



U.S. Department  
of Transportation

**Federal Transit  
Administration**

## **FINAL TECHNICAL REPORT**

*Atlanta Region TMC Platform for One Click – System  
Development and Design*

**SEPTEMBER 2017**

**Report Number**

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## **ABSTRACT**

ARC was awarded a Mobility Services for All Americans (MSAA) cooperative agreement by Federal Transportation Administration (FTA) in July 2016 to pursue a second phase of the TMCC Simply Get There project. This report summarizes the concept of operations, system development and design work conducted to extend the functionality of the current Simply Get There multimodal trip planner. This report outlines the process undertaken, including stakeholder involvement, needs identification, and the TMCC design elements. It also contains a discussion of lessons learned for technology enhancements and stakeholder involvement.

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# 1. Executive Summary

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The Atlanta Regional Commission (ARC) is the regional planning and intergovernmental coordination agency for the 10-county area including Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry and Rockdale counties, as well as the City of Atlanta. For over 65 years, ARC and its predecessor agencies have helped to focus the region's leadership, attention and resources on key issues of regional consequence.

ARC was awarded a Mobility Services for All Americans (MSAA) cooperative agreement by FTA in July 2016 to pursue a second phase of the Simply Get There project. The MSAA program began in FY 2005 with the goal of helping older adults, persons with disabilities, and economically vulnerable Americans to access their daily needs using transportation. The ARC shares the United States Department of Transportation's (DOT's) desire to improve the transportation system for all Americans and has been partnering with DOT and local partners in order to improve it. In addition to developing its first Human Services Transportation (HST) plan in 2007, the Atlanta region published a Travel Management Coordination Center (TMCC) concept in 2008 with FTA funding. Findings from the 2008 TMCC study supported the development of an HST Advisory Committee and an update of the Coordinated HST Plan to facilitate greater coordination of HST transportation services throughout the region. ARC also received funds during FY 2011 and 2012 to develop a one-click/one-call application called Simply Get There (SGT), which began operating in 2015. The most recent round of MSAA Deployment Planning cooperative agreements allowed ARC to create system specifications for a web-based application that will bring the system forward from "trip discovery" (pinpointing options) to "trip transaction" (centralized booking, scheduling, and dispatching).

The system design and implementation plan has been developed with extensive feedback with stakeholders. ARC recognizes that Simply Get There's enhanced capabilities must be based on the needs of users, including end users and partners such as transportation providers, in order to achieve its overall objective to improve mobility for residents through the Atlanta region. Therefore, ARC began the project by engaging stakeholders who had been involved in the initial phase and identifying additional potential partners. Because there had been staff turnover at a number of agencies between the initial phase and the launch of phase 2, ARC staff met one-on-one with new points of contact to build relationships and ensure buy-in from new staff to the project. After those initial meetings with new staff, ARC held a series of group meetings for all stakeholders to gather their input and feedback. This stakeholder engagement was a valuable part of the information gathering that informs this concept of operations document. ARC will continue to engage stakeholders as we move through additional steps of phase 2 and through the future.

Project goals include:

1. Integration with Simply Get There trip discovery web application
2. "Trip triaging" capabilities to find ideal cost/accommodations match
3. Data analysis/monitoring to find efficiencies and influence planning/future implementation in a system-wide feedback loop

**Additional functions to support project goals include:**

1. Ability to create client profiles with permissions to use multiple providers, records of current eligibility, trip accommodations needed, and indication of other programs they might join
2. Ability to schedule a trip
3. Ability to pay for a trip
4. Ability for ARC or a provider to charge a user and for ARC to pay a provider
5. Information on and ability to schedule travel coaching/training assistance
6. Cross-modal trip booking and connections to manifest creation and scheduling systems as well as route optimization across modes
7. Payment and billing - Cost sharing calculated on back-end
8. Modular system (“plug and play” system that users could adapt to local needs)
9. Integration with third party systems, including Computer- Aided Dispatched /Automatic Vehicle CAD AVL software, Google, Google Maps, RouteMatch, and Trapeze
10. Ability to track trips by the funding source
11. Ability to generate invoices
12. Web-based application that can be hosted or deployed locally on ARC servers or a location of ARC’s choosing
13. A robust API to map data from other ARC and partner systems
14. Ability to house some transportation provider information on this application, rather than pulling all information from two external databases
15. Ability to be 508 compliant

## **Purpose**

The purpose of this report is to demonstrate how the ARC SGT Phase II System design met the goals for a improved one call one click center as defined by the MSAA initiative. The goals are listed as follows:

- Increase mobility and accessibility for the transportation disadvantaged and general public.
- Achieve more efficient use of Federal transportation funding resources.
- Driven by the local community.
- Provide a simplified point of access for traveler support.
- Support coordinated and comprehensive service operations and management.
- Streamline program management requirements and procedures.

