

# Idaho Transit Technology Plan

Prepared For:  
Idaho Transportation Department  
Division of Transportation Performance

Prepared By:  
**M**<sup>c</sup>FARLAND **M**ANAGEMENT, LLC

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## **EXECUTIVE SUMMARY**

The application of transit supportive technologies is an important element toward achieving Idaho's vision of providing coordinated, contemporary transit services in an efficient, effective and intelligent manner. The Idaho transit technology program, managed by the Idaho Transportation Department Division of Transportation Performance (ITD-DTP, formerly Public Transportation), identified the following three initiatives that have been guiding planning, development, and deployment of technology-based projects.

1. Plan and deploy Advanced Public Transportation Systems (APTS) technology in accordance with a Federal Transit Administration Intelligent Transportation System grant.
2. Enhance Idaho traveler information to include a transit component.
3. Design and build a management system to improve grant administration and performance management by ITD-DTP and their sub-recipients and those reporting operational data.

The purpose of this planning document is to describe technology deployment activities to date and answer the question, "Where do we go from here?" The Plan defines a 5-year roadmap for future transit technology deployments and identifies specific projects, their priorities, and estimated costs.

This Plan will require updates as progress is made. Minor updates (supplements) will be prepared annually and a major update (re-write) is anticipated in five years.

### **Partnerships**

The partnerships that have formed to plan and deploy transit technology projects throughout Idaho have been critical to successful accomplishments achieved to date and to the future deployments under consideration. The current partners comprise fifteen different organizations including Idaho Transportation Department, Community Transportation Association of Idaho (including statewide Mobility Managers), and numerous transit providers across Idaho. As the transit technology deployment efforts expand, it is anticipated that new partners will join these activities.

## **Advanced Public Transportation Systems**

APTS technologies are currently being deployed, or have been deployed, at eight Idaho transit providers. These technologies include demand response dispatch software, fixed route management systems, automated vehicle location, mobile data terminals, and en-route traveler information signage at bus stops (not all eight providers have received all these technologies).

Potential future technology deployments include components that will expand usage to other providers, improve demand response trip reservation systems, enhance fixed route data collection, and expand efficiency and safety of operations.

## **Traveler Information**

Transit related traveler information has been improved by expanding the information available on the Idaho 511 system (phone and website). Currently, eleven fixed route transit providers have their routes, stops, and schedules available on Idaho 511 and Google Transit. These new systems provide transit users with up-to-date information about their upcoming trips.

Potential future technology deployment will enhance the information displayed on Idaho 511 maps, add mobile applications to learn when the next bus will arrive at a particular stop, expand the use of 511 phone service to provide transit information, and improve the development and maintenance of transit service information that enables map display and schedules.

## **Management System**

The management system currently under development will perform two primary functions – automate the grants administration business processes, and establish a performance management system. This new system is called ***I-TRIPS*** (Idaho – Transportation, Reimbursement, Integration, and Performance System). The new system will automate the complete lifecycle of grant funding administration including all aspects of the ITD-DTP business processes.

Currently, the system is nearly developed and will enter the system testing phase in early 2012. Potential future enhancements include adding other grant funding programs (other than FTA), integrating information with ITD's financial system, and expanding asset management analysis capabilities.

## Other

In addition to the three primary transit technology initiatives discussed above, some other supporting technologies have been deployed, and still others are being considered in the future. This group of technologies include automated data sharing approaches (integration/interfaces), Idaho Rideshare system that matches riders to promote car/van pooling, and other uses for transit route mapping, stops, and schedule information.

## Specific Technology Projects Identified

Table E-1 summarizes the proposed future transit technology projects, discussed in greater detail within this Plan, grouped by technology initiative and priority.

**Table E-1**  
**Transit Technology Projects Grouped By Technology Initiative and Priority**

Technology Initiative	Priority	Transit Technology Project	Estimated Cost
APTS	High	Interactive Voice Response (IVR)	\$450,000
APTS	High	APTS Information Sharing/Coordination	\$325,000
APTS	High	Advanced Phone Systems	\$50,000
APTS	High	Automated Passenger Counters	\$1,300,000
APTS	High	Electronic Stop Annunciators	
APTS	High	Electronic Fare Collection (smart cards)	\$450,000
APTS	Medium	Additional systems deployment for new participants	\$750,000
APTS	Medium	Expansion of system capabilities/features	\$50,000
APTS	Medium	Web-based Demand Response Reservations	\$300,000
APTS	Medium	Security Cameras	See Note 1
APTS	Medium	Volunteer Driver/Rider Software	\$100,000
APTS	Medium	Wi-Fi on Vehicles	See Note 1
APTS	Low	Website Enhancements	\$50,000
APTS	Low	Transit Signal Priority	See Note 1
Traveler Info	High	Upgrade MODES Software to Google API 3.0	\$150,000
Traveler Info	High	Using AVL data to display bus locations on transit 511	\$50,000
Traveler Info	High	MODES Training	\$50,000
Traveler Info	High	Mobile applications	\$80,000
Traveler Info	High	Bus stop/schedule information on 511 phone	\$45,000
Traveler Info	Medium	Additional providers on transit 511/Google Transit	\$200,000
Traveler Info	Medium	Enhancements to Transit 511 webpage	\$80,000
Traveler Info	Medium	Integrate Google Transit Trip Planner into 511 Transit	\$30,000

*Idaho Transit Technology Plan – Final (December 2011)*

<b>Technology Initiative</b>	<b>Priority</b>	<b>Transit Technology Project</b>	<b>Estimated Cost</b>
Traveler Info	Medium	MODES-Routes Trip Planning	\$125,000
Traveler Info	Medium	Additional en-route traveler information signage at bus stops	\$300,000
Traveler Info	Medium	Transit alerts through texting and email	\$70,000
Traveler Info	Medium	MODES UPDATE Enhancement (Phase 1)	\$30,000
Traveler Info	Medium	MODES UPDATE Enhancement (Phase 2)	\$100,000
Traveler Info	Low	511 phone call out feature	\$45,000
Traveler Info	Low	AMTRAK Information on 511 Transit	\$7,500
Traveler Info	Low	Transit Statistics on 511 Phone use	\$20,000
Mgmt System	High	Add FHWA funding sources	\$300,000
Mgmt System	High	Integration with ITD financial system (AMS)	\$100,000
Mgmt System	High	Enhanced Asset Management	\$100,000
Mgmt System	Medium	Add other funding sources	\$200,000
Mgmt System	Medium	General System Upgrades	\$100,000
Mgmt System	Medium	Additional dashboard panels	\$25,000
Mgmt System	Medium	Planning/GIS module	\$100,000
Mgmt System	Low	Policy development module	\$50,000
Data Sharing	High	Interface between AMR (Medicaid Brokerage) and RouteMatch	\$25,000
Data Sharing	Medium	Interface between RouteMatch database and I-TRIPS database	\$150,000
Data Sharing	Low	Integration of I-TRIPS with FTA TEAM system	\$200,000
Data Sharing	Low	Integration of I-TRIPS with ITD STIP	\$50,000
Other	High	Idaho Rideshare Enhancements	\$25,000
Other	Medium	Other uses for GTFS data	\$0
Other	Low	Bus Stop Database	\$100,000

Note 1: Highly dependent on type and number of Providers interested in this technology, as well as the scale of the deployment. Cost estimates are not available at this time. Project budgets should be prepared when planning the specific technology project deployment.

# **1. INTRODUCTION**

## **Purpose**

Over the past several years, the Idaho Transportation Department (ITD) Division of Transportation Performance (formerly Division of Public Transportation) and its partners have planned for and implemented numerous technologies in support of improved statewide transit operations and the experiences of its users. These technologies were funded with federal and state monies and have been focused on increasing efficiencies, enhancing operational effectiveness, increasing service usage and satisfaction, and improving financial and performance management.

The purpose of this document is to describe the deployments to date and identify future plans for transit technology implementation in Idaho. The Idaho Transit Technology Plan (“the Plan”) defines a 5-year roadmap of “where we go from here.” The Plan is specifically focused on public transit technologies and does not include other ITD-Division of Transportation Performance (the “ITD-DTP”) responsibilities (such as bicycle-pedestrian programs). Funding for the future transit technology projects described in this document has not been secured. This Plan will identify the prioritized technology projects and prospective funding possibilities to identify and secure the necessary funding for implementation.

On June 14-15, 2011, a statewide transit technology summit was conducted in Boise, Idaho. Summit attendees included Idaho Transportation Department, Community Transportation Association of Idaho staff, Mobility Managers, transit providers, and other interested parties. The purpose of the summit was to review current status of technology deployments and provide input regarding future opportunities. An early draft of this document was used to guide the discussions during the summit. Information gathered during the summit was used to finalize this document.

## **Historical Perspective**

The following major events have facilitated the recent Idaho transit technology deployment activities:

1. The acquisition of a 2005 FTA grant to plan and deploy Advanced Public Transportation Systems (APTS). APTS is a major component of the national Intelligent Transportation Systems (ITS) Program.
2. The restructuring of the relationship between ITD-DTP and the statewide transit Providers who receive federal funding (as sub-recipients to FTA Grants received by ITD).
3. The acquisition of an ARRA grant to develop a grants and performance management system. This effort will be used by ITD-DTP and their sub-recipients to better manage their businesses.

4. Idaho's significant investment in a statewide 511 system (website and phone system) provided the foundation to add specific transit related traveler information features.

The APTS activities have been guided by two previous documents – Idaho Transit ITS Study<sup>1</sup> and the Idaho APTS Implementation Plan<sup>2</sup>. The first of these documents prepared a technology assessment of Idaho transit provider's operations and their potential to incorporate APTS technology applications. The second document defined a specific implementation plan for APTS deployments, using the original ITS Study as a starting point. The implementation plan outlined which transit providers would receive specific APTS technologies – all within the budget available.

These and other extensive planning efforts identified the needs and capabilities of the transit providers and ITD-DTP and formed the basis for development of specific transit technology initiatives. Following this planning, various procurement efforts were successful in acquiring the expertise needed to move forward with several transit technology development activities. These activities are described in Chapter 4 of this Plan.

### **Importance of Partnerships**

Although much of the transit technology efforts so far have been led by ITD-DTP, the current deployment successes could not have been achieved without the important partnerships established with numerous organizations throughout the state. These organizations are identified in Chapter 3. These and newly established partnerships will be a critical factor in the success of future transit technology deployment efforts.

### **Relationship to Idaho ITS Plan and Architecture**

Intelligent Transportation Systems are defined as integrated information, telecommunications, and computer-based technologies used to make infrastructure and vehicles safer, smarter, and interconnected. The ITS Program includes groups of dedicated transit technologies within the national ITS architecture called market packages. The transit related ITS architecture market packages include:

1. Transit Vehicle Tracking
2. Transit Fixed Route Operations
3. Demand Response Transit Operations
4. Transit Fare Collection Management
5. Transit Security
6. Transit Fleet Management
7. Multi-Modal Coordination

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<sup>1</sup> Iteris, Inc. (June 2007). *Idaho Statewide Intelligent Transportation Systems Study*. Submitted to the Idaho Transportation Department – Public Transportation Division.

