# Final Report

# CANAMEX Smart Tourist Corridor

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Idaho Transportation Department
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Nevada Department of Transportation
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in cooperation with the
U.S. Department of Transportation – Federal Highway Administration

March 24, 2004

# EXECUTIVE SUMMARY

The CANAMEX Corridor is an important trade, tourism and travel way for the United States, Mexico and Canada. In terms of population, it is the fastest growing region in the country, and includes four of the five fastest growing states. More than 65 percent of the freight moving in the Corridor originated outside of the region. Travel in the Corridor has increased 130 percent since 1970. The Corridor includes some of the most visited sites in America, including the Grand Canyon, Yellowstone National Park, and Hoover Dam. While large portions of the Corridor are in rural areas, it also passes directly through the urban areas of Salt Lake City, Las Vegas, and Phoenix.

In 1999, the Governors of Montana, Idaho, Utah, Nevada and Arizona created the CANAMEX Corridor Coalition (CCC) to spur economic development along the corridor. Following the development of a corridor plan in 2001, the CCC retained the Western Transportation Institute of Montana State University – Bozeman in 2002 to develop the CANAMEX Smart Tourist Corridor Initiative. WTI surveyed the needs of the CANAMEX states' tourism industry, analyzed each state's Intelligent Transportation System assets and plans, and researched communications technologies and information collection and dissemination systems. This Final Report is the action plan for development of the Smart Tourist Corridor.

## Goals

The two primary goals of the Smart Tourist Corridor are:

- ***Increase tourism spending and length of stays by enhancing the tourist experience*** Rural economic development is a shared challenge among the CANAMEX states. For most rural areas, tourism supports local businesses, generates revenues and provides local employment. The Corridor has great potential for promoting tourism development through public/private partnerships; by extending visits "one more day", the Smart Tourist Corridor can significantly enhance rural economies.
- ***Establish CANAMEX as the safest, most secure and most efficient corridor for travelers within and through the region***. The personal safety of travelers is the highest priority of the CANAMEX states, and is supported by the Federal Highway Administration, as evidenced in SAFETEA and other legislation. Security has increased in importance for all stakeholders in the post-9/11 environment. Efficiency of the transportation system is also essential for the region's continued economic competitiveness.

## Smart Tourist Corridor Elements

Survey data collected through this project show that the number one need of travelers is *information*: what are the traffic and weather conditions on the road, and what can we do and where can we stay along the way? The Smart Tourist Corridor proposes to use a combination of emerging technologies and interstate/interagency coordination to provide seamless safety and tourism information to corridor travelers.

The plan for the Smart Tourist Corridor includes four integrated elements:

- The CANAMEX Gateway: Multi-portal website element will create a safety and tourism data gathering/sharing system that will form the heart of the Smart Tourist Corridor

concept. This element will make it possible for all participating agencies to receive relevant, real-time information and alerts, and will allow for the creation of the CANAMEX Gateway website, which will provide Corridor-wide information to travelers.

- The CANAMEX Communications element will consist of technological improvements that facilitate the dissemination of tourism and safety information to travelers, such as completing cellular coverage in the Corridor.
- Smart Devices Development consists of public-private partnerships that expand the ability of tourists and other travelers to use smart devices such as cellular phones, personal digital assistants, and in-vehicle navigation units throughout the Corridor.
- Safety, Security and Operations Improvements are a broad range of activities that will foster better coordination and cooperation among emergency response agencies throughout the corridor, as well as increased safety and improved emergency response.

These initiatives provide a powerful opportunity to integrate the informational databases of tourism and transportation agencies; in other words, combine the tourism inventory of venues and attractions with transportation's real-time travel advisories to improve the visitor experience and thereby increase tourist activity. In addition, these initiatives will promote and facilitate safe travel along the entire Corridor.

**Costs & Funding**

Full implementation of the CANAMEX Smart Tourist Corridor requires an estimated $70 million over 10 years for equipment, systems development, and operations and maintenance. Of this amount, approximately $27 million is necessary to develop the data sharing system and establish a multi-portal website to service the enhanced information services ("CANAMEX Gateway"), and approximately $36 million is necessary for development of the technological infrastructure ("CANAMEX Communications"). Most of the costs (an estimated $68 of the $70 million total) will be the responsibility of state departments of transportation; a variety of federal funding opportunities exist to provide potential resources to the states.

The Smart Tourist Corridor Initiative will also yield significant benefits to all of the CANAMEX states, including increased tourism activity, improved visitor experience, increased safety and improved mobility for travelers, and ultimately job development for residents and their communities. Estimates indicate cost reductions of almost $66 million from reduced accident and weather delays and increased tourism revenues of more than *400 million dollars* for the CANAMEX states over the next ten years, yielding an overall benefit-to-cost ratio of 7.1. As shown in Table 1, the benefit-to-cost ratio for public and private tourist entities is substantially larger at 167, reflecting their relatively smaller cost responsibility of only $2.6 million for the five states over 10 years. The estimated benefit to the tourism industry is based on a conservative formula that assumes that 1% of tourists will spend "one more day" in the region as a result of the Smart Tourist Corridor initiatives.

**Table 1: Summary of CANAMEX Benefits by Stakeholder Group**

| STAKEHOLDER GROUP | ESTIMATED BENEFITS ($) | ESTIMATED COST ($) | OVERALL BENEFIT-TO-COST RATIO |
|---|---|---|---|
| State DOTs | $65,700,000 * | $68,329,500 | 1.0 |
| Tourism Industry | $440,424,214 | $2,632,500 | 167.3 |
| Traveling Public | $65,700,000 | $0 | n/a |
| **TOTAL** | **$506,124,214** | **$70, 962,000** | **7.1** |

* The cost savings due to reduction in accident and weather delays directly benefit the traveling public and are also counted as benefits to the State DOTs as it is in the DOTs' strategic interest to move people quickly and safely through the transportation systems.

## Next Steps

Section 8 of this report contains a full discussion of project next steps for each initiative, many of which are dependent on the receipt of federal funds. There are many things the CANAMEX Corridor Coalition and its partner agencies, Transportation and Tourism, can do now to advance development of the Smart Tourist Corridor. The major opportunities are listed here (Table 2). Once funding has been secured, qualified contractors should be engaged to design the specific system linkages and protocols, and undertake operation of the Smart Tourist Corridor.

**Table 2: Smart Tourist Corridor -- Recommended Next Steps**

| Action Item | Responsibility | Support | Approval | Timeline (Initiation Date) |
|---|---|---|---|---|
| | | | | |
| **Earmark**: Advocate and obtain federal multi-year earmark for ITS implementation of Smart Corridor Operations | CANAMEX Corridor Coalition | CANAMEX Project Office, DOTs, Congressional Delegations | CANAMEX Corridor Coalition | Spring 2004. Dependent upon congressional action. |
| **Framework**: Establish organizational framework for managing project implementation and business plan | CANAMEX Project Office | | CANAMEX Corridor Coalition | Spring 2004 |
| **Standards/Architecture**: Identify ITS standards & architecture for deployment of data gathering and information sharing networks. Conduct gap analysis of existing standards and systems. Secure special project funding from FHWA. | ITS Coordinators | CANAMEX Project Office | CANAMEX Corridor Coalition | Summer 2004 |
| **CANAMEX Gateway Website**: Create plan/prototype for website. Determine method for website implementation. | CANAMEX Project Office | ITS Coordinators; State Tourism Agencies | | Spring 2004 |
| **Tourism Brand**: Define Tourism brand for the Corridor | State Tourism Agencies | CANAMEX Project Office | State Tourism Agencies | Summer 2004 |
| **Tourism Partnerships**: Develop data sharing partnership agreements and identify joint tourism promotional opportunities. Develop means for collecting data. | State Tourism Agencies | CANAMEX Project Office | | Spring 2004 |
| **International Outreach**: Engage Alberta, Sonora, federal land management agencies and the Department of Customs & Border Protection and define roles | CANAMEX Project Office; states of Montana and Arizona | | State Tourism Agencies | Summer 2004 |
| **Funding Opportunities**: Explore alternative federal funding opportunities to define tourism and traveler data sets that should be incorporated in the traveler information system (EDA, state and private resources etc.) | CANAMEX Project Office | | State Tourism Agencies, CANAMEX Corridor Coalition | Summer 2004 |
| **Communications Plan**: Develop an integrated corridor deployment plan to map wireless coverage of the various communications systems deployed throughout the corridor. | CANAMEX Project Office | State CIOs and technology agencies; ITS Coordinators | CANAMEX Corridor Coalition | Fall 2004 |

| Action Item | Responsibility | Support | Approval | Timeline (Initiation Date) |
|---|---|---|---|---|
| | | | | |
| **ITS Device Deployment and Tactical Plan** Develop a coordinated plan to continue deployment of ITS devices in the corridor. | ITS Coordinators | CANAMEX Project Office | | Fall 2004 |
| **511 Linkage and Enhancement**: Each of the CANAMEX states should adopt protocols to link their 511 systems and establish a project timeline for deployment. Also develop standards for adding tourism information, concierge services, and public lands information to 511. | ITS Coordinators | CANAMEX Project Office; State Tourism Agencies | | Summer 2004 |
| **Private Sector / Telematics New Technology Testing**: Promote the five-state, 1500 mile CANAMEX Corridor as an attractive platform for the private sector to test & pilot projects and as an opportunity to develop innovative risk and revenue sharing partnerships. | CANAMEX Project Office | ITS Coordinators; State Tourism Agencies | CANAMEX Corridor Coalition | Fall 2004 |
| **State Border Operations**: Formalize multi-state agreements for DOTs and law enforcement agencies to coordinate operations at state borders (already noted in standards) | ITS Coordinators | DOT Directors | CANAMEX Corridor Coalition | Fall 2004 |
| **Incident Management Plans**: Develop incident management plans within each state, and share with other states. | ITS Coordinators | DOT Directors | | Fall 2004 |
| **Cost-Benefit Analysis:** Collect additional data to refine estimates of increased tourism revenue potential for each state. | CANAMEX Project Office | State Tourism Agencies | | To be determined based on need for the data. |

# DISCLAIMER

This document has been prepared and disseminated under the sponsorship of the CANAMEX Corridor Coalition, which includes the Departments of Transportation from Montana, Idaho, Nevada, Utah, and Arizona, in cooperation with the Federal Highway Administration, United States Department of Transportation, Canada and Mexico. The lead state and contractual authority is the Montana Department of Transportation, which has accepted this document as the final report of the project. These state departments of transportation and the Western Transportation Institute, Montana State University – Bozeman provide this document in the interest of information exchange. The Montana Department of Transportation and the Western Transportation Institute, MSU – Bozeman assume no liability for its contents or use thereof. The contents of this report reflect the views of the authors who are responsible for the opinions, findings and conclusions presented herein. The authors are not responsible for any misrepresentation of data from the referenced vendors, manufacturers, or representatives. The Montana Department of Transportation and the Western Transportation Institute, MSU – Bozeman do not endorse products or manufacturers of the systems reported herein.

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# ACKNOWLEDGEMENTS

The Western Transportation Institute would like to extend its sincere appreciation to Carol Sanger, Executive Director of the CANAMEX Corridor Project, for her guidance and assistance throughout the project. WTI would not have been able to develop this report without the participation of the organizations listed below.

**Montana**
Montana Department of Commerce
Montana Department of Transportation
Blackfoot Nation
Montana Historical Society
MT - Lewis & Clarke Bicentennial
MT - National Park Service
Gold West Country
Great Falls Chamber of Commerce
Helena Convention and Visitors Bureau
Russell Country
Butte Chamber of Commerce

**Idaho**
Idaho Department of Parks & Recreation
Idaho Department of Commerce
Idaho Department of Parks & Recreation
Idaho Transportation Department
Shoshone - Bannock Tribe
ID - Bureau of Land Management
ID - National Park Service
ID - U.S. Forest Service
Lava Hot Springs Foundation
Pocatello Chamber of Commerce
Rexburg Chamber of Commerce
Sun Valley Company
Yellowstone Bear World

**Nevada**
Nevada Commission on Tourism
Nevada Department of Transportation
Nevada Department of Conservation & Natural Resources
Las Vegas Convention & Visitors Authority
Las Vegas Paiute Tribe
NV - Bureau of Land Management
NV - Humboldt-Toiyabe National Forest
NV - Lake Mead National Recreation Area
NV - U.S. Forest Service

**Utah**
Utah Department of Transportation
Utah Department of Community & Economic Development
Utah Division of Parks and Recreation
Utah Division of Travel Development
Utah Travel Council
UT - National Park Service
UT - U.S. Forest Service

**Arizona**
Arizona Department of Transportation
Arizona Game & Fish Department
Arizona Humanities Council
Arizona Office of Tourism
Arizona State Parks
Ak-Chin Indian Community
AZ - Bureau of Land Management
AZ - National Park Service
Northern Arizona University
Public Lands Information Center
Sharlot Hall Museum
Arizona Automobile Association
Wickenburg Chamber of Commerce
Madden Media
Metropolitan Tuscon Convention & Visitors Bureau
Sedona Chamber of Commerce
Sierra Vista Convention & Visitors Bureau

**Canada**
Province of Alberta

**Mexico**
State of Sonora

**Telecommunications Companies**
Telcordia
QUALCOM

In addition, WTI would like to thank the following individuals who played a key role in the development and completion of the technical memos and this final report:

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| State | Name | Organization |
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| Arizona | Victor Mendez | Arizona Department of Transportation |
| Arizona | Peter Woog | Pivotal Group |
| Arizona | Tom Belshe | Arizona Department of Commerce |
| Nevada | Jeffrey Fontaine | Nevada Department of Transportation |
| Nevada | Tom Skancke | The Skancke Company |
| Utah | John Njord | Utah Department of Transportation |
| Utah | Stephen Goodrich | United Parcel Service |
| Idaho | Dave Ekern | Idaho Transportation Department |
| Idaho | Dr. Richard Bowen | Idaho State University |
| Montana | Jim Currie | Montana Department of Transportation |
| Montana | Jay Foley | Diversified Transfer and Storage |
| Montana | Betsy Baumgart | Montana Department of Commerce |

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# 1. INTRODUCTION

## 1.1 Background

The CANAMEX Trade Corridor was established in 1995 as a High Priority Corridor in the National Highway Systems Designation Act passed by the U.S. Congress. In the United States, the Corridor follows Interstate 15 travels south through Montana, Idaho, Utah and Nevada. In Las Vegas, the Corridor follows U.S. 93 to Phoenix, Arizona and then Interstates 10 and 19 to Nogales (Figure 1). In 1999, the Governors of the five corridor states signed a Memorandum of Understanding creating the CANAMEX Corridor Coalition with public and private sector representation.

Based on the CANAMEX Corridor Plan, developed by Economics Research Associates in 2001, the Corridor is defined as a "unifying element." The Plan was designed to meet the following objectives that are common to all five states:


**Figure 1: CANAMEX Corridor**

- To stimulate economic development and enhance economic opportunity in the communities traversed by the CANAMEX Corridor. The communities are defined to include states, metropolitan areas, counties, cities, towns, and Native American reservations.
- To heighten awareness of the Corridor nationally and internationally and to incorporate the views, concerns and aspirations of key stakeholders from the Corridor communities into the development of the Plan.
- To identify the most critically needed transportation and telecommunications infrastructure (basic installations and facilities) projects within the Corridor, for the purposes of facilitating the safe and efficient movement of people, goods and services for the next 30 years, and to plan for their development.
- To establish the Corridor as a leader in the innovative use of emerging technologies to accelerate economic development and sustain quality growth.
- To enhance the global competitiveness of the CANAMEX Corridor states.

- To prepare a Plan that represents the interest of each state and allows the five CANAMEX Corridor states to present a united front to the Federal Government for the funding of critically needed improvements and action on other initiatives.

The Coalition developed an action plan that identified five bold initiatives that, if undertaken, would drive the Plan's ultimate success. The initiatives are listed below:

- Smart Freight Corridor
- Smart Tourist Corridor
- Telecommunications Access for Rural Areas
- Corridor Highway Improvements
- Smart Process Partnerships

In the fall of 2001, the Coalition decided to focus its initial implementation efforts on the Smart Tourist Corridor Initiative.

## 1.2 Smart Tourist Corridor Objectives

The overall goal of the Initiative is to develop a vision to enhance the Corridor's economic growth through tourism development based on advanced technology and communications applications. The CANAMEX Corridor Coalition established the following overall objectives for the Smart Tourist Corridor Initiative:

- Provide Corridor travelers with the safest and most convenient travel experience possible within the limits of available technology and resources.
- Identify a wide array of timely information desired by tourists and other Corridor travelers (including freight), based upon their perceptions of needs; advise Corridor travelers of user friendly outlets that can meet their information and other travel needs.
- Identify incident management and other operational practices within the Corridor and recommend alternative generic concepts for their improvement, including new and upgraded telecommunications, protocols and procedures.
- Identify new and upgraded infrastructure projects within the Corridor required to support implementation of the Smart Tourist Corridor Initiative and Corridor operations.

## 1.3 Uniqueness of Corridor

The CANAMEX Corridor is one of the most unique and diverse rural travel corridors that the United States has to offer. The spectacular landscapes include the beauty of the Rocky Mountains in the north, the breathtaking valleys surrounded by the Wasatch Mountains in the central region, and the red rocks and wide open plains in the south. The region retains its rural character in part due to the fact that 63% of the land in these states is Federal and Native American land (Final CANAMEX Corridor Plan, 2001). While large portions of the Corridor are in rural areas, it also passes directly through the urban areas of Salt Lake City, Las Vegas, and Phoenix.

**Figure 2: Montana Landscape**

Recreational Opportunities:

The CANAMEX Corridor offers a full range of year-round recreational opportunities including traditional favorites like fishing, skiing, white water rafting, hiking, and camping, as well as emerging activities such as extreme sports and off-road vehicles.

**Figure 3: Recreational Opportunities**

Visitor Experience:

Each year, more than 31 million travelers visit the national parks, monuments, historical sites, recreational areas and reserves in the CANAMEX Corridor region. The region contains some of the most famous landmarks and treasured natural sites in the United States, including the Grand Canyon, Yellowstone National Park, Glacier National Park, Craters of The Moon National Monument Wilderness, Zion National Park and Hoover Dam.

