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## Interactive Travel Information System

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# **Interactive Travel Information System**

## **Final Report**

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For  
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An interagency collaboration of the  
Minnesota Department of Transportation and the  
Minnesota Department of Trade and Economic Development,  
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# Table of Contents

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## Executive Summary

Introduction .....	1
Barriers and Opportunities .....	3
Concept--Pre-Design Phase .....	4
Funding--Breakthrough Innovations .....	5
Concept Implementation--Design Phase .....	5
The System .....	6
Is It Working?--Major Issues .....	7
Results and Conclusions .....	9

## **Executive Summary**

More than 15 percent of the traveling public stops at Travel Information Centers throughout the state, according to information from the Office of Tourism and recent studies and surveys. And those studies show continued growth in that number; requests for specialized help numbers alone total close to 500,000. By providing information centers at most of our Class I Rest Areas, state agencies could reach more than two million customers.

Increased collaboration among state agencies can help in effectively and efficiently meeting this growing need. In May 1993, representatives of the Minnesota Department of Trade and Economic Development (DTED) and the Minnesota Department of Transportation (Mn/DOT) met to identify such opportunities for collaboration.

Mn/DOT provides safety, routing, road and weather conditions, while the Office of Tourism provides tourism-related information expressly designed for trip planning purposes through its Travel Information Counselors.

Studies completed by Mn/DOT--including the IVHS Rural Scoping Study and the annual Mn/DOT Rest Area Facility Audits--and Tourism indicated that Travel Information Center (TIC) and Rest Areas customers want specific types of information: weather (pavement condition and visibility), mapping (destination point), construction sites and detour routing, safety, and tourism information (relating not only to trip planning but also to present and immediate destination point).

By working together, the two agencies realized that they could design a solution to improve the information available to travelers in Minnesota. Since neither of the agencies could fund this initiative, both jointly requested and received a Breakthrough Innovations grant.

As a result, the two agencies oversaw the development of a touch screen information system that

supplies a variety of information, including major attractions, state parks and forests, outdoor activities, calendar of events, accommodations and camping, road information, weather, mapping, and safety and regional services. Three units, known as Travel Partners kiosks, began operating on a test basis in 1994.

The system proved successful in two important ways. First, it offers the potential to save money. In 1994, Travel Partners kiosks received 63,320 requests for information. The cost to serve one customer at a TIC in the traditional way amounts to an estimated \$1.89. If those customers use the new service instead, that means that the cost of the new system (\$100,000) has been amortized (\$117,000) in less than a year. In addition, it gives both agencies a way to respond to a growing demand for travel information in a cost-efficient manner.

The Travel Partners kiosks provide 24-hour-a-day service, instead of the eight-hour service traditionally available. Two Travel Partners kiosks are located near St. Cloud and Duluth. The third portable kiosk currently is located in Maple Grove.

The Breakthrough Innovation project not only resulted in a specific improvement, it also opened the door to providing transportation and travel planning information to the public. It provided a foundation to build information delivery channels to various audiences. Efforts currently under way include the following:

- The Mn/DOT New Initiatives Fund agreed to fund the development of a pavement condition reporting system, which can be made available to maintenance personal on their personal computers and to the general public on the touch screen information system.
- Another project will demonstrate the technical and economic feasibility of using and integrating current weather information from AWOS and Road and Weather Information System (RWIS) sites.
- Additional funding from the Intelligent Vehicle Systems Office will support building an information corridor that incorporates the touch screen information system and the RWIS.
- Mn/DOT, in cooperation with the DTED's Office of Tourism applied for federal funds through the Scenic Byway Program to upgrade mapping and operating systems.

## **Introduction**

In May 1993, representatives of the Minnesota Department of Trade and Economic Development (DTED) and the Minnesota Department of Transportation (Mn/DOT) met to explore developing a new cooperative agreement that would encourage and increase positive interactions among employees of both agencies, would allow both agencies to look collaboratively at customer needs, and to identify opportunities for future cooperation.

