



Prepared for DRMAC

TRANSPORTATION COORDINATION SYSTEMS ADVISOR PROJECT

Final Report

March 2013



Acknowledgements

DRMAC wishes to express appreciation to members of the Transportation Coordination System Steering Committee for their time assisting in development of this plan.

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This project was funded with proceeds from a Federal Transit Administration New Freedom Grant.



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1 EXECUTIVE SUMMARY

The Denver Regional Mobility and Access Council (DRMAC) initiated the Transportation Coordination Systems Advisor project – also referred to as the TCS project – to improve coordination of Human Service Transportation (HST) programs and service delivery in the Denver metro area. In particular, the TCS project steering committee initiated the project to determine an efficient and effective way to coordinate trip requests, booking, scheduling, and provision of HST trips.

To aid in facilitating this work, DRMAC hired a consulting advisor in June 2012. The TCS advisor was tasked with guiding the TSC stakeholders and steering committee through a process designed to answer two specific questions:

- How much and to what extent could the existing and anticipated transportation services be better shared or coordinated?
- What partnerships, technologies, and other elements will be necessary to achieve that increased level of coordination within one to three years?

At the outset of the project, the steering committee set the goal of establishing a system that enables transportation providers to share a portion of their capacity with other providers.

This final report presents the findings of the process, the recommendations, and an implementation framework for moving the recommendations into operation.

Recommendations

The recommended system is comprised of three independent, but mutually supportive components. Component 1 focuses on the administrative and financial aspects of the coordination system. Component 2 focuses on shared regional supports for coordinating transportation services. Component 3 focuses on information technology and interagency communication protocols related to scheduling and booking trips in a coordinated manner.

While each of the components has independent utility, they offer support to one another and can be sequenced for a phased implementation process. Component 1 provides a long-term strategic initiative to implement significant changes to the administrative and funding structures to maximize the efficacy of coordination. Component 2 consists of simple efforts that can be implemented immediately with near-term results. Component 3 provides important technological upgrades that will be beneficial regardless of whether or not components 1 or 2 are implemented. However, these technological upgrades help to pave the way toward enhanced coordination by facilitating coordination without dramatically changing the business processes of existing organizations.

What did this project accomplish?

Key outcomes for this project include:

- **An evaluation of a centralized call-center model based on economic principles:** The recommendation for consolidating funding sources is intended to directly address the need for improved cost effectiveness of HST investments. The proposal for a single call center for a single funding source is shown to lack expected economies of scale while also missing opportunities to pool and leverage multiple funding sources. The TCS project proposes an alternative that enables the region to move forward with coordination without drastically changing the operational models of existing HST providers. See Chapter 4, Component 1.
- **A model that builds on existing successes:** The model addresses the important role that seemingly small coordination efforts can play in building trust and establishing a wide-range of coordinated supports. Component 2 of the recommended model provides small, immediate efforts that will help to pave the way toward greater coordination. See Chapter 4, Component 2.
- **A clear specification for technology investments** that are tied to Rider and Provider needs and the long-term vision for enhancing coordination. See Chapter 4, Component 3.
- **A flexible, multi-faceted approach:** Taken together, these recommendations enable DRMAC and its partners to pursue multiple opportunities simultaneously. Each of the components can be implemented independent of one another. This helps to avoid the tragedy that often comes to monolithic plans that require all parts to work in order for the vision to come to fruition.

2 PROCESS AND METHODS

Prior to initiation of the TCS project, DRMAC and its partners completed a variety of planning and strategy development efforts aimed at identifying needs and articulating the vision for a coordinated transportation system. The TCS project builds on these prior planning efforts to recommend specific implementation actions for the next 1 – 3 years.

History leading up to the TCS project

Transportation and coordination issues have been an on-going focus in the Denver Metropolitan Region for many years. A transportation summit in 2000 hosted by the Rose Community Foundation identified a number of needs relating to a growing population of seniors in areas with limited access to transportation services.

Following this summit, the Rose Community Foundation partnered with the HealthONE alliance to sponsor the Getting There Collaborative which culminated in the development of an assessment of transportation needs and an action plan to advance coordination. The Getting There Collaborative led to the creation of DRMAC in 2005.

More recently, the work of DRMAC and its partners has focused on implementation of key concepts from prior planning efforts including implementation of a centralized information and referral program and assessment of the transportation service support program funded by the Denver Regional Council of Governments (DRCOG) Area Agency on Aging.

One Call Serves All

The vision that has emerged through recent planning work is for a one-call/one-click model that simplifies access to services for customers and maximizes utilization of resources. The one-call model articulated in DRMAC's call center work plan articulates a vision in which customers are able to call one number to get the right ride.

A No Wrong Door Approach: Enabling Any Door to be the Right Door

At the beginning of the TCS project, DRMAC was in the midst of implementing a centralized information and assistance program. Implementation of DRMAC's information and assistance center accomplished one of the primary recommendations set forth in the 2005 *Getting There Collaborative* plan and gave rise to a coordinated approach to coordinating information and referral services.

The centralized online resource guide paves the way toward a one-call outcome by putting traveler information in the hands of multiple call centers. Now, if a caller reaches the wrong service provider, the call taker is able to refer the caller to other programs using the service database. The shared database approach is commonly referred to in the information and referral

industry as a “No-Wrong-Door” approach to coordinating information and referral services. (see Box for background on a No-Wrong-Approach).

At this stage in the planning process, the emergence of a one-call model raised the question of whether alternatives to a centralized call center might be possible. Furthermore, despite the progress represented by DRMAC’s coordinated information and assistance center, the region still lacked an agreed upon model for coordinating service delivery functions of HST services such as scheduling, and dispatch. At the beginning of the TCS project, additional work was needed to determine the appropriate model for coordinating scheduling and dispatch functions to achieve the desired outcome of improve operational efficiencies.

Centralized Call Center for Older American Act Funded Providers

Meanwhile, prior to the TCS project, regional providers of Older American Act (OAA) funded transportation services were participating in a study commissioned by DRCOG’s Area Agency on Aging DRCOG to evaluate efficiencies specific to senior OAA funded transportation. This study – conducted by BBC Research & Consulting, titled “Evaluation of the DRCOG Area Agency on Aging Transportation Service Support Program” (hereafter referred to as the BBC Study)

recommended the establishment of a consolidated call center for Older American Act OAA funded transportation services. The BBC Study directly addresses coordination of service delivery by calling for consolidation of scheduling and dispatch functions within the network of OAA funded services. However, the scope of the BBC study was limited to a single funding source. As such, the BBC study did not address the larger discussion of how multiple funding sources could be coordinated, as that was not its intent.

TCS Project: A Sharper Focus on Funding Sources

With these prior planning efforts as the backdrop, the initial scope of the TCS project focused on identifying the functions and feasibility of a one-call model for coordinating multiple funding sources. The TCS project builds on prior planning efforts to flesh out what coordination would look like within a region with multiple HST programs.

No Wrong Door: Enabling Any Door to be The Right Door for accessing Human Services

Given increasing enrollment in human service programs and declining revenues, human service agencies are facing pressures to streamline services. A No Wrong Door philosophy has been adopted in communities throughout the United States as an approach for coordinating information and referral services. A No Wrong Door model provides access to multiple human service programs by ensuring that individuals seeking help are directed to the most appropriate service, regardless of where they enter the information and referral system. This is commonly facilitated through a shared database of information about available services.

For the TCS project, the DRMAC board expressed concern that the term “No Wrong Door,” with its double-negative “no” and “wrong” phrasing should be replaced with more positive phrase. As such, the term used for a No Wrong Door approach in this TCS project has been simplified to a “one-call model”. This phrase reflects the goal of achieving a one-call outcome for individuals seeking access to HST programs, but does not imply consolidation of call center functions.

Project Methodology: A systems engineering inspired process

Given the history leading up to the TCS project, it was clear that the scope would need to address a wide range of technology aspects relating to call center functions and options. But given the divergent views surrounding a single call center versus alternatives such as a no-wrong door approach, it was apparent that the project would need to delve into planning and policy issues.

The first deliverable for the project, Technical Memo # 1, *Literature Review and Reflections*, identified issues relating to process and recommended a systematic method for identifying user needs and linking those needs to the project goals and the recommendations.

The project advisor recommended a systems engineering process, borrowed from the software engineering field to enable a more focused identification of the different needs of the system users. Although the project was not scoped to conform to Institute of Electrical and Electronics Engineers (IEEE) standards, the planning process followed the spirit of IEEE standards by focusing on the identification of user needs and linking user needs to system requirements. In particular, the process focused on eliciting user needs through a variety of stakeholder outreach efforts including surveys, interviews, a workshop and iterative review of project deliverables.

Figure 1, Systems Engineering Process, presents the systems engineering “V” demonstrating the progression of a conventional systems engineering process over the life cycle of a system development and implementation process. For the TCS project we have carried out most of concept of operations work, as documented in Appendix A, *Concept of Operations for ITS Components*. The next steps for DRMAC and the TCS Steering Committee is to develop an RFP, solicit, and retain a vendor and advance the system requirements and detailed design.

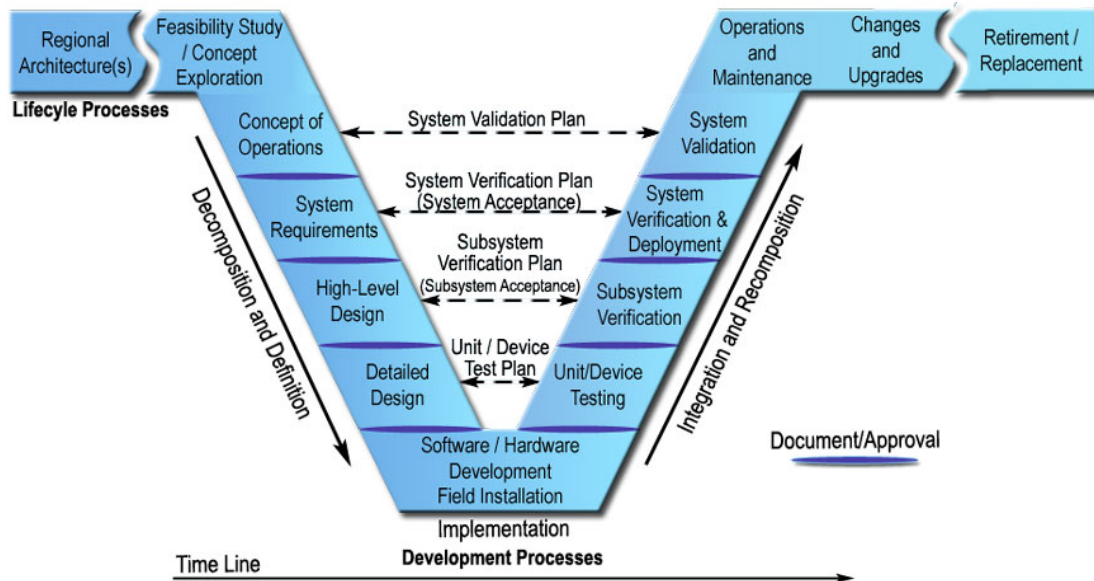


Figure 1. Systems Engineering Process

TCS Project Steps, Deliverables and Milestones

Table 1 provides an overview of the project schedule, deliverables, key questions, meetings and milestones for the project.

Table 1. Process Overview

Timeline	Key Questions	Deliverables	Meetings and Milestones
June 2012	What are the project goals? What is the overall scope of the project?	Technical Memo # 1 – Literature Review	Steering Committee Meeting # 1
July and August 2012	What are the specific needs of the stakeholders? What are their desired outcomes?	Technical Memo # 2 – Stakeholder Interviews	Stakeholder Interviews Steering Committee Meeting # 2
October 2012	What can we learn from other models? What models could meet the needs in Denver?	Technical Memo # 3 – Case Studies	Steering Committee Meeting # 3
		Technical Memo # 4 – Models and Recommended Model	
November 2012	How can the recommended model be refined to address concerns raised by the steering committee?	Technical Memo # 4a – Discussion Questions for Recommended Model	Steering Committee Meetings # 5 and 6 Provider meeting for DRCOG RFP (component 1) Working group meetings for components 2 and 3
December 2012	How can the recommended model be applied to a specific funding decision happening now?	Recommendations for DRCOG Title III-B grant application	
January 2013	What are the specific technology requirements of the recommended model?	Technical Memo # 5 – High-level system requirements for IT aspects of the coordinated system	
February 2013	How do all of the various aspects of the recommended model work together to form a complete system?	Final Report	Steering Committee Meeting # 7

Final Report Structure and Organization

This report comprises a collection and synthesis of the prior deliverables, presented in a simple format to present a complete system. Readers seeking more detailed information are advised to consult the individual project deliverables. Chapters 1 and 2 of this report provide background and context for the project. Chapter 3 provides an overview of existing conditions and serves to document the needs and conditions to which the recommended TCS model responds. Chapter 4 outlines the specific requirements for each component of the model, answering key questions identified by the TCS steering committee. The appendix includes a collection of materials developed to supplement the implementation process.

3 EXISTING CONDITIONS

At the outset of the project a finding of the Literature Review contained in Technical Memo # 1 highlighted the fact that many of the existing plans seek to define *how* the system should operate, but the underlying needs of system users were not clearly defined. In particular, the needs of providers and trip Sponsors were not as well developed as the insights into Riders' needs.

For example, the call center work plan sets the goal of finding the "right ride" for a customer. The qualities of the "right ride" were described for the Rider, but not for the provider or for the trip Sponsors.

During the kickoff meeting, it was suggested that DRMAC and its partners would benefit from a clearer definition of their objectives in pursuing a coordinated system as it relates to the needs of all parties.

In July and August the project advisor carried out a week-long site visit to interview a wide range of stakeholders. Over thirty individuals representing over twenty organizations were interviewed through a mix of six in-person interviews, five telephone interviews and four focus group meetings. This information was combined with information derived from the literature review to develop insights into the users of the HST system and their needs. The information was also used to understand the context of the system. Supplemental information was collected through two surveys. A transit systems survey was conducted seeking information on the technical systems used by the various HST providers. The results of this survey are contained in Appendix B. A shared supports survey was also conducted to collect input on the importance and priorities placed on various coordinated functions. This information is contained in Table 3 of Chapter 4.

Users and User Needs

Three key users of the HST system are identified: Riders, Transportation Providers, and Transportation Sponsors. An "Others" category is also provided to document the needs of individuals and organizations who indirectly use and/or benefit from the HST system.

Riders

Riders include individuals who ride HST services to meet their individual access and mobility needs. Riders interface with the HST system at a variety of levels. Initial interaction occurs when Riders seek information about HST services or when agencies perform marketing and advertising activities to raise awareness about their services. Riders also interface with the transportation system when they reach out to an agency or provider to find a ride. Depending on the provider and the individual Rider's history and needs, the Rider may need to be registered with the Provider and/or engaged in a needs assessment/eligibility determination process. Once the necessary registration, eligibility, and needs assessment tasks are completed, the Rider will again interface with the transportation system to book travel. Depending on the Rider and the Provider, this may occur on an ad hoc basis or on a regular, scheduled basis, or both. Many of these

interactions up to this point are handled over the phone, via paperwork, electronically, or in some cases in-person as part of the eligibility/needs assessment process. Riders interface directly with the HST system when transportation service is performed. Depending on the service and the Rider's needs, this interaction may vary greatly.

Based on Rider surveys and other planning work carried out by DRMAC in February and March 2011, it is understood that Riders have the following general needs as it relates to HST:

- HST Services connect Riders to needed services
- Information about HST programs is readily available and accurate
- Access to HST service is simple
- HST Service is available when needed
- HST Service is affordable, reliable, safe, and convenient
- Travel times on HST services are reasonable
- Riders are independent and have a sense of autonomy over their transportation choices
- Riders are able to express and have their needs heard and understood
- Individual privacy is protected
- HST services help to fill gaps

Providers

Providers are the agencies and organizations that operate HST services and direct support functions. Providers of HST perform transportation services include a wide variety of organizations spanning a spectrum of operating modes including fixed-route general public transportation, taxi, volunteer transportation, and demand responsive transportation.

The provider group also includes agencies that perform information and referral services, such as DRMAC, Via, and Seniors' Resource Center (SRC), as well as organizations that arrange and schedule HST services such as the Access-a-Ride and Medicaid NEMT brokers. Providers perform a wide range of functions in support of HST services.

Providers have the following general needs as it relates to HST:

- Service is cost effective and/or profitable
- Regulatory expectations are feasible to implement
- Coordination protocols are simple, intuitive, and easy to use
- Coordination is of mutual benefit to coordinating entities
- Information transferred between parties is accurate and secure
- Service is compliant with applicable rules and regulations
- Service providers have a sense of autonomy and control over the quality of services they provide
- Sufficient information is available to enable providers to be accountable for their service

Sponsors

Sponsors are the agencies and organizations that fund HST services. In some cases Sponsors and providers overlap, but Sponsors are generally distinct and separate from providers. Sponsors define the high-level goals and objectives of the various HST programs, the organizational and

administrative frameworks for managing HST service and set forth service quality requirements that Providers must follow. In addition, Sponsors also solicit, evaluate, and select projects, set funding priorities in collaboration with stakeholders, ensure compliance, and track the performance of projects/services funded. Sponsors interact with the system at a variety of levels, primarily in the early and latter stages of the life-cycle of an HST trip.

Sponsors have the following general needs as it relates to HST:

- HST services are cost effective
- HST services meet identified community and consumer needs
- Sufficient information is available to enable Sponsors to be accountable for their funding decisions
- Service is compliant with applicable rules and regulations.

Others

Other users that interact with the system in a peripheral way include:

- **Caregivers:** Individuals and organizations who care for Riders. This can include a range of parties including parents, children, doctors and nurses, case workers, and other professionals. Caregivers need to know that their Riders' needs are being met.
- **Decision Makers:** Decision makers include any individual who has a direct role in determining how HST services are performed. Decision makers need to know that services are cost effective and closely aligned with community/consumer needs.

Operating Environment

The existing systems and operational models are diverse, layered and highly adapted to their specific operating contexts. This section documents these systems for the purpose of identifying opportunities to better meet the needs identified. For additional detail, Technical Memo # 2, *Stakeholder Interview Summaries*, provides more detailed information for each of the agencies interviewed.

Existing Coordination and Service Delivery Models

HST services are provided under a variety of service delivery models with varying levels of coordination. Denver's Regional Transportation District (RTD) Americans with Disabilities Act (ADA) paratransit service and the State's Medicaid Non-Emergency Medical Transportation (NEMT) service are both operated through regional brokerages. The NEMT program will permit operators to co-mingle trips whereas co-mingling has not been possible within the ADA paratransit program.

OAA and State Funding for Senior Services (SFSS) funded transportation programs are operated at primarily a county level and are coordinated informally. Medicaid Community-Based Waiver programs are organized at the county level with varying degrees of coordination with HST programs.

There is no single model for regional or statewide coordination. In Boulder County, the system is coordinated under a lead agency model. SRC coordinates multi-county service through a modified brokerage model using blended-funding. In Douglas County funding sources are coordinated directly by the local coordinating council in cooperation with the County Mobility Manager.

Service Areas and Sub-Regions

The TCS advisor's assessment of the region – which is based on stakeholder interviews and a review of prior planning documents – indicates existing sub-regional nodes of activity around which transportation services could be coordinated. The existing operational patterns appear to be organized around three or four sub-regions, each with distinct operational characteristics and community context. Although the specific parameters of the sub-regions are difficult to define in discrete terms, there appear to be important distinguishing factors between the operational patterns, political contexts and coordination models of each of the sub-regions. These sub-regions were generally broken down into Boulder County, Greater Denver, and Douglas County. It is recognized that there is also a distinction between the rural areas and the urban areas and that this division crosses the boundaries of the sub-regions identified above. It is further recognized that the boundaries of many providers do not correspond to these sub-regions: Via, for example, provides services across multiple sub-regions and has expressed an interest and willingness to provide expertise and capacity beyond its traditional service area. Furthermore, RTD's service area does not encompass all of the sub-regions. This finding is further documented in Technical Memo # 2, *Stakeholder Interview Summaries*.

Existing Systems

The stakeholder agencies were surveyed regarding their existing systems supporting customer intake, scheduling, dispatch, and trip-booking. Appendix B, *Transit Systems Survey Results*, contains the results of the survey. Highlights of the existing systems are:

- **Information and Referral:** DRMAC recently implemented a regional information and assistance service supported by a regional database of transportation options. In addition to DRMAC's information and assistance service, essentially all local providers also perform varying degrees of information and referral functions. The objective of the DRMAC information and referral database is to build a no-wrong-door model for coordinating the information and referral services offered by multiple agencies.
- **Scheduling:** Four out of eight HST providers with vehicles use computer-aided scheduling. All four use RouteMatch. Of these, two use route optimization.
- **Vehicle Technology:** There are a wide range of vehicle technologies. Currently only two of the surveyed providers use anything more than cell phones and radios in their vehicles.
- **Telephone systems:** Four of nine providers are unable to perform an attended call transfer.
- **Internet:** All providers have access to high-speed internet. Although First Ride indicated a medium-speed connection in the survey, it was determined during a follow up interview that the internet connection has been problematic.
- **Internet:** With one exception, all providers have access to high-speed Internet.

Goals

A major focus of the TCS project was to define what the “right ride” means from the providers' and trip Sponsors' perspectives. Three measures were considered for the coordination system:

- **Cost Savings and Efficiencies:** The coordination system shall achieve a net reduction in unit costs (cost per trip, cost per hour, or cost per mile) that can be reinvested to increase service and quality and quantity.

- **Service Quantity:** The coordination system shall maintain or increase the amount of service provided as measured by trips, service span, geographic coverage, and service types.
- **Service Quality:** The coordination system shall increase or maintain the quality of transportation programs as measured through customer satisfaction surveys regarding and the accessibility of services and the availability, simplicity, convenience, and reliability of information; safety records (e.g., accidents per 1,000 revenue miles), and other formats that speak to customer-focused outcomes.

During the project kickoff meeting and subsequent meetings there was a great deal of discussion about the three bullets listed above. It was generally agreed that these goals were the right goals to guide the process, but more specificity would be needed to develop performance measures. Participants indicated that it is critical that services reflect customer needs and quality, and that these tradeoffs be made clear relative to cost savings and service goals. For example, during the interviews we found that senior transportation and volunteer transportation programs tend to prioritize quality more than other transportation programs.

Although some providers emphasize service quality differently than others, there is consensus among all of the TCS steering committee members that service efficiency needs to be improved so that limited resources can be stretched to the greatest extent possible. For some, efficiency comes at the cost of service quality, while others – especially volunteer-based programs – believe service efficiencies are derived from a high-quality program. While these needs are not mutually exclusive, they do create tension when it comes to proposals to consolidate aspects of the various programs.

4 RECOMMENDED SYSTEM

In October 2012, the project advisor presented an overview of three case studies showcasing alternative models for coordination of HST services. The case studies featured HST coordination programs in Portland, Oregon; Pittsburgh, Pennsylvania; and Honolulu, Hawaii. Technical memo # 3, *Peer Reviews & National Best Practices*, was produced to document the case studies.

