

## PROJECT SUMMARY

# Centralized SPaT and MAP Data Sharing

### Project Location:

Systemwide

### Start – Finish Date:

May 2019 – November 2020

### Project Status:

Complete

### Project Partners:

Athey Creek Consultants

### MnDOT Project Cost:

\$124,000

### Projects with Similar Characteristics:

Smart Snelling

511 WZDx

Arrow Board Integration

Connected Corridor

### Project Description:

The project assessed MnDOT's ability to share signal phasing and timing (SPaT) data and intersection geometry (MAP) data to travelers and third-party systems via a centralized process. The following tasks were completed:

- Developed a concept of operations and systems requirements for a centralized data sharing system.
- Conducted stakeholder interviews with multiple DOTs that used similar traffic signal software as MnDOT.
- Demonstrated an existing software product (Q-Free's MAXVIEW version 2.X) against the system requirements and documented the results.

### Project Objective:

The objective of the project involved the assessment of MnDOT's ability to share accurate signal phasing and timing (SPaT) data and intersection geometry (MAP) data through a centralized process by demonstrating an existing signal software product. The project looked to leverage MnDOT's existing MAXVIEW traffic signal management system.



Figure 1: Intersection Geometry as shown in MAXVIEW 2.X

### Project Accomplishments:

- Testing several test script scenarios to understand how an existing software product compares to the set requirements for the data sharing system concept.



## Key Findings:

### Existing Software Capabilities

Through the seven test scripts for this project, MAXVIEW 2.X was able to demonstrate the ability to:

- Create, view, and manage roadway geometry regarding lanes, movements, crosswalks, etc.
- Display signal status data generated at the intersection through the user interface.
- Host a robust and graphical user interface that shows map layers, roadway geometry data, and signal status information.

### Beta Testing

Due to Q-Free's MAXVIEW 2.X being in beta testing, not all functionality was available at the time of the demonstrations. Some examples include not storing required data elements, not being able to use alternate mapping sources, and not being able to view live data feeds.

### Lessons Learned:

- At the time of the project, there was no known tool that could achieve all required or optional requirements that were defined for the centralized SPaT and MAP data sharing system concept.
- A cloud hosted solution may increase the chance of achieving the 99.8% up-time requirement set forth in this assessment.
- Requirements to allow users to create, manage, and disperse roadway geometry data are complex and will require significant effort for development of a centralized MAP data sharing system.
- Q-Free's platform has since been updated to *Kinetics*. Q-Free's new system capabilities should be assessed.

### Potential Next Steps for MnDOT:

- Evaluate the benefit of two-way communications between the centralized system and travelers or third-party vendors.
- Should additional assessments be completed, the system requirements identified in this initial assessment should be used as a guide or modified as needed for future centralized data sharing system evaluation.
- Continue to monitor the development of SPaT and MAP capabilities within MAXVIEW as it finishes the next version's beta testing stage.
- Continue to seek outreach opportunities to raise awareness of the effort put forth in this project and continue to gauge interest in the data sharing concept (both internally and externally).
- Further explore tools / procedures used in other SPaT / MAP deployments in the U.S.
- Develop a pilot or demonstration for a V2X application using the SPaT and MAP tools explored in this project.
- Evaluate MAP generation tools for future pilots and demonstrations.
- Evaluate current Q-Free capabilities for SPaT and MAP data.