Automated Information Systems at Interstate Welcome Centers as Element of Intelligent Vehicle-Highway Systems

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No standard for the distribution of information at information centers located in Interstate rest areas and welcome centers exists. Some states use basic automated information systems (AISs). A second-generation AIS would be a method of distributing information through Interstate rest areas and welcome centers that is compatible with the future plans of the Intelligent Vehicle-Highway System. A questionnaire was sent to each state to identify its method of distribution of information at information centers. At least 17 states use an AIS to provide information to travelers. A second questionnaire was sent to the operators of an AIS. Most AISs can be classified into two categories: those containing paid advertisements and those not containing paid advertisements. A second-generation AIS (AIS-2) can be developed by modifying the AIS. The physical system should be a network of terminals linked to a master system. Expert system programming would help manage the data in a "yellow pages" method of advertisements. Computer-integrated manufacturing could be used to tie together all of the different aspects of the AIS-2 and allow for change as technology changes over time.

Thousands of rest areas and welcome centers across the United States operate to assist motorists as they travel on the Interstate system. The primary functions of these rest areas and welcome centers are to provide the traveler, either the single driver or several persons in a vehicle, with a place to relax and to use rest room facilities. A secondary function is to provide a source of information about the surrounding area and the state.

No uniform method of distributing information at Interstate rest areas and welcome centers exists. Most rest areas and welcome centers provide staff and brochures to inform the public. This combination allows travelers (a) to interact with the staff to find specific information and to carry this information away with them in the form of a brochure or (b) to review brochures only and take the ones that appear to be of interest. However, two major problems occur when this combination of information distribution methods is used. First, it is not financially feasible to operate a staffed rest area continuously. During the hours that the main building is closed it is not possible for the traveler to receive data through the information center. The second problem is that much waste is generated by some travelers. They may grab numerous brochures and, at a later time, read them, keeping those with the information desired and then discarding those pamphlets that they do not need.

An expanded form of an information center has recently been implemented in several states. An automated information system (AIS) allows a traveler to automatically obtain information about a specific subject in a timely manner without receiving excess information. However, AISs have various limitations, such as the availability of information.

Through further development of the AIS, a much greater range of information could be made available to the traveler. Information on (a) local restaurants and hotels, (b) local attractions, and even (c) road construction in the area as well as a host of other things could be programmed into the AIS. With a wider variety of information about the local area available to the traveler, it is likely that more tourism dollars would be spent in an area. On a broader scope of improving travel on the U.S. roadway system, the Intelligent Vehicle-Highway System (IVHS) program has been initiated and includes plans to develop AISs to assist travelers (1).

The research described here specifically addressed the concept of AISs at information centers, their current use, and their potential for further development. A survey of the various state agencies responsible for rest areas and welcome centers in the United States was made to determine the current methods of providing travelers with relevant information. The existing AISs, referred to as the first-generation systems, were analyzed in detail. Successful elements and apparent problems were noted. Finally, a conceptual design of a second-generation AIS was proposed on the basis of the analysis. This proposed system would serve as a partial link between the AIS in use today and the future systems in the IVHS program. The research concluded with recommendations on how a second-generation AIS could be implemented.

BACKGROUND

Roadways, present and past, are built to provide travelers with a way to move from one place to another, usually in a relatively safe and easy manner. However, the roadway by itself has not always been sufficient. Throughout most of the ages resting places adjacent to the roadside have also been established. These places allow travelers to rest so that they are more alert when they continue their journeys. These rest areas, however, are only as useful as the facilities provided. As travelers' needs and journey purposes have changed over time, so have the purposes and features of the rest areas changed.

The original travelways were footpaths used for hunting, primarily created by movement of many animals traveling the path (2). Early humans usually did not travel far from home, traveling only far enough so that they could return home for shelter at night. Rest areas were only a place for brief relaxation or for protection from bad weather.

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As the mode of travel improved and humans began to travel farther from home and to trade with other villages, travel back home each night was not practical. The purpose of the rest area began to expand into providing overnight facilities. Travelers turned to existing structures for shelters, usually a religious sanctuary, rather than just an area adjacent to the road. These first organized rest areas provided safety from bandits, as well as a place to rest and obtain food. Local people began to realize the financial benefits of these travelers, who bought local goods and services, thus increasing activity in the local economy. The local people would tell travelers about the happenings in the community and possibly about what to expect as their journey continued (*3*). Thus, the exchange of information became a part of the purpose of the rest area: the local people gain in economic development and travelers know more about local activities and the roadway ahead.

