

Greater Yellowstone Rural ITS Project

Work Order II-2A Evaluation of Touch Screen Traveler Information Kiosks

Prepared for

MONTANA DEPARTMENT OF TRANSPORTATION

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And

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IMPLEMENTATION STATEMENT

This study is sponsored by the U.S. Department of Transportation, Federal Highway Administration in cooperation with, the Montana Department of Transportation, the Wyoming Department of Transportation, the Idaho Transportation Department, and the Yellowstone National Park. The major objective of this document is to summarize GYRITS Work Order II-2A Evaluation of Touch Screen Traveler Information Kiosks.

DISCLAIMER

The opinions, findings and conclusions expressed in this publication are those of the authors and not necessarily those of the Idaho Transportation Department, the Montana Department of Transportation or the U.S. Department of Transportation, Federal Highway Administration. Alternative accessible formats of this document will be provided upon request.

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1. INTRODUCTION

This report summarizes the evaluation of Work Order II-2A, Evaluation of Touch Screen Traveler Information Kiosks located in Montana. The purpose of this work order was to deploy and evaluate touch screen kiosks containing travel and tourism information.

1.1. Description of the GYRITS Corridor

The Greater Yellowstone Rural ITS Project (GYRITS Project) was initiated to enhance rural ITS by demonstrating and evaluating ITS in a rural environment. GYRITS began in January 1997 with a Congressional Earmark to fund (1) the creation of a Regional ITS Strategic Deployment Plan, (2) the implementation of "early winner" projects, and (3) the development of supporting documentation. In February 2000, a strategic plan was completed that included stakeholder input, GYRITS organizational structure, regional architecture, legacy systems, and candidate projects. The Dynamic Warning Variable Message Sign (VMS) is one of the candidate projects selected for implementation.

The Greater Yellowstone Rural Intelligent Transportation System Priority Corridor is a 200-mile long, 100-mile wide, heavily utilized rural transportation corridor between Bozeman, Montana and Idaho Falls, Idaho (Figure 1). This corridor includes:

- Three states: Montana, Idaho and Wyoming;
- Two national parks: Yellowstone (YNP) and Grand Teton GTNP; and
- Numerous transportation facilities ranging from Interstate freeway to low-volume, two-lane rural highways.

Primary transportation facilities include:

- Interstate 90/15 from Bozeman, Montana to Idaho Falls, Idaho through Butte, Montana;
- U.S. Highway 191/20 from Bozeman, Montana to Idaho Falls, Idaho; and
- U.S. Highway 89/26 from Livingston, Montana through Jackson, Wyoming to Idaho Falls, Idaho.

Additional highways added to the corridor at the March 1998 Steering Committee meeting include:

- Highway 212 from Red Lodge, Montana, through Cooke City, Montana and into Yellowstone National Park;
- Highway 14 from Cody, Wyoming, through the east entrance of Yellowstone National Park and into the Park interior; and
- Highway 31 from Swan Valley Idaho, over Teton Pass to Jackson, Wyoming.

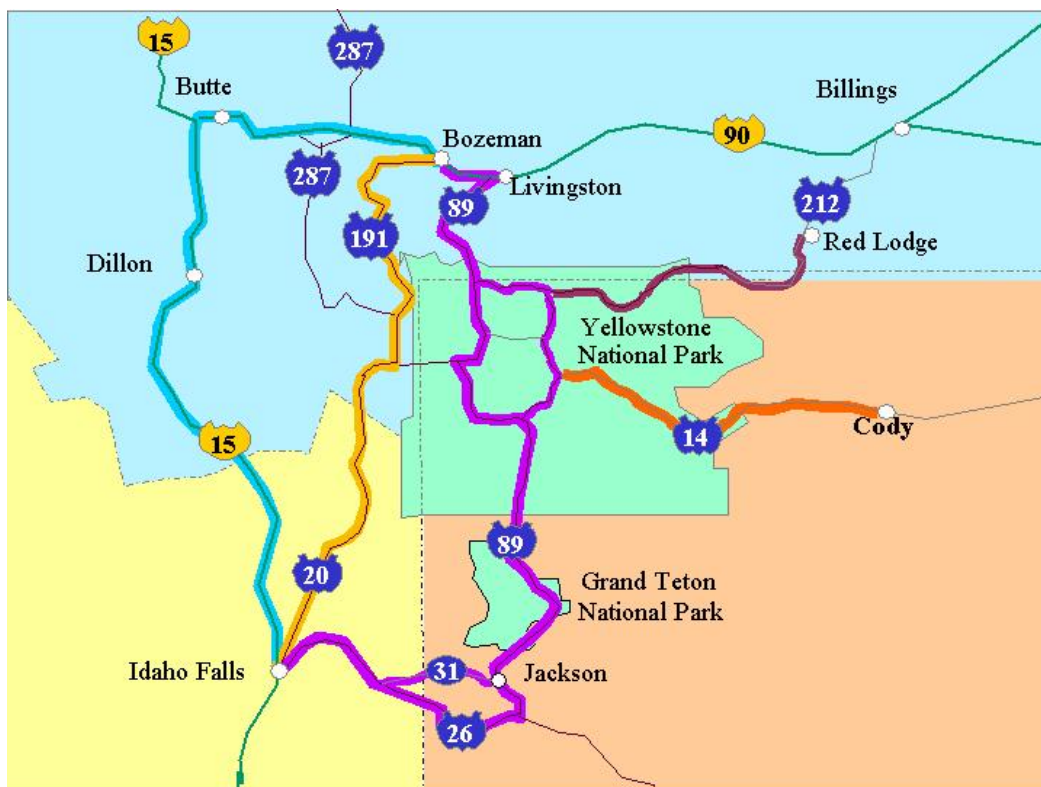


Figure 1: GYRITS Study Area

These routes represent vital transportation links for the economy and well being of the three-state area of Montana, Wyoming and Idaho. They also serve the recreational and resource needs of a growing number of individuals seeking to utilize the Greater Yellowstone ecosystem and Grand Teton National Park. The national importance of the corridor is further emphasized by its function as the trucking industry's connector between the upper Midwest markets along Interstate 90 and the Intermountain and Southwest markets accessible by Interstate 15.

2. LITERATURE REVIEW

A literature review was conducted in order to identify other kiosk deployments, measures of success, challenges and the like. This section summarizes results from other kiosk deployments.

2.1. TravelLink: Atlanta, Georgia Olympic Kiosks (1)

140 Kiosks were deployed in Atlanta in preparation of the 1996 Olympic Games. An evaluation of the kiosks was completed in September 1997 by Concord Associates, Inc. for the Georgia DOT and FHWA. Some of the highlights of the evaluation follow.

