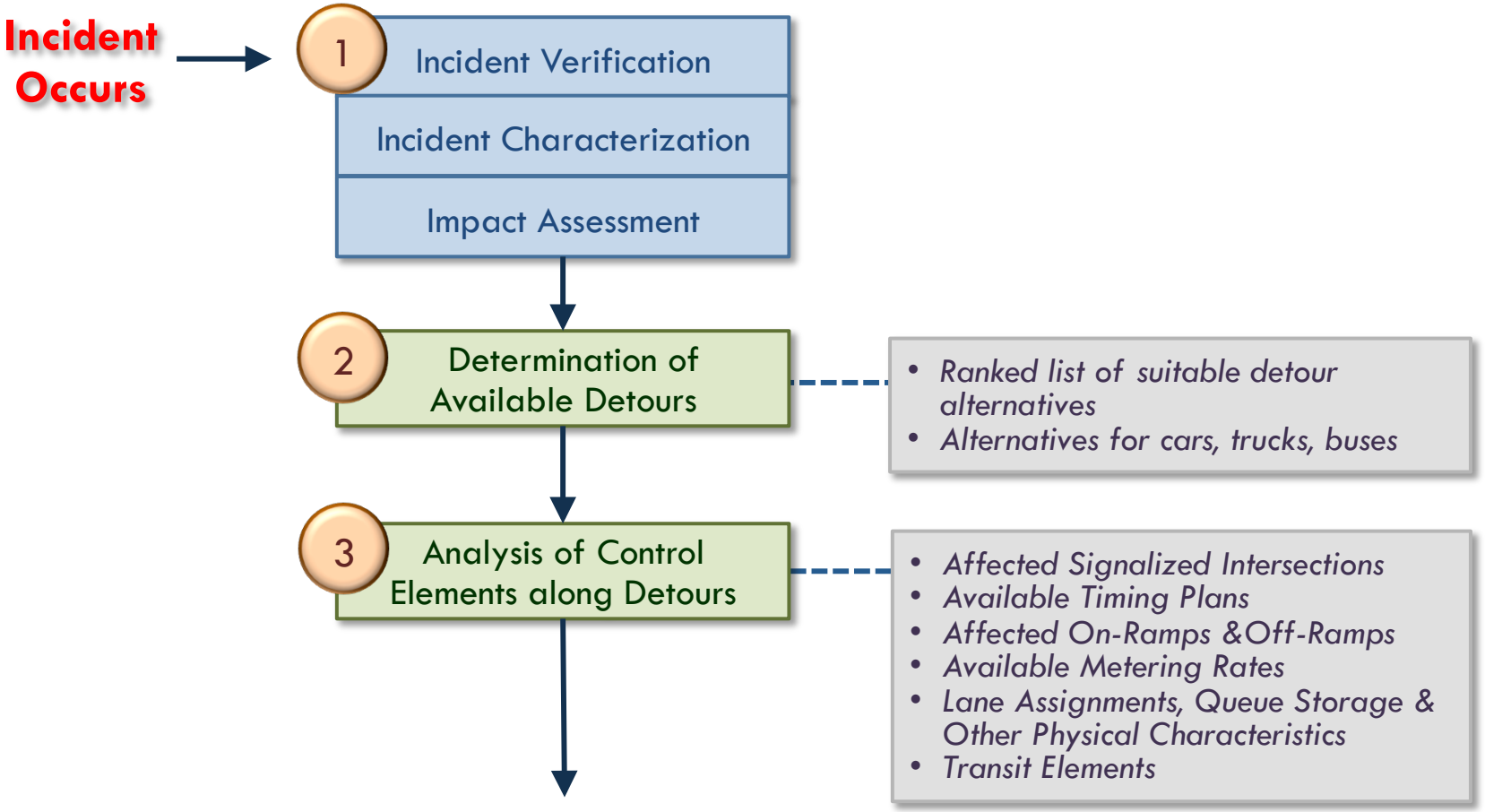
- **Finding the proper point between**
  - Very simple rules ---------- Very complex rules
  - Predefined response plan ---------- Many elements to make one
  - Defining a response plan for now ---------- Conditions in the future
- **For example**
  - When generating possible routes how complex does this become
  - When generating response plans how many reroutes, plans, messages to consider