As Americans were moving west in the colonial period, the rest areas, usually called taverns, were an important element in expansion. They were privately operated establishments that provided food and overnight accommodations for regular travelers in early American history. These taverns also provided a place for the exchange of local information by the people who visited them. For example, fur traders on their regular trading routes were frequent customers. They could eat and rest while they learned of areas where game was abundant, and in exchange they would share their traveling knowledge with others.

Motor Vehicle Age

With the rapid development and use of the motor vehicle in the early 20th century, the emphasis of travelers' needs at rest areas changed again. Trips were longer both in time and in distance. It became important that travelers have a chance to relax, a need met by most rest areas. Knowing that rested drivers meant fewer accidents on the travelways, the early highway designers began to realize the need to add additional space adjacent to the travelways as turnouts. When the initial turnouts were few and far between, drivers would create their own turnouts by stopping on the side or shoulder of the roadway or sometimes even on adjacent private property. With the early roads being narrow, the created turnouts were frequently hazardous to moving vehicles, particularly if the stopped vehicles reduced sight distance. Many landowners also became increasingly disturbed by the constant trespassing onto their lands. To reduce the problem the state of Michigan began constructing turnouts in 1919. These are now considered the first rest areas on public roads (*4*).

Highway engineers began to look at the ideal frequency and spacing of turnouts with respect to motorists' needs. Turnouts were becoming mandatory to provide a safer roadway, as well as to meet the needs of the drivers. During the 1920s and 1930s turnouts became more frequent and evenly spaced along the major highways in the United States. In 1938 the federal government recognized their importance by granting federal money for their construction and maintenance. As a result many turnouts were upgraded to wayside areas (or roadside parks), with the addition of picnic tables, trash cans, shade, and possibly well or spring water. Many new wayside areas were also built from 1940 to 1960, and some included a small building with limited rest room accommodations. These wayside areas met the needs of the typical motorist during this time period. With the advent of the Interstate system in the late 1950s, motorists' needs changed again.

The Interstate system allowed motorists to travel direct routes from city to city on a limited-access highway. More people owned cars, and vehicle miles of travel increased more than ever before in history. Much of this travel was for recreational purposes rather than strictly for business. People were traveling into new areas in the United States and now needed information about the sights to see, motels and restaurants, and special events. The old turnouts or wayside areas did not provide the details about a particular state. They just provided basic food and a place to rest.

The new wayside areas were called roadside rest areas and provided a place to rest, relax, and obtain food, as well as a place to obtain tourist information. Many locations began to distribute information to the traveling public so that they would know more about the state or region. Some of the roadside rest areas evolved into information distribution centers, with food and rest being a secondary purpose. These rest areas, known as welcome centers, were usually located near the state line to provide information to motorists as they entered the state. Although other needs of motorists were met, the main purpose of the facility was to provide motorists with information on the state or region.

The Future: IVHS Program

Modern-day roads are continually becoming more and more congested. Transportation engineers have begun to realize a growing need for new technologies to increase the efficiency of the roadway system rather than for continual building of more roadways. In 1991 the Intermodal Surface Transportation Efficiency Act included provisions for IVHSs. To accomplish IVHS goals, the IVHS program was divided into six areas. Although each area is unique, all are interlocking. These areas are

- Advanced traffic management systems,
- Advanced traveler information systems,
- Advanced vehicle control systems,
- Advanced public transportation systems,
- Commercial vehicle operations, and
- Advanced rural transportation systems.

The area critical to the present research was advanced traveler information system (ATIS) technologies, which attempt to assist the traveler with planning, perception, analysis, and decision making to improve the convenience and efficiency of travel. ATISs acquire, analyze, communicate, and present information to assist travelers from their origins to their destinations. "A major component of the ATIS is providing information to the driver of a vehicle" (*5*).

METHODOLOGY

To various degrees information to travelers who use the Interstate highway system is now provided at rest areas and welcome centers. The overall object of the present research was to determine if there is a more effective process of providing travelers with this information. The research was accomplished in three general steps. The first step (through an initial questionnaire) was to determine details about the existing systems that were being used and the degree of automation. A second, more specific questionnaire (step two) was developed to determine additional details about the existing first-generation AISs. The third step was to combine the good parts of

operating systems, particularly, the first-generation AISs, into a second-generation AIS that would be compatible with the IVHS program.