## **Results**

The project resulted in the development of a comprehensive concept of operations and system design document for the next phase of the Simply Get There Trip Planner. Our scope describes tasks and deliverables that, ultimately, will generate specifications for an end to end web-based mobility management solution that manages the entire lifecycle of the trip. Application requirements will be developed based on best practice coordination models. Based on these functional requirements, an application architecture and design will be developed. It is expected that substantial discussion and iteration with ARC and Ride Connection will be required.

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The scope of work described below will address the tasks to be completed as part of the project. Major tasks include:

- System Analysis and Concept of Operations
- Functional Requirements Definition
- Application Design and Database Design
- Application Programming Interfaces / Systems Integration
- Application Technical Specifications Document

The application and system design effort will allow ARC to procure software or development services to build the next phase of Simply Get There. The design will add major functional components to extend the current application to support a common fleet and regional coordination.

## Recommendations

SGT is the current trip planning and trip discovery application developed and deployed. The web application is currently deployed and utilized by multiple users and agencies in the Atlanta region. It is recommended that the current system be extended to support a more robust operational and service delivery model. The current project should leverage the existing SGT application and architecture to extend the scope of the functionality to support a multi-modal, regional transportation coordination platform.

Key functional areas to be considered and phased in include:

- Centralized Resource Management
- Centralized Eligibility Determination
- Web-Based Reservations
- Automated Scheduling and Provider Assignment
- Provider Management and integration to existing Information and Referral System (ESP)
- Transportation brokering and least cost most appropriate provider assignment
- Automated Dispatching
- Automated Payment
- Automated cost allocation and invoicing
- Regional Trip Coordination
- Transportation Analytics

## 2. Project Background

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ARC was awarded a Mobility Services for All Americans (MSAA) cooperative agreement by FTA in July 2015 to pursue a second phase of the Simply Get There project. The MSAA program began in FY 2005 with the goal of helping older adults, persons with disabilities, and economically vulnerable Americans to access their daily needs using transportation. The ARC shares the United States Department of Transportation's (DOT's) desire to improve the transportation system for all Americans and has been partnering with DOT and local partners in order to improve it. In addition to developing its first Human Services Transportation (HST) plan in 2007, the Atlanta region published a Travel Management Coordination Center (TMCC) concept in 2008 with FTA funding. Findings from the 2008 TMCC study supported the

development of an HST Advisory Committee and an update of the Coordinated HST Plan to facilitate greater coordination of HST transportation services throughout the region. ARC also received funds during FY 2011 and 2012 to develop a one-click/one-call application called Simply Get There (SGT), which began operating in 2015. The most recent round of MSAA Deployment Planning cooperative agreements will allow ARC to create system specifications for a web-based application that will bring the system forward from “trip discovery” (pinpointing options) to “trip transaction” (centralized booking, scheduling, and dispatching).

## Document Contents and Purpose

The purpose of this document is to demonstrate the methodology, results and lessons learned from the eighteen months devoted to the design of Phase 2 for the ARC Simply Get There Multi-Modal Trip Planner.

## 4. System Design Methodology

The ARC project team followed the guidance of the United States Department of Transportation (USDOT), FTA and project technical assistance consultants in approaching the Phase II System design of a travel management coordination center.

The deliverables due to the USDOT that facilitated the design process included:

Deliverable	USDOT Approval Date
Concept of Operations	1/17/17
Requirements Document	7/17/17
Phased Implementation Plan	Last response 10/12/17; resubmit 10/18/17
Common Fleet Information Platform	Submission 10/20/17
Final Report	Submission 10/20/17

## Concept of Operations

The ARC SGT Concept of Operations followed a traditional USDOT systems engineering design process. In addition to meetings with all stakeholders and the core project group, needs assessment interviews with each provided the content of the ARC SGT Concept of Operations. The Concept of Operations covered the initial design concepts as well as system goals and stakeholder expectations for the project.

Project goal is to extend the current SGT application and, potentially, architecture to extend the scope of the functionality to support a multi-modal, regional transportation coordination platform.

