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**List of Abbreviations and Acronyms**

|  |  |
| --- | --- |
| ADA | Americans with Disabilities Act |
| AIL | Action Items List |
| ATP | Acceptance Test Procedures |
| AVL | Automatic Vehicle Location |
| BT | Burn-In Testing |
| CDL | Commercial Driver's License |
| CDR | Critical Design Review |
| CIO | Chief Information Officer |
| COTS | Commercial off-the-shelf |
| CSV | Comma Separated Value |
| DAR | Dial-a-ride |
| ED | Elderly and Disabled |
| ESRI | Environmental Systems Research Institute |
| FCC | Federal Communications Commission |
| FDD | Final Design Document |
| FDR | Final Design Review |
| FTP | File Transfer Protocol |
| GIS | Geographical Information System |
| GPS | Global Positioning System |
| HIPAA | Health Insurance Portability and Accountability Act |
| HTTPS | Hypertext Transport Protocol Secure |
| ICA | Independent Computing Architecture |
| IDD | Installation Design Document |
| IAT | Installation Acceptance Test |
| IEEE | Institute of Electrical and Electronics Engineers |
| IT | Information Technology |
| ITS | Intelligent Transportation Systems |
| IVR | Interactive Voice Response |
| JRE | Java Run-time Environment |
| KML | Keyhole Markup Language |
| LAN | Local Area Network |
| MDT | Mobile Data Terminal |
| NEMA | National Electrical Manufacturers Association |
| NEMT | Non-emergency Medical Transportation |
| NTD | National Transit Database |
| NTP | Notice To Proceed |
| ODBC | Open Database Connectivity |
| OMRG | Onboard Mobile Router Gateway |
| OSI | Open System Interconnection |
| PCA | Personal Care Attendant |
| PDD | Preliminary Design Document |
| PDR | Preliminary Design Review |
| POI | Point of Interest |
| PSDS | Paratransit Scheduling and Dispatching Software |
| RAM | Random Access Memory |
| RAPS | Risk Adjustment Processing System |
| RDP | Remote Desktop Protocol |
| RFP | Request for Proposal |
| RM | Requirements Matrix |
| RR | Requirements Review |
| SA | System Acceptance |
| SAE | Society of Automotive Engineers |
| SCCP | Skinny Call Control Protocol |
| SHP | Shapefile |
| SIP | System Implementation Plan |
| SMs | Systems Manuals |
| SQL | Structured Query Language |
| SSID | Service Set Identifier |
| SSN | Social Security Number |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| TP | Training Plan |
| TRD | Test Results Documentation |
| UAT | User Acceptance Testing |
| UMs | User Manuals |
| USB | Universal Serial Bus |
| VLU | Vehicle Logic Unit |
| VoIP | Voice over Internet Protocol |
| VPN | Virtual Private Network |
| WLAN | Wireless Local Area Network |
| XML | eXtensible Markup Language |
| XMPP | Extensible Messaging and Presence Protocol |

# Introduction

These specifications define the functional, performance, installation, integration and project implementation requirements for the deployment of paratransit scheduling and dispatching software (PSDS) for Gadabout.

This document includes the following sections:

* Section 2 provides an overview of Gadabout’s existing transportation services, system environment, and the technical scope of this project;
* Section 3 defines the information technology (IT) requirements;
* Section 4 defines wireless data communication system requirements;
* Section 5 defines the geographic information system (GIS) and mapping requirements for the PSDS;
* Section 6 defines the PSDS system requirements;
* Section 7 defines reporting requirements;
* Section 8 defines future needs;
* Section 9 defines the functional and performance requirements for computer-sided dispatch (CAD) / automatic vehicle location (AVL);
* Section 10 defines the project implementation requirements;
* Section 11 defines warranty and spares requirements;
* Appendix A contains the Price Proposal Form; and
* Appendix B contains the Compliance Matrix.

# Overview

Gadabout provides paratransit services throughout Tompkins County by operating two different types of service. They operate regular Gadabout service (primarily for elderly and disabled persons) and have a contract with Tompkins Consolidated Area Transit (TCAT) to operate TCAT’s Americans with Disabilities Act (ADA) paratransit service. Gadabout operates both types of service simultaneously with the same fleet of buses.

Due to the management of drivers, both paid and volunteer, and other factors, the scheduling of client trips can be challenging. Gadabout requires paratransit scheduling and dispatching software (PSDS) that meets the needs of both clients and staff, and better meets the goals and future direction of Gadabout.