Step 1: Existing Information Centers

Since published information about specific practices at Interstate rest areas is limited, a survey of government agencies was conducted. The format of the survey was a written questionnaire that was mailed to the operating agency of information centers in each of the 50 states. The questions for the initial questionnaire (Figure 1) were developed to determine how operators of the information centers acquire and distribute traveler information. The main areas that were addressed in the questionnaire were the (a) sources of the information, (b) method of distribution of the information, and (c) type of information available. To encourage a quick response the length of the questionnaire was kept short.

The questionnaire was mailed to the state agency in each of the 50 states that deals with tourism. The agencies and their addresses were obtained from the *National Directory of State Agencies*. The cover letter requested that the questionnaire be forwarded if there was someone more knowledgeable on the subject. A self-addressed, stamped envelope was enclosed to encourage a quick and easy response. If there was no response within 1 month a copy of the questionnaire was sent to an official at the state department of transportation.

An evaluation of the returned questionnaire included the following relationships: information sources, distribution methods, number of automated systems, method of automation, and agency responsible for operation. No attempt was made to quantify the quality of service, since the users are the primary source for such an evaluation.

Step 2: First-Generation AISs

A second questionnaire was developed to acquire more detailed data on existing AISs. In particular, this questionnaire (Figure 2) inquired about specific operating details of the AISs. This questionnaire was sent to a state agency or private business, or both, that operated an AIS at an Interstate rest area or welcome center. When necessary a follow-up telephone call was made to clarify or amplify the answer.

With the data received from this second questionnaire an analysis of each AIS was performed by classifying the options offered on every system. The most common attributes of every system and the unique attributes of every system were identified.

Step 3: Second-Generation AISs

The components for a second-generation AIS were designed by using the common and the unique elements of the existing systems. The object was to put together the good elements and, where possible, minimize the undesirable elements. Where possible the second-generation AIS would use as much of the existing system as practical, particularly the hardware, to encourage a cost-effective system.

Also taken into consideration in the development was how this second-generation AIS could fit into the future expectations of the

IVHS program. The major association would be with the in-vehicle communication system. Prototype vehicles have now been equipped with monitors and personal computers to allow access to an electronic telephone directory.

EXISTING INFORMATION CENTERS

The first questionnaire was distributed to all 50 states. Seven of the questionnaires were returned to Tennessee Technological University because of an incorrect mailing address. A second copy of the questionnaire was mailed to the correct address, determined by using the telephone directory of the city where the agency is located.

Thirty-nine responses were received. One of the remaining agencies referred the authors to another state agency to obtain the information requested; however, a questionnaire mailed to that agency was not returned. For the 10 states not responding, a second attempt was made to receive the information by mailing the questionnaire to each state department of transportation. This resulted in the return of four more responses, for a total of 43 usable responses.

Information centers are operated in the welcome centers and rest areas of at least 40 states. One of the remaining 10 states (Arizona) planned to open its first visitor information center in 1994. For the analysis in the present research, only the 40 states that responded to the survey and that had information centers were considered.

The distribution of information is the responsibility of many different state agencies, as shown in Table 1. The state agency that deals with tourism or travel manages the information centers in most states (75 percent). Often these agencies are part of or are within the state department that deals with economic development or commerce (45 percent). Like the days of the Roman Empire, travelers still bring economic growth to the areas to which they journey. Other states have a separate agency that handles only tourism (28 percent). In five states (Delaware, Michigan, New Hampshire, Ohio, and Texas) the information centers are run by the state department of transportation, and in two states (South Carolina and Utah) the information centers are run jointly by the state department of transportation and the state department of parks, recreation, and tourism.

Another factor that makes each information center distinct is the source of the information that is passed along to travelers. The majority of states receive part of their information from chambers of commerce (90 percent of the states), from submitted information (85 percent), or from local governmental units (83 percent). Other sources of information include educational institutions (35 percent), local welcome centers (13 percent), or local news agencies (8 percent). Most agencies use a combination of sources to fulfill their needs. The most common combination is the chamber of commerce, local governmental units, and submitted information. This allows a wide range of information to be gathered from just a few sources. Of specific interest are the methods of distribution of the information. All information centers provide brochures to motorists. Virginia charges a provider fee to distribute the brochure to the traveler. All centers except one (New Hampshire) have at least part-time staff available to assist motorists. Several states use posters (50 percent) or electronic display signs (10 percent). Seventeen states have some sort of automated system available for motorists. In addition, three states (Colorado, South Carolina, and Texas) have automated systems in the developmental stage. Other forms of information distribution include lighted transparencies, taped information for the visually impaired, and videotapes.