Culture and History:

Tourists are also attracted to the rich culture and history of the region. The many Native American Reservations located throughout the Corridor are popular destinations, as well as other sites and events which showcase the heritage of the West: mining towns, the trails and discoveries of Lewis and Clark, rodeos, and cattle ranches.

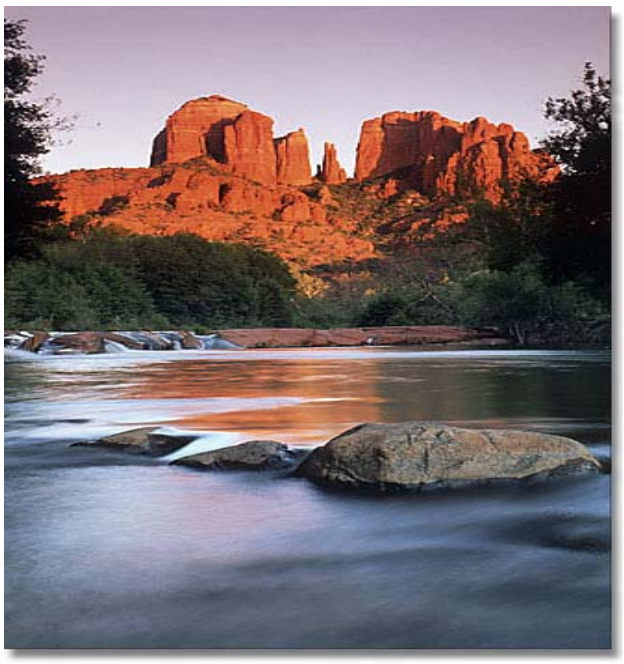

**Figure 4: Zion National Park**

Natural Resources:

The region is rich in natural resources that are critical to the economic vitality and environmental stability of our country. These resources range from agricultural lands and mineral deposits to animal and plant life that is unique to the region.

Transportation Facilities and Technology:

The CANAMEX Corridor must provide a safe and efficient means of traveling a long distance, through remote areas, under all weather and road conditions. Transportation agencies in the region have been on the cutting edge of providing technology solutions that manage facilities throughout the corridor. Recent innovations include: highway advisory radio, dynamic message signs, 511, Kiosks, advanced traveler management and information systems, road and weather information, and other management systems.

International Travelers:

Many international travelers visit the region, attracted by the diverse landscapes and unique cultural experiences described previously. Since the Corridor connects the United States to both Canada and Mexico, the majority of international travelers are from these two countries. However, Interstate 15 provides all travelers with easy access to popular destinations.

**Figure 5: Hoover Dam**

## 1.4 Purpose

The purpose of this Final Report is to present a summary of the recommended program for the CANAMEX Smart Tourist Corridor. The program is based upon the research, analyses and findings of three previous Technical Memoranda (TM) completed for the CANAMEX Corridor Coalition. Some findings and recommendations from the previous Technical Memoranda have been further refined for this Final Report.

The Final Report is organized as follows:

- Section 1 is **Introduction**, and contains relevant background information to the study genesis and purpose.
- Section 2 summarizes the **Methodology** followed throughout the entire project.
- Section 3 summarizes the **Travel and Tourism Outreach Findings** developed in TM 1.
- Section 4 summarizes the **Corridor Operations** needs and recommendations identified in TM 2.
- Section 5 describes the proposed **Vision and Strategic Initiatives** developed for the Smart Tourist Corridor (TM 3).
- Section 6 summarizes the potential **Costs and Benefits** of the Strategic Initiatives.
- Section 7 presents descriptive **Scenarios** of the Smart Tourist Corridor in action.
- Section 8 proposes **Next Steps** for further implementation of this project.

## 1.5 Relationship to other CANAMEX Documents

This report is the final product that summarizes the results of a series of three Technical Memoranda (TM) produced for the CANAMEX Corridor Coalition. TM 1 studied tourism issues and needs in the Corridor. TM 2 studied operational issues and needs in the Corridor. The TM 3 presented the recommendations for the Smart Tourist Corridor. Each of the TMs contains detailed surveys, analysis, and conclusions that are summarized in this final report. For more technical information on the development of the final recommendations, please refer to the three TMs, available on the CANAMEX website (www.canamex.org).

Significant research and analysis for the Coalition was conducted and summarized in a series of working papers by Economic Research Associates (ERA). These working papers were prepared in 2000 and 2001, and recommended the Smart Tourism Corridor concept. The research and analysis conducted for these reports formed the basis for the research and analysis for this study.

# 2. METHODOLOGY

## 2.1 Overall

The Western Transportation Institute defined a methodology for determining the tourism, operational and traveler needs of the Smart Tourist Corridor, and then developing the strategic initiatives and recommendations contained in this final report. The methodology was designed to collect necessary information, provide for appropriate review, and develop the framework and alternatives for the implementation of the Smart Tourist Corridor Initiative.

## 2.2 Outreach Findings and Vision

The first phase of WTI's research (detailed in TM 1) was designed to identify tourism needs and develop a preliminary vision for the Smart Tourist Corridor. Tourism needs were established through extensive outreach with public and private stakeholders. These needs provided the inspiration and foundation for the development of a framework and prioritized alternatives.

## 2.3 Corridor Operations

In the second phase of research (TM 2), WTI studied operational needs in the Corridor. Again using an outreach process, researchers worked with transportation and emergency services personnel in the Corridor states to document existing infrastructure, and identify infrastructure needs and operational procedures that will promote safe and efficient travel. This research included a review of emerging technologies that will impact Corridor travel.

## 2.4 ITS Infrastructure and Benefits

The final phase of research (TM 3) presented recommendations. The preliminary concepts developed in TM 1 were refined based on the operational considerations identified in phase 2, as well as ongoing feedback from stakeholders. The outcome was the Strategic Initiatives described herein.

# 3. TRAVEL AND TOURISM OUTREACH FINDINGS

## 3.1 Introduction

In order to develop a vision for the Smart Tourist Corridor, extensive outreach was conducted to establish the challenges and goals of the agencies that manage facilities or provide services to travelers in the region. More than 70 interviews were conducted with public and private sector agencies in all five states, including federal, state, and local agencies; Native American tribal organizations; and private tourism and communications enterprises. The following sections are provided as a summary, and more detailed information can be found in TM 1: Travel and Tourism Outreach Findings and Vision, dated October 1, 2003.

The public sector interview instrument developed for the stakeholder interviews was designed to produce a profile of the agency, its clients, its information systems and needs, and its transportation challenges. Rather than use a traditional survey instrument with pre-defined responses, researchers used a questionnaire in order to facilitate discussion and generate detailed information. WTI conducted 57 interviews with 39 public sector stakeholder agencies. As shown in Figure 6, stakeholder views represent a broad range of federal, state, local and Native American organizations.

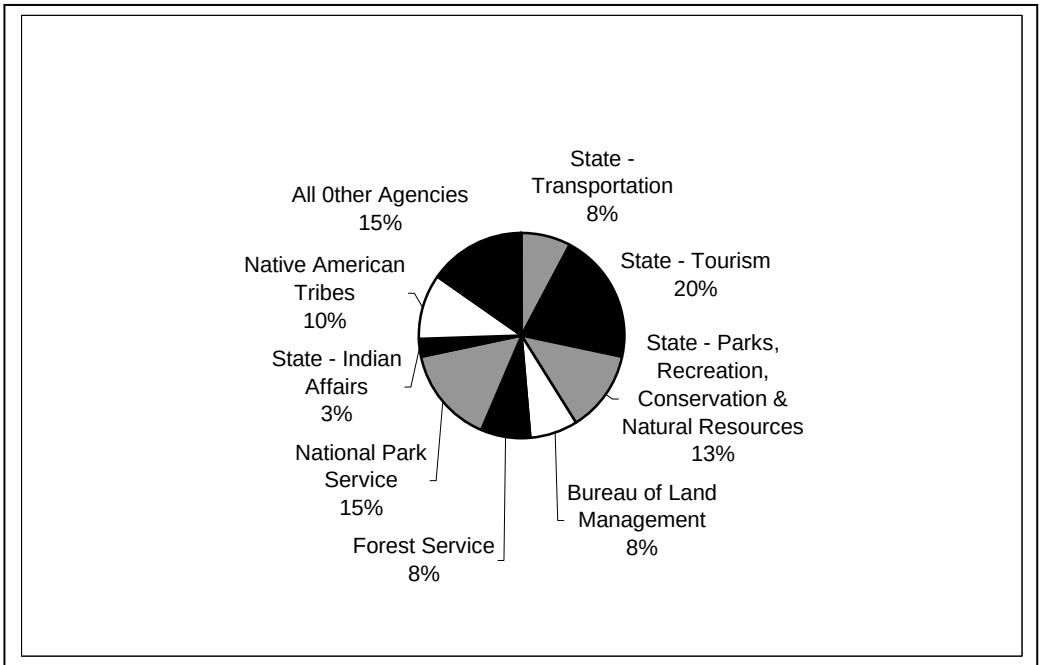


Figure 6: Distribution of Stakeholders

Interview questions covered the following topic areas:

- **Mission:** The mission and function of the agency.
- **Marketing or Strategic Plan**: Whether the agency had a marketing or strategic plan.
- **Geographic Area**: The agency's perspective on the geographic definition of the I-15 Smart Tourist Corridor region

- **Public & Private Partners:** An overview of the partnerships the agency has for the development and dissemination of information

- **Customer Issues**: The primary issues the agency faces in understanding and responding to their customers.

- **General Statewide, Regional or Local Issues:** The general issues facing the agency from a statewide, regional and/or local perspective.

- **Visitor Information:** The type of information currently provided to visitors and the communications mechanism.

- **Gaps In Visitor Information:** The agency's perspective of gaps in the information they currently are providing and related gaps or issues in the delivery of the information to the visitor.

- **Attraction Promotion**: The scope and degree of tourism information provided by the agency.

- **Priority Needs:** The major issues or needs facing the agency today from an inclusive perspective.

- **Transportation Challenges:** The primary transportation issues or needs from the perspective of the tourism and recreation agencies.

- **Information Systems:** A generalized overview of the current information systems and information management employed by the agency.

The information derived from the stakeholder interviews was used to identify the highest priority needs and develop advanced technology concepts for an integrated travel and tourism information system to address them. Additional interviews and meetings were conducted to review, refine and prioritize the preliminary concepts. Since a large number of stakeholders represented tourism agencies and recreation facilities, the priority information issues identified here tend to reflect the needs of those agencies more than others.

In an effort to understand the issues and needs of the private sector and identify partnership opportunities, individual and group interviews were conducted. The private sector interviews were conducted during the period of June through July 2003 through telephone interviews and group meetings. Individual telephone interviews were conducted in Montana and Idaho, and two discussion group meetings were conducted in Utah and Arizona. Interviews for Nevada were conducted as part of a Las Vegas outreach workshop. A complete list of private sector organizations interviewed is included in Table 3.

**Table 3: Private Sector Outreach**

| Organizations |
|---|
| Montana |
| Gold West Country |
| Russell Country |
| Butte Chamber of Commerce |
| Great Falls Chamber of Commerce |
| Helena Convention & Visitors Bureau |
| Idaho |
| Lava Hot Springs Foundation |
| Pocatello Chamber of Commerce - Convention & Visitors Bureau |
| Rexburg Chamber of Commerce |
| Sun Valley Company |
| Yellowstone Bear World |
| Nevada |
| Las Vegas Convention and Visitors Authority |
| Utah |
| Utah Travel Council |
| Arizona |
| Arizona Automobile Association |
| Wickenburg Chamber of Commerce |
| Madden Media |
| Metropolitan Tucson Convention and Visitors Bureau |
| Sedona Chamber of Commerce |
| Sierra Vista Convention and Visitors Bureau |
| Miscellaneous |
| In-Vehicle Telemetric |
| Telcordia |
| Qualcomm |

## 3.2 Summary of Outreach Findings

Most of the initial interviews were conducted with public sector agencies. Their information needs were categorized into seven general challenges:

- Providing adequate personal safety information
- Expanding access to visitor information
- Developing and maintaining the tourism infrastructure
- Providing transportation information and options
- Access and use of public lands
- Managing visitor expectations
- Upgrading and integrating technology and communications

The individual information needs were then studied and prioritized. The highest ranked public sector needs, based on the number of times the stakeholders discussed them were:

1. Developing multi-language information materials
2. Expanding facility specific/facility use information
3. Conducting consumer research on changing visitor visitation patterns and activities
4. Expanding facility use advisories
5. Expanding facility use personal safety advisories.

Additional interviews were conducted with private sector agencies to compare public and private needs. As shown in Table 4, public and private sector priorities are relatively consistent. Differences in their priorities are often attributable to the mission of the agencies; for example, private sector agencies do not own or manage public lands, so would not view “Access and Use of Public Lands” as a priority.

**Table 4: Prioritization of Public and Private Sector Needs**

| Issues and Opportunities | Sector | |
|---|---|---|
| | Private | Public |
| **1. Providing adequate personal safety information.** | | |
| Facility Use Advisories | | X |
| Facility Use Personal Safety | | X |
| Travel Advisories | | X |
| Congestion | | X |
| Incidents | | X |
| Construction | | X |
| Parking | | X |
| Multi-Modal Options | X | X |
| **2. Expanding access to visitor information.** | | |
| Multi-Language | X | X |
| Facility Specific/Facility Use | | X |
| Interpretative Materials | | X |
| Regionalized Information | X | X |
| Pre-Trip Information Delivery | X | X |
| En-Route Information Delivery | X | X |
| Congestion and Parking | | X |
| **3. Developing and maintaining the tourism economy & tourism infrastructure.** | | |
| Consumer/Visitor Research | X | X |
| Tourism Infrastructure Development | | X |
| Changing Activity Patterns | X | X |
| Changing Visitation Patterns | X | X |
| Transportation Infrastructure Maintenance | X | X |
| Tourism Program Development | | X |
| **4. Providing transportation information and options.** | | |
| Directional Signage | X | X |
| Multi-Modal Options | X | X |
| Transportation Infrastructure Maintenance | X | X |
| Travel Advisories | X | X |
| Parking | | X |
| **5. Access and use of public lands.** | | |
| Use Rules and Regulations | | X |
| Off-Highway Vehicle Regulations | | X |
| Access | | X |
| Stewardship | | X |
| **6. Managing visitor expectations.** | | |
| Facility Multi-Use | | X |
| Multi-Language | X | X |
| Upgrading and integrating technology & communications. | | |
| Real Time Information | X | X |

Another significant finding from the stakeholder interviews was that the priority information needs are linked through a variety of relationships. Since many of the information needs are applicable to multiple categories (or "challenges"), addressing a single information issue can help an agency meet multiple challenges. For example, if a public lands agency develops a technology solution that allows it to disseminate real-time travel advisories, it will have the capability to address at least three challenges: up-grading its communication system, providing enhanced personal safety information, and facilitating access of public lands.

The cross-cutting nature of information issues also demonstrates the importance of information sharing and integration. Developing an innovative solution to an information need can address

the challenges of multiple agencies, as well as reach a much larger segment of the public, if the data can be incorporated into an integrated, accessible system. This was the guiding vision behind the Smart Tourist Concept presented in Section 5: Strategic Initiatives.

# 4. CORRIDOR OPERATIONS

## 4.1 Purpose

Corridor Operations are those activities that, taken together, make possible the safe and efficient movement of people and goods. The purpose of this chapter is to describe the means by which accurate and timely information can be collected, processed and shared by public and private agencies, and then distributed to the traveling public in a way that will enhance safety and provide convenient access to tourism information. The following aspects of Corridor operations have each described and analyzed:

- Information Exchange
- Incident Management
- Communications / Telematics

First, however, it is necessary to briefly examine information needs as determined by tourism agencies and other Corridor stakeholders.

## 4.2 Traveler Information Needs

The information needs of Corridor travelers include pre-trip, en-route and arrival information regarding specific travel destinations as well as information about changing travel conditions. Needs vary according to travelers' objectives for the journey, as well as to varying conditions along the route. For example, while some travelers will undoubtedly have a fixed destination in mind, others will search for attractive destinations of opportunity once they begin their trip. Information availability must accommodate and be responsive to these changing needs.

The information needs of Corridor travelers can be satisfied either actively or passively. That is, travelers may make inquiries to obtain information or, alternatively, information may be provided to them without any action on their part. For example, travelers may wish to determine the availability of specific amenities at several alternative destinations before making a final decision. Pre-trip or en-route information most likely will be obtained from the public or private venue under consideration. In this case travelers have pro-actively initiated the information "search." However, travelers often don't know when a planned route to the selected destination has been closed due to e.g., a serious accident. Providing this information to travelers so that they can make informed decisions regarding alternative routing, or otherwise modify their plans, must be initiated by the public agency responsible for operating the roadway.

Based on outreach activities described earlier, travel and tourism needs identified by stakeholders are show in Table 5.

## Table 5: Travel and Tourism Information Needs

| Challenges | Information Needs | Pre-Trip | Along-the-Way | Approaching Destination | Destination Area |
|---|---|---|---|---|---|
| **Safety** | | | | | |
| | Facility Use Advisories | X | | | X |
| | Real Time | | | X | X |
| | Facility Use Personal Safety | X | | | X |
| | Real Time | | | X | X |
| | Travel Advisories | X | X | X | X |
| | Congestion | | X | X | X |
| | Incidents | | X | X | X |
| | Construction | X | X | X | X |
| | Parking | | | X | X |
| | Multi-Modal Options | X | | X | X |
| **Visitor Information** | | | | | |
| | Multi-Language | X | X | X | X |
| | Facility Specific/Facility Use | X | | | X |
| | Interpretative Materials | X | | | X |
| | Regionalized Tourism Information | X | X | X | X |
| | Pre-Trip Info Delivery | X | | | |
| | En-Route Info Deliver | X | X | | |
| | Congestion & Parking | | X | X | |
| **Tourism Infrastructure** | | | | | |
| | Consumer Research | X | X | X | X |
| | Infrastructure Development | | | X | |
| | Changing Activity Patterns | X | X | X | X |
| | Changing Visitation Patterns | | | X | |
| | Infrastructure Maintenance | N/A | N/A | N/A | N/A |
| | Program Development | | | X | |
| **Transportation** | | | | | |
| | Signage - Directional | X | X | X | |
| | Multi-Modal | X | | | X |
| | Infrastructure Maintenance | N/A | N/A | N/A | N/A |
| | Travel Advisories | X | X | X | X |
| | Parking | | X | X | |
| **Public Lands** | | | | | |
| | Use Rules and Regulations | X | | | X |
| | Off-Highway Vehicle Regulations | X | | | X |
| | Access | X | | | X |
| | Stewardship | | | X | |
| **Managing Visitor Expectations** | | | | | |
| | Facility Multi-Use | X | | | X |
| | Multi-Language | X | X | X | X |
| **Technology & Communications** | | | | | |
| | Real Time Communications | X | X | X | X |

## 4.3 Information Exchange

Existing Information Exchange in the CANAMEX Corridor, although effective within and around urban areas is, in general, inadequate to meet the needs of, and provide optimum benefits to, Corridor travelers particularly in rural areas. Tourism information, e.g., en-route and in the vicinity of destinations, usually is not available in real time, frequently not available at all in rural areas, and suffers from inadequate resources and the slow emergence and adoption of new technologies.