Response Plan
Intersection Signal Control Requests
On routes
Not on Routes
Ramp Meter Control Requests
On routes
Not on routes
Equipment Request
Trucks
Associated Equipment
Cars
Personnel Request
Traffic Engineers
Safety Personnel
Others
Communication Request
CMS/DMS Control Requests
Transit Request
HAR Requests
Stakeholders
511
3rd Parties

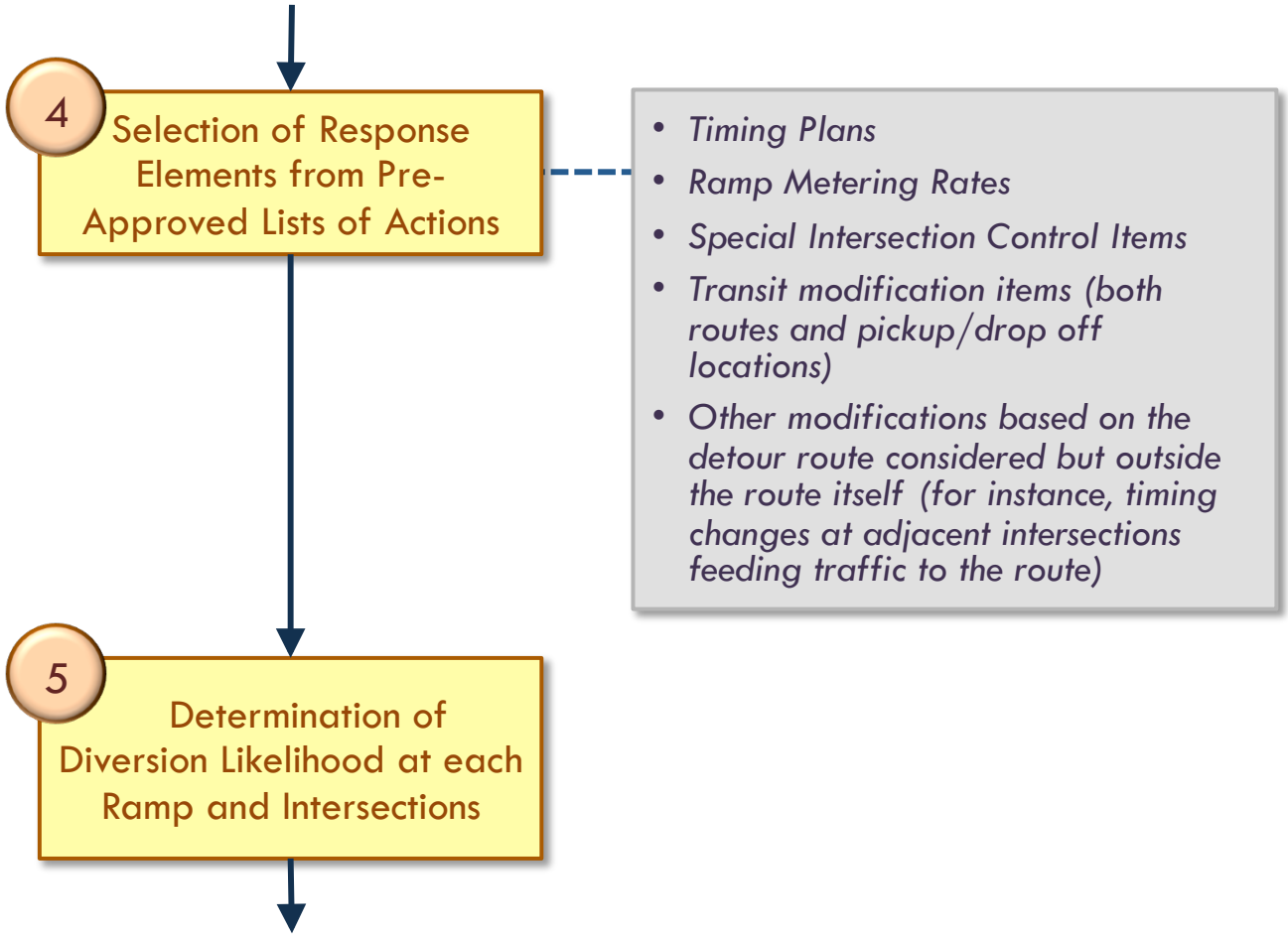
Response Plan Creation



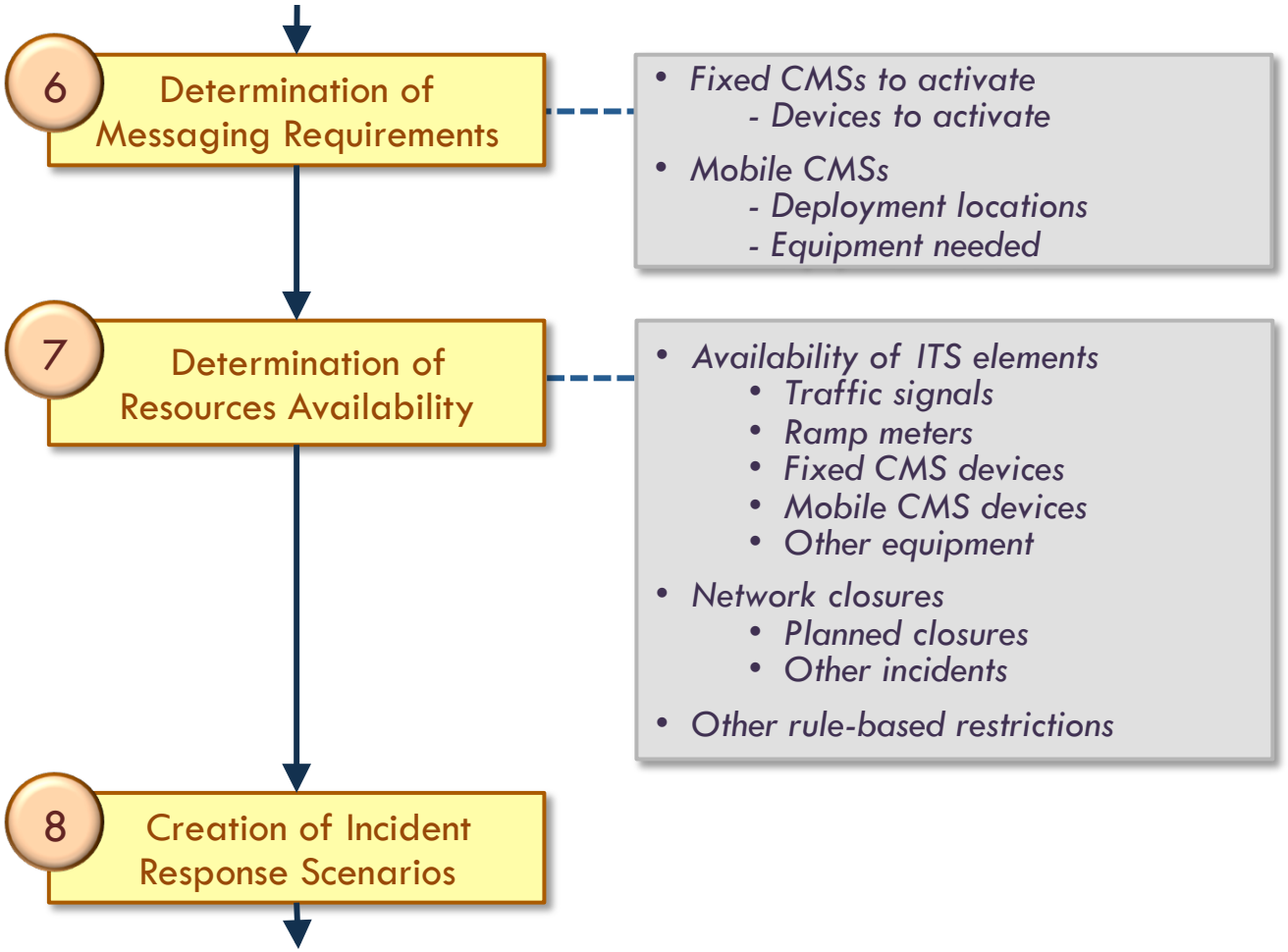
Response Plan Creation (1/5)



