

North/West Passage Transportation Pooled Fund Study



Phase II Work Plan

December 13, 2004

North/West Passage Transportation Pooled Fund Study Phase II Work Plan

Phase II Projects – ITS Integrated Corridor Strategic Planning Including Development of Traveler Information and Maintenance Network

Purpose

The purpose of Phase II of the North/West Passage Transportation Pooled Fund (TPF) Study Projects is to develop a North/West Passage ITS Integrated Corridor Strategic Plan while continuing to develop, expand implementation, and evaluate integrated traveler information systems. This work will include coordinated maintenance operations across state borders and the development of safety improvement systems. The plan will focus on center-to-center opportunities and include a high-level architecture for the corridor, an inventory of communication coverage, and a coordinated deployment/operations concept for traveler information systems. Suggested projects for the corridor to pursue will be identified.

The long-term vision of the North/West Passage Corridor states (Washington, Idaho, Montana, North Dakota, South Dakota, Minnesota, Wyoming, and Wisconsin) is to influence ongoing standards development; operate database systems that can transmit and receive multiple data streams; and utilize effective methods for sharing, coordinating, and integrating traveler information across state borders.

Based on funding commitments from North Dakota, Wisconsin, and Minnesota, the initial geographic focus of Phase I was I-94 through Wisconsin, Minnesota, and North Dakota. Phase II projects will expand on this initial geographic area as additional states commit funding.

Status

Currently the North/West Passage states contain numerous systems for collecting, processing, integrating, and delivering transportation data to users. While the information is valuable to users, it is difficult to determine which system can provide the needed information and how accurate and timely the information is. All the states involved have worked on various elements of an integrated traveler information network and have had significant success. However, due to a variety of issues, the current traveler information systems are only beginning to be integrated across state borders. Phase I projects are currently underway along I94 and are expected to demonstrate capabilities to integrate traveler information systems across state borders.

Strategy

By coordinating efforts to develop an integrated traveler information and maintenance operations network, the North/West Passage states will influence ongoing standards development; operate data base systems that can transmit and receive multiple data streams; and utilize effective methods for sharing, coordinating, and integrating traveler information across state borders. When completed, the systems should appear seamless to users and maintenance operations. This system will benefit users in all connected states by supplying timely and accurate traveler information.

In some Phase I Projects that involved significant construction or equipment purchases, the North/West Passage TPF Study served as project initiator. This concept of project initiation was a

success in Phase I and will continue during Phase II where appropriate and when funding is available.

In Phase II, the participants will focus on integrated corridor strategic planning for the development of the traveler information and maintenance network. And when funding is available continue development of a series of independent, but closely related projects. These projects will build on the success of the Phase I program that focused on integrated traveler information systems and coordinated maintenance operations. One project suggestion from Phase I – Develop Automated Road Condition Reporting System (previously titled 1.3) has been carried forward to Phase II.

Phase II Projects

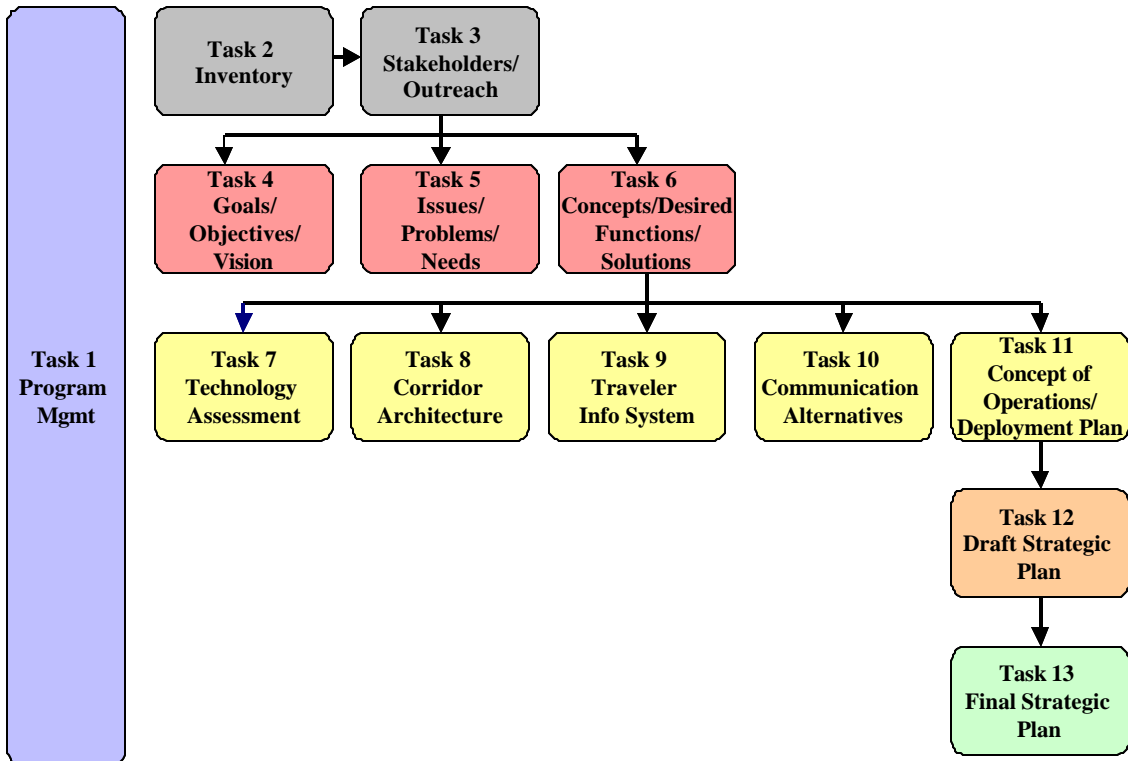
North/West Passage members submitted project ideas and then voted on projects to pursue for Phase II. The following lists the ranking of as agreed by the membership. It was agreed that the initial focus of Phase II would be Project 2.1.