INTERSTATE REST AREAS -- NATIONAL SURVEY
Tennessee Technological University

1. Does your state currently operate information stations in either Interstate rest areas or welcome centers that contain materials about the state's resources?

[ ] yes or [ ] no

If no, please go to question #9.

2. What agency operates these information stations?

Name of Agency _____
Contact Person _____
Title _____
Address _____

Phone _____

If agency does not operate the information stations, go to question #9.

3. Where does your state acquire the information found at these stations? Check all that apply.

_____ Chambers of Commerce   _____ local welcome centers
_____ cities or counties   _____ local news agencies
_____ local educational institutions
_____ information is submitted by those wishing to be represented
_____ other _____

4. In what form does the motorist receive this information? Check all that apply.

_____ pamphlets   _____ posters
_____ electronic display signs   _____ automated systems
_____ staffed traveler information stations
_____ others _____

If no automated system is used, please go to question #8.

5. Does your agency or a private company operate the automated system?

[ ] your agency or [ ] private company
Name of Private Company _____
Contact Person _____
Address _____

Phone _____

FIGURE 1 Interstate rest area questionnaire.

Most agencies (98 percent) use the combination of brochures and staff to inform travelers. This allows travelers to talk with someone who can give specific information about a place, whereas the brochures allow them to carry something along with them as they continue their journeys.

Some of the states use an automated system to assist the traveler in finding the proper information. Of the 17 states with automated systems, 5 states operate the systems themselves, 10 states use private agencies, and 2 states operate the systems jointly with a private agency or university. Most offer only touch-screen capabilities and printout on demand. Two states (Idaho and Minnesota) have their automated systems encased in a building similar to those used for automated teller machines (ATMs) for 24-hr availability.

Of the 17 states with automated systems, most offer a variety of information including information on motels (94 percent), statewide attractions (88 percent), and state and national parks (88 percent). Other information available on some systems includes local attractions (76 percent), local restaurants (65 percent), and local stores or malls (29 percent). Four states (Montana, Minnesota, Idaho, and Missouri) offer information on cost, and one state (Wyoming) offers information on availability.

Overall, a good response was received from the first questionnaire, with 40 of the 50 states responding with a usable reply (Table 2). The most frequent source for the information located in the information center was the chamber of commerce: this was followed by information submitted from various sources and local governmental units such as cities or counties. By far the most common methods of distribution were brochures and staff, and a combination of these methods was used in every state that responded except one. Seventeen states operated AISs in their information centers, and 3 more states had AISs in development. The most common types of information found on these AISs were information on motels, state and national parks, and statewide attractions.

AUTOMATED INFORMATION SYSTEMS

The second step of the research was to acquire specific information about the AISs currently in use. The data on each system needed included the number of advertisers, the cost of advertisements, and how advertisers are initially located.

6. If your state uses an automated system, what are the features of this system? Check all that apply.

    _____ touch screen   _____ audio capabilities
    _____ personal computers   _____ print out available to motorist
    _____ print out automatic to motorist
    _____ print out with graphics
    _____ automated systems enclosed in own building for 24-hour/day use
            (similar to ATM's used at banks)
    _____ others _____

If printouts are available, please enclose one along with the survey if possible.

7. If your state uses an automated system, what types of information are offered to the motorist? Check all that apply.

    _____ statewide attractions   _____ state and national parks
    _____ local restaurants   _____ motels
    _____ local stores or malls   _____ cost information
    _____ availability
    _____ local attractions (such as plays, festivals, & sporting events)
    _____ others _____

If printouts are available, please enclose one along with the survey if possible.

8. Has your state performed any research since 1985 on the use of automated systems as information centers at Interstate rest areas and welcome centers.
    [ ] yes or [ ] no

If yes, would you please send me a copy of the report. If there is a cost for the report, please let me know in advance.