Building on the case study findings, the project advisor presented a range of potential models that could work in the Denver metro region. Technical Memo # 4, *Models for the Denver Region*, was prepared to highlight a range of potential models and to evaluate the degree to which the various models meet the identified needs. Technical Memo # 4 introduced three conceptual coordination models including brokerages, supported coordination and an exchange model (see Table 2, Functional Classification of Coordination Models).

The concept of the life-cycle of an HST trip was introduced at this stage of the project. The HST trip life-cycle concept was used to facilitate a discussion about the various functions that are performed in support of an HST trip. Table 2 shows the three conceptual models and various levels of coordination and/or consolidation that occur during the life-cycle of an HST trip. This information was used to frame a recommendation for the Denver metro area.

Recommended Model

The recommended model for coordinated transportation is a hybrid approach that incorporates aspects of all three primary models presented in Technical Memo # 4, including supported coordination, brokerage, and exchange. The recommendation can be described as a regional coordination program for supporting a constellation of sub-regional coordination nodes. It is comprised of three major components: Component 1 focuses on the administrative and financial aspects of the coordination system. Component 2 focuses on shared regional supports for coordinating transportation services. Component 3 focuses on information technology and interagency communication protocols for scheduling trips in a coordinated manner.

Alternatives Considered

Several alternative models were considered including a single call center for each funding source, a single call center for multiple funding sources, and a do-nothing option. The single call center for a single funding source option was evaluated as part of the previously mentioned BBC study and was adopted by DRCOG as the path forward for coordinating OAA/SFSS funded transportation services. The TCS Advisor's recommendation for multiple call centers organized around sub-regional nodes of coordination reflects a major shift in direction compared to the outcome of the BBC study. This recommendation is based the following rationale:

- **Diseconomies of scale:** The principal criticism of the single-call center for a single funding source is that it does not achieve the economies of scale necessary to produce the expected efficiency benefits. The BBC study claims that a centralized call center will be

more efficient because it will eliminate administrative redundancies. However, unless operations are also consolidated, each of the agencies operating transportation services will be required to retain a base-level of scheduling and dispatch functions. A consolidated call center may in fact result in a net increase in administrative staff. In addition to the creation of a new call center requiring significant staffing, staff time would also be required for local operators to assign trips to vehicles, handle drivers' schedules and work with customer scheduling issues that come up during service delivery.

- **Missed opportunity to leverage/co-mingle funds:** Furthermore, a centralized call center for a single funding source fails to address coordination of funds. Coordination of funding is often cited as a key obstacle to coordination and is also one of the greatest opportunities to maximize capacity utilization. The best practice case studies prepared for this project each highlight ways in which coordinated systems have leveraged multiple funding sources to maximize resource utilization. By focusing on a single funding source, the call center identified in the BBC study does not take advantage of the opportunity to leverage multiple funding sources or co-mingle compatible passengers to maximize capacity utilization.

Chapter Structure and Organization

For each component, this chapter provides answers to the following questions:

- How will the model work?
- Which stakeholders will be involved at what levels?
- What is the timeline for implementation?
- What action steps are needed and in what order?
- What technology is needed?
- What is the estimated budget for each step?
- What is the expected impact on the TCS goals?

Table 2 Functional Classification of Coordination Models

Functions Performed		Brokerage Model	Supported Coordination Model	Exchange Model	Recommended Model
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Lifecycle of an HST investments</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Front-end Administrative Functions</p>	Advocacy	<p>Administrative support functions are consolidated</p>	<p>Support and customer intake functions are coordinated</p>	<p>Exchange Model</p>	<p>Administrative and funding functions are consolidated for as many funding sources as possible</p>
	Planning				
	Grant administration				
	Regulations and compliance				
	Procurement				
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Transportation Provider Support Functions</p>	Technology	<p>Passenger registration and scheduling functions are consolidated</p>	<p>Vehicle scheduling, dispatch and service delivery functions are independent</p>	<p>Passenger registration and scheduling and vehicle scheduling and dispatch functions are coordinated</p>	<p>Support functions are coordinated at a regional level.</p>
	Vehicles				
	Insurance				
	Maintenance				
	Fuel				
	Driver Training				
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Customer Intake Functions</p>	Eligibility Determination	<p>Service delivery and some administrative functions are independent</p>	<p>Vehicle scheduling, dispatch and service delivery functions are independent</p>	<p>Service delivery and some administrative functions are independent</p>	<p>Passenger registration and scheduling functions are coordinated regionally and consolidated sub-regionally.</p>
	Information and referral				
	Orientation				
	Travel Training				
	Passenger registration				
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Service Delivery Functions</p>	Passenger scheduling	<p>Quality assurance</p>	<p>Reporting</p>	<p>Invoicing</p>	<p>Payment</p>
	Vehicle scheduling				
	Dispatch				
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Back-end Administrative Functions</p>	Passenger pickup	<p>Quality assurance</p>	<p>Reporting</p>	<p>Invoicing</p>	<p>Payment</p>
	Trip completion				
	Quality assurance				
	Reporting				

Lifecycle of an HST Passenger trip

White space signifies functions for which the mode of coordination is undefined.

COMPONENT 1: LEVERAGE FUNDING TO SUPPORT SUB-REGIONAL BROKERAGES

Component 1 seeks to overcome administrative and funding obstacles that prevent or limit the degree to which HST providers are able to share capacity with other providers. Component 1 uses the administrative and funding frameworks of HST programs to incentivize and structure the regional HST coordination model. It focuses on a sub-regional brokerage model aimed at strengthening and supporting the existing providers of HST services.

Early in the project, the TCS steering committee recognized that certain administrative and funding frameworks of HST programs can act as a barrier to capacity sharing. For example, it was recognized that two of the largest HST programs in the Denver region – ADA Paratransit and Medicaid NEMT transportation – are not directly coordinated with one another or with other HST programs. It was recognized that the existence of two separate call centers for the ADA Paratransit and NEMT transportation services is more a reflection of the separate administrative, regulatory and funding frameworks for these programs than a reflection of a deliberate system designed to support coordination.

The status quo in Denver was compared to the models presented in Portland and Pittsburgh where the funding frameworks are deliberately designed to support coordination. Through this comparison it became apparent that coordination of services and capacity sharing can be greatly enhanced when the funding frameworks and administrative structures that support HST programs are coordinated and in some cases, consolidated.

The comparison of Denver's existing model for coordination with those of the case studies highlighted the fact that Colorado is one of three states that does not provide dedicated state funding for operation of HST services.¹ The Portland and Pittsburgh models were both designed around dedicated operating funds for HST programs and therefore provided a context and opportunity to leverage those funds to build deliberately coordinated systems. Rather than rejecting the case studies because of this fundamental difference, the systems advisor used this information to look at how the concept of using HST funds to shape and structure HST coordination could be applied in Denver. Component 1 of the recommended system, therefore, strives to leverage multiple funding sources currently available in the Denver region to mimic a dedicated funding source.

The concept is to create and use a pooled funding source to foster the development and expansion of sub-regional HST brokers.

How will the model work?

The objective of this component of the system is to create nodes of coordination in which multiple funding sources are combined and leveraged. Based on a preliminary review of the region, the TSC advisor recommended a system of brokers designed around sub-regions. As highlighted in Chapter 3, the TSC advisor noted that the region appears to be divided into three or four natural sub-regions consisting of Boulder County, Denver metro and environs (Jefferson, Broomfield,

¹ While Colorado Department of Transportation administers a FASTER (Funding Advancement for Surface Transportation & Economic Recovery) transit grant program, it is not currently available for operations funding. This may change in the future. If so, FASTER funds should be considered as one of the potential sources of pooled funds.

Adams, Denver, and Arapahoe Counties), and Douglas County with additional divisions between urban and rural areas that cut across these sub-regions. Gilpin and Clear Creek Counties choose to coordinate HST separately. The TCS advisor's assessment is that the operational patterns, available resources, and community contexts differ to a sufficient degree in each of the sub-regions that these sub-regions could serve as a logical starting point for coordinating HST services through local brokerages. Given the short timeframe and broad scope of this project, the TCS advisor recognizes that it is not possible to make a definitive judgment about the proper boundaries of the sub-regions.

Nevertheless, the concept of sub-regional operations is to strengthen and support the examples of coordination that are already in place. This is not to say that what works now is good enough for the future. Instead, it is an affirmation of the good work that is being done to coordinate services in local communities. It is recommended that HST services be coordinated at the sub-regional level by strengthening and supporting existing brokerage programs in each area while also developing new brokers in areas where such services are not currently offered.

Funding

The pooled funding source described above would be used to fund coordinated HST within each sub-region. This would be accomplished by pooling as many funding sources as possible. Initially it is recommended that the OAA/SFSS funds be matched with Federal Transit Administration's 5310 funds. Ideally, a portion of local mill levy funds for people with developmental disabilities (DD) and potentially Veterans Trust Fund revenue that is already being spent on transportation could also be leveraged in this program to provide a diversified source of funding for on-going HST needs in the sub-regions for a wide range of Riders.

Payment and Reimbursement

Once established, the pooled funding would be distributed through a multi-year competitive contract to establish local brokerages for each sub-region to coordinate transportation services.

Trip rates should be established in such a way that occasional long-distance trips are adequately compensated as an incentive for coordination among regions. One simple way to accomplish this would be to establish two rates for each sub-region: one rate for local trips within the sub-region and a second rate or schedule of rates for long-distance trips between sub-regions. More complex blended rate formulae that include variables for mileage and hours can also be used to ensure adequate compensation, but a careful balance needs to be achieved between simplicity and functionality: complex reimbursement formulae can be difficult to administer.

Which stakeholders will be involved at what levels?

It is recommended that the planning and implementation effort associated with Component 1 focus on partners that are willing and interested; this includes both funding partners and operations partners. Of course, determination of which funding partners to include depends on which funding sources are included in the pooled funding program(s). Technical Memo 4a, *Supplemental Discussion Questions*, explores this question and recommends using the OAA/SFSS funded program and the FTA's 5310 program as a starting point for gathering interested partners.

Stakeholder involvement is organized into two phases: pre-implementation and implementation.

Pre-Implementation

The process of establishing a pooled funding source will require a significant amount of effort on the part of DRMAC, local and regional funding partners, and local providers. Interested parties should provide a point person to carry out the action steps identified above. Given DRMAC's role as a regional facilitator of coordination, DRMAC should play a significant role in spearheading this effort, including recruitment and outreach to identify interested funding partners.

Implementation

The brokers would be responsible for ensuring that HST is being provided within each sub-region, co-mingling funds and Riders from various funding sources to meet the TCS goals of improved service quality and cost effectiveness. Non-profit brokers should be given the authority to operate and/or sub-contract HST service. To avoid potential misalignment of incentives, for-profit brokers should be prohibited from operating HST services. Coordination with providers of ADA paratransit and Medicaid NEMT services should be explicitly allowed and encouraged. Brokers should be allowed to bid on multiple sub-regions.

Governance and Oversight

Policy details should be determined through a collaborative process involving a technical advisory committee of stakeholders and interested parties.

What is the timeline for implementation?

The outcome of the steering committee discussions was to focus on each opportunity for combining funding sources as it arises. DRCOG's Request for Proposal (RFP) for OAA/SFSS dollars was the first such opportunity the steering committee attempted to weave these concepts into an existing system.

During the course of the TCS project, attempts were made to incorporate aspects of this concept into the DRCOG RFP for the current round of OAA/SFSS funding. While many of the recommendations made by the TCS advisor were incorporated, some aspects were left out as a result of limited time to incorporate the recommendations as well as limiting state and federal guidelines. A dual-rate structure for local and regional trips was not incorporated as a result of timing limitations. The recommendation to prohibit for-profit brokers from operating transportation services was believed to be a violation of state and federal regulations governing these funds. DRCOG was also more inclined to establish a single brokerage for the region for this RFP whereas the recommendation of the TCS advisor is for a constellation of sub-regional brokerages.

The next potential opportunity to consolidate funding appears to be the FY 2014-2015 call for projects for the new FTA Section 5310 program, expected to be released by DRCOG summer 2013. Given that the OAA/SFSS funds will have already been obligated under the current RFP procurement, it may not be possible to directly coordinate OAA/SFSS funds with FY 2014-2015 Section 5310 funding in a programmatic way. Ad-hoc opportunities for leverage and match should still be pursued.

Given the time lag between different funding cycles, it will always be challenging to coordinate and temporally bridge multiple funding sources. Over the next two years, as the next OAA/SFSS cycle approaches, the TCS steering committee should work directly with DRCOG to explore opportunities for directly coordinating the next round of Title III-B funding more closely with

future releases of Section 5310 funding as well as the other funding sources listed below. Direct coordination of these funding sources could include the creation of a single pooled funding source to fund transportation for seniors and people with disabilities.

In the meantime, ad-hoc opportunities could be pursued on a pilot basis in one or more of the sub-regions.

What action steps are needed and in what order?

DRMAC should work directly with RTD and DRCOG to develop a 5310 program that directly leverages other HST funding sources to create a pooled grant program. Starting immediately, it is recommended that DRMAC work with RTD and DRCOG to discuss opportunities for structuring a portion of the 5310 funding under a pooled funding model.

Meanwhile, one or more local coordinating councils should begin working with local funding partners to identify opportunities within sub-regions to use other HST funding sources as match for a 5310 operating grant to fund a sub-regional brokerage on a pilot basis. Candidate funding sources include, but are not limited to:

- Medicaid Non-Emergent Medical Transportation Funds
- Mill Levy Funds for Services for People with Developmental Disabilities
- Municipal and county general funds
- Older American Act and State Funding for Seniors Services
- RTD General Funds supporting ADA Paratransit services
- Veterans Trust Funds
- Waivered Medicaid funds for Home and Community Based Services

Once the funding sources have been identified the next step will be to design the grant program. The program design details will depend entirely on the funding sources included in the program.

What technology is needed?

The specific technology requirements of this recommendation are currently unknown. The technology aspects of Component 3 will support coordination between and within sub-regional brokerages. Technology needs will largely be driven by the reporting and compliance requirements of the various funding sources. As such, the technology aspects should be determined once the funding partners are identified.

What is the estimated budget for each step?

Pre-Implementation

This task could consume anywhere between 10 to 40 percent of an FTE for DRMAC plus 5 to 20 percent FTE for other participating organizations.

Assuming the average loaded cost of labor (including fringe and overhead) is approximately \$65,000 per FTE and assuming six individual agencies participate in developing the pooled funding source over the course of a one-year period, each contributing staff time to the effort, pursuit of this component could cost between \$26,000 to \$104,000 in direct labor per year.

Implementation

The cost of operating a pooled funding source is assumed to have a lower average per unit administrative cost compared to separately administered funding sources. Operating costs should decrease as productivity and resource use increases within the brokered programs. The degree to which productivity increases can be gained will depend on the number of funding sources that can be leveraged under the brokerage model. If fewer than two funding sources are included, productivity gains won't increase significantly. Actual operating costs should be included as part of detailed design of the jointly funded sub-regional brokerage program.

What is the expected impact on the desired outcomes?

The recommended model will directly enable organizations to co-mingle funding sources so that trips can be provided in the most cost effective manner possible. This proposal creates a clear and direct opportunity for organizations to coordinate funding sources and vehicle capacity.

COMPONENT 2: PROVIDE REGION-WIDE SUPPORT AND INCENTIVES TO ALL PROVIDERS

The concept of component 2 is to provide support services to a wide range of organizations involved in coordinating and delivering HST programs throughout the region. The idea is similar to the services offered by coordination programs that provide support for partner agencies in Honolulu and Portland, Oregon. For example, in Portland, Ride Connection provides driver training for a wide range of non-profit and commercial transportation providers. It has secured safe driver insurance discounts for volunteer drivers who participate in its defensive driver training program. Ride Connection also provides and oversees a shared vehicle program for over twenty participating agencies in the Portland metropolitan area. In Honolulu, Honolulu Rides provides a centralized information and referral service and a vehicle sharing program. These shared supports have enabled organizations in both regions to increase transportation options and the quality of transportation service while decreasing unit costs of providing transportation services.

Shared supports is defined as the services and activities that can be coordinated efficiently among a large number of providers in a region to achieve an economy of scale. Activities such as driver training, procurement, grant writing, sharing best practices, and risk management are often included. The recommendation for Denver is to build on the foundation of shared supports already offered by DRMAC and to recognize the role shared supports play in facilitating a regionally coordinated transportation system. Shared supports complement the recommendation in Component 1 to establish a constellation of sub-regional brokers by providing common supports for brokers and providers, serving as a common advocacy forum for the regional system, and working to create cohesiveness in the system.

The recommended model works in concert with the structures already in place. This component of the recommended TCS model builds on the infrastructure provided through DRMAC by adding specificity to the coordination function DRMAC serves. Inclusion of this recommendation as part of the TCS model reaffirms the important role of DRMAC in building cohesiveness in the regional system. Furthermore, Component 2 supports Component 1 by providing continuity between sub-regions.

Two Short-Term Projects

As the TCS Component 2 implementation committee considered various options for collaborating on shared supports, increased/expanded travel training and development of common data standards for financial records emerged as the highest priorities. This was determined by surveying members of the Component 2 working group regarding the importance and priorities of coordinating certain functions. The full range of efforts considered is listed in Table 3, Shared Supports Survey: Frequency of Response by Function and Response Type. This feedback was used to facilitate a discussion regarding priorities. Although advocacy and information and referral were ranked as the most important and highest priorities, respectively, the working group felt that these efforts were already well addressed by DRMAC and more help was needed with things like travel training and coordination of reporting standards. To be conservative, the survey responses were not sampled and may not represent the views of all providers in the region. However, interest and willingness tend to play a significant role in the success of these kinds of efforts, so relying on a self-selected survey to guide this kind of process provides a reliable measure of what agencies are willing to do.

In addition to these efforts, it is recommended DRMAC add new collaborative projects as time progresses. A brief overview of the travel training and financial data standards efforts is provided below, as well as a framework for identifying future efforts. Future efforts of a shared support network could include, but are not limited to: Grant writing and grant management, driver training, pooled insurance, vehicle maintenance, and joint procurement. It is recommended that the working group use a similar survey in conjunction with the DRMAC strategic plan to identify additional future opportunities.

Table 3. Shared Supports Survey: Frequency of Response by Function and Response Type

	Advocacy	Planning and Programming Grant Administration	Insurance	Maintenance	Vehicles	Fuel	Travel Training	Information and Referral	Eligibility Determination	Coordinated/Shared Driver Training	Reporting Standards	
To what degree are these functions currently coordinated within the Denver metropolitan region?												
Coordination of this function could be improved	6	3	3	2	2	0	2	4	4	3	2	3
This is well coordinated	1	2	0	0	0	1	0	3	4	0	2	1
This is not coordinated and doesn't need to be	0	0	2	1	1	3	1	0	0	3	0	1
I don't know	1	2	3	4	5	4	5	1	0	2	4	3
How would you prioritize the importance of coordinating these functions at the regional level?												
High Priority	2	3	1	0	0	0	0	4	7	2	2	3
Medium Priority	4	3	2	2	1	1	1	3	0	1	4	2
Low Priority	1	0	3	1	2	2	2	0	1	3	1	0
Not a Priority	0	0	0	1	2	2	2	0	0	2	0	0
I don't know	1	2	2	4	3	3	3	1	0	0	1	3

Source: DRMAC TCS Project Component 2 Workgroup Questionnaire, 2012

How will the model actually work?

The concept is for DRMAC to play a facilitating role in leading interested organizations in joint regional efforts that have a demonstrable impact on the TCS goals. DRMAC and its partners could select one or two strategic efforts to focus on each year and make incremental progress on advancing efforts that address TCS goals. For example, the focus would be travel training and

common data standards' development for financial records for the next year or two, but additional actions could be developed over time.

Regional Travel Training

Current travel training options focus primarily on either the Boulder County area or on individuals who have been identified as eligible for ADA paratransit services. While there is an existing partnership to provide travel training in the region, additional resources are needed for outreach, recruitment, and delivering travel training services above and beyond the existing programs.

The aim for a regional travel training program is to build the capacity for providing more robust travel training services anywhere in the Denver metropolitan region by focusing on reaching individuals before they become eligible for ADA paratransit.

Common Standards for Financial Records

“Common standards” refers to a *consistent* method used by multiple agencies to estimate, report, track, and record transportation costs. Consistency does not require all agencies to have identical procedures. Rather, consistency involves establishing common ground rules for determining what is and is not included in the calculation of standard financial measures for estimating and reporting transportation costs within a network of providers. Individual agencies can continue to report on metrics unique to their organization while also organizing reporting efforts to correspond with an agreed upon framework for services that are coordinated.

Appendix C, Resources for Developing Common Standards for Financial Records, offers a set of resources that can be used in connection with this effort. Furthermore, individual providers have established systems for reporting financial information that can serve as best practices. SRC, for example, has developed a method for reporting averaged per trip cost and was recognized by CDOT for having systems in place to accurately track financial data. These resources can be brought together during a workshop to share best practices.

Which stakeholders will be involved at what levels?

In general, DRMAC will spearhead this component and will involve a wide range of partner organizations with varying roles, depending on the kinds of actions pursued.

Travel Training

DRMAC and Via Mobility Services have both expressed interest and willingness to carry out the planning and pre-implementation work necessary to support the regional Travel Training proposal. During the TCS Component 2 working group meetings, stakeholders felt it was premature to specify the details regarding the roles each organization would play as part of an expanded regional Travel Training program. These roles will need to be refined as the concept is developed further.

In terms of other stakeholders above and beyond DRMAC and Via, it was determined that additional partners would be needed to help fund the travel training program and that an incremental partner development effort would be needed.

The concept of an incremental partner development effort is to reach out to organizations that could benefit from travel training and work with them to identify their needs and design the travel training services around those needs. In doing so, DRMAC and Via could articulate the value of

travel training and explore options for matching partner contributions with grant funds to achieve a fully funded travel training program.

It is recommended that interested members of the working group continue to meet to refine the concept and pursue the action steps listed below.

Common Standards for Financial Records

It is recommended that a financial standards workshop should be held, open to any interested stakeholders who provide or fund HST services. The objective of the workshop would be to provide training to HST providers and funders regarding common financial reporting standards and to highlight various requirements of different providers. The workshop would serve as a collaborative forum for organizations to share information and best practices for reporting while also comparing and contrasting their various reporting requirements and processes.

For more specificity in determining which stakeholders to involve, the TCS steering committee could look to the progress being made on Component 1 relating to the recruitment of funding partners for the pooled funding source. Any organizations interested in pooling funds would be an ideal candidate for attendance at the workshop.

The workshop should be facilitated by an individual with experience in cost allocation for HST programs. The general format of the workshop should consist of equal parts training and discussion.

What action steps are needed and in what order?