While the states have made significant investments in Intelligent Transportation Infrastructure with which to provide important roadway information, more is warranted as evidenced by the great amount of ITS components planned and programmed for future deployment.

Many opportunities exist to improve information exchange. For example, providing "seamless" information to travelers is just now beginning as a part of institutional coordination. However, it will require significant investment and institutional "buy-in" to improve information coordination and to reap the available benefits for travelers. Effective information exchange depends a great deal among the CANAMEX states and among members of the tourism

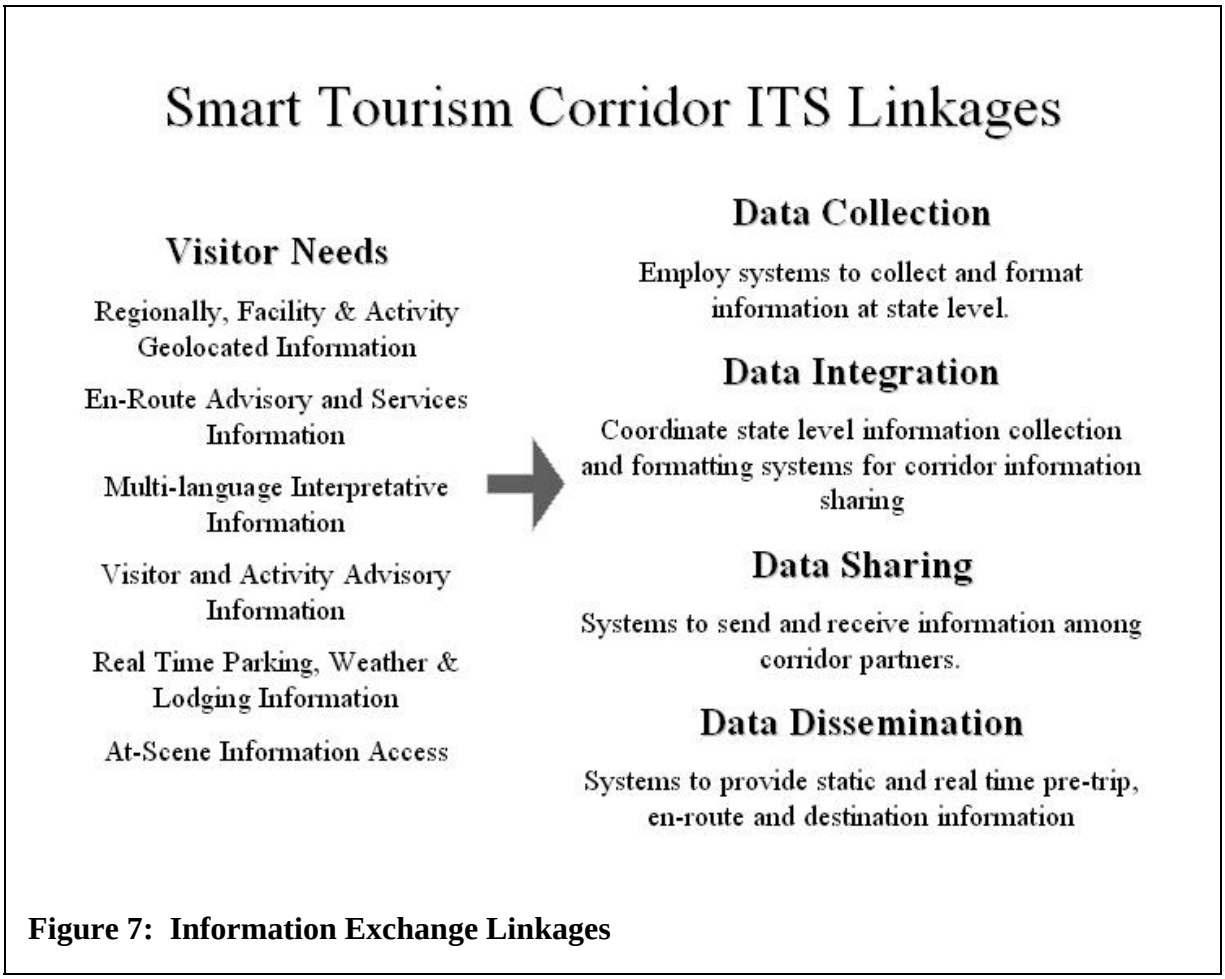


**Figure 7: Information Exchange Linkages**

community.

There are many means by which Corridor information may be exchanged. All travelers within the CANAMEX Corridor (tourists, freight carriers, and those people using it for every day travel) want to avail themselves of up-to-date and accurate information. While some travelers obtain needed information before they begin their journey, others do not. However, virtually all travelers benefit from en-route information, whether it is related to tourism and recreation, or to traffic conditions and weather along the way and / or at their destinations. Selected information exchange linkages for segments of the journey are shown in Figure 7.

Information being exchanged within the Corridor is primarily limited to travel safety and remote, automated collection of travel-related data such as weather and road surface conditions, roadway incidents, etc. Automated acquisition and decimation of tourism related information is spotty and is primarily via the Internet where tourism venues and agencies may post amenities, costs, availability of accommodations, etc. on their websites. In addition, tourism information is available at Visitor Information Centers throughout the Corridor.

Distribution of travel information frequently is through Highway Advisory Radio, Dynamic Message Signs, National 511, and other ITS devices.

Chapter 5 describes Strategic Initiatives and concepts, which when adopted and implemented, will greatly expand the ability to acquire, process and distribute tourism and travel information throughout the Corridor. In addition, recommendations contained in the Technical Memoranda preceding this Final Report describe additional specific actions that would significantly improve Corridor information exchange.

ITS components are the essential tools for collection of travel, weather, road surface condition and a host of other operational data that may become an impediment to the traveler. They are the primary, although not exclusive, means by which transportation agencies communicate with travelers in the CANAMEX Corridor. Collection and processing of this information by public agencies enable officials to determine what information must be provided to Corridor travelers, as well as how and when it becomes available.

ITS components within the Corridor include:

- Highway Advisory Radio,
- Highway Closure and Restriction System,
- Closed Circuit Television,
- Dynamic Message Signs,
- Road Weather Information Systems,
- Traffic Monitoring Systems,
- Nationwide Traveler Information Number 511, and
- Transportation Management Centers

**Figure 8: Traffic Management Center**

Virtually all ITS components play a critical role in determining conditions that might compromise Corridor travel safety and provide important and appropriate information to travelers.

Each State ITS Coordinator inventoried ITS components in the Corridor. Existing components and those planned and/or programmed for deployment were plotted in a GIS format on base maps of each State. Shown below in Figure 9 is the GIS map for Idaho showing existing and planned ITS components.

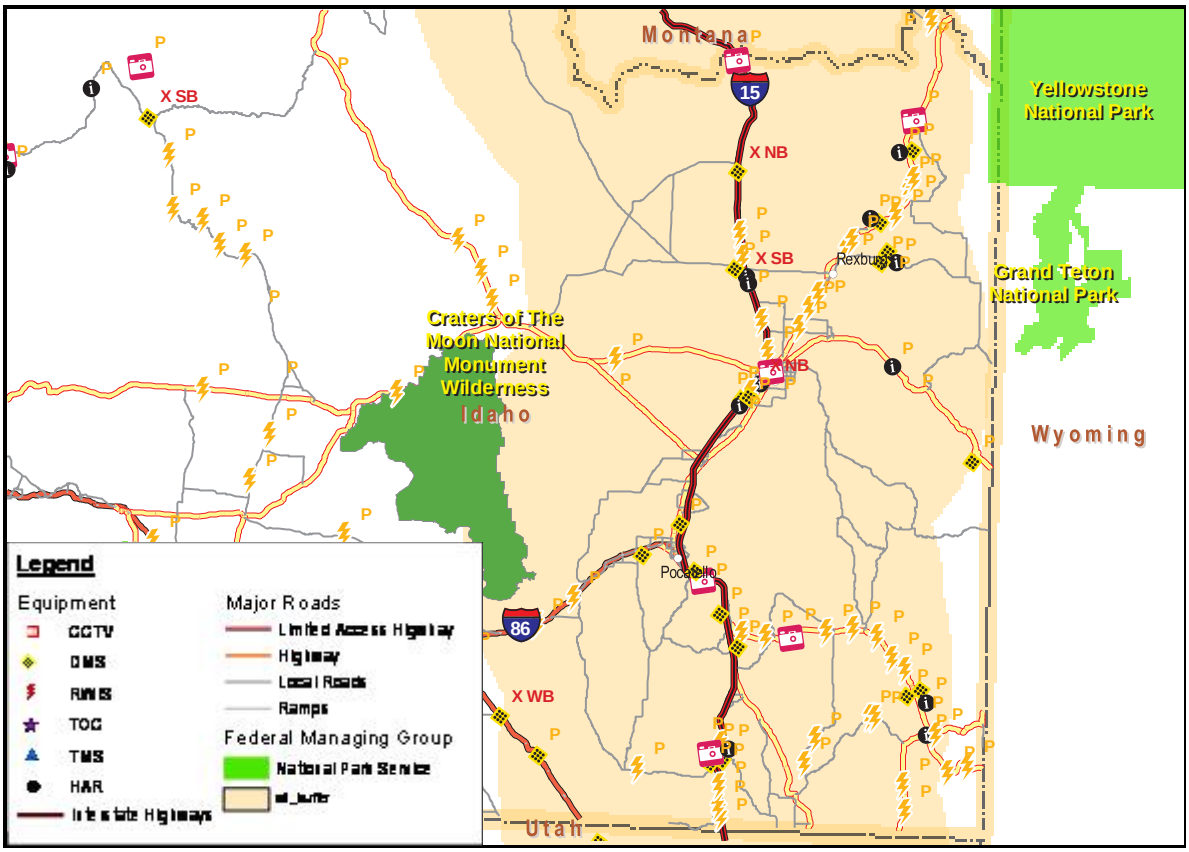


**Figure 9: Existing and Planned ITS components in Idaho.**

## 4.4 Incident Management

An incident is any planned or unplanned event resulting in disruption of normal travel during a particular time and at a specific location along the transportation network.

Unplanned incidents occur spontaneously along the transportation network and often threaten the lives of both the public and emergency service providers. However, tourists, long-haul freight carriers and regional residents using the Corridor for everyday travel as well as other Corridor travelers must also be made aware of planned incidents, such as maintenance and construction activities so that they may choose to adjust their travel plans as warranted. These latter incidents pose more of an inconvenience to travelers and usually do not amount to a threat to safety.

Few Corridor functions, if any, are of greater importance than Incident Management (IM). When it is performed "right," it is a significant enhancement to traveler safety. When it is done "wrong" the results can be disastrous for law enforcement officers, as well as other responders, at incident scenes. In addition, there is a growing number of wrongful death lawsuits filed against incident commanders and government agencies alleging mismanagement of incident sites.


**Figure 10: Roadway Incident**

Most of the CANAMEX Corridor is located in rural areas of the five states. Incident management in any rural area is problematic. Mountainous terrain compromises cell phone coverage to some urban areas; some rural highways have little or no coverage. In fact, some areas of the Corridor are without wireless coverage. Frequently, motorists reporting accidents or other unplanned incidents requiring emergency response do not know their own location. Moreover, once an incident is located, responders need much more time to reach the scene than their urban counterparts. Preliminary research by WTI indicates that the time to learn of an accident is two to three times longer where no wireless coverage exists. The response times in remote sections of the Corridor often are measured in hours rather than minutes.

Rural Incident Management usually is organized at the county or regional level of government. The most important part of IM is the ability to communicate effectively. Ironically, first responders in rural areas view this as the most under funded element and serious deficiency of IM. As with Information Exchange, effective Incident Management also depends a great deal on institutional coordination.

Particularly at the local level, current Incident Management practices are sometimes fraught with correctable problems, such as inadequate communication, inadequate training, traffic control and inattention to passing traffic. State Incident Management, on the other hand, generally is well organized, and adequate resources exist within the Corridor. Both Arizona and Idaho have statewide Incident Management plans. Utah, Montana and Nevada have disaster plans that include some Incident Management elements.

Among the travel and tourism information needs identified by stakeholders are: travel safety advisories, availability of real time information, personal safety, and notice of en-route incidents and en-route construction and maintenance.

Numerous recommendations for improving Incident Management practices are contained in Technical Memorandum 2.

## 4.5 Telematics

Telecommunications is the science and technology of transmitting information over great distances in the form of electromagnetic signals. Telematics is the science of long-distance transmission of computerized information; in other words it is the intersection of telecommunications and computing. The importance of telematics throughout the Corridor cannot be overstated. It is the foundation upon which rests the entire concept of information exchange and incident management. Moreover, the primary objectives of enhancing safety and convenience of tourists, freight carriers, local residents and other Corridor travelers cannot be attained without a robust applied telematics system. Information Exchange and Incident Management are dependent on an effective telecommunications and telematics system.

Some of the principal travel and tourism needs as expressed by tourism agencies and individuals as part of Traveler and Tourism Outreach are listed below. The ability of agencies to be responsive to these expressed needs is entirely dependent on telematics.

- Information regarding facility use, regionalized tourism information
- Pre-trip information delivery, en-route information delivery
- Information about congestion and parking at tourism venues
- Rules and regulations at venues
- Access to public lands
- The ability to obtain real-time information
- Public / Private Partnerships
- Availability of technological devices
- Provision of information directly to travelers and other institutional information outlets

Currently wire line is the most pervasive, effective and reliable means by which to communicate within the CANAMEX Corridor. However, this method of communication often depends upon the initiative of tourists (and other travelers) that they sometimes find time-consuming and inconvenient. As a result, information that would benefit tourists' travel experience often is difficult to obtain. Wireless communication, however, has the potential to become the dominant form over the next decade.

Effective wireless communication in the Corridor is sporadic uneven due to mountainous terrain and business decisions by carriers not to invest in these areas. Telecommunications companies are reluctant to construct repeater towers in rural areas due to their substantial costs in relation to revenues. In addition, local residents often oppose repeater towers due to their ungainly appearance on the landscape. Thus, mountainous terrain and lack of adequate repeater towers combine to make cell phone effectiveness in the Corridor very problematic. There are extensive "gaps" in cell phone coverage. Satellite phones, on the other hand, are almost one hundred percent effective in virtually any terrain, with the possible exception of canyons. Currently, the

Corridor's wireless communication focus is primarily use of voice communication, often in emergency situations.

Fortunately, the Federal Communications Commission has mandated that all telecommunication companies assure their products can support wireless E911 (Enhanced 911) by 2005. Satellite telephones, as costs drop and business models are adjusted, will most likely proliferate in the market and wireless E911, accessible through satellite phones, will gradually replace many of today's cell phones. Thus, Corridor travelers will benefit greatly with regard to their safety and ready access to tourism and related venues. In addition to reporting incidents that can be immediately and accurately located, tourists will be able to obtain "concierge" services en-route to their destinations. For example, availability of accommodations, prices, directions to venues, amenities, rules and regulation, parking, etc. will be available on demand. The outlook for significantly improved wireless communication in the Corridor is very promising.

## 4.6 Institutional Coordination

As suggested earlier, Corridor travelers seldom care which state they are traveling in when seeking (or wishing to provide) information. As a result, DMS and other electronic media in one state should provide important information about conditions affecting travel at least in abutting states and, preferably, in all Corridor states. Moreover, information that may affect traveler decisions from outside the Corridor should also be available. Therefore, it is incumbent on CANAMEX states to ensure that operating policies, protocols and communication systems are in place so that information available to tourists and other travelers is "seamless." Institutional coordination and operating systems integration are essential to provision of truly comprehensive information.

Examples of information states should exchange include, incidents, weather conditions, roadway surface condition, travel delays, DMS messages, changes to 511 messages, and so forth. Also, it is important to formally document agreements among the states in Intergovernmental Agreements.

Many opportunities exist to improve information exchange. For example, the provision of "seamless" information to travelers is just now beginning as a part of institutional coordination. However, it will require significant investment and institutional "buy-in" to improve information coordination and to reap the available benefits for travelers.

## 4.7 Recommended Actions

Clearly, there exist deficiencies in the operational capability within the Corridor. Listed below are the primary recommendations developed for addressing them. TM 2 discusses these recommendations in greater detail.

### 4.7.1 Information Exchange

- The type of information exchanged via the national information number, 511, should be significantly broadened within the limits of each state's statutes and policies.
- Protocols for assuring that Corridor information is compatible and seamless among the CANAMEX states should be developed.

- States and other agencies should develop information exchange procedures that foster an ongoing working relationship between Departments of Transportation and state/private sector tourism agencies.

### 4.7.2 Incident Management

- Corridor states without a Statewide Incident Management Plan should develop one. Proactive and frequent interagency Incident Response training should be realistic and apropos to situations usually encountered by first responders. In addition, each state should partner with local responders to increase coordination and provide training when warranted.

- Agreements among agencies should be formal and documented thus, limiting exposure to litigation.

- All maintenance and operating staff as well as emergency responders should receive training in how to set up traffic control zones in accordance with the Manual of Uniform Traffic Control Devices.

### 4.7.3 Telematics and Telecommunications

- A project should be undertaken to determine the limits and quality of the region's telecommunications infrastructure.

- Additional funds should allocated to capital, operating and maintenance costs for improving communication components of ITS.

- CANAMEX states' policies and statutes that may constrain the allocation of funds for improving telematics, and entering into partnerships with the private sector, should be modified.

# 5. SMART TOURIST VISION AND STRATEGIC INITIATIVES

This chapter describes the preliminary vision and initial concepts developed for the Smart Tourist Corridor. It then presents the final strategic initiatives that resulted from the research and outreach process.

