Final report of ITS Implementation Research Center project: Travel Virginia.

A Research Project Report

For the Center for ITS Implementation Research

A U.S. DOT University Transportation Center

Travel Virginia

EXECUTIVE SUMMARY

This report summarizes the results of a fifteen-month study to assess the feasibility of expanding Travel Shenandoah, a pilot rural ATIS service developed for Virginia's Northern Shenandoah Valley, into a comprehensive, statewide service covering the entire Commonwealth of Virginia.

It describes the concept of an umbrella statewide service, made up of a series of independent, financially viable regional partnerships linked together through a single, central statewide travel information clearinghouse, and outlines the major lessons learned from the pilot Travel Shenandoah regional service that went live on April 26, 2000.

Using seven primary evaluation criteria, it is concluded that the concept of a statewide service is both feasible and potentially of considerable value both to the traveling public and to the Commonwealth of Virginia. The seven criteria include: institutional and legal issues, technical considerations, potential business models, financial feasibility, availability of data, user acceptance, and partnership interest.

A series of recommended Travel Virginia regions are described herein. The boundaries of these regions are determined by a combination of factors including the configuration of the highway system, local government boundaries, established VDOT Districts, State Police Divisions, Virginia Tourism Corporation and State Planning District Commission boundaries, as well as the areas served by local telephone and media companies.

Attention is directed to the major functional and technical issues associated with the implementation of a comprehensive statewide service, together with the legal, regulatory, and procurement requirements that must be met by VDOT and other agencies of the Commonwealth of Virginia in establishing any form of statewide traveler information service.

Based on this analysis, three broad organizational options are discussed as the basis for supporting implementation of a long-term, statewide service. Each option is evaluated against a common set of criteria and a recommended option is identified.

A proposed four-year implementation program is outlined. It discusses alternative business arrangements among regional partners, VDOT, and the central statewide Clearinghouse, and describes a recommended staged program of regional expansion. The program focuses initially on the completion of service along the entire length of the I-81 Corridor in Western Virginia, followed by the I-66 and Route 29 Corridors. These are followed, in turn, by provision of service to the I-64, I-95, and I-70 Corridors, and finally by service to the Coastal areas of Eastern Virginia, the Piedmont, and Southside Virginia.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

This report summarizes the results of a fifteen-month study to assess the feasibility of expanding Travel Shenandoah, a pilot rural ATIS service developed for Virginia's Northern Shenandoah Valley, into a comprehensive, statewide service covering the entire Commonwealth of Virginia. The report is divided into nine chapters, each of which is summarized below.

Chapter I, The Concept of Travel Virginia, describes the concept of an umbrella statewide service, made up of a series of independent, financially viable regional partnerships linked together through a single, central statewide travel information clearinghouse.

Chapter II, Travel Shenandoah: Some Lessons Learned, describes the pilot Travel Shenandoah regional service that went live on April 26, 2000, and discusses some of the major lessons learned from its development and initial operation.

Chapter III, Feasibility of a Statewide Travel Virginia Service, assesses the feasibility of extending the pilot Travel Shenandoah service to cover the entire Commonwealth, using seven primary criteria. The criteria used include: institutional and legal issues, technical considerations, potential business models, financial feasibility, availability of data, user acceptance, and partnership interest.

Chapter IV, Implementing Travel Virginia: Potential Regions and Service Partners, outlines the possible division of the Commonwealth into a series of Travel Virginia regions. The boundaries of these regions are determined by a combination of factors, including the configuration of the highway system, local government boundaries, established VDOT Districts, State Police Divisions, Virginia Tourism Corporation, and State Planning District Commission boundaries, together with the areas served by local telephone and media companies.

Chapter V, Implementing Travel Virginia: Functional and Technical Issues, discusses the major functional and technical issues associated with the implementation of a comprehensive statewide service. Emphasis is placed on three major topics: data collection and maintenance, the need to expand the initial Clearinghouse concept, and the delivery of services to the end-user.

Chapter VI, Implementing Travel Virginia: Legal, Regulatory, and Procurement Issues, reviews the legal, regulatory and procurement requirements that must be met by VDOT and other agencies of the Commonwealth of Virginia in establishing any form of statewide traveler information service. It includes a brief discussion of the implications of the July 2000 FCC announcement designating 511 as a nationwide telephone number for traffic and related information.

Chapter VII, Implementing Travel Virginia: Organizational Options and Recommended Approach, outlines three, broad organizational options for supporting implementation of a statewide service and summarizes the reasoning behind a specific recommended approach.

Chapter VIII, Implementing Travel Virginia: A Proposed Four-Year Program, outlines a proposed four-year program to implement a full-scale, statewide Travel Virginia service. It discusses alternative business arrangements among regional partners, VDOT, and the central statewide clearinghouse, and describes a recommended staged program of regional expansion. The program focuses initially on the completion of service along the entire length of the I-81 Corridor in Western Virginia, followed by the I-66 and Route 29 Corridors. These are followed, in turn, by provision of service to the I-64, I-95, and I-70 Corridors, and finally by service to the Coastal areas of Eastern Virginia, the Piedmont, and Southside Virginia.

Chapter IX, Recommended Next Steps – A Proposed Eighteen Month Immediate Action Program, outlines a recommended program of activity over the period from October 1, 2000 to March 31, 2002. It includes a basic level of on-going support for the umbrella Travel Virginia program, completion of service south to Bristol along the I-81 Corridor, as well as from Front Royal east to Manassas along I-66. It provides for the immediate implementation of a first-stage, statewide Traffic and Travel Alert service covering all Interstate Highways and State Primary Routes.

CHAPTER I
THE CONCEPT OF TRAVEL VIRGINIA

The Commonwealth of Virginia has been recognized for some time as a leader in the development and application of Intelligent Transportation Systems (ITS) technologies. These technologies improve the safety and operational efficiency of the over 40,000 miles of highways in Virginia.

One aspect of this leadership is reflected in the steadily expanding provision of timely, useful, and easily accessible information to the traveling public regarding current traffic and travel conditions on major commuter routes. The Partners-in-Motion program provides such a service in the metropolitan Washington, D.C. region; a second partnership, led by ITERIS Corporation, is developing a similar service in Hampton Roads.

These two metropolitan initiatives have been complemented by a pilot rural project, covering 150 miles of the Northern Shenandoah Valley in northwest Virginia. Labeled Travel Shenandoah, the service was developed through a partnership of Virginia Tech and the Shenandoah Telecommunications Company (SHENTEL). It provides travelers with timely information on current traffic and travel conditions on the major routes serving the valley, and also comprehensive information on traveler services, tourist attractions, and trip routing. The service, which is designed to be financially self-supporting, went live on April 26, 2000 and has been in successful operation since that date, 24 hours a day, seven days a week.

VDOT's primary objective in underwriting the Travel Shenandoah program was to demonstrate the feasibility of implementing an advanced traveler information service in a rural area. Emphasis was placed on developing a service that provided value to the traveling public, enhanced the safety and operational efficiency of the highway system, and was financially viable as a long-term business proposition. While the final results of the program are yet to be determined, every indication is that it will be successful in each of these regards.

A second VDOT objective for Travel Shenandoah (assuming that the pilot program was a success) was that the initial implementation in the Northern Shenandoah Valley should serve as a model for the subsequent implementation of similar services in other areas of the Commonwealth. The Travel Virginia program was created to assess the feasibility of such a concept, and to examine the issues likely to be involved.

The Concept of a Statewide Travel Virginia Service

Travel Virginia is a family of 10-12 inter-connected, regional traveler information services that are linked together through a common, statewide Traveler Information Clearinghouse. The basic concept of which is to provide users with convenient access to a uniform set of timely, accurate travel information for all parts of the Commonwealth.

The intent is that the service be as financially self-supporting as possible, following the model of Travel Shenandoah. Figure 1.1 depicts the division of the Commonwealth into an illustrative set of twelve possible Travel Virginia regions.
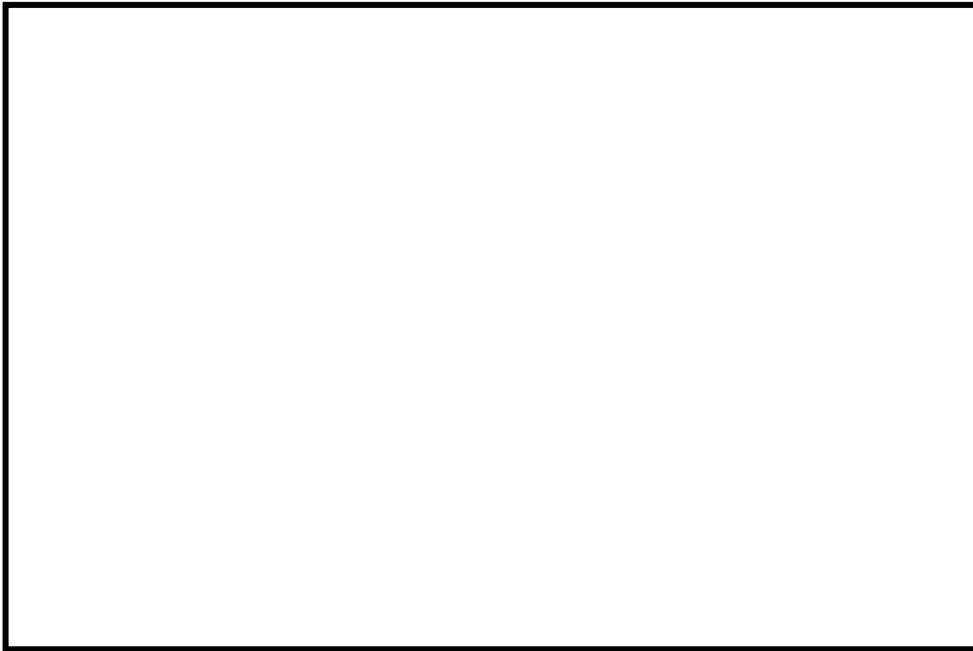
Figure 1.1 Twelve Proposed Travel Virginia Regions.

Operational Structure

Each regional service would be the responsibility of a local partnership, made up of a combination of both public and private sector organizations. The partnerships would commit to collect and maintain up-to-date information on tourist attractions and traveler services in their region, and to relay this information to the central clearinghouse where it would be verified and combined with data from other sources into a single, integrated statewide database. Information from this database, including up-to-date information on current traffic and travel conditions, would be relayed back to each partnership in real time. The partnerships would then be responsible for disseminating the information to the traveling public via a variety of different distribution modes. The structure is illustrated in Figure 1.2.
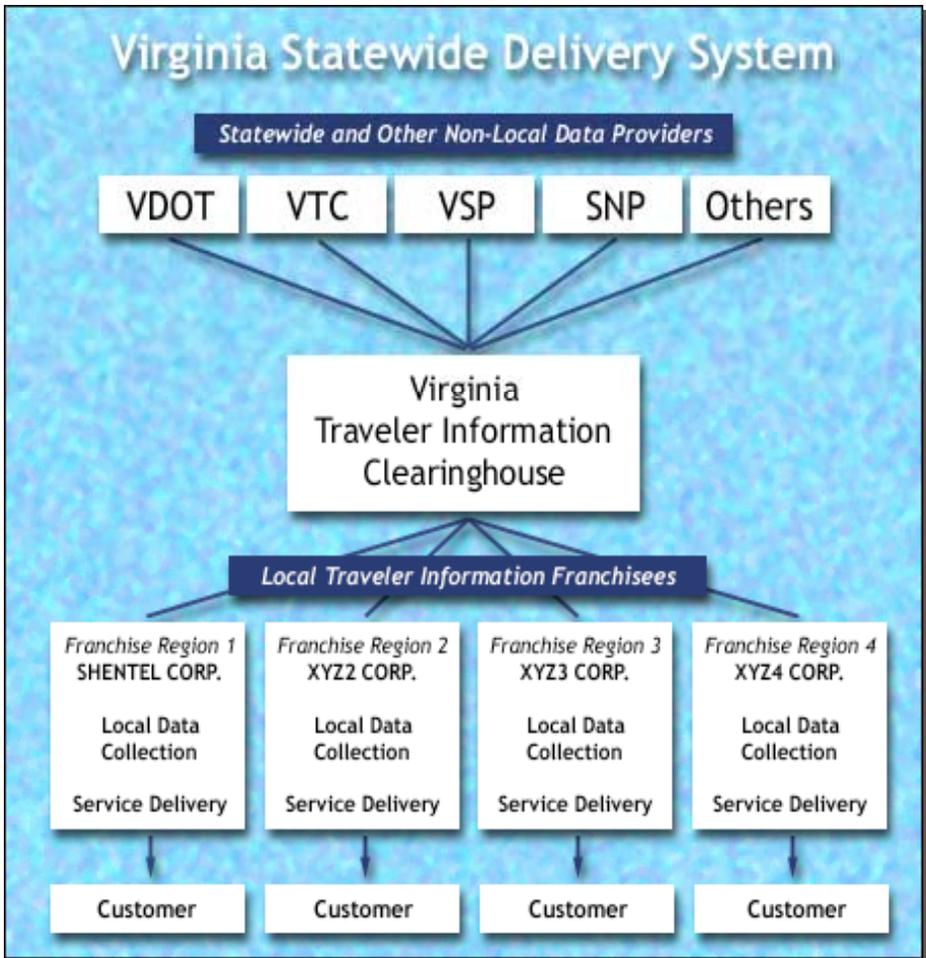
Figure 1.2 Statewide Database Structure.

The intent is that each partnership would be a financially self-supporting enterprise, responsible for providing the services outlined above to a pre-agreed upon set of standards. In return for doing so, each local partnership would have the right to generate revenues from a range of ancillary activities, sufficient to support its operation and yield an acceptable level of profit.

User Services

The precise nature of the services involved will necessarily vary from region to region, dependent on the characteristics of the region and the core-business interests of the partners. In general terms, however, it is intended that the information provided to the traveling public and the set of delivery modes involved will parallel those implemented as part of the pilot Travel Shenandoah project. These are summarized in Figure 1.3.

10 SERVICES

- 'Travel Alerts'
- Current Traffic & Road Conditions
- Food & Lodging
- Traveler Services
- Tourism, Events & Attractions
- Emergency Services
- Door-to-Door Trip Routing
- Advertising & Promotions
- On-Line Shopping & Reservations
- On-Line Reservations

8 DELIVERY MODES

- Internet/Email
- Mobile Telephone (Cellular/PCS)
- Pager
- Landline Phone & Fax
- Cable Television
- Changeable Message Signs
- Highway Advisory Radio
- Information Kiosks/Terminal

Figure 1.3 Services and Delivery Modes.

Users are to be provided with the ten basic forms of service illustrated in Figure 1.3. These services are to be delivered via a mix of eight delivery modes, also listed in Figure 1.3. While the services and delivery modes will be tailored to meet the requirements of each region, the intent is that a common core of information will be available to users at all times for all regions. This common core will then be supplemented by additional information unique to each region. Similarly, it is intended that users will be able to access the service whether they are simply planning a trip for six months hence, are about to depart, are already traveling in their vehicle, or are stopped at some intermediate point along the way.

Data Inputs

As noted above, data on local tourist attractions and traveler services will be collected, maintained, and regularly updated by each of the local partnerships for its region. These data will be complemented by additional regional and statewide information collected and maintained by the central Clearinghouse. This will include continuously updated information on traffic and travel conditions throughout the state, as well as additional statewide tourist and related data and the information needed to maintain and operate the Travel Virginia on-line shopping and reservation services.

Information in the Clearinghouse database will be updated at different intervals, appropriate to the type of data involved. Information on traffic and travel conditions, for example, will be updated continuously. Information on forthcoming events and attractions will be updated either weekly or monthly. And information on food and

lodging establishments, tourist attractions, and other traveler services will be updated at least once every six months.

User Access

Users of the service will be able to access any of the eight basic delivery modes free of charge from any point within the Commonwealth and elsewhere. The only exception will be tailored Travel Alert services, designed to be delivered via pager, fax, or e-mail to specific groups of users who opt to contract for the service for a small monthly fee.

Information on any given region will be available to users located in any other region. Thus a user in Hampton Roads, about to leave on a trip to Winchester in the Northern Shenandoah Valley, could use the service to check on road conditions on a number of routes linking the two areas. Alternatively, this person could use the service to make a hotel reservation in Winchester, obtain directions to several local businesses, or check on concerts or sports events in Washington, D.C. that might justify a diversion on the way home.

Market Focus

The bulk of the development effort associated with the Travel Virginia program will be focused on the rural regions and the smaller urban areas of Virginia. In the case of both the Northern Virginia and Hampton Roads regions, emphasis will be placed on linking the Travel Virginia service to the metropolitan traveler information services that are either already in existence or are under development.

The service will be designed to provide information of value to multiple market segments, including both the traveling public and those offering services to such travelers. Examples include: people planning a future trip, travelers checking conditions prior to departure, travelers en-route, potential tourists, visitors to the area who are unfamiliar with the surroundings, local businesses providing services to the traveling public, commercial vehicle operators, local residents, state and local government agencies, emergency service providers, and persons needing help. Thus, the service will be designed and operated so that it provides a convenient, easy to use means of linking persons desiring a service with those in a position to provide it.

Business Model

 The focus on providing services of value to multiple market segments is critically important to the long-range financial viability of the concept. Just as the nature of the services provided will necessarily vary somewhat from region to region, so also will the structure of the revenue producing activities.

A representative set of revenue sources, again based on those employed in Travel Shenandoah, is illustrated in Figure 1.4. They include: overall commercial sponsorship of the service, targeted subscriptions, telephone roaming charges,

conventional banner advertisements, tailored information pages, web sites and audio announcements, structured search services (both web-based and telephone-based), special promotions, and commissions on electronic shopping sales and reservations.
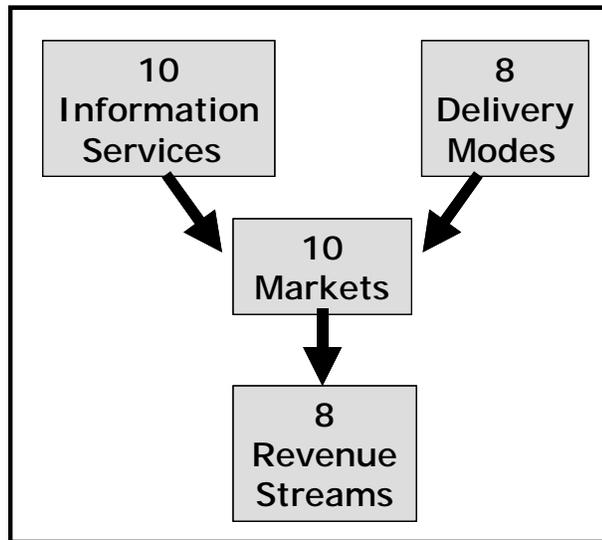
Figure 1.4 Revenue Sources.

These sources will again inevitably vary in relative importance from one region to the next, and will in many cases be supplemented by additional sources unique to each region. In all cases, more than one revenue source, and preferably several, will need to be identified if the regional service is to be financially viable.

Potential Benefits to Partners

It is anticipated that the precise composition and focus of the partnerships will vary considerably from one region to the next, depending on the characteristics of the local area, the services to be provided, and the potential benefits that local organizations see in participating.