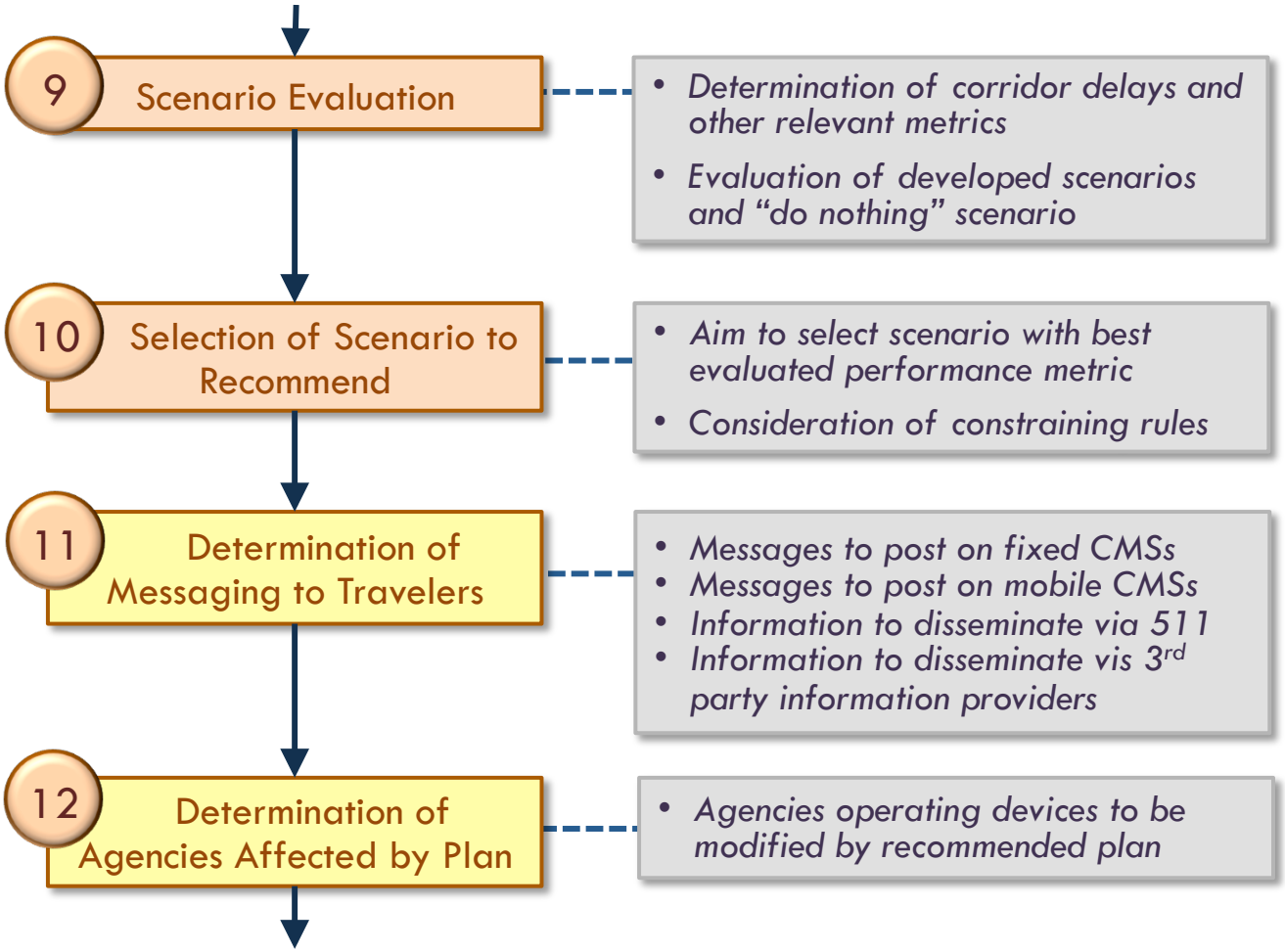
Response Plan Creation (2/5)