<sup>2</sup> McFarland Management, LLC. (August 2008). *Idaho Initial Advanced Public Transportation Systems (APTS) Implementation Plan*. Submitted to the Idaho Transportation Department – Division of Public Transportation.

8. Transit Traveler Information
9. Transit Signal Priority
10. Transit Passenger Counting

Chapter 2 defines the Idaho transit technologies, within most of these ITS architecture market packages, in more detail.

The state of Idaho has recently updated their statewide ITS Plan and Architecture. It is a federal requirement to keep these efforts current in order to spend federal money on ITS deployments (including transit related ITS deployments). The statewide architecture includes elements of transit technologies. The specifics of all the possible transit technologies and stakeholders were not available at the time the statewide plan was completed (February 2011), however, following the completion of this Plan the statewide architecture will be updated, if needed.

### **Plan Update Process**

As new technology opportunities arise and deployments are completed, this Plan will require updating. The following process will be followed to update this Plan and maintain it as a relevant and useful document.

- Prepare minor updates (supplements) once per year (obtain input from stakeholders at the transit technology summit to be held in coordination with the CTAI Annual Fall Conference)
- Prepare a major update (re-write) every 5 years

### **Contents**

This document is organized to give the reader information about current Idaho transit technology activities and define the plans and priorities for future activities. The following Chapters encompass the entire Plan:

- Chapter 2 – Transit Technologies
- Chapter 3 – Partner Organizations
- Chapter 4 – Technology Deployments
- Chapter 5 – Technology Opportunities and Priorities
- Chapter 6 – Projects and Funding Plan
- Chapter 7 – Challenges
- Chapter 8 – Near-Term Action Plan

## **2. TRANSIT TECHNOLOGIES**

The ITD-DTP established three primary transit technology initiatives, which are the subject of this Plan. They include:

4. Plan and deploy APTS technology in accordance with the FTA ITS grant.
5. Enhance Idaho traveler information to include a transit component.
6. Design and build a management system to improve grant administration and performance management by ITD-DTP and their sub-recipients.

The APTS technology initiative is focusing on a select group of ITS transit technologies that were identified as high priority in the original Idaho ITS Study. The highest priority components include demand response dispatch software, fixed route management systems, automated vehicle location (AVL), mobile data terminals (MDT) or handheld devices, and en-route traveler information signage at bus stops. RouteMatch Software is currently working with six transit providers to deploy these technologies appropriate to each operation.

The Idaho traveler information initiative is striving to provide information to the users of the Idaho fixed route transit systems regarding location of bus routes and stops, and bus schedules. Idaho has a significant investment in their current 511 system (both website and phone systems). This initiative is utilizing that foundation to provide the transit information via a specific transit information webpage and as a menu item on the 511 phone system. Castlerock Consultants is the 511 system contractor developing these new transit information features.

The management system initiative will develop a system to perform two primary functions – automate the grants administration business processes, and establish a performance management system. Agate Software was selected to design and develop this new system and is currently working with ITD-DTP to design and deploy the system.

The specific technology applications within each of these initiatives are identified in Table 1 and described in Appendix A. Table 1 also includes ‘Other’ transit technologies that have been supported by ITD-DTP. These technologies are a combination of applications to support transit operators, grant applicants and managers, and the users of the transportation services.

Although the technologies identified in Table 1 are shown by initiative, it is understood that integration of technologies across initiatives is a likely future outcome. As these integrated technology offerings are available in the marketplace, Idaho will be ready and open to evaluating their possible application as a future implementation.

A status of each Idaho transit technology initiative is provided in Chapter 4. A discussion of potential transit technology opportunities and priorities follows in Chapter 5.

**Table 1**  
**Idaho Transit Technologies List**

<b>APTS (Efficiency and Safety)</b>	<b>Traveler Information</b>	<b>Management System</b>	<b>Other</b>
Demand Response Dispatch Software	Transit Services Website	Organization Information	Statewide One-Stop-Resource Website
Fixed Route Management Systems	Trip Planning Websites	On-line Application	Provider Directory
Automated Vehicle Location (AVL)	511 Phone System	Grant Financial Management	Dynamic Rideshare Services
Mobile Data Terminal (MDT)/ Handheld Device	En-Route Signage	Grant Award and Tracking	Various uses for GTFS databases
APTS Information Sharing/Coordination	Mobile Applications	Reimbursement Process	Bus stop database
Advanced Telephone Systems	Transit Alerts	Asset/Inventory Management	
Interactive Voice Response (IVR)	GTFS Data Management System	Operational Data Management	
Website Enhancements		Reporting	
Web-based Reservations		Planning Functionality	
Maintenance Management Systems		Policy Development Functionality	
Security Systems			
Volunteer Driver/Rider Software			
Automated Passenger Counters (APC)			
Electronic Stop Annunciators			
Electronic Fare Systems			
Wi-Fi Onboard Vehicles			
Transit Signal Priority			

### **3. PARTNER ORGANIZATIONS**

As mentioned earlier, the partnerships that have formed to plan and deploy transit technology throughout Idaho have been critical to the accomplishments achieved to date and to the future deployments under consideration. The current partner organizations implementing the Idaho transit technology initiatives include:

- ITD-DTP – responsible for pursuing and implementing FTA and other grants to provide the tools to support statewide transit systems operate in an efficient, effective and intelligent manner.
- CityLink – provides fixed route services in Coeur d’Alene and south on US 95.
- Community Transportation Association of Idaho (CTAI) – the statewide, nonprofit membership association dedicated to creating partnerships, improving efficiencies, and building a truly multi-modal system of connected travel in Idaho. CTAI has developed i-way.org (the online resource for transit information) and through the mobility managers has maintained strong relationships with the transit providers.
- Lewiston Transit – provides demand response and fixed route services in the city of Lewiston.
- LINX - a transportation cooperative that connects transportation providers across 27 counties in Idaho, Wyoming and Montana to address the Greater Yellowstone region’s transportation challenges and market their services through one integrated system.
- Mountain Rides Transportation Authority (MRTA) – provides demand response and fixed route services in the areas of Sun Valley, Ketchum, and Hailey, as well as vanpool services to surrounding communities including Shoshone and Twin Falls.
- Northwestern Trailways – provides intercity services between Spokane and Coeur d’Alene, and cities between those locations and Boise.
- Pocatello Regional Transit (PRT) – provides demand response and fixed route services in the Pocatello region and some areas beyond.
- Regional Public Transportation (RPT) – provides demand response services and fixed route services in Moscow, Idaho.
- Salt Lake Express – provides intercity services between Idaho Falls, Boise, and Salt Lake City, Utah. Additionally, they travel to areas in the Yellowstone National Park region in Wyoming and Montana.
- START Bus – a Wyoming based company, provides an intercity service between Driggs, Idaho and Jackson, Wyoming.
- Targhee Regional Public Transportation Authority (TRPTA) – provides demand response and fixed route services in the Idaho Falls region, and some services in Salmon and Rexburg.
- TRANS IV – provides demand response services in the Twin Falls region.

- Treasure Valley Transit (TVT) – provides demand response and fixed route services in the Mountain Home, Payette, and McCall areas.
- Valley Regional Transit (VRT) – provides demand response and fixed route services in Ada and Canyon Counties of southwest Idaho, including Boise.

The commitments by the above organizations have included both staff time and/or project funding to ensure the success of various transit technology deployments. These partnerships are essential to the success of future activities. Other organizations who might not yet be listed are invited to join the efforts to move forward with future technologies.

## **4. TECHNOLOGY DEPLOYMENTS**

Significant progress has been made in the past two years to deploy transit-related technologies with the goal of improving transit operations, assisting users to learn more information about available services, enhancing the grants management process, and establishing a performance management system. A summary of the accomplishments are provided below within each major Idaho transit technology initiative.

### **APTS Deployments**

The APTS technologies selected as the most applicable and important to improve transit services across the state include the following:

- Automated Vehicle Location (AVL) systems – uses GPS devices and communications equipment installed on vehicles, and software systems to locate and display bus locations. This is a foundational technology that supports many other potential applications, such as automated passenger counters, stop annunciators, and transit signal priority systems.
- Mobile Data Terminal (MDT) – small computer installed in the bus that the driver can interact with to input operational data. The MDTs deployed in Idaho include a communication device to relay the information provided by the driver to a database that can be accessed by dispatchers/schedulers.
- Demand Response Dispatching – applies sophisticated software applications to assist providers of demand responses services to schedule rides, manage their resources, and collect valuable data. AVL and MDT systems are used in conjunction with this software to achieve best results.
- Fixed Route Management Systems – similar to Demand Response software, assists fixed route providers to manage their operations. Also uses AVL and MDTs to record ridership data and on-time performance measures.
- En-route Signage – uses various message boards at fixed route bus stops to provide riders with real-time information regarding next bus arrivals. The information is driven by the Fixed Route Management Systems and AVL/MDT information.

These APTS technologies can improve transit services throughout Idaho through more efficient allocation of resources, improving management of client information, reducing the time to collect operational data, and providing for more effective communications between dispatchers and bus drivers.

Table 2 identifies the Idaho Provider partners that are receiving the APTS technologies, which technologies apply to each Provider, and the status of the deployment. The technologies received by each organization were based on a detailed analysis of their respective operations. Not all technologies were recommended for deployment at all locations primarily because the

deployment costs were not warranted based on the size of certain operations. The project is approximately 75% complete– with an expected completion date of December 2012.

**Table 2**  
**APTS Technology Deployment Status by Organization**

Organization	AVL/MDT	Demand Response Dispatching	Fixed-Route Management	En-Route Signage	Status
MRTA	✓		✓	✓	Live with Fixed Route system. Acceptance testing conducted. Working on punch list items. Planning for signage installation complete.
PRT	✓	✓	✓	✓	Live with Demand Response and Fixed Route systems. Acceptance testing conducted. Working on punch list items. Planning for signage installation ongoing.
RPT	✓	✓	✓		Live with Demand Response and Fixed Route systems. Acceptance testing conducted. Working on punch list items.
Trans IV	✓	✓			Complete and accepted.
TRPTA	✓	✓	✓		Live with Demand Response and Fixed Route systems. Acceptance testing conducted. Working on punch list items.
TVT	✓	✓	✓		Live with Demand Response software and Fixed Route systems. Acceptance testing conducted. Working on punch list items.
VRT	✓	✓			Under a separate contract, Route-Match is deploying the Demand Response Dispatching software. Fixed Route software is desired, but currently unfunded.
Lewiston Transit	✓	✓			Under a separate contract, Route-Match has fully deployed their Demand Response Dispatching software.

Currently, 131 buses have had the requisite equipment installed at the first six provider locations in the table (excluding equipment installed at VRT and Lewiston Transit). All five planned demand response Providers are using the advanced dispatch software to operate their services. Trans IV has completed the system acceptance process – the other four providers are still testing the systems.