In the case of potential public sector partners, for example, benefits might take the form of increased tourism through improved marketing of the region, associated growth of local businesses and enhanced local economic development, improvements in highway safety and related services to the traveling public, and the ability to respond more rapidly to emergency situations.

The interests of potential private sector participants will be driven mainly by the role that participation in the service might play in increasing their existing revenue base and profitability. In most cases, this is likely to be achieved if their participation takes the form of an incremental addition to an established business, which builds upon and expands an already successful business operation, rather than through the creation of a totally new line of business.

Examples might include using participation as a Travel Virginia partner as a way to help build market share for an existing, related line of business or to simply accelerate the growth of an established revenue stream. In appropriate circumstances, it may offer the opportunity to create a new, low-cost source of revenue that represents a logical addition to an existing business and that takes advantage of existing, sunk-costs in infrastructure investment or brand identification. In a limited number of cases, participation by a private sector organization may be seen simply as a useful community service or an opportunity to build market visibility.

In the case of Travel Shenandoah, the service was built around the model of a dominant local telecommunications partner, SHENTEL, which in turn had established business relationships with multiple other telecommunication providers. Given the importance of telecommunications to the whole service, it is likely that in a local telephone company will play a leadership role in other regional partnerships. This does not have to be the case, however. Other potential local partners include: local newspaper, radio and television companies; local Internet service providers; major employers with large commuting workforces; large educational institutions; and major commercial tourist attractions.

CHAPTER II
TRAVEL SHENANDOAH: SOME LESSONS LEARNED

The initial model for Travel Virginia is the pilot demonstration service launched in April 2000 in the Northern Shenandoah Valley under the title Travel Shenandoah. Developed over a period of approximately eighteen months by a team from Virginia Tech and SHENTEL, Travel Shenandoah has proven to be an invaluable learning experience. This chapter briefly describes the current service and outlines some of the major lessons learned from its design, development, and initial operation.

The Travel Shenandoah Service

Travel Shenandoah is a real-time traffic, travel condition, and tourism information service for Virginia's Shenandoah Valley. The service went live on April 26, 2000.[1]

Coverage Area

The area covered by the service is illustrated in Figure 2.1. It stretches roughly 150 miles from north to south, straddling the I-81 Corridor from the Virginia/West Virginia line in the north to the town of Lexington in the south. From east to west, the coverage area is roughly 50 miles wide at its greatest point, stretching again from the West Virginia border in the west to the eastern border of the Shenandoah National Park. The area covers 14 counties, the Shenandoah National Park, roughly 250 miles of three major Interstate routes, and some 500 miles of state primary routes.

---

[1] The Travel Shenandoah Internet address is http://www.travelshenadoah.com
The telephone service may be accessed by dialing 1-800-578-4111.
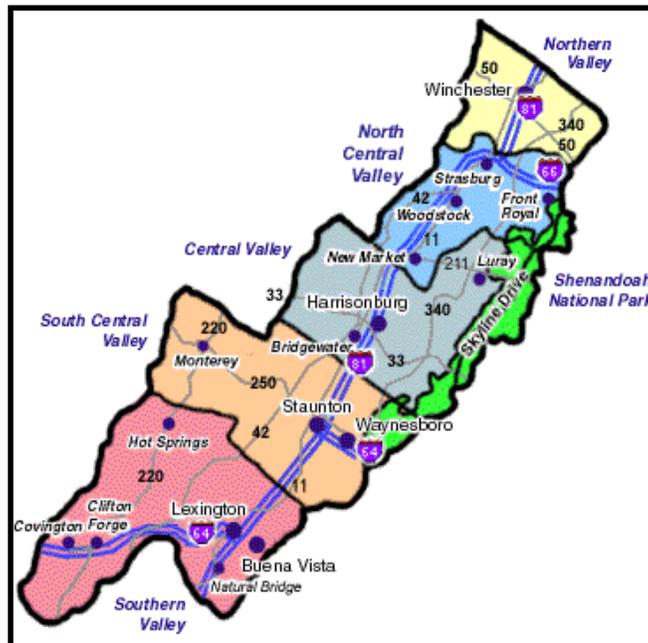
Figure 2.1 Travel Shenandoah Map.

Sponsorship

The service was developed originally as a rural ITS operational test, sponsored jointly by the Virginia Department of Transportation (VDOT) and the Virginia Tourism Corporation (VTC). It was designed and developed by the Virginia Tech Transportation Institute (VTTI) and the Shenandoah Telecommunications Company (SHENTEL), as a public-private partnership. The same partnership is operating the service during its initial 15-month demonstration period. Slightly less than 50 percent of the total cost of the development and demonstration of the service has been contributed by VDOT. The balance has come from other sources, including a major contribution from SHENTEL.

User Services

The service (please see Figure 1.3) provides tourists and prospective visitors, travelers, truckers, and local residents with easily accessible, up-to-date information on current road and traffic conditions, tourist attractions and upcoming events, food and lodging, traveler and emergency services, trip routing, and on-line shopping and reservations. Information may currently be accessed via the Internet, voice actuated mobile or landline phone, pager, or cable television. Over the next year the delivery modes are being extended to include automated links to VDOT changeable message signs, cooperative highway advisory radio services, and counter-top terminals and kiosks.

Information is available to the user both on request and via "push" Travel Alerts, designed to warn travelers of accidents or other hazardous conditions as they occur. These alerts are provided continuously and at no charge to the user via the Internet, wireless telephone, cable television, and a tailored subscription pager service.

Data Sources

Data are obtained from some 35 different sources and verified and entered into an integrated, digital database maintained at a central statewide Clearinghouse at VTTI. The majority of the information that flows into the Clearinghouse is automated. The major sources of data and the structure of the Clearinghouse are illustrated in Table 2.1.

Table 2.1 Data Sources for Travel Shenandoah.

Type of Data	*Primary Data Sources*	*Secondary Sources*
Real Time Travel Alerts	Virginia State Police 'CAD' System VDOT 'VOIS' System Shenandoah National Park Operations Clearinghouse Operator Verification	VDOT Residencies Local Radio & TV Stations
Current Traffic & Travel Conditions	VDOT Construction Announcements VDOT Public Information Web Site US Weather Service Virginia State Police VDOT Residencies Shenandoah National Park	Local Government Agencies Local Radio Stations Local Destination Marketing Organizations & Universities Unsolicited Call-Ins
Other Travel Related Information	Geo-Coded Mile Markers Geo-Coded Street Addresses MapQuest Maps & Software	
Individual Establishments (Food & Lodging, Traveler & Emergency Services)	SHENTEL EYP Other Local 'Phone Company EYPs VTC Database SVTA Database Shenandoah National Park Data Extensive Direct Contacts Travel Shenandoah Marketing	Local Government Records Chambers of Commerce Data Association Memberships
Tourist Attractions	VTC Database SVTA Database Shenandoah National Park SHENTEL & Other Co. EYP Virginia State Historical Markers Extensive Direct Contacts Travel Shenandoah Marketing	Other Local Destination Marketing Organizations Local Government Agencies Membership Organizations Individual Establishments
On-Line Transactions, Advertising & Promotions	Travel Shenandoah Marketing Calypso Online Shenandoah.com Links to VTC & SVTA Member Web Sites Links to Other Web Sites	

Real time information on traffic and road conditions is updated continuously via automated links to VDOT and the Virginia State Police systems. Weather information is drawn directly from the National Weather Service. Data on tourist attractions, places to stay and eat, and related traveler services are drawn from VTC, regional Destination Marketing Organizations (DMOs) and local tourist organizations, and National Park Service databases. These are augmented by private telephone company electronic yellow pages and the sale of targeted advertising and promotions on the Travel Shenandoah service. All data are checked at least once every six months. The current database contains information on over 4,500 establishments.

The Central Clearinghouse

The Clearinghouse database is built on an SQL Server platform with Cold Fusion as the middleware ODBC programming language, and is supplemented by selected JavaScript and Visual Basic applications. The design is based on standard relational database principles and data warehouse design methodology. The database feeds all delivery modes. Information is relayed via a TCP/IP connection from the central Clearinghouse database to an identical SQL Server database maintained by SHENTEL. Data inputs and administration are managed through a custom designed, web-based administrative system.

The central Clearinghouse currently operates 24 hours a day, seven days a week. It is staffed by trained operators from 6:00 am to 8:00 pm on weekdays and from 8:00 am to 8:00 pm on weekends. During nighttime hours, the service operates in automated mode.

Data Feeds to Delivery Modes

The Clearinghouse feeds information simultaneously to all delivery modes. In the case of the Internet-based service, the connection is direct, including real-time transmission of Travel Alerts that appear automatically in a window on every screen of the Internet service. In the case of the various telephone-based services and the cable television service, the information passes through an additional step. It is fed from the SQL Server database into a data-voice translation system developed by VODAVI and maintained by SHENTEL at the company's facility in Edinburg, Virginia. From here, the information is relayed via a voice-actuated service to conventional landline and mobile phone users.

Information on Travel Alerts is also transmitted directly via the VODAVI system to an alpha numeric paging service, and via an automated translation system to SHENTEL's Emergency Alert System (EAS) for display as a scrolling message on all 90 channels of SHENTEL's cable television service. In addition to these EAS messages, one channel of the cable television service is devoted to Travel Shenandoah information.

Delivery of Services to Users

Both mobile phone and pager services may be accessed both via SHENTEL's own subscribers and by those of other companies with whom SHENTEL has established business relationships for shared access to the company's cellular, PCS, and paging networks. In the case of the present service, this includes some half-dozen major mobile telephone companies and four other paging companies.

The basic Travel Shenandoah service is free to users, the only exceptions being pager subscriptions and subscription services aimed at commercial businesses and organizations. In each of these cases, users are charged a small monthly fee.

The Public-Private Partnership

As noted earlier, the service was developed initially as an ITS demonstration project, funded by VDOT under the Smart Travel program. It has evolved to become a public-private partnership in the truest sense of the phrase; involving the participation of

representatives of both the public and the private sectors, with the university playing a combined role of broker and active participant. All parties are making a significant contribution, and all parties are receiving significant benefits. This is illustrated conceptually in Figure 2.2.
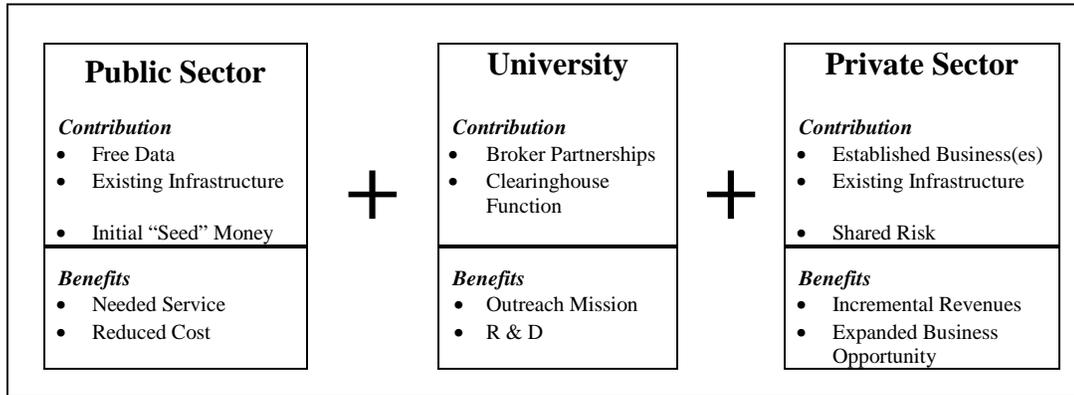
Figure 2.2 Partnership Representation.

Both SHENTEL and VTTI have made substantial additional financial contributions. SHENTEL is providing access to its infrastructure at no charge, and has contributed substantial personnel and equipment to the endeavor. VDOT is similarly providing free access to its Changeable Message Sign and Highway Advisory Radio installations, and together with VTC and the State Police, is providing free access to its various databases. VTTI's contributions, in addition to the creation of the Clearinghouse database, include brokering the development of the basic partnership development of the underlying business model and creating the marketing plan.

The benefits to the public sector include enhanced service to the traveling public, improved safety and operational efficiency of the highway system, and continued growth in tourism and travel-related business activity, all achieved at reduced cost. The private sector gains an expanded business base and the opportunity to create and take advantage of new revenue sources. The university has the benefit of both a real world research project and, through the operation of the Clearinghouse, fulfillment of its mission of public outreach. Figure 2.2 summarizes these various contributions and the equivalent benefits gained by each party.

Business Model

A critical piece of this puzzle is the underlying business model that serves as the financial platform for the long-term viability of the service. In order to achieve the benefits listed above, it is essential that the service be capable of generating sufficient revenues to cover its on-going operating costs. If it fails to do this, it will not be financially viable over the long-term. It is here that the service's somewhat unique business model comes into play.

Most other ATIS services, whether developed for an urban area or a rural area, have relied primarily on only one or two major revenue streams to support their operation.

The result has been that they have been extremely expensive to maintain, often prohibitively so, resulting in either a marked cutback in service or their early demise.

In the case of Travel Shenandoah, the service was designed from the outset to be market driven, focusing on the delivery of multiple services via multiple delivery modes. Each delivery mode was designed to be aimed at the interests of one or more specific market segments. The result is a model (Figure 2.3) based on eight separate revenue streams, none of which alone could come close to supporting the costs of operation but which in combination have a good chance of doing so.

Travel Alert	Current Traffic & Road Conditions	Food & Lodging	Traveler Services	Tourism	Emergency Services	Trip Routing	REVENUE STREAM	Internet	Pager	Mobile Telephone	Cable TV	Telephone/Fax
							Subscriptions					
✓							Individual		✓	✓		
✓							Organizational	✓	✓	✓		✓
✓	✓				✓	✓	Telephone 'Air' Time			✓		
							Tailored Information Service					
		✓	✓	✓	✓	✓	Individual Establishments	✓		✓		
✓	✓	✓	✓	✓	✓	✓	'What's On' Promotions	✓	✓	✓		✓
✓	✓	✓	✓	✓	✓	✓	Service Sponsorship	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	Conventional Advertisement	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	On-Line Shopping & Reservations	✓				
✓	✓						Governmental Fees-for-Service	✓	✓	✓	✓	✓
✓	✓						Sale of Data/Data Feeds		✓	✓		

Figure 2.3 Revenue Model.

The ten information services and eight delivery modes are those illustrated previously in Figure 1.3. They are listed again for convenience in Table 2.2, together with the ten major market segments toward which the service is directed. The result is a set of eight complementary revenue streams, listed separately in Table 2.2. They are designed both to support the on-going costs of operating the service and to offer a reasonable financial return to SHENTEL.

Table 2.2 Major Components of the Travel Shenandoah Business Model.

Information Services	Delivery Modes	Market Segments
Travel Alerts	Internet / E-Mail	Travelers En-Route
Current Traffic & Road Conditions	Mobile Telephone	Travelers Prior to Departure
	Pager	Potential Tourists
Food & Lodging	Landline Phone/Fax	Visitors to the Valley
Traveler Services	Cable Television	Local Businesses
Tourist Events & Attractions	Changeable Message Signs	Commercial Vehicle Operators
Emergency Services	Highway Advisory Radio	Local Residents
Door-Door Trip Routing	Information Kiosk	State & Local Government Agencies
Advertising & Promotions		Emergency Service Providers
On Line Reservations		Persons Needing Help
On Line Shopping		

Major Revenue Streams
Overall Commercial Sponsorship of the Service
Targeted Subscriptions
Telephone Roaming Charge
Conventional Banner Advertisements
Tailored Information Pages, Web Sites & Audio Announcements
Structured Search Services, both Web-based and Telephone-based Special Promotions
Commissions on Electronic Shopping Sales and Reservations
Limited Governmental Fees for Service

Some Lessons Learned from Travel Shenandoah

Travel Shenandoah has been developed over a two-year period, and represents both a valuable learning experience and a significant investment of time and money by all players involved. Experience with the design, development, and initial operation of the service suggests seven major lessons for its potential expansion to other regions and the state as a whole.

Flexibility of Partnering Relationships

The partners in Travel Shenandoah have accepted an unusual degree of flexibility in their interpretation of their respective roles, which has allowed the project to evolve successfully, often in ways that would not otherwise have been possible. In particular, it has become very clear that successful development of a service such as Travel

Shenandoah, while it must still have disciplined direction, cannot be approached in the same way as a conventional ITS or transportation construction project.

Data Collection and Maintenance

By far the biggest challenge has been in the collection and verification of the underlying data. This applies to information obtained from automated sources as well as that developed directly. It is all perfectly feasible, but it takes considerable energy and time, particularly calendar time.

Value of Rapid Prototyping and Staged Development

Probably the most important technical step that was taken in the initial development of the service was the decision to create and demonstrate an early, working prototype, using actual data, during the first six months of the project. This served both to illustrate to the service's multiple stakeholders what the service was designed to do and how it might be of value to them, and also to provide a working vehicle for continuous refinement and expansion.

A second, important decision was to develop the service in stages, focusing initially on the comprehensive web-based system and its associated database and then extending that concept to other delivery modes.

Working with Stakeholders

It is a cliché to say how important it is to stay in touch with your key stakeholders, but this was underlined time and again throughout the project. The service has evolved successfully largely because of the constant interaction between the members of the project team and the project's primary stakeholders, as well as the willingness of both parties to listen to each others' concerns and work out creative ways of addressing them.

Multiple Markets, Delivery Modes, and Revenue Streams

A service designed only to provide traffic data will almost never be self-supporting financially. A key to the prospective success of the Travel Shenandoah service has been the constant emphasis that has been placed on a market-driven perspective: view the design of the service from the point of view of the multiple users and the suppliers of information.

In the former case, the primary issue is what kind of information and transactional capabilities are likely to be of interest to different user groups at different times and places. In the latter case, the issue becomes one of determining how best those needs may be met in a way that meets both the goals of public sector stakeholders to provide enhanced services to the traveling public and of private sector stakeholders to build market share and make a profit.

Rural Areas are Different

What is needed and works in a major metropolitan area is very different from what is needed and works in a rural or less developed area. One cannot simply pick-up an ATIS service model designed for an urban area, no matter how good, and hope to apply it successfully to a largely rural environment.

Importance of Realistic Financial Objectives

The experience of designing and implementing the original Travel Shenandoah business model suggests clearly that it is possible to create a rural ATIS service that can provide useful service to the traveling public and be financially viable. For this to happen, however, it is essential that all parties involved view the prospects for financial return in realistic terms.

For the public sector, this implies viewing the service as something of value to the public, which can be delivered at a reduced cost to the public purse. In all probability, it will not represent a significant opportunity for revenue or profit sharing by the public sector, at least in the short run. Equally important, care should be taken to avoid endangering the viability of what will inevitably be a somewhat fragile start-up enterprise by succumbing to the temptation to charge the service's private sector partners either for the use of data collected by the public sector for other purposes, or for the use of public infrastructure solely in support of the service itself.