- 2.1 North/West Passage ITS Integrated Corridor Strategic Plan**
 - *Corridor ITS Strategic Plan*
 - *Corridor High Level Architecture*
 - *Integrated Traveler Information Systems Coordinated Deployment Concept*
 - *Corridor Communication Coverage Inventory and Alternatives*
- 2.2 Coordinated Guidelines for Rural DMS Operations and Messages along the Corridor**
- 2.3 Automated Road Condition Reporting System**
- 2.4 North/West Passage Road Weather Info/Net**
- 2.5 North/West Passage Coordination and Partnership with the FHWA Clarus Initiative**
- 2.6 Automated Gate System Demonstration**

The group agreed website maintenance is necessary to continue communication internally and externally and should continue to be funded through Phase II, but not listed as a project.

Details of projects 2.1 – 2.6 are included on the following pages.

Project Title	2.1 North/West Passage ITS Integrated Corridor Strategic Plan
Project Champion	To be determined
Project Objective	To develop an expanded ITS Integrated Corridor Strategic Plan for the North/West Passage Corridor. Development of the ITS Corridor Strategic Plan will help the states to coordinate integrated corridor efforts between state borders and identify future projects to pursue within the North/West Passage Corridor. The plan will focus on center-to-center opportunities and include a high-level architecture for the corridor, an inventory of communication coverage, and a coordinated deployment/concept of operations for traveler information. Suggested projects for the corridor to pursue will be identified.
Current Status	North/West Passage Phase I successfully pursued early deployment of several ITS projects to improve traveler information under the strategic context of the corridor. However, there is a need to develop a solid, corridor wide strategy for planning, programming and development of future integrated corridor projects. North/West Passage states have developed or are developing statewide strategic plans, statewide architectures, state specific traveler information systems, and state specific communication coverage issues. However, the states along the corridor see a need to develop a corridor-wide strategic plan with a high-level architecture, coordinated traveler information system, and an inventory of communication issues for the I-90 and I-94 corridor from Washington to Wisconsin.
Suggested Approach	<p>Following is a suggested approach for developing a North/West Passage Corridor ITS Strategic Plan:</p> <ul style="list-style-type: none"> ▪ Identify stakeholders to work with to develop an inventory (existing, planned, future) of communication coverage, ITS components, traveler information systems, and architecture for each state and corridor-wide. ▪ Conduct surveys to identify communication coverage, architectures, and existing ITS components. Hold a workshop with identified stakeholders to discuss goals/objectives/vision, issues/problems/needs, and concepts/potential solutions/desired functions for communication coverage, ITS components, traveler information systems, and architectures for the corridor. ▪ Based on the above information gathered from the stakeholders, and working with representatives of each state to develop a corridor architecture, a coordinated deployment concept for traveler information, communication alternatives, and a concept of operations/deployment plan will be created for inclusion in the overall strategic plan. ▪ Special emphasis will be placed on identifying projects that fit within the scope of the North/West Passage charter and that would enhance each states' ability to share information or integrate systems across borders.
Geographic Focus	The geographic focus for Phase II will be the I-90 and I-94 Corridor from Washington to Wisconsin. Additional emphasis within the Strategic Plan will be placed on those states contributing financially to Phase II.
End Users	North/West Passage States - particularly for the planning, coordination, development and operation of integrated programs and projects between the states.
Suggested Outreach	Outreach and education will occur with the identifying of stakeholders and conducting surveys, interviews, and workshops. Progress of the project will also be available on the North/West Passage website (http://www.nwpassage.info).