Key functional areas to be considered include:

- Centralized Resource Management

- Centralized Eligibility Determination
- Web-Based Reservations
- Automated Scheduling and Provider Assignment
- Provider Management and integration to existing Information and Referral System (ESP)
- Transportation brokering and least cost most appropriate provider assignment
- Automated Dispatching
- Automated Payment
- Automated cost allocation and invoicing
- Regional Trip Coordination
- Transportation Analytics

Integration considerations for the coordination platform will consider the following:

- Third party scheduling and dispatching application integration
- Customer Information and Access
- Real Time information integration
- Provider communication and integration
- Transportation Data Exchange
- Support for “no tech” providers
- Security and Privacy

Multi-modal considerations for the coordination platform will consider the following:

- Transportation Network Companies
- Real Time Fixed Route Information
- Vanpool Integration
- Provider database expansion and integration

The planning phase of this effort is underway and includes the following, the first three bullets of which are deliverables in this Cooperative Agreement:

- Development of a Concept of Operations
- Stakeholder engagement
- Travel Management Coordination Platform (TMCP) Design
- Determine technology toolset and functional requirements to expand capacity in existing providers and integrate the trip planning / discovery process into the service delivery operations

### **Stakeholder Engagement:**

The system design process was developed with extensive feedback with stakeholders. ARC recognizes that Simply Get There’s enhanced capabilities must be based on the needs of users, including end users and partners such as transportation providers, in order to achieve its overall objective to improve mobility for residents through the Atlanta region. Therefore, ARC began the project by engaging stakeholders who had been involved in the initial phase and identifying additional potential partners. Because there had been staff turnover at a number of agencies between the initial phase and the launch of phase 2, ARC staff met one-on-one with new points of contact to build relationships and ensure buy-in from new staff to the project. After those

initial meetings with new staff, ARC held a series of group meetings for all stakeholders to gather their input and feedback. This stakeholder engagement was a valuable part of the information gathering that informs this concept of operations document. ARC will continue to engage stakeholders as we move through additional steps of phase 2 and through the future.

Stakeholder meetings have been conducted with the following stakeholder types:

- 1) Technical Stakeholders, including people who develop and use software applications
- 2) Agency Stakeholders who work with older adults and people with disabilities
- 3) User Stakeholders, including residents who may have been trained on the software and who are the target populations for human services transportation

Multiple stakeholder events have been conducted to:

- Educate stakeholders on SGT features and functionality
- Educate stakeholders on the next phase of SGT
- Get feedback from stakeholders on feature gaps, workflow, and process.
- Incorporate stakeholder feedback into concept of operations. Feedback on requested features and functionality will be included in the prioritization and design process.

Stakeholder topics and discussions revolved around the following questions:

- Describe your agency and transportation program?
- Key challenges in coordination or mobility?
- Familiar with SGT and how it could assist your consumers?
- Does anyone currently utilize this type of system? If so, how?
- The Simply Get There (SGT) Comprehensive Stakeholder Team includes:

<b>SIMPLY GET THERE PARTNER ORGANIZATION</b>	<b>POINT OF CONTACT</b>	<b>EMAIL</b>
<b>AGING AND DISABILITY RESOURCE CONNECTION (ADRC)</b>	Cara Pellino	<a href="mailto:cpellino@atlantaregional.com">cpellino@atlantaregional.com</a>
<b>ARC TRANSPORTATION ACCESS AND MOBILITY MANAGER</b>	Cain Williamson	<a href="mailto:cwilliamson@atlantaregional.com">cwilliamson@atlantaregional.com</a>
<b>AREA AGENCY ON AGING (AAA)</b>	Kathryn Lawler	<a href="mailto:klawler@atlantaregional.com">klawler@atlantaregional.com</a>
<b>ATLANTA REGIONAL WORKFORCE BOARD (ARWB)</b>	Marsharee O'Connor	MO'Connor@atlantaregional.com