Travel Training

The first step over the next three to four months is to refine the program details and to recruit partners. The program details will need to be adapted to the partner needs, so these tasks should be carried out concurrently. The objective of partner development is to recruit organizations that would benefit from travel training and to identify their contribution as part of the overall budget for the proposal.

As the program details and partners are identified, a grant application should be prepared for FY 2014-2015 FTA Section 5310 funds. Other funding sources may also be available and should be considered, but the 2014-2015 FTA Section 5310 program appears to be an appropriate source for travel training benefiting seniors and people with disabilities in the urbanized area. If the program takes on a job-access dimension, the 5307 program may be more appropriate.

Implementation and evaluation should begin as soon as funding is available. The objective should be to maximize independent mobility for individuals. Implementation and evaluation will demonstrate the value of travel training by reducing demand for ADA paratransit and other HST services. As such, performance measures such as number of independent Riders and basic information about pre- and post-training mobility patterns will be important to track.

Common Standards for Financial Records

There are two alternative paths forward. If the TCS working groups are busy with the other tasks identified in this plan, the workshop should be sequenced to follow the work of recruiting funding partners for Component 1. As interest in a pooled funding source grows, those organizations and their providers could be invited to a workshop to discuss reporting requirements and explore what changes would need to be made under a pooled funding model.

If the working groups are more eager to develop common standards for financial records, a voluntary workshop could be arranged sooner for any interested organization. This workshop should be voluntary because some organizations may feel disinclined to coordinate if they feel pressure surrounding the financial records topic.

A first step in either case will be to approach the DRMAC board to gain approval and to allocate funding for moving forward with this task. The relatively small financial commitment required to sponsor the workshop should be achievable with DRMAC board approval.

What is the timeline for implementation?

Travel Training

The overall travel training program could be implemented in less than a year, but it would be a long-term effort whose benefits increase as time goes on.

The Component 2 working group discussed the idea of developing the travel training proposal to a sufficient level of detail to apply for a FTA Section 5307 and/or 5310 grant.² With changes in the administrative structures of these grant programs, the timelines for applications is currently uncertain. Based on preliminary information from DRCOG, it appears notices for funds for the FY 2014/2015 Section 5310 program will be announced in summer 2013.

In anticipation for the 2013 grant applications, DRMAC and Via will need to work with other interested stakeholders to further define roles and to begin the outreach process to identify sources of match. The Component 2 workgroup discussed working with organizations such as the Department of Healthcare Policy and Finance, Denver Center for Independent Living, community centered boards, local senior centers, among others.

Common Standards for Financial Records

Implementation of common standards for financial records will likely be a layered and on-going development over several years. The initial workshop could be held immediately, or in sequence with the activities of Component 1. Depending on which initial step is pursued, the timing for actual implementation could be as soon as six months from now if a great deal of progress is made at the initial workshop or early next year. If the work is carried out in close connection with Component 1, the timeline may be driven more directly by the timeline for the specific funding sources being pooled. This implies a longer timeframe, potentially spanning as many as three-years.

What technology is needed?

Travel Training

Figure A1 in Appendix A highlights the position of travel training and mobility assessments as part of the generic framework for customer intake and trip scheduling. Although technology was

² With passage of the current reauthorization bill Moving Ahead for Progress in the 21st Century (MAP-21), the former FTA Section 5316 (Job Access Reverse Commute) and 5317 (New Freedom) grant programs have been eliminated and projects formerly eligible under those programs have been rolled into the FTA Section 5307 and 5310 programs, respectively. Under this recommendation, grants for travel training would most likely be funded with an FTA Section 5307 or 5310 grant.

discussed as a potentially beneficial supplement for the travel training and mobility assessment processes, the component 3 working group determined not to include mobility assessments or travel training in the scope of the initial ITS specifications. As such, there are no specific technology related proposals included in the TCS model that relate to travel training or mobility assessments. This is not to say that travel training and mobility assessment would not benefit from information technology, it was simply not considered a high enough priority for the component 3 workgroup to include it in the current IT specification.

As DRMAC and Via refine plans for the regional travel training program, technology needs can be identified building on the work carried out as part of this project. In particular, the mobility assessment and travel training technologies should tie into the proposed electronic referral system described in Appendix A.

Common Standards for Financial Records

At this time, no specific technology needs are identified. The workshop can be carried out using standard presentation software and spreadsheets. Once standards are identified systems may need to be updated to receive and/or track data differently. New systems should specify open and shared standards (see Component 3 for a more detailed overview of open data standards).

What is the estimated budget for each step?

Travel Training

For planning purposes, the component 2 work group identified a travel training program capable of funding and supporting three full-time travel trainers in addition to the existing staff available at Via and DRMAC. Assuming a fully loaded labor cost of \$65,000 per FTE plus a lump sum budget of \$25,000 for materials, supplies and contingencies, the travel training program would cost approximately \$220,000 per year. While it is not anticipated that the travel training program would initially require all three FTEs, the estimate provides adequate resources should all three FTEs be needed during the first year.

Common Standards for Financial Records

The cost of carrying out this task is primarily related to labor. If a professional is needed to facilitate the workshop an honorarium or consulting fee ranging between \$1,500 – \$5,000 should be adequate for a one or two-day workshop plus preparations.

What is the expected impact on the desired outcomes?

By pursuing relatively easy projects that demonstrate success partners build trust, gain experience working with one another, and begin to identify increasingly beneficial ways to coordinate with one another.

Travel Training

It is estimated that a travel training program consisting of three full time FTEs would have the capacity to train approximately 180 additional individuals per year. This is based on the expectation that one FTE will successfully train approximately five individuals per month. Recent research into the costs and benefits of travel training programs suggests benefits of travel training accrue at a benefit/cost ratio that is between 1.5 and 4. The combined effect of increasing traveler

awareness and independence while also reducing the overall cost of HST services is highly aligned with the TCS goals.

Common Standards for Financial Records

Common standards for financial record keeping can enhance coordination in a number of ways:

- **Accountability:** Agencies that have a full picture of their costs are better prepared to accurately account for program expenditures. Improved accountability enables agencies to advocate more confidently for resources to expand their work.
- **Consistent tracking:** Multiple providers working within a coordinated network can more consistently track comparable costs. Consistent tracking allows for comparability of costs among multiple providers.
- **Improved decision making:** Agencies using full cost accounting can highlight the true cost of providing transportation services which aids decision making at all levels.
- **Confident rate negotiations:** Provider agencies receive consistent and high quality data on costs and service when negotiating rates. Agencies using common rules for tracking financial measures can pave the way toward building and understanding the reporting requirements that would accompany a higher level of coordination.

COMPONENT 3: PROVIDE ELECTRONIC DATA INTERCHANGE CAPABILITY WITHIN IT SYSTEMS

Component 3 is relatively simple. The concept is to provide support for exchanging data between HST providers. This is accomplished by coordinating customer intake and scheduling functions through electronic data interchange (EDI) capabilities.

How will the model actually work?

The EDI concept operates at two levels. First, electronic data exchange is enabled for customer intake facilitating a warm referral process that includes secure exchange of customer data between two or more HST providers. This is accomplished through the establishment of common data formats that can be transferred securely and electronically between providers during the intake process. In connection with this, agencies are also equipped with phones that are capable of making an attended call transfer. Second, and later in the lifecycle of a trip request, electronic data exchange facilitates visibility of available capacity and demand to facilitate trip swapping and ridesharing among multiple HST providers. This is accomplished through the creation of a shared, secure database that HST providers can use to post trip requests and available capacity.

The warm referral capability of the system allows agencies to achieve a one-call outcome for customers without consolidating call center functions. Customers who initially call the wrong number can be quickly transferred to the correct organization along with any information they have already provided during the initial intake call. The trip exchange database enables agencies to identify opportunities for improved capacity utilization, thus facilitating the goal of shared vehicle capacity among multiple HST providers.

The recommendation is for DRMAC and a small number of partner providers to collaboratively develop and/or procure functional software that operates at the proof of concept level³.

Options for Software Development/Procurement

There are several basic options for developing and/or procuring software. Commercial off-the-shelf software (COTS), if available and appropriate for the needs identified can be licensed from a wide range of software vendors. Procurement of COTS software often includes an up-front licensing fee and fees for initial configuration, plus on-going maintenance and upgrade fees.

If COTS software is not available, is too expensive, or does not meet the identified needs, organizations have the option of hiring a developer to build a custom application. When doing so, the organization hiring the developer can either own the license, thereby securing ownership of the source code, or can license the software from the developer thereby securing temporary rights to use the software.

As an alternative to COTS or custom development, there is a growing body of open source software available to meet a variety of needs. Open source software is a term used to describe a variety of software products that are licensed to facilitate free distribution of the underlying source code. In recent years open source software has become more common in publicly funded information technology projects where public investments are made in source code and the

³ Proof of concept means the software and related systems are developed to a sufficient level of basic functionality to demonstrate feasibility in a real-world operational context.

sponsoring organizations wish to protect the source code for a public purpose. Because the underlying source code is easily transferable, the procurement mechanisms are different for open source software compared to COTS or custom built software.

Open source software is often referred to as “free,” but this is a misnomer. While the license may allow for un-paid use of the source code, open source software – especially newer applications – often require specific adaptations in order for it to meet the needs of individual users. Furthermore, maintenance of open source software often is handled by a community of developers and users. The community is expected to contribute to the on-going care and feeding of the system. The total cost of ownership of open source software, therefore can include up-front development costs for adapting source code to meet local needs plus on-going maintenance costs to contribute to the upkeep of the system. These costs are often (but not always) lower for open source projects compared to proprietary COTS systems because the costs are shared, much of the work is done on a volunteer basis, and contributions tend to be more agile with less overhead.

Of course, like many things, the actual costs depend on the actual situation. At present there are a limited number of open source offerings available for the HST market, so any open-source effort would likely require a degree of custom development.

A small number of developers and policy makers are working on advancing open standards in the HST industry. Over the long-term, open source software promises to provide increased reliability, reduced cost, and improved performance of HST systems. However, the decision to pursue open source software is often both a practical decision and a philosophical decision.

COTS software exists in a variety of fields to perform the desired functions identified for Component 3. It is recommended that DRMAC develop a flexible RFP for which COTS, custom development and open source solutions are permitted. To preserve this flexibility both now and in the future it will be important to specify that all systems utilize open data formats so that information can be freely shared between systems as they are developed over time.

Which stakeholders will be involved at what levels?

It is recommended that the TCS working group identify a task leader with the technical and staffing capacity to carry out the work of overseeing the procurement. In addition to the task leader, an advisory committee should also be assembled consisting of a sub-set of the TCS steering committee – presumably the same individuals and organizations who served on the Component 3 working group.

In terms of actual use and implementation, the system should be open for any agency that is interested in participating.

However, component 3 should be carried out as a proof of concept effort among a small number of organizations for which a clear benefit is expected from participating. Based on participation in the Component 3 workgroup and the opportunities identified so far, this could include, but is not limited to SRC, Via, Broomfield, selected CnR routes, and First Ride.

What action steps are needed and in what order?

The first step is to determine which organizations will be involved and what aspects of their services areas will be included.

Concurrent with selecting the organizations and services, the task leader should begin developing the RFP and refining the system requirements. The scope of the TCS project limited the systems

engineering work to the highest level requirements. Additional detail will be needed to ensure the RFP captures the most important requirements of the participating organizations. As the RFP is prepared, the task leader should work with its funding partners to clarify any specific requirements relating to the procurement.

Procurement should be carried out with input from the participating organizations. As cited above, it is recommended that the procurement be open to a wide range of solutions including COTS, custom development and open source.

The proposals received will guide much of the remaining steps for detailed systems design, implementation and testing. However, the TCS committee will need to ensure that evaluation of the system performance is carried out.

What is the timeline for implementation?

Selection of pilot sites, refinement of requirements, and development of the RFP should be feasible within a 4 – 8 month period beginning immediately.

Procurement of developer/vendor support will be subject to local procurement rules, but can reasonably be expected to take 2 – 3 months beginning after the RFP is distributed.

Detailed systems design, implementation and testing will depend on the amount of custom development required. It is reasonable to expect this portion of the project to span a 6 – 12 month period.

Once the system is up and running (potentially 18 months from now), evaluations should be carried out on a regular basis for the first year. A full written review should be published after 12 months of operations.

What technology is needed?

The technical requirements are specified in Appendix A.

What is the estimated budget for each step?

Shared intake and referral

The cost of the shared intake and referral software is not known. Since this system is not expected to reduce costs, it is not possible to calculate its value in a similar way to that which is used below for the Trip Exchange Database.

Trip exchange database

The total cost for procuring the trip exchange database depends in part on the type of software procured. As indicated above, it is recommended that DRMAC and its partners use an RFP that invites a wide range of software types. While this will help to ensure innovation and cost effectiveness, it also introduces a degree of uncertainty regarding cost. Given this uncertainty, the budget is based on an estimate of the value of the system rather than its cost. In other words, since we don't know what the system will cost, we are estimating what DRMAC and its partners should be willing to pay based on the benefits of system.

The method used is based on the financial benefit of coordinating trips. It is calculated by multiplying the number of trips expected to be coordinated by the current marginal cost of providing trips. This figure is then translated into an equivalent "total cost of ownership" dollar amount by multiplying the annual benefits by the system's expected useful life. This amount can

be compared to the total cost of ownership – including license and setup fees, maintenance fees, training costs, additional labor for administration, and replacement costs – for any particular software type.

Using data from SRC and First Transit, geospatial analysis was used to estimate the total number of trips that could potentially be coordinated. Spatial and temporal data was used to produce a video animation of trip origins and destinations grouped into 15-minute segments. The data was visually surveyed to identify trips traveling in the same direction at the same time of day with origins and destinations near one another. Figure 2 is a screen shot from the animation displaying trips during the peak hour. Green lines represent SRC trips and red lines display First Ride trips. Red squares indicate drop offs to signify direction of travel. Applying this method to data from the week of August 6, 2010, it is estimated that SRC and First Ride could potentially coordinate approximately 8 - 10 trips per day.



Figure 2. Snapshot in time: Spatial and temporal overlap of HST trips

According to financial data provided for this project, SRC has a marginal cost⁴ of approximately \$16 per trip. First Ride did not provide financial data, but it is not unreasonable to expect that First Ride’s marginal cost is close to SRC’s for the same service. Assuming a marginal cost per trip of \$16 and assuming a 250-day operating year, this level of coordination would indicate financial benefits in the range of \$32,000 - \$40,000 per year (8 to 10 trips per day × \$16 per trip × 250 days per year). If the system has a useful life of 5-years, DRMAC and its partners should pay no more than \$160,000 - \$200,000 for the equivalent total cost of ownership for any given system. Any amount less than this would generate net benefits for the participating agencies.

The following table can be used to estimate the value for higher levels of coordination, should additional agencies participate, or should higher levels of coordination be expected.

Table 4. Estimated Total Cost of Ownership and Benefits Required to Breakeven

Total cost of Ownership	Annualized Value	Daily Coordinated Trips Required to Breakeven
\$750,000	\$150,000	38
\$600,000	\$120,000	30
\$450,000	\$90,000	23
\$300,000	\$60,000	15
\$150,000	\$30,000	8

What is the expected impact on the desired outcomes?

The shared information and referral system is expected to improve one-call outcomes for customers while decreasing data entry time for providers. While this is not expected to reduce administrative cost for participating agencies, it is expected to improve customer satisfaction.

⁴ Marginal cost is the cost of providing one additional unit of service. It is calculated by dividing variable costs by units of productivity. Examples of variable costs include drivers’ salaries and fuel.

The trip exchange database is expected to increase efficiency and cost effectiveness by improving productivity. Productivity improvements are expected to result from improved visibility of coordination opportunities. Based on the data collected, the two identified agencies could potentially coordinate between 8 – 10 trips per day. Additional participating agencies with similar overlap in service areas would increase this amount.

APPENDIX A:

Concept of Operations for ITS Components

SYSTEM REQUIREMENTS

INTRODUCTION

Between July 2012 and February 2013, DRMAC and its partners carried out a user needs elicitation process to define the requirements of a coordinated transportation system. The results of this work are described in detail in the forthcoming final report of the DRMAC Transportation Coordination System Advisory Project (TCS Project).

The concept, as outlined in the Final Report, is to support a coordinated system of human service transportation programs designed to meet the needs of individual Riders while maximizing the use of available resources. The system is described in generic form in Figure 1, consisting of a variety of processes that are supported by two specific information technology (IT) components.

The IT components include a one-call shared intake and referral system and a trip exchange database. The one-call shared intake and referral system (see Box 1, Figure 1) consists of a coordinated customer intake process supported by secure electronic sharing of customer records. The trip exchange database (see Box 2, Figure 1) enables multiple human service transportation providers to publish unassigned trips and available capacity and to view the unassigned trips and available capacity of other providers to discover ridesharing opportunities.

The scope of this document is to describe the high-level system requirements of the IT components as they relate to the overall coordination system. The purpose of this document is to support DRMAC in advancing system requirements toward the next steps of procurement and implementation. As part of a phased implementation process, DRMAC and its partners have expressed a desire for these technologies to be advanced to a proof of concept level of completion among a selected group of pilot sites. Pilot sites have not yet been identified.

SYSTEM DESCRIPTION

The IT components are part of a series of mutually supportive mobility management activities. During the life-cycle of a human services transportation trip, the proposed coordination system integrates a one-call model for coordinating customer intake and assessment with a system for identifying opportunities for travel training and mobility coaching in advance of the eligibility determination process. The eligibility determination and trip scheduling processes include methods for referring customers to other providers when the customers' eligibility or the providers' requirements or other constraints result in the provider being unable to fulfill the requested trip. The proposed system also provides a method for agencies to compare unmet trip needs and available capacity among multiple providers to discover opportunities for shared trips.

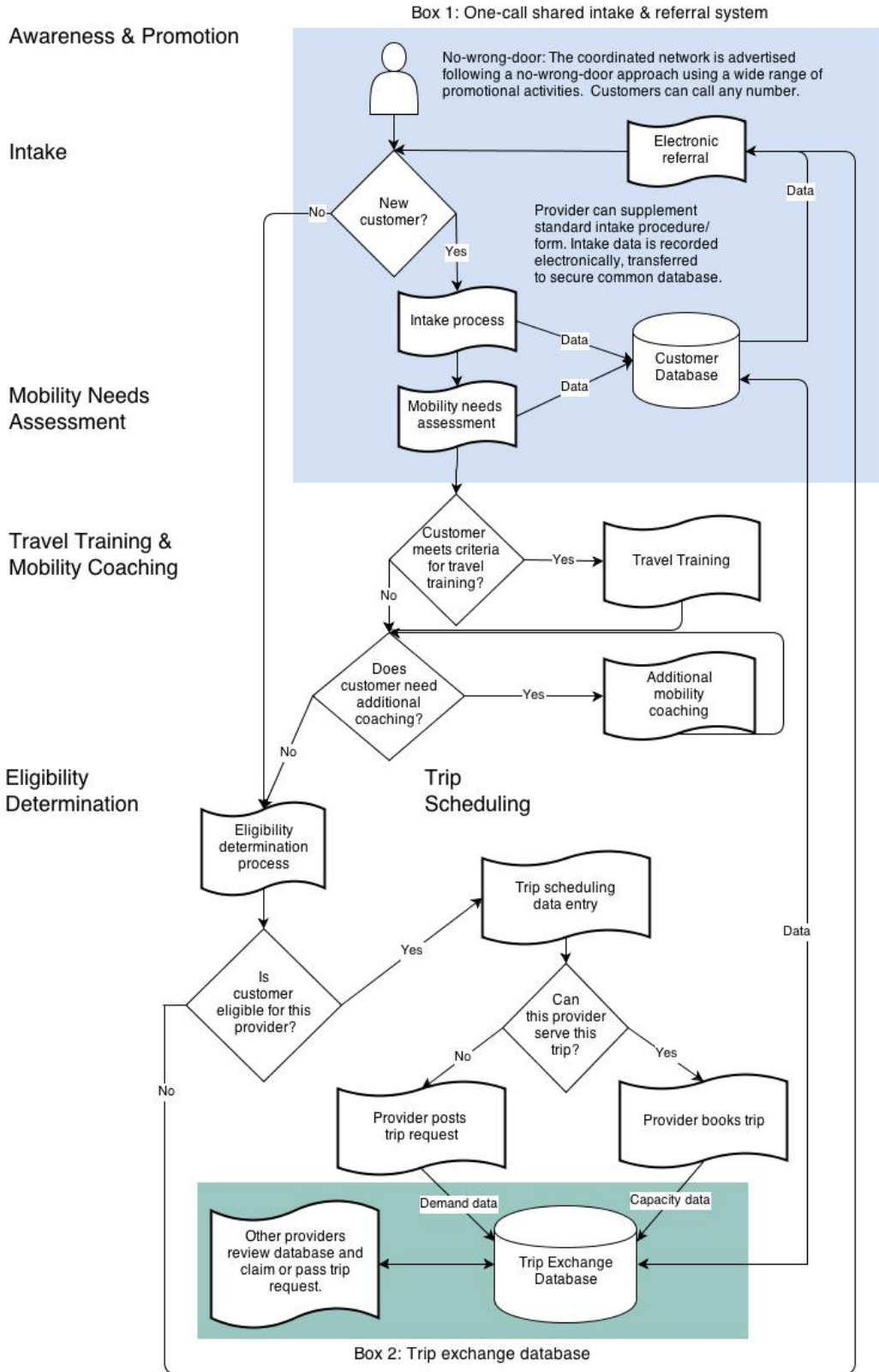


Figure A1. System Diagram

SYSTEM REQUIREMENTS

The following high-level system requirements are described for each of the IT components.

One-call Shared Intake and Referral System

The concept of the one-call model is based on a no-wrong-door approach that allows individual agencies to retain existing intake and referral functions, but enables customers to make a single call to get a ride. This is accomplished through the use of attended call transfers between agencies and secure electronic sharing of records.

Attended call transfers

- Each entity participating in the coordinated system shall have the ability to carry out an attended call transfer.

Secure electronic data sharing

- To reduce duplication in the intake process, the system shall enable the referring entity to share customer intake data securely and electronically with other providers.

Data

- As part of a related component of the TCS project⁵, a workgroup has been established to collect information and forms used by existing human services transportation providers as part of their intake processes. These forms will provide the data needed for development of a common intake process.

Trip Exchange Database

The concept of the trip exchange database is to facilitate coordination of trips that individual agencies are unable to perform. This is accomplished by allowing multiple providers to post unmet passenger trip requests alongside confirmed vehicle runs with empty seats. The proposed exchange database could then be used match unmet demand with available supply.

Administrative Rules

Given the wide range of operating environments, scheduling processes and performance expectations among providers, users of the system will need to conform to agreed upon rules for interfacing with the system. These rules include data standards and standards for the ways in which providers transact with the system.

