

TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Date: 2-5-15

Lead Agency (FHWA or State DOT): South Dakota DOT

INSTRUCTIONS:

Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.

Transportation Pooled Fund Program Project # <i>(i.e., SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX))</i> TPF-5(054)		Transportation Pooled Fund Program - Report Period: <input type="checkbox"/> Quarter 1 (January 1 – March 31) <input type="checkbox"/> Quarter 2 (April 1 – June 30) <input type="checkbox"/> Quarter 3 (July 1 – September 30) <input checked="" type="checkbox"/> Quarter 4 (October 1 – December 31)	
Project Title: Development of a Maintenance Decision Support System			
Name of Project Manager(s): Dave Huft		Phone Number: 605-773-3358	E-Mail: dave.huft@state.sd.us
Lead Agency Project ID: SD2002-18		Other Project ID (i.e., contract #): 310814	Project Start Date: October 14, 2002
Original Project End Date: April 30, 2003		Current Project End Date: September 30, 2015	Number of Extensions: 32

Project schedule status:

On schedule On revised schedule Ahead of schedule Behind schedule

Overall Project Statistics:

Total Project Budget	Total Cost to Date for Project	Percentage of Work Completed to Date
\$8,670,210.00	\$7,988,501.59	92.14%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
\$292,961.16 (3.38%)	\$292,961.16	94.23%

Project Description:

The Maintenance Decision Support System (MDSS) research program is responsible for research and development related to the implementation of new information technologies, including winter and summer decision support tools, to support transportation maintenance decisions. The program also performs substantial research and development into parallel transportation applications that may either share data with MDSS, or benefit by leveraging technologies developed under the program (for instance, sharing of data between MDSS and other agency systems, or the development of management-oriented tools that leverage MDSS' capabilities).

Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):

- The first version of the MDSS Dashboards was released with v11.00 of the MDSS Graphical User Interface (GUI). This also includes the addition of the dashboards into the mobile versions of MDSS. The dashboard requires a new version of Java to be used which resulted in new Java libraries being added to the code. The initial dashboard panels included segment-based information, cameras, RWIS, and METAR sites. In addition to the dashboard, a survey was also created to be taken by users in the field to provide feedback on the functionality associated with the current features.
- Presented additional results from the numerous simulations comparing seasonal simulation output from MDSS (in terms of maintenance resources used in the simulation) at select locations across the PFS MDSS member agencies, using multiple differing level of service and other impactful configuration differences. Still awaiting comparative data from most agencies in order to realize the full benefits of this effort.
- Changed the majority of PFS MDSS member agencies from the "Analysis" weather data source to the "Modeled" data resource in the WMRI Management Tool, based on generally superior performance in previous winter tests. Implemented numerous enhancements and bug resolutions to the Seasonal Graphs and Comparison Tool in the WMRI toolset. Fixed memory leak in the MDC/AVL Management Tool, and continuing to experiment with increasing the memory that is made available to the tool to keep it from crashing in full-winter queries for agencies with many trucks.
- Version 11.00 of the MDSS GUI software was released to the users in the field.
- Held a project meeting on October 20- 22 to cover accomplishments of Year 1 and layout the plans for year 2 of the Phase VIII research plan.
- Operational support began for all agencies billing their operations through the PFS MDSS contract. This includes operational weather forecasting support, RWIS data integration, customer support, training, and AVL/MDC data integration (where applicable).
- Released the new Assessment of Recommendation interface and held training sessions for 5 states. The interface provides a 'rerun' option that takes input from users regarding road, weather, and treatment actions and regenerates a revised set of recommendations. Also continued work on the automated collection and visualization of data to support the assessment of recommendations task in key data-rich test beds.

Anticipated work next quarter:

- Incorporation of suggestions and comments associated with the MDSS Dashboards. It is anticipated that panels will also be developed for displaying data from the WMRI and AVL/MDC Management Tools.
- The multi-year seasonal simulations for evaluating MDSS' configurations across the state agencies will be completed for the agencies that have provided adequate data for comparison in an effort to identify where MDSS' current configurations may be either less than ideal, or not representative of current agency practice.
- Continue work on identifying and eliminating issues noted with the WMRI and MDC/AVL toolsets. Investigating the possibility of an import function in the WMRI tool so as to permit direct comparison of agency data against WMRI data in the WMRI toolset.
- Continue winter operations for all agencies, including the provision of any additional training requested by the agencies.
- Continue the Assessment of Recommendation evaluation with closer interaction with users involved in the evaluations. One anticipated modification is a request for follow-up evaluations after rerunning an assessment. Also continue efforts aimed at objective assessment of recommendations using data captured in well-monitored test beds, and at ways of quantifying the results.
- Complete and post the WMRI Setup Guide and MDSS Dashboards Reference Guide.
- Develop and produce preliminary version of MDSS Training Videos and establish a platform to house videos.
- Provide Google Analytics statistics to the PFS group.
- Conduct a project meeting to cover completed work in Phase VIII Year 2 and updates to anticipated work to be completed.
- Implement MDSS outside of Iteris' infrastructure in order to provide clear separability and documentation of the PFS MDSS software modules vs. Iteris' infrastructure and modules.

Significant Results:

- While the seasonal simulations carried out in Q2 and Q3 appear to be providing a lot of very useful information, this process has not yet come to a conclusion where the final results of that activity are clear yet. The primary holdup is in getting equivalent data from the member agencies to permit comparison.

Circumstances affecting project or budget. (Please describe any challenges encountered or anticipated that might affect the completion of the project within the time, scope and fiscal constraints set forth in the agreement, along with recommended solutions to those problems.)

- None this quarter.

Potential Implementation:

- The MDSS research program is now well into its 8th phase of work. The core MDSS software / services have been operational within numerous state transportation agencies for several years or more, depending upon the agency. An initial suite of "Management Tools" has been implemented within the past several years, starting first with a WMRI tool to aid managers in quantifying winter severity across their jurisdiction from a winter maintenance perspective, followed up more recently by a complementary suite of MDC/AVL-oriented tools analyzing and visualizing maintenance being performed by the agency's MDC/AVL-equipped snowplow fleet. During Phase VII, MDSS applications for iOS and Android mobile platforms were designed, developed and made available to PFS member agencies. New features and capabilities continue to be added in the present phase of work.