- The kiosk contained information on traffic, Olympic and other special events, weather, metro route planning, travel and tourism, and schedules for MARTA public transit, Amtrak, airlines at Hartsfield airport, and greyhound.
- The kiosk had problems with menu navigation, system crashes, printer problems, and attraction loop (audio/video segment loop intended to attract users) failure.
- Kiosk users complained of insensitivity of the touch screen, slow response time, lack of information (soccer, traffic, non-Atlanta information, school listings), scrolling and map movement, system problems, screen glare, that it was not advertised and had no sound.
- Kiosks averaged about 6 users per hour with an average length of use of 2.9 minutes. The use compared to foot traffic is shown in Table 1.
- 18% of respondents (a total of 4 out of 22) reported that they altered their travel plans due to information on the kiosk: 3 altered their route and one altered their destination.
- Travelers reported the value of the kiosk averaged 3.89 on a 5 point scale.

Table 1: Foot Traffic for Atlanta Kiosks

Date	Location	Foot Traffic	Number of Uses	% Use
July 26, 1996	Ringold Tourist Center	280	24	8.6
July 29, 1996	Hartsfield Airport	619	10	1.6
July 31, 1996	MARTA Omni Sta.	>10000	9	0.1
August 1, 1996	MARTA Kensington Sta.	1222	7	0.6
August 2, 1996	North Park Town Center	311	2	0.6
August 2, 1996	AMTRAK	167	12	7.2
August 4, 1996	Stone Mountain	643	19	3.0
August 5, 1996	Hartsfield Airport	653	12	1.8

2.2. Castle Rock Kiosks (2)

The Castle Rock Kiosks are small tabletop units that allow users to pay for services such as checking their email, or browsing the web. The kiosk does provide free traveler information to all users. The same traveler information is mirrored on an Internet site. The kiosks were deployed in Flagstaff, Arizona and Branson, Missouri. The evaluators only reviewed a kiosk in Flagstaff since it was beyond the tourism season due to deployment delays.

The kiosk's appearance does not suggest any free services. In a seven-hour evaluation period only one person approached a Castle Rock kiosk at Flagstaff, Arizona to check her email. Even after doing this, the user was unaware of the free traveler information until the evaluator pointed these features out.

The evaluators were able to solicit 21 people to use the kiosk. After surveying them, none found immediately practical information. They reported no re-routing, changes in choice of services (such as restaurants or hotels) or change in travel plans.

The evaluators identified elements of a successful kiosk system as reliable, visible, easy to use, useful to the user, and adaptable.

2.3. AZTECH Phoenix, Arizona (3)

The Metropolitan Model Deployment Initiative in Phoenix, Arizona encompassed 15 ITS projects under the program name of AZTECH. One of these projects involved touch screen traveler information kiosks. At the time of the evaluation report, 22 kiosks had been deployed with six more on the way. The 28 kiosks had the following costs:

- \$233,350 hardware;
- \$109,100 software and development;
- \$46,200 installation;
- \$153,519 annual O & M costs:
 - \$1,771 content and user interface updates,
 - \$44,085 operations monitoring,
 - \$82,659 site maintenance,
 - \$11,480 equipment replacement,
 - \$4,723 communication line,
 - \$8,801 server share (4.2% of AZTECH server cost).

It is assumed that there was no initial cost for content development because the system was able to utilize the information developed for the Trailmaster website (another AZTECH project). The evaluators did not conduct user surveys because they “did not observe sufficient user activity to justify further analysis.”

2.4. San Antonio Kiosks (4)

As part of the Transguide San Antonio Metropolitan Model Deployment Initiative, 40 kiosks were deployed. The kiosks contained information on current traffic conditions, (static) transit schedules, navigation, and weather conditions and forecasts. There were plans to include dynamic transit information, dynamic airport parking and flight information, and information on services. Similar to the Phoenix kiosks, the use was so low that the kiosks were not evaluated beyond cost and system description. The kiosks provided the same information that was on the traveler information website (which had significant use). On the website, there were about 5,000 user sessions per month with an additional 15,000 during each of two weather events in October and December. The system cost \$1,526,374, with over half of the cost resulting from development labor. Operation and Maintenance cost \$176,065 per year with the following breakdown:

- \$57,403 regular maintenance;
- \$9,840 equipment updates;
- \$9,927 database updates;
- \$24,404 phone lines;
- \$24,601 operations;
- \$2,952 weather; and
- \$46,938 share of Transguide personnel, and server.

2.5. Feasibility of Advertising Revenues (5)

In 1996, David M Dornbusch and Company, Inc. investigated the feasibility of using advertising to offset development and operations costs of traveler information kiosks at rest areas. Their study included an extensive survey of existing kiosks. At the time, 20 states had traveler information kiosks, with 9 more planning systems. Only one state responded that there was no interest in developing a kiosk system. They identified the critical factors to success as usefulness of the content, reliability of the system, and location of the kiosks.

Based on the survey, costs for a kiosk system averaged

- \$10,000 per unit for hardware,
- \$60,000 to \$150,000 for software development,

- \$40,000 for content development, and
- 18% of deployment cost for annual operations and maintenance (~\$20,000 to \$36,000).

They investigated several options for recouping these costs including user fees, business sponsorships and advertising. They suggested that user fees were unfeasible due to technological limitations and legality. A business sponsor for each kiosk was also suggested. However, these sponsors are difficult to find and they could imply government endorsement of the business, which could lead to problems.

The primary investigation utilized advertising. The paper suggested advertising rates would be similar to full page newspaper ads which generate about \$45 per 1,000 readers. They estimated a maximum of 200 users per kiosk per day. With this use, which is much higher than most usage rates, they estimate advertising could generate \$2,475 per kiosk, per month. However, they also estimate that the sales staff to generate this advertising would cost \$150,000 per year for the first two years, with a potential tapering off to \$40,000-80,000 per year depending on renewal rates.

3. PROJECT DEVELOPMENT

The Montana Tourism and Recreational Initiative (MTRI) was a multi-agency effort that deployed 14 kiosks around Montana. Although state of the art when installed, the technology quickly became outdated. Additionally, many of the kiosks were located in staffed visitor centers, where a live person was available for tourism and travel information, limiting the utility of kiosks. Donated equipment from both MTRI and the Montana Job Service, who were removing kiosks for a different project at the same time, is shown in Table 2.

Table 2: Donated Kiosk Equipment

Donated By	Quantity	Description	Value
Job Service	22	Kiosk Enclosures	\$44,000
Job Service	22	486 Computers	\$550
Job Service	22	Touch Screen Monitors	\$5,500
Job Service	22	Dot Matrix Printers	\$1,100
MTRI	7	Kiosk Enclosures	\$35,000
MTRI	7	Pentium Computers	\$2,100
MTRI	7	Reboot Devices	\$1,610
MTRI	7	56k Modems	\$609
MTRI	9	Elo Touch Screen Monitors	\$9,000
MTRI	1	Data Manager Workstation	\$3,500
MTRI	12	ATX Automated Printers	\$14,949
MTRI	20	Printer Paper Rolls	\$320
		Total:	\$118,188

With the donated equipment and existing content and software from the MTRI system, the opportunity to do much with little resources arose. The plan involved using existing equipment in conjunction with GYRITS funds for software and content development.