To ensure compliance with existing regulatory standards and to maintain flexibility in adapting the system to an evolving coordination process, the system will need to be governed by

⁵ The TCS project identifies three independent, but mutually supportive components of a regional coordinated transportation system. Component 1 focuses on administrative and funding structures, component 2 focuses on regional supports, shared resources, and capacity building, component 3 focuses on information technology. The component 2 workgroup is taking the lead in collecting intake forms for use in evaluating a shared intake process.

operational policies derived from its users. Furthermore, the system will need to be flexible, enabling the system administrator to implement on a recurring basis changes to the rules.

- The system shall permit the system administrator to specify and change as needed the minimum and maximum number of days or hours in advance of a trip pickup time users are permitted to post, claim, withdraw, and complete a new trip request.
- The system shall contain an application programming interface (API) or similar mechanism allowing the system administrator to customize administrative rules governing the exchange system.

Users and User Classes

- The system shall recognize a system administrator that has editing privileges for modifying administrative rules.
- For each provider, the system shall recognize a class of users consisting of provider administrators, schedulers, viewers and drivers that each belong to a unique provider entity.

Functions

The system shall:

- Permit schedulers and administrators to post unlimited trip requests according to administrative rules defined by the system administrator.
- Permit schedulers to claim trips posted by other providers.
- Feature a method for comparing one or more trips from one provider to one or more trips from other providers to automatically make recommendations for optimized ridesharing given spatial, temporal, regulatory and vehicle capacity constraints.
- Permit viewers to view the data of their own trips and those of approved providers.
- Integrate with on-board vehicle hardware to enable drivers to indicate trip completion electronically and in real-time.

Security

- The system shall allow the system administrator to assign user classes among providers.
- The system shall allow the provider administrator to assign user classes within its own user group.
- The system shall allow each provider administrator to maintain a whitelist of other providers that are permitted to their view trip requests.
- The system shall transfer, store and backup data using encryption.
- The system shall authenticate users following a widely accepted authentication standard.
- The system shall log changes in the data to facilitate change auditing.

Data

The system vendor shall work with DRMAC and the pilot sites to develop appropriate attributes for classes that describe trip requests, trip claims and trip confirmation. Attributes anticipated for each class include but may not be limited to:

- **Trip Request:**
 - Unique customer ID for exchange system
 - Unique customer ID for provider system
 - Unique customer ID for funder system (name value pair)
 - Pickup Time
 - Dropoff Time
 - On-time window
 - Scheduling priority
 - Origin
 - Geo Location (Lat, Long)
 - Street Address
 - City
 - State
 - Zip
 - Notes
 - Destination
 - Geo Location (Lat, Long)
 - Street Address
 - City
 - State
 - Zip
 - Notes
 - Asking Price (what is requester willing to pay for claimer to claim trip)
 - Funding Source
 - Mobility Needs (from mobility assessment or other source)
- **Trip Claim**
 - Provider ID
 - Service type description/ID
 - Mobility equipment
 - Proposed pickup time
 - Proposed dropoff time
 - Bid Price (price claimer is willing to accept for providing trip)
 - Notes
- **Trip Confirmation**
 - Odometer start
 - Odometer finish
 - Actual Pickup time
 - Actual Dropoff time
 - Payment method

- Notes
- **Providers**
 - Provider type
 - Other characteristics
- **The system shall store data in a format that is easily retrievable by external systems through standard data transfer formats.**

APPENDIX B:

Transit Systems Survey Results

Table 5. Transit Systems Survey Results

	To The Rescue	RTD Access-a-Ride and Call-n-Ride	Via Mobility Services	City and County of Broomfield	SRC - Urban	A Little Help	DRMAC	First Ride	Town of Castle Rock
Who is your telephone service provider?	Integra	CenturyLink	Comcast PRI	We use Verizon for our cell phones. The telephones are internet based.	Integra	Phone.com	Integra	CenturyLink	Sprint
How many telephone lines do you have at your location?	6	Many	23	2	8 in transp. 30 more in SRC	2	4	4	1
Do you use Voice Over Internet Protocol (VOIP) phones?	No	Yes	Yes	Yes	No	Yes	Yes	No	No
Does your telephone system allow you to make an attended call transfer?	No	Yes	Yes	Yes	Yes	No	Yes	No	No
How many FTEs (full time equivalents) answer phones for transportation information, referral, intake and/or scheduling at your organization?	2	Many	12	4	3	1	1	2	
Do you have faxing capabilities?	Yes - Standard Fax	Yes - Standard Fax	Yes - Standard Fax	Yes - Standard Fax	Yes - Standard and Fax via email	No	Yes - Standard Fax	Yes - Standard Fax	Yes - Standard Fax
Do you have emailing capabilities?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Who is your internet service provider?	CenturyLink	CenturyLink, RockyNet	Comcast Business Class	I asked IT and didn't get a response--I hope to let you know soon	Integra	Comcast	Integra	?	CenturyLink
What is the bandwidth of your internet connection?	DSL (12Mb)	100 MG	20 Mb Fiber		T 100	?	20/2	?	20 mg
How many computers share bandwidth at your organization?	7	Many	100	20+	All	3	5	4	300
Do you use an interactive voice recognition (IVR) system?	NO! We have a live person answering each phone call.	An IVR system for AaR (and other uses) is now in procurement. CnR may also make use of it after it is implemented.	IVR is used for call routing by pressing the appropriate number in a menu selection	We have a system where we have them press 1 to make a request or press 2 to be forwarded to dispatch.		No	We have the capacity for this but it is not currently set up.		We do not use an IVR system. We use a blackberry for our taxi program that has google voice mail.
Qualitatively, how would you describe the speed of your internet connection?	Fast	Fast	Fast	Medium	Medium	Fast	Fast	Medium	Fast
How do you communicate with your drivers?	Cell Phone, Paper Manifest	Mobile Data Computer (MDC), Tablet Computer, Two-way Radio, Cell Phone	Tablet Computer, Two-way Radio, Cell Phone	Cell Phone, Paper Manifest, Email, and in person meeting	Two-way Radio, Cell Phone, Paper Manifest	Cell Phone	N/A	Two-way Radio, Paper Manifest	Cell Phone, Smartphone, Paper Manifest

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	To The Rescue	RTD Access-a-Ride and Call-n-Ride	Via Mobility Services	City and County of Broomfield	SRC - Urban	A Little Help	DRMAC	First Ride	Town of Castle Rock
Which of the following best describes your scheduling process?	1 - 2 day advance notice - we require at least 24 hours advance notice for all trip requests	Real-time scheduling - we take calls up to the day of the trip	Real-time scheduling - we take calls up to the day of the trip	Requests must be made by 3pm the business day before, but we try to accommodate them day of if need be.	2+ business day advance notice is preferred - we require more than 2 hours advance notice for same-day rides	1 - 2 day advance notice - we require at least 24 hours advance notice for all trip requests	N/A	2+ day advance notice - we require more than 2 days advance notice	1 - 2 day advance notice - we require at least 24 hours advance notice for all trip requests
Do you use a computer aided scheduling system?	No.	AaR - RouteMatch CnR - MobilityDR	RouteMatch - We have the paratransit scheduling module and the AVL module	We use Microsoft Access to schedule our transportation. An ex-employee created the program within Access.	RouteMatch TS - SRC is working towards mobile data, should be in place within 60 days.	We have been using Serality to look up volunteer interests/availability and are switching over to Volgistics.	No	Route Match	no
Do you use route optimization within your scheduling system?	No	Yes	No	No	Yes	No	N/A	No	No
Manual Systems	The person scheduling the trips uses MAPQUEST or GOOGLE MAPS to help determine distance and time it takes the drivers to travel and respond.			We use Microsoft Access to schedule our transportation. An ex-employee created the program within Access. It does have the ability to do some things automatically (like be sure that a client is on there every Monday, Wednesday, Friday) but we have to manually put in the times for pick ups/schedules.	In the volunteer component, we are posting trips to drivers on Google docs		N/A		We schedule rides on a first come first serve basis. We try to get as close to the time the rider requests as possible. We schedule rides so one vehicle can handle the load.
Which of the following hardware components are currently used on-board in the day-to-day operations of your agency's passenger vehicles:	Driver has Cell Phone	Global Positioning System (GPS), Mobile Data Computer (MDC), Tablet Computer, Mobile broadband wireless internet (3G/4G, etc), Two-way Radio, Driver has Cell Phone	Global Positioning System (GPS), Automated Vehicle Location (AVL), Mobile Data Computer (MDC), Tablet Computer, Automated Passenger Counter (APC), Mobile broadband wireless internet (3G/4G, etc), Two-way Radio, Driver has Cell Phone, Farebox, Annunciator, Electronic Passenger Information Signage	Driver has Cell Phone	Two-way Radio – MDC will be added 6/1/13		N/A	Two-way Radio	Driver has Cell Phone, Driver has Smartphone

APPENDIX C:

Resources for Developing Common Standards for Financial Records

RESOURCES FOR DEVELOPING COMMON STANDARDS FOR FINANCIAL RECORDS

INTRODUCTION

The following resources are offered as part of the Transportation Coordination System (TCS) project to assist DRMAC and the Regional Coordination Supports Workgroup in developing common standards for financial record keeping. The information is provided as a starting point for a discussion among interested providers and partners to explore changes to the way agencies currently track and record financial information.

Common standards for financial record keeping can enhance coordination in a number of ways:

- **Accountability:** Agencies that have a full picture of their costs are better prepared to accurately account for program expenditures. Improved accountability enables agencies to advocate more confidently for resources to expand their work.
- **Consistent tracking:** Within a coordinated network, consistent tracking allows for comparability of costs among multiple providers.
- **Improved decision making:** Full cost accounting helps to highlight the true cost of providing transportation services which aids decision making at all levels.
- **More confident rate negotiations:** Consistent and high quality data on costs and service gives provider agencies confidence when negotiating rates.
- **Paving the way toward enhanced coordination or consolidation:** Establishing common ground for tracking financial measures can serve as a first step toward building an understanding the reporting requirements that would accompany a higher level of coordination.

What is meant by “common standards for financial records?”

“Common standards” refers to a consistent method used by multiple agencies to estimate, report, track and record transportation costs. Consistency does not require all agencies to have identical procedures. Rather, consistency involves establishing common ground rules for determining what is and is not included in the calculation of standard financial measures for estimating and reporting transportation costs within a network of providers. Individual agencies can continue to report on metrics unique to their organization while also organizing reporting efforts to correspond with an agreed upon framework for services that are coordinated.

Resources

Several tools are offered to kick off the TSC workgroup effort for evaluating common standards for financial records:

- Part 1: Chart of Accounts
- Part 2: Important Terms and Concepts
- Part 3: Service Data

- Part 4: Performance Measures
- Part 5: Performance Evaluation
- Part 6: Cost Allocation Resources

PART 1: CHART OF ACCOUNTS

The following chart of accounts highlights the major expense categories that are typically tracked as part of a transportation program. This list was developed using several charts of accounts provided in recent literature relating to cost allocation supplemented with line items from the National Transit Database financial input forms.

This list can be used as a comparison against the existing budgets for participating providers. Any line items that are not included in participating agencies' budgets can be flagged as a potential area where full costs are not being counted.

1. Expenditures

1.1. Operations and maintenance

1.1.1. Salaries

1.1.1.1. Drivers salaries

1.1.1.2. Dispatcher, scheduler, and other non-driver, non-admin salaries

1.1.1.3. Mechanic salaries

1.1.2. Fringe benefits

1.1.2.1. Drivers fringe

1.1.2.2. Dispatcher, scheduler, and other non-driver, non-admin fringe

1.1.2.3. Mechanic fringe

1.1.3. Contracted vehicle maintenance

1.1.4. Materials and supplies

1.1.4.1. Fuel and lubricants

1.1.4.2. Tires and tubes

1.1.4.3. Other parts and supplies

1.1.5. Vehicle licensing and registration

1.1.6. Other materials and supplies (non-maintenance)

1.1.7. Professional services (legal, computer, etc)

1.1.8. Purchased transportation (taxis, bus fares, contracted service, etc)

1.1.9. Vehicle insurance

1.1.10. Vehicle leases and rentals

1.1.11. Maintenance facility rent/lease

1.1.12. Vehicle depreciation

- 1.1.13. Donated/contributed labor/services
- 1.1.14. Advertizing
- 1.2. Administrative
 - 1.2.1. Labor
 - 1.2.2. Fringe
 - 1.2.3. Professional services (legal, computer, etc)
 - 1.2.4. Materials and supplies
 - 1.2.5. Utilities
 - 1.2.6. Insurance
 - 1.2.7. Miscellaneous expenses
 - 1.2.8. Dues and subscriptions
 - 1.2.9. Travel and meetings
 - 1.2.10. Taxes
 - 1.2.11. Non-vehicle depreciation
 - 1.2.12. Rental of real property
 - 1.2.13. Equipment leases
 - 1.2.14. Other indirect administrative overhead and central services
- 1.3. Capital Outlay
 - 1.3.1. Furniture and equipment
 - 1.3.2. Technology
 - 1.3.3. New construction and land purchase
 - 1.3.4. Vehicle replacements
 - 1.3.5. Expansion vehicles
 - 1.3.6. Maintenance equipment
 - 1.3.7. Facility acquisition and improvement

PART 2: IMPORTANT TERMS AND CONCEPTS

As a first step in the process of establishing common standards for financial record keeping, there are some basic accounting concepts that will be helpful.

- **Direct costs:** Direct costs are those costs that are directly caused by a particular activity. The salaries of bus operators are a good example of a direct cost: bus drivers are directly linked to the activity of providing transportation.

- **Indirect Costs:** Indirect costs are costs that cannot be directly linked to a particular activity in an economically feasible way⁶. Administrative salaries are a good example of indirect costs. An organization that is involved in transportation will inevitably consume some portion of the Executive Director's time, probably in small increments throughout the year. But these units of time are often difficult to link to a specific unit of transportation service. For simplicity, accountants refer to these kinds of costs as indirect costs.
- **Fixed-Costs:** Fixed costs are costs that do not change with respect to the level of production. A transit system that provides 100 vehicle miles will require some base-level of administrative facilities and fixed overhead that does not change if the agency increases service to 150 vehicle miles.
- **Variable Costs:** Variable costs are costs that change with respect to the level of production. Fuel is an excellent example of a variable cost. A transit service that provides 100 vehicle miles will have an annual fuel bill proportionate to that level of service. If the transit service increases service to 150 vehicle miles, the fuel bill will increase by 50 percent. Direct costs are almost always variable costs.
- **Cost Allocation:** A process referred to as cost allocation is used to assign indirect costs to specific services for the purpose of evaluating performance, aiding decision making, and generating cost-sharing agreements between organizations. Cost allocation is a multi-step process of (1) accumulating cost data for a specified period of time and expressing costs in meaningful cost categories (line items that are meaningful to transportation decision making and evaluation), (2) classifying cost categories into variable and fixed cost classes, (3) assigning a cost driver or other basis of allocation for each cost category (e.g. hours, miles, etc.), (4) dividing past-period cost categories by units of output from the same period (e.g. hours, miles, etc.), and (5) estimate allocated costs by multiplying future expected units of output by estimated basis of allocation unit rates.

PART 3: SERVICE DATA METRICS

In addition to financial data, service and performance data will also be needed to measure success. As a starting point, the workgroup might consider collecting the following information for each service within the coordinated system:

Service Quantity

- **Ridership** – Ridership is defined as unlinked passenger trips. An unlinked passenger trip is an individual leg of any given multi-modal journey. A passenger who rides a bike to the bus, rides the bus to the transit transfer center and boards a second bus to travel to the final destination performs two unlinked passenger trips on a transit vehicle: one for the ride to the transit center, and one for the ride from the transit center to the final destination. Each boarding counts as a single unlinked passenger trip.

⁶ With enough effort any cost can be linked to an activity, but the effort required to collect data often outweighs the benefit of doing so.

- Revenue miles – Revenue miles are the vehicle miles performed by a transit service while operating in passenger service. Deadhead miles – miles of service performed when passengers are not allowed to enter the vehicle – are not included.
- Revenue hours – Revenue hours are corresponding hours of service performed while a vehicle is in revenue service.
- FTE by job class – The Full Time Equivalent of each job classification listed in the budget should be included for assessment of labor utilization and effectiveness.
- Vehicles – Vehicles available in maximum service and vehicle operated in maximum service are two important measures for determining the available capacity and efficient utilization of a transit service. Average age of fleet is also important. Each agency should maintain a fleet roster listing the vehicle identification number, year purchased, purchase price, odometer reading at purchase, current odometer reading, passenger capacity, wheelchair capacity, presence of lift/ramp or other accessibility equipment, and remaining useful life.

Service Quality

In addition to information about the amount of service provided, the following service quality information can also be collected:

- Travel time
- On-time performance
- Customer complaints, grievances and commendations
- Customer satisfaction ranking
- Accidents and safety record
- Service Coverage
- Service Gaps
- Service span

PART 4: PERFORMANCE METRICS

Using the service cost, service quantity and service quality data, a broad range of performance measures can be calculated. Year-to-year comparisons can be made to evaluate progress. Peer comparisons can be made for benchmarking and planning purposes. Common performance statistics include:

- Cost per mile, hour, trip
- Subsidy per mile, hour, trip
- Trips/hour
- Trips/capita (including per capita measures for specific populations)
- Accidents per 1,000 revenue miles
- Maintenance cost/mile

- Maintenance cost/vehicle
- Vehicle insurance cost/vehicle
- Administrative cost/total cost

PART 5: PERFORMANCE EVALUATION

MAP-21 emphasizes a performance-based planning framework for all future transportation investments. This represents an opportunity for mobility management programs to leverage common financial reporting standards as part of a performance based planning and evaluation framework.

Figure 1 provides an overview of a typical performance-based planning framework. The objective of a performance-based planning framework is to link desired outcomes defined through a visioning/planning process to measurable goals and objectives which are then translated into strategic investments and implementations. Implemented programs and services are then evaluated based on their contribution to the goals and objectives.

DRMAC's efforts to develop a common language for recording and tracking financial information can serve as a natural point of departure for development of a robust performance-based approach to implementing mobility management programs.

Figure C1. Performance-Based Planning Cycle



PART 6: OTHER RESOURCES

An excellent resource was published by the Louisiana Department of Transportation showing various methods for developing and applying a cost allocation model for public transit services:

- Applied Technology Research Corporation, Alliance Transportation Group, LKC Consulting Services (2003). *Cost Allocation Workbook: A Cost Allocation Model for Louisiana Transit Operators*. Louisiana Department of Transportation and Development. <http://www.dotd.la.gov/intermodal/transit/publications/Cost%20Allocation%20Workbook-2003.pdf>. Accessed July 31, 2012

In addition, the Transit Cooperative Research Program recently published a report on methods for structuring cost sharing agreements among human service transportation programs:

- Burkhardt, J. E., et al. (2011) *Transit Cooperative Research Program Report 144: Sharing the Cost of Human Services Transportation*. Volume 1: The Transportation Services Cost Sharing Toolkit. Transportation Research Board, Washington, D.C.
http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_144v1.pdf. Accessed July 31, 2012

APPENDIX D:

Technical Memoranda



MEMORANDUM

To: Angela Schreffler, Executive Director, DRMAC
From: Ross Peterson, Nelson\Nygaard Consulting Associates
Date: July 17, 2012
Subject: Transportation Coordination Systems Advisor - Technical Memo # 1

PURPOSE

This is the first of several brief technical memoranda for the Transportation Coordination Systems Advisor Project. The purpose of this memorandum is to prepare the consultant in advance of the project kickoff meeting scheduled for July 23, 2012. Issues related to need for this project have been evaluated, background documents have been reviewed, and a number of early reflections and recommendations have been developed. A brief presentation of these insights will serve as a launching point for the project kick off meeting discussion.

BACKGROUND

Transportation and coordination issues have been an on-going focus in the Denver Metropolitan Region. A transportation summit in 2000 hosted by the Rose Community Foundation identified a number of needs relating to a growing population of seniors in areas with limited access to transportation services.

Following this summit, the Rose Community Foundation partnered with the HealthONE alliance to sponsor the Getting There Collaborative which culminated in the development of an assessment of transportation needs and an action plan to advance coordination.

Recent work has focused on implementation of key concepts from prior planning efforts including implementation of a centralized information and referral program and an assessment of the transportation service support program sponsored by the Denver Regional Council of Governments (DRCOG).

DOCUMENT REVIEW

The following documents were reviewed:

- Executive Summary Transportation Summit Research & Final Report, Rose Community Foundation, November 2000
- Getting There: Analysis of Colorado's Human Service and Public Transportation Networks, Rose Community Foundation and HealthONE Alliance, Fall 2005
- Longmont Coordinated Service Presentations, VIA and RTD, October 2010
- Evaluation of DRCOG Area Agency on Aging Transportation Service Support Program, BBC Research, December 2010

- Provider & Rider Survey Results, DRMAC, February 2011
- Contact Center information gathering and planning meeting notes, DRMAC, February & March 2011
- Contact Center Work Plan, DRMAC, January 2012
- Cross County and Long-Distance Trips Coordination, DRMAC, January 2012
- DRMAC Bylaws, DRMAC, June 2012

REFLECTIONS & RECOMMENDATIONS

The following reflections and recommendations are offered in response to the background materials reviewed.

Terminology: The term “call center” has taken on a number of different meanings for various groups in various contexts. The term has also been used extensively in a number of the planning documents and efforts. In many respects, the “call center” term has become a pseudonym for the larger coordination framework. The consequence of this is a confusion of what the problem is and what the appropriate solutions could be. The use of this term as a pseudonym for coordination places the technology cart before the horse. Good planning practice dictates that the problem should drive the solution. Yet when the term “call center” becomes so ubiquitous, the call center solution becomes the driving force behind the effort. It is recommended we use the term “Coordination System” to convey a more neutral description of what is needed.

Accurate cost/benefit analysis is needed: The various reports do not demonstrate how the recommended call center with centralized scheduling and dispatch achieves the desired outcomes. We agree that a centralized call center with scheduling and dispatching capabilities could improve operational efficiencies, but a more detailed assessment of costs and benefits is needed to show how. A cost analysis that evaluates the marginal costs of each agency performing these functions as well as the financial and operational implications of consolidation is needed to show expected costs and benefits.

Performance-based design and planning framework is needed: Decisions should be based on a framework that links expected outcomes from a range of potential alternatives with desired outcomes elicited through a user needs identification process. The recommended performance measures identified below can serve as a starting point for this framework. Furthermore, the materials generated over the past decade can serve as a basis for documentation of user needs. Based on our review of these materials it appears riders needs are well defined but more specificity is needed to define the desired outcomes of providers and trip sponsors.

Desired outcomes for providers and trip sponsors need more specificity: Many of the documents have sought to define how the system should operate, but the high-level systems planning work seems to be incomplete. In particular, DRMAC and its partners would benefit from a clearer definition of their objectives in pursuing an improved coordination system. Prior documents have addressed a need for efficiency but the specific measures for determining efficiency have not been identified. For example, what does the “right ride” mean from the providers and trip sponsor’s perspective? The tradeoffs associated with efficiency also need to be made clear. Namely, measures relating to service quantity and quality also need to be specified.