As a result, a task force with representatives from both agencies formed, with the goal of developing recommendations for improving the operations of Travel Information Centers (TICs) and Rest Areas. The task force reviewed the IVHS Rural Transportation Study, information from Mn/DOT Rest Area studies and surveys, and local/national information provided by the Office of Tourism. It learned that more than 15 percent of the traveling public stops at TICs, and that experts expect this number to increase substantially in the future. Requests for specialized help alone number about 500,000. By providing information centers at most of our Class I Rest Areas, state agencies could reach more than two million customers.

Growth in requests raised issues about the most efficient way to meet demand. The task force began to explore opportunities for cooperation and solutions. By working together, the two agencies realized that they could design a solution to improve the information available to travelers in Minnesota. Since the partnership did not have funds for this initiative, it requested and received a Breakthrough Innovations grant.

With grant funds, the two agencies guided the development of the new tool--a touch screen information system that supplies a variety of information, including major attractions, state parks and forests, outdoor activities, calendar of events, accommodations and camping, road information, weather, mapping, and safety and regional services. Three units, known as Travel Partners kiosks, began operating on a test basis in 1994.

This report provides information about how the task force developed the solution, the execution of the solution, its impact, and future activities.

## **Barriers and Opportunities**

The task force unanimously agreed on the following directions for the project:

- that giving the customer the information they wanted in a friendly format was very important;
- that both agencies needed to rededicate staff resources to better respond to customer needs;
- that customers should be able to obtain information without contacting a staff member;
- that increased services will be user friendly and accessible to the public 24 hours a day.

It also looked at current systems. For example, the Office of Tourism developed an interactive computer information system called "Vacation Advisor" that offered trip planning advice. This system used the same current database that tourism staff access to service customers requesting vacation planning advice.

In addition, Mn/DOT staff researched new technologies in Norway, Sweden, Denmark, and Austria and reviewed interactive information systems disbursing various lines of information. Kiosk systems in Europe dealt primarily with weather--Road and Weather Information Systems (RWIS)--and safety information. In Sweden, kiosks listed license numbers of stolen cars separately along with weather and safety information. Sweden locates its kiosks in public as well as commercial outlets, such as their form of convenience stores.

Mn/DOT began discussing the development of a system that delivered weather information. The Intelligent Transportation System (ITS) office was working on a system that delivered transit schedules and congestion information to the public. Our task force was exploring the design of a system that could tie the various ideas together and provide an interactive technology in a friendly format. This system would prepare the public for the advanced systems of ITS, as well as other private and government service delivery systems. The task force was willing to work with Mn/DOT offices, Tourism offices, and other interested parties to develop a system that was

able to relate to, incorporate, and adopt new technologies, such as RWIS, ITS, and Geographic Information Systems (GIS) mapping.

Both Tourism and Mn/DOT agreed that TICs and Rest Areas--along with shopping malls, libraries, home computers, commercial truck stops and restaurants--would become service centers offering a vast range of services compatible with the users of that location.

### **Concept--Pre-Design Phase**

Mn/DOT and Tourism would work together to develop a first-generation interactive information touch screen computer system that delivers:

- Real-time weather. Custom travel weather forecasts prepared by a vendor and updated several times daily.
- Mapping and routing assistance. A service that draws and prints a map between various Minnesota cities as well as providing driving directions in text format.
- Traditional tourism information relating to lodging, events, attractions, etc. The system would easily sort from various data bases.
- Motorist information. Road condition, detour routing, safety bulletins provided by Mn/DOT.
- Local information. Information compiled by TIC staff directly related to their area, including emergency services and numbers and current events of note.

The system would be networked, allowing information available from a system information center (kiosk) to be updated in St. Paul or by some other single site. The system must not only be accurate but also so attractively designed that the public will feel invited to use it. The task force considered presentation of the data and information of equal importance to accuracy.

## **Funding--Breakthrough Innovations**

Because no one agency could fund this project, the task force needed to secure funding for their vision and considered several sources.