Figure 2: Screen-Shot at Wheat Montana

In order to pool resources, further efforts were made to create a multi-state endeavor. After several meetings, agencies from Idaho and Wyoming expressed interest. Idaho ultimately backed out due to lack of confidence in the system. Representatives from the Idaho Department of Commerce had concerns about system performance and proprietary software. Wyoming had issues with placing kiosks in Wyoming that contained competing tourism and services information for Montana (and potentially Idaho). In fact, this was a concern for all three states. The various agencies expressed greater comfort with a system that was tailored to a specific area. Local information would be prominent, but a traveler could access information from other states if needed. Additionally, as long as there was equal reciprocity, all states would benefit. Funding set aside for an update to their webpage could have been dovetailed to prepare content for the kiosks, but the Wyoming Business Council wanted to see the system proven in Montana first. Since that time, the Wyoming Business Council has gone through restructuring, and several changes of staff. If the system were to be expanded to Wyoming, contact would have to be reestablished with the Wyoming Business Council.

Yellowstone units were pursued, but due to construction schedules and the desire for YNP to develop more interpretive content, the deployments were postponed. The potential locations were Mammoth and Old Faithful.

4. SYSTEM DESCRIPTION

The GYRITS Kiosks are computerized devices that provide travelers with information through a touch screen interface. The kiosks were placed in state and private owned facilities that were frequented by tourists potentially unfamiliar with the area and in need of information on services, travel directions, tourist attractions, etc. Familiar motorists could benefit from the real-time weather and road conditions information.

The kiosks are housed in an enclosure, or in some cases (Wheat Montana and Bozeman Rest Area) mounted into the wall. System components include:

- Dell Dimension 2350 (Intel Pentium 4, 2.2 Ghz, 256 RAM);
- Primary Software: Windows XP, SiteKiosk;
- Integrated 10/100 ETHERNET; and
- Elo 15-inch CRT touch-screen monitors.

The primary server can upload information to the individual kiosks. The kiosks are connected by either high speed satellite (ML Electronics) or dedicated high speed landline (Bozeman Rest Area).

4.1. Software Architecture

One of the decisions regarding development of kiosks is where the information is stored and how it is updated. On one extreme, a kiosk could simply be a computer with unlimited access to the world-wide-web. This option has virtually no costs for software development, content collection and formatting. However, the user may find it difficult to find the information they want, especially considering the content is not tailored to the local area. Also, the targets or hyperlinks are typically too small for a user to “click” using a touch screen interface. Also, download times for more memory intensive information may limit its use.

On the other extreme, a kiosk can be a stand-alone unit with all of the information located on the machine, specifically formatted for the kiosk. This does not allow for real-time information such as road conditions. Additionally, collecting and formatting content can require heavy resources. Being able to utilize existing sources such as state tourism agencies web-databases is key to keeping maintenance costs down.

The GYRITS kiosks utilize a balanced structure. The intent of the system is to have the bulk of the information stored locally on the machines. This relatively static information could include services, tourist attractions, and the video clips that have higher memory requirements. The kiosks are able to retrieve real-time data such as road and weather conditions directly from sources on the world-wide-web or from the kiosk server.

The kiosks utilize existing databases from Montana Travel, but require some reformatting for use by the kiosk, primarily due to the need for larger touch targets because of the touch screen.

4.2. Content

Based on observation of the Bozeman Rest Area Kiosk, as well as those elsewhere, the following functional features work on every kiosk:

- Roads & Weather (including road cameras),
- Camping & Lodging,
- Things to Do, and
- Places to Go.

The features that do not work and could be very useful are:

- Cities and Destinations,
- Yellowstone Park,
- Index, and
- Maps.

The functions that do not work lead to a page that, in most cases, says “Coming Soon.” In the case of the “Index” button nothing happens. The removal of these features on the kiosk reduces the functions that can be completed on the map. Although these functions represent the downfalls, the remainder of the functions work well. Due to the initial intention of this kiosk to be a Greater Yellowstone Information System, it would probably have been prudent to complete the functions critical to that particular corridor prior to completing the other functions.

4.3. Costs

Costs were difficult to precisely track since numerous agencies were involved and there were many donations of time and equipment. Some costs included:

- \$123,800 Federal funds used for equipment purchases, and software and content development;
- \$5,000 WTI funds used for satellite installations;
- \$28,021 University of Montana ITRC used for;
 - Staff time \$21,590,
 - Equipment \$447,
 - Satellite connection fees \$4110, and

- Miscellaneous travel and storage \$1,874; and
- \$118,188 equipment donated by Travel Montana (only some was used).

Although only six units were deployed, equipment was available to deploy several more. However, as the primary costs for kiosks are software and content development, only six kiosks were financially feasible. Unfortunately, software and content development are a continuing maintenance cost that can kill the success of kiosk programs.

4.4. Site Locations

Several site hosts were solicited and selected, trying to have a variety of location types. Information relating to site host involvement can be found in Appendix B. The following descriptions of each site illustrate the location of the site in relation to the Greater Yellowstone Project area. In addition, the location of the kiosk units within each location is described and shown with a graphic and a photograph of the kiosk at that location.

4.4.1. Fairmont Hot Springs

Fairmont, MT is located 3 miles off of I-90, approximately 10 miles west of Butte. Fairmont Hot Springs has 152 lodging units, two Olympic sized hot springs pools and full Convention Facilities. The kiosk is located in the hot springs resort main building, directly across from the entrance to the pools, approximately 20 feet from the front desk as shown in Figure 3. It is positioned near the pool entrance, along the corridor to the café, and dining room and within 50 feet of the main entrance. This allows maximum exposure to potential users. Users of this kiosk unit would mainly be tourists or people attending conferences at the facility.