## 5.1 Smart Tourist Vision

The Smart Tourist vision (or concept) was a framework for addressing the challenges and priority needs identified through the stakeholder interview process. It is not intended to be project specific, but rather to present an approach that affords transportation agencies and tourism organizations the ability to provide and receive information, manage facilities and services, and meet traveler needs beyond their own jurisdictional borders. *At the heart of this vision is creating the ability for existing databases to communicate on a multi-state basis, so that all travelers have easy access to tourism information and real-time advisories (CANAMEX Gateway: multi-portal website), leading to improved traveler experiences and increased tourism activity.*

From the stakeholder interviews, key characteristics of the framework were identified. From these, it became possible to identify the inter-relationship between the various needs (Figure 11) and the vision (Figure 12), and then create the concept for an Integrated Travel and Tourism Information System (ITTIS).

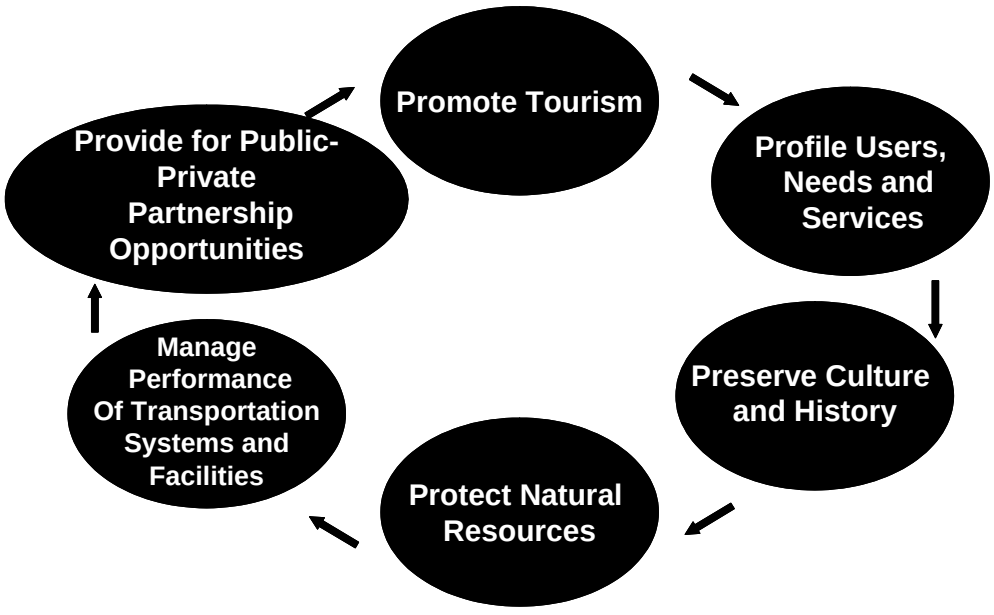


**Figure 11: Inter-relationship of Goals**

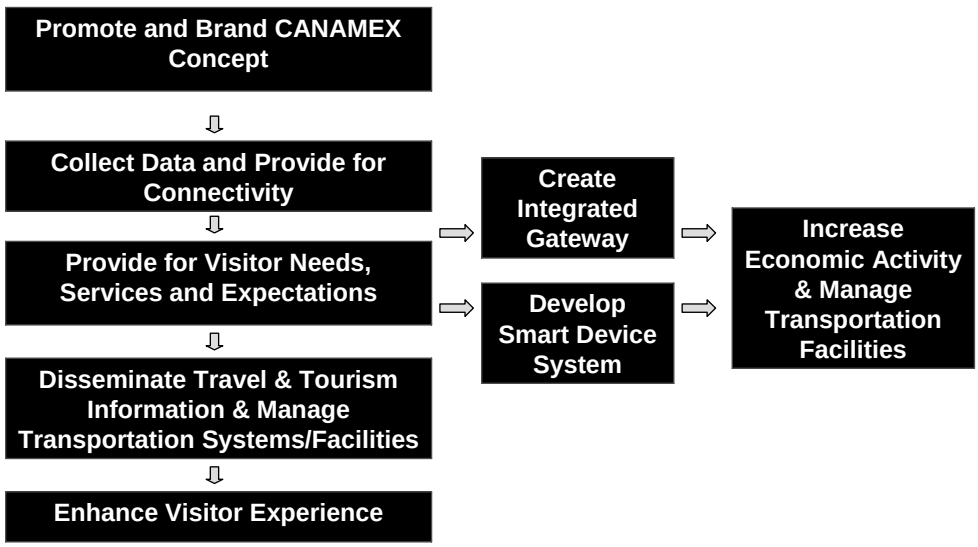


**Figure 12: Vision Outcome**

### 5.1.1 Institutional Integration

Through years of experience, public and private agencies in the United States have learned that they need a strong institutional foundation and positive relationship with their partners to successfully implement and operate technological improvements (Figure 13). In planning for the implementation of transportation technology, it is critical to recognize that technology can be the enabler that allows diverse agencies to work together.

Communication and coordination between tourism organizations and the creation of a catalyst to ensure cooperation were commonly identified needs throughout the outreach activities conducted during this project. To address these needs the Tourism Network concept was conceived. A cohesive mechanism to facilitate cooperation between tourism organizations and departments of transportation and achieve the corridor-wide vision, the Tourism Network would:

- Provide an organizational structure for addressing institutional issues,
- Develop a branding program and marketing plan,
- Identify and manage data to be fused to allow for seamless information,
- Address international visitor needs by determining language requirements for the CANAMEX Gateway/Multi-portal website,
- Discuss changing visitation, recreation activity, demographic and trip patterns,
- Establish monitoring and reservation system requirements to allow for demand forecasts to be made on attractions and services, and

- Determine the level of discounts that could be created to modify visitor travel behavior.

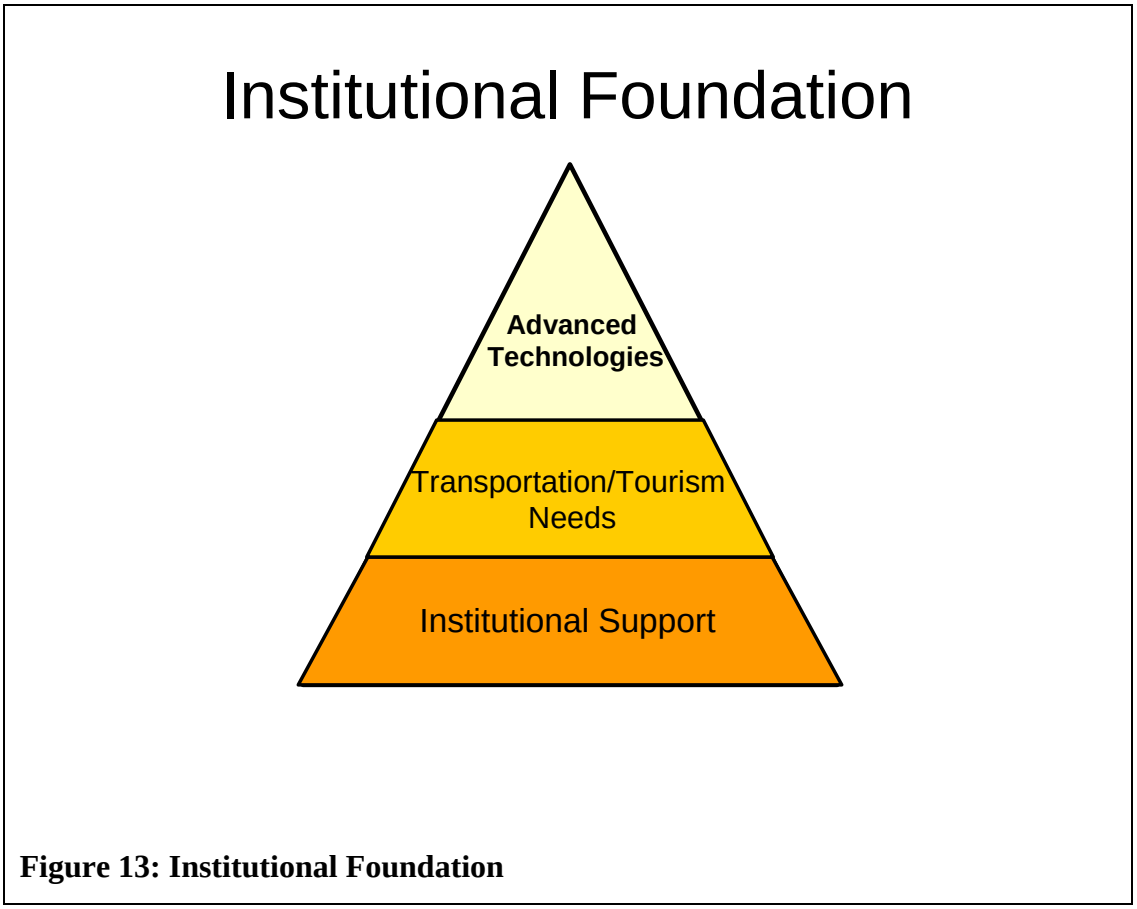


**Figure 13: Institutional Foundation**

### 5.1.2 Integrated Travel and Tourism Information System

From the vision, the research team conceived a preliminary concept for an Integrated Travel and Tourism Information System (ITTIS). The ITTIS would create a gateway to receive and disseminate information, deploy smart devices and build an infrastructure to assist operating agencies with managing facilities and traveler demands to ultimately generate economic activity. The system would be composed of five modules that could be deployed in phases and leverage existing transportation and tourism initiatives. The modules would also be flexible enough to incorporate future Corridor traveler and agency needs. The initial components were:

- **CANAMEX Gateway/Multi-portal website**: a Corridor-wide portal that links multiple agencies and organizations, and provides the travelers with multi-language information regarding attractions, services, and regulations to enhance their experience. It also creates a database platform for in-vehicle systems.
- **Tourist Information Center**: allows visitors to obtain real-time travel and tourism information about road conditions, attractions, lodging and parking availability, cultural and environmental stewardship education information, all through various devices.
- **Smart Devices and Financial Settlement Center**: provides visitors with electronic payment cards and smart devices managed by a central Financial Settlement Center and

coordinated with the Tourism Network to establish discounts with merchants and device holders. The devices allow for the collection of consumer data, facilitate information dissemination, and can be used as a catalyst to support transportation demand alternatives.

- **Traffic Management Center**: collects transportation operations data and provides information through state road reporting systems to Visitor Gateway/ Clearinghouse. Information is also disseminated to travelers through a variety of en route advanced technologies.
- **Multi-modal Center**: a one-stop shop for multi-modal transportation alternatives (bus, air, rail) that horizontally integrates information and educates and informs travelers of availability.

The long-term vision or concept envisioned the integration of the five modules (Figure 14). The additional component, the Tourism Network, would require a formal institutional partnership among agencies, as explained previously.

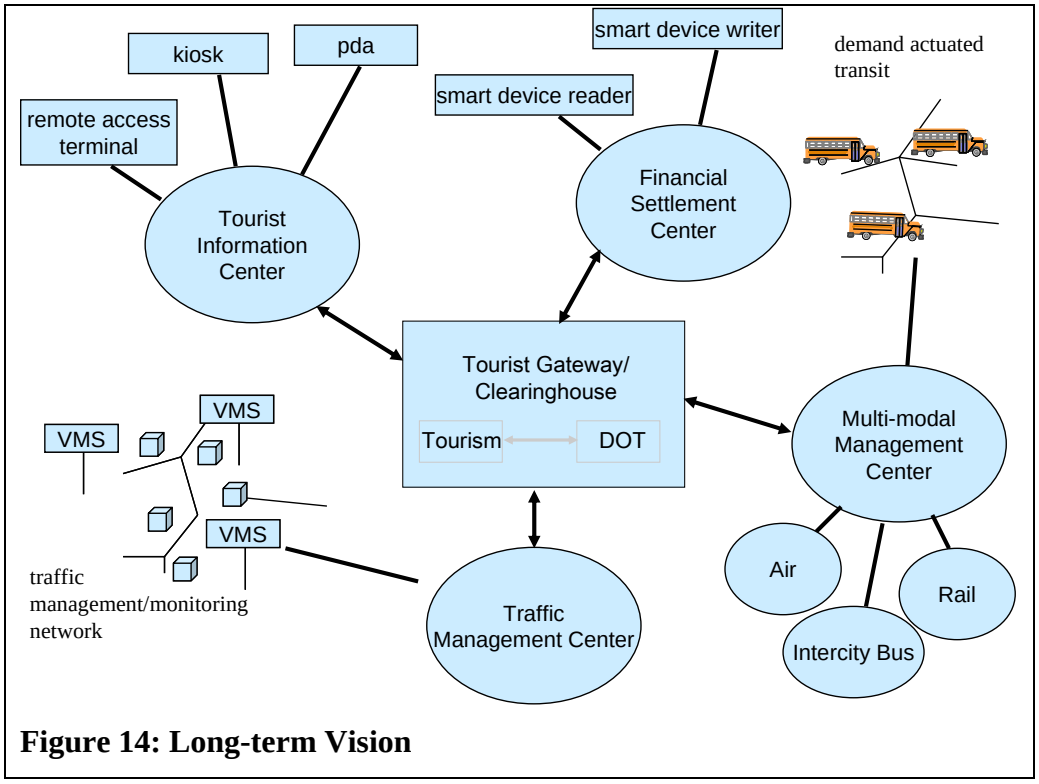


**Figure 14: Long-term Vision**

Based on the outreach to the private sector and their feedback on the CANAMEX Smart Tourist Initiative vision of an Integrated Travel and Tourism System at the Las Vegas workshop, the following priorities were ascertained for each module. The outreach conducted during these meetings was intended to, in part, serve as a critique of a "strawman" vision that could later be refined and detailed.

Based on the outreach activities these priorities there was, highest support from the private sector for the Tourism Network, Visitor Gateway/ Clearinghouse, and Tourist Information Center, and moderate support for the Multi-modal Center (Table 6). It was not surprising that there was

lowest support for the Traffic Management Center in that the private sector may not perceive that as a role for them.

**Table 6: Implementation Prioritization**

| Integrated Travel and Tourism Information System Module Prioritizing | | |
|---|---|---|
| | **Private** | **Public** |
| Tourism Network | High | Low |
| CANAMEX Gateway/Website & Clearinghouse | High | High |
| Tourist Information Center | High | High |
| Smart Devices and Financial Settlement Center | Low | Moderate |
| Traffic Management Center | Low | Moderate |
| Multi-Modal Center | Moderate | High |

Based on preliminary review of the concepts by stakeholders, public and private agencies gave the greatest support to the development of the Visitor Gateway Clearinghouse, Tourism Network and the Tourist Information Center. As each of these concepts are key elements of a coordinated and integrated information system, it is not surprising that both public and private sector organizations selected these as their highest priorities.

The modules of the ITTIS were developed during the first phase of this project (TM 1). Following further research, stakeholder input, and the completion of TM 2 and TM 3, the vision and these modules were refined, resulting in the four strategic initiatives detailed below. Table 7 shows how the preliminary modules compare with the Strategic Initiatives.

**Table 7: Comparison of Preliminary Concept Modules to Strategic Initiatives**

| ITTIS MODULES | STRATEGIC INITIATIVES |
|---|---|
| • Tourism Network<br>• Visitor Gateway/Clearinghouse<br>• Tourist Information Center<br>• Smart Devices & Financial Settlement Center<br>• Traffic Management Center<br>• Multi-Modal Center | • CANAMEX Gateway and Multi-state Data Gathering/Sharing System<br>• CANAMEX Communications<br>• Smart Devices Development<br>• Safety/Security and Operations |

In general, most of the elements of the Tourism Network, Visitor Gateway and Tourist Information Center have been folded into the CANAMEX Gateway: Multi-portal website and Multi-state Data Gathering/Sharing System. The Smart Devices and Financial Settlement Center is now the Smart Devices Development initiative, and elements of the Traffic Management Center are contained in both the CANAMEX Communications initiative and the Safety/Security and Operations initiative.

## 5.2 Summary of Strategic Initiatives for the Smart Tourist Corridor

Based on all of the meetings, research, analysis, and stakeholder input to this study, we have identified four strategic initiatives that comprise the Smart Tourist Corridor program. These strategic initiatives are:

1. Create the CANAMEX Gateway, which includes a Multi-portal Website and a Multi-state Data Gathering/Sharing System
2. Develop the CANAMEX Communications Systems
3. Promote Private Sector Smart Devices Development Opportunities
4. Bolster Safety/Security and Operations in the Corridor

The four strategic initiatives are all linked together and interdependent. Many of the initiatives cannot be successful implemented without the completion of others.

Table 8 below shows how these initiatives of the Smart Tourist Corridor address the initial challenges identified in the stakeholder outreach process. The table shows where the initiative has a primary role in addressing the challenge (shown as a "P"), a secondary role in addressing the challenge (shown as an "S"), or no role (shown as a blank).

**Table 8: Relationship of Tourism Outreach Findings to Recommended Smart Tourism Corridor Program**

| Smart Tourist Corridor Initiatives | CANAMEX Gateway and Data Gathering /Sharing System | CANAMEX Communications | Private Sector Smart Devices | Safety/Security and Operations |
|---|---|---|---|---|
| Outreach Findings | | | | |
| Providing personal safety information | **P** | **P** | **P** | **P** |
| Expanding access to visitor information | **P** | **P** | **P** | **S** |
| Developing and maintaining the tourism economy and tourism infrastructure | **P** | **S** | **S** | |
| Providing transportation information and options | **P** | **P** | **P** | **S** |
| Providing information on access and use of public lands | **P** | **S** | **S** | |
| Managing visitor expectations | **P** | **S** | **S** | |
| Upgrading and integrating technology and communications | **P** | **P** | **P** | **P** |

The four strategic initiatives represent a **bold, unique, innovative and feasible** Smart Tourist Corridor program. For example, the creation of a computerized data storage and sharing system (data warehouse) is a simple and feasible concept. However, the scope of the data warehouse, requiring a multi-state partnership, including multiple agencies within each state and federal agencies, is bold and unique. Nowhere in the United States have multiple agencies developed such a concept.

Each of the initiatives is described below. For more detail on the initiatives, please refer to TM 3.