Benefits	The development of an ITS Corridor Strategic Plan will help the affected states in planning and integration of projects and programs along the corridor. Special emphasis will be placed on providing states with suggested projects for the North/West Passage corridor states to pursue.		
Milestones and Schedule	Milestone		Schedule 1 year
	1	Project Management, Administration, and Coordination	On-going
	2	Inventory (Exiting/Planned/Future)	Month 1
	3	Identify Stakeholders/Outreach	Month 1
	4	Goals/Objectives/Vision	Month 4
	5	Issues/Problems/Needs	Month 4
	6	Concepts/Potential Solutions/Desired Functions	Month 4
	7	Technology Assessment	Month 6
	8	Corridor Architecture	Month 6
	9	Traveler Information System/511 Assessment/Integration	Month 6
	10	Communication Alternatives	Month 6
	11	Deployment/Concept of Operations Plan	Month 6
	12	Draft Strategic Plan	Month 11
13	Final Strategic Plan	Month 12	
Plan Process	The following figure outlines the Strategic Plan process of the 13 major milestones listed above.		
	 <pre> graph TD T1[Task 1 Program Mgmt] T2[Task 2 Inventory] --> T3[Task 3 Stakeholders/ Outreach] T3 --> T4[Task 4 Goals/ Objectives/ Vision] T3 --> T5[Task 5 Issues/ Problems/ Needs] T3 --> T6[Task 6 Concepts/Desired Functions/ Solutions] T4 --> T7[Task 7 Technology Assessment] T5 --> T8[Task 8 Corridor Architecture] T6 --> T9[Task 9 Traveler Info System] T6 --> T10[Task 10 Communication Alternatives] T6 --> T11[Task 11 Concept of Operations/ Deployment Plan] T11 --> T12[Task 12 Draft Strategic Plan] T12 --> T13[Task 13 Final Strategic Plan] </pre>		
Major Task Details and Timeline	The following table indicates the 13 major milestones and details of each task along with graphically depicting the timeline for completing each task.		

ID	Task Name	Duration	Start	Finish	March	April	May	June	July	August	September	October	November	December	January
1	Strategic Plan	262 days	Mon 1/3/05	Tue 1/3/06	[Gantt bar from March to January]										
2	Task 1 Project Management, Administration, and Coordination	261 days	Mon 1/3/05	Mon 1/2/06	[Gantt bar from March to January]										
3	Program Management	261 days	Mon 1/3/05	Mon 1/2/06	[Gantt bar from March to January]										
4	Strategic Plan Meetings (4)	240 days	Mon 1/3/05	Fri 12/2/05	[Gantt bar from March to January]										
5	Strategic Plan Meeting 1	1 day	Mon 1/3/05	Mon 1/3/05	[Vertical tick on 1/3/05]										
6	Strategic Plan Meeting 2	1 day	Mon 4/4/05	Mon 4/4/05	[Vertical tick on 4/4/05]										
7	Strategic Plan Meeting 3	1 day	Mon 8/1/05	Mon 8/1/05	[Vertical tick on 8/1/05]										
8	Strategic Plan Meeting 4	1 day	Fri 12/2/05	Fri 12/2/05	[Vertical tick on 12/2/05]										
9	Technical Meetings (6)	220 days	Tue 2/1/05	Mon 12/5/05	[Gantt bar from March to January]										
10	Technical Meeting 1	1 day	Tue 2/1/05	Tue 2/1/05	[Vertical tick on 2/1/05]										
11	Technical Meeting 2	1 day	Fri 4/1/05	Fri 4/1/05	[Vertical tick on 4/1/05]										
12	Technical Meeting 3	1 day	Mon 6/6/05	Mon 6/6/05	[Vertical tick on 6/6/05]										
13	Technical Meeting 4	1 day	Mon 8/8/05	Mon 8/8/05	[Vertical tick on 8/8/05]										
14	Technical Meeting 5	1 day	Mon 10/3/05	Mon 10/3/05	[Vertical tick on 10/3/05]										
15	Technical Meeting 6	1 day	Mon 12/5/05	Mon 12/5/05	[Vertical tick on 12/5/05]										
16	Document Development	261 days	Mon 1/3/05	Mon 1/2/06	[Gantt bar from March to January]										
17	Task 2 Inventory (Existing/Planned/Future)	90 days	Mon 1/10/05	Fri 5/13/05	[Gantt bar from March to May]										
18	ITS Components	40 days	Mon 1/10/05	Fri 3/4/05	[Gantt bar from March to April]										
19	Traveler Information Systems	40 days	Mon 1/10/05	Fri 3/4/05	[Gantt bar from March to April]										
20	Communication Coverage	40 days	Mon 1/10/05	Fri 3/4/05	[Gantt bar from March to April]										
21	Architecture	40 days	Mon 1/10/05	Fri 3/4/05	[Gantt bar from March to April]										
22	Draft Inventory Chapter	30 days	Mon 3/7/05	Fri 4/15/05	[Gantt bar from April to May]										
23	Final Inventory Chapter	20 days	Mon 4/18/05	Fri 5/13/05	[Gantt bar from May to June]										
24	Task 3 Identify Stakeholders/Outreach	101 days	Mon 1/24/05	Mon 6/13/05	[Gantt bar from March to June]										
25	ITS Components	40 days	Mon 1/24/05	Fri 3/18/05	[Gantt bar from March to April]										
26	Traveler Information Systems	40 days	Mon 1/24/05	Fri 3/18/05	[Gantt bar from March to April]										
27	Communication Coverage	40 days	Mon 1/24/05	Fri 3/18/05	[Gantt bar from March to April]										
28	Architecture	40 days	Mon 1/24/05	Fri 3/18/05	[Gantt bar from March to April]										
29	Stakeholder Surveys	20 days	Mon 2/7/05	Fri 3/4/05	[Gantt bar from March to April]										
30	Stakeholder Interviews	20 days	Mon 3/7/05	Fri 4/1/05	[Gantt bar from April to May]										
31	Stakeholder Workshop	1 day	Mon 4/4/05	Mon 4/4/05	[Vertical tick on 4/4/05]										
32	Draft Stakeholder/Outreach Chapter	30 days	Tue 4/5/05	Mon 5/16/05	[Gantt bar from April to May]										
33	Final Stakeholder/Outreach Chapter	20 days	Tue 5/17/05	Mon 6/13/05	[Gantt bar from May to June]										
34	Task 4 Goals/Objectives/Vision	45 days	Fri 4/1/05	Thu 6/2/05	[Gantt bar from April to June]										
35	ITS Components	15 days	Fri 4/1/05	Thu 4/21/05	[Gantt bar from April to May]										
36	Traveler Information Systems	15 days	Fri 4/1/05	Thu 4/21/05	[Gantt bar from April to May]										
37	Communication Coverage	15 days	Fri 4/1/05	Thu 4/21/05	[Gantt bar from April to May]										
38	Architecture	15 days	Fri 4/1/05	Thu 4/21/05	[Gantt bar from April to May]										
39	Draft Goals/Objectives/Vision Chapter	20 days	Fri 4/22/05	Thu 5/19/05	[Gantt bar from April to May]										
40	Final Goals/Objectives/Vision Chapter	10 days	Fri 5/20/05	Thu 6/2/05	[Gantt bar from May to June]										
41	Task 5 Issues/Problems/Needs	45 days	Fri 4/1/05	Thu 6/2/05	[Gantt bar from April to June]										
42	ITS Components	15 days	Fri 4/1/05	Thu 4/21/05	[Gantt bar from April to May]										
43	Traveler Information Systems	15 days	Fri 4/1/05	Thu 4/21/05	[Gantt bar from April to May]										
44	Communication Coverage	15 days	Fri 4/1/05	Thu 4/21/05	[Gantt bar from April to May]										
45	Architecture	15 days	Fri 4/1/05	Thu 4/21/05	[Gantt bar from April to May]										
46	Draft Issues/Problems/Needs Chapter	20 days	Fri 4/22/05	Thu 5/19/05	[Gantt bar from April to May]										
47	Final Issues/Problems/Needs Chapter	10 days	Fri 5/20/05	Thu 6/2/05	[Gantt bar from May to June]										