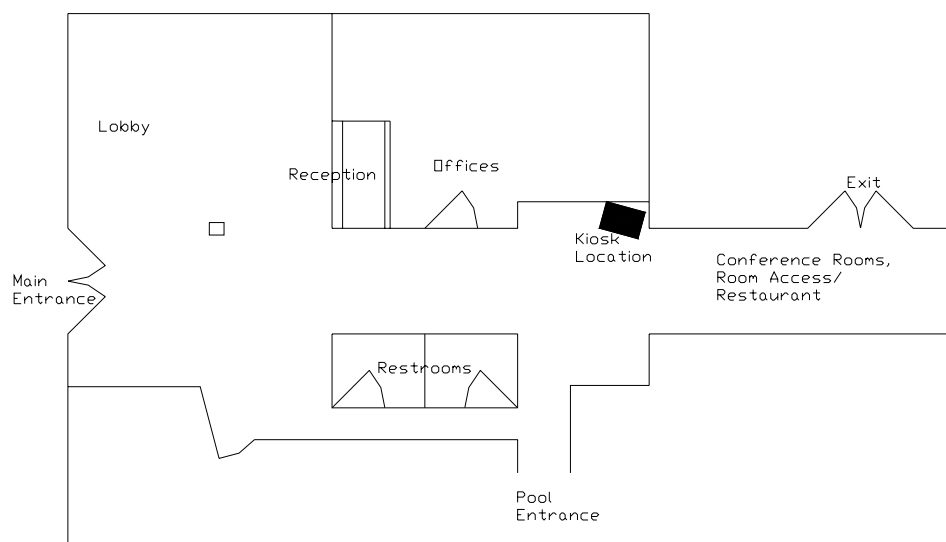


Figure 3: Location Layout for Fairmont Site



Figure 4: Kiosk at Fairmont

4.4.2. Montana City Grill and Saloon

Montana City Grill and Saloon is located off I-15, 5 miles out of Helena in Montana City, MT. It is a full service bar and grill, including a casino gaming area with an overall capacity of approximately 100 people. As shown in Figure 5, the kiosk location is in the casino area next to one of the two entrances to the casino and saloon. Although it is not placed in the most visible spot, the unit was too large to place in a more accessible area according to owners/managers.

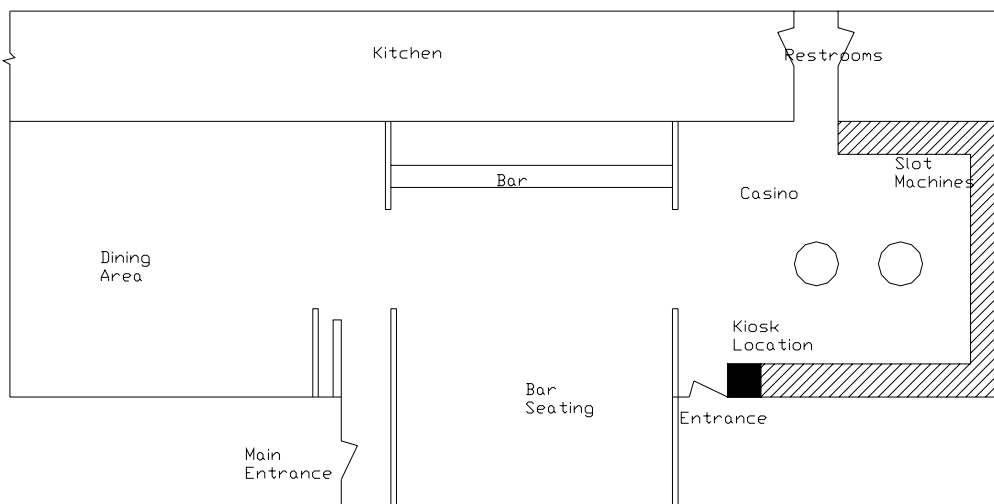


Figure 5: Location Layout for Montana City Bar and Grill

Due to limited use of the casino and the kiosk looking somewhat like a gambling machine, it doesn't receive direct attention as an informational tool. The area does receive a fair amount of

foot traffic due to use of the bathroom, which is located opposite the kiosk. Potential users are primarily local area residents visiting the bar or casino or people that are just passing through. The operating hours for the facility are from 4PM-10PM, further limiting the potential use.



Figure 6: Kiosk at Montana City Bar and Grill

4.4.3. Bert Mooney Airport Butte, MT

The Bert Mooney Airport in Butte, MT is located approximately 4 miles from I-90 off of the Harrison Ave. exit. The Kiosk is located in what seems to be a logical area near the luggage pickup. It is in an area where potential users are waiting for their luggage and have some, albeit limited, time to peruse its functions and look for any specific information they need.

Its location may not be optimal. Although all arriving passengers walk by the kiosk, there is very little seating there and most people picking up passengers wait near the parking exit. Clientele are typically people waiting to pick up other individuals and are likely locals familiar with the area.

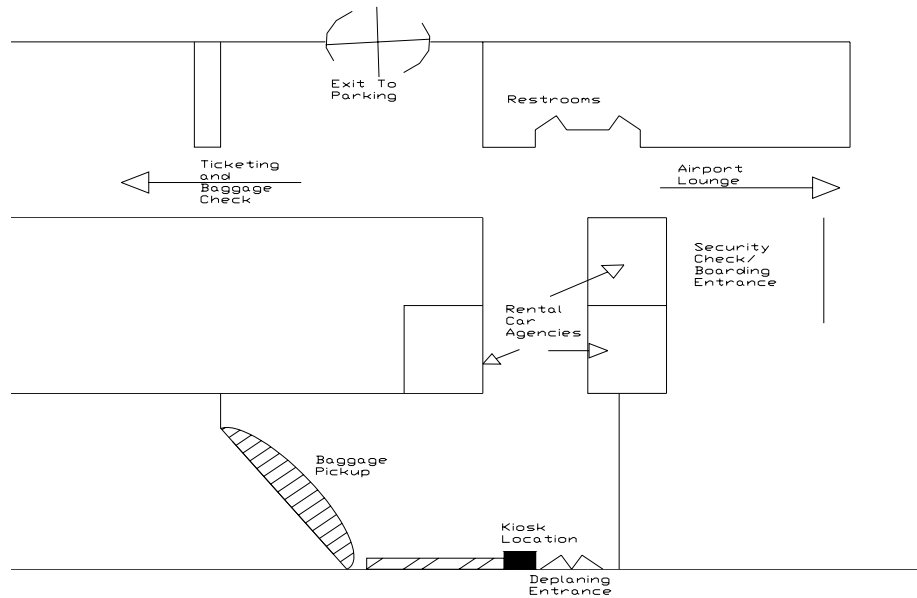


Figure 7: Location Layout for Bert Mooney Airport

The Butte Airport is a two-gate airport. The foot traffic is heavy when flights arrive and depart and almost non-existent the rest of the day. A typical flight schedule is shown in Table 3.

Table 3: Flight Schedule for Butte Airport

Time	Arrival/Departure	Flight #	Origin/Destination
6:05 AM	Departure	Horizon 2381	Seattle
6:30 AM	Departure	Delta 3880	Salt Lake City
12:18 PM	Arrival	Delta 3881	Salt Lake City
12:55 PM	Departure	Delta 3881	Salt Lake City
2:27 PM	Arrival	Horizon 2328	Bozeman
3:02 PM	Departure	Horizon 2328	Seattle
4:05 PM	Departure	Delta 3882	Salt Lake
4:40 PM	Arrival	Delta 3882	Salt Lake
5:40 PM	Departure	Horizon 2385	Seattle
6:05 PM	Arrival	Horizon 2350	Seattle
7:40 PM	Departure	Delta 3886	Salt Lake
8:00 PM	Arrival	Delta 3886	Salt Lake
10:57 PM	Arrival	Horizon 2384	Bozeman
11:24 PM	Arrival	Delta 3888	Salt Lake



Figure 8: Kiosk at Butte Airport

4.4.4. Wheat Montana Bakery

Wheat Montana Bakery is located at the intersection of Interstate 90 and Highway 287. The kiosk is inserted into a wall in the restaurant portion of the facility. The location is fair, although it is located near an entrance meant to be used by business staff working for the bakery instead of the main entrance where patrons would most likely notice it. Persons have to look hard for the kiosk as it blends in with the pictures on the wall. Usage at this location is minimal. During the four hours that we were there to take surveys of users, no one actually used it.