### 5.2.1 CANAMEX Gateway: Multi-portal Website and Multi-state Data Gathering/Sharing System

The multi-state data gathering/sharing system and CANAMEX Gateway website will form the heart of the Smart Tourist Corridor concept. It will also create the basis for private sector companies to provide information services in the corridor.

The main component of the data gathering/sharing system will be a data warehouse (Figure 15) that will function as the central repository for all corridor related data. This data will include both transportation data (such as construction activities, weather, and real-time traffic conditions) and tourism data (such as services, locations, and special events).

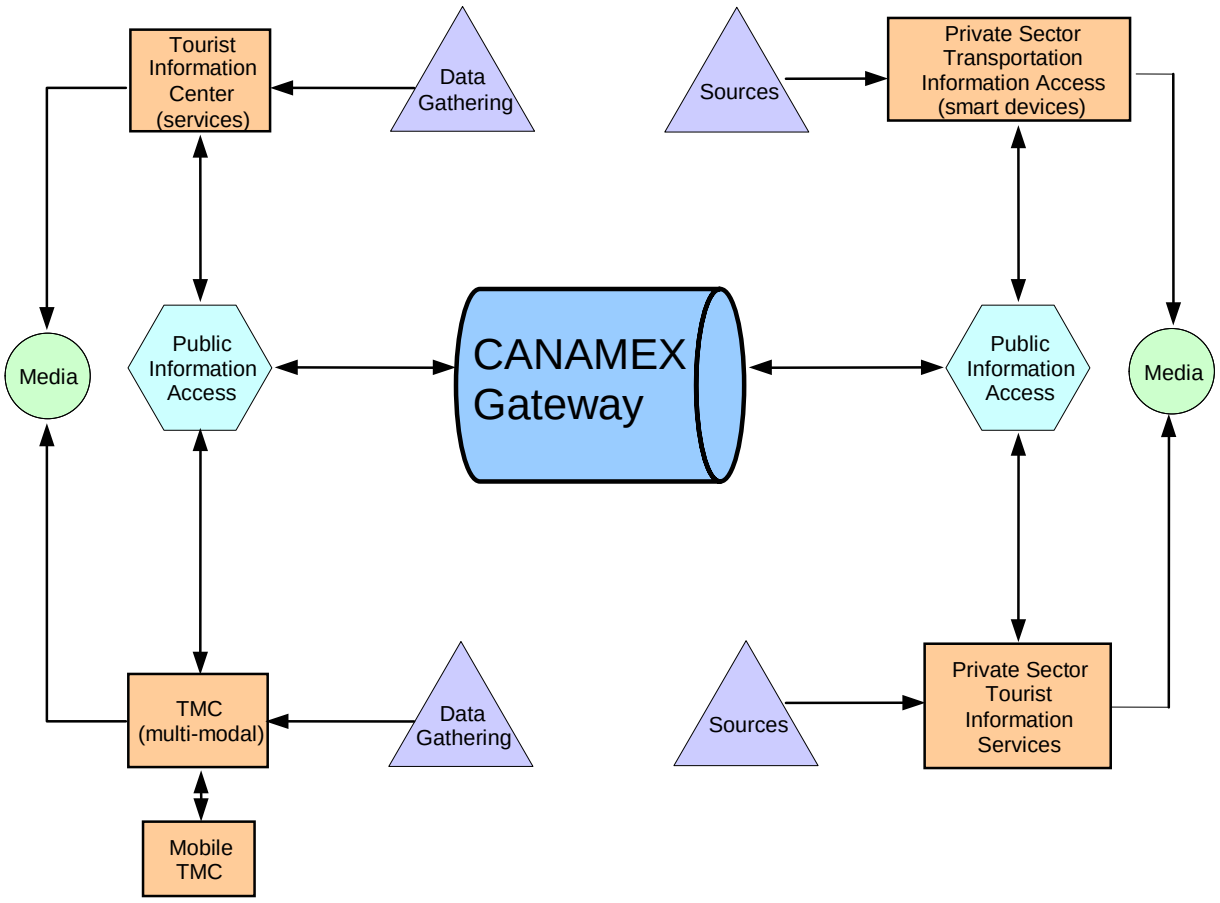


**Figure 15: CANAMEX Gateway Data Flows**

The data warehouse is a critical component to the success of the Smart Tourist Corridor concept. The data warehouse will be the collection point of data from multiple states, and multiple agencies within each of the states. The data warehouse will gather, process, organize, archive,

and distribute the data to appropriate recipients. It is imperative that the data be accurate, reliable, and real-time for the success of the project.

The purpose of the real-time data gathering is to enhance the amount and accuracy of transportation data in the corridor, especially in rural areas. Two methods to collect additional data include traditional methods by state DOT's, and innovative methods through public/private partnerships.

The traditional methods include further deployment of roadway weather information systems (RWIS), traffic monitoring stations (TMS), and closed circuit television cameras (CCTV). The innovative methods include several options, as follows:

- Partner with the private sector to deploy additional traditional data collection devices in the corridor, in both urban areas and around major attractions.
- Partner with private sector organizations that have access to probe vehicle data in the corridor. Examples include Qualcomm, which collects data from the trucking industry, and telematics companies such as Onstar.
- Use DOT and other state agency vehicles as probes, assuming deployment of automated vehicle location systems on fleet vehicles.

The CANAMEX Gateway will consist of a website that provides the traveling public with access to the information in the data warehouse. The Gateway will add value to the existing state tourism and transportation websites, rather than replace them, and be a corridor wide concept supported through a branding initiative and other tourism marketing activities.

Another component of this initiative is tourism center information exchange. The purpose of the tourism center information exchange is to expand data access (for both transportation and tourism related information) to those organizations involved in the tourism industry. The exchange will use available technology to push relevant data and notifications to relevant organizations. For example, if an incident occurred on I-15 in southern Utah, the information would be broadcast (via e-mail) to those tourist organizations affected, such as Zion/Bryce Canyon National Parks and St. George's Visitor Center.

There are several important considerations that will make this concept a success. First, tourism organizations will be provided with accurate, real-time information. Second, tourist organizations will not be bombarded with useless notifications (i.e. Tucson won't receive notifications on the closing of Bozeman Pass in Montana). Third, the tourist organizations will not have to search or look for the information, it will be provided ("pushed") to them.

Table 9 provides a summary of the major elements that comprise the initiative.

**Table 9: Description of CANAMEX Gateway: Multi-portal Website and Multi-state Data Gathering/Sharing System Initiative Elements**

| CANAMEX GATEWAY: MULTI-PORTAL WEBSITE & MULTI-STATE DATA GATHERING/SHARING SYSTEM INITIATIVE | |
|---|---|
| **ELEMENT** | **DESCRIPTION** |
| **Data Gathering** | All of the DOT's are already collecting transportation and weather data in the corridor, but additional data collection is needed, especially in rural areas. Accurate, reliable, and timely data form the foundation of any information system. |
| Closed Circuit Television Cameras (CCTV) | CCTV deployment will be supplemented throughout the corridor; especially in rural areas (the major urban areas already have extensive coverage). CCTV provides travelers with real-time images of traffic and weather conditions. Several DOT's indicated that Internet sites with CCTV images are the most popular (highest number of "hits"). |
| Traffic Monitoring Stations (TMS) | TMS are electronic sensors used by DOT's to determine the amount and speed of traffic on sections of roadway. The TMS will be deployed in rural areas to supplement data being collected in the urban areas. |
| Transportation Management Center (TMC) Upgrades | TMC's are the operations center that control and operate of the ITS field devices. With the installation of additional devices, the TMC's will need to add capacity to control the devices. |
| Roadway Weather Information Systems (RWIS) | RWIS are electronic sensors that provide information on prevailing weather conditions, pavement conditions, and also collect traffic data. Additional RWIS will be deployed throughout the corridor. |
| **Data Warehouse** | The data warehouse will be the heart of the Smart Tourism Corridor. The data warehouse will contain of the all transportation and tourism related data for the corridor. The data warehouse is not actually a physical warehouse, but will be a virtual repository consisting of several servers (computers) and communications that can be located anywhere. . |
| **Tourist Center Information Exchange** | |
| Processess/Procedures Development | To expedite and insure the success of the information exchange, a study will be conducted to determine and develop the methods and process by which the tourist centers can exchange information. The study will also determine the type of information to be exchanged, quality assurance, timeliness, etc, and those centers that should be part of the system. |

| CANAMEX GATEWAY: MULTI-PORTAL WEBSITE & MULTI-STATE DATA GATHERING/SHARING SYSTEM INITIATIVE (CONTINUED) | |
|---|---|
| **ELEMENT** | **DESCRIPTION** |
| Information Exchange System | The information exchange system will be an automated service provided to tourist centers. The system will automatically push relevant transportation/tourism data to the appropriate centers, in real-time. The system will be Internet/e-mail based, and rely on the information in the data warehouse. |
| Branding/Marketing Campaign for Gateway | As part of the development and launch of the CANAMEX Gateway website, a study to develop logos, graphics, slogans, etc. will be conducted. |
| Visitor Surveys | As part of the CANAMEX Gateway website, survey options will be created to query travelers on preferences, attitudes, and trends. This information can then be shared with the tourism industry throughout the Corridor. This information will also be used to periodically review and adjust the application and deployment of the Smart Tourist Corridor. |
| **CANAMEX Gateway Website** | The CANAMEX gateway website will be the user interface that the traveling public uses to access information in the data warehouse. |

**Table 10** presents the roles and responsibilities of participating organizations for this initiative.

**Table 10: Organization Roles and Responsibilities for the CANAMEX Gateway Website and Multi-state Data Gathering/Sharing System Elements**

| ORGANIZATION | ROLES AND RESPONSIBILITIES |
|---|---|
| State DOTs | • Collect transportation and weather data.<br>• Insure accuracy, relevancy, and timeliness of transportation/weather data.<br>• Provide transportation/weather data to data warehouse.<br>• Participate in information exchange with other DOTs and partners.<br>• Operate/maintain ITS field devices, including traffic monitoring stations, cameras, roadway weather monitoring stations, and supporting communications systems.<br>• Operate/maintain Traffic Management Center.<br>• Develop data sharing partnership agreements for involvement of private sector |
| State Tourism Agencies | • Collect tourism data.<br>• Insure accuracy, relevancy, and timeliness of tourism data. Work with tourism organizations to develop guidelines, standards, and processes for collection and maintenance of tourism data.<br>• Provide tourism data to data warehouse.<br>• Maintain/operate CANAMEX gateway website (may be outsourced). Develop marketing campaign for website<br>• Participate in information exchange with other tourism organizations and state DOTs. Work with tourism organizations to develop process/procedures for the information exchange network.<br>• Develop branding/marketing campaign for CANAMEX Gateway website (may be outsourced).<br>• Collect/review visitor survey data from website. Refine marketing and other Smart Tourist Corridor efforts accordingly. |
| Tourism Information Centers | • Collect tourism data.<br>• Provide tourism data to data warehouse.<br>• Work with State Tourism Agencies to define information exchange procedures. Participate in information exchange with other agencies.<br>• Provide transportation, weather and tourism data to travelers. |
| Private Sector Transportation Information Providers | • Develop/deploy innovative data collection techniques to supplement DOT data<br>• Develop data sharing agreements with state agencies.<br>• Participate in information exchange with other tourism organizations and state DOTs. |
| Private Sector Tourism Venues | • Provides amenities, rates, directions and other information to data warehouse<br>• Participate in information exchange with other tourism organizations and state DOTs. |
| State and Federal Land Managers | • Collect tourism and transportation data.<br>• Provide tourism/transportation data to data warehouse.<br>• Help define information exchange procedures; participate in ongoing information exchange with other agencies.<br>• Provide transportation, weather, and tourism information to travelers<br>• Work with State Tourism Agencies to define information exchange procedures. |

The present value estimated cost for this initiative is **$27,051,000**. This includes study costs, development costs, capital costs and 10 years of operational and maintenance costs.

### 5.2.2 CANAMEX Communications

This initiative consists of a series of actions to expand and strengthen the communications infrastructure in the CANAMEX Corridor. A major component will be to expand the state DOT's use of traditional and new ITS methods for disseminating information to the traveling public. These methods include dynamic message signs (DMS), highway advisory radio (HAR), and enhanced 511. The enhanced 511 concept includes not only multi-modal transportation information, but also access to tourism services information. For DMS's, the focus is to expand their deployment further in rural areas of the corridor. Data will be managed and flow through

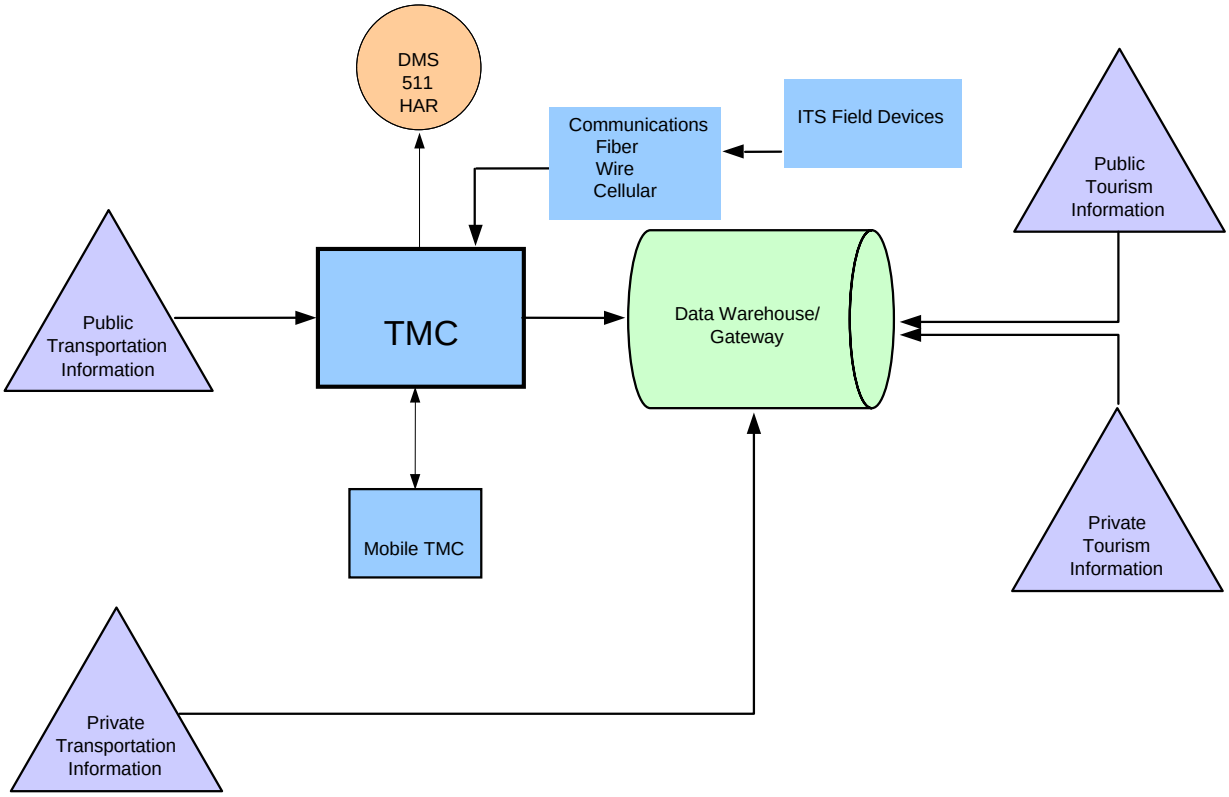


**Figure 16: CANAMEX Communications Data Flows**

Traffic Management Centers (TMC), which collect transportation operations data through a variety of field devices and sensors, and provide information through state road reporting systems to the various dissemination systems. The TMC is similar in scope to a NASA Mission Control Center, but for traffic operations and management.

Additional components of this initiative will include completing cellular coverage in the corridor, providing communications to ITS field devices, and providing satellite phones for state DOT responder/maintenance personnel in rural areas. Completing the cellular coverage in the corridor is essential for the personal safety of travelers in the corridor, and is also essential for the application of innovative private sector technologies. Communications to ITS field devices, especially in rural areas, can be difficult; however, through a variety of methods, including cellular, satellite, phone line, and radio communications can be efficiently provided. Satellite phones are a valuable option for communications, especially during emergencies and incident response. The cost and usability of satellite communications have improved significantly very recently, and will be even more viable in the future.


**Figure 17: Example of Dynamic Message Sign**

Table 11 provides a summary of the major elements that comprise the initiative.

**Table 11: Description of CANAMEX Communications Initiative Elements**

| CANAMEX COMMUNICATIONS INITIATIVE | |
|---|---|
| **ELEMENT** | **ELEMENT DESCRIPTION** |
| Dynamic Message Signs (DMS) | DMS's are the large visual displays on the side or over the roadway that provide travelers with pertinent information en-route. DMS's will be provided at key traveler decision points (e.g., before a major interchange, near major attractions, etc.) throughout the corridor. |
| Highway Advisory Radio (HAR) | HAR is a radio broadcast dedicated to provide travel related information. HAR can provide more detailed information than DMS's, and is useful in partnership with DMS's at key decision points. HAR is also currently used at some attractions to provide usage information. |
| Enhanced 511 Deployment | 511 in the national number for travel information, and is currently deployed in Montana, Utah, and Arizona. 511 will be deployed in the near future in Nevada and Idaho. Currently, 511 provides transportation information; enhanced 511 will expand the current system to provide tourism information. This information will include attractions, parks, hotels, restaurants, shopping, etc… |
| Communications for Field Devices | To control ITS field devices (such as dynamic message signs, cameras, etc…), communications links need to be established between the TMC and the devices. In the rural areas, a variety of communications media (e.g., cellular, satellite, fiber optic, phone lines, etc…) will be utilized to provide a cost effective communication network. The specific communications for the devices will be determined as part for the design process for the devices. |
| Satellite Phones for Rural Maintenance Districts | The costs of using satellite based devices are becoming cost competitive with other wireless communications options. The satellite devices offer some unique advantages, especially in rural areas where cellular coverage is not complete, or may be obscured by canyons, mountains, etc… Satellite devices will also function when other land based systems are knocked out by natural events or power failures. This initiative will deploy a test sample of satellite phones in rural districts for testing and evaluation. |
| Increased Cellular Phone Coverage | Cellular coverage is not complete in the corridor, especially in the mountainous and canyon regions. For personal safety (access to 911) and information access (access to 511), coverage needs to completed in the corridor. |

Table 12 presents the roles and responsibilities of participating organizations for this initiative.