ID	Task Name	Duration	Start	Finish	March	April	May	June	July	August	September	October	November	December	January		
48	Task 6 Concepts/Potential Solutions/Desired Functions	80 days	Fri 4/1/05	Thu 7/21/05													
49	ITS Components	30 days	Fri 4/1/05	Thu 5/12/05													
50	Traveler Information Systems	30 days	Fri 4/1/05	Thu 5/12/05													
51	Communication Coverage	30 days	Fri 4/1/05	Thu 5/12/05													
52	Architecture	30 days	Fri 4/1/05	Thu 5/12/05													
53	Draft Concepts/Potential Solutions/Desired Functions Chapter	30 days	Fri 5/13/05	Thu 6/23/05													
54	Final Concepts/Potential Solutions/Desired Functions Chapter	20 days	Fri 6/24/05	Thu 7/21/05													
55	Task 7 Technology Assessment	40 days	Thu 6/23/05	Wed 8/17/05													
56	ITS Components	10 days	Thu 6/23/05	Wed 7/6/05													
57	Traveler Information Systems	10 days	Thu 6/23/05	Wed 7/6/05													
58	Communication Coverage	10 days	Thu 6/23/05	Wed 7/6/05													
59	Draft Technology Assessment Chapter	20 days	Thu 7/7/05	Wed 8/3/05													
60	Final Technology Assessment Chapter	10 days	Thu 8/4/05	Wed 8/17/05													
61	Task 8 Corridor Architecture	115 days	Thu 6/23/05	Wed 11/30/05													
62	Operational Concept	40 days	Thu 6/23/05	Wed 8/17/05													
63	Define Functional Requirements and Interfaces	40 days	Thu 6/23/05	Wed 8/17/05													
64	Implementation Plan	40 days	Thu 8/18/05	Wed 10/12/05													
65	Agency Agreements	30 days	Thu 8/18/05	Wed 9/28/05													
66	ITS Standards	15 days	Thu 8/18/05	Wed 9/7/05													
67	Architecture Maintenance Plan	30 days	Thu 8/18/05	Wed 9/28/05													
68	Draft Corridor Architecture Report	30 days	Thu 9/29/05	Wed 11/9/05													
69	Final Corridor Architecture Report	15 days	Thu 11/10/05	Wed 11/30/05													
70	Task 9 Traveler Information System/511 Assessment/Integration	75 days	Thu 6/23/05	Wed 10/5/05													
71	TIS/511 Assessment/Integration Conceptual Design	30 days	Thu 6/23/05	Wed 8/3/05													
72	Draft TIS/511 Assessment/Integration Chapter	30 days	Thu 8/4/05	Wed 9/14/05													
73	Final TIS/511 Assessment/Integration Chapter	15 days	Thu 9/15/05	Wed 10/5/05													
74	Task 10 Communication Alternatives	120 days	Thu 6/23/05	Wed 12/7/05													
75	Corridor Graphical Information Database	75 days	Thu 6/23/05	Wed 10/5/05													
76	Corridor ITS Communications Conceptual Design	75 days	Thu 6/23/05	Wed 10/5/05													
77	Draft Communications Alternatives Chapter	30 days	Thu 10/6/05	Wed 11/16/05													
78	Final Communications Alternatives Chapter	15 days	Thu 11/17/05	Wed 12/7/05													
79	Task 11 Deployment/Concept of Operations Plan	125 days	Thu 6/23/05	Wed 12/14/05													
80	Priority Project Descriptions	20 days	Thu 6/23/05	Wed 7/20/05													
81	Cost Estimates	10 days	Thu 7/21/05	Wed 8/3/05													
82	Operation and Maintenance Impacts	10 days	Thu 8/4/05	Wed 8/17/05													
83	Schedule for Deployment	5 days	Thu 8/18/05	Wed 8/24/05													
84	Concept of Operations	30 days	Thu 8/25/05	Wed 10/5/05													
85	Draft Deployment/Concept of Operations Plan Chapter	30 days	Thu 10/6/05	Wed 11/16/05													
86	Final Deployment/Concept of Operations Plan Chapter	20 days	Thu 11/17/05	Wed 12/14/05													
87	Task 12 Draft Strategic Plan	20 days	Wed 11/16/05	Tue 12/13/05													
88	Task 13 Final Strategic Plan	15 days	Wed 12/14/05	Tue 1/3/06													

