Transit Signal Priority (TSP) System Replacement
Concept Detail and Technical Requirements

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Project status and upcoming work

- Completing draft technical requirements now
- Issue RFI in mid-November, responses early January 2018
- RFP in May 2018
- Begin INIT upgrades in early 2018
- Begin new TSP system development in spring 2019
- System testing on prototype corridors in spring 2020
Problem/Opportunity – Upgraded functionality

- TSP check-in based on TSD (ETA) rather than fixed point
- Lateness or headway adherence as criteria
- Additional criteria such as ridership and class
- Ability to request different levels of priority
- Ranking system for handling multiple requests

<table>
<thead>
<tr>
<th>Rank Value</th>
<th>Load</th>
<th>Late</th>
<th>Class</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>Greater than 50%</td>
<td>Greater than 4 minutes</td>
<td>Regular Coach</td>
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<td>2</td>
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<td>Greater than 90%</td>
<td>Greater than 10 minutes</td>
<td>RapidRide Coach</td>
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<td>4</td>
<td></td>
<td>Greater than 20 minutes</td>
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Problem/Opportunity – Replace Existing Equipment

McCain TPRG

Stretch Cabinet

Interface Panel

King County
Current Plan to Upgrade Intersections

- 120/H Line and B Line upgraded for pilot project
- Most existing TSP intersections not initially upgraded
- Account for new intersections in alignment with King County’s MetroConnects long term plan
- Expand from current 200 to approx. 600 by 2025
Proposed Concept

- Solution migration path from existing TPRG to C2I, to full C2C
- Given state depends on jurisdiction capability
- Solution is completely new
- Rely on other jurisdictions like Chicago Transit Authority for past work but we do have a novel approach
- All solutions require at least some development (no COTS solution)
- Signal cabinet components will be standardized around NTCIP 1211, but there will be some new development specifically for our needs
Proposed Concept

Key Integration Points
• INIT On-Board system
• Transit Next Generation Wireless (NGW) system
• Jurisdictional signal systems

Server and Network Solutions
• Low latency is required from buses to the TSP server.
• Server locations and management are still being discussed.
• Leverage KCM wireless communications for greenfield installations where fiber availability is too costly or prohibitive.
Proposed Concept – Ultimate Center-to-Center (C2C)

LEGEND
KC Owned and Operated
Traffic Agency Owned and Operated
KC / Traffic Owned and Operated

King County
Proposed Concept – Base Center-to-Infrastructure (C2I)
Assumptions

- System must support all signal systems in the KC Metro service area
- System must be as standard as possible. Avoid customizations for individual jurisdictions
- Attempt to obtain system with no to few modifications (COTS)
- Use established ITS standards including NTCIP 1211
Dependencies

• System expansion relies on King County wireless project, to obtain OBS data from vehicles
• Project is dependent on signal system and timing upgrades which are owned by signal jurisdictions
• Testing to the 120/H-Line corridor is dependent on RapidRide construction in the same corridor
• Project requires that legacy signal equipment/software can be modified to accept standardized 1211 messages within a reasonable cost/schedule
• Project requires that INIT OBS modifications will occur within a reasonable cost/schedule
Regional Traffic Signal Inventory

Description:
- Project will obtain intersection data for KC Metro TSP functionality
- May be desirable to increase the scope to an Inter-agency project to promote regional signal system inventory and data sharing

Elements might include:
• Develop regional data dictionary for signal controllers
• Update regional ITS architecture
• Collect and aggregate signal system inventories across the region
• Integrate with King County TNET
• Establish signal inventory maintenance program
• Develop use cases for Integrated Corridor Management (ICM)
• Develop C2C architecture for exchanging of real-time data
Questions

Contact with questions or comments:

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