The task force chose the Breakthrough Innovations program administered by the Office of Research Administration as the best philosophical fit. Their Mission Statement cast them "...as a catalyst between the research community (internal and external) and problems occurring within the transportation arena, enabling discovery and implementation of solutions to transportation problems, thereby benefiting both the people who use the various transportation systems of Minnesota and the industries that are dependent on those systems."

The Breakthrough Innovations program accepted the task force's proposal and awarded the project \$100,000 in funding.

## **Concept Implementation--Design Phase**

A project management team formed with the following members: the Chair of the Mn/DOT Area Maintenance Engineers; the Deputy, Office of Economic Development and Tourism; the Manager, Mn/DOT Site Development Unit; the Manager, Mn/DOT Capital Building Program; and an Internal Consultant from the Management Analysis Unit to act as TIC Special Project Manager.

This committee worked through the Breakthrough Innovations submittal and found that the proposal needed amendment because staff were not available to do the programming in-house; the RWIS had not yet reached the pre-design phase and therefore would not be able to supply the required weather data; and the Mn/DOT and Tourism geographic information systems data bases were not completed. As a result, the committee hired a consultant to develop a program that delivered the information. In the end, the committee trimmed the number of sites down to three

and agreed that the system would be designed to accommodate RWIS and GIS mapping when those systems became available for incorporation.

Committee members prepared a Request for Proposal and selected an outside consultant to develop the software and graphics package. The consultant subcontracted the weather and mapping packages and worked as a lead partner with U.S. West.

Mn/DOT would supply road conditions and safety information; construction reports; weather information; and mapping/routing information. The Office of Tourism would supply accommodations and events calendar information and local information compiled by the resident Travel Information Counselors. Tourism also agreed to track usage of this new service at the sites; to assist in the exit surveys of sites; to complete a needs assessment of customers; to monitor the use of storage area; to be the repository for the server; and to keep data current and correct.

The consultant, Mn/DOT and Tourism worked hand in hand to develop this tool--a touch screen information system.

The arrangement produced three units. One unit is a stand-alone kiosk now located at the Maple Grove Rest Area, and two units are in-wall installations located at the TICs in Duluth and St. Cloud.

## **The System**

The program starts out with a screen saver of 200 slides underscored by music. The screen prompts the customer touch it for more information. An introductory video (no talking faces) welcomes customers to the system and reminds them to touch the screen for more information. Upon touching the screen, a menu appears listing the following choices: Major Attractions, State

Parks & Forests, Outdoor Activities, Calendar of Events, Accommodations & Camping, Road Information, Weather, Mapping, Safety, and Regional Services.

Each category offers submenus. For example, under major attractions users can choose the attraction by area, read the text (there is also a voice-over), and play a video. Customers can receive a printout of mapping and accommodations choices. When users choose mapping, they essentially choose a destination. The mapping takes the user from the "you are here" to the city or attraction chosen. The screen then lists step-by-step text directions and highlights a route on a map. The customer may print both the text and the map. Accommodations uses an amenities menu to scale down. Upon reaching the desired type of accommodation in a particular region or city, the customer again has a choice to print the text that includes name, address, phone, and type of business.

### **Is It Working?--Major Issues**

Yes. That does not mean there were not problems. The committee worked very hard to create what they envisioned to be the best system in the country. The two disappointments are mapping and weather.

Mapping was late to be installed. The subcontractor that demonstrated his mapping package to the committee opted out of the agreement with the consultant. The result was a mapping package that the committee considered quite inferior to the original: It used only a list limited to Minnesota cities. The mapping package also was not installed with the rest of the program, which limited the ability to trend usage change rates for all system services.

On the positive side, there is work under way on a mapping package that will utilize the Office of Tourism's and Mn/DOT's GIS mapping databases. A combination of the two will give travel and destination information, bringing customers to the doorsteps of their destinations.