Three measures are recommended:

- **Cost savings:** The coordination system shall achieve a net reduction in unit costs (cost per trip, cost per hour, or cost per mile) that can be reinvested to increase service and quality.
- **Service Quantity:** The coordination system shall maintain or increase the amount of service provided as measured by trips, service span, geographic coverage, and service types.
- **Service Quality:** The coordination system shall increase or maintain the quality of transportation programs as measured through customer satisfaction surveys, safety records (accidents per 1,000 revenue miles), and the availability of reliable information.

More models are needed: The BBC study recommends a single call center based primarily on the emergence of practices in two regions: UDOT's call center pilot project in Salt Lake City, Utah and Kent County's call center in Grand Rapids, Michigan. However, UDOT's example should probably not be considered a "best practice" because it has not actually been implemented.

The concept envisioned for the Denver Region is also quite different compared to the Wasatch Front pilot project. The UDOT sponsored call center would be operated by the Utah Transit Authority whereas the DRCOG study did not address whether or not RTD services would be consolidated (see comment below about the need for more partners). Comparing the two efforts, therefore is not an apples to apples comparison.

An informal survey of principal planners in Nelson\Nygaard's Paratransit and Accessible Community Transportation division identified only one other known region that consolidates scheduling and dispatch functions within a single call center (Buffalo, New York). Most other highly successful coordination systems with consolidation of call center functions (Access in Pittsburg, Pennsylvania and Ride Connection in Portland, Oregon, for example) maintain a decentralized scheduling and dispatch framework. While it may be true that some agencies are able to generate savings and other performance improvements through consolidation of information, referral, scheduling and dispatch functions, there is little evidence that these practices can be considered "best practices" without further performance data supporting this claim. Other models including brokerages, and decentralized coordination functions have also shown equally compelling results compared to the UDOT and Kent County cases and should also be considered.

More partners are needed. Consolidated scheduling and dispatch functions have a greater potential for success when a large number of services are coordinated. Limiting the scope of such a service to just the AAA providers may not generate the desired outcomes.

We expect (and this needs to be tested through cost/benefit analysis) that in order for a consolidated system to yield the desired results, several of the larger partners will need to be involved in the discussion including RDT and potentially the state's broker for non-emergent transportation services.



MEMORANDUM

To: Angela Schreffler, Executive Director, DRMAC
From: Ross Peterson, Nelson\Nygaard Consulting Associates
Date: September 20, 2012
Subject: Transportation Coordination Systems Advisor - Technical Memo # 2:
Stakeholder Interview Summaries

PURPOSE

This is the second of technical memoranda for the Transportation Coordination Systems Advisor Project. The purpose of this memorandum is to summarize the agency and focus group interviews.

AGENCY INTERVIEWS

DRCOG

Date: July 23, 2012
Location: DRCOG Offices
Attendees: Chandra Matthews, Jayla Warren

Overview

DRCOG is a membership organization with 56 member organizations consisting of cities and counties. DRCOG serves as the Denver area Metropolitan Planning Organization and Area Agency on Aging. It has served as the regional AAA for 37 years.

The AAA program passes 85 to 90 percent of funds to local providers, serves as an ombudsman for the region, and hosts the regional Aging and Disability Resource Center (ADRC).

The AAA reports to an advisory committee (the ACA) and the DRCOG board (56 mayors and commissioners).

Services are procured through a request for proposals issued on a two-year interval. Evaluation is based on a comparison of cost for providers and the strengths of each proposal in meeting the needs (based on the needs assessment/hierarchy of needs).

Providers are reimbursed on an average cost per trip basis. Reimbursement rates are determined at the beginning of the contract period based on estimates of what the provider thinks the service will cost during the contracting period. Rates range from about \$7 per trip for agencies that provide a large number of group trips in a relatively small geographic area to as high as \$26 per trip for agencies that provide a trips in a large geographic area and have a smaller percentage of group trips.

Challenges & Unmet Needs

One of the current challenges is the perception of redundancy and overlap in services. It is believed that these redundancies (multiple providers covering similar areas) could be inefficient and strategies are needed to improve the efficiency of operations.

There is a need for a strategic business plan that identifies new funding sources and helps to prioritize efforts.

Goals & Desired Outcomes

DRCOG's goals are to help seniors achieve independent living. In support of this goal, the AAA is focused on bringing more resources (diversified funding and partnerships) into the region to help reduce the waiting list. The AAA is focused on serving older adults with the right services in the right setting. The "right" services and setting are determined by customer choice with the goal of placing seniors in the least restrictive setting.

Current Coordination/Successes/Opportunities

Chandra described the history of the DRCOG transportation program leading up to the BBC study. She indicated one of the motivations for a single call center is to reduce administrative redundancy so that dollars could be spent more effectively.

RTD

Date: July 23, 2012
Location: DRCOG Offices
Attendees: Jeff Becker

Overview

Jeff described the Longmont coordination project and shared concerns about what models should be considered for the Coordination Systems project. He raised concerns that a systems approach ought to be used and that concepts of economic incentives and market forces should be recognized in structuring the coordination models. He emphasized the notion of utilizing business rules as part of the coordination system, and to focus on what functions agencies need to coordinate in order to achieve the desired outcomes (including differentiating between sub-functions, including functions within scheduling and dispatch, for example). In addition to a call center/brokerage, he expressed interest in exploring an exchange model (like the stock market) and an auction model (like e-bay). He advocated for differentiating between the various models based on the degree to which coordination is voluntary versus forced.

Senior Resource Center

Date: August 20, 2012
Location: Senior Resource Center Offices
Attendees: Hank Braaksma

Overview

Senior Resource Center operates a modified human service transportation brokerage based in Jefferson County, serving areas in two operating divisions. The Mountain Division, based in Evergreen serves Clear Creek, Gilpin and Park counties. The Urban Division, based in Jefferson County, serves Denver, Adams, Arapaho, and Broomfield via 16 routes. The fleet consists of 13 vans and 3 Toyota Prius sedans. SRC's average cost per trip is currently \$21.52. SRC provides scheduling and dispatch for its own fleet plus scheduling and dispatch for the American Red Cross's 9 vehicles. SRC carries service contracts with American Red Cross, Lakewood Rides, and a local NEMT provider for early morning and evening Dialysis trips).

Challenges & Unmet Needs

Hank noted that the NEMT program's low reimbursement rate has the effect of pushing demand to other providers. He also noted that the full Medicaid apportionment available to the State of Colorado is not matched, which could present an opportunity for providing additional reimbursement for NEMT trips.

Goals & Desired Outcomes

SRC reports a wide range of performance measures. Service quality is the number one factor the SRC board pays attention to, but cost and ridership are also key determinants in the success of the program.

Hank would like to be able to provide service during mornings, evenings, and weekend, but this is not feasible with the funding currently available to him.

Current Coordination/Successes/Opportunities

SRC allows comingling of trips as a way of better utilizing available capacity. SRC also works with neighboring regions to coordinate services. While the existing rate structures (low reimbursement rates) have tended to act as a disincentive to more coordination, SRC has worked with First Ride and others to transport their passengers when it makes sense.

American Cancer Society

Date: August 20, 2012
Location: Telephone Interview
Attendees: Amanda Childs

Overview

Amanda oversees the local implementation of the American Cancer Society's Road to Recovery program which transports patients for cancer treatment using volunteer drivers. Denver's Road to Recovery program is currently the largest in the western United States and provides between 80 – 90 one-way trips per week. Volunteers currently contribute everything that is needed for transportation: the vehicle, time, and cash for fuel. ACS recognizes occasional exemplary service by providing gift cards for nominal amounts.

Challenges & Unmet Needs

The road to recovery program runs out of funding 8 months into the year, each year. Amanda is concerned about meeting growing needs given her current funding situation.

Recruitment and referral are among the top problems facing Amanda's program. Cancer treatment appointments tend to be scheduled during the weekday which makes it difficult to recruit drivers. Recruitment for trips in the downtown area is the most difficult.

Amanda is currently recruiting through ACS fund raising events.

Goals & Desired Outcomes

The goal of the Road to Recovery program is to help people recover and not have to think about transportation.

Success is measured in terms of total number of patients helped. Number of trips, quality of trip, and cost of trip is not closely tracked. ACS's goal is to reach 70% of all newly diagnosed patients. Amanda does not measure service quality directly, but there is a national call-back survey that is conducted by the national ACS. Amanda rarely gets complaints.

Current Coordination/Successes/Opportunities

Amanda is currently part of the DRMAC volunteer driver task force.

DRMAC helps ACS by sharing information and resources and helping patients find rides through the new information and referral program.

Colorado Veterans Affairs

Date: August 22, 2012
Location: CO Veterans Affairs Office
Attendees: Bill Conroy, Ben Mestas

Overview:

Bill and Ben described their program and role in the DRMAC network. Volunteer driver programs are available up and down the front-range. Counties help to administer the Tobacco tax funded veterans programs. Tobacco tax revenue from the Veterans Trust Fund helps to pay for vans which are then operated by volunteers for a variety of non-profits operating along the front-range. The fund provides about \$870,000 per year for a variety of programs – some of which is used for transportation.

Challenges & Unmet Needs:

Funding runs out early each year before the end of the year. The biggest gap is getting veterans to clinical appointments once the funding runs out. The DRMAC information and referral center was believed to be an excellent resource in helping Veterans find rides once the tobacco tax revenues run out at the end of the year.

In reference to the VTCLI program, there is some concern that Veterans are a good way to get funding, but that the focus then turns away from veterans toward other populations once the funds are secured.

Goals & Desired Outcomes:

Total number of trips is the most important factor for the Colorado VA: Veterans just want to get there.

Current Coordination/Successes/Opportunities:

Based on the conversation, it sounded as though the Tobacco tax revenue was not being used to match any transportation funds. This could be an opportunity to leverage those dollars to fill the end-of-year gap.

Via Mobility Services

Date: August 23, 2012
Location: Via Office
Attendees: Lenna Kottke

Overview

Via Mobility Services provides a wide range of transportation programs for the public and for transportation disadvantaged populations primarily in and around Boulder County, but services reach a total of 19 communities and 5 counties. Via's mission is to promote independence and self-sufficiency for people with limited mobility by providing caring, customer-focused transportation options. Via's services are grouped into core-mission services, which include paratransit, travel training and mobility options and individual travel planning services. In 2011, the paratransit program provided a total of 126,142 trips at an average cost of \$29 per trip. In addition to Via's mission services, Via maintains three earned income contracts with regional partners to provide local fixed-route transit (The Hop), ADA mandated paratransit (Access-a-Ride) and flexible general public demand responsive service (Call-n-Ride). Combined, Via's earned income contracts provide over a million annual passenger trips and generate net income in excess of \$500,000 per year.

In addition to these core service, Via also provides a number of community resources including driver training for volunteer drivers of local non-profit agencies; disability awareness, education and advocacy.

Challenges & Unmet Needs

Via's primary challenge is managing to meet the projected growth in demand with flat or declining revenue. Earned income, government and private giving are flat or growing slower than growth in service demand. Evening trips and weekend service are a known unmet need, as are long distance trips, out of county trips and trips between communities.

VIA generally tries not to provide long distance trips on Via service. Care Connection does some long-distance trips. One of the opportunities for coordination is to coordinate long distance trips with Access-a-Ride so that Via can focus on local trips.

Goals & Desired Outcomes

Via's goals for this project are to identify a workable coordination model that takes advantage of the quality and value of Via's existing services. Key desired outcomes include a method for

providers to communicate and coordinate trips between the service areas and to share trips that cross service boundaries.

Current Coordination/Successes/Opportunities

As part of a Wyoming/Colorado Coordination Institute workshop, VIA agreed to pilot a model of exchanging trips. For example, if another provider such as SRC needed to go to boulder, SRC would do the initial trip, but VIA would be able to schedule trips for the SRC vehicle while it was in Boulder. In order to determine whether this would be a good opportunity, VIA kept track of denials, but volume was low, so VIA didn't take it to the next step.

VIA is very interested in and willing to share resources. It's travel training program, for example could easily be expanded to cover a wider region.

VIA is currently brokering trips to yellow cab, volunteer driver programs, and coordinates with more than 30 human service providers.

Via is currently coordinating scheduling and dispatching for its contracted Call-n-Ride service with its local paratransit service. This is accomplished by manually bridging the custom call-n-ride scheduling system with the RouteMatch scheduling interface. The process has enabled Via to increase productivity on both the paratransit services and the Call-n-Ride service. The next step is to coordinate Access-a-Ride, Via paratransit and Call-n-Ride.

First Transit Medicaid Brokerage

Date: August 24, 2012
Location: Telephone Interview
Attendees: Matt Heafner

Overview

First Transit manages the call center brokerage for nine counties surrounding Denver: Arapahoe, Adams, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer and Weld. Services are sub contracted to over 40 local transportation providers. The call center is staffed with 8 – 10 employees plus after-hours service for overnight and patient discharge.

The call center actively works to encourage riders to use the bus or RTD Access-a-Ride. The call center also manages the mileage reimbursement program. The call center receives between 800 – 1,00 calls per day and oversees approximately 25,000 – 28,000 trips per month. 10% of trips are served by fixed-route or Call-n-Ride/Access-a-Ride. Average reimbursement is approximately \$12 per trip

Challenges & Unmet Needs

The biggest challenge in running the NEMT program is a mismatch between customer expectations and state policy: customers expect more than the state allows in terms of service (trip purpose, etc).

Goals & Desired Outcomes

First Transit is accountable for providing the greatest number of trips within the available budget and for meeting service quality standards. CO DHPF encourages First Transit to put as many tris

as possible on RTD to stretch the available NEMT dollars. On-time performance is First Transit's most important service quality standard. First Transit also conducts a customer satisfaction survey.

Current Coordination/Successes/Opportunities

Matt raised concerns about a coordination system that consolidates funding sources, indicating that significant effort would be required on behalf of the sponsoring agencies to coordinate their procurement processes. Matt noted that the limiting factor for coordinating scheduling and dispatch is software (getting the underlying systems to work together). However, he was somewhat dubious about the prospects of an exchange (something like Orbitz/Expedia) because the underlying reimbursement rate is so low it wouldn't be attractive to regional providers.

RTD Access-a-Ride

Date: August 24, 2012
Location: Telephone Interview
Attendees: Larry Buter

Overview

RTD provides paratransit services for the RTD service area. Larry described the contracting and subcontracting history (Dave's Transportation, then Laidlaw, then Atlantic, then a temporary contract with Special Transit, followed by the current model). The current model is a call center brokerage with four sub contractors. The brokerage is run by First Transit (see first transit interview notes), eligibility is provided by Easter Seals and service is provided by:

- MV Transportation – provides approximately half of all Access-a-Ride trips
- Global
- Via
- Coach USA

Operating Statistics Access-a-Ride

- Average Trip Distance: 13 Miles
- Average Travel Time: 37 Minutes
- Carrier On-time-performance (OTP): 95 – 98 % (defined as vehicle arrives within 15 minutes of passenger window).
- Passenger OTP: 82- 88 Percent
- RTD reimbursement rate for contractors is \$29/revenue hour + fixed cost and fuel cost pushes the rate up to about \$50 – 65 (depending on provider)
- Productivity is between 1.2 and 1.3 pax/hour.

Access-a-Cab:

- Subsidy: \$12 (covers about 5 miles)
- Ridership: 400 trips per day

Challenges & Unmet Needs

Passenger don't always understand the role of paratransit: Larry often find himself spending a great deal of time explaining the ADA paratransit mandate and its limitations.

The recession has reduced the available revenue for access-a-ride. Total revenue hours have decreased in recent years. However, access-a-cab has gone up to help mitigate some of the impacts of reduced ADA service.

Access-a-cab has fraud issues; technology could help mitigate these issues.

Goals & Desired Outcomes

Key performance statistics tracked by RTD access-a-ride include OTP, denials and complaints – each of these statistics goes to the RTD board on a quarterly basis. Paratransit also reports revenue hours, passengers, miles, and productivity. Access-a-cab trips are also reported. For call center, First Transit reports calls, answers, speed, and call length.

Current Coordination/Successes/Opportunities

Larry isn't sure what incentive others have for co-mingling trips with access-a-ride; the regulations and restrictions are so much more difficult to follow (drive time, # of passengers, etc).

Imagine!

Date: August 29, 2012
Location: Telephone Interview
Attendees: Jerry Gooding

Overview

Imagine! provides services for people with developmental disabilities, originally based in Boulder, now serving Boulder and Lafayette. Imagine! Has over 700 employees and 400 licensed drivers. Imagine serves several thousand customers. These include individuals housed at about 12 group home as well as a number of host families, plus high school students (enrolled in summer camps and after school programs).

Imagine! provides therapy and education as part of it's overall day programs. Day centers are located in Boulder and Lafayette.

Jerry's role at Imagine! is to oversee fleet management, which includes buying vehicles, vehicle maintenance, insurance and licensing for Imagine's fleet of 78 vehicles (mostly vans, 57 of which are accessible).

Approximately 65% of Imagine customers are funded by Medicaid, 15% by mill levy and the remainder through private pay.

Challenges & Unmet Needs

Imagine's customers need help getting to doctor appointments. When asked about whether clients are currently eligible to use Access-a-Ride or Medicaid NEMT, Jerry indicated he was not sure and needed to know more about these programs.

Goals & Desired Outcomes

Jerry's goal for the Imagine! transportation program is to stretch the agency's dollars further.

Current Coordination/Successes/Opportunities

Jerry has a 20+ year history working in the insurance industry. He has applied this background at Imagine to negotiate better insurance rates for his drivers. He is also excited about developing innovative procurement methods to improve his buying power. He has recently been working with vendors to negotiate fleet purchase deals that have lead to big discounts for new vehicles.

The limiting factor for Jerry is his time. He would like to be able to do more to help other agencies and believes his board would allow him too if support were provided for his time.

Colorado Department of Healthcare Policy and Financing

Date: September 4, 2012
Location: Telephone Interview
Attendees: Chris Acker

Overview

The Colorado Department of Healthcare Policy and Financing provides funding and oversight for the statewide Non-Emergent Medical Transportation program. The NEMT service provides transportation to Medicaid medical appointments for eligible customers when no other transportation is available. Services are brokered by First Transit (see First Transit NEMT notes).

Services are provided under a capitated rate structure that establishes an annual not-to-exceed budget for all NEMT transportation services.

Challenges & Unmet Needs

Chris expressed concerns about single call center; the only way he sees this working and being able to meet DHPF call center protocol requirements is if all services were funneled through the existing NEMT call center; yet, he recognized that this is probably not an attractive option for the OAA funded programs.

Chris expressed interest in an exchange model wherein scheduling and dispatch is coordinated, but not consolidated.

Goals & Desired Outcomes

The primary objective of the CO DHPF is to get the greatest number of trips for the available funding. In this respect, service quantity is the primary goal with service cost being a supportive goal. Service quality is an important factor, also, but not an explicit goal. The broker is given a number of guidelines on how to ensure quality including call time, on-time performance, and arrival windows.

Current Coordination/Successes/Opportunities

CO DHPF is OK with providers co-mingling trips as long as billing is prepared properly to avoid cross-subsidy.

Boulder County AAA

Date: September 4, 2012
Location: Telephone Interview
Attendees: Laura Mathews

Overview

The Boulder County Area Agency on Aging oversees the Older American Act and Older Coloradans funds for Boulder County. Boulder County AAA contracts with Via and Care Connection (Medical Mobility) for transportation services. Services are governed by a strategic plan that contains a specific goal relating to transportation with the following objectives:

- Affordable
- Accessible
- Flexible
- Reliable
- Safe
- Easy to arrange

Boulder AAA recognizes coordination of services is critical in order to achieve these objectives.

Transportation services are contracted on a four-year funding cycle. Oversight is provided by a citizen's advisory panel.

Challenges & Unmet Needs

Recent discussions have focused on funding and sustainability of the transportation systems. Other current discussions have focused on whether to have Via or the AAA perform information and referral services.

Goals & Desired Outcomes

Key performance indicators include compliance with requirements, and spend rate (to ensure funds are available at the end of the fiscal year). The Boulder County AAA also responds to state requirements which require reporting on number of unduplicated riders and ridership.

Coordination

Current Coordination/Successes/Opportunities

Coordination is very closely associated with the last objective in the strategic plan: "easy to arrange." One-call model has become more of a no-wrong door approach recently. Technology is needed to support enrollment, trip requests, eligibility etc. However, the concept of a "warm transfer" (transferring calls from one provider to another so the client doesn't have to hang up and call someone else) could achieve the "easy to arrange" objective without significant changes in operational structure or large IT investments.

FOCUS GROUP MEETINGS

Douglas County

Date: August 20, 2012

Location: Douglas County Offices

Attendees: Valerie Robson, Renee Williams, Mathew Helfant, Ann Skinner

Overview

Douglas County's LCC provides a forum for coordinating services in Douglas County. The LCC is supported by a mobility manager, Mathew Helfant. The LCC consists of 21 members and five key service providers:

- Love, Inc.
- Neighborhood Network
- Castle Rock Senior Center
- Parker Senior Center
- To The Rescue

Each of the providers offers a variety of programs. Neighborhood Network provides a volunteer driver program. Castle Rock City provides a taxi voucher program. To The Rescue provides services for the senior center and is putting together a new JARC funded shuttle.

Challenges & Unmet Needs

One of the main barriers to additional cross-county transportation is the rate agreements in place. Val expressed a need for a consistent rate.

Participants expressed a need for additional funding for trips – despite the work that is being done, they feel there is never enough funding. Trips have to be prioritized, which means social trips are no longer provided so that higher-level needs can be met (medical, grocery, etc).

Fixed route transit services have been cut or eliminated in parts of Douglas county (Castle Rock). RTD does not provide services to Douglas County that are proportionate to the amount of revenue generated within the county. Parker will lose its Call-n-Ride next year.

Goals & Desired Outcomes

The primary goal of the LCC is to find ways to better utilize vehicle capacity. They are interested in doing something similar to what SRC does in Jefferson County to co-mingle trips.

Current Coordination/Successes/Opportunities

Douglas County is evaluating a “mini-call center” project building on the capacity of Neighborhood Network.

There is an opportunity to look at the O/D data from the Castle Rock voucher program to create referrals/route planning for the To The Rescue JARC shuttle.

Volunteer Driver Programs

Date: August 20, 2012

Location: Senior Resource Center Offices

Attendees: Jon Swanson, Jaci Hjelmgren, Richard Zendejas

Overview:

Three agencies were represented during the Volunteer Driver Programs focus group: Via Mobility Services (Jon), Senior Resource Center (Jaci), and American Red Cross (Richard).

Via Mobility Services

Via originally started as a paratransit program and about seven or eight years ago began adding new elements to better meet riders needs. It now runs a multi-faceted mobility program that includes a volunteer driver program in coordination with the American Red Cross, Care Connect, a family and friends self-recruited mileage reimbursement volunteer program, a mobility specialist, and travel training.