**Table 12: Organization Roles and Responsibilities for the CANAMEX Communications Initiative**

| ORGANIZATION | ROLES AND RESPONSIBILITIES |
|---|---|
| State DOTs | • Operate/maintain ITS field devices, including dynamic message signs, highway advisory radio, and supporting communications systems.<br>• Utilize ITS field devices (dynamic message signs and highway advisory radio) to disseminate information to travelers.<br>• Operate/maintain enhanced 511 system.<br>• Operate/maintain Traffic Management Center.<br>• Deploy and utilize satellite phones in rural districts |
| Private Sector Communications Companies | • Develop and deploy cellular communications infrastructure in rural areas to improve corridor coverage |

The present value estimated cost for this initiative is **$36,189,000**. This includes study costs, development costs, capital costs and 10 years of operational and maintenance costs.

### 5.2.3 Promote Private Sector Smart Devices Development Opportunities

Smart devices (i.e., cellular phones, personal digital assistants, in-vehicle units, etc.) are rapidly developing in usage and applications. A key objective of the Smart Tourism Corridor is for the state agencies to prepare for private sector deployment of tourism and transportation applications in the Corridor. This preparation includes physical elements such as the collection of reliable, real-time transportation data and tourism data, plus the development of an institutional and regulatory environment conducive to private sector investment.

Several vendors already have deployed tourism service applications and mapping/routing applications for cellular phones in other parts of the country and the world. Partnering may be needed with these and/or other vendors to bring these services in the Corridor, especially in the rural areas.

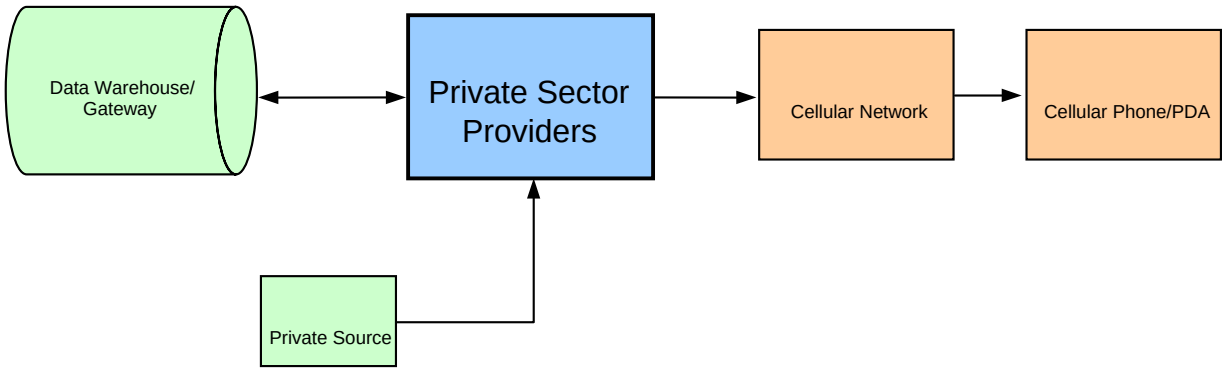


**Figure 18: Smart Devices Data Flows**

In the near future, cell phones will also offer unique opportunities for financial services in the Corridor. Japan and South Korea are already using cell phones for financial services (basically functioning as digital ATM cards), and these services will soon be available in the U.S.

Table 13 provides a summary of the major elements that comprise the initiative.

**Table 13**: **Description of Private Sector Smart Devices Initiative**

| OPPORTUNITIES FOR THE USE OF PRIVATE SECTOR SMART DEVICES | |
|---|---|
| **ELEMENT** | **ELEMENT DESCRIPTION** |
| Smart Devices Deployment Initiatives | Smart Devices include cell phones, personal digital assistants (PDA's), portable computers, and in-vehicle navigation systems that have Internet access. These devices can be used to access any of the information on the Internet, including the CANAMEX Gateway website. Further, many companies are offering travel and tourism applications/services for Smart Devices that can enhance the visitor experience in the corridor. By creating the data warehouse and providing incentives, CANAMEX can attract these companies to deploy in the corridor. |

Table 14 presents the roles and responsibilities of participating organizations for this initiative.

**Table 14: Organization Roles and Responsibilities for Private Sector Smart Devices**

| ORGANIZATION | ROLES AND RESPONSIBILITIES |
|---|---|
| State DOTs | • Develop data sharing partnership agreements for involvement of private sector for smart device traveler information services |
| Private Sector Transportation Information Providers | • Develop and deploy smart device traveler information services in the corridor<br>• Supplement DOT collected transportation data with additional sources.<br>• Develop data sharing agreements with state agencies |

The present value estimated cost for this initiative is $1,500,000. This includes study costs, development costs, capital costs and 10 years of operational and maintenance costs.

### 5.2.4 Safety/Security and Operations in the Corridor

The Safety/Security and Operations initiative is an important and broad series of activities that covers many of the recommendations from TM 2. The major recommendations include developing the public sector infrastructure for E911, providing training and developing interagency agreements for enhancing state DOT incident management, Corridor wide implementation for Amber Alerts, and DOT information exchange.

The CANAMEX Gateway: Multi-portal Website will enhance the homeland security efforts in the Corridor. The increased level of monitoring of the Corridor will also provide relevant, reliable and real-time information for critical security decisions. For the DOT's that maintain/operate the Corridor, the additional data and information exchange will foster better coordination and cooperation among maintenance districts bordering adjacent states.

In other words, very nature of creating the data warehouse, with the corresponding information exchange, will facilitate all aspects of Corridor operations by making it easier for agencies with diverse missions to share information and work together. Traffic operations and incident management response will be faster when all relevant agencies can share information, and thereby coordinate resources quickly.

**Table 15** provides a summary of the major elements that comprise the initiative.

**Table 15: Description of Safety/Security and Operations Elements**

| SAFETY/SECURITY AND OPERATIONS IN THE CORRIDOR | |
|---|---|
| **ELEMENT** | **ELEMENT DESCRIPTION** |
| Automatic Vehicle Location (AVL) Systems for Maintenance Vehicles | AVL is a global positioning system (GPS) based device that tracks the location and movement of vehicles. The system can be used to more efficiently deploy maintenance vehicles, track maintenance vehicles for safety/security, to coordinate activities, and to also automatically provide transportation/weather data. |
| DOT Information Exchange | Similar to the tourist center information exchange, the DOT exchange will push relevant transportation, construction, incident and other data from the data warehouse to each DOT. |
| Amber Alerts | Amber Alert is the national system used to help regain kidnapped children by providing notifications on DMS's and other media. Each state in the corridor already participates in the program, and the additional DMS' and other information sources provided as part of the CANAMEX Smart Tourism Corridor can and will be used to broaden the reach of future Amber Alerts. |
| Mobile Transportation Management Centers for Rural Areas | The Mobile TMC's will consist of 1 mobile operations center vehicle, 2 portable DMS, 1 portable HAR, 2 portable CCTV, and 1 support/service vehicle. The mobile TMC's will be used in rural areas to respond to emergency events (e.g., wildfires), construction zones, incidents, crashes, special event activities (e.g., state fairs, festivals, sporting events, etc…), and other occasions requiring on the spot traffic control and information. |
| E-911 | In order to implement E-911 (E-911 is an enhancement to the 911 system that provides the location of cellular based 911 calls), the call centers (Public service Access Points – PSAP's) will need to upgrade their equipment. |

Table 16 presents the roles and responsibilities of participating organizations for this initiative.

**Table 16: Organization Roles and Responsibilities for Safety/Security and Operations**

| ORGANIZATION | ROLES AND RESPONSIBILITIES |
|---|---|
| State DOTs | • Participate in information exchange with other DOTs and partners.<br>• Operate/maintain Traffic Management Center.<br>• Utilize additional ITS devices for Amber Alerts<br>• Deploy and utilize automatic vehicle location systems.<br>• Deploy and utilize Mobile TMCs |

The present value estimated cost for this initiative is **$6,222,000**. This includes study costs, development costs, capital costs and 10 years of operational and maintenance costs.

## 5.3 Assessment of CANAMEX Smart Tourist Corridor Recommendations to CANAMEX Corridor Final Plan

In April 2001, the CANAMEX Corridor Coalition adopted an overall *Final Plan* for the CANAMEX Corridor. One of the five major recommendations of the *Final Plan* was to develop a Smart Tourist Corridor. The *Final Plan* recommendations included some guidance on the Smart Tourist Corridor, but also suggested a further detailed study to develop the parameters.

Table 17 below provides an assessment of the recommendations from the *Final Plan* compared to the recommendations developed for this current *Smart Tourist Corridor Study*. The table shows that the current recommendations hold true to the objectives and principles in the *Final Plan*, while further building on supporting concepts.

As shown in Table 17, the *Smart Tourist Corridor Study* recommends a significant increase in the number of ITS devices in the corridor, which is consistent with the current planning efforts of each state. The *Smart Tourist Corridor Study* also adds important supporting elements, including data gathering, sharing/disseminating not only transportation data but **also tourism information**, and partnering with the private sector.

**Table 17: Assessment of CANAMEX Smart Tourist Corridor Recommendations to CANAMEX Corridor Final Plan**

| Smart Tourism Corridor, December 2003 Recommendations | CANAMEX Corridor Final Plan, April 2001 Recommendations |
|---|---|
| Develop a Smart Tourism Corridor, divided into six strategic initiatives | Develop a Smart Tourist system that will provide static and real-time information to travelers |
| | |
| Data Gathering | Not included |
| Recommend 237 Closed Circuit Television Cameras (CCTV) | Not included |
| Recommend 584 Traffic Monitoring Systems | Not included |
| Recommend Transportation Management Center Upgrades | Not included |
| Recommend 43 Roadway Weather Information Systems | Not included |
| CANAMEX Gateway Website | Included CANAMEX Website |
| Develop data gathering/sharing/dissemination system (data warehouse). | Portions included --development of an integrated information sharing system (CT-MAIN) for transportation data |
| Not recommended | Kiosks (10 sites) |
| Also includes sharing traveler and tourism data | Not included |
| Tourist Center Information Exchange | Portions included |
| Information exchange system | Not included |
| Develop brand for corridor | Included |
| Develop marketing campaign | Included |
| Visitor surveys | Not included |
| | |
| Communications | Portions included |
| Satellite phones | Not included |
| Field device communications | Included |
| Increases cellular coverage | Included |
| Information Dissemination | Portions included |
| Enhanced 511 system | Not included |
| Recommend 105 additional dynamic message signs | Dynamic Message Signs (22) |
| Recommend 43 additional HAR sites | Highway Advisory Radio (11 sites) |
| | |
| Private Sector Smart Devices Initiative | Not included |
| | |
| Safety/Security and Operations | Portions included |
| Automatic Vehicle Location Systems | Not included |
| DOT information exchange | Included |
| Amber Alerts | Not included |
| Mobile Transportation Management Centers | Not included |
| E-911 | Not included |

# 6. BENEFITS OF THE SMART TOURIST CORRIDOR

## 6.1 Smart Tourist Corridor Costs

### 6.1.1 Corridor Costs by Initiative

Table 18 shows the summary of costs by strategic initiative for the CANAMEX Corridor and the total cost, including capital investment and operational and maintenance costs over the next ten years, is estimated to be $70,962,000.

**Table 18. Summary of Costs by Strategic Initiative**

| STRATEGIC INITIATIVES | COST ($) | COMMENTS |
|---|---|---|
| CANAMEX Gateway | $27,051,000 | Includes RWIS, CCTV, TMS, TMC Upgrades, Data Warehouse, Website, and DOT/Tourist center information exchange. |
| CANAMEX Communications | $36,189,000 | Includes satellite phones, improved cell coverage, DMS, HAR, and Enhanced 511. |
| Smart Devices | $1,500,000 | Includes seed money and costs for public-private partnerships and data sharing. |
| Safety/Security and Operations | $6,222,000 | Includes AVL, Mobile TMC, E-911, etc. Costs related to information exchange and Amber alerts are not included since they are accounted for in CANAMEX Gateway costs. |
| **TOTAL** | **$70,962,000** | Includes capital investment costs and 10 years of operational and maintenance costs. |

### 6.1.2 Corridor Costs by State

This section illustrates the method used to allocate the cost among the states of Arizona, Nevada, Utah, Idaho, and Montana.

Each CANAMEX state is anticipated to invest a common percentage of the costs related to the implementation of the CANAMEX data warehouse and gateway website, etc., all of which will benefit the CANAMEX Corridor as a whole. Cost-sharing should also take into consideration the fact that some states will benefit more from the strategic initiatives than others. Table 19 shows the usage of the CANAMEX Corridor by the five states, in terms of vehicle-miles.

**Table 19. Usage of the CANAMEX Corridor by State**

| STATE | AADT * | HIGHWAY LENGTH (MILES) | AVG. ANNUAL DAILY VEHICLE-MILES | RELATIVE RATIO |
|---|---|---|---|---|
| AZ | 75,694 | 387 | 29,293,492 | 0.485 |
| NV | 58,789 | 124 | 7,289,861 | 0.121 |
| UT | 49,481 | 401 | 19,841,824 | 0.328 |
| ID | 11,595 | 196 | 2,272,555 | 0.038 |
| MT | 4,302 | 396 | 1,703,592 | 0.028 |
| **TOTAL** | **199,861** | **1,504** | **60,401,323** | **1.000** |

* The AADT statistics are based on the 1998 existing typical rural and large urban route performance along the CANAMEX Corridor; the numbers for various routes are averaged for each state.

In light of these considerations, the cost of CANAMEX strategic initiatives is shown for each state in Table 20.

First, the total cost is broken down into *Planned ITS Device Costs* and *Other Costs*. The former include the total life-cycle cost of planned ITS devices, including RWIS, CCTV, TMS, DMS, and HAR, and costs almost $50 million (second column in Table 20). *Other Costs* are defined as all the costs related to the strategic initiatives other than those of planned ITS devices; they total approximately $21 million (third column in Table 20).

In order for each state of the CANAMEX Coalition to invest an equitable amount of money in the initiatives, the Technical Advisory Committee Members and the ITS Coordinators have agreed that the five states would first equally share the 15% of the *Other Costs* (i.e. one-fifth of the 15%; about $600,000 for each state, fourth column in Table 20), and the remaining 85% of it will be shared among the states based on the distribution of vehicle-miles traveled along the Corridor (sixth column in Table 20).

**Table 20. Cost of CANAMEX Strategic Initiatives by State**

| STATE | PLANNED ITS DEVICE LIFE-CYCLE COST ($) | OTHER COSTS ($) | 3% SHARE OF OTHER COSTS ($) | RELATIVE RATIO | WEIGHTED SHARE OF OTHER COSTS ($) | TOTAL COST ($)* |
|---|---|---|---|---|---|---|
| AZ | $13,916,000 | $9,296,095 | $630,600 | 0.485 | $8,665,495 | $23,212,095 |
| NV | $3,972,000 | $2,792,507 | $630,600 | 0.121 | $2,161,907 | $6,764,507 |
| UT | $18,942,000 | $6,490,976 | $630,600 | 0.328 | $5,860,376 | $25,432,976 |
| ID | $10,025,000 | $1,309,546 | $630,600 | 0.038 | $678,946 | $11,334,546 |
| MT | $3,087,000 | $1,130,876 | $630,600 | 0.028 | $500,276 | $4,217,876 |
| **TOTAL** | **$49,942,000** | **$21,020,000** | **$3,153,000 (15% of *other costs*)** | **1.000** | **$17,867,000 (85% of *other costs*)** | **$70,962,000** |

* Total Cost equals columns 2 + 4+ 6

### 6.1.3 Corridor Costs by Stakeholder Group

This section illustrates the method to allocate the cost among the *stakeholder groups*, i.e., the State DOTs, the tourism industry, and the traveling public.

For the Smart Tourist Corridor initiatives, no costs have been assigned to the traveling public. Costs are distributed among the State DOTs and the tourism industry. The results are shown in Table 21. Over the ten-year period, the total cost for the tourism industry within the five CANAMEX states is estimated to be about $2.6 million, or about a quarter of a million dollars per year. On average, this is about $50,000 per year per state.

**Table 21. Summary of CANAMEX Costs by Stakeholder Group**

| SMART TOURIST CORRIDOR INITIATIVE | STATE DOT'S ($) | TOURISM INDUSTRY ($) | TRAVELING PUBLIC ($) | TOTAL ESTIMATED COST ($) |
|---|---|---|---|---|
| **CANAMEX Gateway: Multi-portal Website and Multi-State Data System** | | | | |
| Data Gathering | $24,601,000 | 0 | 0 | $24,601,000 |
| Data Warehouse | $567,500 | $567,500 | 0 | $1,135,000 |
| CANAMEX Website | 0 | $760,000 | 0 | $760,000 |
| Tourist Center Info Exchange | 0 | $555,000 | 0 | $555,000 |
| **CANAMEX Communications** | $36,189,000 | 0 | 0 | $36,189,000 |
| **Smart Devices** | $750,000 | $750,000 | 0 | $1,500,000 |
| **Safety/Security and Operations** | $6,222,000 | 0 | 0 | $6,222,000 |
| **TOTALS** | **68,329,500** | **2,632,500** | **0** | **70, 962,000** |

Note that we assumed that the State DOTs will bear the costs of data gathering, safety/security and operations, and communications, while the tourism industry will bear the costs of CANAMEX website and tourist center information exchange. In addition, the costs of the data warehouse and smart devices will be equally shared between the State DOTs and the tourism industry.

## 6.2 Corridor Benefits

The CANAMEX Corridor will promote the economic and transportation linkages among Canada, the United States, and Mexico, support increased tourism, and improve incident management for rural communities.

Implementation of recommendations from TMs #1, #2 and #3 would yield significant benefits to all the CANAMEX states. All Corridor travelers will benefit from significantly increased safety and security. Also, residents within and in the vicinity of the Corridor will experience not only

safety and mobility benefits, but also improved viability of the economy within the Corridor resulting from increased tourism and, ultimately, jobs. The 2001 CANAMEX Corridor Plan determined that the Smart Tourist Corridor Bold Initiative would add 113,000 additional jobs to the Corridor work force through 2030, over and above naturally occurring job growth.

### 6.2.1 Corridor Benefits by Initiative

The Smart Tourist Corridor initiatives are intertwined and interdependent. Therefore, it is impossible to isolate the benefits of one strategic initiative from another. Instead, the corridor benefits will be illustrated through cost reductions and tourism revenues.