Figure 9: Kiosk at Wheat Montana

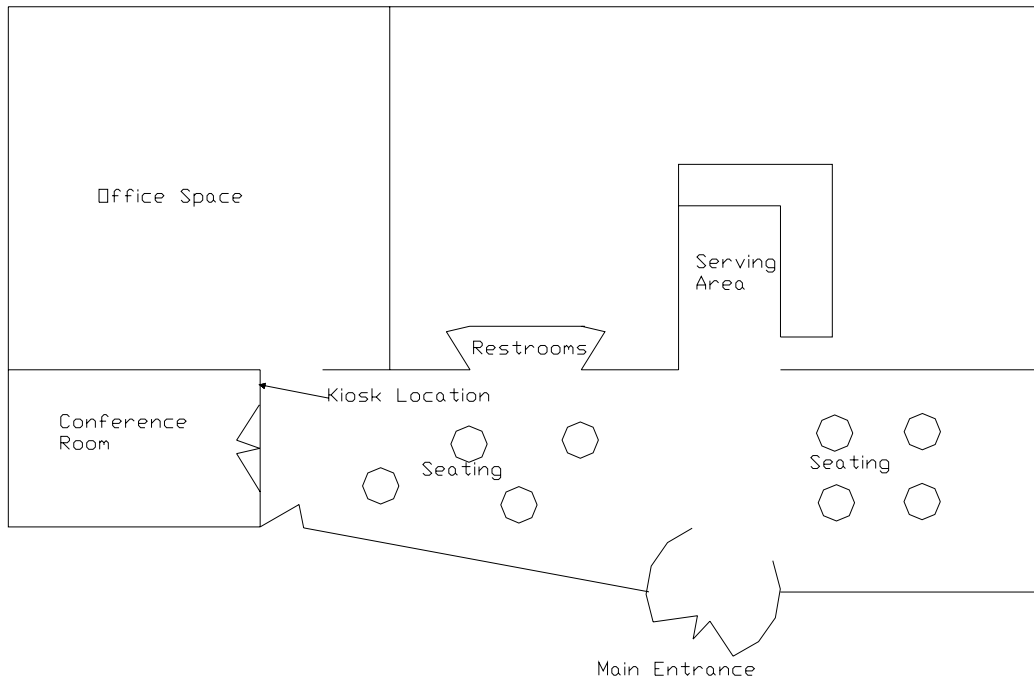


Figure 10: Location Layout for Wheat Montana Bakery

4.4.5. Bozeman Rest Area

This kiosk, located at the rest area in Bozeman MT, at the I-90 and 19th street exit, was the most used of all of the locations. Located directly in front of the doors at the rest area, the kiosk is provided excellent visibility. Due to placement, it is somewhat inaccessible to patrons. However, as the rest area is typically used for restroom breaks during a trip, it provides a way of transferring current information to the traveler.

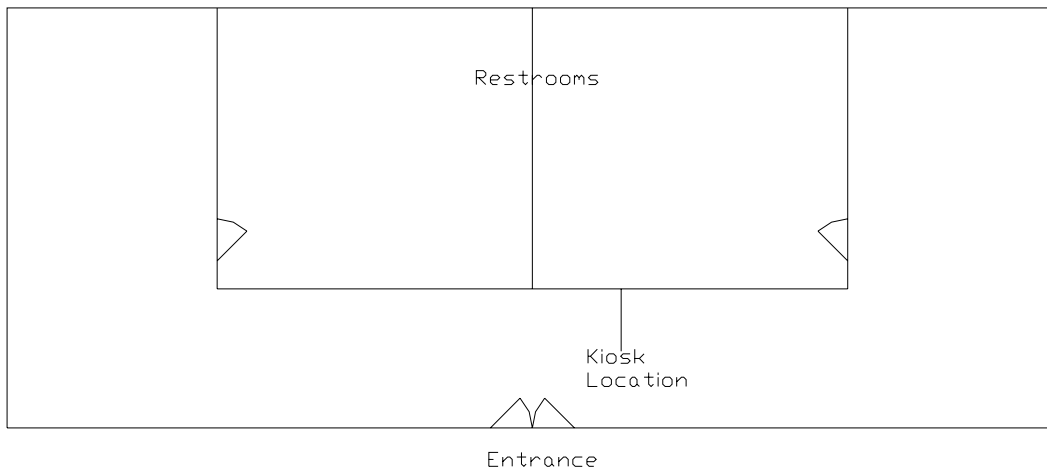


Figure 11: Location Layout for Bozeman Rest Area

Since the Bozeman Rest Area is a state building, the kiosk had to meet ADA requirements. For this reason, the touch screen for the kiosk was placed at a level convenient for persons in a wheelchair. The low screen height forced viewers to look at the kiosk from an oblique angle, creating parallax which continuously misguided them to touch the screen in areas that were not active. A temporary folding chair was placed near the kiosk (and replaced several times). Potential permanent solutions, such as placing a bench next to the kiosk, were discussed.



Figure 12: Kiosk at Bozeman Rest Area

4.4.6. Livingston Chamber of Commerce

Livingston Chamber of Commerce provides an excellent opportunity to get information in an area where frequent users would be traveling into Yellowstone National Park. During the evaluation period, the kiosk was inoperable due to renovation efforts that were taking place. Past workers at this location did say that during their time working there the kiosk was never used to their knowledge.

5. DATA COLLECTION AND ANALYSIS

This section of the report will detail the methodology employed in gathering evaluation data. To evaluate the kiosk, users were surveyed and site hosts were interviewed. Data on frequency of kiosk use and the amount of foot traffic at the location were collected.

5.1. User Survey

The intent of these machines is to provide access to information regarding the greater Yellowstone region to tourists and travelers in general. In order to evaluate the kiosks functionality, it was necessary to put together questions that would measure responses of users. The survey that was administered can be found in Appendix A.

The user survey required administration to persons who used the kiosks of their own will. Waiting for patrons and then asking them to fill out a survey following use was problematic because of the lack of use. As shown in Figure 13 there were only six total users during the survey period.