9. Person filling out form (or send a business card):

    Name _____
    Title _____
    Address _____

    Phone _____

May I contact you if more information is required?   [ ] yes or [ ] no

Would you like a copy of the results of this survey? [ ] yes or [ ] no

Please return this survey by August 31, 1993 to

    Lisa Dean
    Tennessee Technological University
    Box 5015, ext. 85
    Cookeville, TN 38505

FIGURE 1 *(continued)*

Based on the first questionnaire, 17 states had AISs at Interstate rest areas or welcome centers. The operators of these systems were diverse in nature. In some cases the state agency that operated the information center also operated the AIS. In other cases private businesses were contracted to run the systems. Sometimes a combination of sources worked together to operate the system. Educational institutions and tourism associations also helped to run these systems.

The second questionnaire was developed to acquire more information about the operators of the AISs in the 17 states that had them. After 4 weeks information on systems in 10 of the 17 states with AISs was received. A phone call was made to each operator not responding to obtain information about the AISs in the additional states. As a result of these phone calls three more states returned the questionnaire. For the analysis presented here only the 13 states responding to the survey were considered, with the results summarized in Table 2.

After evaluating the data from the second questionnaire, two distinct types of systems were detected. The first type of system relied mostly on paid advertisements to generate the bulk of information found on the AIS (54 percent). The second type of system relied on free advertisements to relay information (46 percent). Although all of the systems had common characteristics, no two systems were exactly alike. A system's unique elements usually strengthened its effectiveness.

The first group of systems that had many common characteristics comprised systems based on paid advertisements. The principal income of the system was through businesses choosing to pay to advertise on the AIS. However, some advertisements were allowed on the systems free of charge. For example, information about public attractions (i.e., state and national parks) was allowed on the system for free. This allowed for more information to be relayed to the traveler. The money received from private businesses (i.e., motels and restaurants) to advertise was usually the major source of income, whereas information about attractions provides the users with a full range of knowledge. It is possible for these systems to generate a profit. Seven of these cases were studied, and in all cases this type of system was operated by a private business.

INTERSTATE AUTOMATED INFORMATION CENTERS
Tennessee Technological University

1. What state (or states) does your system serve?

   _____

2. How many advertisements are currently displayed on each state's systems?

   _____

3. How do you determine who to contact to advertise on your system?   (Check all that apply.)

   _____ Let businesses contact you
   _____ Contact businesses who currently have brochures at the rest area
   _____ Send general invitations (i.e. in the newspaper)
   _____ Only contact business a certain distance from the Interstate
         If so, what distance?   _____
   _____ Only contact businesses a certain distance from the information
         center
         If so, what distance?   _____
   _____ Other   _____

4. How often is the information on your system updated?

   _____

5. What features are available on you system?   (Check all that apply.)

   _____ Printout available to motorist
   _____ Multi-media capabilities
   _____ Graphics on printout
   _____ Touch screen
   _____ ATM-type building
   _____ Other   _____

6. What type of computer hardware is used in your system?   (Check all that apply.)

   _____ Stand alone microcomputer
   _____ Networked microcomputer
   _____ CD ROM
   _____ Other   _____

FIGURE 2 AIS questionnaire.

The second group of systems that emerged was a system based on no paid advertisements. In many cases the respondents of the questionnaire believed that they offered no advertisements, only information, to the public. The cost of the system was primarily funded through the state. No revenue was generated by the system; its only purpose was to inform the traveling public. These systems were generally run by departments of the state, but in one case (Kentucky) it was operated by a private company.

Some systems also have unique features that appear to allow the system to better inform the traveling public. In three states (Iowa, Kansas, and Michigan) users can watch videos of different locations around the state. In Michigan the advertiser can update material more frequently, if the advertiser is willing to pay for it. In three states (Idaho, Minnesota, and South Dakota) the AIS was enclosed in an ATM-type building for continuous use by the traveler, even when the rest area or welcome center is closed. One company, Interactive Technologies, had a network of systems in the western states of Idaho, Montana, Utah, and Wyoming. These four states had telephones nearby to allow travelers to call for reservations.

DEVELOPING AIS-2

The levels of service of the AISs varied. In developing an updated second-generation system (AIS-2), it would be important to consider further use of the AIS with the IVHS program. AIS-2 should be able to integrate all of the information needs of travelers today and to be flexible to allow for expansion to meet the needs of travelers tomorrow. AIS-2 should not merely be a two-dimensional system that matches the needs of the traveler with technology. It should be a system of three dimensions that also includes the ability to change as new technologies are developed over time.