From the perspective of the private sector, it needs to be viewed as an opportunity to provide a useful service that builds on an existing, successful business, and creates one or more new, incremental revenue streams without the need for substantial new infrastructure investment. The temptation must be avoided to burden the activity with the fully allocated costs of existing infrastructure that is already being utilized successfully for other, independent purposes. The goal should be to generate sufficient revenues to cover the on-going operating costs of the service with an additional, reasonable margin of profit left over to provide an acceptable return on the investment involved. The service should be viewed as one in which the public sector costs are treated as a fee-for-service, and are kept to a reasonable minimum.

CHAPTER III
FEASIBILITY OF A STATEWIDE TRAVEL VIRGINIA SERVICE

In parallel with the successful development and testing of the pilot Travel Shenandoah service, an assessment was made of the feasibility of creating similar services in other regions of the State, with a view to ultimately build a comprehensive, statewide Travel Virginia service along the lines outlined in Chapter I.

Emphasis was placed on six issues:

- Technical considerations;

- Availability of data;

- User and customer acceptance;

- Institutional issues;

- Business model and financial feasibility; and

- Potential partnership interest

The results indicated that it was both eminently feasible to develop the type of statewide service envisioned, and that there was considerable interest in doing so on the part of numerous potential stakeholders. There are, however, some significant challenges that need to be addressed. These are discussed in this Chapter.

Technical Considerations

The experience with the development and initial operation of Travel Shenandoah indicates clearly that there are no major technical stumbling blocks that would preclude the development and operation of a broader, statewide service. Indeed, many of the technical issues involved in implementing such a service have been successfully addressed in the creation of the initial pilot. The pilot program has successfully served as a proof of concept for the technical components of the systems.

Most data acquisition is now automated. Procedures have been established to support data verification, updating, and synthesis. The central database and database management system embodied in the current Clearinghouse have been thoroughly tested and are working fine. Both are designed to be fully scaleable up to a statewide level. The same applies to the VODAVI data-voice translation and voice recognition systems implemented by SHENTEL. The process of relaying information from the database to the various delivery modes has been operational for several months and is working well.

Similarly, the entire set of initial delivery modes (Internet, mobile and landline phone, pager, and cable television) have all been thoroughly tested and have now been operational for four months. They are all working well. The remaining modes (CMS,

HAR, and kiosks), while they are not yet operational in Travel Shenandoah, are all based on the use of well-proven technology.

Equally important, all eight of the delivery modes were deliberately designed to take advantage of existing, widely available technology that is already in place throughout most areas of the Commonwealth.

The Internet service, for example, is available to any user with access to a computer and the Internet. While high-speed, broadband access is still some years away in many rural areas of the state, such access is not a critical requirement for the effective delivery of the service. The existing, virtually ubiquitous network of Internet service providers across the state is perfectly adequate. The same applies to conventional landline telephone and cable television service. The existing network of local access and long distance telephone companies and cable television operators provides the vast bulk of the necessary technical infrastructure.

The issue in the case of both mobile telephone and pager service is somewhat more confusing. Here the technical question is the distribution of wireless relay towers across the state and the range of coverage provided by those towers. While the network is already extensive and is growing, coverage in the rural areas of the state is not uniform. There are areas where no coverage is available, and there are a larger number of areas where reception is either of poor quality or somewhat erratic.

However, most major routes are already within the current areas of coverage, and those that are not soon will be. Further, both the extent and quality of coverage is expanding rapidly across all areas of the state. Given the pace of this development, it is not anticipated that this will pose a serious problem to the extension of the service statewide over a three to four year period.

As in the case of Travel Shenandoah, the delivery of services statewide via the remaining three modes, CMS, HAR, and kiosks, is primarily a function of VDOT's investment priorities. There is a growing network of VDOT CMS installations across the state, including a number of planned additional installations. All of these can be connected to, and supported by, the current Clearinghouse operation. The same applies to the growing network of HAR facilities, including those owned and operated by VDOT and those operated by other agencies. With regard to kiosks, VDOT has a program in place to upgrade the existing rest areas on the Commonwealth's interstate routes. This is to include the installation of interactive travel information kiosks that will be linked to the central statewide Clearinghouse database.

There are a few significant technical challenges ahead, both relating to the collection of field data and particularly traffic and road condition information. At the moment, there is little or no automated detection of traffic or road condition data as part of Travel Shenandoah. Over the next few months, plans are in place to implement certain forms of automated detection, mainly through the use of CCTV cameras and automated weather

monitoring devices. In addition to the installation of the devices themselves, each device will need to be connected via a communications link to the central database.

There is also consideration being given to using reverse wireless tracking technology from USWireless Corporation to measure speeds and volumes at critical points on the statewide road network. Though promising, this technology is still unproven.

One final point should be made here regarding the role of an established communications infrastructure in a service such as that envisioned for Travel Virginia. Four basic forms of communications are required to support the service:

- Communications to and from field devices;

- Communications feeding data into and out of the central Clearinghouse;

- Operation of the voice-responsive and related functions of the Clearinghouse; and

- Local access communications delivering services to the end user.

In the case of Travel Shenandoah, the primary communications with the end-user are provided by SHENTEL with support from other carriers having an established business relationship with SHENTEL.

The primary links to and from the Clearinghouse are all web-based, supported by conventional long-distance voice and data communications. As noted above, relatively little reliance is placed on field devices, though this is anticipated to grow in the future with the communications being a combination of state-owned and commercial landline or wireless telephone. SHENTEL operates the voice-responsive and related portions of the Clearinghouse on behalf of Virginia Tech.

In the case of the broader Travel Virginia service, this arrangement may take on a variety of different forms, involving either multiple communications carriers, each operating in one or more different regions, or a lesser number (including possibly just one) of dominant long-distance carriers with established relationships with multiple local access carriers. The range of potential organizational arrangements is discussed further below. Independent of whatever such arrangements are made; however, all four of the technical requirements outlined above must be met.

Availability of Data

The situation is somewhat similar with regard to the availability of data to support the service. Experience with the development of Travel Shenandoah has shown conclusively that the data needed to fuel a statewide service are available. However, experience has also shown that the time and energy that needs to be devoted to data acquisition, verification, maintenance, and regular updating is higher than one would anticipate.

In the case of Travel Shenandoah, once the basic business model and marketing approach had been established and the various Clearinghouse and delivery systems had been

developed and thoroughly tested, such data-related activity accounted for roughly 50 to 60 percent of the total resources devoted to the project. It is anticipated that this will be the case for each of the new regions to be covered in the implementation of a statewide service. Data requirements basically fall into six major categories:

- Real time travel alerts;
- Current traffic and travel conditions;
- Other travel related information;
- Individual establishment data;
- Tourist attractions; and
- On-line transactions, advertising, and promotions.

Table 2.1 (in Chapter II) summarizes the major sources of data that were employed in the development of the initial Travel Shenandoah service. These same sources or their local equivalents are available for all areas of the Commonwealth.

Real Time Travel Alerts

The primary source of data in this case would be the direct link that has been established between the Clearinghouse and the Virginia State Police, supplemented by links to VDOT's VOIS system, local VDOT Residencies, National and State Park Operations, and local radio and television stations.

In the state's major urban areas, these public sector data sources may be supplemented by real-time or quasi real-time traffic information. This information would come from both public sector surveillance and control systems and private sector organizations in the business of collecting and disseminating traffic reports to radio and TV stations and, in certain circumstances, direct to the general public.

Current Traffic and Travel Conditions

The same primary sources would be used here as were employed in the initial Travel Shenandoah service, supplemented by equivalent local and regional data where appropriate (data for Virginia State Parks or National Parks in the area). Again, in the state's major urban areas, these sources may be supplemented by data from public sector surveillance systems and private sector traffic reporting services.

Other Travel Related Information

It would be necessary to repeat the exercise of geo-coding all Interstate mile markers and verifying the precise latitude and longitude of all establishments to be listed in the database, as was done in the case of the initial Travel Shenandoah service. This would again be accomplished through field checks by VTTI staff. The same modified version of the MapQuest software would be used to support provision of directions and trip routing information.

Individual Travel Establishment Data

The primary sources of data in this case would again be the existing VTC database, supplemented by local telephone company yellow page listings, local DMO listing, State and National Park Service data, and information from individual establishments. It is expected that much, but not all, of this data would be available for use in electronic form. It is also recognized that negotiations with each local telephone company will be required regarding the use of the company's yellow page data. Thus, it is considered inevitable that extensive direct contacts will be required to build the initial database. Once that database has been completed, it is anticipated that its regular updating could again be accomplished, at least in part, through the marketing of advertisements and related promotions on the resultant regional and statewide services.

Tourist Attractions

The same basic set of data sources that were employed in the case of Travel Shenandoah would be available and would be used. These would be modified as necessary to incorporate specific local and regional information for the area in question. Considerable emphasis would have to be placed on a close working relationship with all local DMOs, chambers of commerce, and local trade associations.

On-Line Transactions, Advertising, and Promotions

Reliance would again be placed primarily on the marketing and sales activities of the members of the regional Travel Virginia partnership in question. Use would be made of VTTI's alliance relationship with Calypso Online to provide the necessary on-line shopping service.

User and Customer Acceptance

While the service is still new and its effectiveness, consumer acceptance, and financial viability are still being tested, every indication so far is that it will be successful. Usage is growing, the service is strongly supported by both public and private organizations, and the Commonwealth of Virginia, together with three neighboring states, is planning its expansion to other areas. Some illustrative statistics and other evidence that supports this contention include:

- In the months of June and July 2000, prior to the launch of the major marketing campaign, Internet service registered approximately 11,000 and 12,000 hits per month, respectively. Roughly 50 percent of the hits were directed to the Traffic and Travel Conditions channel. Approximately 900 mobile phone calls were made to the free 1-800 number in the month of June.

- Active support has been obtained from all 12 counties within the service area, roughly 25 chambers of commerce, local DMOs and business organizations, and over 500 individual businesses.

- The current Travel Shenandoah database contains information on roughly 4,500 individual establishments, some 400 of which have already requested and been

provided with individual web-based information pages and/or tailored phone announcements, prior to any extensive marketing on the part of SHENTEL. Initial sales efforts over a two-month period have resulted in approximately 100 additional entities placing advertisements on the service.

- There is considerable active support for the Travel Shenandoah service at all levels of government, including the Commonwealth of Virginia, the USDOT, and the adjacent states of West Virginia, Maryland, and Pennsylvania. The I-95 Corridor Coalition has contracted with Virginia Tech to explore the feasibility of extending the service northwards along the I-81 Corridor to a point beyond Harrisburg, PA.

- With the active support of the Virginia Trucking Association and the National Association of Truck Stop Operators, the initial Travel Shenandoah service is currently being expanded to include an additional Truck Fleet Service channel, tailored to meet the needs of the trucking industry.

Institutional Issues

As indicated above, there is significant institutional interest and support for the development of a statewide Travel Virginia service. Within the public sector, the interest is broad and statewide, with support coming from organizations ranging in size from small local DMOs, local economic development groups, and civic organizations to local and county government, the State Police, VTC, and VDOT. In the private sector there is similar, clear support across the state from industry groups such as the Virginia Technology Alliance, local chambers of commerce, business and trade associations, the cable television industry, radio and media companies, Internet service providers, and regional paging and mobile telephone companies.

What is still unclear, primarily because of Travel Shenandoah's short operating history and the inevitable unanswered questions concerning a broader Travel Virginia service, is the precise roles that many of these organizations are interested in playing as part of a larger statewide service. That is, there is broad support for the concept, but many questions remain concerning specific roles and responsibilities. This issue is discussed in some detail in the next section of this chapter.

Many of the questions raised tend to be institutional in nature; having to do, for example, with issues such as the organization, governance and regulation of the service, levels of future financial and political support, and the likelihood that certain critical functions (such as the Central Clearinghouse) may or may not continue in their present form.

These institutional questions break down into four broad categories, all of which need to be addressed if a statewide service is to be successful:

- Long-term organization and governance of a statewide service;
- Contractual relationships with VDOT, VTC, VSP, and local DMOs;
- Long-term responsibility for the statewide Clearinghouse; and

- Relationships with related services, within Virginia and elsewhere.

Each of these is discussed briefly below.

Organizational and Governance Structure

The pilot Travel Shenandoah service, while it has been operating in effect as a public-private partnership, is formally organized as a classical VDOT research contract. VDOT is the client, VTTI serves as the prime contractor, and SHENTEL is a subcontractor to VTTI. That arrangement has worked well during the initial development phase of the service; however, it will not work as the foundation for its long-term operation.

The same comments apply to the development and long-term operation of a broader, statewide service. A research-oriented structure is an excellent vehicle for supporting the initial planning and development of such a service, yet it is wholly inappropriate to its long-term operation. These issues, and the associated questions of the governance and regulation of any statewide service, are critical to its future success. They are discussed in some detail in Chapter VII, which lays out three possible long-term options for consideration.

Contractual Relationships

At the present time, the only formal contractual agreements in place among the parties are the prime contract agreement between VDOT and VTTI and a related subcontract agreement between VTTI and SHENTEL, both relating to the initial research project. As noted above, these need to be restructured to fit the requirements of a continuing service.

Equally important, if a statewide service is to be based on a solid operating foundation, more formal agreements need to be reached among all the parties involved in the initial Travel Shenandoah service, confirming the often somewhat informal understandings that have been reached to date. Agreements also need to be reached with those partners involved in the planning, development, and operation of a broader, statewide service in other regions.

Operation of Central Clearinghouse

To date, VTTI has been responsible for the design, development, and operation of the Central Clearinghouse, with support from SHENTEL concerning the VODAVI data-to-voice translation and telephone-related portions of the operation. These latter portions were developed by SHENTEL as part of the pilot Travel Shenandoah service. Under the terms of the pilot contract, SHENTEL has the continuing rights to that technology, with a requirement that SHENTEL continue to support VTTI in its application in any future extension of the service.

If the system is to operate efficiently on a statewide basis, these two functions of the Clearinghouse need to be consolidated into a single, centralized operation. It should be stressed that this does not imply transfer of the rights to the telephone portions of the operation to an entity other than SHENTEL, but rather underlines the importance of

pulling the two pieces together as an integral part of the support to any future, statewide operation.

Equally, and in many ways even more important, is the issue of long-term responsibility for the continuing operation of the Clearinghouse. The concept was developed jointly by VTTI and SHENTEL during the early stages of the pilot project. It has been implemented by VTTI, where it was viewed initially as a research and development exercise. As the pilot service has evolved, VTTI has gained significant experience with its on-going operation, including not only the technical operation, but also the establishment of effective working relationships with the various organizations providing information for the service. This experience is likely to be of considerable value if the service is to be expanded statewide.

It is clear that the continuing, day-to-day operation of the Central Clearinghouse, particularly in support of a broader statewide service, is something that reaches beyond the established research mission of VTTI. Likewise, it is recognized that VDOT is required to address the continuing operation of the Clearinghouse in the context of the agency's established policies regarding the procurement of both research and professional services.

Continued operation of the Clearinghouse is, however, a service that the university can continue to provide, and would very much like to do so as part of Virginia Tech's ongoing outreach function of the university. There are a variety of ways in which this might be achieved, each of which would have the benefit of retaining and building on the experience gained to date, providing a convenient vehicle for on-going research and development of the service, and minimizing the on-going costs of its operation. This issue, including a recommended option, is again discussed further in Chapter VII.

Links to Other Services

Initial discussions have been held with several organizations, including Partners-in-Motion, AAA, and others regarding the development of links between Travel Shenandoah and their services. These have all gone well, but decisions were made in each case to hold off any further discussions until the pilot Travel Shenandoah service was successfully launched. Now that this has happened, the appropriate agreements need to be formalized and extended to include both the broader Travel Virginia service and links to other relevant organizations, such as the major on-line travel services and media outlets. Where appropriate, such relationships need to be formalized as contractual agreements.

Business Model and Financial Feasibility

It is not yet possible to draw any firm conclusions regarding the financial viability of the basic business model that underlies the Travel Shenandoah service (and by extension the model proposed for Travel Virginia). Three months of operational experience is far too short a period to attempt anything along those lines. It is fair to say, however, that all indications so far are positive and that there is every reason to believe that, with minor

modifications, the model developed for the initial pilot will hold up successfully, both in its initial application in the Northern Shenandoah and as a framework for implementing a broader, statewide service.

The model has three major dimensions: the first deals with the form of the relationship between the public and the private sectors; the second deals with the issue of shared risk and return; and the third concerns the ability to generate revenues that are sufficient to cover all the costs that need to be covered and leave some margin of profit for the private participants. Each is examined briefly in this section.

Relationship Between the Public and the Private Sectors

There are many possible variations on this theme, but for purposes of this discussion distinction may be drawn between two major types of arrangement: Contracted Operations and True Public-Private Partnership:

Contracted Operations Model

Under such an arrangement, a public sector client contracts with an outside party, usually a private sector contractor, to provide an agreed upon set of services utilizing a combination of both public and private sector resources. In return for these services, the contractor is paid a fee, the amount of which is typically based on the contractor's performance, the contractor's potential for generating revenues to offset costs, and the relative resource contributions that each party is making to the undertaking.

The arrangement allows the public sector client to protect the public interest by retaining overall control of the undertaking, while at the same time drawing on private sector resources in a way that reduces the total cost to the public. It affords the private sector contractor the opportunity to develop additional sources of income, usually by building on an established business base and associated infrastructure.

True Public-Private Partnership Model

In this case, the parties agree to form a true partnership, formalized in a legally binding partnership agreement that spells out clearly each party's role(s), responsibilities, and obligations. These include assumption of risk, investment requirements, governance arrangements, oversight authority (if any), and rights to participate in any ultimate financial gain or loss. There is no longer a client and a contractor, but rather two (or more) equal parties to a business arrangement.

The arrangement has the advantages of allowing the parties a greater degree of flexibility to manage their affairs and to respond quickly to changing circumstances. Under the right conditions, it can result in the public sector providing a needed service at a substantially lower cost than would otherwise have been possible, and result in the private sector generating significant new sources of revenue. However, it has the disadvantage of making it harder for the public sector client to protect the public interest.

The first of these two options is by far the most common form of arrangement, yet there is increasing interest in the second. Much of the discussion of such public-private partnerships to date has tended to focus not on true partnership arrangements, but rather on agreements whose structure, despite the partnership label, often simply represent a variation of the former type of agreement. The reasons for this are many, and are shared almost equally by both the public and the private sector participants.

In the case of Travel Virginia, it is VDOT's expressed intention to pursue an option as close as possible to the second arrangement. There are, however, some significant procurement and legal issues that will need to be resolved if this is to be achieved. These are discussed at some length in Chapter V.

With this as background, the basic business model underlying Travel Shenandoah has been designed deliberately to accommodate either option. It can be readily adjusted to place more or less emphasis on a true partnership arrangement, or one that reverts back to something closer to a contracted operation.

Shared Risk and Return

Independent of the final form of the arrangement between the public and the private sectors, it is a basic assumption of the Travel Virginia business model that both parties will contribute significantly to the activity, make investments, share risk, and receive benefit from the arrangement. This is summarized in broad terms in Table 3.1.

Table 3.1 Public / Private Sector Risk Sharing.