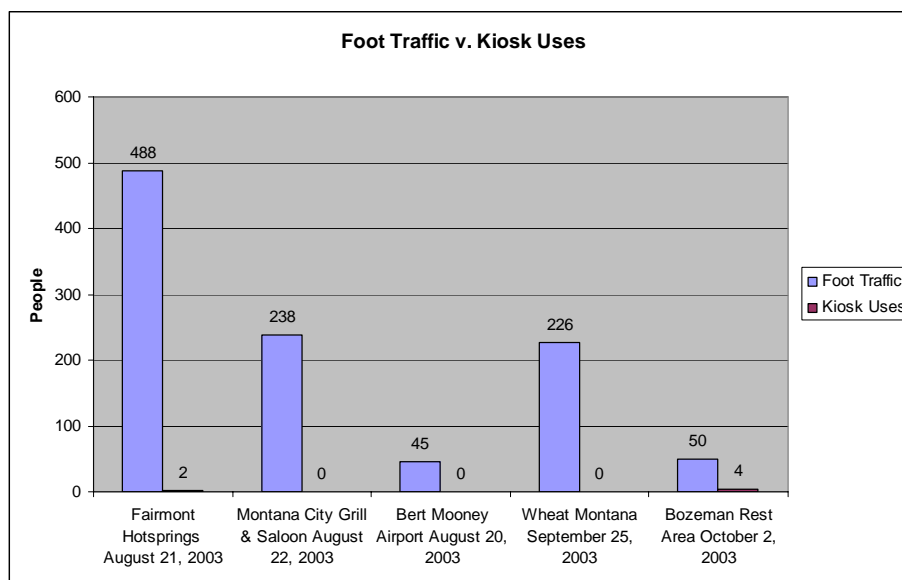


Figure 13: Foot Traffic and Use Results

The surveys completed at Fairmont Hot Springs represented vacationing persons, where those completed at the Bozeman Rest Area were persons traveling for work. One person had used a kiosk previously. The largest criticism related to functionality and the difficulty of using the buttons. Based on survey results, the average response to the initial impression (question 5 in Appendix A) was 5.5 on a 7 point scale (1 being strongly disagree and 7 being strongly agree). Relating to how the features worked, the average response was 6. This was not representative of a single feature, but rather an average of features used by people taking the surveys. All persons surveyed were interested in searching for businesses, although some also used the weather function.



Figure 14: Survey Administration

5.2. Foot Traffic and Kiosk Use

To get an idea of the proportion of users, foot traffic counts were taken at the kiosk locations. The following graphs represent the number of people that either entered the facility or the number of people that came within a reasonable distance to notice the machine.

5.2.1. Fairmont Hot Springs

Due to the location, everyone that either passed through the hallway in front of the kiosk or entered/exited the pool area, with the exception of personnel working for the hotel, was counted. The blank spot from 12:30 to 1:00 resulted from the survey administrators' lunch break.

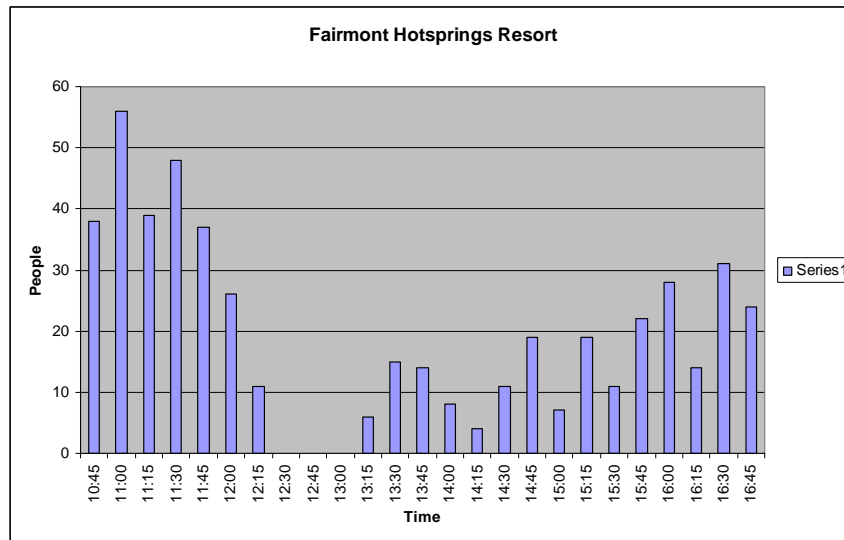
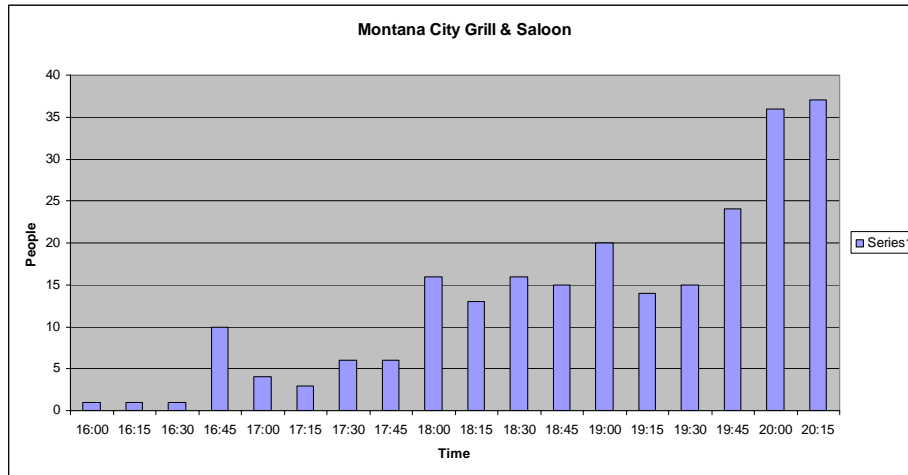


Figure 15: Foot Traffic at Fairmont Hot Springs

5.2.2. Montana City Bar and Grill

During the period of observation (4-8PM on a Friday night) the bar and grill saw very little use initially, but gradually increased in the number of patrons. The Bar and Grill has operating hours from 4-10PM and, thus, does not see the optimal amount of exposure. Foot traffic includes any person who enters the casino room, as it is fairly small and provides exposure to the kiosk.



5.2.3. Bert Mooney Airport

At this location, anyone who entered the baggage claim area was considered to be close enough to see and use the kiosk. This included everyone who was deplaning in Butte or individuals who arrived to pick up those persons. Although the airport does have definite spikes in potential users, the time frame allotted to use the machine is minimal at best. Baggage claim only takes about 10 minutes total, allowing the possibility of only one or possibly two uses.

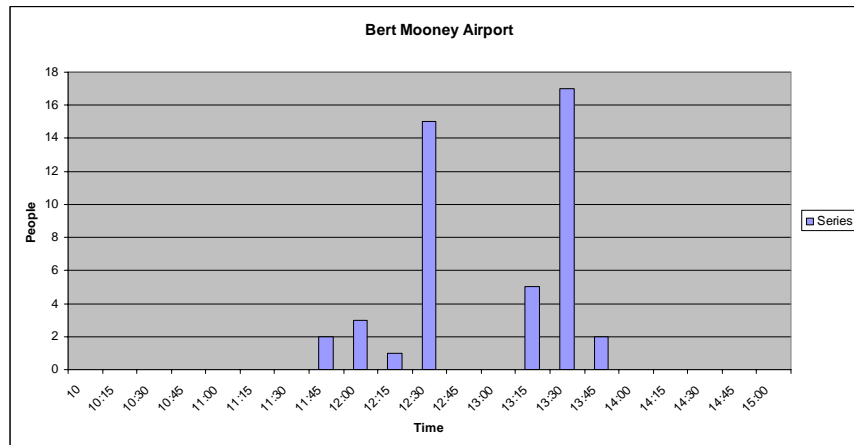


Figure 16: Foot Traffic at Bert Mooney Airport

5.2.4. Wheat Montana Bakery

During the period of observation, the lunch crowd arrived early and tapered off toward the afternoon. At this site, everyone who entered the business was considered to be a potential user due to the fact that the business has a relatively modest seating area.

