

## TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Date: 4-15-15

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.*

<b>Transportation Pooled Fund Program Project #</b> <i>(i.e., SPR-2(XXX), SPR-3(XXX) or TPF-5(XXX))</i>  TPF-5(054)		<b>Transportation Pooled Fund Program - Report Period:</b> <input checked="" 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 type="checkbox"/> Quarter 4 (October 1 – December 31)	
<b>Project Title:</b> Development of a Maintenance Decision Support System			
<b>Name of Project Manager(s):</b> Dave Huft		<b>Phone Number:</b> 605-773-3358	<b>E-Mail:</b> Dave.Huft@state.sd.us
<b>Lead Agency Project ID:</b> SD2002-18		<b>Other Project ID (i.e., contract #):</b> 310814	<b>Project Start Date:</b> October 14, 2002
<b>Original Project End Date:</b> April 30, 2003		<b>Current Project End Date:</b> September 30, 2015	<b>Number of Extensions:</b> 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	\$8,259,484.32	95.26%

Quarterly Project Statistics:

Total Project Expenses and Percentage This Quarter	Total Amount of Funds Expended This Quarter	Total Percentage of Time Used to Date
\$270,982.73      (3.13%)	\$270,982.73	96.15%

**Project Description:**

- The Maintenance Decision Support System research program is responsible for research and development related to the implementation of new information technologies to support transportation maintenance decisions, including winter and summer decision support tools. The program also performs substantial research and development into parallel applications for the transportation industry 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 MDSS dashboard was operational for Q1 2015. Many agencies began using the dashboard within the GUI during this quarter as it takes times for each agency to update their versions of MDSS. Initial feedback from the dashboard functionality has been positive. It was discovered early in Q1 the dashboard's available memory in the MDSS GUI needed to be limited to avoid GUI crashes. This issue became evident when users saved image sites, with multiple views, that had cameras with very high resolutions. To address this issue, users were limited to 5 camera sites. Additional work was conducted on the backend software-side to increase the load speed of the dashboard. Because this work was done 'server-side', no additional versions of the GUI needed to be released.

- The process of temporarily spinning up an end-to-end MDSS instance on external hardware (Amazon's EC2 in this case) has been another focus of work during Q1. The goal is to clearly isolate, identify and document the dependencies and operations of the entirety of the MDSS system, and to rid the MDSS code base of no-longer-used data files and processes that have accrued during the nearly 15-year span of the project. This effort is being undertaken in order to comply with the provisions of the recently-finalized MDSS IP Agreement with the PFS member agencies.

-Version 11.08 of the MDSS GUI was available for download at the end of Q1. Several iterations of the versions from 11.00 to 11.08 were used to test the available memory the MDSS GUI could use from the computer. The MDSS GUI was limiting the available memory the application would consume to avoid causing issues on user's computers. This limit was expanded to account for more data processing needed and new computers have more available RAM to allow for a limit increase.

- Held a project meeting on January 26 to 28 to cover accomplishments of the first part of Year 2 and layout the plans for year 2 of the Phase VIII research plan.

- Operational support continued 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).

- The new Assessment of Recommendation interface had 176 entries during the quarter. Initial evaluation of the results through March indicates a lower percentage of accepts than last year but a very high success rate when the recommendations were accepted.

**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.
- Continued work on identifying and eliminating issues noted with the WMRI and MDC/AVL toolsets. Plans to investigate 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.
- Operations will come to end for most agencies on April 15<sup>th</sup>. Usage stats for the entire winter will be provided to each agency. A list of the final routes will be sent to each agency.
- Perform a final analysis of the Assessment of Recommendations input into the MDSS interface this past winter and evaluate the influence of the revised interface.
- Continue to develop and produce preliminary version of MDSS Training Videos and establish a platform to house videos.
- Conduct a project meeting to cover completed work in Phase VIII Year 2 and updates to anticipated work to be completed.
- Continue implementing MDSS outside of Iteris' infrastructure in order to provide clear separability and documentation of the PFS MDSS software modules vs. Iteris' infrastructure and modules.
- 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.

**Significant Results:**

- While the seasonal simulations carried out in Q2 and Q3 2014 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.
- The deployment of the MDSS Dashboard has been met with positive feedback and constructive comments for changes. This feature allows the most basic users to get information in a quick view.

**Circumstance 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 8<sup>th</sup> 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.