The project cost for completing a Corridor ITS Strategic Plan is to be determined. The following descriptions identify each milestone as identified in the above timeline.

Project Cost

**Task 1
Program Management, Administration and Coordination**

Program Management
Strategic Plan Meetings
Technical Meetings
Document Development

**Task 2
Inventory (Existing/Planned/Future)**

ITS Components
Traveler Information Systems
Communication Coverage
Architecture
Draft Inventory Chapter
Final Inventory Chapter

**Task 3
Identify Stakeholders/Outreach**

ITS Components
Traveler Information Systems
Communication Coverage
Architecture
Stakeholder Surveys
Stakeholder Interviews
Stakeholder Workshops
Draft Stakeholders/Outreach Chapter
Final Stakeholders/Outreach Chapter

**Task 4
Goals/Objectives/Vision**

ITS Components
Traveler Information Systems
Communication Coverage
Architecture
Draft Goals/Objectives/Vision Chapter
Final Goals/Objectives/Vision Chapter

Task 5
Issues/Problems/Needs

ITS Systems
Traveler Information Systems
Communication Coverage
Architecture
Draft Issues/Problems/Needs Chapter
Final Issues/Problems/Needs Chapter

Task 6
Concepts/Potential Solutions/Desired Functions

ITS Components
Traveler Information Systems
Communication Coverage
Architecture
Draft Concepts/Solutions/Functions Chapter
Final Concepts/Solutions/Functions Chapter

Task 7
Technology Assessment

ITS Components
Traveler Information Systems
Communication Coverage
Draft Technology Assessment Chapter
Final Technology Assessment Chapter

Task 8
Corridor Architecture

Operational Concept
Define Functional Requirements and Interfaces
Implementation Plan
ITS Standards
Architecture Maintenance Plan
Draft Corridor Architecture Chapter
Final Corridor Architecture Chapter

Task 9
TIS/511 Assessment/Integration

TIS/511 Assessment/Integration Conceptual Design
 Draft TIS/511 Assessment/Integration Chapter
 Final TIS/511 Assessment/Integration Chapter

Task 10
Communication Alternatives

Corridor Graphical Information Database
 Corridor ITS Communications Conceptual Design
 Draft Communication Alternatives Chapter
 Final Communication Alternatives Chapter

Task 11
Deployment Plan/Concept of Operations Plan

Priority Project Descriptions
 Cost Estimates
 Operation and Maintenance Impacts
 Schedule for Deployment
 Concept of Operations
 Draft Deployment/Concept of Operations Plan
 Chapter
 Final Deployment/Concept of Operations Plan
 Chapter