The deployment of the fixed route management systems encountered some technical challenges during deployment. Most of these challenges have been overcome and limited operation at the planned five locations is underway. Some fixed route system elements will require extra time to complete the deployments which is the reason for the expected contract completion date of December 2012.

The completion of this technology initiative will enable several future technologies to be considered. Those are identified and discussed in Chapter 5.

### **Traveler Information/511 Accomplishments**

Idaho is a member of a coalition of states deploying a 511 system called the Condition, Acquisition and Reporting System (CARS). The state has deployed a mature and extensive 511 system and continues to enhance its capabilities. This system includes both a website and phone system to provide a variety of traveler services to users of the Idaho transportation system. The websites use Google as their base map. Some of the most popular information provided by the system are camera images, weather and road condition information, construction and delay information, and traffic incidents. Winter time is the most common usage when the system accommodates nearly 500,000 unique website visitors per month and well over 100,000 phone calls per month. Idaho's 511 system is seen as an invaluable tool to inform travelers of conditions and help them be more prepared for their travel.

Transit information is another important element of any comprehensive statewide 511 system. A partnership between ITD-DTP and VRT funded and initiated six separate, but highly interrelated, projects to provide transit information to its users. These six projects included:

1. Development of the initial General Transit Feed Specification (GTFS) files – The first step to display transit routes, stops, and schedules on a map is to develop the necessary data and put it in a format that map routines can read. Google developed the national standard and it is now called GTFS. Iteris, Inc. was contracted to generate the initial GTFS files for eleven fixed route Providers in Idaho (including some intercity routes). Additionally, Iteris worked with Google to have the information included in the Google Transit planner website. This task is complete and it is now the responsibility of the transit Providers to keep the GTFS files up-to-date.
2. Inclusion of Idaho fixed route providers on Google Transit. An extensive effort was conducted by Iteris, Inc. to meet Google's requirements for the Provider's information to be included on the Google Transit website. Google Transit allows potential users to plan their trip utilizing fixed route transit service information. This project is also complete. All of Idaho's partner transit Providers' stops and schedules are displayed on Google

Transit, with the exception of Salt Lake Express. Google would not accept Salt Lake Express because they did not truly operate a fixed route service (they operate with a reservation required). Since they do not stop at the locations unless there is a reservation made, Google rejected the submission.

3. Development of the CARS MODES system. Castlerock Consultants is the 511 software development contractor for the CARS coalition. MODES (the transit module of CARS) was originally built by the state of Maine. Idaho funded several enhancements to the Maine system and the implementation for the eleven transit Providers. MODES displays transit routes, stops, and schedules within a CARS system module where daily adjustments and events can be placed on the map. Not only does MODES 'manage' the information, it also facilitates the information being displayed to the public. This project is complete.
4. Creation of a separate transit webpage. The Idaho 511 system is primarily providing motorists with information about state highway conditions. It was decided to develop a separate transit webpage to focus the information on transit users, rather than making another layer of information on the base 511 websites. Castlerock developed this transit webpage for the eleven Providers. A user can find all fixed routes as a colored line on a Google map, along with the stops and schedules. Additionally, each Provider's websites are available as a link if a user is interested in finding more information. Figure 1 illustrates the initial Idaho Transit webpage from which Provider information can be selected. This project is complete with the exception of Valley Regional Transit's routes. The size and complexity of VRT's system has required additional time to complete their portion of the project.
5. Inclusion of a transit option on the 511 phone system. Calling 5-1-1 on your landline or cell phone in Idaho will give you much of the same information that you can find on the website. In Idaho, the system is primarily focused on state highway conditions and incidents. Castlerock has also developed and manages this system. This project added "transit" to the menu of information items. Currently, a user can get transferred directly to one of the eleven transit Provider's direct phone lines to find out more information. This project is complete. Future potential enhancements will be able to provide next bus information by stop location, when funded.
6. Development of a new tool to keep GTFS files up-to-date. Keeping the GTFS data current is critical to the success of this technology initiative. If the route, stop and schedule information is not accurate on the website or on Google Transit, then users may become disenchanted with the system and will likely discontinue its use. In order to assist the Providers in keeping the information current, Castlerock has been contracted to build a user friendly tool to update the GTFS information. The new tool will also help facilitate many of the features of the 511 website to display information in a more readable and easy to understand format. This project is currently underway and will benefit all eleven Providers. The new tool is expected to be completed in January 2012.

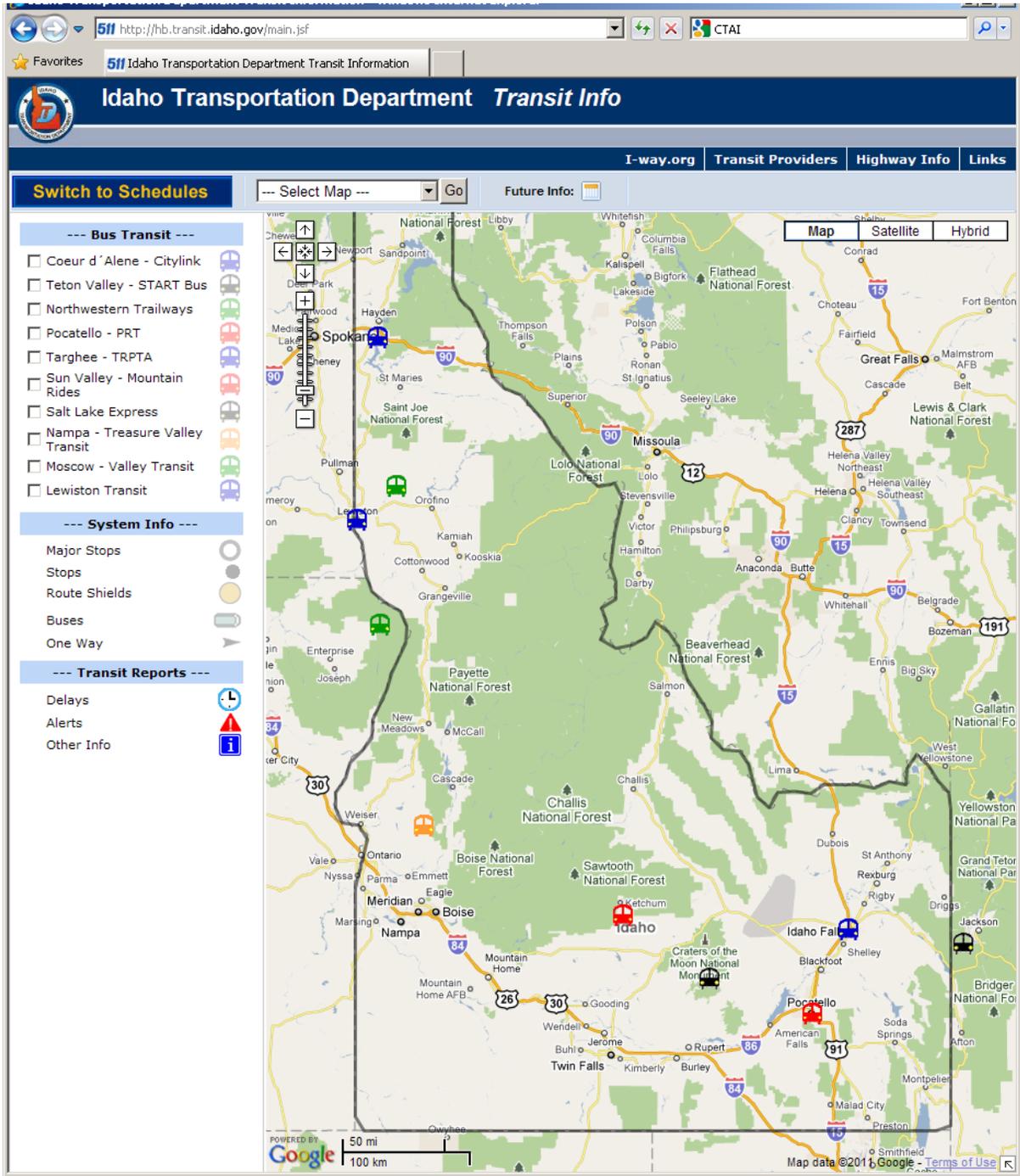


Figure 1. Idaho Transit 511 Webpage – Initial Entry Point

Table 3 identifies the eleven Providers participating in this technology initiative and their status with each of the projects discussed above.

**Table 3**  
**Traveler Information Deployment by Organization**

<b>Organization</b>	<b>Initial GTFS file Generated</b>	<b>Information Displayed on 511 Transit</b>	<b>Information Available On Google Transit</b>	<b>511 Phone Transfers to Providers</b>
CityLink	✓	✓	✓	✓
Northwestern Trailways	✓	✓	✓	✓
RPT	✓	✓	✓	✓
Lewiston Transit	✓	✓	✓	✓
TVT	✓	✓	✓	✓
VRT	✓	<b>Coming Soon</b>	✓	✓
MRTA	✓	✓	✓	✓
PRT	✓	✓	✓	✓
Salt Lake Express	✓	✓	<b>Not accepted*</b>	✓
TRPTA	✓	✓	✓	✓
START Bus	✓	✓	✓	✓

\* Information was not accepted by Google because SLE operates a reservation system and not a truly fixed route operation (meaning they don't always stop at every location).

### **Management System Development**

The Federal Transit Administration (FTA) mandates that ITD-DTP ensures all FTA funds are managed responsibly and in accordance with Federal guidelines. As reflected in Figure 2, ITD-DTP has identified and developed processes to assist local stakeholders in identifying and prioritizing needs and strategies. Potential sub-recipients of grant funds participate in an application process managed by ITD, are awarded funding, and then implement their solutions seeking financial reimbursement from the funding source through ITD's financial processes.

Historically, the workflow and processes that support these activities have been manual and very 'siloed', without much integration across separate FTA funding sources. To improve and better integrate the FTA grant administration process, ITD began design and developing a web-based funding administration, management and reporting system called **I-TRIPS** (Idaho – Transportation, Reimbursement, Integration, and Performance System) that would address the complete lifecycle of grant funding administration - a 'cradle to grave' approach - that automates all aspects of the ITD-DTP business processes.

