

# Wisconsin Department of Transportation

## State Trunk Highway Network Data Processing

### Lean Summary Report



#### Project Summary

The Division of Transportation Investment Management (DTIM) works extensively with State Trunk Highway Network (STN) data to produce maps, update data and perform analysis. The STN consists of six different datasets representing functional classifications, connecting highways, the National Highway System (NHS), NHS routes, long truck routes and Corridors 2030. DTIM's Bureau of Planning and Economic Development (BPED) use these datasets and produce data multiple times a year for other outputs and ensure that data has been accurately updated.

This project was chartered by BPED to examine causes for process delay and how STN data is being processed.

The goal of this project was to reduce non-value-added repetition and reduce processing time of STN data through partial system automation.

#### Improvements

- Identified and eliminated redundant steps in the STN data process
- Identified process steps to streamline and improve efficiencies while reducing processing time
- Produced more accurate data
- Reduced manual process steps
- Organized GIS output

#### MAPSS Core Goal Area

- Accountability
- Service

#### Statewide Goal Area

- Customer satisfaction
- Employee work environment
- Culture of government

#### Issue

The Bureau of Planning and Economic Development used a completely manual methodology to process STN data, creating multiple redundancies of the same data each time the process was performed. Manual methods being employed were creating inconsistencies in data and slowing down production and validation of other products that rely on that data.

#### Lean Six Sigma Process

BPED's Statewide Planning Unit implemented this project to focus on GIS processing time and data accuracy. The team used the following Lean Six Sigma tools:

- Suppliers, inputs, processes, outputs and customers (SIPOC diagram) were identified to understand the full breadth of the STN data process
- Performed a Kano analysis to formulate basic output needs for key customers (employees) and establish ideal outputs to meet these needs
- Mapped a value stream to identify redundant processes and potential process improvements

#### Results

The effects of implementing the partially automated process worked better than expected in reducing processing time, manual steps and data inconsistencies.

Processing time was reduced by about 56 percent from 31.5 to 13.8 minutes for one dataset. A greater reduction in time of approximately 83 percent was recognized when processing all six datasets, reducing the processing time from roughly 3.2 hours to 32 minutes. With the new automated method, all six STN datasets can be processed in the time it took to process one.

Manual steps were reduced by approximately 41 percent (24 steps) for processing one dataset and 90 percent (319 steps) for processing all six datasets.

Finally, several data inconsistencies were improved. Previous GIS methods being utilized were returning inaccurate data. By reevaluating the tools being used and changing some of the queries, more consistent and accurate data is produced for map development, system analysis and updates.

#### Next Steps

The Statewide Planning Unit will ensure process changes are sustained by implementing standard operating procedures and yearly evaluations of the process to account for changes to data, methods and GIS technology.