Task 12
Draft Strategic Plan

Task 13
Final Strategic Plan

<i>Participants</i>	To be Determined
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<p>Organizational Chart</p>	<p>Project 2.1 Organization</p> <pre> graph TD A[Project Champion(s)] --> B[Strategic Plan] B --> C[ITS Components] B --> D[Traveler Information Systems] B --> E[Communication Coverage] B --> F[Architecture] </pre>
<p>Project Idea Contact Information</p>	<p>North/West Passage Steering Committee</p>
<p>Other Information</p>	<p>North/West Passage Steering Committee members voted on projects to pursue with Phase II funding in October 2004 and agreed to synthesis the top four ranked projects into one project. This project includes the top four ranked projects (Corridor ITS Strategic Plan, Corridor High Level Architecture, Integrated Traveler Information Systems Coordinated Deployment Concept, and Corridor Communication Inventory and Alternatives).</p>

Project Title	2.2 Coordinated Guidelines for Rural DMS Operations and Messages along the Corridor	
Project Champion	To be determined	
Project Purpose/Objective	To expand on the meetings held in South Dakota pertaining to DMS Operations and Messages. The purpose of this project is to cooperatively develop a recommended set of sign usage guidelines along with specific messages for display to be used on rural DMS along the North/West Passage corridor. Each state could use these recommendations as systems and operations plans are developed. Also, the operations and message sets could be utilized in developing appropriate guidelines for the Manual On Uniform Traffic Control Devices (MUTCD). Coordinate with the High Plains ITS Coalition.	
Current Status	South Dakota DOT has sponsored several meetings on DMS operations and messages. However, there is not enough time or resources available to actually develop a proposed set of DMS operations and messages. The project would need to be coordinated with any efforts currently underway to expand or develop DMS operations and message sets for the MUTCD. It is anticipated that other efforts, yet to be determined, are also underway to accomplish the same goal. North Dakota State University-ATAC is developing software that could be used in this project. The High Plains ITS Coalition has developed a Pooled Fund Program in this area.	
Suggested Strategy/Approach	Bring together appropriate staff from all interested states to first determine existing standards, how they are applied, who is working on guidelines for MUTCD, along with any other similar efforts. Step one would be to determine the appropriateness of this project, develop a concept for moving forward, and to hold a series of meetings to develop proposed guidelines. Once a draft set of guidelines were developed, a seminar, or series of seminars would be held to further refine the guidelines and inform others of the proposed guidelines. Finally, the participants would work towards adoption of these guidelines in the MUTCD.	
End Users	To be determined	
Suggested Outreach and Distribution Plan	High Plains Coalition ITS Coalition	
Benefits	States would have an agreed upon set of guidelines for operation and messages on DMS. Travelers along the corridor would receive uniform DMS operations and messages.	
Participants	All interested North/West Passage state maintenance, traffic, operations, and law enforcement staff.	
Major Milestones and Schedule	Milestone	Schedule
	1	To be determined
Project Cost	To be determined	
Project Idea Contact Information	North/West Passage Steering Committee	
Other Information	Visit: http://www.pooledfund.org/ for further information on the High Plains Coalition	

Project Title	2.3 Automated Road Condition Reporting System		
Project Champion	Minnesota DOT, Mark Nelson		
Project Purpose/Objective	To develop, test, and evaluate automated road condition reporting that will reduce the need to manually enter situations in statewide reporting systems.		
Current Status	Currently, 511 traveler information for North Dakota is manually entered into UND/Meridian #SAFE System and Minnesota road condition data is manually entered into Condition Acquisition Reporting System (CARS). Wisconsin is in the beginning stages of planning for a statewide 511 system, which has not been deployed. Unfortunately, the time when the data is needed most by 511 travelers and users is the time when staff members are busiest with management operations. A separate project through FHWA is addressing some of these needs as part of the Maintenance Decision and Support System (MDSS) project.		
Suggested Strategy/Approach	The approach will work with and support the MDSS project in developing an approach to automated road condition reporting. The results will be an improved traveler information system. Vendors will develop parameters for generating applicable good/fair/difficult road condition situations based on the weather forecasts. Testing for the reliability, accuracy, and timeliness of automated road condition reporting will also be undertaken. The automated reports should allow for override of reports manually entered by staff in each state.		
End Users	To be determined		
Suggested Outreach and Distribution Plan	To be determined		
Benefits	This project will provide an operational test of automatically generated road condition reports. Automating the reports will save staff time during their busiest operational period, improve accuracy, and reduce delays on making the information available to travelers.		
Participants	North Dakota DOT, Minnesota DOT, Wisconsin DOT, University of North Dakota, and Vendors		
Major Milestones and Schedule	Milestone		Schedule
	1	Study alternatives and planning	TBD
	2	Define concept and develop preliminary parameters	TBD
	3	Preliminary testing of concept	TBD
	4	Develop first generation design for automated road condition reporting	TBD
	5	Operational testing	TBD
6	Evaluation and assessment	TBD	
Project Cost	To be determined		
Project Idea Contact Information	North/West Passage Steering Committee		
Other Information	This project was listed in Phase I Projects, but tabled at the July 29, 2003 Steering Committee meeting, due to the separate and ongoing Maintenance Decision and Support System (MDSS) project.		