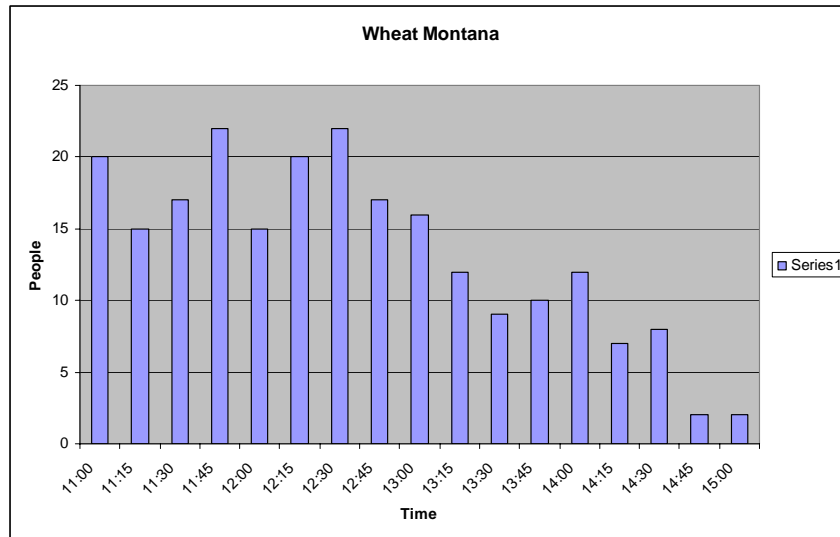


Figure 17: Foot Traffic at Wheat Montana

5.2.5. Bozeman Rest Area

As the Bozeman Rest Area is small, anyone who entered the building was considered to be a potential user since the kiosk is directly across from the entrance.

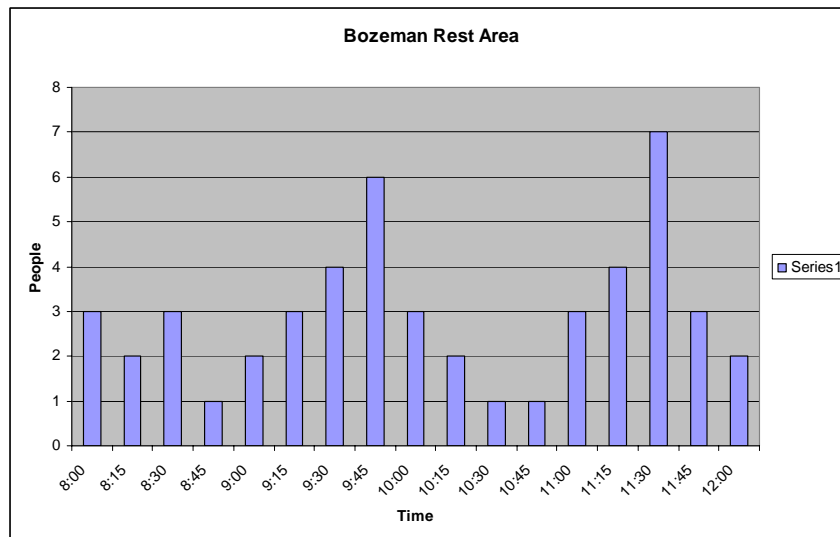


Figure 18: Foot Traffic for Bozeman Rest Area

5.2.6. Livingston Chamber of Commerce

Due to current renovation efforts, an evaluation of this facility could not be completed.

6. CHALLENGES

Attempting to do a lot with limited resources ultimately caused more difficulties in the long run. Although many of the components were free, they had to be replaced because of failure or outdated technology. Trying to develop and deploy the kiosks on a meager budget probably eventuated in more long term costs.

Changes in staff and the lead developer posed challenges as well. Initially, the project was lead by Shawn Peterson at Travel Montana. Shawn left Travel Montana and took a position with ITRC at the University of Montana working with the then director, Lynn Churchill. Due to budgeting problems and political reasons, Lynn resigned and ITRC was downsized. Although Shawn remained involved, he was also let go by ITRC. The project was handed over to Doug Galarus of ITRC, who later resigned. Finally, the project was completed by Gordon Pace with ITRC. The high rate of turnover clearly caused challenges, delays and less functionality in the final product. However, it is surprising that with this amount of staff turnover, the system was completed at all. This is likely thanks to Shawn Peterson's personal commitment to the project and the commitment of the administration at the University of Montana to stick to their commitments to complete this project.

There were also several technical challenges. Some of the GYRITS Kiosks would lock up for hours or even days at a time, possibly due to experimentation with the satellite connection to increase reliability. Inactive links and missing content also marked the need for continual software and content development. The kiosks make good use of existing web information, such as the MDT road cameras, but some information could be improved. For example, MDT's text road report, posted on the kiosk as is, could be reformatted to a clickable map or clearer table sorted by route and milepost.

7. RECOMMENDATIONS AND SUMMARY

In the 26 hours that kiosks were manually monitored, only six individuals used the kiosks. Clearly, the GYRITS kiosks are an inefficient method for providing information to the traveler, as is typical of other kiosk efforts. Better marketing, improvement of the content, and review of location choice may help increase the use. We should not attempt to get Wyoming, Idaho, or even Yellowstone National Park to expand the GYRITS kiosks in there area until we can (1) fix some of the technical problems such as long lock ups, (2) show an increase in the frequency of use of the kiosks, and (3) add content.

The “next-generation” of Kiosks in Montana is the Lewis and Clark Kiosks being developed for the 2004-2006 bicentennial in anticipation of the increase in tourist traffic following the Lewis and Clark Trail. Several of the GYRITS Kiosks are targeted for upgrades with this software. The Lewis and Clark kiosks have more content and, more importantly, have continued development support for the time being. Due to the low foot traffic and high cost for continued development, it is recommended that GYRITS kiosks not absorbed by the Lewis and Clark project continue to run until they break down, at which point they should be dismantled.