<b>ATLANTA UNITED WAY 211</b>	Don Zubler	<a href="mailto:dzubler@unitedwayatlanta.org">dzubler@unitedwayatlanta.org</a>
<b>CENTER FOR VISUALLY IMPAIRED (CVI)</b>	Anisio Correia	<a href="mailto:acorreia@cвига.org">acorreia@cвига.org</a>
<b>COBB COMMUNITY TRANSIT (CCT)</b>	Vida Covington	<a href="mailto:Vida.Covington@cobbcounty.org">Vida.Covington@cobbcounty.org</a>
<b>DEKALB OFFICE OF SENIOR AFFAIRS</b>	Sandra Morrow	<a href="mailto:skmorrow@dekalbcounty.ga.gov">skmorrow@dekalbcounty.ga.gov</a>
<b>DISABILITY LINK, THE CENTER FOR INDEPENDENT LIVING (CIL)</b>	Ken Mitchell	<a href="mailto:KMitchell@disabilitylink.org">KMitchell@disabilitylink.org</a>
<b>GEORGIA COMMUTE OPTIONS (GCO)</b>	Ryan Ellis	<a href="mailto:rellis@atlantaregional.com">rellis@atlantaregional.com</a>

*Table 1 - Individual Stakeholders*

## Requirements Document

Following the Concept of Operations, the Requirements Document was the result of a series of meetings not only with participating stakeholders but also the core project team. Several documents provided by technical assistance and the USDOT for writing system requirements were used to provide best practices information on the formation of this deliverable. The requirements document detailed what the ARC SGT policies and functions should be.

The Simply Get There minimum viable product (MVP) will provide an end to end solution for the mobility management, online reservations, provider management, scheduling, routing, and dispatching. An MVP is the minimum amount of functionality that must be built to be able to successfully sell and solves a large percentage of the problem. This allows you to get the product to market faster, gain valuable customer feedback, add / modify features, re-deploy to customer, and continue the iteration. Agile development methodologies are recommended for this approach.

The following document provides a high-level description of major features and functionality required for the paratransit / demand response market. Target market consists of small to medium sized paratransit, NEMT and senior service providers.

Requirements are broken down into major modules that will need to be developed to support data management requirements, scheduling and routing, and dispatching. The requirements define a “minimum viable product” or MVP. An MVP is the minimum amount of functionality that must be built to be able to successfully sell and solves a large percentage of the problem.

This allows you to get the product to market faster, gain valuable customer feedback, add / modify features, re-deploy to customer, and continue the iteration. Agile development methodologies are recommended for this approach.

**Core modules could include:**

1. Customer Management
2. Provider Management (integrated to ESP)
3. Vehicle Module
4. Drivers Module
5. Reservations Module
6. Provider Assignment
7. Automated Scheduling
8. Route Optimization
9. Dynamic Dispatching
10. Reporting and Cost Allocation
11. Administration

\* Integration to existing Simply Get There and ESP Plus is mandatory.

**Technical Considerations:**

- 1) Address Geocoding
- 2) Vehicle Routing Problem
- 3) GTFS Fixed Route Integration
- 4) Real Time Traffic
- 5) ETA Calculation
- 6) Generic Base Mapping

Route optimization tools and API's will be used to solve the schedule / route problem. Application will provide required trip, route, and depot data. API will provide schedule, route, and route lines. Schedule parameters will be defined in application and passed to API. Schedule display and management will be handled by client.

Developers must focus on usability, user experience, and performance. Application will be 100% web-based and sold as a SaaS solution. Target markets will include the small to medium transit agencies and senior services markets.

**Design Considerations:**

1. Open and Published API Support
2. Broker / Provider Support
3. Transit "Partners" Coordination
4. Multi tenancy
5. User Experience
6. ARC Back Office Integration (ESP Plus)

**Users Types:**

1. Data Manager
2. Reservationist
3. Scheduler
4. Dispatcher
5. Billing / Invoice
6. System Administrator

**Roles and Permissions:**

System should be architected for easy assignment to user types based on user roles and permissions. Create Write Update Delete (CRUD) roles and permissions should be assigned to user roles and types. Module level permissions and field level permission sets should be designed to model user role access and organization data needs. Single sign on based on user assigned roles is optimum.

Workflow for application should include:

- Create and Edit customers
- Create and edit vehicles
- Create and edit reservations
- Create and edit schedules
- Dispatch and monitor performance
- Report and bill on transportation performed with strong exception reporting capabilities

**High Level Design**

The core project team met multiple times to discuss the High Level Design, which described how the system requirements outlined in previous deliverables would be achieved through vendor and technology independent means. Existing technologies employed by the stakeholders were considered during the compilation of the High Level Design, as were Documents such as prior deliverables, USDOT responses to those deliverables.