**Cost Reductions: Reduction in Travel Time, Accident, and Weather Delays**

The Smart Tourist Corridor initiatives will lead to significant cost reductions, as shown in Table 22. It is estimated that over a period of ten years (2005-2014) deployment of ITS devices within the Corridor and software support for traveler information collection, processing and dissemination will save almost $66 million as a result of reduction in accidents (20%) and weather-related delays, as shown in Table 22. These benefits will be achieved by providing timely information to the public traveling along the Corridor.

**Table 22. Cost Savings as a Result of the Smart Tourist Initiatives**

| TIME PERIOD | TRAVEL TIME SAVINGS (VEHICLE HOURS) | COST SAVINGS DUE TO REDUCTION IN ACCIDENT AND WEATHER DELAYS ($) |
|---|---|---|
| **2005-2009** | | |
| Benefits | 18,000,000 per year | $4,900,000 per year |
| **Five Year Total** | **90,000,000** | **$ 24,500,000** |
| **2010-2014** | | |
| Benefits | 49,000,000 per year | $8,250,000 per year |
| **Five Year Total** | **245,000,000** | **$ 41,200,000** |
| **2005 – 2014 TOTAL** | **335,000,000** | **$ 65,700,000** |

In addition, over the same period, travel time savings of 335 million vehicle-hours are expected to accrue as a result of the Smart Tourist Corridor initiatives. These travel time savings can be translated into another $2 billion over the ten-year period. However, since these savings are somewhat abstract, they have not been used in calculating the benefit to cost ratios.

**Tourism Revenues: "One More Day" Counts**

As a result of implementing the strategic initiatives, the improved safety, efficiency, and convenience in travel will attract more tourists to the CANAMEX states and/or encourage

tourists to stay longer. This section explains the method used to estimate the additional tourism revenues generated by the Smart Tourist initiatives.

Researchers collected tourism data for each state in the Corridor, including number of tourists visiting the state and their average daily expenditures. These data are presented in Table 23.

**Table 23: State Tourism Data Collected for Cost Benefit Analysis**

| STATE | ANNUAL NUMBER OF VISITORS (DOMESTIC & INTERNATIONAL) | AVERAGE DAILY EXPENDITURES BY NONRESIDENT VISITORS ($) |
|---|---|---|
| AZ | 29,700,000 | $108/day |
| NV | 47,900,000 | $134/day |
| UT | 17,300,000 | $101/day |
| ID | 21,700,000 | $180/day |
| MT | 9,600,000 | $139/day |

Researchers assumed (conservatively) that over the next ten years, 1% of the tourists visiting each CANAMEX State will stay one day longer each year as a result of the CANAMEX Smart Tourist initiatives. The added tourism revenues for each state were calculated according to the following formula:

$$R = E*P*V*(365*AADT)/100$$

In this formula, R stands for the added annual tourism revenue as a result of the CANAMEX Smart Tourist Corridor Initiatives. E stands for the average daily expenditures of non-resident tourists.

The P factor accounts for the percentage of travelers who are non-resident tourists, which was assumed to be 39.1% based on the following previous research. On average, 39.1% of the nonresident travelers in Montana (a CANAMEX state) are tourists (with the purpose of trip as

vacation), according to the State of Montana 2002 nonresident expenditure profiles available at http://www.itrr.umt.edu/nonres/ExpProfile02.pdf.

The V factor stands for the number of persons per vehicle, i.e., average vehicle occupancy (which was assumed to be 1.3 based on an FHWA study available at http://www.fhwa.dot.gov/planning/toolbox/portland_methodology_user.htm). AADT is the Average Annual Daily Vehicle-Miles indicating the number of travelers visiting the Corridor each year (as shown in Table 19).

Researchers calculated these tourism revenue estimates using currently available data from each state. However, each state uses its own methodology for calculating the data. As a result, characteristics of the data vary from state to state, due to such factors as:

- Year in which most recent data was collected
- Components of average daily tourism expenditures
- Survey methods (panels, household surveys, intercept surveys)

Because of these variations in the data, and the assumptions used in the formula, the estimates are not directly comparable on a state-to-state basis. As a result, the estimates should be considered in relative terms rather than in absolute terms. *The intent of this analysis was to provide a general indication or magnitude of the potential benefits of the Smart Tourist Corridor initiatives*.

If stakeholder agencies determine that it would be beneficial to calculate more accurate estimates of increased tourism revenues, the Coalition may want to consider conducting further research on this topic. The tourism industry could assist in identifying and collecting consistent data in each state, so that detailed, up-to-date, and comparable estimates could be calculated.

In addition to the enormous cost savings, the Smart Tourist Corridor initiatives will boost the economic growth of the CANAMEX states, and in particular, benefit the tourism industry. As shown in Table 24, over a period of ten years (2005-2014), additional revenues of almost one billion dollars will be generated for the CANAMEX states, significantly increasing the benefit-to-cost ratio of the Smart Tourist Corridor initiatives.

In the 2001 CANAMEX Corridor Plan, the report projected that state tourism revenues would increase by one percent (1%) for the first ten year period of implementation of the Smart Tourist Corridor. These increased revenues would occur from additional tourists coming to the Corridor region, and spending more money. WTI has determined that the benefits from assuming that one percent of the tourists spend one more day each year in the corridor are roughly equivalent to the assumption of an increase of one percent for state tourism revenues. Thus, to be conservative in our benefit calculations, we did not assume any *additional benefit* from increasing the base number of tourists in the Corridor as a result of Smart Tourist Corridor implementation.

### 6.2.2 Corridor Benefits by State

In light of the usage of the CANAMEX Corridor by the five states (see Table 19), the anticipated benefits of the CANAMEX strategic initiatives were determined for each state, as shown in Table 24. Table 24 shows the cost reductions, added tourism revenues, and benefit-to-cost ratios for each of the five states.

**Table 24. Benefit of CANAMEX Strategic Initiatives by State**

| STATE | TIME PERIOD | TOTAL COST ($) | COST SAVINGS DUE TO REDUCTION IN ACCIDENT AND WEATHER DELAYS ($) | ADDED TOURISM REVENUES ($) | OVERALL BENEFIT-TO-COST RATIO |
|---|---|---|---|---|---|
| AZ | 2005-2009 | | $11,882,500 | $75,845,707 | |
| | 2010-2014 | | $19,982,000 | $75,845,707 | |
| | **10 Yr. TOTAL** | **$23,212,095** | **$31,864,500** | **$151,691,413** | **7.91** |
| NV | 2005-2009 | | $2,964,500 | $345,804,883 | |
| | 2010-2014 | | $4,985,200 | $345,804,883 | |
| | **10 Yr. TOTAL** | **$6,764,507** | **$7,949,700** | **$146,176,196** | **22.78** |
| UT | 2005-2009 | | $8,036,000 | $46,366,641 | |
| | 2010-2014 | | $13,513,600 | $46,366,641 | |
| | **10 Yr. TOTAL** | **$25,432,976** | **$21,549,600** | **$92,733,281** | **4.99** |
| ID | 2005-2009 | | $931,000 | $19,363,731 | |
| | 2010-2014 | | $1,565,600 | $19,363,731 | |
| | **10 Yr. TOTAL** | **$11,334,546** | **$2,496,600** | **$38,727,463** | **3.64** |
| MT | 2005-2009 | | $686,000 | $5,560,303 | |
| | 2010-2014 | | $1,153,600 | $5,560,303 | |
| | **10 Yr. TOTAL** | **$4,217,876** | **$1,839,600** | **$11,120,607** | **3.07** |
| **ALL FIVE STATES** | **10 Yr. TOTAL** | **$70,962,000** | **$65,700,000** | **$440,424,214** | **7.1** |

Corridor benefits were estimated taking into account the following considerations.

- The estimated benefit from travel time savings is not included in the table.
- The tourism revenues were calculated from increased expenditures by nonresident tourists and do not include the *indirect* and *induced impacts*, i.e., increased business expenditures made by travel-related enterprises and those employed in travel-related occupations, and state & local taxes.
- In addition to the quantifiable benefits, other benefits that will accrue as a result of implementing the strategic initiatives including: additional jobs, reductions in vehicle emissions and improved air quality, reduced queuing at National Parks, etc.

### 6.2.3 Corridor Benefits by Stakeholder Group

The CANAMEX Smart Tourist Corridor strategic initiatives benefit stakeholders in the five states. Table 25 shows the benefits to the principal stakeholder groups: state departments of transportation, the tourism industry, and the traveling public.

**Table 25. Summary of CANAMEX Benefits by Stakeholder Group**

| STAKEHOLDER GROUP | ESTIMATED BENEFITS ($) | ESTIMATED COST ($) | OVERALL BENEFIT-TO-COST RATIO |
|---|---|---|---|
| State DOTs | $65,700,000 * | $68,329,500 | 1.0 |
| Tourism Industry | $440,424,214 ♣ | $2,632,500 | 167.3 |
| Traveling Public | $65,700,000 | 0 | NA |
| **TOTAL** | **$506,124,214** | **$70, 962,000** | **7.1** |

* The cost savings due to reduction in accident and weather delays directly benefit the traveling public and are also considered as benefits to the State DOTs.

♣ For the tourism industry, there are limited data available to use as a basis for allocating Corridor benefits between private sector agencies and public sector agencies. The Corridor will facilitate efforts by public sector tourism agencies to better realize their strategic goals.

In addition to the quantifiable benefits, a broad range of stakeholders will realize many qualitative benefits including:

- Public agencies will be able to exchange essential information and coordinate services.
- Tourism agencies will be able to coordinate services with public agencies, conduct better consumer research, and offer targeted trip information to clients.
- Departments of transportation will be able to use accurate and timely road and weather information to improve traveler safety and facilitate maintenance.
- Tourists and other travelers will have access to real-time travel and safety information through improved communication devices.
- Standardized data exchange will facilitate public-private partnerships, and present opportunities for privatization of certain public services.
- Native American tribes will benefit from enhanced institutional relationships with public sector tourism and transportation agencies, and economic development resulting from increased tourism.
- Increased safety and efficiency for freight haulers will spur the economy and increase employment on a local, regional, state and international basis.

In summary, the Smart Tourist Corridor strategic initiatives are estimated to result in cost reductions of almost $66 million and increased tourism revenues of more than *$400 million* over the next ten years, resulting in an overall benefit-to-cost ratio of 7.1. The initiatives are also expected to result in travel time saving of 335 million vehicle hours over the ten-year time period. The four strategic initiatives offer a significant opportunity to produce substantial quantitative and qualitative benefits for all stakeholders.

# 7. DESCRIPTIVE SCENARIOS OF THE SMART TOURIST CORRIDOR IN ACTION

The following scenarios provide a perspective of how technology may assist the organizations and their customers in their day-to-day lives. The stakeholders identified are only examples and not intended to be an exhaustive list. Expanded versions of these scenarios can be found in Tech Memos 1 and 2.

## 7.1 Visitor/Tourist

*Craig and Janine are thinking of taking a vacation that would allow them to visit Native American sites in the southwest, spend a day or two touring Hoover Dam and relaxing at Lake Mead National Recreation Area, doing a little hiking with some friends outside of Salt Lake and then take a week or so traveling north to explore new territory for them - Idaho and Montana.*

*Given the time they have for this vacation, Craig is thinking of flying into Phoenix and renting a car to tour the Native American sites and Hoover Dam then flying up to Salt Lake and renting a recreational vehicle for the trip into Idaho and Montana.*

*One evening Janine discovers the "CANAMEX Corridor Gateway" on the Internet. It provides her with an easy way to plan their flight to Phoenix and the rental car (both of which she is able to confirm). Once the basic plans are in place, she returns to the site to obtain additional information such as maps to the Native American sites, hiking trails and scenic drives she and Craig will be visiting. The link to the hiking trails also includes helpful safety and weather information.*

*Craig and Janine continue to access CANAMEX traveler information throughout their trip. They use the 511 system to check road and weather conditions; it provides invaluable alternative route information when congestion interferes with their initial plans. The upgraded communications network on the Corridor also provides critical assistance when Janine becomes seriously ill during the trip and Craig needs to find a nearby medical facility. All of the information available on the Corridor allows Craig and Janine to keep on schedule and have a positive visitor experience.*

## 7.2 Tourism Organization

*Claire is the Director of an under-staffed and under-funded Chamber of Commerce in a small town near I-15; she is responsible for the region's tourism marketing program as well as for responding to inquiries from visitors that stop by her office. One day, at a conference for small rural tourism agencies, Claire heard a presentation on the CANAMEX Corridor Gateway portal that served as the 'gateway' for information on the I-15 corridor.*

*Claire investigated the Gateway portal and discovered that all of the state parks and recreation areas, National Parks, and Bureau of Land Management public lands were listed on the site for her region, and that she could search the site for a wide variety of other tourism and recreation services for her region and the neighboring areas. This was information Claire had always wanted to have, but did not know how to go about expanding her website to include lodging, restaurant and private sector tourism information. In addition to the information the site provided, Claire learned that she could link her website to the Gateway site by geographic region, by the activities available in her region and by the travel/tourism services in her region.*

*After linking to the Gateway site, Claire had what she called her informal kiosk. Claire took one of her computers and printers and trained a staff member on how the Gateway site worked, how you could search the site for information and how the site could provide local, regional, state and corridor information to both her staff and to visitors coming to her offices. With some help from the state tourism agency, Claire also used the CANAMEX Gateway site to develop a 'regional information network' so that any interested lodging facility, gas station, convenience store or restaurant with a computer and Internet access could have its own informal kiosk.*

## 7.3 Transportation Manager

*With the onset of winter, Dave, the Director of the southwestern Transportation Operations Center was preparing for another season of severe weather events. During the summer, Dave had directed the deployment of a series of roadway weather information system sites along the one mountain pass that continually proved to be his biggest problem, as well as a series of highway advisory radio stations leading to the pass from both directions to inform travelers of what was going on at the top of the pass.*

*In addition to the two major deployments, David had come in contact with the CANAMEX Corridor Gateway during one of the Transportation Department's briefings on 511 and current traveler information programs. David looked into the information provided by the Gateway and 511 systems to find opportunities to improve traveler information along the major tourism routes to the ski areas that surrounded his Transportation District. As winter approached, David made the following plans to increase the effectiveness of his weather information deployments:*

- *Since his roadway weather information sites were networked and provided information on surface and air temperature, wind speed and direction and participation, he implemented a system to display the information on a map of the pass. He provides this information to the regional tourism agencies so that they can have it available to visitors through the CANAMEX Gateway as well as at his Operations Center.*

- *With his Highway Advisory Radio system networked and the operating system having the capacity to go from text to voice for traveler advisory broadcasts, David is going to link his radio system to the regional tourism information. When there are no advisories, the system will broadcast tourism and recreation information, and when there are traveler advisories, the system will automatically provide contact information for traveler and emergency services.*

## 7.4 Transit/ Rail/ Airport Operator

*Frank is the Director of the Rolling Hills Transit System, which serves a region experiencing a high growth in visitation and a resulting increase in inquiries for multi-modal transportation options. He recognized a need for a one-stop resource that would provide visitors with all of the transportation options available for his tourism region. Frank found that the local airport and the airlines that served it had a robust information system, as did the local Amtrak station, but what they both lacked was any information on transportation resources once the visitor arrived. Upon further investigation, Frank found that the website he had created for the Transit System, while it provided routing and scheduling information, was isolated from all of the other transportation service providers and was not linked to tourism information sites.*

*To address the issue, Frank made the following changes to the Transit System website:*

- *established links to the local airport and created an information resource that linked his transit schedule information to the airlines schedules so that it would coordinate better with the airline flight information;*
- *established, through the CANAMEX Gateway, a link to Amtrak and created a second information resource that provided transit schedules based on the Amtrak schedule.*
- *established a link with the local Visitor Center's website so that transit information would be readily available to visitors visiting the Center's site.*

*After further review of the CANAMEX Gateway site, Frank made the following changes to link tourism information to his transit system website:*

- *created a link with the regional traveler advisories page to keep his dispatchers informed of current roadway conditions;*
- *created a link to his region's tourism information page; and*
- *through the CANAMEX Gateway, created a link to the each of the neighboring tourism marketing agencies websites and (if available) the public transportation service providers in the neighboring regions.*

## 7.5 Federal Land Steward

*Kathryn, the Deputy Chief for the Lost Rock National Recreation Area, is faced with an increasing number of visitors and more demand for 'extreme' recreational activities. She was looking for new ways to communicate, update and keep track of all of the information she and her staff needed to make available to visitors.*

*To address these needs, Kathryn decided to enhance the Recreation Area's website and develop a series of links to other appropriate information sites. The first steps she took were to enhance the description of Lost Rock and include descriptions of the permitted uses and the rules governing those uses. Her staff advised to add information on public and personal safety, general information on appropriate clothing and footwear by season, and general weather conditions for each month. To further expand the weather information, she partnered with the Department of Forestry, the local unit of the Department of Transportation and the National Weather Service to develop a system that would display the combined remote weather information on a regional map.*

*Another challenge Kathryn wanted to address was an increasing number of visitors who indicated having an unpleasant experience, due to the presence of off-highway vehicles and rock crawling contests. Kathryn asked her web designer to change the opening page of the site so that links to information on permitted activities were clearly noted and that a small map showed where these activities were permitted. She then asked that a new link be created that would provide both use and use impact information (noise, dust, etc.) for each activity, with specific descriptions of the locations where the activity is and isn't permitted. For the trails in non-use areas, Kathryn asked her staff to develop plant and wildlife profiles and interpretative information, as well as stewardship information to keep people on the trail.*

*When this work was completed, Kathryn worked with the regional tourism promotion agency to provide all the new maps and information through their website and nationally through the links with the CANAMEX Gateway.*

## 7.6 Operations

*Jeff Rogers had been Fire Marshall of Mountain County for fifteen years. One day during a heavy snowfall, he received an urgent call from Sheriff Tom Evans. Tom told Jeff that there had been a very serious accident involving a large truck and a car at the intersection of Conifer Road and State Highway 17: there was one fatality, four seriously injured people, and the intersection was completely blocked by the wreckage. Two of the injured were trapped in the car and he needed lots of help fast.*