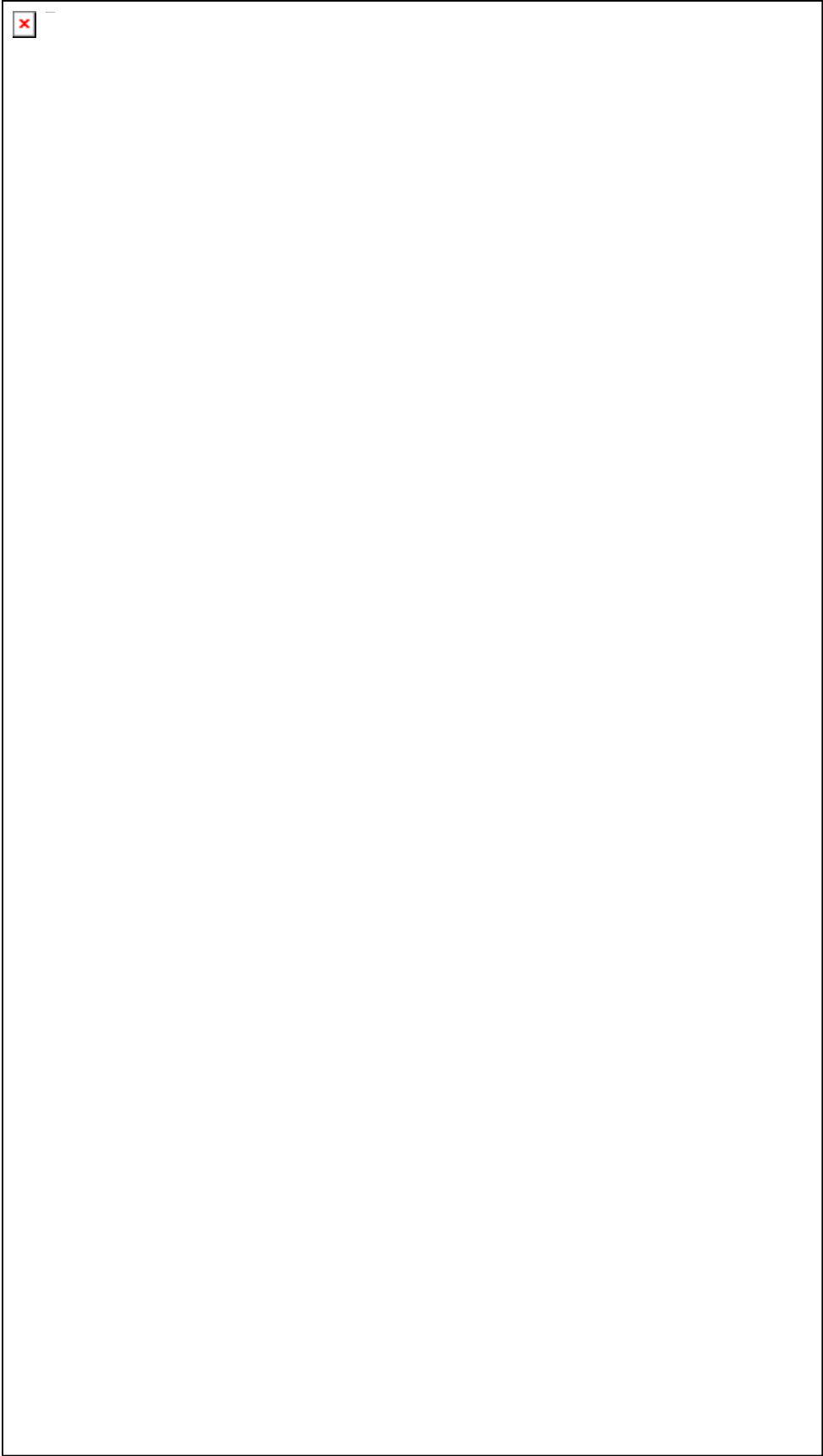
8. REFERENCES

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APPENDIX A: USER SURVEY

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APPENDIX B: SITE HOST RESPONSIBILITIES

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Western

Transportation Institute

416 Cobleigh Hall, PO Box 173910

MSU • Bozeman

To: Site Hosts
From: Trevor Iman
Subject: Touch Screen Kiosk Placement
Date: April 10, 2002

You were previously contacted about becoming a site host for Touch Screen Kiosks, based on your location and the amount of pedestrian traffic through your business. Many of you asked for information regarding these kiosks; the attached description will hopefully help you gain a better understanding of what they are and how they can be useful. It also outlines the expected requirements of you as a site host.

With this in mind if you would look over the attached page and decide if you are willing to participate it would be greatly appreciated. I plan to contact you about your interest in this project, one to two weeks after you receive this information to finalize your involvement and answer any questions.

If you have any questions or comments feel free to contact me at (406) 994-1815, or by email at timan@montana.edu.

GYRITS Touch Screen Kiosk

What is it?



The GYRITS Touch Screen kiosk is an interactive traveler information device placed at a strategic location. The kiosk provides information, updated through a phone line, to the traveler through a touch screen and interactively designed formats. Information provided includes:

- Listings of tourism and recreational facilities throughout Montana and Yellowstone National Park
- Local weather and road condition information
- Real time images from roadside cameras
- Interpretive information about Yellowstone National Park
- Local events and activities
- Maps and area information

Expansion plans include Wyoming and Idaho data and an accommodations / camping reservation system.

Where does it come from?

The Greater Yellowstone Rural Intelligent Transportation Systems (GYRITS) Project is a cooperative public-private project that will plan for and deploy advanced transportation technologies in the Greater Yellowstone Area. The resulting deployments will address unique rural regional and local challenges to provide for safety, mobility, travel demand management, tourism information and services, commercial vehicle operations, economic viability and ensure the ability to fuse and exchange data regionally. The GYRITS Project and resulting touch screen kiosks are supported by a variety of partners including Federal Highway Administration; Montana, Idaho, and Wyoming Departments of Transportation; Yellowstone National Park; Travel Montana; Western Transportation Institute at Montana State University and many others.

How can I be involved?

We have contacted you to gauge your interest in being a site host. By locating a kiosk at your facility you will provide your patrons a better travel experience. There is no financial cost to participate as a site host, other than the incidental cost of power and possibly a few long distance phone calls, to inform us of any problems with the kiosk. Currently the kiosks are updated through a dial up phone line provided and paid for by the project. The kiosks are currently only available for indoor placement, at staffed locations to help deter vandalism.

You will be required to:

- Provide a space for the kiosk with access to an outlet.
(Height = 66", Width = 34", and Depth = 38", plus room for access to the kiosk)
- Check the machines at least once per day and report any problems to the project team.
(Which will be addressed through the dial up connection if possible)
- Work with the project team to evaluate effectiveness and suggest improvements

This project is projected to continue through the fall of 2003, and there will be no direct cost to you as a site host for the duration of this project.

If you have any questions or are interested in hosting a kiosk please contact:

Patrick McGowen
Project Coordinator
Western Transportation Institute
Montana State University
(406) 994-6303

Shawn Peterson
Development Coordinator
Tempest Technologies, LLC
University of Montana
(406) 495-8731