	Public Sector Partners	**Private Sector & University Partners**
Major Contributions	• Public Policy Objectives • Initial Strategic Direction • Participation in Governance • Desired Performance Criteria • Start Up Support	• Prior Experience • Established Business/Brand • Existing Infrastructure • Delivery Against Criteria • Day-to-Day Management
Major Benefits	• Enhanced Service to Public • Increased Tourism Revenues • Traffic Safety & Operations • Reduced Cost / Shared Revenues	• Profit • New Revenue Streams • Expanded Capabilities
Major Investments	• Start-Up Costs • Tourism, Traffic & Other Data • Existing Public Infrastructure • Staff Participation & Oversight • Subsequent Fees-for-Service • Additional Public Infrastructure	• Existing Software • Communications Infrastructure • Proven Business Model • Private Sector Data • Marketing & Sales
Shared Risk	• Potential Failure of Concept • Lost Start-Up Investment • Wasted Staff Time • Public Embarrassment	• Potential Failure of Concept • Lost Up-Front Investment • Major Opportunity Cost • Damaged Reputation

The experience with the development of the pilot Travel Shenandoah service indicates clearly that significant levels of meaningful risk sharing, along the lines outlined in the above table, can be achieved provided that the parties involved each perceive the potential for achieving sufficient benefits to outweigh whatever risks are involved. If that is not the case, then the concept runs the risk of failing at the outset.

The implication of all this is that it simply takes considerable time and effort to build up the necessary levels of support, within both the public and the private sectors, before any true commitments to meaningful risk sharing can be made. This is a process that is rarely straightforward and inevitably involves significant give and take on the part of all involved. The process is greatly helped by two things: the active participation of a credible, determined sponsor who believes in the concept, and the involvement of an objective broker who can see both side's points of view, is trusted by both sides, and can help create compromise solutions that are acceptable to each.

In the case of Travel Shenandoah, VTTI played both of these latter roles. It is strongly recommended that the Institute, or a similar neutral body, play a similar role throughout the development of any statewide service.

Revenue Generation

Once again, it is too early to draw any firm conclusions on this score. The service has simply not been in operation long enough. All indications are, however, that over the first year of operation Travel Shenandoah will meet or exceed its financial goals. That it will do so is due to two major factors: a revenue model that relies on multiple (rather than one or a limited number) revenue streams, and a realistic set of financial objectives.

Revenue Streams

Figure 2.3 in Chapter II summarizes the eight major revenue streams that underlie the Travel Shenandoah business model, and that would be used as a starting point for any statewide service. It indicates their relationship to each of the services and each of the delivery modes. Figure 3.1 summarizes the projected mix of revenues by source for the first year and first three years of Travel Shenandoah's operation.

YEAR ONE   **YEAR THREE**

($350.000   ($900.000±)

Figure 3.1 Revenue Mix by Source.

Realistic Financial Objectives

As noted in Chapter II, the initial experience with Travel Shenandoah emphasizes the importance of realistic financial objectives to the creation of a financially viable, rural traveler information service. This applies equally to all parties.

For public sector participants, it implies viewing a statewide service as an opportunity to provide something of value to the public at a substantially reduced cost than would otherwise be possible. From the perspective of the private sector, it implies viewing the service as an opportunity to expand an existing, already established business through the creation of one or more new, incremental revenue streams without the need for substantial new infrastructure investment.

Five important points should be made here. The first two points apply mainly to the public sector participants, the next two are directed at the private sector partners, and the final comment applies to both parties:

- In all probability, the statewide service will not generate sufficient revenues to offer any significant opportunity for profit sharing by the public sector, at least in the short run. Attempts to insist on such an arrangement up front may well destroy any hope of long-term success.

- A similar comment applies to charging the service's private sector partners for use of data collected by the public sector, or for the use of public infrastructure in support of the service.

- Equally, private sector partners must avoid the temptation to burden the activity with the fully allocated costs of existing infrastructure that are already being utilized successfully for other, independent purposes and the costs of which are fully amortized.

- The goal of the private partners should be to generate sufficient revenues to cover the on-going operating costs of the service with an additional, reasonable margin of profit left over to provide an acceptable return on the investment involved.

- The service should be viewed as one in which the public sector costs are treated as a fee-for-service, and are kept to a reasonable minimum.

Potential Partner Interest

This is a somewhat confusing picture, not because of any basic lack of interest in the concept or lack of general support, but rather because until the pilot Travel Shenandoah service was operating successfully, discussions with potential partners in other regions inevitably had an air of smoke-and-mirrors. It was obviously less than clear to many parties contacted exactly what they might be getting themselves into. The general response was along the lines of, "that sounds interesting, come back and talk to us later when the first one is working."

We are now at that point, and to be successful, a statewide service would require the support of three major, and often distinct types of partners:

- *Data Partners*, supplying information to the service on either a local, regional, or statewide basis;

- *Delivery Partners*, including but not restricted to communications carriers, which are responsible for delivering information services to the ultimate consumer; and

- *Revenue Partners*, responsible for generating revenues to support the service through a series of appropriately contracted commercial opportunities.

It is anticipated (and intended) that in most cases there will be several partners of each type within a given service area or region. Several may play more than one role. This includes communications providers who may play one or more of the roles outlined above. It also includes state and local government agencies, DMOs, tourism associations, media companies, chambers of commerce, and others.

The level and focus of interest of prospective partners will inevitably vary from one region to another. In the case of private firms supplying traffic data, the interest is concentrated in major urban areas. The potential inclusion of rural areas is possible only if the arrangement includes major urban areas as well. In the case of such rural areas, there is strong interest in providing tourist and traveler services information, particularly if these can be added to public sector traffic data.

The key issue in each case is that the prospective partner sees some benefit from participating in the service, in financial or other terms. In purely financial terms, the return may come from several sources, such as the ability to expand an existing line of business in terms of barter arrangements or simply in terms of a negotiated fee for service.

In the case of the pilot Travel Shenandoah service, SHENTEL played all three roles with an emphasis on the second and third. Because of the unique nature of SHENTEL's business and its strong interest in participating in the program, it is considered highly unlikely that a similar arrangement will be possible in many other regions. The evidence suggests, however, that with a little creativity and some significant persistence, an appropriate mix of partnerships can be constructed.

Four important points should be noted here. Firstly, attracting active participation by *Data Partners* is likely to be easier than attracting new *Delivery* or *Revenue Partners*. There are several reasons for this, the most significant being that the costs involved are relatively low, if in fact there are any costs at all for the *Data Partner* involved. Also, the resultant benefits to the *Data Partner* are relatively clear-cut. This will not necessarily be the case for the other two classes of partner.

Secondly, it appears likely that while most local access wireless communications companies would be interested in providing the last mile connection to the consumer for a fee, relatively few of them are likely to be interested in duplicating the investment made by SHENTEL in creating the data-voice and voice recognition capabilities that are key to both the mobile telephone and pager components of the service. The reasons here are twofold: first, the costs involved, though not inordinate, are not insignificant; and second, all these firms are growing rapidly, competing fiercely in a rapidly changing industry, and are faced with many more attractive uses of their resources.

As a result, unless these companies have a particular set of interests similar to those that drove SHENTEL's original interest, then a significant investment in a service such as Travel Virginia is in most cases simply not on their radar screen.

It should be emphasized that this does not mean that the telephone-based portions of the pilot service cannot be delivered in a financially viable manner in other areas, but rather that the original Travel Shenandoah model will have to be modified. More emphasis will be placed on consolidation of the Central Clearinghouse and VODAVI data-voice translation and voice recognition functions, coupled with multiple (and potentially fee-paying) local access services provided by multiple local carriers. The recent FCC ruling on the use of a national 511-telephone number to provide access to traffic information clearly has major implications here. This issue is discussed in some detail in Chapter VII.

While a somewhat similar situation may exist with certain pager and cable television service providers, the issues here are somewhat different and appear unlikely to present as severe a problem.

Thirdly, it is almost inevitable that under the umbrella of an expanded statewide service, the revenue generating opportunities would no longer be concentrated in a single company such as SHENTEL, but would most likely be distributed across three or four different companies. Such examples include a local media or advertising company, one or more local access telephone companies, a major local employer, a regional or statewide communications partner, and the Central Clearinghouse.

The danger here is that such an arrangement may result in each partner receiving too little revenue to make participation in the venture worthwhile. This places even greater importance on the need to build participation wherever possible on the basis of opportunities for incremental increases in revenue to existing, successful businesses.

Finally, the complexities introduced by the second and third points above, while they by no means represent insuperable problems, stress the critical importance of a continued, effective objective broker role. This role is similar to the role that VTTI played in the original development of the pilot Travel Shenandoah service: to facilitate the creation of the network of partnerships essential to development of any statewide service.

Introduction

This chapter focuses on Travel Virginia's operational concept of covering the state, including the factors involved in determining the Travel Virginia regions and potential business partners in these regions. Travel Virginia will be managed much as a regional franchiser, with each region being part of the franchisee but somewhat independent while adhering to general rules designed to ensure a degree of standardization in service and presentation.

Criteria for Selecting Regions

The determination of regional boundaries for the Travel Virginia local franchises were guided by four primary criteria:

1. Each Travel Virginia region should be designed to service a highway corridor or collection of highway corridors. Most long-haul travel is conducted along specific highway corridors, primarily, but not exclusively, focused in the Interstate highway system. Travel Virginia needs to focus on where the majority of the people travel.

2. Travel Virginia regional boundaries should coincide with boundaries of other established structures such as VDOT construction districts, VTC regions, and regional planning districts. Boundary compatibility, to the extent that it can be accomplished, will simplify data acquisition efforts as well as provide a coherent delivery of services to the traveling public.

3. Given that the delivery model is telephone oriented, Travel Virginia regional boundaries should be compatible with local telephone service boundaries. Compatibility with telephone service boundaries will simplify delivery of information to the traveling public.

4. As the regional boundaries limit franchise expansion, regional partners should be coherent and not overreach collective capabilities. Regional partners should have a vested interest in providing quality information to their region. They should have an understanding of local issues, values, and personalities.

Proposed Travel Virginia Regions

Based upon the above criteria, the following regions have been selected to serve as Travel Virginia franchises. Each franchise will be known as "Travel X" ("X" being the name of the franchise). Such an example would be the current pilot project, Travel Shenandoah. Figure 41 graphically depicts these regions. These regions are:

- Northern Virginia,

- Hampton Roads,
- Fredericksburg,
- Richmond,
- Roanoke,
- Bristol,
- Charlottesville,
- Eastern Shore,
- Lynchburg,
- New River Valley,
- Shenandoah, and
- South Boston.
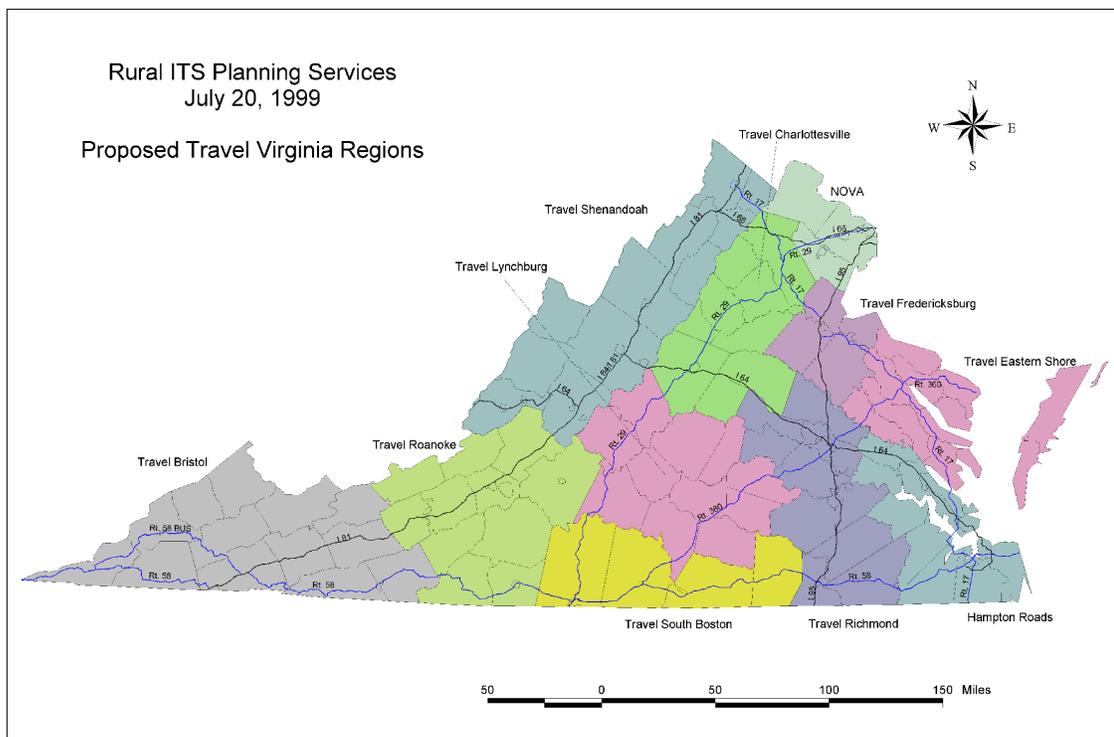
Figure 4.1 Proposed Travel Virginia Regions.

Compatibility With Existing Regional Structures

Virginia state government stakeholders include VDOT, VTC, and the Planning District Commissions. Each of these stakeholders has divided the state into several regions or districts to more efficiently and effectively administer programs and services.

Virginia Department Of Transportation

VDOT has divided the state into nine construction districts. As the name implies, each of these districts is responsible for construction of highways, bridges, and other structures within its assigned boundaries. District responsibilities do not end, however, with construction. Districts are also responsible for regular maintenance as well as emergency response. For example, if an accident or incident occurs within the Staunton District, it is that District's responsibility to respond to the accident, maintain public safety, and clear the obstruction from the roadway as soon as possible to ensure minimal disruption to the traveling public. Consequently, each VDOT construction district will be an integral part of the Travel Virginia network of information providers. Each district will have to work closely with the Travel Virginia clearinghouse to ensure rapid and accurate transmission of information that would be useful to the traveling public. The VDOT construction districts are:

- Bristol,
- Salem,
- Lynchburg,
- Richmond,
- Hampton Roads,
- Fredericksburg,
- Culpeper,
- Staunton, and
- Northern Virginia.

Table 4.1 associates each VDOT construction district with the appropriate Travel Virginia region(s).

Table 4.1 Travel Virginia Region and VDOT Construction Districts.

	Bristol	Salem	Staunton	NOVA	Fredericks-burg	Hampton Roads	Rich-mond	Lynch-burg	Cul-peper
NOVA				X					
Hampton Roads						X			
Fredericksburg					X				X
Richmond						X	X		
Roanoke		X							
Bristol	X								
Charlottesville								X	X
Eastern Shore					X				
Lynchburg								X	
New River Valley		X							
Shenandoah			X						
South Boston							X	X	

Planning District Commissions

The state is divided into 21 Planning District Commissions. These commissions are responsible for the planning of governmental infrastructure within each geographic area. For example, schools, water facilities, waste treatment facilities, highways, and bridges would be integrally planned by each of these commissions for their areas. As a result, each planning commission has a vested interest in ensuring that the highways provide maximum support to the traveling public. This interest alone makes them important stakeholders in Travel Virginia. The District Planning Commissions are:

- Lenowisco,
- Cumberland Plateau,
- Mount Rogers,
- New River Valley,
- Fifth District,
- Central Shenandoah,
- Lord Fairfax,
- Northern Virginia,
- Rappahanock-Rapidan,
- Thomas Jefferson,
- Central Virginia,
- West Piedmont,
- Southside,
- Piedmont,
- Richmond Regional,
- RADCO,
- Northern Neck,
- Middle Peninsula,
- Crater,
- Accomack-Northampton, and
- Hampton Roads.

Table 4.2 associates each Planning District Commission with a proposed Travel Virginia Region(s).

Table 4.2 Travel Virginia Regions and District Planning Commissions.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	22	23
NOVA								X													
Hampton																			X	X	X
Fredericksburg																X					
Richmond															X				X		
Roanoke				X	X						X	X									
Bristol	X	X	X																		
Charlottesville									X	X											
Eastern Shore																	X	X		X	
Lynchburg											X			X							
New River Valley				X																	
Shenandoah					X	X															
South Boston													X								

Figure 4.2 graphically depicts the VDOT construction districts and associates them with the appropriate Planning District Commission(s) as well as proposed Travel Virginia Region(s).
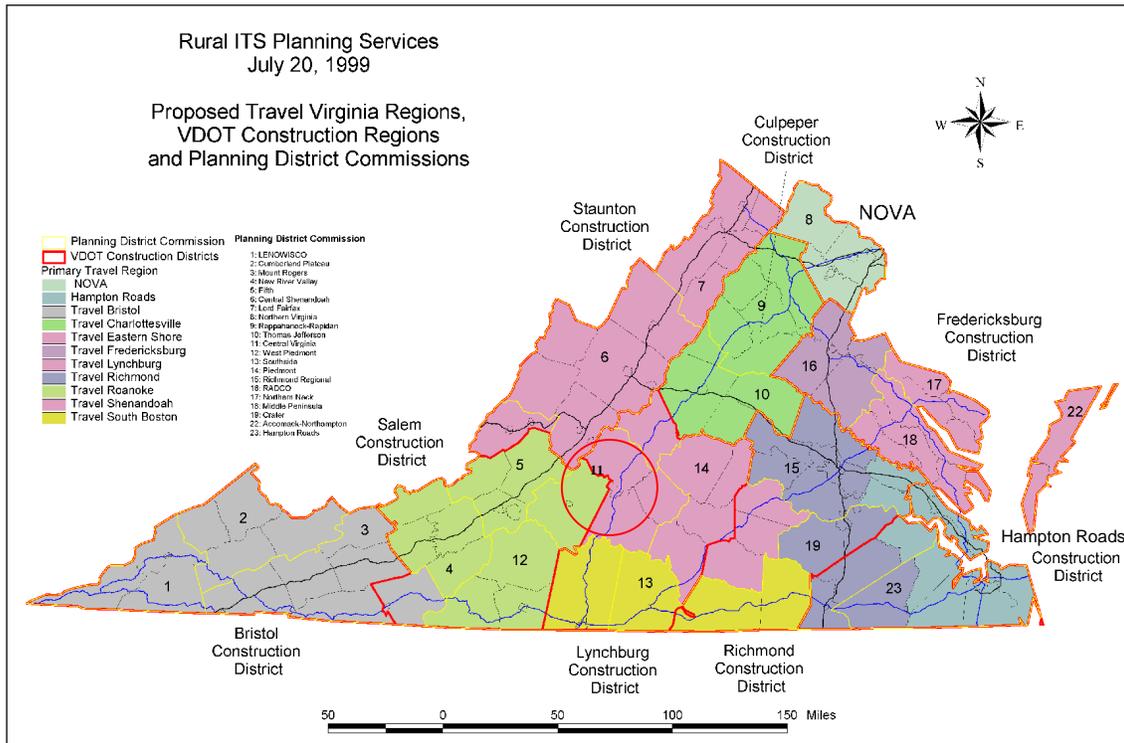
Figure 4.2 VDOT Construction Districts and
Planning District Commissions.