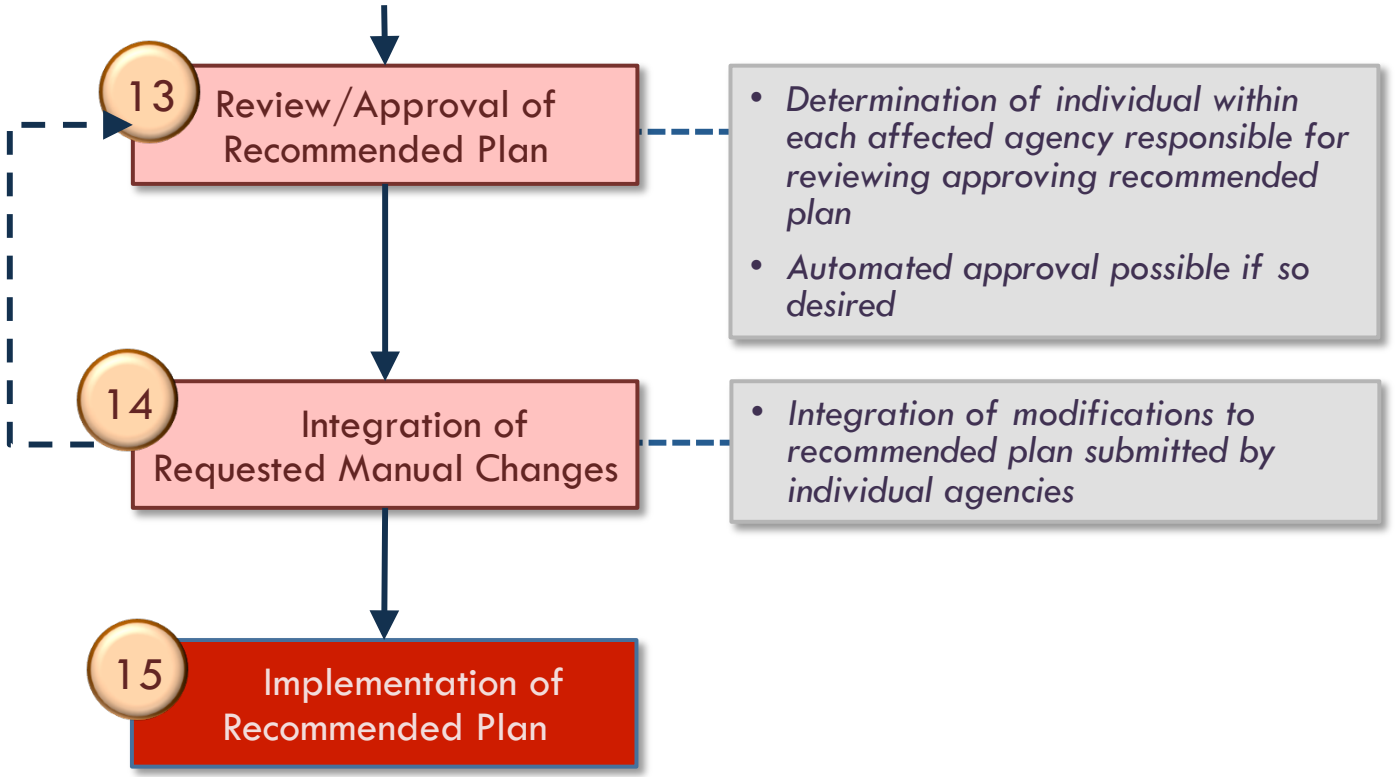
Response Plan Creation (3/5)



Response Plan Creation (4/5)



Response Plan Creation (5/5)



Detailed Response Plan Generation

- **Meetings to continue first quarter**
- **Tom Choe, Francois, Samson to meet with cities and counties to define response plans**
- **Goal: Start responding to incidents in the Spring of 2016**
  - We need to both define and test response plans.
  - This includes signal timing and ramp metering adjustment during incidents, PCMS display on detour routs and so on
  - Samson's team is ready to start meeting with the CC stakeholders to discuss and develop intersection timing plans as part of the response planning exercise

I-210 Connected Corridors
Project Evaluation Framework

June 9, 2015

Before/After Study Technical Memo

- Ready for review by all stakeholders
  - Evaluation approach and methodology
  - Metrics
  - Data collection needs
- Revisit in January

Action Items and Next Meeting Time

Thank You