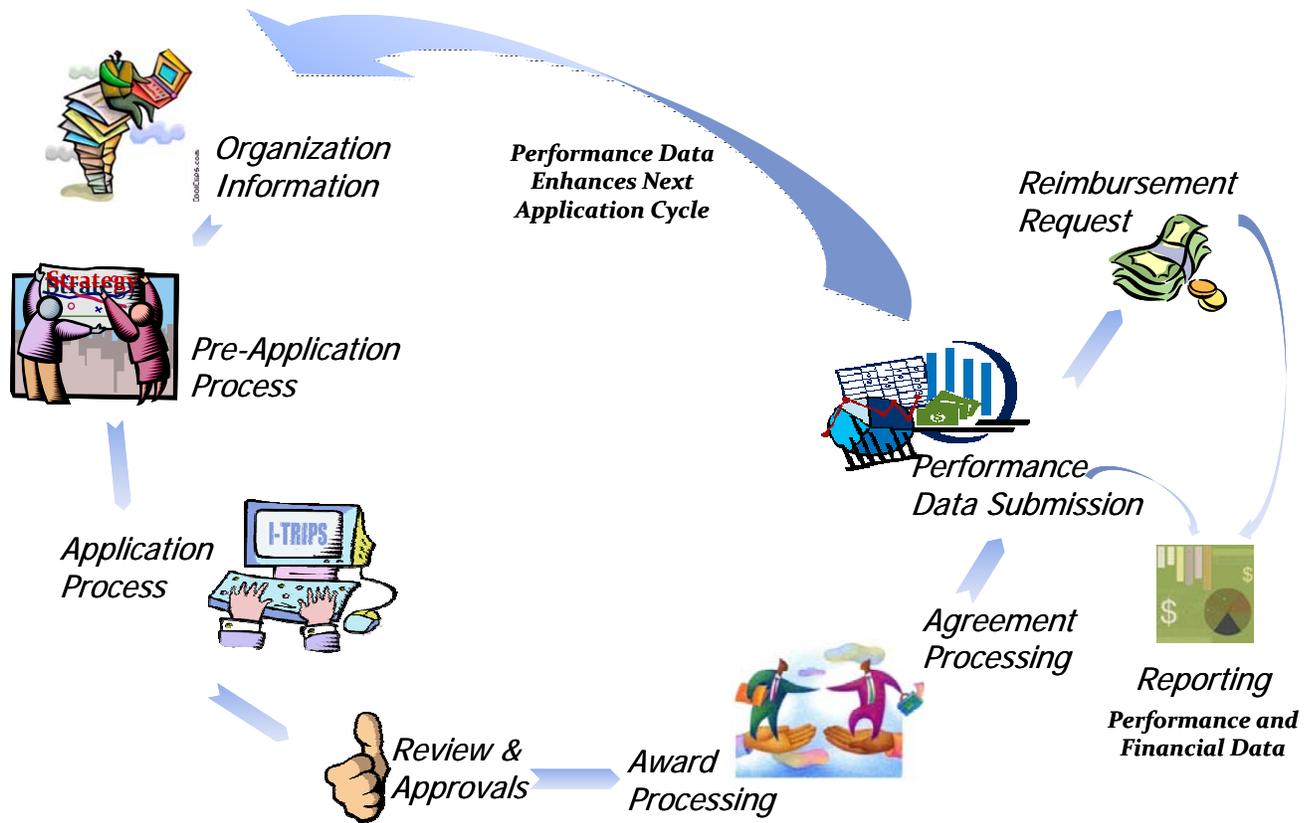


Figure 2. ITD-DTP Business Processes Automated in I-TRIPS

The benefits of the I-TRIPS system will be to ITD-DTP grants and performance management staff, as well as the sub-recipients that receive federal funding through ITD.

The current design of I-TRIPS tracks funding sources, automates the application, award, agreement and reimbursement processes, and collects and reports system performance data for all Federal Transit Administration (FTA) funding programs managed by ITD. The specific components of the I-TRIPS system currently under development are as follows:

- Organization Information – information submitted is used to certify sub-recipients and contractors to receive federal funding.
- Online Application – automates the application process (pre-application and application) and supports efficient ITD review and approval.
- Grant Financial Management – enables ITD-DTP to establish and track federal grants within the system that are used to fund the applications.
- Grant Award and Tracking – As applications are reviewed and approved, awards are made to individual sub-recipients and contractors. This component allows those awards to be made, creates the corresponding agreements, and tracks the awards/agreements throughout their lifecycle.
- Reimbursement – monthly requests are submitted within the system, reviewed by ITD-DTP, and approved for payment.
- Asset/Inventory Management – Assets are identified and tracked within the system, including vehicles and other assets.
- Operational Data Collection – Along with monthly reimbursement requests, operational performance data is required. The system will collect and store this information in a database to support reporting requirements.
- Reporting – the system will provide a process for reporting of any information in the database to support financial and performance management tracking.

The system is built to be strongly linked to the strategies identified in the seventeen local mobility management network plans, which are currently updated annually. This approach allows for the tracking of any and all strategies, its funding and performance throughout its lifecycle. The system also tracks the FTA grants and how they have been allocated to various strategies and sub-recipients/contractors to provide for transit operations in Idaho.

The system is currently finalizing design and system development has begun on selected components. The system is being built in phases. Phase 1 (organization information through grant award) is currently designed and development is complete. Phase 2 (reimbursement through reporting) has completed design activities and development is underway. The system will be operational for final testing by January 1, 2012. Sub-recipients will begin using the system to input operational data and request reimbursements in the spring of 2012. The first fully automated application cycle will be initiated January 2013.

## Other Technology Deployments

I-way is a growing statewide network that connects people to an exciting mix of transportation options, giving Idaho an economic and quality-of-life advantage, while helping keep our state clean and beautiful. I-way does not provide transit services. Through local coordination and partnerships, I-way connects rural and urban communities and protects our way of life, allowing for more efficient and convenient transportation options throughout the state.

I-way was developed and is managed by CTAI. CTAI and ITD-DTP have worked closely to identify and deploy the Idaho transit technology initiatives. Three other technology deployments that have been developed by CTAI and ITD-DTP include:

1. Statewide One-Stop Resource Website – I-way.org (see to the right) is a website designed to give users one place to go to get information regarding transportation options in Idaho. The website also provides stakeholders with recent news items and events calendar.
2. Resource Directory – This application allows individuals the ability to find the various transportation services offered throughout the state by different entities.
3. Dynamic Rideshare Services – Idaho Rideshare is a free and currently active, online resource to help individual commuters find their perfect carpool or vanpool rideshare match. Beyond the traditional commute, Rideshare also has matching tools for Bike Buddies, School Pool and Special Events.



## 5. TECHNOLOGY OPPORTUNITIES AND PRIORITIES

Chapter 4 summarized the progress made to date to deploy transit technologies in Idaho. This Chapter focuses on the future technology opportunities and priorities. Opportunities for technology evaluation are also addressed. The following paragraphs identify possible future transit technologies for consideration, by each major technology initiative.

### Opportunities – APTS

Excellent progress has been made deploying a solid base of APTS technologies at six Provider locations in Idaho. However, there are several technology opportunities for expansion and addition to continue the automation of functions currently being conducted manually. The APTS technology opportunities include:

- **Additional systems deployment for new participants** – this would involve the deployment of RouteMatch base APTS technologies (as deployed at the original six Providers) at other locations in the state. Possible interested Providers might include Citylink, VRT (Fixed Route Management System), Kootenia County and Kootenia Medical Center in the Coeur d’Alene area, and other service providers who may benefit from these technologies.
- **Expansion of system capabilities/features** – for those that are currently using the RouteMatch products, they may be interested in expanding number of vehicles or user licenses, and adding specific reports to support more efficient insight into operational performance.
- **APTS Information Sharing/Coordination** – allows for sharing of information between Providers. Currently each Provider database is separate. This module would help promote enhanced coordination between Providers and could allow for centralized call taking or trip scheduling, if that feature is desired.
- **Advanced phone systems** – upgrading Provider phone systems to be more automated and user friendly.
- **Interactive Voice Response (IVR)** – an integrated feature of the RouteMatch system to automate phone calls/messages to clients of upcoming trips or trip changes.
- **Website enhancements** – upgrades and expansion of Provider websites to enhance the usability and clarity of information available on the Internet.
- **Web-based demand response reservations** – a new module that would allow Demand Response users to book trips online. This feature could be deployed for Providers with or without RouteMatch software.
- **Maintenance management systems** – Software that tracks vehicle maintenance and repair data. This software also assists Provider maintenance staff schedule and track vehicle service to improve efficiency of fleet management.

- **Security cameras** – Closed circuit TV cameras on-board a vehicle or at Provider facilities to enhance security. Images can be sent in real-time to monitor incidents on a bus or to help protect equipment during off-hours at offices or storage areas.
- **Volunteer driver/rider software** – will enhance the capability of the RouteMatch Demand Response software to fully support a volunteer driver/rider program. This enhancement can include rideshare and a pool of personal volunteer vehicles that can be inventoried and managed within the RouteMatch Demand Response software.
- **Automated Passenger Counters** – systems that count (fixed route) passengers getting on and off the bus at each stop. These systems can be integrated into the RouteMatch database to relieve the driver from having to manually log passenger counts in the MDT.
- **Electronic Stop Annunciators** – systems that, linked with AVL data, announce each upcoming stop name on-board the bus automatically. These systems can also be linked with on-board signage which notifies passengers of the next bus stop.
- **Electronic Fare Collection (smart cards)** – includes both cards and readers and has application on fixed route and demand response services. Each card can electronically provide information about the passenger, the fare type, and amount of money or number trips remaining. These systems can be integrated into the RouteMatch database to store, track, and report fare related information.
- **Wi-Fi on vehicles** – provides the ability for passengers to use a Wi-Fi Internet connection on their computers or smart phones while traveling on the bus. Onboard systems would acquire a wireless Internet connection through cell phone or satellite and generate a Wi-Fi signal that could be used by passengers.
- **Transit Signal Priority** – a system that can alter the signal timing to give a priority or advantage to transit operations. Signal priority modifies the normal signal operation process to better accommodate transit vehicles, within the coordinated operation of the signal system along a corridor. The goal of TSP is to improve transit operations while minimizing the impact on vehicles at the intersections.

### **Opportunities – Traveler Information**

Through leveraging the extensive Idaho 511 system, much has been achieved to provide transit users with information about routes, stops and schedules for fixed routes across the state. Many new features and modules have been contemplated to expand and enhance the information and dissemination methods. These include:

- **Additional providers on transit 511/Google Transit** – The eleven providers we have on 511 and Google Transit is a great start. Over time, there will likely be other transit providers interested in being on the Transit 511 webpage and Google Transit. Examples include the new Dover Transit in northern Idaho, Idaho Intercity routes, the Idaho National Laboratory bus service, vanpool programs, and Sun Valley Express.

This item will be a placeholder for others to participate in this technology in the future.