Virginia Tourism Corporation

VTC has also divided the state into seven regions for more efficient and effective administration. Each region focuses on developing the tourism industry within that geographic area. In that regard the VTC region will work closely with individual businesses and historical sites, among others, to publicize products, services, and availability. Travel Virginia can serve as an excellent vehicle for the individual businesses and VTC to make the public aware of attractions and services available within each region. The VTC regions are:

- Southwest Blue Ridge and Highlands,
- Shenandoah,
- Northern Virginia,
- Chesapeake,
- Eastern Shore,
- Tidewater/Hampton, and
- Central Virginia.

Table 4.3 associates each VTC Tourism region with the appropriate proposed Travel Virginia Region(s).

Table 4.3 Travel Virginia Region and Tourism Region.

	SW Blue Ridge Highlands	Shenandoah	NOVA	Chesapeake	Eastern Shore	Tidewater Hampton	Central Virginia
NOVA			**X**				
Hampton						**X**	
Fredericksburg			**X**				
Richmond							**X**
Roanoke	**X**	**X**					**X**
Bristol	**X**						
Charlottesville							**X**
Eastern Shore				**X**	**X**	**X**	
Lynchburg							**X**
New River Valley	**X**						
Shenandoah		**X**					
South Boston							**X**

Figure 4.3 graphically depicts each VTC Tourism Region with the appropriate proposed Travel Virginia Region(s).
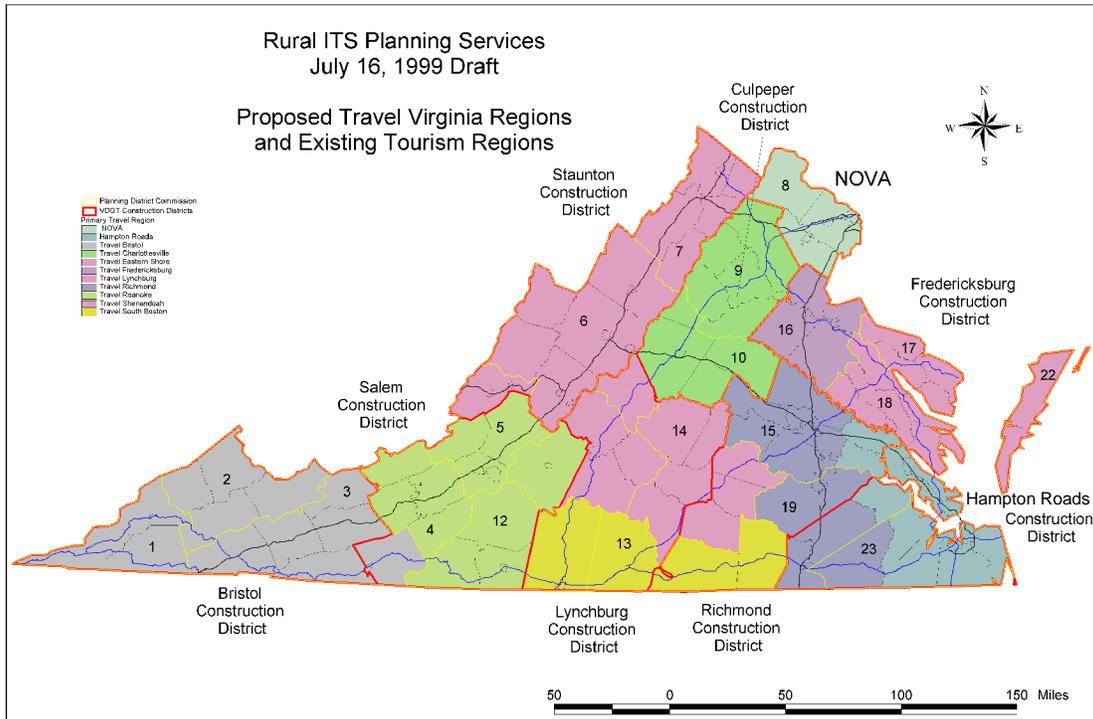
Figure 4.3 VTC Tourism Regions.

Local Telephone Services

Delivery of Travel Virginia information will be affected by a total of eight delivery modes. Local telecommunication providers will be responsible for delivery using four of those modes:

- Mobile telephone (cellular/PCS),
- Pager,
- Landline phone and fax, and
- Cable television.

Local telecommunications providers in each Travel Virginia Region will be given the opportunity to provide the information to the traveling public. If they decline, the offer will be made to another telecommunications provider. Shenandoah Telephone, Inc. is currently providing delivery services for the pilot project, Travel Shenandoah. The local telecommunications provider will be compensated by marketing and selling advertisements on the web version, telephones, and cable TV to businesses in the Travel Virginia database. The local telecommunication providers in the state are:

- Verizon (merger of Bell Atlantic Virginia and GTE South, Inc.),
- CFW Telecom, Inc.,
- Citizen's Telephone Cooperative,
- MGW Telephone, Inc.,
- Shenandoah Telephone, Inc.,
- Sprint, and
- TDS Telecom.

Table 4.4 associates the local telephone provider with the appropriate proposed travel Virginia Region(s).

Table 4.4 Travel Virginia Regions and Local Telephone Service.

	Verizon	CFW	Citizen's Telephone Coop	MGW Telephone	Shenandoah Telephone	Sprint	TDS Telecom
NOVA	**X**						
Hampton	**X**						
Fredericksburg	**X**						
Richmond	**X**						
Roanoke	**X**					**X**	**X**
Bristol	**X**					**X**	
Charlottesville	**X**					**X**	
Eastern Shore	**X**						
Lynchburg	**X**						
New River Valley	**X**		**X**				
Shenandoah	**X**	**X**		**X**	**X**	**X**	
South Boston	**X**					**X**	

Figure 4.4 depicts each telephone service provider along with the associated proposed Travel Virginia Region(s).
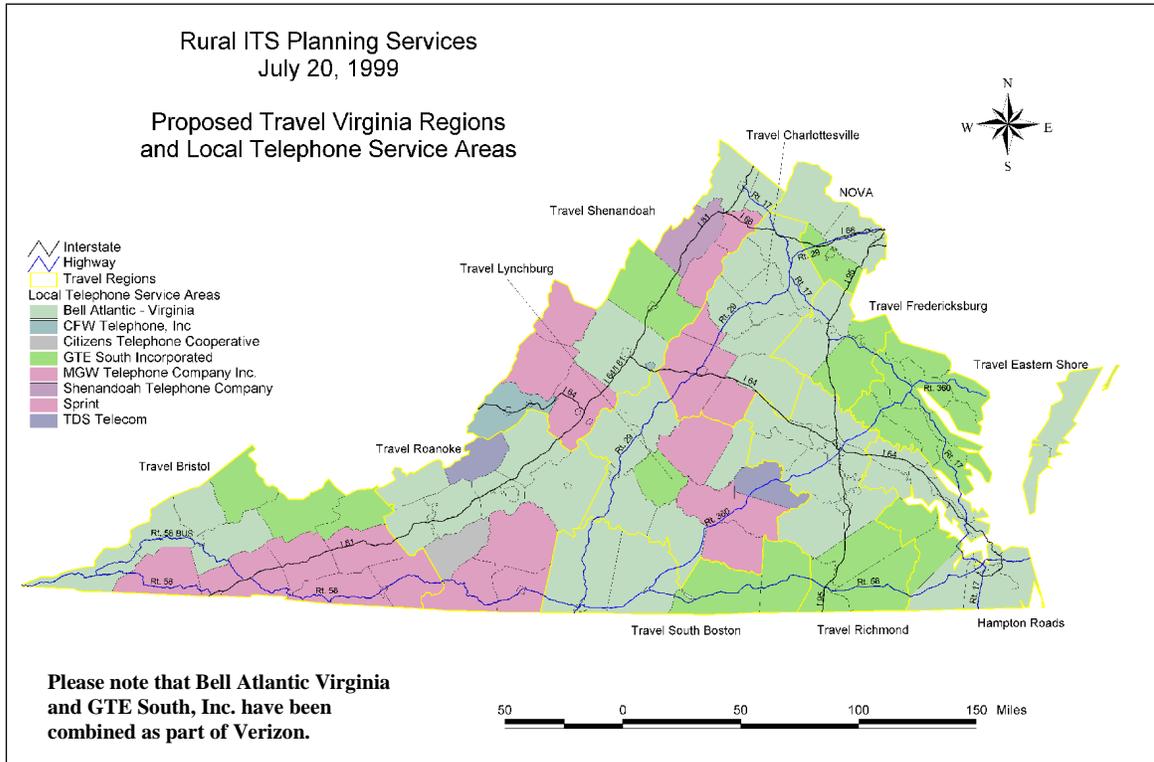
Figure 4.4 Telephone Service Providers and
Associated Proposed Travel Virginia Regions.

Media Company Service Areas

Telecommunications media include broadcast television, radio, and cable television. The areas serviced by each broadcast television station and radio station are dependent on the strength of the transmission and current atmospheric conditions.   To complicate matters, broadcast television stations are often carried on cable networks, providing access to a wider range of homes than normal broadcast options. Major broadcast television stations in the state of Virginia include:

- Bristol – WCYB, NBC, Channel 5,
- Charlottesville – WHTJ, public TV, Channel 41,
- Charlottesville – WVIR, NBC, Channel 29,
- Fairfield – WPXW, PAX, Channel 66,
- Falls Church – WNVT, Public TV, Channel 53,
- Hampton Roads – WAVY, NBC, Channel 10,
- Hampton Roads – WGNT, UPN, Channel 27,
- Hampton Roads – WHRO, public TV, Channel 15,
- Hampton Roads – WVBT, Fox, Channel 43,
- Harrisonburg – WHSV, ABC, Channel 3,
- Lynchburg – W19BC, Liberty University, Channel 19,
- Lynchburg – WJPR Fox, Channel 21,

- Lynchburg – WSET, ABC, Channel 13,
- Norfolk – WPXV, PAX, Channel 49,
- Norfolk – WTKR, CBS, Channel 3,
- Norfolk – WVEC, ABC, Channel 13,
- Northern Virginia – WRC, NBC, Channel 4,
- Northern Virginia – WTTG, FOX, Channel 5,
- Northern Virginia – WJLA, ABC, Channel 7,
- Northern Virginia – WUSA, CBS, Channel 9,
- Northern Virginia – Approximately 25 radio stations providing radio traffic reports for the Washington, DC metropolitan area, including Northern Virginia,
- Richmond – WCVE, public TV, Channel 23,
- Richmond – WRIC, public TV, Channel 8,
- Richmond – WRLH, Fox, Channel 35,
- Richmond – WTVR, CBS, Channel 6,
- Richmond – WWBT, NBC, Channel 12,
- Roanoke – WBRA, public TV, Channel 15,
- Roanoke – WDBJ – CBS, Channel 7,
- Roanoke – WPXR, Pax, Channel 38, and
- Roanoke – WSLS, NBC, Channel 10.

Existing Services

Currently, there are at least three traveler information systems serving metropolitan areas in Virginia. SmarTraveler and HighwayNet.com provide travel information in the Washington, D.C. metropolitan area and the VDOT sponsored Hampton Roads Traffic Information project services travelers in the Tidewater region.

SmarTraveler

SmarTraveler delivers real-time, route-specific, multimodal traveler information through a variety of media to the traveling public. SmarTraveler works with state and local transportation agencies, metropolitan planning organizations, and private industry to provide solutions to congestion and incident management problems.

SmarTraveler's approach to implementing these services is to create public/private partnerships with government agencies that have an interest in better informing travelers and commuters of traffic and transit conditions. These partnerships begin with SmarTraveler assuming the capital costs of building and operating a traveler information center to serve the region's traveler information needs. The public sector commitment is twofold: (1) provide whatever information they have to the regional traveler information database, and (2) purchase services from the system for a specified period of time.

In conjunction with VDOT, SmarTraveler was launched in the Washington, D.C. metropolitan area in July of 1997. It is part of the Partners in Motion public-private partnership of twelve private companies led by Battelle Memorial Institute, and twenty-

five public agencies led by the Virginia Department of Transportation. The SmarTraveler system provides real-time traveler information for Metropolitan Washington, D.C., including the District of Columbia, counties in Maryland and Virginia, approach routes covering a 25-mile radius from the center of the city, and regional commuter and bus routes. Through multi-media channels, consumers can access SmarTraveler from the home, office, and vehicle to get information such as:

- Route-specific, real-time traffic and transit information,
- Up-to-date weather conditions, and
- Rental car, hotel, restaurant, and entertainment listings.

HighwayNet.com

HighwayNet.com is a public/private partnership begun in 1999 between VDOT and EyeCast.com. HighwayNet.com is designed to offer area commuters a choice of free and subscription-based Web tools to manage their commute more effectively. HighwayNet.com uses up-to-the minute traffic images from VDOT's existing network of traffic cameras in Northern Virginia and EyeCast's web-based on-demand video management applications to provide traveler and commuter information. In addition, Highwaynet.com provides a targeted audience for Web advertisers.

Hampton Roads Traffic Information

The Hampton Roads Traffic Information project consists of two parts: 1) highway sensors to track traffic speed, and 2) construction site information.

Highway Sensors

Highway sensors placed at specified intervals in the roadway allow VDOT to track average traffic speeds at the Hampton Roads (I-64), Monitor Merrimac (I-664), and Elizabeth River (I-264) tunnels. These sensors allow analysts to determine where traffic is congested based upon average traffic speeds. A color-coded map, available on the Internet and updated every five minutes, indicates traffic congestion at the tunnels. Eventually, traffic speeds will be available for all major highways in the Hampton Roads region.

Road Construction and Maintenance

For each upcoming month, VDOT makes available information on road construction. This information includes the specific location of construction or maintenance, the dates and times that construction or maintenance will impede traffic flow, and the nature of the construction/maintenance. An example of such information is below:

> *Overpass damage on I-264.*
> *Starting June 1st, road crews will shift Interstate 264 EB lanes at the Birdneck Rd overpass slightly to the left due to an accident that damaged three steel beams. The lanes will shift over four feet to the left and be narrowed by 12 inches.*

Potential Service Partners

We are living in an age of specialization and complexity. The combination of those two factors creates narrow bands of expertise and responsibility. As a result, most organizations today rely on other (or combinations of other) organizations to accomplish their mission. It is rare in today's world when one organization can organically provide the required cradle-to-grave support for any product or service of any size or complexity. This situation has a tendency to increase the number and involvement of a project's stakeholders.

Stakeholders

A stakeholder is normally defined as any person, group, or organization that can place a claim on an organization's attention, resources, or output or is affected by that output. Stakeholders normally, but not always, have a vested interest in the success of the project. This investment could be in terms of money, people, infrastructure, services, or even credibility and political capital. Consequently, in the case of Travel Virginia, the general categories of stakeholders would include government sponsors, potential business partners, service and product providers, and users of the system from the general public.

Government Sponsors

Government sponsors are those government organizations or agencies that provide their imprimatur to a project through guidance and support in the development and deployment phases. A government sponsor may or may not provide some initial development money, but normally does not provide money for operations or maintenance. A government sponsor serves primarily as a facilitator. In the case of Travel Virginia, government sponsors include:

- Virginia Tech Transportation Institute (VTTI),
- Virginia Department of Transportation (VDOT),
- Individual VDOT construction districts (e.g. Staunton and Bristol),
- Virginia Tourism Corporation (VTC) tourism regions (e.g. Chesapeake and Eastern Shore), and
- Planning district commissions.

Potential Business Partners

Because of the narrow bands of expertise and responsibility most organizations experience, it is not unusual for both public and private organizations to enter into mutual business agreements, ranging from fee-for-service relationships to full partnerships. It is not new for private businesses to partner with each other. Public organizations also have a long history of cooperation, but the public-private partnership is a relatively new phenomenon. New ways of doing business require new ways of looking at how business is conducted.

In many respects, the issues involved in a standard contractual relationship and public-private partnership are similar. For example, intellectual property rights, disposition of

property, confidentiality, revenues, and liability are all factors that must be considered in either arrangement. In addition, both fee-for-service relationships and partnerships ultimately rest on a written agreement or contract. The primary differences are in the distribution of power, risks, and benefits. Public-private partnerships are discussed in more detail in Chapter V.

In the case of Travel Virginia, potential business partners include local telephone services, destination marketing organizations (i.e. Shenandoah Valley Traveler's Association), and individual business. More specifically, the local telephone services we have identified include:

- Verizon (merger of Bell Atlantic Virginia and GTE South, Inc.),
- CFW,
- Citizen's Telephone Cooperative,
- MGW Telephone,
- Shenandoah Telephone,
- Sprint, and
- TDS Telecom.

Individual businesses become partners with Travel Virginia by using the service to advertise to customers and through a licensing fee for products sold. Some of the individual businesses expected to participate include:

- Hotels/motels,
- Restaurants,
- Bed & Breakfasts,
- Historical Sites,
- Recreation Sites,
- Lakes,
- Golf courses,
- National and State Parks, and
- Souvenir Shops.

Potential Regional Partners

Many communities have a local or regional tourism commission or chamber of commerce that encourages local economic development through advertising local landmarks and events that would be of interest to visitors. Southwestern Virginia is no exception to this general rule. As Travel Shenandoah expands south towards Bristol and Tennessee, some of the potential regional partners may include:

- Historic Lexington Visitor Center,
- Pulaski Chamber of Commerce,
- Dublin Chamber of Commerce,
- Tazewell County Tourism,
- Richlands Area Chamber of Commerce,
- Town of Pennington Gap,

- Wytheville Public Information Office, and
- Chamber of Commerce of Smyth County.

Content Providers (Source Data)

Travel Virginia will not originate any data; all data in Travel Virginia will be provided from another source. All organizations that provide data to Travel Virginia will also be included as business partners in terms of content data. The primary provider of data will be VDOT. Information provided will consist of any data that affects highway travel and/or safety. Examples include construction sites, dates and times of construction and expected delays, incident sites and expected duration, and weather conditions such as snowfall, snow removal, fog, and rain. VDOT will primarily provide this information through their VOIS system, but will also supplement reports with fax transmissions.

Virginia State Police will also provide information to Travel Virginia. The VSP data will consist of all incidents involving the state police that affect efficient and safe highway travel. Examples would include accidents/incidents, inclusive times, and expected duration. VSP information will be provided through the Computer Aided Dispatch System (CADS).

Virginia Tourism Corporation and Destination Management Organizations will provide much of the same type of data, albeit sometimes for different clients. Information will include data on individual businesses that wish to be included in the Travel Virginia database. Data will include items such as hours of operation, rates, and locations.

Local telephone companies will also provide information to Travel Virginia through the local yellow pages. This information will primarily be used as a quality check to ensure that all businesses are included and that they are still open for business. In addition, it is expected that some businesses that wish to participate might contact Travel Virginia independently.

Finally, National and State parks will provide information concerning park events, both as a reminder to the public to attend and also to notify of any traffic delays caused by the events.

This chapter discusses some of the major functional and technical issues associated with the implementation of a comprehensive statewide service. Emphasis is placed on three major topics: data collection and maintenance, expansion of the initial Clearinghouse concept, and delivery of the services to the end-user.

Data Collection and Maintenance

As discussed earlier, data collection and maintenance have evolved in the pilot project as shared responsibilities of the VTTI Statewide Clearinghouse and SHENTEL. It is recommended that this general arrangement be continued as the service is expanded. In particular, it is recommended that the Clearinghouse continue to be the central repository of data, responsible for its verification, synthesis, and integration into a continuously maintained database.

