

Pooled Fund Study Project TPF-5(054)
SDDOT Project SD2002 – 18
Development of Maintenance Decision Support System
Phase IV
THIRD QUARTERLY PROGRESS REPORT
July – September, 2006

Overview

The third quarter of Phase IV mainly focused on activities related to the analysis of events from the Demonstration Field Test for Year 2 (DFT-2), and preparations for the Field Deployment Transition (FDT) scheduled to take place in the winter of 2006-07.

In addition, tasks relating to the addition of New Hampshire as a full study participant in the FDT continued. Initial interviews and familiarization sessions were originally scheduled for May, but historic flooding caused these meetings to be postponed and rescheduled for early September. User surveys were returned from the participants in August, and the initial interviews and familiarization sessions were conducted on September 7, 2006 in Hooksett and Derry, New Hampshire.

A date for the summer Technical Panel Meeting could not be set during this quarter due to scheduling conflicts. The meeting is scheduled for October 2 and 3 in Sioux Falls, SD.

The remainder of this report will address the major tasks of this quarter, following the outline of the Phase IV Work Plan.

Implement version 2.0 of the PFS MDSS in state agency offices in individual and multi-state test regions as determined by the Technical Panel and evaluate its performance during 2005-06 winter operational maintenance activities (Task 1)

Results from post-season interviews and surveys were compiled into a report, which was made available to all states in late Summer.

Identify required additional research necessary to continue the enhancement of MDSS within an operational environment (Task 2)

During the DFT-2, over a dozen intensive field case studies were conducted across the PFS MDSS domain by both Meridian staff and DOT observers. A large volume of data was collected from these cases; including MDSS forecast data, photographic and subjective observations, camera imagery, as well as NWS and RWIS observations. A limited number of cases also included chemical samples collected by DOT observers. A summary of these cases will appear in a DFT-2 technical report to be prepared during the fourth quarter.

Meridian continues to analyze the data from these cases, with goals of improving the MDSS modeling processes and identifying observational and technology gaps that need to be filled. Numerous modifications were made to the MDSS modeling capabilities based upon findings from these case studies. The findings and modifications resulting from the case study analyses, including the identification and explanation of the current gaps, will be summarized during the October 2006 Technical Panel meeting as well as in a second technical report, a draft version of which will be delivered in the fourth quarter.

Prepare for the Field Deployment Transition (FDT) to be conducted during the winter of 2006-07 (Task 3)

The process has begun to make changes to the MDSS software, and document the software, in preparation for transition to a deployment phase. This transition is scheduled to occur during the 2006-07 season. The focus of development during this transition will be toward a stable release version intended for general release to a large group of operational users outside of the test project. A third technical report will be generated in quarter four outlining the software changes related to this transition and the detailed plan for the FDT.

Most of the member states have expressed an interest in continuing to expand the scope of their individual MDSS deployments during the 2006-2007 FDT. A number of new routes had already been added to the system as of the end of the third quarter, particularly in Colorado, Iowa, and Indiana.

Perform scientific validation of observed weather variables and comparison with input variables to the PFS MDSS (Task 4)

Much of this task is conducted in parallel with that in Task 2. That is, the observational data involved in the field studies will be used to make conclusions about the performance of the MDSS. The results of these studies will be included in the technical report referenced in Task 2, along with an analysis of the current gap in observed weather which needs to be filled to improve performance.

Perform an assessment of the validity, acceptance, utilization and operational requirements of MDSS within State DOT winter maintenance practices (Task 5)

As part of the case studies involving Meridian staff, MDSS users were observed in real-time and an analysis was made as to their acceptance and utilization of the system, as well as to the validity and the operational requirements of the system. These findings were certified through the post-season interviews, resulting in a complete picture of the current state of MDSS from a user-perspective. These data are generally summarized in the DFT-2 report, and findings that show areas where improvement is needed will be noted in the development plan for the FDT.

Develop a strategy to transition the MDSS PFS to a broader state DOT audience and full deployment (Task 6)

As the MDSS begins to approach maturity, and state and local agencies experience increased awareness of the benefits of MDSS through word-of-mouth by current users and extensive promotion by FHWA, the demand for an operational version of MDSS continues to grow rapidly. Meridian has noted requests for MDSS services, either in demonstration mode or limited operational mode, in several Requests for Proposals. As such, a business model needed to be developed, including marketing, licensing, and pricing issues. Such a business model requires balancing the needs of both Meridian and the agencies participating in the PFS to protect the best interests of both.

After much discussion at previous Technical Panel meetings, and with the encouragement of the panel, Meridian has developed a business plan that it feels accounts for all these needs in the best interests of all stakeholders. Such a plan includes aggressive marketing of the PFS/Meridian MDSS solution as the standard Maintenance Decision Support System. It includes fair and standard licensing fees for those not involved in the PFS, and includes reasonable pricing for implementation of the system that can be applied to agencies of varying sizes, such as cities, counties, states, or regional consortiums. Though a number of proposals have been delivered, no deployments have yet been confirmed.

A second issue that must be addressed in order to facilitate broader MDSS deployment is the complexity of the MDSS route configuration process. Meridian has initiated the design phase for a suite of tools that will streamline this process. This tool suite will likely be comprised of a series of translators that convert state construction, traffic, and linear reference system GIS databases into an MDSS standard format, as well as additional graphical tools for gathering required information that – in general – is not expected to be available in state databases.