<i>Project Title</i>	2.4 North/West Passage Road Weather InfoNet
<i>Project Champion</i>	To be determined
<i>Project Purpose/Objective</i>	To inventory existing road weather data sources and develop a conceptual InfoNet. This InfoNet would streamline currently available road weather data from various DOTs’ RWIS sites, National Weather Service, MesoWest, Bureau of Land Management, USDA Forest Service, Dept. of Water Resources, Dept. of Agriculture, and other sources available in the North/West Passage (I-90 & I-94 from Washington to Wisconsin) into one single gateway in a manner that is easily accessible by incident responders and the traveling public. The DOTs and other authorized users will be able to customize their user interface, which will map display a compilation of road weather information to meet their needs.
<i>Current Status</i>	Currently, a variety of agencies operate weather stations of their own and there is a great lack of data integration and interagency collaboration. The information must be accessed through separate sources (DOT, Agriculture, BLM, Forest Service, etc.), making it inefficient and time-consuming to assess road and weather conditions in the region. In addition, the user interfaces are not designed to meet the specific needs of information users. The use of road weather data has not yet reached its full potential, leaving room for improvement in integrating existing data from various sources and enabling easier access to the information.
<i>Suggested Strategy/Approach</i>	<p>The proposed research will take a phased approach.</p> <p>Phase I: A vision will be developed for the NWP Road Weather InfoNet system, an outreach plan will be developed, and the key players/stakeholders will be identified and meet to draft a Concept of Operations and a Risk Management plan. In light of user service requirements defined in the National ITS Architecture, high-level system requirements will identified as a starting point. Through focus groups, site visits, interviews, and brainstorming workshops, a list of preliminary system requirements will be gathered from the end users.</p> <p>Phase II: A prototype application with basic functionality will be developed, tested, and deployed in order to further identify future functionality of the final system for delivery. A questionnaire along with a simple user guide for the prototype application will be sent to the end users to gather/rank the system requirements. Then, the stakeholders and the research team will meet together to walk through the documented system requirements. The desired requirements will be compared against available budget, and the project oversight committee will work with the research team to select the requirements that should be included. The Concept of Operations will be updated and the list of system requirements will be finalized.</p> <p>Phase III: The final system will be developed by upgrading the original prototype application. First, the list of system requirements will be translated into a high-level definition of functions and then detailed design. Then, the design will be implemented in terms of software modules (data interfaces, data processing, user authentication, user interfaces, etc.), which will then be tested and integrated. Concurrently, a facilities study will be conducted to identify which agency is going to administer and maintain the final system and an Operations and Maintenance plan will be prepared by the research team. After system acceptance, the final system will be deployed at the identified agency.</p> <p>Phase IV: In the final months of the project after installation of the final system, the</p>

	evaluation will be conducted for the final system. It will involve working with end users to determine the success of the final system, determine if it succeeds in meeting the goals and objectives of the project, identify the lessons learned through the project, identifying additional steps, etc.	
End Users	All NWP Coalition states, transportation system users in the I-90 and 94 Corridor states, commercial vehicles and system operators.	
Suggested Outreach and Distribution Plan	An outreach plan will be developed in the Phase one of this project. Key stakeholder groups will identified and their roles and responsibilities will be documented in the Concept of Operations. If necessary, a business plan will be developed for the NWP Coalition to implement additional steps and to build on the success of this project.	
Benefits	The NWP Road Weather InfoNet system will allow users to view a compilation of all available road and weather data from numerous sources, greatly increasing the efficiency of situation assessments for a variety of purposes, including incident management, maintenance and snow removal, homeland security applications, emergency medical services, and general public traveler information. Variations of the user interface will depend on the needs of the different types of users.	
Participants	Washington State, Montana, Idaho, Wyoming, North Dakota, South Dakota, Minnesota and Wisconsin DOTs and Tourism Agencies, FHWA, Universities and other stakeholders	
Major Milestones and Schedule	Milestone	
	1	Finish Phase One: Draft Concept of Operations and preliminary system requirements etc.
	2	Finish Phase Two: Install the prototype application and finalize the system requirements
	3	Finish Phase Three: Install the final system
	4	Finish Phase Four: Submit the evaluation report
	Schedule	
		Month 1-9
		Month 10-18
		Month 19 - 36
		Month 37 - 48
Project Cost	To be determined	
Project Idea Contact Information	Xianming Shi, Ph.D., Research Scientist and Steve Albert, Director Western Transportation Institute (WTI) Montana State University P.O. Box 174250, Bozeman, MT 59717-4250 Phone: (406) 994-6114 ; Fax: (406) 994-1697	
Other Information	The researchers at WTI are leading a research project entitled <i>WeatherShare</i> to streamline currently available road weather data from Caltrans RWIS, California Dept. of Water Resources, National Weather Service, and other sources available in the Redding area into one accessible source in a manner that is easily accessible by incident responders and potentially the traveling public. Systems engineering methodologies are utilized to gather system requirements from the end users and to ensure that the system is built to work and to meet the user needs.	

