

TRANSPORTATION POOLED FUND PROGRAM QUARTERLY PROGRESS REPORT

Date: February 17, 2014

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.

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|------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 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, 2014 | Number of Extensions: 30 |

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 |
|----------------------|--------------------------------|--------------------------------------|
| \$7,755,260.00 | \$6,981,991.71 | 90.03% |

Quarterly Project Statistics:

| Total Project Expenses and Percentage This Quarter | Total Amount of Funds Expended This Quarter | Total Percentage of Time Used to Date |
|----------------------------------------------------|---------------------------------------------|---------------------------------------|
| \$325,378.29 (4.20%) | \$325,378.29 | 93.75% |

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.):

- Restructured the MDSS server-side road condition analysis and forecast system code bases, the goal being to streamline processing, and in particular to permit fast-tracked responses of MDSS to user-submitted reports.
- Developed the server-side infrastructure to extract data for one or more routes for presentation in seasonal graphical depictions of winter severity measures (in the WMRI Management Tool).
- Mobile app work mostly focused on bug fixes related to the recently-released versions of the iOS and Android applications, such as bugs that prevented cameras at RWIS sites and MDSS 'point routes' from appearing on the iOS Map View. Added an improved search feature to the iOS app.
- A Phase VII Final Report was in final contextual form. Final formatting is necessary to finish document.
- Operations consumed much of the effort during Q4 which included new users added to the system, training, customer support activities, along with weather forecasting support. All agencies have experienced varying degrees of winter weather during Q4 allowing agencies to use MDSS in their operations.
- Training was conducted across all agencies requesting on-site training from Iteris. These training sessions ranged from new users training to very experienced users. Each session required coordination with the agency to determine the level of experience within the session.
- A sub-committee tasked with helping the development of MDSS dashboards held a meeting. Several ideas were shared during the initial meeting with a few mock-ups displayed. Feedback from representatives in several agencies will be used to help shape the dashboards. A survey instrument was in development to acquire feedback from the agencies.
- Evaluations were collected using the existing code and the data collected for evaluation prior to the spring Tech Panel meeting.
- Roadway Environment Blowing Snow model was updated and placed into operations at the beginning of Oct.

Anticipated work next quarter:

- Add the equivalent of the MDSS GUI's 'Static Layers' to the mobile apps (e.g., 24- and 48-hr observed or forecast precipitation, etc.)
- Work with the MDSS Technical Panel to identify factors limiting implementation and operational utilization of the WMRI toolset. Work to add useful visualization and analysis tools, such as seasonal graph summaries of severity measures and spatial aggregation capabilities.
- Identify toolkits which may be available to support dashboard displays on the different MDSS user interfaces. Also identify the desired content, design the dashboard layouts, create mock-ups, and develop initial elements of the dashboard displays.
- Operations will continue during Q1. This will include MDSS customer support, on-site training, and operational weather forecasting support where necessary.
- A final draft of the Phase VII final report will be completed and distributed for review.
- A draft version of the MDSS Dashboards will be released into production. It is likely this will first occur with the MDSS apps and lead to development in the MDSS GUI.
- An analysis of the recommendation evaluations will be done for the spring Tech Panel meeting and at the end of the winter. Subjective analyses of the recommendations and the associated conditions will be performed on saved storms at locations where camera imagery provides a mechanism to assess road conditions.

Significant Results:

- None this quarter, as the project is just embarking on a new phase of work.

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).

- Project was extended to a Phase VIII during Q3, the first year for which funding has been approved by the project's Technical Panel. The primary foci of Phase VIII will include assessment of recommendations, continued enhancement of the MDSS mobile apps, facilitation of implementation of the Management Tools, and design and development of MDSS 'dashboards'.

Potential Implementation:

- The MDSS research program is now in the beginning of 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.