Several factors that should be considered with AIS-2 include the hardware and software of the system, the handling of data, and the compatibility of the system with the IVHS program. These factors not only need to be considered at present, but how they may possibly change in the future should also be considered. A method of handling complex automation has been implemented in the business world. Computer-integrated manufacturing (CIM) is the most powerful concept to date for bringing people, technology, products, and processes together into a single integrated system (6). The concept

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7.  What complications or difficulties have you experienced with your system?
Check all that apply.

          _____ Insufficient amount of advertisers to encourage use by travelers
          _____ Recurring system failure
          _____ Children playing on the system, not allowing access to adults
          _____ Print out with graphics
          _____ Others _____


8.  What is the current fee(s) for an advertisement on your system?

          _____


9.  Are any advertisements free of charge?  If so, what advertisements?

          _____


10. Would you allow your company's name to be used in a published report about
automated systems as information centers in rest areas?

    [  ] yes  or  [  ] no


11. May I contact (or possibly interview) you if more information is required?

    [  ] yes  or  [  ] no


    Person filling out form (or send a business card):

      Name _____
      Title _____
      Address _____
              _____
      Phone _____


    Please return this survey by February 17, 1994 to

          Lisa Dean
          Tennessee Technological University
          Box 5015, ext. 85
          Cookeville, TN  38505
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FIGURE 2 *(continued)*

of CIM can be used with AIS-2, tying together all of the different factors and allowing them to be modified as technology changes.

Physical System

Most of the AISs operated on a stand-alone microcomputer and had to be individually updated at each location. Therefore, it was not financially feasible to update the AISs often. From the information gathered from the second questionnaire, on average, the AIS at each location was updated twice a year. If the AISs at all locations were linked to a master terminal, updates could be sent by telecommunication waves and the information on the AIS would be current. With a networked system the availability of space (i.e., motel rooms and concert tickets) would be current information that could be distributed accurately. Also, information such as road construction, weather conditions, and traffic congestion could be transmitted to the users.

The question quickly arose as to what information should be distributed on this system. Too much information simply confuses the user, whereas too little information does not adequately inform the user. Most systems currently in use charge private businesses (i.e., hotels and restaurants) to display advertisements. The prototype information system of the IVHS system used in Orlando simply had a yellow pages in electronic form (7). A combination of these methods can be used for maximum benefit. All tourist-related activities should be available in the system. This allows users to know that their questions will be answered thoroughly and will not be limited by only the specific business that chose to advertise on the system.

In the 1960s Iowa studied the information needs of drivers and developed the Infosite idea. Infosites were buildings containing informational posters and displays to help travelers (8). Advertisers had to pay to display these signs. Only 20 percent of the space allotted for displays was used. Travelers did not rely on the information found at Infosites because it was incomplete. The program failed because of a lack of information offered to the public. With a yellow pages method of advertising, most businesses would be represented; therefore, travelers could depend on the AIS to receive complete information. As a source of revenue, advertisers could pay to have their basic advertisements enlarged.

One problem that may occur with allowing excessive advertisements on the AIS is an overabundance of information, which could confuse the traveler. Expert system software is a type of software that uses a degree of expertise in problem solving that is comparable to that of a human expert. By using expert system software, the user could narrow the field of choices by answering simple questions. For example, instead of listing every motel in a certain geographic area, the AIS might query travelers on their preferences on cost and specific features (i.e., swimming pool or hot tub). This would allow the AIS to inform the traveler of only a limited number of motels, permitting the traveler to choose from a reasonable number of sources.

TABLE 1 Agencies That Operate Information Centers

State	Specific Agency	Governing Agency
AL		Bureau of Tourism and Travel
AK		Jointly by various agencies
AZ	Office of Tourism	Office of the Governor
AR		Department of Parks & Tourism
CO	Tourism Board	Office of the Governor
DE		Department of Transportation
GA		Department of Industry, Trade & Tourism
FL	Division of Tourism	Department of Commerce
ID		Department of Parks & Recreation
IN	Tourism Department	Department of Commerce
IL	Bureau of Tourism	Department of Commerce & Community Affairs
IA		Department of Economic Development
KS	Tourism	Department of Commerce & Housing
KY	Tourism Cabinet	Department of Travel Development
LA	Office of Tourism	Department of Culture, Recreation & Tourism
ME		Publicity Bureau
MD		Dept. of Economic & Employment Development
MA	Office of Travel & Tourism	Department of Commerce & Development
MI		Department of Transportation
MN	Office of Tourism	Department of Energy & Economic Development
MS		Department of Economic Development
MO	Division of Tourism	Department of Economic Development
MT	Travel Montana	Department of Commerce
NH		Department of Transportation
NM		Department of Tourism
NJ	Division of Travel & Tourism	Department of Commerce & Economic Development
NC	Division of Travel & Tourism	Department of Commerce
ND		Tourism Department
OH		Department of Transportation
OK	Division of Travel & Tourism	Tourism & Recreation Department
OR	Tourism Division	Economic Development
RI	Division of Tourism	Department of Economic Development
SC		Department of Parks, Recreation & Tourism and Department of Transportation
SD	Tourism	Department of State Development
TN		Department of Tourist Development
TX		Department of Transportation
UT		Travel Council, Travel Regions, Department of Transportation
VA	Division of Tourism	Department of Economic Development
WV	Division of Tourism & Parks	Department of Commerce
WI	Division of Tourism	Department of Development
WY	Division of Tourism	Department of Commerce

