



Evaluation Plan

Project Year 2003

May 5, 2003

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Introduction

In 1999, the states of Iowa, Kansas, Missouri, and Nebraska created the Midwest States Smart Work Zone Deployment Initiative (MwSWZDI), a pooled-fund study to develop better ways of controlling traffic through work zones, which improve the safety and efficiency of traffic operations and highway work. In 2001, Wisconsin joined the MwSWZDI. Since its inception, more than of 30 technologies have been deployed and evaluated in the five states, and others are ongoing. The results of the completed evaluations are posted on the Mid-America Transportation Center (MATC) website (www.matc.unl.edu).

The participating states have selected two projects for the 2003 Project Year:

1. Criteria for Portable ATIS in Work Zones: Lane Merge, Travel Time and Speed Advisory Systems
2. MwSWZDI Conference and Workshop

Universities in the participating states will perform the associated work. The universities that will be involved in the work are:

- Iowa State University,
- University of Kansas,
- University of Missouri-Columbia,
- University of Nebraska-Lincoln,
- University of Wisconsin-Milwaukee, and
- Marquette University.

The University of Kansas will coordinate the overall evaluation process and compile the results of the evaluations into a final report.

The descriptions and budgets of the projects are presented in this plan. Work will begin in June 2002, and be completed by May 31, 2003.

Criteria for Portable ATIS in Work Zones: Lane Merge, Travel Time and Speed Advisory Systems

Synthesis Study

Description

The Midwest Smart Work Zone Deployment Initiative has been conducting multiple evaluations of portable ATIS (Advanced Traveler Information Systems) that are intended to provide good real-time information to drivers about delays and geometric issues in advance of work zones. Systems have included TIPS, Intellizone, ADAPTIR, Brown RTCMSC, and D-25. In addition, similar tests of such equipment have been performed elsewhere, sporadically. Some of the evaluations have been expensive, and a cohesive body of knowledge does not yet exist for providing guidance as to the most effective methods of deploying such systems and determining when such systems are warranted. If these technologies are to become part of standard practice for departments of transportation, given their complexity and expense, such guidance needs to be developed.

Characteristics of these systems that distinguish them from other ATIS devices are (1) they can be readily moved between work zones or redeployed within the same work zone in a similar or different configuration; (2) they provide a message directly to the driver within the driving environment; and (3) the message can change in response to traffic, lane geometry, construction equipment location or personnel needs. Many of these systems obtain and process traffic information automatically, but systems that require human intervention have also been tested. Message formats vary, but can include variable message signs, highway advisory radio or CB broadcasts. A recent review of the ATIS literature, covering 158 reports and articles, performed for the Wisconsin Department of Transportation concluded that there is still a deficiency in knowledge of how such technologies should be deployed.

Objective

The objective of the evaluation is to assemble all readily available knowledge of portable ATIS devices in work zones; to understand existing practices; to reach conclusions as to what constitutes best practice; and to define future testing needs. Issues of particular interest include:

- Means of delivering message
- Intent of message (e.g., speeds advisory, delay advisory, travel times and merge warnings)
- Content of message
- Legal or policy restrictions or other requirements on the content of message
- Number, variety and placement of method of delivery means
- Type, number and locations of detectors
- Methods of internal operation of the system, including communications, data logging and algorithms
- Types and sizes of expected impacts on safety, driver behavior, driver satisfaction and worker satisfaction

- Effectiveness of system components, including detectors, signs and transmitters
- Nonautomatic methods of changing message and criteria for manual override
- Typical costs and cost effectiveness of deployments as a whole.

This review will not compare products directly to each other. Rather the review will focus on applications of the most promising technologies, regardless of the vendor, in actual work zone situations.

Methodology

The method of evaluation is a literature review and best practices scan. It is anticipated that very little useful information will be found in the academic or professional literature. It will be necessary to work through persons involved in the technology (either as vendors or as DOT personnel) to obtain reports or anecdotal information related to the topics cited in the previous section.

The list of information sources should include:

- Literature collected as part the WisDOT ATIS review
- Abstracts from TRIS
- Full text of documents located by TRIS, when deemed appropriate
- National Transportation Library documents
- Abstracts from Engineering Village 2
- Major university transportation libraries (e.g., Northwestern, UC-Berkeley)
- Information from MwSMDI participating state DOTs
- Information from other state or local DOTs
- Information from FHWA and other USDOT entities
- Documents posted on the Internet
- Review of trade publications.

In addition to a traditional literature search, information will be obtained by:

- Direct contact (phone or e-mail) with key individuals at FHWA
- Direct contact with key individuals at state DOTs
- Direct contact with vendors
- Direct contact with any referrals.

The methods of analysis will include:

- Determining the relevant literature and information
- Organizing relevant literature and information by topic
- Summarizing the literature and information
- Determining best practice.