## Service and Operations Overview

An overview of the characteristics of Gadabout transportation services is as follows:

* Gadabout is a New York State chartered not-for-profit corporation. It provides door-to-door transportation services for people 60 years and over, and persons with disabilities in Tompkins County.
* Gadabout, under contract to TCAT, operates ADA Complementary Paratransit, which is a specialized, door-to-door transportation service for people who are not able to ride the fixed-route transit system (TCAT) because of a disability.
* Other Transportation Services:
* Medicaid trips;
* Trips to bring people from Watkins Glen (in Schuyler County) to Challenge, which is a non-profit organization that is committed to creating pathways to employment for people with disabilities or barriers. This is Gadabout’s longest distance subscription trip;
* Trips to bring other people in the community to Challenge for their programs/training; and
* New Freedom trips, which are provided beyond the three-quarters of a mile ADA corridor and times of service (these trips are dependent on driver availability).

Further, Gadabout receives funding to subsidize trips for the frail elderly.

Gadabout has approximately 10 volunteer drivers who transport Tompkins County residents whose transportation needs cannot be met by Gadabout drivers due to location (where a customer lives or needs to go) or timing (when a customer needs to travel). Volunteer drivers operate Gadabout vehicles and are not reimbursed for mileage. Each volunteer offers his or her own time.

Drivers who operate Gadabout vehicles are required to have a minimum of a Class C New York State (NYS) Commercial Driver’s License (CDL) with a Passenger Endorsement. Also, drivers are required to meet NYS Department of Motor Vehicles (DMV) article 19A compliance standards. Volunteer drivers are also provided with ongoing training and support.

## Vehicle Fleet

Table 1 shows the current Gadabout fleet and its characteristics.

## Gadabout Mission, Vision and Goals

Gadabout’s Mission and Vision statements are as follows:

* Mission: to provide safe, reliable, and affordable transportation services to older adults and people with disabilities within Tompkins County
* Vision: to enhance and enrich the independent living of our clients by providing accessible individualized transportation options that ameliorate the barriers that face them

Gadabout’s overall goals (in no particular order) are as follows:

* Attract new riders
* Increase efficiency of service to optimize resources
* Improve our flexibility to adapt to new, different or changing conditions
* Improve customer service and satisfaction by providing the highest possible level of service including reliability and consistency
* Develop and communicate the value proposition in terms of resources, partnerships and mobility business models

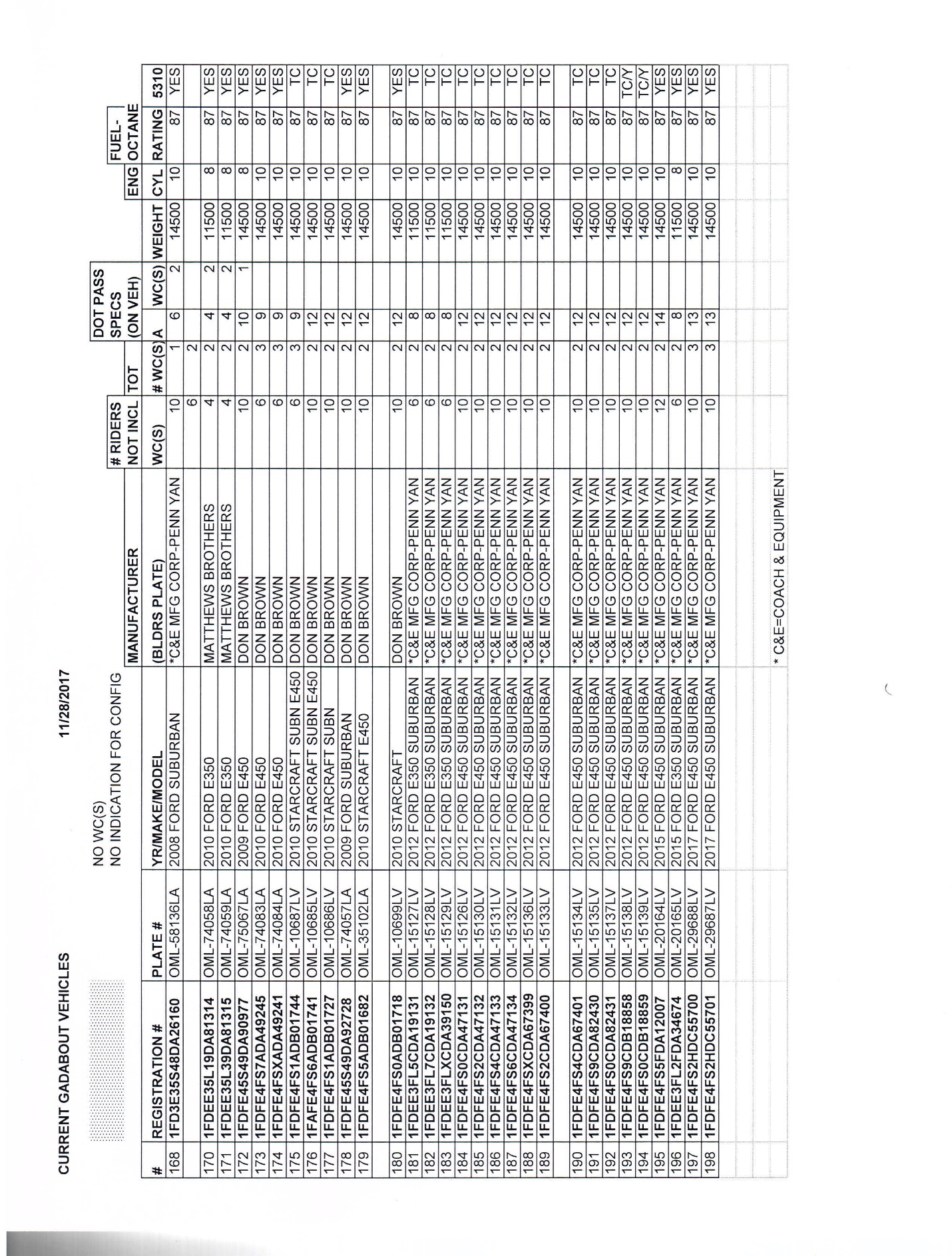
## Existing Computer Infrastructure Environment