- **Enhancements to Transit 511 webpage** – This is also a placeholder for continuing to make improvements to the Transit 511 webpage. One enhancement that is being considered includes building a “low bandwidth” version of the webpage to improve the speed at which information loads and it would support the smartphone application discussed below. This project will allow for other enhancements to the Transit 511 webpage to be accomplished in the future.
- **Upgrade MODES software to Google API 3.0** – The current MODES software and MODES web are developed in a version of the Google API that is expiring in June 2013. This API allows the MODES related software to display information on the Google Maps base and be able to interact with that information such as displaying transit routes, stops, and schedules and being able to click on icons to display more detailed information. The new API that Google has developed will require a change in the way 511/MODES interacts with Google Maps. This change affects all 511 applications that use Google Maps to display information. The CARS coalition has recently approved a \$1.6 million project to update CARS and the web applications. The newly developed MODES UPDATE was created in the new Google API so no changes are expected to that software. This project will fund the update of the core MODES and MODES Web software to the new Google API. This is critical to continuing using MODES/MODES Web to manage daily transit provider user information on the transit 511 webpage.
- **Integrate Google Transit Trip Planner into 511 transit webpage** – This project will allow 511 transit webpage users to perform trip planning via Google Transit from within the Idaho 511 Transit page, rather than having to go to Google Transit. However, because of limitations in the Google Maps API, the real time schedules and any events that may be on the 511 transit page will not be shown on the integrated Google Transit page.
- **MODES-Routes trip planning** - Modes-Routes will enable members of the public to plan trips and review transit information on custom transit routes or areas on the Modes-Web 511 Transit web site. Users will be able to create and save routes to a personalized account for easy access. Two possible solutions are being considered: a basic version and a more advanced version. Funding availability will determine which version will be deployed. This project is required to deploy the transit alert projects described below.
- **Bus stop/schedule information on 511 phone** – This item will build a feature on the 511 phone system (transit menu) to allow callers to obtain bus stop and schedule information. It would allow someone to learn what next three buses are expected to arrive at a particular stop – statewide. The system will be built to direct a caller through a menu to identify the bus stop of interest to them, or take short cut by dialing a bus stop number (specific to the particular stop) into the system to obtain the information.

- **511 phone call out feature** – Another possible option to use the 511 phone system is to have the system call a transit user and give them updated information about their bus stop/schedule if something has changed (e.g., bus is running late).
- **Additional en-route traveler information signage at bus stops** – En-route signage is currently being installed at certain bus stops and transit stations in Sun Valley and Pocatello. This allows riders to know when the next buses are arriving at a particular stop, when they are at that stop. These signs are driven by RouteMatch and the AVL database. This item will expand the use of this technology at additional transit providers and bus stops throughout the state. This application would be linked to the RouteMatch system or be standalone to provide similar information from a different source.
- **Mobile applications** – This item allows transit users to receive the most current information about bus stops and schedules using mobile devices (when they can not be in front of their computers). Using an Internet enabled Smartphone, a user could display a simplified version, appropriately formatted, of the Transit 511 webpage to identify stops, bus schedules, current location of the bus, etc. Another possibility with this project would be to build a smartphone “app” to facilitate information to the users more quickly. If this option was chosen, the most likely first application would be for Android-based smartphone operating system (because it uses an open platform).
- **Using AVL data to identify real-time bus locations and display on transit 511** – As part of the RouteMatch contract, they will be providing a streaming data feed of the AVL data for all buses throughout the state. The format of the information was designed by Castlerock to enable integrating that information into the Transit 511 webpage maps which display the bus location. This item will build that interface so that some of the fixed route bus services (those which are using RouteMatch software) can display on Transit 511 the actual location of their buses (based on AVL data) instead the location based on static schedule information or operators input into MODES.
- **Transit alerts through texting and email** – This technology will alert transit users of changes to bus operations through text messages or emails. Instead of a transit user having to request the information, a Transit Alert system would push the information to them only when something has changed. These information pushes would be based on a profile that the transit user would set up online. The two approaches being considered for this technology involves how focused the messages will be. One option is to use twitter to broadcast messages – this is an inexpensive option to set up, but may cause too many messages being sent. The other option is more expensive but would allow the profile set up to be tight enough to only send messages related to an individual’s trip or even stop location.
- **MODES UPDATE Enhancement (Phase 1)** – This enhancement would allow the MODES UPDATE tool to be used for planning new routes. The tool would allow transit agencies to develop, store, and analyze potential transit routes, stops and

schedules. The potentially new transit routes could be printed and/or integrated into presentations for display to decision-makers.

- **MODES UPDATE Enhancement (Phase 2)** – This enhancement would build on Phase 1 allowing the MODES UPDATE (planning) tool to analyze the transit route schedules within provider services and between multiple provider services to identify potential coordination opportunities. This feature would be used to coordinate existing routes, coordinate between an existing and new route, and plan for new routes.
- **MODES training** – Initial training was provided when MODES was first deployed. Idaho fixed route transit providers require updated training on the use of the MODES software so that it can be used more regularly to keep information current and provide users with real-time information regarding scheduling and possible events affecting operations.
- **AMTRAK information on 511 Transit webpage** – This project will provide real time AMTRAK schedule information for the rail line in northern Idaho.
- **Transit statistics on 511 phone use** – This project will create an IVR platform-independent 511 call statistics system so that ITD and its transit partners can learn more about the specific menu items callers request when interacting with the 511 phone system.

### **Opportunities – Management System**

The Management System (I-TRIPS) is mostly designed and will be operational in early 2012. This base system will automate many activities currently being accomplished manually by ITD-DTP staff and FTA grant sub-recipients. During the design and development of this base system, several possible enhancements have been identified for potential future consideration. These potential enhancements include:

- **Add FHWA funding sources** – Currently, I-TRIPS is being built to manage FTA grants. There is a need to expand the funding sources to include the following FHWA funded programs – Bicycle/Pedestrian, Congestion Mitigation Air Quality, Park and Ride, Rail, Safe Routes to School, Scenic Byways, Transportation Enhancements, Transportation Technology Training, and Highway Safety. This project will extend the capabilities of I-TRIPS (within the existing system structure) to include these FHWA funding sources.
- **Add other funding sources** – As the responsibilities of the ITD-DTP may grow to include other grant funding sources, so should the capabilities of I-TRIPS to efficiently manage those new grants. This item is a place holder for future expansion of the system to address other funding sources.
- **General System Upgrades** – After using the system for at least 1-2 years, it is envisioned that system upgrades will be needed. Defining system upgrades is not possible at this time; therefore, this project is a placeholder for system upgrade efforts.

- **Integration with ITD financial system (AMS)** – Once built, I-TRIPS will be a standalone financial management tool for ITD-DTP. AMS, ITD’s master financial system, requires the FTA grant financial information to be part of their system as well to perform other functions such as reimbursement from the federal government. Ensuring that the two systems have consistent, accurate, and up-to-date information will be a challenge. This item proposes to develop a two-way interface to share certain financial and grant status data between AMS and I-TRIPS.
- **Enhanced asset management** – the I-TRIPS system scope includes a base asset inventory management component. This item will allow a more extensive asset management system to be developed and included, or integrated, with the I-TRIPS system. One option currently being considered would be the asset management software being developed by VRT, under a FTA grant. If this option is selected, an interface could be established between I-TRIPS and this new asset management software to share information and allow Providers the use of complete functionality without having to enter data into both systems.
- **Additional dashboard panels** – Dashboards are a convenient way to display top-level information regarding the status of grants and performance management. This project will design and build, as needed, additional dashboards (beyond what is provided for in the current contract). It is anticipated that after using the system for several months or one application cycle that additional dashboards will be desired.
- **Planning/GIS module** – This project will design and develop a planning module within I-TRIPS that will allow additional transit route information to be incorporated and existing and proposed transit routes to be displayed on a map. This functionality will be important for future transit planning and evaluation of grant applications.
- **Policy development module** – This project will design and develop a policy development module which will store the relevant policies within I-TRIPS and assist in identifying newly required policies to improve the grants management process.

### **Opportunities – Automated Data Sharing**

As transit technology is deployed, and systems are built, it has become evident that there are important links between systems and data that needs to be shared. Currently, this sharing of information between systems is performed manually - meaning that data may need to be input into two or more systems separately. This process is inefficient and also can result in errors in data entry. Automated data sharing between systems – through the development of interfaces – is needed to improve transit operations and management. The needed interfaces include:

- **Interface between AMR (Medicaid Brokerage) and RouteMatch** – For those Providers using the demand response dispatch software and providing Medicaid trips, two separate systems are being used to identify and schedule trips. The interface being proposed in this item will automatically load accepted trips from the AMR system into the RouteMatch system so they can be scheduled. This will

significantly improve the efficiency and accuracy with which this process is accomplished currently.

- **Interface between RouteMatch database and I-TRIPS database** – The I-TRIPS database will contain important operational data that will be used to determine system performance. Much of this information is required by FTA in the National Transit Database. The RouteMatch system automatically collects this NTD data – elements such as passenger trips, revenue miles, average trip length, etc. The item proposes an interface be built between the two systems to automatically populate the I-TRIPS system monthly with the operational data from RouteMatch. This will dramatically simplify the federal reporting requirements and ensure the accuracy and timeliness of data collection.
- **Integration of I-TRIPS with FTA TEAM system** – TEAM is the FTA’s system that tracks their grants for all the states. ITD-DTP staff can login to TEAM to update financial and milestone information. Currently, there are no grants management systems integrated with TEAM. There is a possibility that an interface between the I-TRIPS system and TEAM can be built. TEAM is due for a major upgrade and FTA is interested in reviewing the I-TRIPS system before those upgrades begin. This proposed effort will, if authorized by FTA, design and develop an interface between the two systems to share the appropriate information which would save ITD-DTP staff time and ensure accurate information is contained in both systems.
- **Integration of I-TRIPS with ITD STIP** – the Idaho State Transportation Improvement Program (STIP) is updated annually and contains the planned projects for the coming years. ITD-DTP is required to identify the public transportation related projects and include them in the STIP. I-TRIPS will have the approved and funded projects list as a result of the annual application cycle. An interface between the two systems will allow efficient and accurate transfer of appropriate information.

### **Opportunities – Other**

The following list identifies other potential transit technology opportunities:

- **Idaho Rideshare enhancements** – Currently envisioned upgrades to the Idaho Rideshare system will be to offer instant, real-time ride-matching through a mobile phone application. Users will then be able to add a trip, find matches, and connect with matched users through the application wherever they are, whenever they want.
- **Other uses for GTFS data** – Other transportation regions are finding several uses for GTFS data beyond the original intent. Examples include WalkScore and Mapnificent. These Internet applications utilize the data contained in GTFS files to provide transit supportive information to public agencies as well as the general public. WalkScore ([www.walkscore.com](http://www.walkscore.com)) provides communities with a walkability score for any address – including the distance to fixed route transit services. Mapnificent ([www.mapnificent.net](http://www.mapnificent.net)) provides information to the public regarding how to use public transportation or biking to make their travel and how far someone could get from a specific location within a certain time. Looking to the future, Idaho should

expect that our GTFS data may be used, or we may want it to be used, for similar and new applications. Funding may, or may not, be required to facilitate membership or development of similar future Internet based information sources. This item is a placeholder for application of our GTFS files in similar ways.

- **Bus stop database** – This project will provide access to the state’s inventory of bus stops and bus stop data via an interactive online mapping system. The type of detailed bus stop information that will be made easily available to the general public as well as agencies and providers include pedestrian features, bicycle features, safety conditions, signage, bus stop amenities, and current photos of the bus stop and surrounding area.

### Technology Priorities

Assigning priorities to each technology described above is important to guide efforts to secure funding for future implementation. At the recent Idaho Transit Technology Summit (June 14-15, 2011), the attendees were asked to provide their sense of which technologies were most important to them. Since then additional input was obtained from stakeholders regarding transit technology priorities. The technology priorities expressed in terms of high, medium, and low are shown in Table 4 for each transit technology, categorized by technology initiative.