The following paragraphs provide a more detailed discussion of the Clearinghouse operation as it has evolved in the course of the pilot Travel Shenandoah project.

Clearinghouse Concept

The statewide Clearinghouse is designed to collect relevant data pertaining to traffic and travel conditions, tourism, and traveler services. The information is then processed, integrated, and stored in the Clearinghouse to provide a one-stop easy access point for all travel related information in the project areas. This data is accessed by local delivery partners that deliver the data via the modes under their control.

Data Acquisition: Traffic/Travel Conditions

The Virginia Department of Transportation (VDOT) and the Virginia State Police (VSP) are the primary sources of traffic and travel condition information for the Clearinghouse. These agencies have the primary responsibilities of managing traffic incidents and maintaining traffic flow on the Commonwealth's interstate and primary roadways.

VDOT currently uses an incident management system known as VOIS. Incident notification is done via e-mail from the VOIS system to the Clearinghouse operations center. The information is then deciphered, transcribed, input into a web-based administrative system, and entered into the database for immediate posting on all delivery modes.

Currently the Clearinghouse operations center is manned seven days a week, from 6:30am to 8:30pm on weekdays and from 8:00am to 8:00pm on weekends. If an incident is reported during non-manned hours, an automated filtering program has been designed to read incoming messages, determine if the incident occurred within the currently

defined operating area, and automatically enter the incident into the database and post on all modes.

The e-mail delivery system was a sufficient means for data acquisition within the limited pilot scope of the initial program. In the future, the Clearinghouse will have direct access to the VDOT system via a VOIS terminal located at the Clearinghouse operations center. The advantages of having a terminal are threefold. First, there is always the possibility that an e-mail might get lost on a server, thus delaying the posting of an incident. The terminal will provide direct accessing to the system, allowing a posting to be done as soon as possible, thus avoiding untimely delays. The second advantage is that VDOT would be aided in enhancing their VOIS data. The terminal would allow the Clearinghouse operations staff to add pertinent data from other data sources, therefore providing valuable data to the management system. Finally, by having a terminal, the VTTI staff will gain insight into the data requirements of the current VOIS system and provide assistance to VDOT in strengthening their data management capabilities. This will allow them to make more informed planning decisions regarding incident management.

The Virginia State Police are responsible for clearing all incidents that occur on the Commonwealth's interstates. The VSP receive information regarding traffic incidents via 911 and #77 phone calls. These calls are processed at a central dispatching office and a field officer is then sent to the scene. The officer is in continuous contact with the dispatcher, keeping the dispatcher apprised of events on the scene. Once an incident has been cleared and normal traffic flow is resumed, the officer will officially close the scene with the dispatcher and a formal closing of the incident will be recorded.

Following discussions with the Virginia State Police, the Clearinghouse has arranged to obtain direct access to the State Police computer aided dispatch system (CADS) for the pilot project. The necessary links have been established and are working very well. The cooperation of the State Police, coupled with the data available through VOIS, has significantly enhanced both the quality and timeliness of the data available on traffic and roadway conditions.

Going forward, the combination of the State Police and VDOT data will provide the Clearinghouse and the traveling public with the most comprehensive traffic and travel information currently available. In the future, additional data sources will be added as new technology and traffic monitoring processes become available in the Commonwealth.

Data Acquisition: Tourism (Non-Profit & Profit)

Tourism data is an essential part of the Travel Virginia concept. In fulfilling the project goals, tourism information will be complied, entered into the database, and posted on the Internet and over the telephone system.

The data will come from a variety of sources, including the Virginia Tourism Corporation (VTC), regional specific tourism associations, regional chambers of commerce, economic development groups, and others yet to be identified.

Data Acquisition: Traveler services

In the pilot project currently underway, electronic yellow pages for the entire project area were collected, compiled, and reviewed. Traveler services categories were identified and all other information was deleted from the yellow pages database. The edited information was then up-loaded in the Clearinghouse database for further review and revision.

The Travel Virginia project will have to follow a similar process as regions are added to the system.

Data Cleansing: Traffic

Traffic and construction information is viewed via respective incident management systems and reviewed for relevance per the project area. When it has been determined that the incident occurred within the project-defined area, the information is entered into the database through a web based administrative system.

Manual data entry is done during operations center hours. The dispatchers review the message, transcribe the text, enter the location and type of incident, and submit the message to the database. Automated data entry is done during non-operations center hours. Filters have been programmed to identify where an incident has occurred and what has occurred. The information is then entered into the database for posting.

Construction information is received from participating district offices of VDOT on a weekly basis. Clearinghouse staff reviews this data, and applicable information is posted. VDOT staff members review the information that is posted and may call with additional information if deemed necessary.

Data Cleansing: Tourism & Traveler Services

Clearinghouse staff will enter the initial tourism and traveler services data into the Clearinghouse either manually or electronically. Once entered and standardized, these records then become the responsibility of the franchisee for updating and maintenance. The franchisee will be responsible for contacting all of the locations and verifying address, phone number, and location on a biannual basis.

Data Storage: Technical

The Clearinghouse is built on a SQL Server platform with Cold Fusion as the middlewear ODBC programming language. Additional programming languages include JavaScript and Visual Basic. The programmers followed a standard relational database using data warehouse design methodology.

The data link between franchisees and the Clearinghouse is via a TCP/IP connection for replication of the SQL server databases. The data is managed by a web based administrative system. The system will allow the partners to view, add, update, and correct information in the Clearinghouse. To maintain the integrity of the information, a tracking system is included to trace all data corrections made. Access to the data management system is password restricted.

Clearinghouse Operation Center Management

The Clearinghouse Operation Center is currently being manned seven days a week, 10 to 14 hours a day during the current pilot project. The hours of operation can and will be adjusted on an as needed basis as the number of data sources increase and the regions of coverage increase.

The staff has received extensive training in operating the Clearinghouse system. Dispatchers are trained in translating incoming data, posting the appropriate information into the system, and cleaning and standardizing database records.

Standard operating procedures have been created for all major duties, as well as decision trees for how to handle unusual but potential situations.

These positions are located at the Virginia Tech Transportation Institute (VTTI) in Blacksburg, Virginia.

Hours of Operations are Monday through Friday, 6:30am to 8:30pm, and Saturday and Sunday, 8:00am to 6:00pm.

Extension of Clearinghouse Concept

As noted earlier, the current VTTI Clearinghouse operation focuses primarily on the collection, verification, and synthesis of data into a central database, coupled with its subsequent distribution to SHENTEL for delivery to the end user. SHENTEL has developed and maintains the necessary data-voice translation and voice recognition technology (referred to for convenience as the VODAVI system) at SHENTEL's operating facility in Edinburg, Virginia.

Going forward, as additional local access delivery partners are added to the service in new regions, it will be essential that the two functions be more tightly linked into a single, common Clearinghouse operation. This does not imply that SHENTEL would cease to operate the VODAVI system that they have developed at significant internal cost, but rather that the current VTTI and SHENTEL operations would be more closely linked together as an integrated statewide Clearinghouse operation.

This issue is discussed in more detail in Chapter VII below.

A related set of technical issues concern the future automation of certain traffic and road condition data collection activities. To date, virtually none of the traffic and road

condition data contained in Travel Shenandoah is collected via any form of automated device. Going forward, it is envisioned that significant amounts of these data will be collected through a variety of automated procedures.

These range from the possible use of reverse wireless-based technology to track operating conditions on major roadways, to implementation of closed-circuit television monitors at selected locations. Installation of advanced weather and road condition monitoring devices at selected locations is also possible.

In each case, the technologies involved and the need to upgrade necessary communications links will have to be carefully evaluated before any final decisions are made leading to field implementation. Enhanced communications links, for example, will be required between all such field devices and the Clearinghouse, thus combining the use of both VDOT owned facilities and the purchase of commercial communications capacity from one or more telecommunications providers.

This issue is currently receiving major attention through one of the standing working groups that has been formed as part of VDOT's parallel I-81 ITS Implementation program. It is essential that these activities continue to be closely coordinated.

Delivery of Services to the End User

Closely linked to the extension of the Statewide Clearinghouse is the issue of the delivery of services to the end user.

In the pilot Travel Shenandoah program, SHENTEL served as the primary delivery partner, providing service directly through several of its operating subsidiaries and, to a lesser degree, through the firm's established business relationships with other telecommunications firms.

As the service expands to cover additional regions, it is anticipated that this latter type of arrangement will become more and more important, with SHENTEL or a similar major delivery partner receiving data directly from the Clearinghouse and in turn delivering the information to the end user and feeding the information in real time to a network of additional minor delivery partners in each region.

This issue, including its implications for the long-term collection of certain types of data and the financial viability of the service, is again discussed in more detail in Chapter VII.

CHAPTER VI
IMPLEMENTING TRAVEL VIRGINIA:
LEGAL, REGULATORY, AND PROCUREMENT ISSUES

Introduction

There are numerous legal, regulatory, and procurement issues associated with the development of an Advanced Traveler Information System such as Travel Virginia. Some of the issues exist because they are merely systemic to current procedures, while others are the result of breaking new ground, primarily in the public-private partnership arena. We have not attempted to resolve the issues here, as many are significantly beyond the scope of this report. We merely identify them here as a means of highlighting to stakeholders potential roadblocks in Travel Virginia implementation.

VDOT Mission and Values

Written by VDOT employees, the VDOT mission and values statements capture the essence of how the employees see their responsibilities to their profession and to the public. The mission statement encompasses the critical functions that VDOT performs, while the values statement captures the beliefs and morals that guide those actions.

VDOT Mission

The following list describes the mission of VDOT:

- Maintain the public trust, and treat public dollars with utmost care.

- Be a leader in utilizing innovation and technology to deliver products and services.

- Use the best business practices to get the job done.

- Commit to making VDOT a great place to work.

- Enhance economic opportunities while preserving the beauty, natural resources, and heritage of Virginia.

The goal is for people to think "VDOT," when you ask them to name the top transportation agency in the nation.

VDOT Values

The following list represents the values of VDOT:

- Put safety in everything VDOT does.

- Listen to customers and demonstrate this by caring about their needs and solving their problems.

- Do the things you know are the right things to do.

- Use everybody's talents to solve problems.

- Be honest, open, and fair.

- Respect one another and encourage individual development.

VDOT Policy

As with any public agency, VDOT is not monolithic and policy varies depending upon the issue. Some of the more critical issues to Travel Virginia, along with the associated VDOT or state policy, are addressed below.

Intelligent Transportation Systems

The VDOT goal for intelligent transportation systems is to unify the transportation technology efforts of all Commonwealth of Virginia agencies under a single umbrella concept: Smart Travel.

Intellectual Property Rights

Intellectual property includes unique hardware, software, processes, and other products. Under Virginia law, contractors using public funds to develop software may retain ownership of the intellectual property, but a license must be provided to the state so that it may use the software for its own purposes. Both public and private partners should develop licensing agreements that detail the rights to intellectual property that the public partner will receive. These agreements should protect the public partner's use of the intellectual property while reducing the private partner's risks that the property will be widely distributed.

Disposition Of Property

State laws require that the state retain ownership of property purchased using public funds. Because these laws complicate the disposition of property at the end of a project, VDOT prefers to avoid using public funds to purchase property or equipment. Private sector partners should consider using only private funds to purchase required property or equipment. Other mechanisms may also be considered, such as leasing equipment for the life of the contract.

State-Supplied Data And The Virginia Freedom Of Information Act (FOIA)

Transportation data provided by the state in a partnership agreement is publicly owned and can be requested by anyone. By law, the state must respond to a request for data within five working days. For typical ATIS projects, data is processed and repackaged by the private partner, marketed to the public for free or for a cost, and provided to VDOT free of charge. Because the repackaged data is shared with the state, it is unclear whether this data becomes public domain and is accessible without cost, via the Virginia FOIA.

Revenues

Virginia state law allows VDOT to receive revenues from profit producing ventures. VDOT will also consider in-kind services in exchange for revenues. The amount of revenue that may be shared and the level of administration required by VDOT to manage the revenues will influence the selection of revenue-sharing mechanisms.

Indemnification

VDOT may only indemnify private partners to the extent allowed by the Virginia Tort Claims Act. This limits the state's ability to indemnify private partners, which may conceivably have a chilling effect on the public-private partnership.

Project Completion/Delivery

Typical VDOT contracts include strong language to enforce contract completion. In public-private partnerships, both partners have a different set of performance incentives. VDOT might consider modifications to the standard completion clause if the partnership clearly includes non-traditional performance incentives and considerations. Because these partnerships involve shared risks and benefits, any revised contract termination clause should be crafted to protect the investments made by both parties.

Virginia Tourism Authority Policy

The Virginia Tourism Authority, doing business as the Virginia Tourism Corporation (VTC), serves the interests of the economy of Virginia by supporting, maintaining, and expanding the Commonwealth's domestic and international travel market and motion picture production. The Corporation develops and implements programs beneficial to Virginia travel-related and motion picture production-related businesses and consumers that no industry component or organization would be expected to carry out on its own.

Mission

VTC serves the economic interests of Virginia by supporting, maintaining, and expanding the Commonwealth's domestic and international travel market, thereby generating increased visitor expenditures, tax revenues, and employment. Through national and international marketing programs, VTC researches and targets specific, highly profitable audience segments in those geographic markets, offering the highest potential of travel to Virginia. VTC enters into cooperative advertising agreements with corporate sponsors that result in advertising in which both the travel attributes of the state and the co-sponsor are presented in one advertisement. VTC also identifies corporate sponsors who are willing to enter into such joint promotions. These joint ventures impact VTC's advertising budget by leveraging available dollars with money provided by the private sector partner.

The Partnership Development Process

As a public agency, VDOT has a limited number of options (solicited or unsolicited proposals) when it comes to developing partnerships with the private sector.

Solicited Proposals

If VDOT initiates the partnership concept, it will release a Request for Proposals (RFP) for non-professional services pursuant to the State's Agency Procurement and Surplus Property Manual.

Unsolicited Proposals

Should a private-sector entity develop a partnership concept, it may submit an unsolicited proposal for consideration. An unsolicited proposal may be submitted to the Assistant Commissioner for Planning, Research & Technology for evaluation and possible action. Should VDOT wish to pursue a partnership opportunity submitted through this process, it will develop a solicitation based on the concept in the unsolicited proposal. The proposal evaluation will then follow the standard process as described in the Agency Procurement and Surplus Property Manual.

Public-Private Partnership

VDOT is in the process of learning what it means to create such a partnership, brokering of services for revenue, bartering agreements, and interpreting shared risks and rewards. As we enter into an age of new business practices and head towards an on-going operational service, these and similar issues will continually be raised and will have the potential to create some roadblocks in the near future. Again, resolution of these issues is beyond the scope of this report; we merely hope to identify and clarify them. Ironically, the VDOT Public-Private Transportation Act does not apply to services like Travel Virginia.

Public-Private Transportation Act of 1995

In the mid-nineties the General Assembly found that there was a need for construction and improvements to transportation facilities that were not wholly satisfied by existing public acquisition procedures. These concerns culminated in the enactment of the Public-Private Transportation Act of 1995. The Act authorized private entities to acquire, construct, improve, maintain, and/or operate transportation facilities for the public, thereby serving the public safety and welfare. According to paragraph 56-557 of the Act, a "transportation facility" is any road, bridge, overpass, tunnel, ferry, airport, mass transit facility, vehicle parking facility, port facility, or similar commercial facility used for the transportation of persons or goods together with any property that is needed to operate same. Consequently, the Public-Private Transportation Act of 1995 does not apply to information systems, particularly advanced traveler information systems. This situation leaves a large void in the regulations and guidance necessary to implement projects like Travel Virginia.

Partnerships

A partnership is an arrangement of roles and relationships in which two or more public and private organizations combine resources to accomplish individual and often divergent goals through the joint pursuit of one or more common objectives. Each partner normally brings different things to the arrangement. For example, the private partner might bring new technology, new processes, or capital. The public partner might bring stable planning, eminent domain, or in-place infrastructure.

There are three important dimensions that characterize the public-private partnership. They are:

- Pooled resources,
- Shared risks and benefits, and
- Reason to maintain the partnership.

One of the primary characteristics that distinguishes a public-private partnership from a traditional fee-for-service contract is the pooling of resources. In the traditional fee-for-service contract, resources are sold, bartered, or otherwise exchanged. In the public-private partnership those resources are pooled together, allowing each partner to leverage off the other's assets. These resources can range from capital to hardware and from land to credibility.

In a public-private partnership, risks are shared more equitably than under the fee-for-service concept. Under fee-for-service, both the contractor and contractee bear some risk; however, that risk is limited, creating a situation where the contractor risk is to the contractee but not necessarily to other stakeholders. The goal of a partnership is to create a mutually beneficial arrangement for all parties where power, risks, and benefits are shared and the partners are responsible to all other stakeholders.

There must be a compelling reason to maintain the partnership. The reason may be that neither organization could provide the service or product on its own. The reason may be that one or the other partner has a monopoly on the technology or market, or some other aspect of the business arrangement. Finally, the reason may be to gain public exposure, establish a market, or it may even be political in nature.

Key Public Private Partnership Issues

As stated above, many of the issues involved in public-private partnerships are the same as those found in a standard fee-for-service arrangement. For example, leadership, stakeholder involvement, legal, and administrative issues are all factors that must be considered in either arrangement. The primary difference is in how these issues are addressed in the relationship and how the power, risks, and benefits are shared.

Leadership

Leadership is possibly the most critical aspect of any project. It is the leadership that sets the vision and influences the culture of the organization. Normally in a public-private

partnership, the leadership is shared among the partners with the public organization taking the lead as the primary facilitator of the project and the private sector leader taking the lead in technological matters. Travel Virginia closely follows this pattern. The public sector leaders, VDOT and VTC, will not directly provide any services. They will, however, maintain the public's interest in financial, legal, and political matters. The private sector leader will primarily be responsible for research and development efforts, the day-to-day delivery of services to the public, and the marketing and sales of the advertisements. VTTI will serve as a broker to have Travel Virginia services provided by the private sector and will maintain the data clearinghouse.

Stakeholder Involvement

Travel Virginia has made a commitment to involve all stakeholders in all phases of the project, including the very outset. Both public and private stakeholders can collect data, and just as importantly will have an interest in what data is collected and used in Travel Virginia. Early involvement will also cement a sense of ownership on the part of the stakeholders, so they do not think of Travel Virginia as "that" project, but rather as "my" or "our" project. This should be extremely valuable in developing advocates when Travel Virginia is seeking credibility with key decision-makers in either sector. Finally, a key role for stakeholders is to determine the requirements that the product must satisfy. Stakeholders have the primary interest in the success of the project and should have a clear idea of what will constitute success.

VDOT Procurement Procedures

VDOT procurement practices are primarily regulated by the Virginia Public Procurement Act. The act was designed to standardize procurement procedures for public organizations throughout the state in an effort to institutionalize best practices. In response to internal reviews that found problems with the procedures, VDOT has implemented a number of new procurement policies designed to ensure staff practices are fair, consistent, and efficient.

Requirement For Competition

VDOT has a requirement for competitive bidding on virtually all contracts, which is designed to prevent collusion and graft. However, this makes it difficult to put together a public-private partnership without the private sector being forced to disclose more information than it would normally like to do.

