Hybrid Data

Kick-off Meeting
Monday, June 17th, 2019

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Hybrid Data: Key Goals

- **Reduce costs and increase coverage of traffic monitoring**
- **Methodology for DVHD (Daily Vehicle Hours of Delay)**
- **Smarter deployment of point-based sensors**
- **Strategy for third-party data**

Overview of tasks

1. **Project management**
2. **Background survey**
3. **DVHD**
4. **Point-based data collection strategy**
5. **Opportunities for improved coverage**
6. **Strategy for incorporation of third-party data**
7. **Final report and workshop**

Overview of deliverables

- **Management**
  - Kick-off meeting
  - Quarterly progress reports
- **Technical Memo: Existing Caltrans and Third Party Data**
- **Technical Memo: DVHD Estimation Methodology**
- **Technical Memo: Results for Tasks 4, 5, and 6**
  - Point-based data collection strategy
  - Opportunities for improved coverage
  - Strategy for incorporation of third-party data
- **Final report**
- **Workshop**

Schedule

		PROJECT MONTH																	
	PROJECT TASKS/DELIVERABLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Project Management																		
	Kick-Off Meeting	◆																	
	Quarterly Progress Reports			◆			◆			◆			◆			◆			◆
2	Background Survey	■	■	■	■	■													
	Technical Memo: Existing Caltrans and Third Party Data					◆													
3	Daily Vehicle Hours of Delay (DVHD)			■	■	■	■	■	■	■	■	■	■						
	Technical Memo: DVHD Estimation Methodology												◆						
4	Point-Based Deployment Strategy										■	■	■	■					
5	Opportunities for Improved Coverage										■	■	■	■					
6	Strategy for Incorporation of Third-Party Data													■	■	■	■		
	Technical Memo: Results for Tasks 4, 5, and 6																◆		
7	Final Report and Workshop																■	■	■

1. Project Management

- **Facilitate communication and manage budget**
  - Kick-off meeting
  - Quarterly progress reports
  - Ad hoc discussions as necessary

2. Background survey

- **Understand existing data landscape**
  - Caltrans data pipeline including PeMS
    - Traffic operations, ICM, ramp metering, traffic signals, etc.
    - Performance measures such as the Mobility Performance Report
  - Survey of third-party data
    - Existing third-party data providers and products market review
    - Data fusion
    - Existing standards for mobile data
    - Potential impacts of connected vehicles
    - Data ownership options

3. Daily Vehicle Hours of Delay

- **Determine algorithms to estimate DVHD using third-party data**
- **Use algorithms to calculate DVHD**
- **Determine performance of algorithms**
  - Evaluate the effect of data quality and data mix on DVHD estimation:
    - using third-party data
    - using traditional detector data
    - using Census data in PeMS
    - erroneous data
  - Consider algorithmic variations depending on local configuration of third-party data and existing detector data
  - Determine required data levels to achieve satisfactory DVHD reports

4. Point-Based Data Collection Strategy

- **Propose a new strategy for the efficient deployment of physical, point-based detectors**
  - Contribution and key value of point-based detectors in existing data pipeline and PeMS
  - Key challenges of point-based detector configuration and data
  - Required level of sensing infrastructure
  - Strategy for efficient deployment of physical, point-based detectors
  - Impacts of new strategy on existing data pipeline, PeMS, and performance reports

5. Opportunities for improved coverage

- **Understand potential value of incorporating third-party data**
  - Extension of coverage to
    - un-instrumented freeways
    - conventional state highways with signalized intersections (arterials)
  - Compensating for reduced deployment of point-based detectors
  - Impacts to existing measures and reports by incorporating third-party data
  - Potential financial impacts

6. Strategy for using 3rd-party data

- **Identify key challenges and propose a path forward**
  - Comparison of Caltrans and third-party data characteristics
  - Propose framework for use of mobile data by Caltrans
  - Network representations
  - Need for data quality monitoring and reporting
  - Propose a strategy for including DVHD in PeMS
  - Highlight key considerations for a future procurement strategy when defining data requirements, data quality and data ownership.

7. Final report and workshop

- **Summarize key findings in final report**
- **Hold a workshop for discussion of recommendations and next steps**

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6	Strategy for Incorporation of Third-Party Data													■	■	■	■		
	Technical Memo: Results for Tasks 4, 5, and 6																◆		
7	Final Report and Workshop																■	■	■

Thank you