Senior Resource Center

SRC's volunteer driver program began about eight years ago to provide personal rides for seniors age 50 and above. Trips to the hair salon is the largest trip purpose. The goal of the program is to provide trips that no other agency will. SRC's volunteer driver program currently has about 70 – 75 volunteer drivers.

American Red Cross

The ARC program used to be a stand alone program with 4 FTEs. Over the past few years funding cuts have required scaling the program back. It is currently being operated with 1.5 FTEs. Via and SRC's support has enabled ARC to cope with staff shortages and continue providing services. ARC's transportation role is somewhat unique within the ARC national landscape. Funding for the program comes through the Rose and Daniel Foundations which provides a unique mandate to provide transportation. The current arrangement is for ARC to transport ambulatory customers for VIA and SRC. The cost is currently about \$100/day per route with about eight routes. Although VIA and SRC are the designated call takers for the program, Richard's customers still call him

Challenges & Unmet Needs:

Gaps are beginning to form for medical trips. This is believed to be caused in part by changes in land use patterns that have pushed doctor's offices further away from central areas. The average trip distance seems to be getting longer. Known gaps:

- VA Hospital
- Lowry
- 400 Indiana Street
- Red Rocks

Goals & Desired Outcomes:

Participants agreed that service quality is the number one priority for volunteer driver programs. The participants noted that service cost and the total number of trips provided are also important, but for volunteer driver programs, neither of these latter outcomes can be achieved if service quality is not the number one objective. The focus group participants agreed that a high quality volunteer driver program leads to increased trips and a reduced cost per trip for the transportation system in general.

Desired outcomes include improving efficiency and effectiveness so that gaps in service can be filled.

Current Coordination/Successes/Opportunities:

VIA and SRC provide support to ARC which has helped to ensure continuation of the ARC volunteer driver program.

SRC recognizes it's unique role in filling gaps that other transportation programs do not provide.

Older American Act Funded Programs

Date: August 21, 2012
Location: DRCOG Offices
Attendees: Hank Braaksma, Margaret Rendon

Overview:

Two agencies were represented during the Older American Act funded transportation provider focus group: Senior Resource Center (Hank), and First Ride (Margaret).

First Ride

First ride provides services in Arapaho and Denver counties with a fleet of eight buses for both counties. Annual service is approximately 14,000 trips in Denver county and 11,000 trips in Arapaho county.

Senior Resource Center

See summary from SRC Agency interview.

Challenges & Unmet Needs:

Service is not provided for early morning, evenings or weekends. Hank would like to provide a 12 hour day but is unable to give available revenue.

Some concerns were raised about the proposal for a centralized call center. The goal of the call center has been stated as improving customer experience and reducing administrative and operating costs. However, when asked how a centralized call center would impact actual information, referral, scheduling and dispatch functions at SRC and First Ride, the focus group participants expressed concern that not all of their current scheduling and dispatch time could be shifted. First ride currently employs approximately 2.5 FTEs in the administration, scheduling and dispatch function. During the interview, it was discussed that this could be reduced to 1.5 FTEs if the information, referral, scheduling and dispatch functions were provided elsewhere.

Similarly, SRC employs 5.5 FTEs in the administration, scheduling and dispatch functions. Consolidation could allow SRC to eliminate potentially 2 FTEs. In order for a regional scheduling and dispatch program to take over the current case-load of the two organizations, Hank and Margaret estimated a call center would require perhaps 4 FTEs. Thus, the total number of FTEs required to run a central call center would be 9 FTEs (1.5 at First Ride, 3.5 at SRC, and 4 at a centralized call center) compared to 8 FTEs that are currently needed. There is also concern that if the individual agencies are unable to connect directly with their customers, the quality of their services will decline.

Goals & Desired Outcomes:

First Ride's number one performance measure is total number of trips, but Margaret recognizes that the quality of her service is a major factor influencing the number of trips she receives. She feels that her customers would not call back for a second trip if the first trip was not a high quality experience.

SRC's core accountabilities are its annual budget, service quality and ensuring compliance with the rules set forth by DRCOG and its other funding partners. However, poor service quality will get Hank in more trouble with his board than any other performance measure.

Current Coordination/Successes/Opportunities:

Coordination is happening, but not to the scale the agencies would like it to. SRC and First Ride are beginning to coordinate using RouteMatch software, but have tended to coordinate through ad hoc telephone and email communication in the past.

Boulder County LCC

Date: August 23, 2012
Location: Boulder County Office
Attendees: <<need sign in sheet>>

Overview

Boulder county LCC recently formed to serve as a forum for discussing the needs of transportation disadvantaged populations, share information, and coordinate services.

Challenges & Unmet Needs

Participants related unmet needs primarily to a need for additional funding. More funding would help put more volunteers into service, would allow for the purchase of additional discounted transit fare booklets, reducing the amount of time required for arranging a ride, and expand the number of available trip purposes.

Related to funding, the LCC is focused on reducing the cost of paratransit because of the close relationship paratransit has with fixed-routes: the belief is that high paratransit costs place pressure on fixed routes by competing for funding. Given the high cost of paratransit service, anything that can be done to reduce paratransit costs ultimately help to improve other available options.

Local needs are being met fairly well, but there is a need for additional service for longer distance trips – especially accessible trips.

Goals & Desired Outcomes

A coordination system is needed to increase the transparency of available capacity. The focus has been on consolidating scheduling and dispatch services within the region. The desired outcome is a reduction in unit costs and an improved customer experience. There is interest in alternative approaches; the idea of an electronic exchange was of interest to the LCC.

Current Coordination/Successes/Opportunities

More work is needed to understand the county to county transportation needs. This is one of the current areas of work the LCC is pursuing.

INSIGHTS

- **Service Quality as Primary Goal for Some, Not All:** Senior transportation and volunteer transportation programs tend to place service quality as a higher priority compared to other transportation programs.
- **Sub-Regions:** There is a great deal of coordination occurring within local areas. It appears there are three sub-regions of coordination:
 - Douglas County
 - Boulder County
 - Jefferson/Adams/Broomfield/Denver/Arapaho
- **Provider Needs:** Although some providers emphasize service quality differently than others, there is consensus across the board there is a need to improve the efficiency of services so that resources can be used more efficiently. For some, efficiency can come at the cost of service quality while others – especially volunteer-based programs – believe service efficiencies are derived from a high-quality program. While these needs are not mutually exclusive, they do create tension when it comes to proposals to consolidate aspects of the various programs.
- **New Opportunities:** The stakeholder interviews revealed new opportunities for the partners to collaborate. Imagine's efforts to improve procurement, insurance, and vehicle maintenance are universal needs that all providers share. Similarly, there is a universal need for advocacy. Regional coordination around these issues can build momentum and trust among partners to pave the way toward more enhanced future coordination and/or consolidation of services.



MEMORANDUM

To: Angela Schreffler, Executive Director, DRMAC
From: Ross Peterson, Nelson\Nygaard Consulting Associates
Date: September 24, 2012
Subject: Transportation Coordination Systems Advisor - Technical Memo # 3: Peer Reviews & National Best Practices

PURPOSE

This is the third technical memoranda for the Transportation Coordination Systems Advisor Project. The purpose of this memorandum is to highlight the practices of three relevant cases from around the country of various models for regional coordination. A summary of lessons learned is provided for use in development of models for the Denver region.

NATIONAL BEST PRACTICE CASE STUDIES

Proven models of highly successful coordination programs exist in all corners of the country. From Portland, Oregon to Pittsburgh Pennsylvania, practitioners have discovered a number of mechanisms that help to strengthen and build the capacity of local organizations to coordinate transportation resources so that access and mobility can be improved. Examples of best practices from Portland Oregon and Pittsburgh Pennsylvania are provided from regions of similar size to the Denver Metro region. Since these regions both enjoy dedicated funding, but the Denver region does not, an additional best practice case is provided from Honolulu Hawaii, which is slightly different in terms of demographics, but similar in terms of available funding sources. These statistics are summarized in Table 1.

Table 1 Regional Demographics, Density and Funding Context for Denver and Selected Peers

	Denver	Honolulu	Pittsburgh	Portland
2010 Population	2,543,482	950,000	2,356,285	2,226,009
Area (square miles)	8,346.06	600.74	5,281.47	6,683.74
Density (population per square mile)	304.75	1,581.38	446.14	333.05
Funding	No dedicated funding	No Dedicated Funding	Dedicated Funding – Lottery	Dedicated Funding – Cigarette Tax

Sources: AASHTO/APTA Survey of State funding for Public Transportation, 2007, U.S. Census, 2010 Census Data

RIDE CONNECTION, PORTLAND, OREGON

Background and History

Ride Connection is a private non-profit based in Portland Oregon established to link accessible, responsive transportation to community needs. Ride Connection and its network of over 30 service partners work in collaboration to provide vital services that strengthen the Portland region's current transportation services. For over 26 years, the Ride Connection network has provided customer-focused, safe, reliable transportation options for individuals in Clackamas, Multnomah, and Washington counties in Northwest Oregon.

Ride Connection's services are aimed at maintaining an individual's independence. Whether it's door-to-door transportation, travel training using public transit, helping low income job seekers get to an interview or providing general public services in rural communities, Ride Connection delivers transportation options for those in need: older adults, people with disabilities, rural residents, and low income job seekers.

In the mid-1980s, a TriMet citizen committee recommended to TriMet that a volunteer program could help to meet the growing transportation needs of older adults and people with disabilities. The first rides were done in 1986 as a TriMet project. Ride Connection was then incorporated as a private nonprofit in May 1988 with a vision to serve this population with a more adaptable and accessible service than traditional paratransit. The relationship between TriMet and Ride Connection represents a unique blending of public and private resources and serves as a model of effective regional cooperation and collaboration.

Ride Connection and its service partner network have evolved from a limited provider of volunteer transportation service options, to a major provider in the provision of transportation services to older adults and people with disabilities in the Tri-County area. Over the years, the Ride Connection network has grown from providing just over 11,700 rides in its first year to providing over 416,000 rides in the 2010-11 fiscal year. Today, the Ride Connection network boasts 705 drivers, including 468 of volunteers. Ride Connection's RideWise travel training program supported over 2,000 individuals with training and access to public transportation last year.

Funding Structure

Ride Connection is funded primarily through a pooled state funding program known as the Special Transportation Fund. The Special Transportation Fund (STF) was created in 1985 by the Oregon Legislature and is currently funded with a \$.02 per pack cigarette tax. These funds are grouped with Federal Transit Administration 5310 funds which are then passed through to designated entities at the local level. The law identifies 42 designated entities referred to as "STF Agencies," one of which is TriMet – the regional transit district serving the tri-county area surrounding metropolitan Portland. TriMet passes approximately \$1.6 Million in STF formula funds to Ride Connection annually.

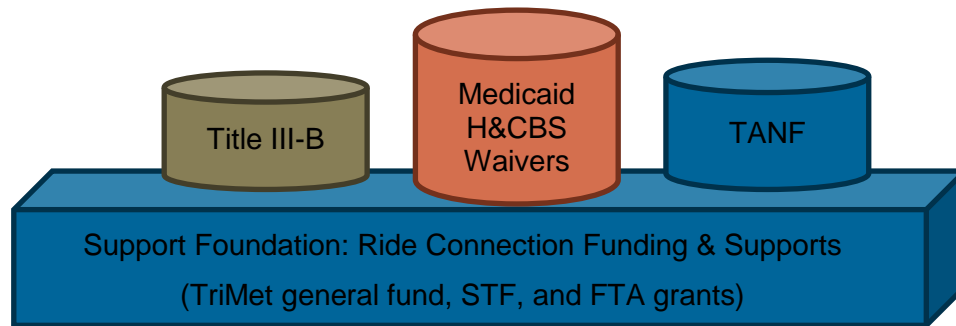
The STF program also includes a discretionary component that provides an additional \$3 Million per year to Ride Connection's annual budget. The STF program includes funding for capital which requires local match, and operations which requires no local match because operations funds are entirely derived from the state cigarette tax.

In addition to STF funds, Ride Connection also receives general fund revenue from TriMet, as well as other discretionary FTA grants for specific projects. Combined, Ride Connection is funded through a total of fourteen incoming contracts.

Operational Model

Incoming funds are used to provide supports to existing human service agencies. The concept of operations is to leverage the FTA, STF and TriMet investments to support and strengthen programs that are derived from other funding sources. In this respect, Ride Connection's coordination model does not explicitly co-mingle multiple DOT and non-DOT funding sources through the coordination system as is the case in a traditional brokerage. Instead, DOT and local transportation funds are used to incentivize coordination and to expand mobility management programs from the bottom up. Non-DOT federal funds for programs such as Title III-B of the Older Americans Act, Medicaid Community-Based Waiver Programs, and TANF are indirectly extended through better utilization of those resources.

Figure 1 Ride Connection's Supported Partnership Model



Services

Ride Connection recognizes, supports, and embraces the uniqueness of individual service partners and community organizations. Ride Connection coordinates and ensures the support of a reliable community transportation network by supporting its partners with:

- Centralized call center services and scheduling support;
- Driver Training;
- Contract compliance, risk management, and safety assistance;
- Accessible fleet acquisition;
- Management and maintenance of 100+ vehicle fleet;
- Streamlined and coordinated funding application processes;
- Technical assistance and support;
- Data management and reporting support;
- Web-based tools for daily operations;
- Outreach and joint marketing of regional transportation services;
- Advocacy for special transportation needs;
- Volunteer recruitment assistance; and

- Service Planning, which includes coordination of existing services for efficiency and creation and implementation of innovative ideas.

In addition to these provider supports, Ride Connection also provides the following direct services:

Information and referral

Ride Connection's Travel Coach provides a personalized mobility planning system that is easy to access and addresses the individual mobility needs of each customer. This personalized service provides customers with information and services that best meet their mobility needs.

RideWise Travel Training

The RideWise travel training program promotes independent travel of older adults and people with disabilities by providing free access to information, training, and support. The RideWise program is designed to provide mobility support ranging from trip planning assistance to intensive one-on-one travel training and is based solely on an individual's need and ability level.

Directly Operated Transportation Services

With a service area of 3,027 square miles, Ride Connection works with its network of service partners to create mobility options throughout the region. These services consist of:

- **Door-to-Door Service** – Demand/Response. Depending upon location, Ride Connection links the customer to a service partner or one of Ride Connection's direct service outlets. Customers are picked up at their door and taken to their destination.
- **Community Shuttles** – A number of shuttles were designed by Ride Connection for specific communities where multiple customers shared similar trip requests (i.e. grocery stores). By implementing fixed route services (that can deviate with advance notice) that make stops at popular destinations, Ride Connection decreases the cost per ride.
- **Shared Vehicle Program** – Organizations that need a vehicle occasionally can borrow accessible vehicles without having the expense of owning a vehicle. Ride Connection or one of its partners provides the vehicle and requisite training and the borrowing organization provides the fuel and driver.
- **Unique, Community-Based Solutions** – Ride Connection collaborates and acts as a liaison between public transit agencies and service partners to develop community transportation services and programs that offer solutions for customer needs, leverage community resources, and expand the capacity of the regional transportation system.
- **Veteran Transportation Services** – This program is designed to meet the needs of Veterans through the use of volunteer drivers who are veterans as well. Ride Connection worked with Washington County Disability and Veteran Services and with Multnomah County Aging and Disability Services in order to create and implement the program in both counties and is currently collaborating with regional Veterans Administration Medical Center and has received a grant to seamlessly coordinate their transportation services and scheduling system.
- **Road to Recovery** – Ride Connection partners with the American Cancer Society in order to provide transportation options to patients seeking cancer treatment.

- **Ride Together** – Riders to recruit their own driver and once the driver is approved, Ride Connection provides mileage reimbursement for rides given. This program is intended to empower riders to ask for rides from a loved one or neighbor without feeling like they have nothing to offer in return.
- **Fare Assistance** – The FareShare program provides matching funds for the purchase of public transit fare for the clients of human service agencies and community non-profit partners in order to encourage these organizations to include transportation in their program planning.

Volunteers

Volunteers are an integral part of Ride Connection's program. The level of commitment Ride Connection receives from individuals who give their time, their compassion and their energy in order to help Ride Connection achieve its mission is fundamental to Ride Connection's success. The most critical factor (in addition to funding) in Ride Connection's ability to maintain and expand service is volunteer hours served. Last fiscal year, volunteers contributed 52,335 hours of service, lending a hand to Ride Connection as drivers, group transit trip leaders, board members, advocates, and much more.

Central Dispatch & IT Support

Ride Connection hosts a dedicated RouteMatch server and provides support for six of the largest providers in the Ride Connection network. For Ride Connection's smaller partners who do not need the robust capabilities of RouteMatch, a custom lightweight scheduling application was developed called RidePilot. RidePilot provides a web portal for agencies to perform basic scheduling and dispatching functions. For larger providers that could benefit from the RouteMatch service center, but are already invested in another proprietary system, Ride Connection is developing a clearinghouse that will create an electronic data interchange between the RouteMatch call center and other systems within the region.

ACCESS PARATRANSIT SERVICES, PITTSBURGH, PA

Background and History

ACCESS Paratransit is a coordinated, shared-ride paratransit service that provides door-to-door, advanced reservation transportation for the City of Pittsburgh and all of Allegheny County. Although ACCESS primarily serves people with disabilities, clients of human services agencies and people age 65 and over, the service is also open to the general public, noting that few general public riders take advantage of it. ACCESS is funded through a variety of funding streams which allows it to coordinate services for a diverse group of customers and substantially increase ridership.

ACCESS Paratransit is sponsored by the Port Authority of Allegheny County – the regional public transit provider. ACCESS Paratransit is administered by a service broker, ACCESS Transportation Systems Inc., a current subsidiary of Veolia Transportation, which has held a contract with the Port Authority since 1979.

The system was initially developed and implemented in part as a response to then UMTA's Section 504 requirements which required public transit agencies to make their systems accessible to persons with physical disabilities by either adding lifts to their fixed-route vehicle fleets or to

provide paratransit services. The system designed and implemented with the help of a \$2.2 million grant from UMTA which began in 1978 and ended in 1982 and was designed to test the concept of using a broker to provide specialized transportation to a large urbanized area. The initial design concept was a product of the Civil Engineering Department of Carnegie-Mellon University in Pittsburgh. The final design and implementation was performed by Multisystems, Inc. under contract to the Port Authority. In 1982, the Port Authority assumed complete financial responsibility for ACCESS.

ACCESS continues to meet the obligations of Section 504, and since the advent of the Americans with Disabilities Act in 1990, has served to meet the Port Authority's ADA complementary paratransit obligations. The program actually exceeds the minimum ADA paratransit requirements in a number of different ways:

- Service Area – service is available county-wide, and not just to and from the ¾ mile transit route corridors
- Fares – the base ADA fare is equivalent to the fixed route fare
- Service Days and Hours – service is provided from 6 am to 12 midnight, 7 days a week, regardless of the shorter operating hours of specific fixed routes
- Same-day service – available on a space-available basis
- Will-call return service – offered for appointments with non-predictable ending times
- Eligibility – convenience fares enable ADA conditionally eligible customers to ride at twice the ADA fare (for other trips for which the conditions do not apply) on a space-available basis

In 2005 ACCESS won the United We Ride National Leadership Award recognizing its efforts to meet the needs of transportation disadvantaged individuals in Allegheny County. The award is part of United We Rides' national initiative to implement common sense solutions to transportation problems and coordinate services.

Funding Structure

ACCESS manages two large subsidy programs – for ADA paratransit-eligible persons and for seniors – while also providing services to sponsored clients of 121 human services agencies, including the Allegheny County Area Agency on Aging and the Medical Assistance Transportation Programs (Medicaid). Approximately 30% of ACCESS customers are people with disabilities, 30% are seniors, 35% are customers of human services agencies (which include Medicaid), about 5% are escorts for customers, and 1% is the general public. The Port Authority also utilizes 5310 funding to acquire accessible taxis to supplement the ACCESS program.

Pennsylvania Section 203 Senior Shared-Ride Program

In Pennsylvania, there is a state program under Section 203 which utilizes state lottery proceeds to fund 85% of the cost of shared-ride services for seniors. In Allegheny County, ACCESS (through the Port Authority) is also the “vehicle” for the provision of shared-ride services funded by Section 203. Human service agencies and churches can also leverage Pennsylvania Lottery funds to sponsor ACCESS trips for their members. A majority of ACCESS' senior ridership is subsidized through Lottery funds.

Human Service Agency Transportation Programs

ACCESS provides service for clients of 121 different human service agencies including the Medicaid recipients whose non-emergency medical transportation is sponsored through the state's Medical Assistance Transportation Program.

In fiscal year 2007, ACCESS provided 137,200 Medicaid funded trips, which was substantially lower than 2005 and 2006 (165,000 and 144,150, respectively). The decrease was due to an effort to revamp the eligibility process to replace the requirement for doctor's letters with in-person assessment.

The Area Agency on Aging (AAA) is one of the largest sponsors of the ACCESS system. It was the first agency to buy into coordinating services through the program. ACCESS provides transportation support to senior centers, adult day health, for health care and medical appointments, and for home and community based waiver programs.

Operational Model

The ACCESS system is operated as an administrative, decentralized brokerage, a fairly unique model that draws on the skills and resources of the private sector, avoids duplication of effort, and offers a high degree of accountability and flexibility. By increasing coordination and sharing rides and administrative costs between sponsors, the system achieves the economies of scale and cost efficiencies necessary to make the program sustainable.

ACCESS Transportation Systems Inc. acts as the brokerage that administers paratransit services through eight transportation providers under contract. Six of the transportation providers are private for-profit companies and two are non-profit human service agencies. The Port Authority, as the lead partner, provides administrative oversight of ACCESS and sponsors ADA and senior transportation.

ACCESS designates each of the providers to provide service in designated service areas. Some of the designated areas are not exclusive, especially in more dense areas, giving customers a choice of service provider. Service providers are paid hourly rates for providing dedicated vehicle service. Multiple service providers create a competitive marketplace where providers are incentivized to provide quality service and contain costs. Annual procurement of providers (a fairly unique program element) allows ACCESS to re-evaluate service quality and implement changes and solve inefficiencies each year.

In fiscal year 2007, brokerage administration costs were only 5.9% of total costs and customer service received excellent reviews: only 65 complaints out of every 100,000 trips. On-time performance was 94.5% and productivity was 2.38 trips for hour, both of which are outstanding in the industry for a system of this type and size.

Brokerage Functions

One of the original concepts of this design was that it depended heavily on the expertise of the transportation providers for scheduling and routing, vehicle acquisition, driver hiring and retention and risk management. Indeed, the design was premised on there already being such for-profit and non-profit carriers providing service in Allegheny County. As the broker, ACCESS provides technical assistance and monitoring of the provider network. But it goes beyond that: over the years, ACCESS has navigated service provider buy-outs, service provider struggles, and

in certain cases, found it necessary to "grow" service providers, all to maintain a competitive environment.