Weather posed another problem. The first was how to fund it. Since weather was part of the contract with the consultant, the charge was covered during the contract period. After the contract expired, the weather service, to continue, had to be funded, but the committee had no funds. Therefore, while the committee searched for funding, weather was disconnected for a while. Also, the committee did not feel that the weather service was delivering information that the users needed. Ironically, weather started out and continues to be the most popular choice.

The committee continues to work on this issue and has found a weather package that will give the traveler pavement condition and visibility information as well as a graphic presentation of weather throughout the state. This system also will prepare field employees for the advent of the new RWIS technology.

On site, the system ran remarkably smoothly. The portable kiosk located at Maple Grove, when first installed, experienced numerable printer problems. However, after going through several "how to add paper and how to reboot" sessions with the Greenview employees, those problems ceased. Greenview employees were excited about the machine and spent time learning the information that the programs delivered. They liked it because it gave them an opportunity to answer customer's questions and also to provide increased service.

## Results and Conclusions

The system proved successful in two important ways. First, it offers the potential to save money. In 1994, the kiosks received 63,320 requests for information. The cost to serve one customer at a TIC in the traditional way amounts to an estimated \$1.89. If those customers use the new service, that means that the cost of the new system (\$100,000) has been amortized (\$117,000) in less than a year.

In addition, it gives both agencies a way to respond to a growing demand for travel information in a cost-efficient manner. This system introduces the traveler to the concept of receiving information from an inanimate object. It also never sleeps so it can deliver information during non-staff hours. It efficiently and cost effectively delivers information previously not available to the traveling public. This system has an opportunity to improve the safety of those who use it through the use of pavement condition and visibility information. It also can help reduce congestion, helping the commercial travelers find their way among a myriad of other services with the addition of new choices on the menu.

The Breakthrough Innovation project not only resulted in a specific improvement, it also opened the door to providing transportation and travel planning information to the public. It provided a foundation to build information delivery channels to various audiences. Efforts currently under way include the following:

- The Mn/DOT New Initiatives Fund will fund the establishment of a pavement condition reporting system, a WINDOWS program that standardizes the current field reporting. Developed using the Mn/DOT Maintenance Manual as the dictionary, this program is scheduled for installation by the end of 1995. Information will be made available to maintenance personnel via their personnel computer and to the general public via the Travel Partner System kiosks.
- The Mn/DOT AWOS Weather Integration Travel Partners Demonstration Project will

demonstrate the technical and economic feasibility of utilizing and integrating current weather information from AWOS and RWIS sites. This information will be made available to non-aviation users served by Mn/DOT. For this project, Mn/DOT will use a satellite communications network. The system will be able to deliver information to multiple sites. For this project, the portable Travel Partners kiosk will move from Maple Grove to Albert Lea.

- The Intelligent Vehicle Systems Office has granted funding to build an information corridor using Minnesota Travel Partners kiosks from the metropolitan area through Duluth on I-35. Now in the design phase, the project will set up a prototype system that will use the major components of the RWIS. This project will establish four to six additional sites.
- Mn/DOT in cooperation with the DTED's Office of Tourism has recently applied for federal funds through the Scenic Byway Program to upgrade the mapping and operating systems. This project modifies travel kiosks now operating in Minnesota to provide information about and to promote Minnesota Scenic Byways. The project has three objectives: classification of Minnesota Scenic Byways as tourism attractions by incorporating them into the database of attractions developed and maintained by the Minnesota Office of Tourism; conversion of the existing routing and mapping feature of the kiosks to GIS-based data so kiosk users may choose information on the shortest route to their destination or a scenic route with Minnesota Scenic Byways highlighted on the kiosk screen and on the system's printed maps; and promotional presentations on Minnesota Scenic Byways. The project continues the kiosk partnership involving the Minnesota Office of Tourism and Mn/DOT. It enhances the partnerships that developed the existing system.

These projects build on the success of the Breakthrough Innovation project. Not only did the initial investment prove a new cost-effective way to bring more information to the traveling public, it also spurred new partnerships and projects. The Breakthrough Innovation grant gave state agencies a testing ground to improve existing service and to pursue new ideas and technologies.