In accordance with chapter 7, article 2, paragraph 11-41 of the Virginia Public Procurement Act, all public contracts with nongovernmental contractors for the purchase or lease of goods, or the purchase of services, insurance, or construction shall be awarded after competitive sealed bidding or competitive negotiation. Professional services are required to be procured by competitive negotiation. Nonprofessional services are normally procured by competitive sealed bid; however, goods, services, and insurance may be procured by competitive negotiation if it is justified in writing that competitive sealed bidding is either not practicable or not fiscally advantageous to the public.

Competitive sealed bidding is defined in paragraph 11-37 as including the following elements:

- A written invitation to bid incorporating the specifications, contractual terms, and conditions for that particular procurement.

- Public notice of the invitation to bid at least ten days prior to the date set for receipt of bids by posting in a designated public area or publication in a newspaper of general circulation, or both.

- Public opening and announcement of all bids.

- Evaluation of all bids based on requirements as specified in the invitation. Requirements can include special qualifications of contractors, life cycle costing, value analysis, inspection, testing quality, workmanship, delivery, and suitability for particular purposes.

- Award to the lowest responsive and responsible bidder.

The same paragraph defines competitive negotiation as including:

- Issuance of a written Request for Proposals indicating in general terms that which is sought to be procured. The RFP will specify the factors to be used in evaluating the proposal.

- Public notice of the invitation to bid at least ten days prior to the date set for receipt of bids by posting in a designated public area or publication in a newspaper of general circulation, or both.

- Procurement of services:

  1. *Professional services.* The government will engage in individual discussions with two or more contractors deemed to be fully qualified, responsible, and suitable based upon the initial response to the RFP. The contractors will be encouraged to elaborate on their proposal, professional qualifications, or alternative concepts. The RFP will not require estimates of man-hours or costs; however, the government may discuss nonbinding estimates of total project costs at this stage. Proprietary information from competing contractors shall not be disclosed to the public or to other competitors. At the conclusion of the discussions, the government shall rank all competitors as deemed most meritorious based upon the evaluation factors published in the RFP. Negotiations will commence with the contractor ranked first. If a satisfactory contract can be negotiated at a price considered to be fair and reasonable, the award shall be made to that contractor. Otherwise negotiations with that contractor shall be formally terminated and negotiations initiated with the contractor ranked second, and so on until a satisfactory contract can be negotiated. Should the government body determine in writing that only one contractor is fully qualified, or that one contractor is clearly more highly qualified

than the others, a contract may be negotiated and awarded to that
contractor.

2. *Other than professional services.* The government body shall select two
    or more contractors deemed to be fully qualified and best suited among
    those submitting proposals on the basis of factors in the RFP, including
    price if so requested in the RFP. Negotiations shall then commence with
    the contractors so selected. Price can be considered but need not be the
    determining factor. After negotiations have been conducted and
    terminated, the government body shall select the contractor deemed to
    have provided the best proposal and award the contract. Should the
    government body determine in writing that only one contractor is fully
    qualified, or that one contractor is clearly more highly qualified than the
    others, a contract may be negotiated and awarded to that contractor.

The term "professional services" means work performed by an independent contractor
within the scope of the practice of accounting, actuarial service, architecture, land
surveying, landscape architecture, law, dentistry, medicine, optometry, pharmacy, or
professional engineering. "Nonprofessional services" means all services not specifically
identified as professional services.

Privacy Issues

The importance of protecting private information has increased with the explosion of
information technology systems and the more widespread use of the Internet. The
Intelligent Transportation Society of America has issued ITS fair information and privacy
principles in an effort to provide guidance concerning the boundary between adequate
public disclosure of information and the protection of privacy. The principles are
advisory in nature.

Individual Centered

Intelligent Transportation Systems must recognize and respect the individual's interests
in privacy and information use. ITS systems create value for both individuals and society
as a whole. Central to the ITS vision is the creation of ITS systems that will fulfill our
national goals. The primacy focus of information use is to improve travelers' safety and
security, reduce travel times, and enhance individuals' ability to deal with highway
disruptions and improve air quality. Traveler information is collected from many
sources, some from the infrastructure and some from vehicles, while other information
may come from transactions (such as electronic toll collection) that involve interaction
between the infrastructure and vehicle. This information may have value in both ITS and
non-ITS applications. The individual's expectation of privacy must be respected. This
requires disclosure and the opportunity for individuals to express choice.

Visible

Intelligent Transportation Information Systems will be built in a manner visible to
individuals. ITS may create data on individuals, and individuals should have a means of

discovering how the data flows operate. "Visible" means to disclose to the public the type of data collected, how it is collected, what its uses are, and how it will be distributed. The concept of visibility is one of central concern to the public, and, consequently, this principle requires assigning responsibility for disclosure.

Comply

Intelligent Transportation Systems will comply with state and federal laws governing privacy and information use.

Secure

Intelligent Transportation Systems will be secure. ITS databases may contain information on where travelers go, the routes they use, and when they travel, and therefore must be secure. All ITS information systems will make use of data security technology and audit procedures appropriate to the sensitivity of the information. ITS systems should use technological and administrative safeguards to assure that access to personally identifiable information is available only to those who need to know it.

Law Enforcement

Intelligent Transportation Systems have an appropriate role in enhancing travelers' safety and security interests; however, information identifying individuals will not be disclosed to law enforcement absent consent, government authority, or appropriate legal process. ITS has the potential to make it possible for traffic management agencies to know where individuals travel, what routes they take, and travel duration. Therefore, ITS can increase the efficiency of traffic law enforcement by providing aggregate information necessary to target resources. States may legislate conditions under which ITS information will be made available. Absent government authority; however, ITS systems should not be used as a surveillance means for enforcing traffic laws. Although individuals are concerned about public safety, persons who voluntarily participate in ITS programs or purchase ITS products need to have a reasonable expectation that they will not be "ambushed" by information they are providing.

Relevant

Intelligent Transportation Systems will only collect personal information that is relevant for ITS purposes. ITS, respectful of the individual's interest in privacy, will only collect information that contains individual identifiers that are needed for the ITS service functions. Furthermore, ITS information systems will include protocols that call for the purging of individual identifier information that is no longer needed to meet ITS needs.

Anonymity

Where practicable, individuals should have the ability to access Intelligent Transportation Systems on an anonymous basis. Certain ITS applications (e.g. commercial vehicle operations or "mayday") require personally identifiable information to function. Others (e.g. automated fee payment) may be designed to enable use by individuals without identifying themselves (through anonymous debit accounts) or with identifiers for

convenience (credit cards). Unless provision of identifiers is required by the ITS application, users should be provided with the opportunity to choose anonymity.

Secondary Use

Intelligent Transportation Systems information stripped of personal identifiers may be used for non-ITS applications. American consumers want information used to create economic choice and value, but also want their interest in privacy preserved. ITS information is predictive of goods and services that interest consumers, such as the right location for stores, hospitals, and other facilities. However, personally identifiable information collected by ITS surveillance technologies is extremely sensitive. Therefore, the following practices should be followed:

- ITS information absent personal identifiers may be used for ITS and other purposes.

- Generally, data collectors should assure that ITS information provided to private organizations for secondary uses is stripped of personal identifiers.

- Individuals, however, may contract to allow use of personal identifiers for secondary use if full disclosure in the intended use is made and informed consent obtained.

ITS America Privacy Policy[2]

As an example of a specific ITS privacy policy, the following is the policy statement developed by ITS America:

1. **INDIVIDUAL CENTERED. Intelligent Transportation Systems must recognize and respect the individual's interest in privacy and information use.**

   ITS systems create value for both individuals and society as a whole. Central to the ITS vision is the creation of ITS systems that will fulfill our national goals. The primary focus of information use is to improve travelers' safety and security, reduce travel times, enhance individuals' ability to deal with highway disruptions and improve air quality. Traveler information is collected from many sources, some from the infrastructure and some from vehicles, while other information may come from the transactions —like electronic toll collection— that involve interaction between the infrastructure and vehicle. That information may have value in both ITS and non-ITS applications. The individual's expectation of privacy must be respected. This requires disclosure and the opportunity for individuals to express choice.

2. **VISIBLE. Intelligent Transportation Information Systems will be built in a manner "visible" to individuals.**

   ITS may create data on individuals. Individuals should have a means of discovering how the data flows operate. "Visible" means to disclose to the public the type of data collected, how it is collected, what its users are, and how it will be distributed. The concept of visibility is one of central concern to the public, and consequentially, this principle requires assigning responsibility for disclosure.

---

[2] Taken from the ITS America web page: http://www.itsa.org.

3. **COMPLY. Intelligent Transportation Systems will comply with state and federal laws governing privacy and information use.**

4. **SECURE. Intelligent Transportation Systems will be secure.**

ITS databases may contain information on where travelers go, the routes they use, and when they travel, and therefore must be secure. All ITS information systems will make use of data security technology and audit procedures appropriate to the sensitivity of the information. ITS systems should use technological and administrative safeguards to assure that access to personally identifiable information is available only to those that need to know it.

5. **LAW ENFORCEMENT. Intelligent Transportation Systems have an appropriate role in enhancing travelers' safety and security interests, but absent consent, government authority, or appropriate legal process, information identifying individuals will not be disclosed to law enforcement.**

ITS has the potential to make it possible for traffic management agencies to know where individuals travel, what routes they take, and travel duration. Therefore, ITS can increase the efficiency of traffic law enforcement by providing aggregate information necessary to target resources. States may legislate conditions under which ITS information will be made available. Absent government authority, however, ITS systems should not be used as a surveillance means for enforcing traffic laws. Although individuals are concerned about public safety, persons who voluntarily participate in ITS programs or purchase ITS products have a reasonable expectation that they will not be "ambushed" by information they are providing.

6. **RELEVANT. Intelligent Transportation Systems will only collect personal information that is relevant for ITS purposes.**

ITS, respectful of the individual's interest in privacy, will only collect information that contain individual identifiers that are needed for the ITS service functions. Furthermore, ITS information systems will include protocols that call for the purging of individual identifier information that is no longer needed to meet ITS needs.

7. **ANONYMITY. Where practicable, individuals should have the ability to access Intelligent Transportation Systems on an anonymous basis.**

Certain ITS applications (e.g., commercial vehicle operations or "mayday") require personally identifiable information to function. Others (e.g., automated fee payment) may be designed to enable use by individuals without identifying themselves (through anonymous debit accounts) or with identifiers for convenience (credit cards). Unless provision of identifiers is required by the ITS application, users should be provided with the opportunity to choose anonymity.

8. **SECONDARY USE. Intelligent Transportation Systems information stripped of personal identifiers may be used for non-ITS applications.**

American consumers want information used to create economic choice and value, but also want their interest in privacy preserved. ITS information is predictive of goods and services that interest consumers, for example, the right location for stores, hospitals and other facilities. However, personally identifiable information collected by ITS surveillance technologies is extremely sensitive. Therefore, the following practices should be followed:

- ITS information absent personal identifiers may be used for ITS and other purposes.
- Generally, data collectors should assure that ITS information provided to private organizations for secondary uses is stripped of personal identifiers.

- Individuals, however, may contract to allow use of personal identifiers for secondary use if full disclosure in the intended use is made and informed consent obtained.

9. FOIA. Federal and State Freedom of Information Act (FOIA) obligations require disclosure of information from government maintained databases. Database arrangements should balance the individual's interest in privacy and the public's right to know.

In determining whether to disclose ITS information, governments should, where possible, balance the individual's right to privacy against the preservation of the basic purpose of the Freedom of Information laws to open agency action to public scrutiny. ITS travelers should be presumed to have reasonable expectations of privacy for personal identifying information. Pursuant to the individual's interest in privacy, the public/private framework of organizations collecting data should be structured to resolve problems of access created by FOIA.

Federal and State Freedom of Information Act (FOIA)

FOIA obligations require disclosure of information from government maintained databases. Database arrangements should balance the individual's interest in privacy and the public's right to know. In determining whether to disclose ITS information, governments should, where possible, balance the individual's right to privacy against the preservation of the basic purpose of the Freedom of Information laws to open agency action to public scrutiny. ITS travelers should be presumed to have reasonable expectations of privacy for personal identifying information. Pursuant to the individual's interest in privacy, the public-private framework of data collecting should be structured to resolve problems of access created by FOIA.

Safety

The extensive growth in the wireless communications industry over the past ten years has been accompanied by concern for the potential hazards of drivers using wireless communication devices from moving vehicles. Given the National Highway Traffic Safety Administration's (NHTSA) mission to save lives, prevent injuries, and reduce traffic-related health care and other economic costs (through regulation, enforcement, economic incentives, educational programs, basic and applied research, and technology demonstration programs), the Agency has taken a particular interest in this issue.

USDOT currently has a number of programs that focus on how best to utilize wireless technology in the vehicle to support efficient and effective emergency response (e.g. automated collision notification [ACN], nationwide 911 access to emergency services from vehicles, in-vehicle information on traffic hazards, and roadway conditions). In addition, the safety benefits of having a communications capability available within a vehicle are well documented and supported by both law enforcement and consumer safety groups, which frequently promote the use of these devices to ensure the security of the driver as well as to report congestion, crashes, and drunk drivers.

Nevertheless, there has been increasing concern over the safety of using communications devices while driving, particularly within the public sector, and this has been reflected in

the growing number of legislative initiatives in the states that address the use of wireless communications in vehicles. In response, NHTSA prepared a report to help ensure that the public, the wireless industry, and the states have sufficient knowledge upon which to make informed decisions regarding the issues and to identify needed initiatives and research to help ensure that the economic, safety, and convenience benefits of mobile wireless communications can be maintained within an acceptable margin of safety. The report addresses four specific questions as follows:

- Does use of cellular telephone technology while driving increase the risk of a crash?

- What is the magnitude of the traffic safety problem related to cellular telephone use while driving?

- Will crashes likely increase with increasing numbers of users of cellular telephone technology in the fleet?

- What are the options for enhancing the safe use of cellular telephones by drivers?

Does use of cellular telephone technology while driving increase the risk of a crash?

Based on the NHTSA report, in some cases the inattention and distraction created by the use of a cellular telephone while driving is similar to that associated with other distractions in increasing crash risk. Both the research studies and crash data reviewed in this report highlight several factors by which cellular telephone use while driving can increase the risk of a crash. Among these, conversation appears to be most associated with the crashes reviewed.

What is the magnitude of the traffic safety problem related to cellular telephone use while driving?

There are insufficient data in the NHTSA report to indicate the magnitude of any safety-related problem associated with cellular telephone use while driving. This is a consequence of inadequate reporting and thus it cannot be determined whether a problem requiring action exists. Rather it serves to underscore the need for enhancing such data collection at both the state and national levels.

Will crashes likely increase with increasing numbers of users of cellular telephone technology in the fleet?

The data also suggest that as the use of in-vehicle wireless communications technology increases there will be an associated increase in related crashes if little changes. However, the accuracy of this prediction in either direction (i.e. increase or decrease in crashes) is uncertain, given the pace at which cellular telephone designs and the functions they can perform are changing. Such changes, along with state legislative initiatives and changes in wireless subscriber characteristics, virtually ensure that usage patterns will change over time and thus influence associated crash trends.

What are the options for enhancing the safe use of cellular telephones by drivers?

In the report, NHTSA presents a variety of options for enhancing the safe use of cellular telephones by drivers and addressing the many issues raised. These include educational, research, enforcement, and legislative considerations and initiatives. The intent is to better define the nature and magnitude of any potential traffic safety problem and assist the public, the states, and the industry in making informed decisions on how best to address any issues related to cellular telephone use and driving.

CHAPTER VII
IMPLEMENTING TRAVEL VIRGINIA: ORGANIZATIONAL OPTIONS AND A
RECOMMENDED APPROACH

An appropriate organizational structure is key to the implementation and operation of a successful statewide Travel Virginia Service. This chapter of the report outlines three broad organizational options for supporting such a service and summarizes the reasoning behind the choice of a specific, recommended approach.

The Requirements of an Effective Organizational Structure

To be effective in supporting the development of a successful statewide service, the organizational structure on which that service is based must meet four basic sets of requirements: It must be capable of supporting an operationally effective service, it must be financially viable, it must protect the public interest, and it must be relatively easy to implement. The major factors to be considered under each of these four headings are summarized below.

Operational Effectiveness

To be operationally effective, the organizational structure must satisfy at least the following five criteria:

- *Quality User Service.* It must support the provision of consistent, high quality user service, whenever and wherever it is needed.

- *Stable Service Support.* It must provide a stable level of support for the service, including a steady flow of accurate, timely information, a reliable Clearinghouse operation, and a mix of reliable, easy-to-use delivery services.

- *Flexible Partnering Arrangements.* It must encourage a variety of flexible partnering arrangements tailored to the requirements of each individual region, rather than being locked into one single partnership model or set of partners.

- *Responsive to Changing Needs*. It must be capable of responding rapidly to changing needs and emergency priorities, on the part of both the users and the sponsors of the service (VDOT, VTC, and VSP).

- *Incorporate Evolving Technologies*. It must be open to and capable of incorporating new technologies as they evolve and come on-line.

Financial Viability

To be financially viable, the organizational structure must meet at least the following five requirements:

- *Support the Business Model.* It must support the objectives of the service's underlying business model; providing for the delivery of a market driven set of user-services in a financially self-supporting manner.

- *Multiple Revenue Stream.* It must encourage the generation and exploitation of multiple revenues streams, rather than relying on one or two dominant sources of income.

- *Effective Risk Sharing.* It must embody effective sharing of risk and return by all parties, including the contribution of free (or heavily discounted) access to existing private infrastructure and free access to relevant public data.

- *Minimum Start Up Costs.* The additional start up costs associated with the statewide service must be as low as possible.

- *Acceptable Financial Return.* It must support a set of services capable of yielding an acceptable financial return to all parties.

Protecting the Public Interest

In order to effectively protect the interests of both the traveling public and the Commonwealth of Virginia, the organization of the service must meet at least the following conditions:

- *VDOT & Other Sponsor's Policy Objectives.* It must meet the underlying policy objectives of VDOT and the other public sector sponsors of the service.

- *Uniform Statewide Service.* It must provide for a basic, uniform level of service to all parts of the Commonwealth and all categories of users.

- *State Procurement Regulations.* It must allow for compliance with all relevant Commonwealth of Virginia procurement regulations and other statutory requirements.

- *Long Term Commitment.* It must reflect a meaningful, long-term commitment to the maintenance of the service by all parties.

- *Minimum Public Cost.* It must be structured in such a way as to minimize the on-going costs to the public sector.

Ease of Implementation

Finally, the statewide service should be as easy and straightforward to implement as possible. This implies that at least the following five requirements are met by whatever organizational structure is put in place:

- *Build on Experience.* It must actively encouraging participation by organizations having direct, relevant experience on similar programs, preferably on the pilot Travel Shenandoah project or, failing that, on similar projects in other areas of the country;

- *Established Technical Structure and Staff.* It must reflect the use of an established, proven technical structure and staff, preferably one that is already in place in Virginia.

- *Objective Broker Role.*   It must include a meaningful role for an objective broker to negotiate the creation of an effective family of regional partnerships.

- *Rapid Start Up.* It must be capable of hitting the ground running, with no major start-up delays or interruptions to existing services.