**Table 4**  
**Transit Technology Project Priorities**

Transit Technology Projects	Priority
<b>APTS</b>	
Additional systems deployment for new participants	Medium
Expansion of system capabilities/features	Medium
APTS Information Sharing/Coordination	High
Advanced Phone Systems	High
Interactive Voice Response (IVR)	High
Website Enhancements	Low
Web-based Demand Response Reservations	Medium
Maintenance Management Systems	Low
Security Cameras	Medium
Volunteer Driver/Rider Software	Medium
Automated Passenger Counters	High
Electronic Stop Annunciators	High
Electronic Fare Collection (smart cards)	High
Wi-Fi on Vehicles	Medium
Transit Signal Priority	Low

**Table 4**  
**Proposed Transit Technology Project Priorities (Continued)**

Transit Technology Projects	Priority
<b>Traveler Information</b>	
Additional providers on transit 511/Google Transit	Medium
Enhancements to Transit 511 webpage	Medium
Upgrade MODES Software to Google API 3.0	High
Integrate Google Transit Trip Planner into 511 Transit	Medium
MODES-Routes Trip Planning	Medium
Bus stop/schedule information on 511 phone	High
511 phone call out feature	Low
Additional en-route traveler information signage at bus stops	Medium
Mobile applications	High
Using AVL data to identify real-time bus locations and display on transit 511	High
Transit alerts through texting and email	Medium
MODES UPDATE Enhancement (Phase 1)	Medium
MODES UPDATE Enhancement (Phase 2)	Medium
MODES Training	High
AMTRAK Information on 511 Transit	Low
Transit Statistics on 511 Phone use	Low
<b>Management System (I-TRIPS)</b>	
Add FHWA funding sources	High
Add other funding sources	Medium
General System Upgrades	Medium
Integration with ITD financial system (AMS)	High
Enhanced Asset Management	High
Additional dashboard panels	Medium
Planning/GIS module	Medium
Policy development module	Low
<b>Automated Data Sharing</b>	
Interface between AMR (Medicaid Brokerage) and RouteMatch	High
Interface between RouteMatch database and I-TRIPS database	Medium
Integration of I-TRIPS with FTA TEAM system	Low
Integration of I-TRIPS with ITD STIP	Low
<b>Other Transit Technology Applications</b>	
Idaho Rideshare Enhancements	High
Other uses for GTFS data	Low
Bus Stop Database	Medium

The priority designations are defined as follows:

- High – Strong interest from most stakeholders. Funding should be pursued for technology implementation in the next 1-2 years.
- Medium – Moderate interest from most stakeholders, or strong interest from some stakeholders. Funding should be pursued following the implementation of the high priority technologies.
- Low – Little interest from most stakeholders, or possibly a strong interest from a small number of stakeholders. Funding should not be pursued for these technologies until higher priority technologies are implemented, unless special circumstances arise.

These priorities should be used to guide funding pursuits and technology project implementation activities.

## **Technology Evaluation**

### Purpose of Evaluation

The primary purpose of conducting an evaluation is to document supportable evidence of the performance and benefits of the implementation of a particular transit technology, or set of technologies. Conducting an evaluation can:

- Provide information to prioritize resources and justify future investments
- Provide hard evidence of performance and benefit
- Establish a Idaho transit technology benefits database and contribute to the national database of transit technology deployments
- Encourage wider deployment of transit technologies

### Approach

#### *Evaluation Plan Development*

The Evaluation Plan guides the evaluation process. It establishes the goals and objectives, defines the evaluation design and methods, identifies the performance measures, outlines the approach to data collection and analysis, and documents the baseline conditions. Preparing an Evaluation Plan is an essential first step to conduct a successful evaluation; however, it can be as short or as long as the evaluator feels is necessary to define the evaluation to be conducted.

#### *Evaluation Design and Methods*

Evaluation design and methods will vary by transit technology deployment. Three types of designs that may be considered for Idaho transit technology evaluations include:

- Before – After: Comparing data collected during baseline and after-deployment conditions. An example of this method could include comparing total transit

ridership before technology deployment with ridership following technology deployment.

- With – Without: Comparing data collected in experimental and control sites that are similar except the experimental site uses a transit technology and the control site does not. An example of this method could include comparing on-time performance of a fixed route transit system whose route is using an active fixed route management system with another route (of similar nature) that is not using the technology.
- Case Study: A descriptive and more qualitative approach to evaluating a particular transit technology implementation. A case study evaluation seeks to identify what worked well and what didn't and determine lessons learned from the experience.

#### *Importance of Establishing a Baseline*

A baseline documents the conditions prior to deployment of a particular transit technology or set of technologies. It specifically, identifies the values of the variables to be measured during the evaluation prior to technologies being deployed. These values can later be used to compare against after technology deployment to measure the impacts and determine the benefits. A baseline is critical if the evaluator is planning to utilize a *Before-After* evaluation design. The baseline should be established prior to technology deployment and be documented in the Evaluation Plan.

#### *Data Collection*

The data to be collected should be clearly identified in the Evaluation Plan and should directly correspond and support the analysis of the performance measures selected for evaluation. Numerous data elements may be required to be collected to support the analysis of the performance measures to be evaluated. If a baseline is being established, it is important to collect the same data elements before and after technology deployment in order to conduct proper comparative analysis.

#### Potential Performance Measures

Identifying performance measures will depend on what impacts or benefits the evaluator is interested in understanding through conduct of the evaluation. Stated another way, the performance measurements selected will depend on what questions the evaluator wants to answer. The performance measures will be identified, along with the objective of the evaluation, in the Evaluation Plan.

Some potential performance measures to be considered during an evaluation to measure the impacts and benefits of deploying transit technologies include:

- Increased ridership
- Fewer miles driven for a given number of rides provided
- Lower cost of operations
- Increase service areas and/or rides for same cost of operations

- Reduced no-shows for demand responses services
- Reduced dead-head time and miles for demand response services
- On-time performance for either demand response or fixed route services
- Time required to collect and report operational data
- Enhanced reporting capability
- Increased customer service and satisfaction
- Staff accepted and/or adapted to technology
- Fewer crashes or incidents involving transit vehicles
- Decreased environmental impacts due to enhanced services
- Decrease staff time to schedule trips, drivers, buses to routes, etc.
- Decrease use of current communication systems (radio, etc.)

It should be noted that many of these measures can be combined to calculate other measures such as cost/mile, miles/trip, or return on investment. These other measures may be the ultimate goal of the evaluation.

Depending on the transit technology to be deployed, the performance measures listed above may or may not be relevant or adequate. During evaluation planning the most appropriate measures and approaches to analyze the impacts and benefits of your specific technology should be determined.

## 6. PROJECTS AND FUNDING PLAN

The technology opportunities defined above represent a set of projects within each Idaho transit technology initiative. Table 5 provides a listing of the projects, estimated costs, and sequencing considerations.

The project estimated costs are planning level values, in 2011 dollars. Final project costs should be prepared and approved prior to initiating any implementation. Many of the estimated costs were provided by the vendors currently working on system deployments. Some of the estimates are based on best judgments and will require a more in-depth assessment of the scope of work and finalize the costs to perform the project.

The suggested sequencing column is provided as a guideline for possible implementation timing. This information is roughly based on the priorities described in the previous section. Of course, project implementation timing is highly dependent on available funding. The suggested sequencing shown in Table 5 is provided to assist in efforts to secure funding for the various projects. Some projects are known to be needed immediately, and are so designated. The other high priority projects are mostly designated as 1-2 year activities. Not all the projects are applicable to every transit provider; therefore, some of the suggested sequencing has a longer duration for deployment.

There are numerous funding opportunities that may be applicable to technology implementation. It is important that all involved agency/organization make every effort to secure funding appropriate to a particular project. Many of the funding sources are federal and may be coordinated by ITD; however, other funding sources may be available to transit providers and should be considered. Each federal Notice of Funding Availability (NOFA) should be carefully reviewed to determine whether or not transit technology projects can be proposed. The known funding sources that should be considered and pursued to implement the transit technology projects are identified below. Other funding sources (not listed here) may come available and should be reviewed and considered, as appropriate.

- Federal Transit Administration (FTA - traditional programs)
- FTA - State of Good Repair (SGR)
- FTA – Livability
- FTA – Transit Investment for Greenhouse Gas and Energy Reduction (TIGGER)
- Transportation Investment Generating Economic Recovery (TIGER)
- Transportation, Community and System Preservation (TCSP)
- Homeland Security
- Private: Chambers of Commerce, Rotary Clubs, individual businesses
- Universities/Colleges
- Non-profit organizations: United Way, etc.
- Local agencies: Cities, Counties, etc.
- United States Department of Agriculture, Rural Development Division

**Table 5**  
**Transit Technology Project Estimated Costs and Suggested Sequencing**

Transit Technology Projects	Estimated Cost	Suggested Sequencing
<b>APTS</b>		
Additional systems deployment for new participants	\$750,000	1-5 years
Expansion of system capabilities/features	\$50,000	1-5 years
APTS Information Sharing/Coordination	\$325,000	1-2 years
Advanced Phone Systems	\$50,000	1-2 years
Interactive Voice Response (IVR)	\$450,000	1-2 years
Website Enhancements	\$50,000	As needed
Web-based Demand Response Reservations	\$300,000	1-5 years
Maintenance Management Systems	See Note 1	As needed
Security Cameras	See Note 1	1-5 years
Volunteer Driver/Rider Software	\$100,000	1-5 years
Automated Passenger Counters	\$1,300,000	1-2 years
Electronic Stop Annunciators		
Electronic Fare Collection (smart cards)	\$450,000	1-2 years
Wi-Fi on Vehicles	See Note 1	1-5 years
Transit Signal Priority	See Note 1	As appropriate
<b>Traveler Information</b>		
Additional providers on transit 511/Google Transit	\$200,000	1-5 years
Enhancements to Transit 511 webpage	\$80,000	1-2 years
Upgrade MODES Software to Google API 3.0	\$150,000	Immediately
Integrate Google Transit Trip Planner into 511 Transit	\$30,000	3-5 years
MODES-Routes Trip Planning	\$125,000	1-2 years
Bus stop/schedule information on 511 phone	\$45,000	1-2 years
511 phone call out feature	\$45,000	As appropriate
Additional en-route traveler information signage at bus stops	\$300,000	1-5 years
Mobile applications	\$80,000	1-2 years
Using AVL data to identify real-time bus locations and display on transit 511	\$50,000	Immediately
Transit alerts through texting and email	\$70,000	1-2 years
MODES UPDATE Enhancement (Phase 1)	\$30,000	1-2 years
MODES UPDATE Enhancement (Phase 2)	\$100,000	3-5 years
MODES Training	\$50,000	Immediately
AMTRAK Information on 511 Transit	\$7,500	3-5 years
Transit Statistics on 511 Phone use	\$20,000	3-5 years

**Table 5**  
**Transit Technology Project Estimated Costs (Continued)**

Transit Technology Projects	Estimated Cost	Suggested Sequencing
<b>Management System (I-TRIPS)</b>		
Add FHWA funding sources	\$300,000	1-2 years
Add other funding sources	\$200,000	3-5 years
General System Upgrades	\$100,000	3-5 years
Integration with ITD financial system (AMS)	\$100,000	1-2 years
Enhanced Asset Management	\$100,000	1-2 years
Additional dashboard panels	\$25,000	3-5 years
Planning/GIS module	\$100,000	3-5 years
Policy development module	\$50,000	3-5 years
<b>Automated Data Sharing</b>		
Interface between AMR (Medicaid Brokerage) and RouteMatch	\$25,000	Immediately
Interface between RouteMatch database and I-TRIPS database	\$150,000	1-2 years
Integration of I-TRIPS with FTA TEAM system	\$200,000	3-5 years
Integration of I-TRIPS with ITD STIP	\$50,000	3-5 years
<b>Other Transit Technology Applications</b>		
Idaho Rideshare Enhancements	\$25,000	Immediately
Other uses for GTFS data	\$0	As needed
Bus Stop Database	\$100,000	3-5 years

Note 1: Highly dependent on type and number of Providers interested in this technology, as well as the scale of the deployment. Cost estimates are not available at this time. Project budgets should be prepared when planning the specific technology project deployment.