The design of the service delivery network included organizing Allegheny County into service zones and selecting, contracting with, and providing technical assistance to providers assigned to those zones. (That is, to request service, an ACCESS customer calls the carrier(s) assigned to the area in which they live.)

Initially, the zones were designed to first reflect and take advantage of service areas served by non-profit agency operators; then, the remainder of the County was divided up to take advantage of local for-profit providers – mostly taxi companies. While some of the service zone boundaries have changed over the years, this basic design -- and the underlying premise -- has remained intact since 1979.

Figure 2 Functions of the Broker and Service Providers

Role of ACCESS as the broker	Role of service providers
▪ Customer service	▪ Vehicle procurement
▪ Travel training	▪ Maintenance
▪ Coordination of demand	▪ Risk management
▪ Service monitoring	▪ Insurance coverage
▪ Technical assistance	▪ Maintaining adequate labor force
▪ Accounting and reporting	▪ Staff training
▪ Contracting	▪ Reporting to the broker
▪ Substance abuse programs	▪ Reservations
▪ Scrip sales	▪ Scheduling
▪ Eligibility determinations	▪ Dispatching
▪ Public participation	

Invoicing

Sponsors pay their fair share of the cost of paratransit services, including their portion of the administrative cost. Sponsoring human service agencies are invoiced directly by the broker. Sponsoring agencies of low-volume trips are invoiced based on the full-cost zone-base fare amount, which reflects the full cost of operating the trip. An administrative fee is added to this figure based on the average per trip cost of the brokerage administration.

Invoices to human service agencies that have high volumes of trips are computed differently. At the end of each year, the broker calculates for each sponsoring agency an average cost per trip based on a statistically-relevant sample of trips sponsored by that agency, with cost assessed by time and based on the particular provider's hourly rate. Note too that this analysis includes the shared cost of trips that are co-mingled with other trips on the vehicle at the same time, i.e., a sponsor's average cost per trip reflects costs only associated with the transportation of its clients.

This average operational cost per trip is then added to the average cost per trip for the brokerage administration. This process is done once a year and is reviewed mid-year.

Service Characteristics

Service Area and Demographics

ACCESS generally serves all of Allegheny County (780 square miles) as well as points 1.5 miles outside the county line regardless of fixed route corridors. The service area population is about 1.4 million people. Service area density is roughly 1568 people per square mile, with a median income of \$47,505, average household size of 2.23 and median age of 43.3.

In 2010, ACCESS provided 1.6 million passenger trips traveling 12.2 million passenger miles. Operating expenses totaled approximately \$33.8 million. About 400 dedicated vehicles are used to provide ACCESS services.

Service Schedule

ACCESS provides paratransit service 6:00 a.m. to midnight, seven days a week, and before 6 AM and after midnight within $\frac{3}{4}$ mile of operating fixed routes. There are no restrictions on the purpose or number of trips which may be taken by riders, except that riders are required to share their vehicle with others traveling in the same direction and at the same time.

To request service, customers call the one provider (or where there is a choice, one of the providers) serving the area in which the customer lives.

Fare System

Fares are based on a fare zone matrix that has remained largely intact since the service began.

Fares are paid either with paper scrip or through third party-billing. The system is cashless.

Different color-coded scrip is discounted for customers upon purchase based on the subsidy associated with different sponsoring program. This scrip, purchased from ACCESS in books, is then used to pay for the fare. For example, ADA paratransit customers and seniors pay fares with discounted scrip they buy from the ACCESS. For example, scrip used by ADA paratransit customers has a different discount than scrip used by seniors. Dually eligible persons purchase the scrip that typically has the highest discount for the trips they will be making.

Clients of human service agencies do not pay a fare; these fares for these trips are billed to the sponsoring agency. For sponsors with a low volume of trips, the trip rates are based on the zone fares. For heavy-use agencies, a per-trip rate is estimated, as described above.

Additional Amenities

In addition to door-to-door paratransit service, ACCESS also provides sponsors with a variety of amenities to improve service, including assistance with car and booster seats, assistance with packages, and hand to hand service for individuals who require constant supervision. ACCESS' service providers will also make every effort to provide the same driver for customers who require routine.

Eligibility

The ACCESS ADA eligibility process evaluates if individuals are able to get to and from the bus stop and use the bus in a variety of environments. The purpose of this process is to match the travel abilities of each individual with the appropriate mode of public transportation; either Port Authority fixed route service or ACCESS on-demand paratransit service. All applicants for ACCESS must appear in person for an interview and participate in a function assessment of physical, cognitive, or visual skills necessary for the independent use of fixed route service.

The Functional assessment, administered by Easter Seal Society of Western Pennsylvania, includes a mock bus trip complete with environmental and structural obstacles.

Trip-by-Trip Eligibility

Additionally, environmental barriers located where the individual's trips will take place are assessed to see if they would prevent the use of fixed route service for that individual. ACCESS uses trip-by-trip eligibility screening which provides an environmental assessment of the bus stop and path of travel for any trip requested to determine which barriers in the transit system or environment would prevent the individual from using the bus for their trip. The barrier findings are recorded and reported back to municipalities and agencies that may be able to assist with their removal.

Travel Training

Travel training is offered by ACCESS at no charge to individuals who want to learn the skills necessary to safely use fixed route service, which can vastly improve an individual's independence.

Feeder Services

When the path of travel barriers prevents an ADA eligible individual from getting to and from the bus stop, feeder service is available to take a customer to an accessible bus stop. This is a free service for the ACCESS portion of the feeder trip. There are also several Job Access and Reverse Commute (JARC) funded paratransit-to-fixed-route services available to match travel patterns and needs, such as scheduled service to a remote employment locations. The Elder Express, a neighborhood circulator, provides trips to a choice of several transit stops and senior centers, shopping and activity centers operating with funding through partnerships with community foundations.

HONOLULU RIDES, HONOLULU, HAWAII

Background and History

Honolulu Rides was formed in 2008 to serve as a mobility management center for the City and County of Honolulu, Hawaii. Honolulu Rides is operated by a private non-profit (Innovative Paradigms) which assists the City of Honolulu in the management of the mobility management center.

Prior to establishment of the mobility management center, Paratransit, Inc. – the parent of Innovative Paradigms – was hired to improve the eligibility determination process for the ADA

paratransit program, locally known as The Handi-Van. The initial contract was to provide eligibility determination and travel training services.

For years prior to the establishment of the eligibility center, consultants and outside observers have suggested improvements are needed for the eligibility process and management of The Handi-Van to rein in growing costs. A Nelson\Nygaard study conducted in 2010 recommended a number of management strategies to help control double digit percentage increases in cost and uncontrolled increases in demand.

Later, recognizing that JARC and New Freedom funds were not being fully utilized, a follow up coordination study recommended specific strategies for implementation of a mobility management center. This became the genesis for the Honolulu Rides program. Innovative Paradigms was hired to develop a plan, provide grant writing support, assist in partnership building and provide technical support for the local partner agencies.

Funding Structure

The program is currently funded with JARC and New Freedom grants matched by city and county general fund revenues. Initially match was being provided by partners within the program, but this became a difficult process to manage on an on-going basis. Staff and program advocates were able to convince the city to continue funding the program using general fund revenues based on the evidence that the program was creating new capacity, meeting needs, and doing so in a cost-effective way.

Looking forward, staff are actively working to establish continuity in support among local elected leaders. Staff are trying to establish a leader within the cabinet level of the city to help create continuity at the decision maker level. The hope is to generate lasting buying and understanding of the program among elected leaders and decision makers as a means of ensuring long-term funding availability.

Operational Model

Technically, the eligibility and mobility management centers are separate operations, but are currently contracted through the same provider. On the mobility management side, the operational model can be characterized as supported regional coordination. In fact, the information and referral services and support program has a number of similarities to the DRMAC model. The online database and information and referral center are essentially identical to the DRMAC getting there guide. There are however, a few important distinctions.

The primary distinction is that the mobility management center is run by a private non-profit whose headquarters are outside of the Honolulu region whereas DRMAC is run locally. The second major distinction is the Honolulu region had fewer instances of coordination occurring prior to establishment of the Honolulu Rides program compared to the Denver region. Whereas DRMAC supports partners who have been coordinating services for many years, the Honolulu \Rides program represents some of the first major coordination projects in recent history. The principal motivation for implementing the Honolulu rides program was a chronic lack of needed capacity; The Handi Van simply could not handle more customers and new options were needed. The mobility management center has helped to create new capacity while providing additional travel options through travel training.

Services

Services are differentiated between those provided through the eligibility center and those provided through the mobility management center.

Mobility Management Center

The mobility management center provides information and referral services including an online and printed database. Planning and support for grant writing and coordination is also provided by the mobility management center.

Among the most successful initial efforts is a vehicle placement program that provides vehicles to local partner agencies and supports them in providing transportation services for their clients. A partnership with Goodwill, which began in 2010 with 11 vehicles, is currently providing approximately 70,000 trips per year. The average cost per trip, including the management fees associated with startup is approximately \$8 per trip. Compared to The Handi Van's average cost per trip of approximately \$40, the Goodwill partnership has enabled the city to expand available services at a very low marginal cost. In addition to being extremely cost effective, the partner program has pulled a lot of trips off of the Handi Van service. The city was initially expecting to see a dip in ridership, but the transfer of trips enabled an improvement in the quality of the Handi Van service which attracted additional riders. Staff at the City of Honolulu attribute this to latent demand. It is believed that riders who wanted to use the service were suddenly able to use the program once available seats opened up and service quality improved. The Goodwill partnership provides approximately 140 one-way trips per day, or approximately 4 percent of total daily ridership of The Handi Van service.

Recently the mobility management center has added travel training for individuals who are not traditional Handi Van customers.

Eligibility Center

The eligibility center provides in-person functional assessments and has helped the City achieve compliance with FTA regulations for ADA paratransit services. The center has established procedures for determining eligibility, conditional eligibility and temporary eligibility. Travel training services are provided as part of the eligibility center.

OTHERS MODELS

Other models have been identified in areas where land uses, transportation providers and funding context is more similar to the Denver region. Cities that were considered, but not included in this peer review include:

- Salt Lake City, Utah
- Los Angeles, California
- Washington, D.C.
- Dallas, Texas

Like Denver, Salt Lake City, Utah is similarly sized, has similar land use patterns and is also in a state that does not provide dedicated state funding to match FTA's human service transportation programs. Salt Lake City is in a similar situation as the Denver metro region in terms of implementation of a coordination system: it is evaluating a number of options, but has not

implemented a “model.” Because of this, it would not provide evidence of success if selected for evaluation as a peer. Washington, D.C., Dallas, Texas, and Los Angeles, California are also comparable to the Denver region in some ways and could be considered peers for the purposes of evaluating transit services. However, the models employed in each of these cities focus primarily on the ADA and Medicaid NEMT services. These regions were not selected because coordination of the ADA and Medicaid NEMT services is not believed to be an immediate opportunity in the Denver metro region.

SUMMARY OF LESSONS LEARNED

The following insights are offered to summarize several lessons learned from the peer reviews.

Dedicated Funding & the Need for Advocacy

Many of the frequently cited best practices (including Portland and Pittsburgh) reside in states with dedicated funding for transportation disadvantaged populations. Dedicated funding is a major element that makes these models work. It serves as an incentive, gives the programs their formalized structure, and provides resources to put services into operation. This is not to say that Denver cannot have a successful model without dedicated funding. In fact, the Honolulu model indicates it is possible to carry out a rudimentary mobility management program without on-going dedicated funding. However, the services provided in Honolulu and the funding being used is not dramatically different from the funding available in Denver. Programs with dedicated funding can do significantly more than programs that lack this resource.

A major element that will be needed within the Denver model is an advocacy & fund development component. This can be, and perhaps works best when, consolidated. The objective of the advocacy and development function is to generate and maintain a sustainable source of match. Both the Honolulu and Portland models include advocacy as an explicit function of the coordination system.

There are no One-size Fits all Models for Coordination

Without dedicated funding, Denver’s model may be very different in structure and operations when compared to the best-practice cases presented in this memorandum.

As demonstrated through the case comparisons contained in this memorandum, Denver may be blazing a new trail when it comes to developing a model for coordination. To some extent, this means Denver may be inventing a new model – or at least creating several important adaptations of existing successful models.

The case studies demonstrate a wide range of approaches to expanding the availability of service, reducing costs, and improving service quality. These models are each a unique reflection of the available funding as well as the political context and individual leaders who helped shape the programs. Drawing from this lesson, DRMAC’s program should be designed to build on the strengths of the Denver region.



MEMORANDUM

To: Angela Schreffler, Executive Director, DRMAC
From: Ross Peterson, Nelson\Nygaard Consulting Associates
Date: September 24, 2012
Subject: Transportation Coordination Systems Advisor - Technical Memo # 4: Models for the Denver Region

PURPOSE

This is the fourth technical memoranda for the Transportation Coordination Systems Advisor Project. The purpose of this memorandum is to outline a range of potential transportation coordination systems for evaluation in the Denver metropolitan region.

In this technical memorandum, we adapt the lessons learned from the case studies and three conceptual models to establish a range of potential options for the Denver region. We begin at a theoretical level to map out a wide range of options and then narrow the options based on a practical understanding of what will work given the unique circumstances facing the Denver region. The recommendations presented in this memorandum are not intended to serve as a conclusion. Instead, this information intended to stimulate discussion during our next steering committee meeting.

This memo contains the following parts:

- Part 1 – Introduction
- Part 2 – Conceptual Models
- Part 3 – Modeled Considered
- Part 4 – Recommended Model

INTRODUCTION

A model for Denver's future coordination system will consist of a variety of elements that fit together to form a whole. There are three primary elements that need to be considered: 1) functions and the degree to which they are coordinated or consolidated, 2) the types and variety of funding sources included, and 3) geographic scale.

The first key variable is the degree to which functions are coordinated and/or consolidated within the system. The functions performed by funding agencies and service providers can be coordinated or consolidated at a variety of levels to determine the structure of the coordination model. Models that consolidate functions such as customer intake, information and referral, and scheduling and dispatch are often categorized as brokerages or call centers. Models that consolidate supportive functions such as driver training, procurement, insurance, maintenance, volunteer driver support and similar, can be thought of as supported coordination models. New technology makes it possible to coordinate scheduling and dispatch without consolidating call center operations, giving rise to a new model we refer to as an exchange. These models are not

mutually exclusive, nor do they represent an exhaustive list of all available options. The models are presented at a conceptual level to serve as a point of departure for the discussion during our next steering committee meeting. The models – and Figure 1, in particular – will lend structure to our discussion enabling us to answer the question “how much and to what extent can services and functions be coordinated.”

The second major variable is the number and kinds of funding programs included in the coordination model. The number and kinds of funding sources involved has a significant impact on the structure, objectives, and outcomes of the coordination system. For example, models focusing primarily on coordinating volunteer transportation programs for seniors and people with disabilities tend to emphasize different performance measures than models focusing primarily on mandated transportation such as Medicaid non-emergency medical transportation or ADA paratransit. This is partly because of the requirements set forth by the sponsoring agencies, but also because of the different expectations and norms that have emerged within those programs. We explore the advantages and disadvantages of grouping several different funding sources in this memorandum and recommend a preliminary model consisting of two or potentially three key funding sources for the initial coordinated system.

The third major variable is geographic scale. A coordination system can be deployed at varying geographic scales. Examples exist of statewide coordination systems (such as those in Washington and Florida), county-based systems (as in Georgia and Illinois) and regional systems (as in Pittsburgh and Portland). Geographic scale creates important political and operational implications for the chosen model. While a statewide model is beyond the scope of this effort, there are important and meaningful differences between a regional or sub-regional (i.e. county-based) system that we highlight in this memorandum. Our recommendation is a hybrid model that provides regional support for a constellation of sub-regional coordination nodes.

Bringing it all together, our preliminary recommendation is a hybrid approach that includes aspects of all three of the conceptual models: sub-regional brokerages of at least two funding sources, regional support for coordination coupled with an electronic data interchange system to facilitate inter-regional coordination.

PART 1: CONCEPTUAL MODELS

The delivery of Human Service Transportation programs – like any major undertaking – involves a number of functions that are carried out by a range of actors. Figure 1, below describes the generic functions performed by funders and providers of transportation and defines several generic coordination models based on the degree to which functions are consolidated or coordinated. Building on the lessons learned from the literature and stakeholder interviews we are presenting three conceptual models for consideration: 1) brokerage model, 2) supported coordination model, and 3) exchange model.

Brokerage Model

Brokerages (sometimes referred to as call centers) directly manage supply and demand by matching incoming trip requests with available transportation providers. Brokerages represent consolidation of mostly administration, intake, and some scheduling and dispatch functions. The Pittsburgh example is an administrative brokerage that funnels funding from multiple sources into a single administrative program, which is then contracted through a broker to sub-contract services at the local level. In Denver, the RTD Access-a-Ride and Medicaid NEMT call centers are

brokerages that consolidate intake and scheduling functions, but they do so in isolation. Each brokerage focuses a single funding source. The SRC model, on the other-hand, is a modified brokerage that comingles multiple funding sources within the SRC network.

Supported Coordination

A precursor to consolidation is often a system of coordinated supports that indirectly build the capacity of organizations to coordinate. Coordination of support functions within the life-cycle of a human service transportation investment can achieve cost savings, quality improvements, and service efficiencies.

Supported coordination involves coordination and or consolidation of support functions. The Portland example is a hybrid of a brokerage and supported coordination. While six of Ride Connection's 30 partners use Ride Connection's call center for scheduling and dispatch which performs brokerage functions, all of Ride Connection's partners receive some form of support, including vehicles, driver training, maintenance subsidies, insurance, or similar. To name a few local examples, DRMAC, Imagine!, VIA and SRC are each providing support to their partners to enhance and strengthen existing services.

Exchanges

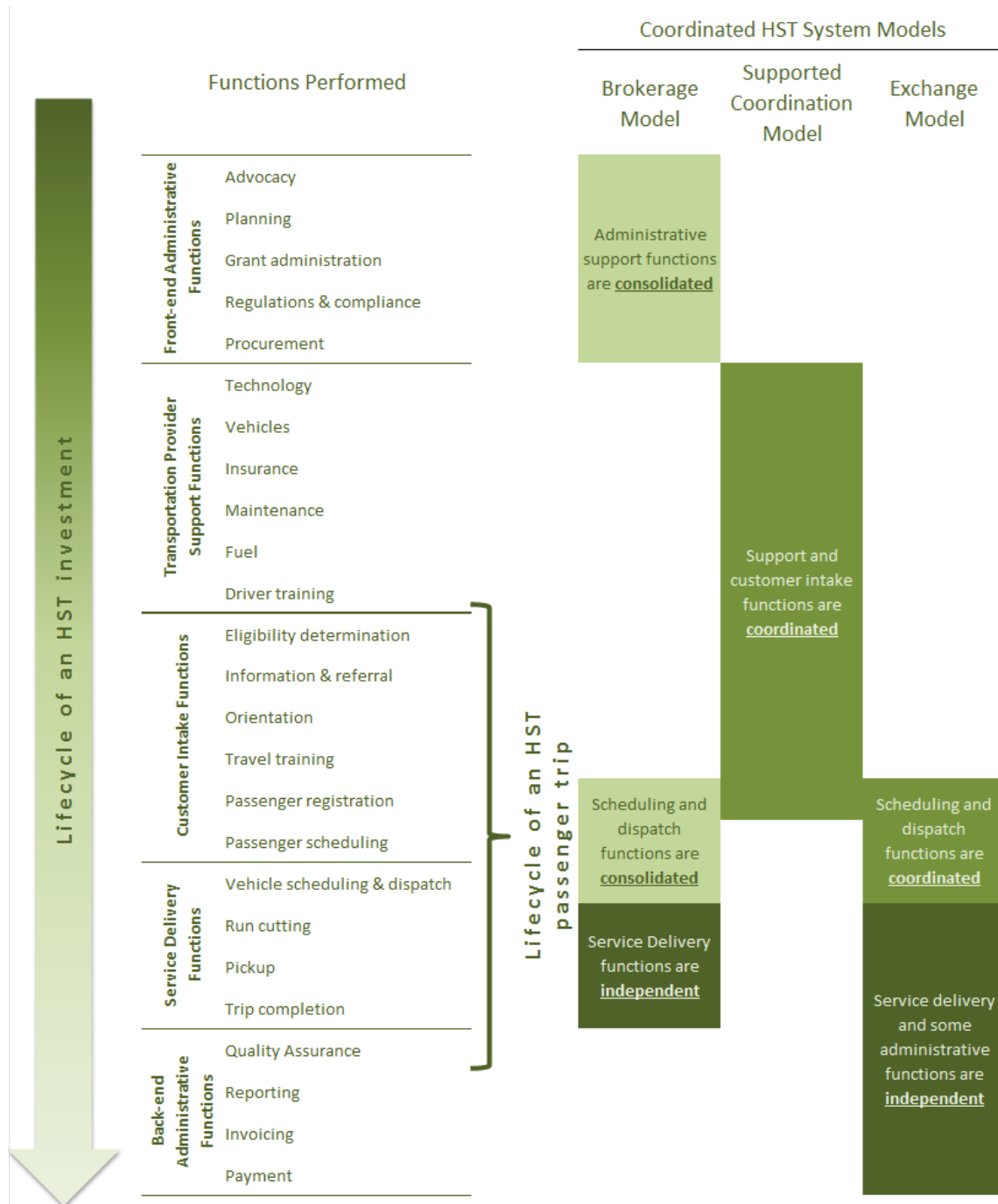
Exchanges facilitate coordination of scheduling and dispatch without consolidation of scheduling and dispatch functions. Ride Connection's Clearinghouse project is an example of an exchange. Other examples of an exchange-based system have been built on proprietary software such as the system used in Paducah which relies on RouteMatch software.

The Ride Connection model reveals an emerging exchange-based approach in which supply and demand are managed passively through a system of electronic data interchange. An exchange enables transportation purchasers and operators to coordination by accepting or rejecting trips based on an economic price equilibrium that is determined through open exchange of supply and demand information.

What functions should be coordinated and/or consolidated in the model?

The recommendation is to include aspects of each of the three models presented above as part of a regional coordination system. This is explored in more detail in parts 3 and 4 of this memorandum.

Figure 1 Functional Classification of Coordination Models



Funding Sources

Manhy successful models of coordination involve multiple funding sources. This reflects the idea that multiple funding sources are needed to achieve economies of scale and the benefits of improved utilization of resources. A key question to be answered for the DRMAC TCS project is what funding sources should be included?

Nationally, there are four major funding sources that serve as an effective starting point for evaluating opportunities to coordinate. These are Medicaid, including Non-Emerging Medical Transportation and waived Home and Community Based Service programs, Title III-B of the Older American’s Act, and the Federal Transit Administration’s various programs for the public and transportation disadvantaged populations.

At the present time, each of the four major funding sources is administered separately in the Denver region with varying degrees of coordination at the provider level. In general, coordination of services is allowed, but major administrative functions are not coordinated. Table 1, below highlights several key attributes for each of the four major funding sources.

