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ODOT TSM Field Technology Plan

ITS and Signals Group - Needs Assessment Work Session #1

July 2, 2020

Microsoft Teams

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## ATTENDEES

- Peter Koonce, PBOT
- Alison Tanaka, PBOT
- Shaun Quayle, Washington County
- Tiffany Slauter, ODOT Traffic Ops
- Katie Bell, ODOT R1 Traffic
- Katie Johnson, ODOT Signals
- Michael Kimlinger, ODOT State Traffic
- Christina McDaniel-Wilson, ODOT Traffic Safety
- Doug Spencer, ITS
- Christopher Harris, ODOT TSM
- Chris Wright, ODOT TSM
- Paul Tiller, ODOT TSM
- Yi-Min Ha, Kittelson
- Alice Root, Kittelson
- Scott Beaird, Kittelson
- JR Wegehaupt, Quality Counts

## MEETING NOTES

The following summarizes key discussion items during the Needs Assessment Work Session:

### 1. Data Sharing and Integration

- a. A question shared during the discussion: can a traffic signal function as a local ATR? The primary issue at signals is not being able to detect vehicle movement (thru/ turns). Currently only the vehicle approach is collected.
- b. Tiffany Slauter shared that ODOT currently logs and stockpiles detector logs at their traffic signals, and shares the data if requested. This process is not formalized at the moment. Additionally, many different types of data auxiliary to the primary purpose are collected and the value of this data is yet to be determined or distributed.
- c. Peter Koonce and Shaun Quayle expressed support for sharing data and resources (such as cabinet space) between their agency's traffic signal system and ODOT TSM, but noted challenges of having limited resources (as described in the following point). Signals and ITS equipment could be co-located but access, utility billing, and maintenance all need to be considered.
- d. Several challenges related to sharing data from the traffic signals and ramp metering include:

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- i. Accuracy – Tiffany shared that while useful, traffic counts from detector data (especially intersections not set up for ATSPMs) have varying level of accuracy, and is highly dependent on the detector layout at the intersection. Chris Harris also noted that an overarching challenge is how to provide easily understandable data and context for users when sharing a mix of data sources.
  - ii. Equipment Funding – PBOT currently maintains 7 different types of controller brands, each with their own unique set of capabilities. Peter shared a potential idea to co-locate data collection equipment at PBOT cabinets if the location is desired for continuous data collection. Paul Tiller notes space and form factor would need to be considered in signal cabinets to fit TSM equipment. Agencies would have to coordinate access to signal cabinets. For example PBOT would have to provide a signal engineer or certified signal electrician onsite since non-certified persons are not allowed into signal cabinets. Chris Harris also noted, funding, replacement schedules, and updates all need to be a consideration for creating a “future proof” program.
  - iii. Configuration – Tiffany shared that each signal has a lot of unique configurations at the detector level, and it can be tedious to set up the analysis procedures required to convert the raw detector counts into useable turning movement counts. Chris Harris notes the importance of balancing the desire to leverage unique datasets while avoiding creating additional technical debt since data integration often requires customization.
  - iv. Staffing – Shaun Quayle shared that many agencies maintaining traffic signal and ITS equipment are collecting more data than they are able to process. Agencies do not have the available FTEs or knowledge to properly process and analyze the data. As mentioned in a previous work session, Chris Wright notes the large gap in training between TSM field staff, and signals techs and ITS support staff. ITS and traffic staff often have electrician certifications while TSM staff do not.
  - e. ODOT also receives counts collected by other firms through the Development Review process. However these counts are maintained in a separate database, and may not be as well advertised as the data collected through TSM. While MS2 may provide an opportunity to consolidate ODOT counts, there will need to be consideration that the duration and quality for data not collected by TSM may not sufficiently meet statewide HPMS data needs.
- 2. Data Awareness and Education** – MS2 training and the Data Catalog project (at the agency level) may help address the following issues.
- a. ODOT currently collects a lot of data, but the availability of the data is not very well advertised to all users, internal and external to ODOT.

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- b. Peter Koonce shared that there may be a need to better market what data ODOT is currently collecting and how to get it.
  - c. Several ODOT stakeholders also shared that there may be a need for more training on how to use the internal systems and share what is available within those systems.
  - d. There is also a need to simplify the data acquisition process, and ideally have all ODOT data be downloadable from a central location. MS2 platform may be critical to addressing this.

### **3. Detecting Anomalies**

- a. Agencies need to be able to verify that the data they are receiving is accurate. Including data that provides context (such as failed detector, incidences, construction activities, etc.) would help with the verification process. The MS2 program as the central repository for all agency counts would assist in this verification process as it already includes a QC process to flag anomalies before any data is published.

### **4. Realtime Data**

- a. Providing real-time data to the traffic signal and ITS operators may help agencies more dynamically respond to changing traffic conditions. Some example strategies where real-time data could help include:
  - i. Congestion Management
  - ii. Conditional Flashing Yellow Arrow indications
  - iii. Conditional Walk Timings
- b. Providing real-time data could also help evaluate work zone traffic impacts and adherence to specifications.
- c. Providing continuous ATR data is currently limited by the communication and counting equipment in the field.

### **5. Pedestrian/Bicycle Data**

- a. More bicycle and pedestrian would help agencies better monitor the increasing changes in travel modes.
- b. Flir infrared technology may be a potential technology to evaluate. Flir infrared was a technology that the TSM group initially looked at in the early 2000's but was too costly at the time for continued research.
- c. Peter shared that PBOT currently has a project to make the signal performance measure more multimodal.
- d. Traffic signals with bicycle detectors could log detector counts to develop bicycle-related counts. The accuracy of this data varies based on the technology at the intersection.

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- e. Traffic signals may also provide an idea of changes in pedestrian demand by logging push button actuations. Although this may not be an accurate measure of pedestrian counts, it can provide a measure for changes in pedestrian demand.

**6. Other topics discussed:**

- a. There is a desire to expand coverage of ATR locations. This would help with providing data needed to determine weekend closures which are becoming more common.
- b. A consideration was raised for the TSM team to validate ramp meter data to augment the group's current data collection program.
- c. Stakeholders acknowledged the hurdles of constant changes to network definitions and intersection layout.
- d. Many stakeholders raised the desire to "get more out of our assets" by evaluating all the data collected by each piece of equipment – not just the resulting data. Using traffic signal detector logs (at intersections not configured for ATSPMs) is an example of how agencies could derive additional value for data already being collected.