## 7. CHALLENGES

As the Idaho Transit Providers move into operating the technologies recently deployed and consider future technology implementation, several challenges exist. The following list of challenges and possible mitigation activities were discussed at the 2011 Idaho Transit Technology Summit. A summary of those discussions are as follows:

### 1. Marketing 511/Google Transit

Website statistics indicate a low level of usage of the 511 transit webpage and numbers of users have not increased much since all transit providers are displayed on the system. This is an indication that more marketing of transit information on the 511 transit webpage and Google Transit is needed to ensure users are aware of the availability of this service.

Some of the approaches identified to increase the level of marketing of the 511/Google Transit traveler information included the following:

- Information sheets handed out to customers (materials available on I-Way.org)
- Place 511 phone and website advertizing on transit vehicles (materials available on I-Way.org)
- Links from provider webpages to 511
- Mobility Managers actively promoting through blogs, focus groups, and other meetings

### 2. Maintaining GTFS files

The General Transit Feed Specification (GTFS) data files define transit routes, stops and schedules for the purposes of mapping and Internet display of information. Proper maintenance of these data files is critical to the display of accurate and current information for transit users. It is very challenging for transit providers to maintain their GTFS files and therefore sometimes some of the data has become out dated.

Idaho Transportation Department, in partnership with Valley Regional Transit, has recently developed a tool (directly linked with the Idaho 511 system) to assist the transit providers to develop and maintain accurate GTFS data files. This new tool, called MODES UPDATE, will be available to all providers in January 2012.

### 3. Using MODES to actively update information on fixed route services in real-time

MODES is the software module that allows the set up and management of transit information display on 511. It also allows the providers the ability to identify and display “events” on the transit routes and make changes to transit route schedules if a bus is running behind. It is important that the transit providers use this software to keep the information on 511 current and accurate. The providers are not currently using this

module so in some cases that means the display of transit information on 511 may be inaccurate.

Additional training will be provided by Castlerock on how to use MODES. This training will demonstrate how easy it is to keep the daily information current on the 511 system using MODES. It is hoped that this training will encourage the transit providers to maintain up to the minute information on 511 for use by their customers.

**4. How to measure the success of transit technology deployments**

Measuring the performance of transit technology deployments can identify the impacts and benefits of these activities and encourage future technology considerations. Chapter 5 (of this Plan) provides a brief overview of how to approach conducting an evaluation of transit technologies and potential performance measures that could be used. Transit providers are encouraged to consider conducting evaluations of significant transit technology deployments.

**5. How to best use technology to encourage coordination**

One of the goals of transit technology deployment is to encourage providers to coordinate services. This can be accomplished through the enhanced ability to share information about transit services that may have the opportunity to coordinate with another service. Types of services that can consider coordination include private and public services providers, fixed to fixed routes services, and demand response to fixed route services.

Through the current technology initiative deployments (specifically, APTS and traveler information/511 transit), information regarding service location and schedules is more readily available. The transit providers who may be considering coordination efforts are encouraged to use the information available to facilitate the required analysis. Additionally, some of the technology opportunities (future projects) are designed to further enhance the ability to share information and encourage coordination.

**6. How to expand use of IdahoRideshare.com**

Idaho Rideshare provides a system that travelers who need a ride can connect with another individual able to provide that ride. Idaho is part of a coalition of states that has implemented IdahoRideshare.com to facility these connections. Currently, IdahoRideshare.com is not being used to its full extent.

Some suggested approaches expressed at the Idaho Technology Summit to expand the use of IdahoRideshare.com included:

- Everyone should learn more about IdahoRideshare.com and how to use it
- Everyone should reach out and discuss the program with:
  - Employers
  - Chambers of commerce
  - Universities
  - Need to check if Idaho National Laboratory is interested
  - Others

- Consider promoting IdahoRideshare.com for major events
- Noted: Kootenai County is using it

#### **7. Resources to deploy transit technology**

The resources at the Idaho transit providers are limited to deploy the technologies defined in this document (both in terms of available time and technical capability). During the current deployments, it has been challenging for the Providers to dedicate the time and effort necessary to ensure success. As a result, there is a risk that future technology deployment could similarly struggle to be accomplished or may fail. Some suggestions to mitigate this challenge include:

- Better planning. The required time commitment necessary to ensure success needs to be better understood when planning to deploy a particular technology. Once this is understood by the Provider, staff time can perhaps be allocated in such a way to support the project as required.
- Additional resources. One option may be to provide additional resources at the state or local level to support the project during deployment activities to ensure successful project completion. The costs associated with these additional resources would need to be identified and programmed prior to committing to the project initiation.

#### **8. Approaches to secure funding**

Funding is a critical element to continue deployments of Idaho transit technologies. Chapter 6 (of this Technology Plan) identifies the future transit technology projects and discusses the possible sources that could be utilized to fund future deployments. It is everyone's responsibility to pursue all possible funding sources in order to accomplish the continued deployment of Idaho transit technology projects.

## 8. NEAR-TERM ACTION PLAN

This chapter identifies specific action items that are recommended in the next six months to complete ongoing transit technology projects and begin the process to implement the future technology opportunities outlined in this document. The following action items are recommended:

1. Ensure wide distribution of this planning document to interested stakeholders to promote an understanding and adoption of the future potential transit technology opportunities.

Timing: Immediately

Responsibility: Idaho Statewide Transit Technology Project Manager

Description: Distribute this document to all interested stakeholders. Encourage them to understand the contents and work to implement the recommendations.

2. Continue strong coalition of partners.

Timing: Ongoing

Responsibility: ITD, CTAI and all partners

Description: Partners should continue to work closely together to implement the recommendations in this planning document. CTAI should continue to lead efforts to educate, pursue funding, and deploy transit technologies defined in this plan. This may include sponsoring quarterly and annual coordination meetings of the partners.

3. Pursue funding for transit technology deployments.

Timing: Ongoing

Responsibility: All

Description: Identify and pursue all available funding sources, as described in Chapter 6, of this document to continue deployment of transit technology projects in Idaho.

4. Complete deployment of the APTS project.

Timing: next 6 months

Responsibility: Idaho Statewide Transit Technology Project Manager, in association with RouteMatch Software.

Description: The current APTS project schedule indicates an expected completion date of December 2012. The major activities include finalizing the development and deployment of the fixed route management software (to include collection of fare types), and deploying the traveler information (next bus arrival) signs at specific locations in Sun Valley and Pocatello. This action item includes all

activities necessary to ensure that the APTS project is completed on schedule.

5. Complete development and distribution of MODES UPDATE tool.

Timing: next 3 months

Responsibility: Idaho Statewide Transit Technology Project Manager, in association with Castlerock Consultants.

Description: The current schedule to complete development and distribution of the MODES UPDATE tool indicates software developed by December 2011 and project completion by March 2012. Project completion includes final development of the new software, on-site user training, and follow-up to ensure proper use of the tool. This action item includes all activities necessary to ensure that the MODES UPDATE tool is completed on schedule.

6. Complete development of I-TRIPS project and initiate use per project plan.

Timing: next 6 months and beyond

Responsibility: Idaho Statewide Transit Technology Project Manager, in association with Agate software and stakeholders.

Description: The current I-TRIPS project schedule indicates an expected completion date of January 2013; however, the bulk of system development will be complete by March 2012. The major activities include completing software development, system acceptance testing, initiation of sub-recipient data collection, and initiation of the FY 2013 application. This action item includes all activities necessary to ensure that the I-TRIPS project is completed on schedule.

7. Begin three traveler information projects identified in Table 5 as required immediately.

Timing: next 6 months and beyond

Responsibility: Idaho Statewide Transit Technology Project Manager, in association with Castlerock Consultants and stakeholders.

Description: The following three traveler information technology projects have been identified as required immediately:

- a. Upgrade MODES software to Google API 3.0
- b. Using AVL data to identify real-time bus locations and display on transit 511
- c. MODES training

This action item will secure funding and begin development of all three of these projects (as they are described in Chapter 5). Activities will continue to successfully complete each project.

8. As appropriate, and funding allows, begin development and deployment of other high priority transit technology projects identified in this plan.

Timing: next 6 months and beyond

Responsibility: Idaho Statewide Transit Technology Project Manager and interested stakeholders.

Description: Based on guidance provided in this Plan (project descriptions, budgets, priority, and sequencing), develop and deploy Idaho transit technology projects. As appropriate, coordinate efforts with other transit providers and stakeholders.

## Appendix A Technology Definitions<sup>3</sup>

### **APTS**

**Demand Response Dispatch Software** – Specialized software that automates trip scheduling and routing; collects and maintains client records, service and vehicle data; and generates standard and customized reports. These systems can also interface with AVL/MDT devices in a vehicle in order to track vehicles and communicate schedule adjustments to drivers in real time.

**Fixed-Route System Management** – Specialized software that can help to manage fixed route services. Using AVL/MDT applications, transit operators can efficiently collect ridership data and measure schedule adherence. This data can also be used to facilitate effective route planning.

**Automated Vehicle Location (AVL)** – This technology determines vehicle location using navigation sensors – most likely utilizing Global Positioning System (GPS). The use of AVL information can assist transit operators to determine schedule adherence, track vehicle location and determine the feasibility of adjusting a demand response vehicle’s schedule to accept more trips. These systems also can support other technologies such as automated passenger counters, electronic stop annunciators, and transit signal priority systems.

**Mobile Data Terminals (MDT)/Handheld Devices** – Small on-board computer designed to efficiently provide demand response or fixed route trip information to drivers and collect pertinent information from drivers. The computer is linked wirelessly to the transit operations center. This technology allows data exchange between the bus and center regarding dispatch, trip, route, and rider data. **Handheld Devices**, such as a smart phone or tablet, perform a similar function to that of the MDT, but are typically less capable and have smaller screens to display information.