This review will recognize that lessons learned in the deployment of other types of ATIS might be applicable to the deployment of portable ATIS in work zones. For deployments where written reports have not yet been issued, it will likely be necessary to conduct extensive interviews with key individuals who were intimately involved in deployments.

Work Plan

The following task needs to be performed to accomplish the objectives of the study:

- Task 1. Assemble an advisory committee of experts associated with the MwSWZDI to guide the study and to participate in making recommendations. Meet with advisory committee.
- Task 2. Develop interview protocol.
- Task 3. Compile literature and experiences with portable ATISs in work zones.
- Task 4. Review, organize and critique information obtained in Task 3.
- Task 5. Make recommendations with the assistance of the advisory committee.
- Task 6. Prepare final report.

Schedule

The project will take 12 months.

Budget

The following budget is based on costs at the University of Wisconsin—Milwaukee and may vary depending upon the institution that performs the study. The project involves 150 hours each of faculty, graduate project assistant and student hourly help for a total of 450 person-hours.

Item	Amt
Personnel	
Salaries & Wages	\$ 14,085
Fringe Benefits	\$ 3,504
Total	\$ 17,589
Other Direct Costs	
Materials & Supplies	\$ 500
Printing & Copying	\$ 100
Postage	\$ -
Telephone & FAX	\$ -
Research Equipment	\$ -
Travel	\$ 100
Tech Acquisition	\$ -
Tech Installation	\$ -
Tech Maintenance	\$ -
Total	\$ 700
Total Direct Costs	\$ 18,289
Indirect Costs	\$ 8,596
Total	\$ 26,885

MwSWZDI Conference and Workshop

The MwSWZDI was originally started to help avoid duplication of efforts among neighboring states and to facilitate information sharing within the region. Early on, the participating states recognized that the work being done was of interest to transportation agencies across the country, not just in the Midwest. So, in January of 2000, the first MwSWZDI Conference was held in Omaha, Nebraska. This project involves the coordination of a second conference to present the work performed as part of the pooled fund study since the conference in 2000 and to facilitate discussion on related issues among states in attendance.

The first conference drew 125 attendees and 25 vendor displays. With the publicity the study has received in the interim, it is anticipated that this conference will draw 150-200 attendees and 25-50 vendors. Costs are based on the conservative end of these ranges.

It is currently anticipated that the conference will be held in Madison, Wisconsin, in conjunction with a FHWA showcase event.

Budget

Item	Amt
Personnel	
Salaries & Wages	\$ 11,520
Fringe Benefits	\$ 749
Total	\$ 12,269
Other Direct Costs	
Materials & Supplies	\$ 1,600
Printing & Copying	
Postage	\$ -
Telephone & FAX	\$ -
Research Equipment	\$ -
Site Rental and Fees	\$ 3,000
Mailings	\$ 2,000
Food	\$ 16,800
Revenue (Reg, Vendors)	\$ (17,500)
Total	\$ 5,900
Total Direct Costs	\$ 18,169
Indirect Costs	\$ 8,267
Total	\$ 26,436

Overall Budget

Item	Criteria for Portable ATIS in WZs	MwSWZDI 2004 Conference	Project Coordination (KU)	Total
Personnel				
Salaries & Wages	\$ 14,085	\$ 11,520	\$ 8,732	\$ 34,337
Fringe Benefits	\$ 3,504	\$ 749	\$ 1,946	\$ 6,199
Total	\$ 17,589	\$ 12,269	\$ 10,678	\$ 40,536
Other Direct Costs				\$ -
Materials & Supplies	\$ 500	\$ 1,600	\$ 1,000	\$ 3,100
Printing & Copying	\$ 100		\$ 2,000	\$ 2,100
Postage	\$ -	\$ -	\$ 400	\$ 400
Telephone & FAX	\$ -	\$ -	\$ 400	\$ 400
Research Equipment	\$ -	\$ -	\$ -	\$ -
Travel	\$ 100	\$ -	\$ 3,716	\$ 3,816
Site Rental and Fees	\$ -	\$ 3,000	\$ -	\$ 3,000
Mailings	\$ -	\$ 2,000	\$ -	\$ 2,000
Food	\$ -	\$ 16,800	\$ -	\$ 16,800
Revenue (Reg. Vendors)	\$ -	\$ (17,500)	\$ -	\$ (17,500)
Total	\$ 700	\$ 5,900	\$ 7,516	\$ 14,116
Total Direct Costs	\$ 18,289	\$ 18,169	\$ 18,194	\$ 54,652
Indirect Costs	\$ 8,596	\$ 8,267	\$ 8,278	\$ 25,141
Total	\$ 26,885	\$ 26,436	\$ 26,472	\$ 79,793