TABLE 2 Results of Questionnaires

<u>Interstate Rest Areas Questionnaire</u>
Number of questionnaires sent...................... 50
Number of responses................................ 43
Number of information centers...................... 40
Number of states with AIS 17

Most common sources of information.................1) Chamber of Commerce
                                                   2) submitted
                                                   3) local governmental unit

Most common methods of distribution................1) brochures
                                                   2) staff
                                                   3) posters

Most common type of information found on AIS.......1) motels
                                                   2) state and national parks
                                                   3) statewide attractions

<u>Automated Information Systems Questionnaire</u>
Number of questionnaires sent...................... 17
Number of responses................................ 13
Number of AIS with paid advertisements............ 7
Number of AIS without paid advertisements......... 6

Unique elements on some systems....................1) telephones
                                                   2) videotapes
                                                   3) ATM-type building

Data Management

CIM could be used to manage all of the data in AIS-2. All of the data should be input into a master system and then transferred to the other systems in the network. Not only will the main agency operating the system need to have access to data entry, but each private business represented on the system will also need to enter their specific time-dependant data (such as reservations) to keep the system updated.

The data output will be the information received by the traveler. Expert system software can be a means of controlling the amount of data received by the traveler. Real-time output will be in the form of screen display, printed general information, and printed detailed information.

Once the traveler has received the information from AIS-2, in many cases a response to the business is desired. Currently, telephones are placed near some of the systems so that the user can call to make reservations. This step could be improved by installing a modem in the microcomputer. Then, just by pressing a button (or by touching a screen) the user could request AIS-2 to call and make reservations, providing that the businesses (i.e., motels and restaurants) have the computer facilities to answer this type of call.

AIS-2 will be a complex system involving state-of-the-art components, large quantities of data, and real-time information needs. With the IVHS program being the major program for the U.S. surface transportation system, the development of AIS-2 must complement the development of IVHSs. CIM is the umbrella that can manage the physical system and data management needs of AIS-2 while considering the future needs of the IVHS program.

CONCLUSIONS

Based on the results of the present study the following conclusions were drawn.

1. Seventy-five percent of the Interstate information centers were operated by the state agency that deals with tourism. In five states the information centers are operated by the state's department of transportation.

2. The most common sources of information for the centers were chambers of commerce, private submittals, and local governmental units.

3. All of the states surveyed used brochures to distribute information, and all of the states except one used at least part-time staff.

4. Seventeen states had an AIS to assist motorists in obtaining information about the state. Three more states had AISs in development.

5. The type of information available from some AISs included information on motels, statewide attractions, parks, local attractions, restaurants, and stores. Four states offered information on cost, whereas one state offered information on availability.

6. The first-generation AISs fall into two categories: (a) those with paid advertisements and (b) those without paid advertisements.

7. Development of AIS-2 should be compatible with the IVHS program. The physical system should be a networked system of terminals linked to a master computer. Data input and updating, data output, and traveler response could be managed by CIM. Information for the traveler could be processed by expert system programming.

RECOMMENDATIONS

1. Various types of information can be included on an AIS. Additional research is needed to determine what type of information (i.e., weather conditions or road construction) is functional and practical for AIS-2.

2. The range or geographic extent of the information (i.e., surrounding states, regions, and counties) to be offered on an AIS is another area that needs further evaluation.

3. Pilot IVHS studies have included in-vehicle AISs. Airports, shopping centers, and other populated centers have provided information for the traveling public. An evaluation of the optimum type of location(s) of AISs for the traveling public is necessary.

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