**APTS Information Sharing/Coordination** – A separate module within the RouteMatch system that allows information sharing between transit provider’s databases. The shared information could be used to enhance coordination of services.

**Advanced Telephone Systems** – A computerized telephone system can answer multiple phone lines, redirect calls and automatically answer many basic transit questions. They may be programmed to respond to queries for schedule, route and fare information. More advanced systems may also be able to record demand response trip requests outside of normal business hours.

**Interactive Voice Response** – An automated telephony system that interacts with callers, gathers information and routes calls to the appropriate recipient. An IVR system can accept a combination of voice telephone input and touch-tone keypad selection and provides appropriate responses in the form of voice, fax, callback, e-mail and perhaps other media. An example of

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<sup>3</sup> Development of these definitions included input from the National ITS Architecture, FHWA ITS, and the original Idaho ITS Study document.

IVR that is being considered for transit operators is an automated call out system to notify demand response passengers when their ride will be arriving.

**Website Enhancements**– Idaho transit providers have a current web presence. This technology strives to upgrade or expand the usability and clarity of information available on the Internet. Improving web presence for transit providers means ensuring that routes, schedules, fare and other information is kept current and accurate.

**Web-based Reservations** – Specifically for Demand Response users, this web-based reservation system would facilitate the booking of trips online. This feature could be deployed for Providers with or without RouteMatch software being implemented.

**Maintenance Management Systems** – This software processes, stores, tracks, and reports detailed vehicle maintenance and repair data, which can include parts and supplies inventory. It can aid in scheduling service to improve efficiency of fleet management. Advanced systems can be integrated with automated operations, vehicle tracking, in-vehicle diagnostics, inventory, and accounting functions to improve a provider’s efficiency.

**Security Systems** – Closed circuit TV cameras on-board a vehicle or at Provider facilities to enhance security. Images can be sent in real-time to monitor incidents on a bus or to help protect equipment during off-hours at offices or storage areas.

**Volunteer Driver/Rider Software** – Software that will enhance the capability of the RouteMatch Demand Response software to fully support a volunteer driver/rider program. This enhancement can include rideshare and a pool of personal volunteer vehicles that can be inventoried and managed within the RouteMatch Demand Response software.

**Automated Passenger Counters** – Systems that count (fixed route) passengers getting on and off the bus at each stop. These systems can be integrated into the transit provider’s database to relieve the driver from having to manually log passenger counts in the MDT. There are two primary technologies used: pressure sensitive treadle mats, and entryway infrared light beam. Vehicle location technology can be integrated to associate data with specific stops.

**Electronic Stop Annunciators** – Systems that, linked with AVL data, automatically provide audible and/or visible messages to passengers of the names of upcoming stops. These systems provide important information to passengers via a voice recording announcing the stop’s name, and/or display the stop name on a digital signboard.

**Electronic Fare Systems** – These systems include both cards and readers and has application on fixed route and demand response services. Fare media can expedite the boarding process and allow passengers to utilize the system without carrying cash. Each card can electronically provide information about the passenger, the fare type, facilitate payment, and contain the amount of money or number trips remaining. These systems can be integrated into the transit provider’s database to store, track, and report on fare related information.

**Wi-Fi Onboard Vehicles** – Provides the ability for passengers to use a Wi-Fi Internet connection on their computers or smart phones while traveling on the bus. Onboard systems

would acquire a wireless Internet connection through cell phone or satellite and generate a Wi-Fi signal that could be used by passengers.

**Transit Signal Priority** – A system that can alter the signal timing to give a priority or advantage to transit operations. Signal priority modifies the normal signal operation process to better accommodate transit vehicles, within the coordinated operation of the signal system along a corridor. The goal of TSP is to improve transit operations while minimizing the impact on vehicles at the intersections.

### **Traveler Information**

**Transit Services Website** – Advanced, database driven, webpage which exclusively provides transit related information to passengers and operations staff. The Website is most likely map-based and can include transit routes, stops and real-time schedule information to aid traveler's use of transit services. Information can be provided for a certain transit provider, or regional/statewide services involving multiple providers.

**Trip Planning Websites** – Various websites that can assist travelers to plan their trip using transit – Google Transit is an example of an independent application. Other applications can be specifically integrated into a 511 system. A traveler may be able to identify beginning and ending points on a map-based system or type in their location and destination and these systems would provide options to make the trip using transit, if available.

**511 Phone System** – Dialing 5-1-1 can, in most states, provide information to travelers regarding their upcoming or ongoing trip. Much of the information on existing 511 phone systems is focused on road conditions, incidents, and travel times. 511 phone systems can also provide information about using transit services. Examples could include providers in a certain area and their contact information, bus stops, and the next time a bus will arrive at a certain stop.

**En-route Signage** – Message boards that provide information to travelers during their trip. These signs could be onboard a bus, at a bus stop, or at major transit centers/transfer points. Information provided to travelers en-route may include the schedule or status of buses at bus stops, display of location and time, and other traffic conditions.

**Mobile Applications** – Technologies that allow transit information to be disseminated to advanced mobile applications such as Internet enabled smart phones, emailing, or text messaging. Information regarding transit operations (bus stop locations, real-time schedules, or event messages such as major delays) can be viewed, requested, or pushed to transit users. Mobile “Apps” could also be developed to work with certain smartphone operating systems to provide similar information.

**Transit Alerts** – Transit Alerts include information regarding bus operations (primarily bus times at certain stops or major events causing delays) provided to transit users with technology that pushes the information based on profiles established by the user in advance. Information can be provided via text message or email. The more detailed the profile, the more tailored the information can be to reduce the amount of emails or text messages generated.

**GTFS Data Management Systems** – General Transit Feed Specification data is used to map transit information such as routes, stops and schedules. They are required to support display of information on traveler services and trip planning websites. These data files are challenging to develop and maintain. This technology includes a software package that can assist a transit provider in the development and maintenance of GTFS data files. Keeping the files current is critical in providing accurate information to travelers on the web.

### **Management System**

**Organization Information** – This component allows organizations interested in doing business with a state agency managing FTA Grants to input certain information necessary to be certified by the state. The information necessary must be defined in the system and required to be entered by the organization to be certified.

**Online Application** – Automates the grant application process allowing prospective sub-recipients to easily apply for federal funding. This could include various steps (such as a pre-application and application) to complete the process to apply for an FTA grant. Information submitted would be contained in a database which would facilitate an efficient review and approval process.

**Grant Financial Management** – A component of the management system that allows for set up, award, tracking, and reimbursement of federal FTA grant dollars by ITD-DTP and their sub-recipients. This component would be structured to support status reporting to the FTA of financial and milestone status information.

**Grant Award and Tracking** – Following the review and approval of an application by a potential sub-recipient, this component would allow ITD-DTP to award funding and develop an agreement to be signed by both parties. The agreement would define the terms of the arrangement, including the funds by type of authorized expenditure, timeframe, and factors to be used to measure performance. This information would be in the mobility management database and be tracked through the life of the award.

**Reimbursement Process** – The management system component that would allow sub-recipients to request reimbursement of funds as they are expended.

**Asset/Inventory Management** – The component that would define, collect, store, process, and track related assets of a transit provider needed to conduct their operations. Assets could include vehicles of various types, facilities, and equipment. The level of asset management functions, including analysis of replace versus repair certain assets, contained within the management system would vary based on the needs of the state grant administrators.

**Operational Data Management** – This component would be database driven and collect, process, and track transit provider operational data. Operational data could be any data element to measure performance of a sub-recipient's operation as defined in the agreement – examples might include vehicle revenue miles/hours, passenger trips of various types, operational costs, and other information relevant to major events/incidents.

**Reporting** – The component of the management system that allows its users to extract information from the database and generate reports. Reports could include standard (monthly/quarterly/annual) reports, as well as ad hoc reports. This reporting component should allow for real-time access to the database to ensure accurate the timely information.

**Planning Functionality** – This component allows state grants administrators the ability to utilize the information in the database for planning and evaluation of applications. This component may include a GIS element to display current and newly proposed transit routes, along with demographic information.

**Policy Development Functionality** – This component incorporates, tracks, and recommends new policies related to the management of FTA grants administration. Each funding cycle identifies lessons learned to improve the process. Some of those lessons may result in new policies to improve the system efficiency and effectiveness. This component would facilitate the development and incorporation of these new policies.

### **Other**

**Statewide One-Stop-Resource Website** – A website designed to give potential multi-modal users one place to go to get information regarding public transportation services in Idaho. The website can also provide stakeholders and users with recent news items and events calendar.

**Provider Directory** – This application allows potential transit users the ability to find the various services offered throughout a region or state by different providers. The directory would be web-based and easily accessible to identify various types of services (transit, cabs, medicaid, etc.).

**Dynamic Rideshare Services** – An online resource to help individual commuters find their perfect carpool or vanpool rideshare match. Beyond the traditional commute, rideshare services could also contain matching tools for Bike Buddies, School Pool and Special Events.

**Various uses for GTFS databases** – Projects that would utilize GTFS data to enhance analysis or information provided to transit users.

**Bus Stop Database** – Provide access to the state's inventory of bus stops and bus stop data via an interactive online mapping system. The type of detailed bus stop information that will be made easily available to the general public as well as agencies and providers include pedestrian features, bicycle features, safety conditions, signage, bus stop amenities, and current photos of the bus stop and surrounding area.

## **Appendix B Glossary of Terms**

AMR – American Medical Response  
APC – Automated Passenger Counter  
APTS – Advanced Public Transportation Systems  
ARRA – American Recovery and Reinvestment Act  
AVL – Automated Vehicle Location  
CARS – Condition Acquisition and Reporting System  
CTAI – Community Transportation Association of Idaho  
FHWA – Federal Highway Administration  
FTA – Federal Transit Administration  
GIS – Geographic Information System  
GPS – Global Positioning System  
GTFS – General Transit Feed Specification  
ITD – Idaho Transportation Department  
ITD-DTP – Idaho Transportation Department – Division of Transportation Performance  
I-TRIPS – Idaho – Transportation, Reimbursement, Integration, and Performance System  
ITS – Intelligent Transportation Systems  
IVR – Interactive Voice Response  
MDT – Mobile Data Terminal  
MODES – The transit module of the CARS 511 system  
MRTA – Mountain Rides Transportation Authority  
NOFA – Notice of Funding Availability  
PRT – Pocatello Regional Transit  
RPT – Regional Public Transportation  
STIP – Idaho State Transportation Improvement Program  
TCSP – Transportation, Community and System Preservation  
TEAM – Transportation Electronic Award and Management  
TIGER – Transportation Investment Generating Economic Recovery  
TIGGER – Transit Investment for Greenhouse Gas and Energy Reduction  
TRPTA – Targhee Regional Public Transportation Authority  
TSP – Transit Signal Priority  
TVT – Treasure Valley Transit  
VRT – Valley Regional Transit