*Tom asked Jeff to activate the County emergency response plan that would involve alerting the one paramedic at the firehouse and calling in the County's other three volunteer emergency medical personnel. In the meantime Tom had called the area Highway Patrol office and requested that Lt. Shagnasty send officers to assist with traffic control. The Lieutenant responded that none of his officers were anywhere near the scene and that the closest unit could not get there for at least 45 minutes. As the wreck was only a couple of miles from the Bear Rock County line, Tom called Sheriff Winblat to ask that he would make some of his officers available under the terms of their recently signed Intergovernmental Agreement. To expedite clearing the wreckage from the road, he called the County's Highway Department, the State Maintenance Yard, and the closest private towing firm. Communication with responders had been facilitated by the recent acquisition of "satphones," and the installation of AVL systems on emergency vehicles.*

*Tom arrived at the scene of the accident. The private ambulance service retained by the County soon arrived, at about the same time as the fire vehicles. As the ranking official on the scene, Tom had initially acted as the de facto Incident Commander until Jeff arrived. As soon as Tom went over the situation with him, Jeff assumed the role of Incident Commander. Without hesitation he instructed the paramedics to begin triaging the victims. Simultaneously, other volunteers started using the "jaws" to extricate victims and enable the medical people to treat them. Meanwhile, rather than call the County Coroner to officially pronounce death (which would have delayed clearing the scene for hours while he could be located and travel), he asked the lead paramedic to transmit vital information to the Coroner for confirmation that the victims were indeed dead.*

*State highway crews arrived and immediately began clearing the smaller stuff away. When the large wrecker arrived, he immediately asked the driver to assess the scene and give him an estimate of the time it would take to remove the wreckage so that normal traffic could be restored. Jeff also had the foresight to send a state maintenance vehicle down the shoulder and be positioned at the end of the queue of oncoming traffic to alert approaching drivers that traffic was stopped. He then requested that the state's HAR system, 511 and the County website carry updated information about the accident so as to reduce the flow of traffic toward the scene and facilitate drivers' ability to choose alternative routing.*

*As soon as the victims had been treated and transported and the wreckage had been removed, maintenance workers cleaned up the area and normal traffic was restored. The County plan and all the infrastructure upgrades had been instrumental in the quick response to a complex and hazardous situation.*

## 7.7 Safety

*Three days ago, Dick and Jane were traveling north on Interstate 15 with their children; Jane was driving their new Ford sedan. Without warning, the large truck in front of them suddenly applied its brakes and began swerving from lane to lane. Jane was unable to stop the car and grazed the out-of-control truck with the driver's side front door. Dick and Jane were able to see that the truck had struck a passenger vehicle and that several people were injured.*

*Dick called 911 on their satellite telephone. He explained what had occurred to the dispatcher, but apologized that he had no idea of their location. The dispatcher assured him that she was aware of his exact location. As soon as she had notified emergency service responders, the dispatcher typed the nature and location of the incident into her computer. Simultaneously the information was automatically forwarded to all other Corridor TMCs and to the Corridor Clearinghouse where it was reviewed by supervisor Ron Gibbons. After quickly reviewing the message and scanning the real-time status board for major roadways in the Corridor, Ron transmitted the signal to a DMS located about a quarter of a mile south of the crash.*

*The DMS immediately displayed the message Ron had sent. It also began transmitting a short-range wireless signal carrying the same message to any vehicle receiver with line-of-site connection. Jim and his wife Mary Kaye were alone in their Hummer when he first saw the DMS. He immediately slowed and cautiously approached the scene. They knew they were going to be delayed for a while, but they had avoided becoming part of the accident scene.*

*Three miles behind the Kayes, Al Benton noticed he was within a mile of an exit. Suddenly, an automated voice announcement spoke the exact message displayed on the DMS. The mobile repeater embedded in the vehicle two miles ahead of him, which he could not see, had relayed the message to him. Al slowed and gradually stopped on the shoulder of the roadway where he contacted, through the computerized communication system in his vehicle, the concierge service offered free of charge by AAA. He queried the service for alternative routing around the wreck; within a minute or two the system displayed the most viable route.*

# 8. SUMMARY AND NEXT STEPS

## 8.1 Moving Forward--from the CANAMEX Corridor Final Plan to the CANAMEX Smart Tourist Corridor

The purpose of the Smart Tourist Corridor Study was to move forward from the five broad initiatives of the CANAMEX *Final Plan* to develop a specific and tailored plan for implementation of a Smart Tourist Corridor. Through 18 months of effort, the CANAMEX Corridor Coalition succeeded in developing the plan for the Smart Tourist Corridor, which is described in this final report.

The development of the Smart Tourist Corridor plan was a collaborative effort of all five states, their transportation and tourism agencies, the CANAMEX Corridor Coalition member representatives, the CANAMEX Corridor Technical Advisory Committee, state ITS coordinators, the CANAMEX project office, the Western Transportation Institute, and a host of other stakeholders. The method to develop the plan was founded on a needs based approach, in concert with traditional planning methods and the latest FHWA guidelines. The study team:

- Collected and analyzed transportation and tourism data
- Conducted stakeholder outreach, surveys, and interviews
- Conducted research
- Evaluated the data and stakeholder information
- Determined project needs based on the data evaluation
- Developed Smart Tourist Concepts to meet the needs
- Reviewed and refined the concepts based on stakeholder feedback

The results of all the analyses and work effort were summarized in three Technical Memoranda, which are the basis for this Final Report.

The work effort and recommendations developed for the Smart Tourist Corridor plan significantly advanced the position of the CANAMEX Corridor towards project implementation. Table 26 provides a summary assessment of the progress made by the Coalition since the adoption of the Final Plan in 2001. As shown in the table, the Coalition has moved from a high level visionary plan to a detailed plan for implementation of one of the original five bold initiatives.

**Table 26: Assessment of CANAMEX Corridor Coalition Progress from the Corridor Final Plan to the Smart Tourist Corridor**

| DISCUSSION AREA | CANAMEX CORRIDOR FINAL PLAN (APRIL 2001) | SMART TOURIST CORRIDOR (DECEMBER 2003) |
|---|---|---|
| *Vision* | Developed high level vision for all transportation aspects of corridor | Develop specific vision for Smart Tourism Corridor |
| *Bold Initiatives* | Identified high level 5 initiatives | Identified 6 specific initiatives |
| *Roles and Responsibilities* | Not defined | Defined specific roles and responsibilities for implementation of Smart Tourism Corridor |
| *Stakeholder outreach and assessment* | General in scope | Focused on tourism and transportation stakeholders<br>Detailed survey instrument/questionnaire<br>Over 70 organizations |
| *Funding opportunities* | Analyzed federal program | Developed earmark |
| *Benchmarking* | Not assessed | Engaged I-95 corridor Coalition for CCC meeting presentation and peer-to-peer information exchange |
| *Existing/Planned ITS Infrastructure* | General | Detailed GIS analysis<br>GIS map prepared for each state DOT identifying planned ITS infrastrucutre |
| *Tourism Transportation Needs and Issues* | General | Conducted significant stakeholder outreach and surveys.<br>Tech Memo #1 produced |
| *Highway Operational Needs and Issues* | Not performed | Conducted individual state workshops<br>Tech Memo #2 produced |
| *Data Gathering Systems* | Not defined | Identified 800 specific geo-located field devices and upgrades<br>Identified data to be exchanged |
| *Data Sharing System* | Developed general concept | Developed specific initiative<br>Established platform for multi-state information exchange |
| *Tourist Center Information Exchange* | Not addressed | Develop specific initiative to share tourism/transportation data<br>Engaged state, federal, private sector and Native American organizations |
| *Information Dissemination Systems* | Identified need for some limited additional infrastructure | Identified specific trip stage traveler information needs and public/private roles<br>Identified traveler information infrastructure and locations |
| *Safety/Security* | General | Develop specific initiative to address safety/security issues in corridor |
| *Role of Private Sector* | General | Specific areas of opportunity identified<br>Developed concept of preparing states' data for enticement of private sector |

## 8.2 Next Steps/Issues for Consideration

The discussion of Next Steps supports each of the four defined initiatives. As stated earlier in this report, the initiatives are closely integrated. Consequently, the Next Steps are too.

The key to developing the Smart Tourist Corridor lies in the CANAMEX Corridor Coalition's ability to increase federal funding for ITS and related applications. The five CANAMEX states receive approximately 60% of their fair share of federal ITS funding. The states need a dedicated earmark under the next five-year transportation authorization bill. If implementation depends on the allocation of existing resources and state funds, the Smart Tourist Corridor plan will be obsolete before it is fully implemented. The Next Steps are summarized in Table 27, and then discussed in greater detail in the text that follows.

**Table 27: Recommended Next Steps**

| Action Item | Responsibility | Support | Approval | Timeline (Initiation Date) |
|---|---|---|---|---|
| | | | | |
| **Earmark**: Advocate and obtain federal multi-year earmark for ITS implementation of Smart Corridor Operations | CANAMEX Corridor Coalition | CANAMEX Project Office, DOTs, Congressional Delegations | CANAMEX Corridor Coalition | Spring 2004. Dependent upon congressional action. |
| **Framework**: Establish organizational framework for managing project implementation and business plan | CANAMEX Project Office | | CANAMEX Corridor Coalition | Spring 2004 |
| **Standards/Architecture**: Identify ITS standards & architecture for deployment of data gathering and information sharing networks. Conduct gap analysis of existing standards and systems. Secure special project funding from FHWA. | ITS Coordinators | CANAMEX Project Office | CANAMEX Corridor Coalition | Summer 2004 |
| **CANAMEX Gateway Website**: Create plan/prototype for website. Determine method for website implementation. | CANAMEX Project Office | ITS Coordinators; State Tourism Agencies | | Spring 2004 |
| **Tourism Brand**: Define Tourism brand for the Corridor | State Tourism Agencies | CANAMEX Project Office | State Tourism Agencies | Summer 2004 |
| **Tourism Partnerships**: Develop data sharing partnership agreements and identify joint tourism promotional opportunities. Develop means for collecting data. | State Tourism Agencies | CANAMEX Project Office | | Spring 2004 |
| **International Outreach**: Engage Alberta, Sonora, federal land management agencies and the Department of Customs & Border Protection and define roles | CANAMEX Project Office; states of Montana and Arizona | | State Tourism Agencies | Summer 2004 |

| Action Item | Responsibility | Support | Approval | Timeline (Initiation Date) |
|---|---|---|---|---|
| | | | | |
| **Funding Opportunities**: Explore alternative federal funding opportunities to define tourism and traveler data sets that should be incorporated in the traveler information system (EDA, state and private resources etc.) | CANAMEX Project Office | | State Tourism Agencies, CANAMEX Corridor Coalition | Summer 2004 |
| **Communications Plan**: Develop an integrated corridor deployment plan to map wireless coverage of the various communications systems deployed throughout the corridor. | CANAMEX Project Office | State CIOs and technology agencies; ITS Coordinators | CANAMEX Corridor Coalition | Fall 2004 |
| **ITS Device Deployment and Tactical Plan** Develop a coordinated plan to continue deployment of ITS devices in the corridor. | ITS Coordinators | CANAMEX Project Office | | Fall 2004 |
| **511 Linkage and Enhancement**: Each of the CANAMEX states should adopt protocols to link their 511 systems and establish a project timeline for deployment. Also develop standards for adding tourism information, concierge services, and public lands information to 511. | ITS Coordinators | CANAMEX Project Office; State Tourism Agencies | | Summer 2004 |
| **Private Sector / Telematics New Technology Testing**: Promote the five-state, 1500 mile CANAMEX Corridor as an attractive platform for the private sector to test & pilot projects and as an opportunity to develop innovative risk and revenue sharing partnerships. | CANAMEX Project Office | ITS Coordinators; State Tourism Agencies | CANAMEX Corridor Coalition | Fall 2004 |
| **State Border Operations**: Formalize multi-state agreements for DOTs and law enforcement agencies to coordinate operations at state borders (already noted in standards) | ITS Coordinators | DOT Directors | CANAMEX Corridor Coalition | Fall 2004 |
| **Incident Management Plans**: Develop incident management plans within each state, and share with other states. | ITS Coordinators | DOT Directors | | Fall 2004 |
| **Cost-Benefit Analysis:** Collect additional data to refine estimates of increased tourism revenue potential for each state. | CANAMEX Project Office | State Tourism Agencies | | To be determined based on need for the data. |

### 8.2.1 Organization

The stakeholder agencies and organizations involved in implementation need to establish a well-defined project management process to ensure coordination and accountability. This becomes increasingly important as the project evolves. Ultimately, a formalized Smart Tourist Corridor structure should be adopted to manage and maintain the system, including establishing data management standards.

Initially, the stakeholder agencies can be divided into transportation related (largely ITS) and tourism related groups. The CANAMEX Project Office has the expertise and capacity to ensure that project development is coordinated between the two groups during the planning and design stages. However, as the CANAMEX Gateway moves into implementation, testing and maintenance phases, it is advised that a dedicated organization be formed or hired on a contract basis to manage the day to day operations and coordination of the five-state Smart Tourist Corridor.

There are a series of next steps that can be undertaken by both the tourism and transportation sectors to advance the development of the Smart Tourist Corridor. While many of these are dependent on federal funding, the early steps involve project scoping, branding, the development of timelines and organizational issues.

### 8.2.2 CANAMEX Gateway

This study identified $27 million in costs associated with the CANAMEX Gateway, of which approximately $1.9 million are tourism related, the balance being associated with the transportation components.

There are several things that the state tourism agencies can do now without significant amounts of funding. These include:

- Designation of a CANAMEX coordinator in each of their agencies
- Development of a brand for the corridor including identifying the CANAMEX “product” and target market
- Development of a document establishing the scope and purpose of their collaboration
- Establishment of joint promotion timeline and task list
- Reach out to and define roles for Sonora, Alberta, the relevant federal land management agencies, the Dept. of Customs and Border Protection
- Collect detailed and consistent data from each state to refine increased tourism revenue estimates

Initially, the state tourism staff member would work with the CANAMEX Project Office to establish a project scope and timeline that is both bold, yet resource constrained. Project consultants should be hired to define the data sets, maintenance standards, and institutional responsibilities. Project consultants should also be engaged to coordinate the state Transportation departments integrate communications standards, data gathering and dissemination devices and protocols.

Similarly, there are important steps the state ITS Coordinators can undertake to prepare the project for federal funding. These include:

- Determine the ITS standards and architecture for deployment of the data gathering and information sharing networks
- Conduct a gap analysis of existing standards and systems to define the development plan
- Identify and secure special project funding from FHWA.

Once federal funding is secured, it is recommended that a contractor operating under a joint tourism-transportation review committee be hired to coordinate the integration of the information data gathering and information dissemination. The scope would include:

- Defining how data would be gathered, from where and how the various systems would communicate and prioritize data
- Define the data warehouse, protocols and standards
- Develop the processes and procedures to exchange tourism information in a timely and customer-driven way
- Develop performance measurement standards, both qualitative and quantitative to evaluate progress and effectiveness of the Smart Tourist Corridor
- Define and design the website and use interface

### 8.2.3 CANAMEX Communications

This study identified communications needs of $36 million over the next ten years to facilitate the data collection and information dissemination along the Smart Tourist Corridor. These costs largely reflect costs for those devices to be deployed along the corridor. The CANAMEX states today receive approximately $6 million annually in federal ITS funding. Increasing the federal funding for the purchase and deployment of these devices is key to implementation of this initiative.

Each of the CANAMEX states should adopt protocols to link their 511 systems and establish a project timeline for deployment.

In order to ensure that seamless and redundant coverage exists to gather data from the field and send information out to signs and users, an integrated corridor deployment plan should be developed to map coverage of the various communications systems deployed throughout the corridor. The CANAMEX states need to look for ways to increase telecommunications coverage in the region, including access to fiber in highway rights of way, the siting of additional towers cell and wireless towers.

The CANAMEX states can support this initiative by sharing information on deployment of new systems and coverage what they have, where they have it as their projects are developed.

### 8.2.4 CANAMEX Smart Devices

Car manufacturers, major financial companies, hotel chains and major travel industry service firms are embracing technologies that will give them real-time access to their customers 24/7. While many of these technologies market products and services, other technologies seek to improve the safety and security of the user, such as windshields to improve night blindness and in-vehicle navigational aids.

CANAMEX ITS coordinators and the project office should be alert to opportunities to partner with the private sector in order to take advantage of devices that will advance the complementary

Smart Corridor goals of safety and security and increasing tourism by enhancing the tourist experience.

The five-state, 1500 mile CANAMEX Corridor should be marketed as an attractive platform for both test or pilot projects and as an opportunity to develop innovative risk and revenue sharing partnerships.

### 8.2.5 CANAMEX Operations

TM 2 (Corridor Operations) recommended numerous strategies for enhancing operations in the corridor. Of all these recommendations, the three that should be pursued initially include the DOT information exchange, state border operations coordination, and statewide incident management plans.

Each of the states already performs significant management and operations activities within the Corridor. To enhance these existing activities, an information exchange system will be developed that will share information on activities that may impact other states. The first step to developing the information exchange systems is to determine the data to be exchanged, and the method for exchanging the data.

All of the states cooperate at various levels with their activities near state borders. However, the coordination of these activities could be enhanced by creating plans for the coordination of operating practices. Through a series of meetings and workshops, the states can develop a series of recommended practices and agreements to adopt and implement. Each state already has in some form statewide incident management plans. In fact, Arizona and Idaho have fully documented a formalized plan. However, several states need to update their plans and/or include more documentation of practices, plans and procedures such as Utah, Montana, and Nevada. In addition to these, the five CANAMEX states can improve the safety and security of the Corridor by formalizing agreements between the Departments of Transportation and law enforcement to coordinate operations at and across state borders. For those states with international borders, an effort should be made to engage counterpart authorities in both Canada and Mexico to participate in formal operating partnerships.

Given the safety emphasis of the Federal Highway Administration and SAFETEA, funding should be sought by the five states to retain a contractor to organize a series of workshops and analyze each state's incident management plans to identify those areas where regional benefits would be enhance through closer coordination. Corridor operations provide the backbone for all of the initiatives. It is significant that the major next steps for each of the previous initiatives are relevant here.

- Development of ITS standards and architecture described in 8.2.2 CANAMEX Gateway
- ITS Device Deployment and Tactical Plan are described in 8.2.3 CANAMEX Communications
- 511 Linkage and Enhancement are described in 8.2.3 CANAMEX Communications
- Innovative partnerships are described in 8.2.4 CANAMEX Smart Devices.