**Design Considerations:**

7. Open and Published API Support
8. Broker / Provider Support
9. Transit “Partners” Coordination
10. Multi tenancy
11. User Experience
12. ARC Back Office Integration (ESP Plus)

**Users Types:**

7. Data Manager
8. Reservationist
9. Scheduler
10. Dispatcher
11. Billing / Invoice

## 12. System Administrator

### **Roles and Permissions:**

System should be architected for easy assignment to user types based on user roles and permissions. Create Write Update Delete (CRUD) roles and permissions should be assigned to user roles and types. Module level permissions and field level permission sets should be designed to model user role access and organization data needs. Single sign on based on user assigned roles is optimum.

Workflow for application should include:

- Create and Edit customers
- Create and edit vehicles
- Create and edit reservations
- Create and edit schedules
- Dispatch and monitor performance
- Report and bill on transportation performed with strong exception reporting capabilities

A working session to educate the core project team and stakeholders on key and major design concepts was conducted. This provided a high level overview of key technical and architectural concepts. A base or foundation understanding of these will become important in the business model, cost structure, and application re-design / re-architect business decisions in the future. The detailed presentation is attached to this memo.

- Service Oriented Architectures
  - Web Services refers to the technologies that allow for making connections.
  - Services are what you connect together using Web Services.
  - A service is the endpoint of a connection.
  - A service has some type of underlying computer system that supports the connection offered. The combination of services—internal and external to an organization—make up a service-oriented architecture.
- Best Practice: Representation State Transfer (REST)
  - It is a style; not standard
  - Best practice for implementing web-based applications and services
  - Applications built on this framework are considered “RESTful”
  - Best example of this framework: Internet
- Cloud Computing
  - Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction
  - Characteristics
    - On-demand self-service

- 
- Broad network access
  - Resource pooling
  - Rapid elasticity
  - Measured service
- Software as a Service
    - Software as a Service (SaaS) is what most people mean when they say "the Cloud."
    - SaaS provides a complete software solution.
    - The easiest way to think about SaaS is that it is some type of standard software package that can be used on demand and is paid for by subscription, by use, by advertising, or by sharing information
    - Platform as a Service (PaaS) may also become relevant to ARC. PaaS is a category of cloud computing services that provides a platform allowing users to develop, run, and manage applications without the complexity of building and maintaining the infrastructure typically associated with developing and launching an commercially available product. The advantages of PaaS are primarily that it allows for higher-level programming with dramatically reduced complexity; the overall development of the application can be more effective, as it has built-in infrastructure; and maintenance and enhancement of the application is easier. It can also be useful in situations where multiple developers are working on a single project involving parties who are not located nearby.
  - Extended Markup Language (XML) – Electronic data interchange
    - Popular standard for application and data sharing
    - Commonly used in web services for presenting, communicating, and storing data.
  - Application Programming Interface (API)
    - APIs allow for the creation of a minimal interface that is relatively stable that can be used by other software systems to access or manipulate the underlying systems or data.
    - This allows for enhancements to the underlying systems or data without disturbing the software systems that use the API.
  - Security and Authentication
    - Authentication is the mechanism you use to verify the identity of visitors to your Web site or Web application. Typically, you do this by assigning a user name and password to a visitor or allowing a visitor to anonymously access public content on your site.

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## Phasing and Implementation Plan

The Phasing and Implementation Plan was compiled by the ARC SGT consultants with the assistance of potential system vendors as well as information technology and procurement personnel from the participating vendors. Additionally, guidance for the System Phasing and Implementation Plan was distributed by the FTA.

The following section outlines a proposed implementation schedule and budget based on the user's highest priority business requirements. Major feature and functional components are bundled into logical feature sets. It is expected the project can be fully implemented in three major phases with the first phase addressing the major pain points of the project.

### Phase 1 – Web Based Reservations

Major function components of phase 1 include:

- Centralized Resource and Eligibility Management
- Automated Web Reservations
- Billing and Cost Analytics
- Regional Transportation Coordination API

### Resource Management

Creating and editing customer demographics including default address information (geocoded), eligibility information, capacity and constraint related parameters (mobility needs, PCA's, guests, etc...), trip related data (trip purpose, trip type), and billing information. Information below defines the core data management requirements for customers.

Major Functions:

- SEARCH - Searching for Customers
- NEW - Creating New Customers
- EDIT - Editing Customers
- DELETE - Deleting Customers

The vehicle module simply provides users the ability to define the type of vehicles operated and their relevant characteristics. This data is very important for route and schedule optimization. Vehicle data will be passed into scheduling tools. Much of the data below is required by FTA for National Transit Database (NTD) annual reporting.