Table 1 Major HST Funding Programs in the Denver Metropolitan Region

Funding Program Title	Administrative Lead Agency	Service Delivery Structure	Current Instances of Coordination	Desired Outcomes
Title III-B	DRCOG AAA, Boulder County AAA	Service contracts are issued on a sub-regional level based on an annual average cost per trip rate.	Coordination of services is allowed and encouraged, but is often thwarted by rate structures that do not vary with trip distance	Service quality and efficiency.
FTA Urbanized Formula	RTD Fixed-Route, Access-a-Ride, Call-n-ride, Access-a-cab	Service contracts are issued on a sub-regional level.	Comingling of passengers is discouraged on access-a-ride vehicles.	Regulatory compliance.
FTA 5310, JARC, New Freedom	Administered by CDOT and RTD	Contracts are issued competitively	JARC and New Freedom are currently funding a wide range of coordination pilot projects.	Varies
Medicaid NEMT	Administered by the Colorado Department of Health Policy and Financing	Service is brokered through a regional call center and a network of over 40 providers	Coordination of services is allowed and encouraged, but is often thwarted by rate structures that do not cover the cost of longer distance trips	Ridership & Regulatory compliance.
Medicaid Home & Community Based Service Waivers	Need more information			

In addition to the four federal funding sources listed in Table 1, the stakeholder interviews revealed three additional local funding sources:

- Colorado Veterans Affairs Trust Fund
- DD Mill Levy
- Sales Tax
- One-time transportation surplus?

These sources are important to note because they could serve as local match to establish a dedicated funding program akin to the STF fund described in the Portland model, or the Senior Shared Ride program in Pennsylvania (see Technical Memo # 3).

Which funding sources should be considered?

The primary determinant in identifying which funding sources to include in a regional coordination system should be interest and willingness on behalf of the organizations and individual decision makers that oversee the funds. In order for the decision makers within an agency to agree to participate in a coordinated system they will need to see a tangible benefit for their organization. Organizations and their decision makers will also need to know whether the proposed change could negatively impact their program.

Based on the stakeholder interviews, there is a clear interest from DRCOG in evaluating a new model. This interest was demonstrated through their investment in the call center study that proposed a single call center for all Title III-b funded programs. Concerns over DRCOG's proposal have stimulated interest and willingness on behalf of a number of Title III-B providers to identify options for coordinating. Given these interests, it seems the Title III-B programs are a good candidate for the coordination system.

FTA 5310 funds may also be a good candidate. Recent changes to MAP-21 have made the FTA 5310 program more flexible by rolling New Freedom projects into the larger Enhanced Mobility for Seniors and People with Disabilities program. Some states have allowed a larger percentage of 5310 funds to be used for operations which raises the specter of the 5310 program becoming a potential source of match for on-going operations funding from programs serving seniors and people with disabilities. An argument could be made to include FTA 5310 funds as part of the model to match Title III-B funds for capital and operations.

This also raises the possibility of collaborating with counties to explore options for leveraging the pooled FTA and Title III-B funds with a portion of local dollars generated through the DD mill levy or the Veterans Trust Fund.

Assuming these funds could be included in the model, this leaves Medicaid NEMT and RTD Access-a-Ride funds unaddressed. Based on information collected during the interviews, there is less interest on behalf of these organizations to implement a major change to their existing brokerages. Indeed, it may be impractical to adjust the administrative structures of the RDT Access-a-Ride and Medicaid NEMT programs in time for implementation of a coordination system that includes these funds in the short-term. Instead, a hybrid model approach could be used to achieve a practical solution for each of the regional partners. RTD and NEMT can continue using independent brokerages, but access to an electronic exchange could facilitate improved coordination of scheduling and dispatch functions facilitating ad hoc trip swapping when practical.

Geographic Scale

In addition to determining which functions are to be coordinated or consolidated and how many funding sources should be included, determining the geographic scale of a coordination system is also very important.

At what geographic scale should the model be operationalized?

The Denver metropolitan region covers a vast land area that is comprised of a wide range of communities and services. The stakeholder interviews revealed a number of successful examples of coordination and effective human service transportation delivery networks at the local level. The finding that these local networks appear to operate on a sub-regional level gives rise to the idea that services could be coordinated within sub-regions. The alternative – as alluded to in the BBC study for a single regional call center – would be to coordinate and/or consolidate services at a regional level. Neither option is mutually exclusive of the other.

In Part 3, below, we evaluate, but ultimately dismiss a purely regional model. Instead, our recommendation – outlined in Part 4 – is to implement a hybrid model that includes some coordination of services at the regional level, with other functions consolidated and coordinated within sub-regions.

MODELS CONSIDERED

Four basic models are presented to highlight the advantages and disadvantages of various approaches. These are presented to describe the rationale underlying the recommended model. The first model is essentially the proposal contained in the BBC study commissioned by DRCOG. The second model is an expansion of the BBC study to include additional funding sources. The third model is a departure from a “single call center” approach, toward a constellation of multiple sub-regional brokers (or mini-call centers) supported by a regional coordination infrastructure. The fourth model is a do-nothing option that explores the costs and benefits of maintaining the status quo.

Model 1: Centralized Call Center for Title III-B Transportation

Model 1 is to implement the centralized call center proposal documented in the BBC report commissioned by DRCOG.

Advantages

- A major advantage of implementing the DRCOG proposal is the fact that the plan is already complete and DRCOG has political buy-in to implement it.

Disadvantages

- A single call center is a bit of a misnomer because Access-a-Ride and the Medicaid NEMT programs would continue to operate call centers for their programs. Similarly, there is no reason to believe DRMAC would discontinue its information and referral service, were DRCOG to implement a new regional call center for Title III-B programs. As such, the consolidated call center proposal would not achieve a one-call outcome as envisioned. A no-wrong door approach is possible, however, if the databases of each of the four call centers are coordinated. This work is underway, however, and is more accurately captured in Model 4, Status Quo.

- A single call center will not achieve the expected cost efficiencies described in the BBC report. The BBC report claims cost efficiencies will be gained through improved economies of scale. However, interviews with three of the major Title III-B contractors highlighted potential flaws in this logic. In order for an economy of scale to be achieved, the total amount of fixed overhead cost will need to decrease or the total variable costs need to increase. Yet, there is no evidence that either of these changes will occur. Fixed overhead will decrease slightly for each of the Title III-B contractors if they give up certain scheduling and dispatch functions. However, the decrease at the provider level is not expected to make up for the increase required to staff a centralized call center. The reason for this is due to the fact that each of the operators will need to perform rudimentary scheduling and dispatch functions regardless of whether or not scheduling and dispatch services are performed by a central call center. This phenomenon is well known in the call center industry – and is exhibited in Denver. Transportation programs operated through a call center generally run two scheduling procedures: once by the broker to issue trips to local providers, and again by local providers to optimize the trips at a local level. Because of this two-pass scheduling process, most of the operators will need to retain some local capacity to conduct scheduling and dispatch functions. Yet, a centralized call center will also need scheduling and dispatch capability. Therefore, the outcome is a net increase in the fixed overhead for these functions. Also, unless additional funding sources are added to the program, variable costs (the cost of services) will be the same for a centralized service compared to a decentralized service. If fixed costs increase and variable costs stay the same, a centralized call center would result in a diseconomy of scale.

Prognosis for Model 1:

While the motivations – which include improving efficiency and service quality – for pursuing a single call center have merit, Model 1 is not expected to achieve the desired outcomes. Model 1 is not recommended.

Model 2: Centralized brokerage with multiple funding sources

If the major flaw of Model 1 is the lack of economy of scale, the logical solution is to add multiple funding sources to achieve a more robust brokerage. Such a model could funnel Title III-B funding plus other major funding programs through a region-wide brokerage. Obvious candidates for inclusion in such a model are RTD Access-a-Ride and Medicaid NEMT. The vast majority of literature relating to coordination of human service and public transportation focuses on this specific opportunity. The Deficit Reduction Act of 2005 [42 U.S.C. 1396a](a) gave States the option to establish a non-emergency medical transportation brokerage programs. This legislation and the success of pioneer brokerages (including the Pittsburgh and Portland systems) have resulted in the creation of numerous brokerages throughout the country. In a Transit Cooperative Research Program Synthesis report, Hosen and Fetting studied twelve such brokerages and found that the effective coordination of transit and Medicaid NEMT services is possible and beneficial in terms of reducing cost and improving service quality (2006). However, the same study cites examples of brokerages that are unable to achieve the desired outcomes of cost efficiency and service quality improvements and concludes that local interest and willingness is a key success factor in establishing a successful program.

Advantages

- On the surface, the scale of a coordinated brokerage funneling three of the region's largest transportation programs through a single call center may possibly be the most cost effective arrangement possible.
- Coordination of the Title III-B, Access-a-Ride and Medicaid NEMT services would capture a very large percentage of the total trip volume for transportation disadvantaged populations. If a brokerage could be implemented in such a way as to achieve real cost savings, this could result in a significant benefit to the region if savings were reinvested into additional transportation options.

Disadvantages

- The principal disadvantage of this option is the massive scale of changes that would be required to the underlying funding programs in order to achieve effective integration. Given that the current call centers for Access-a-Ride and Medicaid NEMT are operated by the same contractor, but in entirely separate facilities signals significant operational challenges to integration of these call center operations. If the operations were easy to integrate, they would be integrated already. The procurement, governance, oversight and legal underpinnings of at least two, but probably all three of the funding programs would need to be revised. While this is possible, it is likely a very long process that will take years to bring to fruition.

Prognosis for Model 2

Given DRMAC's interest in implementing something in the near-term, it is not recommended that the steering committee focus on Model 2 as an immediate opportunity. Instead, Model 2 should be evaluated as a long-term opportunity. If the steering committee and other stakeholders feel that this is a real opportunity worth pursuing in the long-run – and this decision should be based on interest and willingness expressed from decision makers for each of the three major funding sources – the TCS project should focus on laying the foundation for successful future implementation of a regional brokerage. This is a decision that should be discussed during the next steering committee meeting.

Model 3: Decentralized scheduling & dispatch with multiple funding sources

Recognizing that a centralized approach may not be a practical solution for near-term implementation, a third model could focus on more immediate opportunities. This model draws from the experiences in Portland and Honolulu of building a system by supporting and strengthening existing resources within the region. This is the hybrid model alluded to earlier in this memorandum. It is described in detail in Part 4 of this report.

Advantages

- A hybrid model would build on the successes of existing programs and can be implemented without significant changes to existing operations.
- The exchange component takes advantage of existing software infrastructure and the unique landscape of homogenous IT systems (i.e. the fact that everyone uses RouteMatch).

Disadvantages

- Requires significant advocacy work to secure and structure the funding component
- Is a different course of action than that outlined in prior plans relating to a centralized call center

Prognosis for Model 3

Given the strengths and complexities of operations that exist at the local level, a system that supports and strengthens rather than replaces or duplicates existing services appears to be the most fruitful path forward. Model 3 is recommended for further evaluation by the steering committee.

Model 4: Status Quo

As a counter point to the previous options, a do-nothing option should also be considered. The do-nothing option would be to continue with services as they exist today without implementing major structural changes to any of the coordination systems that are already in place.

Advantages

- One advantage of pursuing the status quo is that coordination is already happening. DRMAC is already on its way toward a supported coordination network. Major changes to scheduling and dispatch functions do not appear to be needed in order to achieve the desired outcomes of improved cost effectiveness and service quality. Small incremental changes could be made to continually improve the existing model without major investments in technology or administrative restructuring. The funds saved from not pursuing “big-plans” may equal the cost benefits of implementing said plans.

Disadvantages

- The need for additional transportation services is growing faster than available funding. Yet, it appears the funding resources could be better leveraged to extend the available funding. Implementation of big changes in the way funds are structured at the regional level could result in the creation of an equivalent dedicated funding source to those available in Portland and Pittsburgh that have been so fundamental to establishing successful programs in those regions. Not pursuing big changes to funding structures in the Denver Region risks missing out on this opportunity.
- Based on the stakeholder interviews, it is clear the partners have a need and desire to do more to improve transportation. Without leadership, implementation could be very fragmented and inefficient.

Prognosis for Model 4

Model 4 is best suited for use as a baseline against which to compare the relative costs and benefits of the preferred model. It is recommended that a status quo model be advanced in the evaluation process to demonstrate the tradeoffs of implementing different facets of the recommended model.

RECOMMENDED MODEL

The recommended model is a hybrid of the supported coordination, brokerage, and exchange models. It can be described as regional coordination program for supporting a constellation of sub-regional coordination nodes. It is comprised of four major components.

Component 1: Support Sub-Regional Coordination Nodes

This is the most important element of the recommended model. The concept is to foster the development and expansion of sub-regional brokerages with dedicated funding provided through a new pooled funding source.

Sub-Regions

The region appears to be divided into three or four natural sub-regions consisting of Boulder County, Denver metro and environs (Jefferson County, Broomfield, Adams, Denver, and Arapaho counties), and Douglas County. The three mountain counties could also be included in this as well. Feedback is needed from the steering committee and stakeholders regarding the boundaries for sub-regions.

Dedicated Funding

Once the sub-regions are established, a funding source should be created to fund transportation for transportation disadvantaged populations within each sub-region (component 1), plus a set aside to incentivize coordination at the regional level (component 2). This should be accomplished by pooling as many funding sources as possible. At a minimum, the Title III-B funds should be match with 5310 funds (which will require CDOT involvement). Ideally, a portion of local DD mill levy funds and potentially Veterans Trust Fund revenue could also be included in this program to provide a diversified source of funding for on-going transportation needs in the sub-regions. Of course, the eligibility requirements for ridership would be governed, in part by the funding sources flowing into each program.

Once established, the funding would be distributed through a multi-year competitive contract to establish local brokerages for each sub-region to coordinate transportation services. The funding cycle may need to be longer in duration than 2-years.

Sub-Regional Broker/Operators

The brokers would be responsible for ensuring that transportation is being provided within each sub-region. Brokers should be given the authority to operate and/or sub-contract service and to co-mingle riders from various funding sources. Coordination with public transit and Medicaid NEMT services should be explicitly allowed and encouraged. Bidders should be allowed to bid on multiple sub-regions. Rates should be established in such a way that occasional long-distance trips are adequately compensated as an incentive for coordination among regions. One simple way to accomplish this would be to establish two rates for each sub-region: one rate for local trips within the sub-region and a second rate or schedule for rates for long-distance trips between sub-regions. More complex blended rate formulae are also used to ensure adequate compensation, but a careful balance needs to be achieved between simplicity and functionality.

This program could be initiated as a pilot for one of the sub-regions, and then expanded after one or two years to the region as a whole. Policy details should be determined through a collaborative process involving a technical advisory committee of stakeholders and interested parties.

Administration of Dedicated Funding

At least two options are available for administering the new pooled funding. DRCOG could continue to administer the program or the funds could be passed through to DRMAC in a similar way as the STF funds are passed from TriMet to Ride Connection in Portland, Oregon.

Component 2: Provide Region wide Support & Incentives to all Providers

Regardless of which organization administers the funds, the new pool should include a regional set aside to be used to incentivize coordination at the regional level. Regional funds would be used to provide support services to partners, including the sub-regional brokers, as well as other local partners and providers throughout the region. Core services of a support network should include, but are not limited to:

- Advocacy
- Grant management
- Driver training
- Travel Training
- Insurance
- Vehicle Maintenance
- Procurement

These services can be an expansion of the programs that are already in place within several of the organizations. The stakeholder interviews revealed very progressive work at Imagine! relating to vehicle procurement and insurance and Travel Training capabilities at Via. Component 2 involves investing in and extending these skills to a broader regional audience.

Component 3: Provide Electronic Data Interchange Capability within IT systems

Component 3 is relatively simple. The concept is to provide support for exchanging data between the regions and among operators within the regions. This is accomplished by coordinating scheduling and dispatch functions through electronic data interchange (EDI) capabilities within the existing scheduling and dispatch software. The Denver region is unique in that essentially every major transportation operator uses the same scheduling system. This will allow for a relatively simple (albeit potentially expensive) expansion of the licensing agreements to add a coordination module.

Component 4: State Agency Rate Agreement

The fourth component is aimed at leveling the playing field in terms of the prices paid for transportation. The concept is to establish a rate agreement for passengers who are eligible for Access-a-Ride and some other state or federally funded program. The objective is to reduce the extremely low-cost option of placing a rider on Access-a-Ride for the standard passenger fare, and instead charge a negotiated rate that is closer to the actual cost of service. This is accomplished by requiring all state and federal agencies that buy passes on behalf of their dually eligible customers to pay half of the average fully allocated cost of the trip. By charging a negotiated rate,

Access-a-ride no longer becomes the provider of last resort and agencies begin to recognize the full cost of transportation. This forces organizations to become more proactive about coordinating trips and pursuing mobility management and travel training programs.

As an example, consider the case where an NEMT eligible customer is initially placed on RTD by the NEMT broker. Instead of NEMT paying the Access-a-Ride fare, the broker would be forced to pay half of RTD's fully allocated cost. Realizing this could cost the brokerage over \$20, the broker looks for a better deal elsewhere. Assuming the trip can be provided by a taxi for \$19, the trip is posted to the EDI exchange for \$18 – the maximum price the NEMT broker is willing to pay before going to a Taxi. SRC – which is also using the EDI system – accepts the trip on a shared-ride van that is scheduled to run in the same neighborhood that day. This creates an incentive for local providers to want to take NEMT trips.



MEMORANDUM

To: Angela Schreffler, Executive Director, DRMAC
From: Ross Peterson, Nelson\Nygaard Consulting Associates
Date: October 25, 2012
Subject: Transportation Coordination Systems Advisor - Technical Memo # 4a:
Supplemental Discussion Questions

PURPOSE

During our last meeting there was a great deal of interest in and questions about the recommendation for a consolidated funding source. This memo is provided to highlight several options for designing and carrying out a consolidated funding program for coordinating human service and public transportation programs. No recommendations are being offered at this point. Instead, the information is offered to stimulate discussion during our next steering committee meeting.

DISCUSSION QUESTIONS

Three discussion questions are offered to initiate the dialogue:

- What funding programs could be included in a regional consolidated grant program?
- Which organizations would be involved in administering the dedicated funding pool?
- To what extent can the funding structure be implemented as a pilot project and/or phased?

This memo provides additional background information and potential options for answering each of the questions.

What funding programs could be included in a regional consolidated grant program?

While there is consensus the regional transportation coordination system would ideally encompass multiple funding sources, it is not clear which sources should be included, and how various sources could be phased in.

The funding sources considered so far include:

- Older American Act Title III- B Funds
- FTA Section 5310 Funds
- RTD General Funds supporting ADA Paratransit services
- Veterans Trust Funds
- Mill Levy Funds for Services for People with Developmental Disabilities
- Medicaid Non-Emergent Medical Transportation Funds
- Waivered Medicaid funds for Home and Community Based Services

It would be ideal to include as many of the funding sources for human service and public transportation programs as possible, but accomplishing a consolidated grant program is constrained by several key factors:

- **Authority:** Each of the programs requires different approvals and authorities for making changes to how funds are administered. Some of the funding sources are administered at the county level while others are administered at the state level or regional level. Regional boundaries are not uniform for all programs. Given the differences in levels of authority, achieving a high degree of consolidation of funding sources could require significant advocacy, coalition building and collaboration.
- **Timing and Logistics:** The logistics associated with changing the distribution methods of one or more funding sources to become part of a consolidated grant program differ among programs. Some programs are currently obligated under multi-year service contracts while others are structured as pass-through grants renewed on a semi-annual basis. The opportunity to design and implement a program will depend on when the various funding sources reach the end of their funding/contracting cycle.

It is important to note that comingling of transportation funds can be achieved in ways other than through a consolidation of funds at the grant level. Agencies that operate service can accomplish improved economies of scale by serving clients who are funded by various funding sources. A number of funding sources permit comingling of passengers who are funded differently. This means that additional funding sources can be coordinated at the service delivery level even if those funds are not part of a consolidated grant. For example, a non-profit agency that provides shared-ride services using funding from a consolidated grant program that does not include Medicaid NEMT funds, could still provide services to Medicaid NEMT clients and receive payment for those trips through the local NEMT brokerage.

Which organizations will be involved in administering the dedicated funding pool?

There are several options for how a regional consolidated funding structure could be administered. Determining the appropriate structure is less of a technical decision than it is a local political decision. Input is needed from the steering committee on the available options.

To help members of the steering committee begin thinking about the different ways a program could be structured, the following three options are offered.

- **Option 1 – DRCOG:** DRCOG currently administers the Title III-B funds and could become the direct recipient of FTA Section 5310 funding under the MAP-21 legislation. This would allow for an immediate opportunity to combine two major funding sources as part of a regional coordinated transportation program.
- **Option 2 – RTD:** RTD currently administers the ADA Paratransit program and could become the direct recipient of 5310 funding. This would allow for direct coordination between the ADA paratransit program and other social service programs funded with 5310 dollars. Furthermore, RTD's brokerage model has similarities to the NEMT brokerage model provided by HCPF. An RTD role in administering a regional consolidated fund could have long-term potential for eventually integrating NEMT dollars into the regional coordinated transportation program.
- **Option 3 – HCPF:** In a reversal of roles described in Option 2, HCPF could build on its brokerage to add other funding sources over time.

- **Option 4 – Collaborative Oversight:** Under a collaborative oversight model multiple organizations would play a role in overseeing the regional consolidated fund. DRCOG could perform planning and programing functions while RTD could perform grant management and administration. A collaborative role could involve DRMAC as an advisory board and resource to DRCOG and RTD.

To what extent can the funding structure be implemented as a pilot project and/or phased?

At least one sub-region has expressed interest in phasing in a new approach for funding human services transportation coordination. How can a pilot or phased approach help to support the regional vision for a coordinated transportation system?

Table 1 Descriptive Information for Funding Sources

Funding Source	Governing Body/Bodies	Funding Cycle	Distribution Method
Older Americans Act, Title III-B	Area Agencies on Aging; Boulder and Denver Regional Council of Governments	One and two-year awards	Some is pass-through & some is for direct procurement of services
Federal Transit Administration Section 5310	CDOT (historically); MAP-21 requires the urbanized areas to designate a direct recipient.	One and two-year awards (historically)	Discretionary capital grants (historically); may be available for operating grants in the future
Veterans Trust Fund	Colorado Department of Veterans Affairs	Primarily one-year awards, multi-year awards are permitted based on need	Discretionary grants to nationally chartered veterans service organizations
Medicaid Non-Emergent Medical Transportation (NEMT)	Colorado Department of Healthcare Policy and Finance	Contracts are renewed on a multi-year cycle	Purchase of service through regional broker (in metro area)
Medicaid Home and Community Based Services Waiver Programs	Colorado Department of Human Services; Division for Developmental Disabilities	One-year contracts	Funding is distributed through Community Centered Boards
Mill Levy for Services for People with Developmental Disabilities	Counties	Varies by County	Varies by County