- *Effective Governance and Management.*   It must provide for both effective policy-level oversight and governance of the service, as well as responsive, practical day-to-day management of its operations.

The Organization of the Travel Shenandoah Pilot Project

As has been discussed, although it rapidly evolved into an effective 50/50 partnership between VTTI and SHENTEL, the original pilot Travel Shenandoah project was structured formally as a conventional VDOT research project. VDOT was the client, VTTI served as the prime contractor, and SHENTEL was a major subcontractor to VTTI.

Table 7.1 Travel Virginia Organizational Options and Responsibilities.

	Alternative Long-Term Arrangements			
	DOT R&D Pilot Project	**Option A**	**Option B**	**Option C**
	Travel Shenandoah	Competitively Contracted Clearinghouse, Multiple Local Partners	Non-Profit VTIP Clearinghouse, One Major Statewide Partner, Multiple Local Partners	New Venture: Combined VTIP/SHENTEL Clearinghouse & Delivery Function, Multiple Local Partners
Major Function	Note: Figures in parentheses indicate approximate allocation of responsibility			
Planning & Concept Formulation, Business Model	VTTI (65%) SHENTEL (35%)	Contract C/H (65%) Local Partners (30%) VTTI (5%)	VTIP C/H (30%) Major Partner (30%) Local Partners (30%) VTTI (10%)	New Venture (60%) Local Partners (30%) VTTI (10%)
Brokering of Partnerships, Project Management	VTTI (80%) SHENTEL (20%)	Contract C/H (75%) Local Partners (20%) VTTI (5%)	VTIP C/H (50%) Major Partner (20%) Local Partners (20%) VTTI (10%)	New Venture (70%) Local Partners (20%) VTTI (10%)
Data Acquisition	VTTI (75%) SHENTEL (25%)	Contract C/H (60%) Local Partners (35%) VTTI (5%)	VTIP C/H (35%) Major Partner (25%) Local Partners (30%) VTTI (10%)	New Venture (55%) Local Partners (35%) VTTI (10%)
Data Verification & Synthesis	VTTI (85%) SHENTEL (15%)	Contract C/H (60%) Local Partners (35%) VTTI (5%)	VTIP C/H (45%) Major Partner (25%) Local Partners (30%) VTTI (0%)	New Venture (60%) Local Partners (35%) VTTI (5%)
Central Database Management	VTTI (95%)\ SHENTEL (5%)	Contract C/H (85%) Local Partners (10%) VTTI (5%)	VTIP C/H (80%) Major Partner (10%) Local Partners (5%) VTTI (10%)	New Venture (90%) Local Partners (5%) VTTI (5%)
Data Feeds to Delivery Partners	VTTI (85%) SHENTEL (15%)	Contract C/H (85%) Local Partners (10%) VTTI (5%)	VTIP C/H (30%) Major Partner (30%) Local Partners (30%) VTTI (5%)	New Venture (90%) Local Partners (5%) VTTI (5%)
Delivery of Services to End Users	VTTI (15%) SHENTEL (70%) Local Partners (15%)	Contract C/H (25%) Local Partners (70%) VTTI (5%)	VTIP C/H (25%) Major Partner (40%) Local Partners (30%) VTTI (5%)	New Venture (65%) Local Partners (30%) VTTI (5%)
Marketing & Sales	VTTI (30%) SHENTEL (70%)	Contract C/H (25%) Local Partners (75%) VTTI (0%)	VTIP C/H (0%) Major Partner (65%) Local Partners (35%) VTTI (0%)	New Venture (70%) Local Partners (30%) VTTI (0%)
Generation of Revenue	VTTI (15%) SHENTEL (85%)	Contract C/H (35%) Local Partners (65%) VTTI (0%)	VTIP C/H (0%) Major Partner (65%) Local Partners (35%) VTTI (0%)	New Venture (70%) Local Partners (30%) VTTI (0%)

Table 7.1 (see the column headed DOT R&D Pilot Project) summarizes the relative contributions of the two parties to the pilot program in each of nine major functional areas. While every party played a role in all of the functions, VTTI took the lead in the development of the pilot partnership, the underlying business model and marketing plan, the collection and synthesis of data, the development and operation of the Central Clearinghouse database, and the development of the Internet service. SHENTEL took the lead in the development of all telephone, pager, and cable television components of the

service, in the delivery of services to the end user, in the implementation of the marketing and sales plan, and in the generation of revenue. The two organizations shared responsibility for on-going development of the underlying concepts. VTTI was responsible for overall management of the project.

This structure worked extremely well as the foundation for the initial planning, design, and development of the service. And it is working equally well as the basis for the current fifteen-month demonstration project.

It is not, however, an appropriate structure to support on-going delivery of the service once the demonstration project has been completed, for at least five reasons:

- The structure is designed specifically to support a short-term R&D function, not the on-going delivery of a service.

- It is based not on a partnership concept, but one of contracted services, in which it is implicitly assumed that the public sector will bear the brunt of the costs.

- It does not provide a sufficiently clear designation of the rights and responsibilities of all parties, particularly in the context of a continuing service agreement. It is also silent on such matters as protection of privacy and restrictions on the use of certain revenue sources and legal liability, and it leaves unanswered many questions regarding shared financial risk and responsibilities, ownership of data and technology, patent rights, and similar issues.

- It makes no provision for effective policy-level oversight and governance by the primary stakeholders.

- It does not provide an effective basis for the management of the complex, day-to-day activities of an on-going business partnership.

Therefore, for these reasons, it is recommended that an alternative organizational structure be developed to support implementation of any future statewide service.

Three Possible Organizational Options for a Statewide Travel Virginia Service

Table 7.1 (see three right hand columns) summarizes three possible organizational options for a statewide Travel Virginia service. They are deliberately designed to illustrate three possible extremes. There are many possible variations on each one, including combinations of parts of each into a variety of composite arrangements.

Option A: Competitively Contracted Clearinghouse, Multiple Local Partners

In this model, the on-going operation of the Central Clearinghouse, together with the overall direction and delivery of the service, would be let out for competitive bids, in a manner somewhat similar to that followed by VDOT in the case of the recent Hampton Roads ATIS procurement.

Respondents would be required to either specify a series of proposed regional partnerships as part of their bid, or to guarantee the formation of such partnerships within a short period of time. The successful bidder would be responsible for assuming overall responsibility for the development and delivery of the service, in a manner that meets VDOT's policy and financial goals. This would include assuming responsibility for final brokering of local partnerships, on-going data collection and operation of the central Clearinghouse, oversight of local partners, marketing, and acceptance of shared risk and return in a manner acceptable to VDOT, the other sponsors, and the successful bidder

Delivery of user services would be to specifications negotiated with VDOT and the other sponsors of the service. The successful bidder and the individual local partnerships would share responsibility for the delivery of these services and for the associated generation of revenue. It is assumed that the objective of the successful bidder would be to create and run a successful for-profit service, including the Clearinghouse operation.

Under this scenario, the roles of both VTTI and SHENTEL would depend primarily on the successful bidder. In the case of VTTI, it is anticipated that the role would be a minor one, focused mainly on transfer of information regarding the pilot Travel Shenandoah project to the successful bidder, including possible licensing of the underlying software as well as a possible on-going evaluation role. SHENTEL's role would most likely be as one of the local partners: responsible both for the continuing delivery of services in the Northern Shenandoah Valley and possible operation of the telephone-related portions of the Central Clearinghouse.

The third column in Table 7.1 (headed Option A) summarizes the anticipated distribution of responsibilities under this first scenario.

Option B: Non-Profit VTIP Clearinghouse, One Major Statewide Partner and Multiple Minor Local Partners

The second model assumes that both Virginia Tech and SHENTEL continue to play a major role in the development and operation of a growing Travel Virginia service, staged over a period of several years.

Responsibility for the on-going operation of the Central Clearinghouse would be transferred from VTTI, which operates as part of the research arm of the university, to a new, non-profit entity operating under the umbrella of the university's established outreach function. It would be organized, as are numerous other ventures that have evolved as an outgrowth of university research, through the auspices of Virginia Tech Intellectual Properties (which holds the intellectual property rights to the Travel Shenandoah software) and the Virginia Tech Foundation.

The new non-profit entity would assume overall responsibility for the development and operation of a growing statewide service. It would assume all of VTTI's current responsibilities, including continued brokering of local partnerships, on-going data collection, verification and synthesis, operation of all Central Clearinghouse functions, provision of data feeds to and oversight of local partners, overall marketing of the

service, and on-going management of the program. Emphasis would be placed on meeting VDOT and other public agency goals in a manner that minimizes the cost to the public sector.

The Clearinghouse would continue to be based in Blacksburg, most likely in VTTI's current Smart Road facility. The cost of on-going Clearinghouse operations would be recouped through an annual charge made to each of the local partners for the service, with the charge being based simply on the need to cover the costs involved. It is anticipated that the new entity would contract with VTTI for certain R&D services. Any revenues received in excess of costs would be directed toward the support of additional R&D activities.

Under this scenario, the non-profit Clearinghouse would be supported by one major statewide partner together with multiple minor local partners. It is anticipated that SHENTEL would play the role of the major partner.

In this capacity, SHENTEL would be responsible for continued delivery of the services the firm is currently delivering in the Northern Shenandoah Valley, extension of these services south down the remainder of the I-81 Corridor, other potential areas, and operation of the telephone-related portions of a consolidated Clearinghouse in conjunction with the new VTIP entity. The consolidated Clearinghouse would then relay a continuing stream of information to a family of local partners that would be responsible for its subsequent delivery to the end user. This arrangement has the advantage of avoiding the need to convince one or more additional, regional telecommunications companies of the value of performing the central role within their region (currently being performed by SHENTEL in the Northern Shenandoah Valley).

Under this scenario, SHENTEL would serve as the central repository and relay point for all telephone and wireless-based communications throughout the Commonwealth, building on its established data-voice translation and voice recognition technology. The role of other telephone and pager companies would be simply as local access partners, providing the last mile connection for users of the service. Users' calls would be channeled to a local relay station and via an automated switch to the central SHENTEL service. There they would be fed into the central database, where an appropriate response would be formulated and relayed back to the user via the same switching network and local rely point. The arrangement is standard operating procedure within the telecommunications industry, and builds directly on the established business relationships that SHENTEL already has in place with other, local access telephone companies.

SHENTEL would also be responsible for supporting the on-going marketing of the service for specific local sales activity and for major portions of the overall revenue generation to support the service. They would be supported in these latter two roles by each of the local partners. It is assumed that both SHENTEL and the local partners would have the objective of making a financial return from their investment. The Clearinghouse would be designed to break even on annual operations.

The anticipated distribution of responsibilities under this second scenario is summarized in the column headed Option B in Table 7.1.

Option C: New Venture – Combined VTIP/SHENTEL Clearinghouse and Delivery Function, Multiple Minor Local Partners

The third option is a variation on the theme of Option B, reflecting a significant increase in commitment from the private sector coupled with a selective extension of the centralized delivery capability in those areas where it proves difficult to form an effective local partnership. The major increased commitment is reflected in the creation of a formal joint venture between VTTI and SHENTEL, replacing the previous combination of a non-profit VTIP Clearinghouse with SHENTEL as a major, statewide delivery partner.

In this case, the new venture would assume lead responsibility for each of the major functions, including all of those allocated to either the VTIP Clearinghouse or SHENTEL under Option B. The new venture would again be supported by a network of local partnerships, responsible for aspects of local data collection, service delivery, marketing and sales, and revenue generation. In addition, however, the new venture would itself assume a leadership role in performing some or all of those functions in regions where it might prove infeasible to create an effective local partnership.

The new venture would be funded by investment capital from SHENTEL, and potentially the Virginia Tech Foundation and other investors. It would be operated as a free-standing, for-profit enterprise based in Edinburg, Virginia.

The fifth and final column of Table 7.1, headed Option C, summarizes the anticipated distribution of responsibilities under this scenario.

Assessment of the Three Options

Table 7.2 provides a preliminary comparison of each of the three options against the set of major requirements defined earlier. The analysis is intended not to serve as the basis for making a choice, but simply as a convenient means of summarizing the relative strengths and weaknesses of each option. It must be interpreted in that light.

Given that important proviso, the analysis suggests that there is little to choose overall between Options B and C, with Option B having a slight edge in terms of potential operational effectiveness and financial viability, and Option C having a similar slight advantage in terms of its ability to protect the public interest. Both Options B and C, however, appear to be potentially more attractive than Option A, which tends to rate lower in all four major categories and to pose some particular challenges in terms of its probable ease (or lack thereof) of implementation.

Table 7.2 Comparison of Organizational Options.

	Alternative Long-Term Arrangements		
	Option A	**Option B**	**Option C**
	Competitively Contracted Clearinghouse, Multiple Local Partners	Non-Profit VTIP Clearinghouse, One Major Statewide Partner, Multiple Local Partners	New Venture: Combined VTIP/SHENTEL Clearinghouse & Delivery Function, Multiple Local Partners
Evaluation Criteria			
Operational Effectiveness			
Provide Quality Service	4	5	5
Stable Support Structure	3	5	5
Foster Flexible Partnering	3	5	5
Respond to Changing Needs	3	4	4
Incorporate New Technology	4	5	4
Average	3.4	4.8	4.6
Financial Viability			
Support Business Model	3	4	5
Multiple Revenue Streams	4	5	5
Effective Risk Sharing	3	5	4
Minimum Start Up Cost	2	5	4
Acceptable Financial Return	2	4	4
Average	2.8	4.6	4.4
Protecting the Public Interest			
Meet VDOT Objectives	4	5	5
Uniform Statewide Service	3	4	5
State Procurement Regulations	5	3	3
Long-Term Commitment	2	4	5
Minimize Public Cost	3	5	5
Average	3.4	4.2	4.6
Ease of Implementation			
Builds Directly on Experience	1	5	5
Technical Structure/Staff in Place	1	5	5
Objective Broker Role	2	5	5
Quick Start Up	1	5	4
Day-to-Day Management	4	4	5
Average	1.8	4.8	4.8
Overall Assessment	**2.9**	**4.6**	**4.6**

Again, it must be stressed that this analysis is designed not to serve as the basis for a decision, but rather to highlight some of the major differences between the three options as they have been defined here. It is recommended that a refined version of this framework be used to help support a final choice or set of choices regarding the implementation of these options.

A Recommended Option

Bearing in mind all of the above, it is suggested that a two-stage approach be followed to any implementation of a statewide Travel Virginia service.

Stage One: Next Ten Months (September 1, 2000 – June 30, 2001)

Over the next ten months, it is suggested that the demonstration phase of the current Travel Shenandoah project continue to be operated as a research project. This would apply also to the related projects dealing with the development of a truck fleet alert service and the northerly extension of the service to Harrisburg sponsored by the I-95 Corridor Coalition. It would also apply to the preliminary planning and implementation of a southerly extension of the service to cover the remainder of the I-81 Corridor in Virginia as suggested in the following chapter.

In parallel with these activities, it is recommended that four steps be taken over that same time period.

Establishment of VTIP Clearinghouse

The necessary steps should be taken to establish the proposed VTIP Clearinghouse, with a view to transferring operational responsibility for all Clearinghouse operations from VTTI to that entity on or before July 1, 2001. The VTIP Clearinghouse would operate as a non-profit entity under contract to VDOT. It would assume responsibility for all Clearinghouse operations over the entire length of the I-81 Corridor in Virginia, the northerly extension to Harrisburg, and the initial implementation of a truck fleet service alert service.

The new Clearinghouse would have a minimal staff, consisting of a part-time Director, a full-time Clearinghouse Manager and one to two part-time technical staff, supported by the current team of hourly Clearinghouse operators. Where appropriate and acceptable to the staff members in question, one or more members of the current VTTI staff would be given the opportunity to transfer to the new VTIP Clearinghouse operation.

To avoid unnecessary disruptions in the current work program, it is suggested that the VTIP Clearinghouse be housed in the current VTTI Smart Road facility and that selected portions of its work be subcontracted to VTTI and the current VTTI research team. It is anticipated that these would include such portions as additional regional partnerships and the development of additional software, among others.

Designation of SHENTEL as the Major Partner for the Entire I-81Corridor in Virginia

Planning for the southerly extension of the current Travel Shenandoah service south along the remainder of Virginia's I-81 Corridor to Bristol, Virginia would be based on the assumption that SHENTEL would serve as the major partner of the VTIP Clearinghouse for the delivery of all services along the entire length of Virginia's I-81 Corridor, for the extension north to Harrisburg, and in connection with the truck fleet alert service.

The staff of the VTIP Clearinghouse and VTTI would work with SHENTEL to establish appropriate consolidation of the on-going operation and management of current VTTI and SHENTEL Clearinghouse responsibilities. It is anticipated that the main

Clearinghouse database would continue to be based in Blacksburg, Virginia and the telephone-related portions of the Clearinghouse in Edinburg, Virginia.

SHENTEL would serve as the focal point for the delivery of all telephone-based services within the corridor, working as described earlier with a network of local-access telecommunications companies along the entire I-81 Corridor to deliver last-mile service to the user.

Additional partnerships would be established by the VTIP Clearinghouse and SHENTEL with local organizations (DMOs, PDCs, television and media companies, and other organizations) within the region. These would support the collection of local data, delivery of cable television service, the marketing and sale of the service, and the generation of revenue.

<u>Assessment of the Feasibility of a Possible VTIP/SHENTEL Joint Venture, and if Appropriate Development of a Proposed Business Plan</u>

In parallel with the first two steps, a detailed assessment would be made of the feasibility of a possible VTIP/SHENTEL joint venture. If the results of this assessment are positive, a proposed business plan would be prepared for review by the appropriate management organizations. This would then be used as the basis for a proposal for continued development and operation of a comprehensive, statewide Travel Virginia service.

<u>Detailed Assessment of Potential Options</u>

Finally, the preliminary assessment of the potential options presented earlier would be refined to cover a more detailed analysis of the issues involved, the pluses and minuses of each approach, and the potential attractiveness of different variations on each of the three main themes. Working closely with VDOT, the current Travel Virginia research team would select a recommended option. The necessary steps to support implementation of that option would be identified.

Governance of a Statewide Service

No matter what organizational option is chosen, an appropriate structure must be developed to provide for effective, continuing governance of any statewide service. It is recommended that this take the form of a five- or seven-person Board of Governance, made up of representatives of VDOT, VTC, Virginia State Police, and the organization(s) responsible for the delivery of the service. The Chairperson of the Board would be a rotating position, with the individual being elected annually by a majority vote of the members of the Board.

The Board would have overall responsibility for setting policy with regard to all aspects of the statewide service, for oversight of its day-to-day operations, and for review and approval of all contractual obligations before they were entered into. The person within the organization responsible for operation of the Central Clearinghouse would report to

the Board. Other individuals and/or organizations responsible for major partnership activities would report to the Board through that individual.

Clearly, the appropriate membership of such a body cannot be determined until the final organization structure is put in place for the Travel Virginia service. Over the short-term, it is suggested that an interim Board of Governance be established, made up of five individuals, including one each to be designated by VDOT, VTC, the State Police, Virginia Tech, and SHENTEL. This Board would be replaced, expanded, or re-constituted as appropriate once a final organization structure had been determined.