Key considerations for managing vehicles in proposed system:

- Vehicle Capacity
  - Ambulatory Seats
  - Wheelchair Slots
- Vehicle Availability
- Vehicle Requirements
  - Drivers must have this capability to be assigned to it
- Vehicle Pull In / Pullout (Garage Location)

### Web-Based Reservations

The reservation module allows customer service representatives (CSR) to quickly and easily book trips. There are two types of trips:

- Demand Response (single trip)
- Standing Order (recurrence pattern)

Major functions include:

- New Reservation
- SEARCH for Reservation
  - Easy and flexible search functions.
  - Once customer with trips is identified, user can edit record
    - EDIT
    - DELETE
    - COPY
- Schedule / Assign to provider
- API support to coordinate transportation request

### Billing and Cost Allocation

Trip billing, invoicing, and cost allocation will be a major feature set in phase 1. This includes the following features:

- Trip Cost Estimation based on contract or program billing rules
- Billing verification and eligibility
- Third party billing and invoicing
- Cost analytics and allocation

Phase 1 - Implementation Estimate						
	Application Development Fees		Annual Application Hosting	Annual Technical Support	Timeframe	
	Low	High			Low	High
<b>Resource Management</b>	\$ 75,000.00	\$ 150,000.00	\$ 24,000.00	\$ 12,000.00	6 Months	9 Months
<i>Customer</i>						
<i>Eligibility</i>						
<i>Driver</i>						
<i>Vehicle</i>						
<b>Resource Management</b>	\$ 75,000.00	\$ 150,000.00	\$ -	\$ -	3 Months	6 Months
<i>Web Based Access</i>						
<i>Provider Assignment</i>						
<i>API</i>						
<b>Billing and Cost Allocation</b>	\$ 25,000.00	\$ 50,000.00	\$ -	\$ -	3 Months	6 Months
<b>Total</b>	<b>\$ 175,000.00</b>	<b>\$ 350,000.00</b>	<b>\$ 24,000.00</b>	<b>\$ 12,000.00</b>	<b>9 Months</b>	<b>12 Months</b>

### Phase 2 – Automated Scheduling and Dispatching – is this common fleet?

Major functions of phase 2 would include:

- Automated Scheduling and Provider Assignment

- Route Planning and Optimization
- Automated Dispatching
- Electronic Payment

### Automated Scheduling and Route Optimization

The most complex problem associated with this application is the scheduling and routing problem. Trips must be automatically assigned to a route/vehicle pair that meets the customer requirements and does not violate system constraints.

The vehicle routing problem (VRP) optimizes vehicle schedules and routes for a fleet of vehicles. A scheduler or dispatcher managing a fleet of vehicles is often required to make decisions about vehicle routing. One such decision involves how to best assign a group of customers to a fleet of vehicles and to sequence and schedule their visits. The objectives in solving such vehicle routing problems (VRP) are to provide a high level of customer service by honoring any time windows while keeping the overall operating and investment costs for each route as low as possible. The constraints are to complete the routes with available resources and within the time limits imposed by driver work shifts, driving speeds, and customer commitments. This service can be used to determine solutions for such complex fleet management tasks. The goal is to come up with an itinerary for each driver (or route) such that the deliveries can be made while honoring all the service requirements and minimizing the total time spent on a route by the driver.

### Automated Dispatching

Dispatching is the process of monitoring the performance of service delivery. Dispatchers need easy and fast access to schedule and trip information. The system must provide data views or lists of routes, trips, and related performance data. Mapping of routes and trips is also important for the scheduler and dispatcher to graphically view the planned and actual stops and routes for each provider and vehicle. GIS will be used in later versions to support vehicle tracking. Phase 3 will provide automated vehicle tracking and real time mobile data capabilities to provide real time insight into the regional system.

Phase 2 - Implementation Estimate						
	Application Development Fees		Annual Application Hosting	Annual Technical Support	Timeframe	
	Low	High			Low	High
<b>Automated Scheduling</b>	\$ 500,000.00	\$ 750,000.00	\$ 6,000.00	\$ 48,000.00	12 Months	18 Months
<b>Route Optimization</b>	\$ 250,000.00	\$ 500,000.00	\$ -	\$ -	6 Months	12 Months
<b>Automated Dispatching</b>	\$ 25,000.00	\$ 50,000.00	\$ -	\$ -	6 Months	12 Months
<b>Total</b>	<b>\$ 775,000.00</b>	<b>\$ 1,300,000.00</b>	<b>\$ 6,000.00</b>	<b>\$ 48,000.00</b>	<b>18 Months</b>	<b>24 Months</b>