Project Title	2.5 North/West Passage Coordination and Partnership With the FHWA Clarus Initiative
Project Champion	To be determined
Project Purpose/Objective	To develop a partnership with the Clarus initiative to coordinate efforts, leverage and share resources and to use the North/West Passage as the Clarus regional corridor for tests, demonstrations and model deployment.
Current Status	<p>The FHWA is funding the Clarus project as one of 9 ITS initiatives. The goal is to demonstrate regional surface transportation observing, forecasting and data management systems, and to establish a partnership to create a Nationwide Surface Transportation Weather Observation System. The objective of Clarus is to reduce the impact of adverse weather for all road and transit users and operators. The project proposes to:</p> <ul style="list-style-type: none"> • Develop partnerships between transportation and weather communities • Strengthen ties among federal agencies with similar objectives for example FHWA & NOAA • Demonstrate a framework to collect weather and road conditions for advanced weather models as the basis for value-added products contributing to a safer more efficient system. • Establish an instrumented corridor test bed to host new cutting edge technologies for fixed, mobile and remote sensing • Establish a Clarus Interagency Coordination Committee. (Clarus ICC) to guide development. <p>One of the proposed project milestones is demonstration; implement regional multi-state data collection systems with real-time quality control functionality, feedback to State DOT engineers and the creation of an Internet data portal where both current and archived data can be retrieved. Another milestone in Research; provide instrumented corridors to promote and test cutting edge observational technologies from fixed, mobile, and remote sensors.</p>
Suggested Strategy/Approach	<p>The FHWA has developed a Clarus Roadmap that includes four tracks:</p> <ol style="list-style-type: none"> 1) Stakeholder Coordination – thru FY09 2) System Design – thru FY 06 3) Multi-State Regional Demonstrations – FY 06 thru FY 08 4) Final Design, Model Deployment – FY 08 thru FY 09 <p>North/West Passage representatives will participate in future meetings on Clarus. Based on feedback from these and other meetings about the Clarus program to develop a proposed strategy for a Clarus – North/West Passage partnership. The partnership would coordinate efforts, leverage and share resources and potentially use the North/West Passage as the Clarus regional corridor for research, tests, demonstrations and model deployment.</p> <p>First step will be for North/West Passage members to participate in meetings including The Clarus ICC Meeting in Norman Oklahoma, September 2004. To participate in Clarus ICC meeting, the ICC and in Clarus Project Task Forces.</p> <p>Note: In developing this project we will need to be careful not to be use federal funds to influence a federal program</p>
End Users	Transportation users and managers, 511, NOAA for forecasting
Suggested Outreach and Distribution	To be determined

Plan			
Benefits	Clarus benefits are listed as a one-stop internet portal for all surface transportation weather related observations. Also real-time data for incorporation into value-added weather, traffic, and decision support systems		
Participants	North/West Passage members, FHWA- Clarus program managers, NOAA and contractors		
Major Milestones and Schedule	Milestone	Schedule	
	1	Clarus ICC meeting Norman Okalahoma	9-23-04
	2	Clarus Task Force meetings participation	Thru 2-05
	3	Develop North/West Passage – Clarus partnership	2-05
	4	Continued involvement in Stakeholder Coordination & Project Task Forces	Thru FY 09
Project Cost	To be determined		
Project Idea Contact Information	Steve Albert, Western Transportation Institute.		
Other Information	CLARUS contact - Paul Pisano – FHWA Road Weather Management Program Paul.pisano@fhwa.dot.gov or visit: http://www.ops.fhwa.dot.gov/weather		

Project Title	2.6 Automated Gate System Demonstration	
Project Champion	To be determined	
Project Purpose/Objective	To demonstrate the coordination of automated gate systems along the North/West Passage Corridor for development, placement, signing, and operation for future automated gate systems along the corridor.	
Current Status	South Dakota and Wyoming have developed and deployed automated gate systems for road closings. Each system is individually developed, signed, and operated. Other North/West Passage states that are beginning to develop these systems could benefit from communication and coordination of South Dakota and Wyoming’s efforts and programs for automated gate systems and their operation.	
Suggested Strategy/Approach	Start with an automated gate system seminar to discuss the current status of systems development, review operational policies and recommend future actions, including follow-up planning and program development meetings.	
End Users	Traffic engineers, maintenance staff, and state police agencies in the North/West Passage Corridor	
Suggested Outreach and Distribution Plan	Local and state police	
Benefits	Reduced cost of development	
Participants	Traffic Engineers, operations peoples, and police agencies in the North/West Passage Corridor	
Major Milestones and Schedule	Milestone	Schedule
	1 To be determined	TBD
Project Cost	To be determined	
Project Idea Contact Information		
Other Information		