## Phase 3 – Real Time AVL and Mobile Data Systems

Major functions of phase 3 would include:

- Real Time Asset Tracking and Dispatching
- Real Time Transportation Verification
- Enterprise Transportation Data Analytics

- Customer Mobile App (“Where’s My Ride”) with Electronic Payment
- Driver Mobile App (“Paperless Manifest and Real Time Data Collection”) with Electronic Payment Acceptance

Phase 3 - Implementation Estimate						
	Application Development Fees		Annual Application Hosting	Annual Technical Support	Timeframe	
	Low	High			Low	High
<b>Automated Vehicle Location</b>	\$ 100,000.00	\$ 200,000.00	\$ 6,000.00	\$ 48,000.00	12 Months	18 Months
<b>Mobile Data System</b>	\$ 100,000.00	\$ 200,000.00	\$ -	\$ -	6 Months	12 Months
<b>Mobile Apps</b>	\$ 100,000.00	\$ 200,000.00	\$ 6,000.00	\$ 12,000.00	6 Months	12 Months
<i>Customer</i>						
<i>Driver</i>						
<i>Electronic Payment</i>						
<b>Total</b>	<b>\$ 300,000.00</b>	<b>\$ 600,000.00</b>	<b>\$ 12,000.00</b>	<b>\$ 60,000.00</b>	<b>6 Months</b>	<b>12 Months</b>

### 3. Results/Findings

#### 5.1. Initiative Goals

**Goal:** Integration with Simply Get There trip discovery web application

**Finding:** ??

**Result:** "No Wrong Entry" is a major theme within the design of the ARC SGT system. For transit related concerns such as trip booking, customer service, eligibility questions, there are three methods of entry into the system. The customer can call which ever number they are accustomed to using for assistance and choose whether or not to use the Interactive Voice Recognition (IVR) system (first option), or work with a live representative (second option). As described in the detailed design document, if the customer wishes to speak with a representative, then the system will route the call to a representative from the agency linked to the phone number the customer originally called. If none is available, then the system will hunt for the next available person in the overall system. The third option a customer has is to use the ARC SGT website. This website will allow the customer to create and access a customer profile, begin an eligibility application or search for and book a trip with any agency in the system. These three options allow the customer, especially those eligible for multiple transportation disadvantaged programs to use just one point of access for his or her transportation needs. This compliments the MSAA and United We Ride concept of “one call for a ride.” Additionally, the use of live representatives, IVR and the web gives customer the freedom to choose how they prefer to access their transit options.

**Goal:**

To achieve more efficient use of Federal transportation funding resources.

**Result:** One of the key features of ARC SGT is the coordination of resources among the participating agencies. For example, if two agencies are each providing similar trips to separate

customers, then one agency can deliver trips to both passengers, while the other agency provides service in a different area. This lowers the cost per trip for both agencies, and allows them to use the same amount of Federal funding to provide a greater number of trips. The increase in the number of available trips leads to more transportation options for customers.

**Goal:** To provide a simplified point of access for traveler support.

**Result:** The ARC SGT platform will contribute to a regional coordination of providers/agencies better closing the transportation barriers/gaps while managing cost per trip. The more people use shared and coordinated transit modes, the more likely they are to use public transit, own fewer cars, and spend less on transportation overall. Coordinated demand response modes complement traditional public transit, enhancing urban mobility. Shared modes will continue to grow in significance, and public entities should identify opportunities to engage with them to ensure that benefits are widely and equitably shared. The public sector and private operators are eager to collaborate to improve paratransit service using emerging approaches and technology. While a number of regulatory and institutional hurdles complicate partnerships in the Atlanta region, technology and business models from the coordinated mobility initiatives will help drive down costs, increase service availability and improve rider experience.

**Goal:** To support coordinated and comprehensive service operations and management.

**Finding:** The ARC SGT allows participating agencies to simplify many aspects of service operations and management. Centrally optimized functions such as scheduling, eligibility determination and tracking, comments tracking, billing and reporting eliminates redundancies in all of these functions and gives agencies the opportunity to reallocate resources from these tasks to other areas. Customers also benefit from coordinated service operations.

**Goal:** To streamline program management requirements and procedures.

**Result:** Most of the deliverables completed by the ARC SGT during the Phase II Design process will play a role during the system execution and implementation. Particularly important to the system development process are the Requirements and High Level Design documents. Since these two documents are already complete, the detailed design process will move much more quickly for ARC SGT vendors. Additionally, since the core team and vendors have already viewed and approved the phasing and implementation plan, system development can easily begin immediately after notice to proceed is received.

## 4. Lessons Learned

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The purpose of this document for the Mobility for All American's (MSAA) is to capture the project's lessons learned in a formal way for use by others on similar future projects to determine what problems occurred and how those problems were handled and may be avoided in the future. Additionally, this document details what went well with the project and why, so that other project managers may capitalize on these actions. Throughout the Phase II system design, the ARC SGT team built upon the lessons learned during the process. Compiled below, those lessons can be applied to not only the design process but also its strategy and team. Additionally, these lessons learned contain feedback for the reviewers at the Federal level and the technical assistance team.

The following chart lists the lessons learned from the project. These lessons are categorized by project knowledge area and descriptions, impacts, and recommendations are provided for consideration on similar future new construction projects.

**Table 2 - Lessons Learned**

<b>Category</b>	<b>Issue Name</b>	<b>Problem/Success</b>	<b>Impact</b>	<b>Recommendation</b>
<b>Procurement Request for Proposals (RFP)</b>	Contract Requirements	The technical consultant was fully engaged in the contract process.	Ability to meet FTA timelines with minimal changes.	Projects of this kind require the use of a consultant who is highly skilled both technically to meet FTA milestones and interpersonally to assist the contracting agency in the provision of teaching and training as needed to transfer knowledge on the design.
<b>Scope of Work Management</b>	Scope Creep	Additional requirements requested for High Level Requirements, Architecture, Final Report, Briefing, and Lessons Learned added to the project scope.	Plan for addressing scope creep required an adjustment in budget.	A flexible approval process for any proposed scope changes and timely communication of this process to all stakeholders.
<b>Contract consistency</b>	Staff Turnover	Contracting agency PM turnover x 3	Subject matter expertise is compromised; steep learning curve to get up to speed	Supplement agency staffing to include a Technical analyst responsible for technical oversight of multiple projects.

## **5. Summary of Conclusions and Recommendations**

This Final Technical Report for the ARC SGT Phase II System design establishes that this project met each of the MSAA goals presented during the project kickoff. By designing a system that will meet these goals:

- Increase mobility and accessibility for the transportation disadvantaged and general public.
- Achieve more efficient use of Federal transportation funding resources. Be driven by the local community.
- Provide a simplified point of access for traveler support.
- Support coordinated and comprehensive service operations and management.
- Streamline program management requirements and procedures.

ARC SGT demonstrates that public transportation needs can be met in a manner that is both more efficient and more beneficial to the general public.

## Recommendations

The current Simply Get There web application serves as a onestop shop for information and referral related to multi-modal transportation options. It also has a one-stop telephone information access number and a corresponding one-stop information access web site. This allows customers to call one telephone number to obtain information on any type of transit service (Medicaid, ADA, workforce, low-income, elderly), as well as obtain contact information for providers and information about eligibility requirements, service coverage areas, service hours, and access points. The customer can fill out a detailed profile so that future trip requests can be made without reentering personal data. However, there are limitations and the implementation of phase 2 is recommended.

Simply Get There does not support a complete “one stop / one click system. The user cannot fully book a demand response trip. The site simply provides contact information for potential transport providers. The user must call the provider to reserve a ride. The implementation of phase 2 will allow users to reserve rides online, identify most efficient transport options, connect the reservation to the providers systems for automated scheduling, dispatch the trip, calculate the costs of the trip, and coordinate demand response services across the region. Phase 2 would also give consumers access to a mobile app for mobile booking, “where’s my ride”, and service alerts. A driver mobile app will also be available to capture real time location information, deliver electronic manifests, dynamically optimize route schedules, and provider operational alerts and notifications.

Process recommendations from the ARC SGT Phase II System design provide a condensed version of the lessons learned:

**Strategy:** Plan and pace the project in a realistic manner that evenly distributes work over the lifetime of the project, but prepare to be flexible in the implementation of the design plan.

**People:** Form a cohesive team that understands the benefits of a TMCC and shares the common goal of providing more efficient transportation services to the public.

**Process:** Identify a Core Team to design most of the system in an effective manner, but reach out to the community for ideas and support.

Technology: Bring the consultants and/or vendors into the process as early as is prudent, and make sure they have a clear understanding of the project goals and design, as well as their role in the process.