The following are the characteristics of the existing computer infrastructure environment:

* In-house server (no cloud) with sufficient capabilities for all software proposed; and
* Accessible by in-house network, not the Internet.

Please note that all databases associated with the scheduling software should be Microsoft SQL Server version 2008 or later.

Table 1. Gadabout Fleet

****

## Existing Phone System

Currently, Gadabout is co-located in TCAT’s main office. This office has a Shoretel phone system running on a 2008 Standard Edition server. We are running Shoretel release 14.2 and Shoretel Director build 19.46.7601.0.

We have all analog “loop-start” lines, (17 lines). Almost all of our computers are running off of the network ports in these phones. All of this is supported by HP-ProCurve Switch 2610-48 J9089A 10/100 POE switches.

Our handsets/devices are:

* 4 – IP115’s
* 45 – IP230’s
* 1 – IP230G
* 2 - BB24 Button Boxes

Our Voice Switches are:

* SG-50
* SG90-1
* SG90-2
* Softswitch, (2008 Server)

# Information Technology (IT) Requirements

## General

The selected vendor, referred to as the “Contractor” in the rest of this document, shall provide the hardware and configuration details for installing the system (1) at the location identified by Gadabout (site installation approach). Gadabout does prefer a virtualized server if possible depending on specs and storage requirement needs as well as growth or (2) at a data center proposed by the Contractor (hosted approach). The data center selected for installation of the system must be approved by Gadabout.

The software applications shall include context sensitive help capability.

The software applications must run fully in the user context and shall not require elevated permissions or administrative permissions on the desktop.

All software applications must utilize the Microsoft Operating System consistent with current Gadabout upgrades, patches and service packs on the servers and desktops. The following Microsoft products must be used:

* Microsoft Office Suite: 2010;
* Microsoft Windows Desktop Operating System (OS): Windows 7 and Windows 8.1 (Windows 10 ready is preferred);
* Microsoft Windows Server OS: Windows 2008 R2, Windows 2012 R2; and
* Microsoft Structured Query Language (SQL) Server: SQL Server 2008 R2 Enterprise edition and SQL Server 2012 R2 Enterprise Edition.

All software applications must support role-based security.

The Contractor is required to notify Gadabout when new releases of software applications become available, and when current releases and related systems are no longer supported.

The Contractor must comply with the Gadabout’s change management process when making any changes to supported systems; these changes must be reported to the Gadabout project manager.

The Contractor shall implement a test environment, with all software components installed on parallel hardware at Gadabout, where software updates and configuration changes can be tested prior to being implemented in the production system. Any future updates or upgrades must be tested in the test environment before being implemented on production servers.

All software upgrades or changes required by the Contractor must be made in an Gadabout test environment and certified prior to moving into a production environment. Any on-board firmware changes must be tested first in a “bus-in-box” type test bench before installing them on vehicles.

## Required Infrastructure

### Hardware

The Proposer shall provide the specifications for hardware that comprises the proposed central system, including the required number of workstations for all users. Proposers shall provide the server hardware requirements required to support the proposed solution since Gadabout may procure the hardware from a supplier other than the Contractor and may decide to use the site installation approach.

For site installation, Gadabout reserves the right to confirm the specifications of the Contractor-recommended and supplied hardware and Gadabout reserves the right to offer virtualization within the current infrastructure as a potential replacement for hardware.

The Proposer shall supply the specifications for workstations and tablets, which Gadabout may procure from suppliers other than the Contractor.

### Software

The successful Contractor shall provide software and specifications for hardware that comprise the proposed central system, including the required number of licenses for all users. The cost of each component shall be provided per the instructions on the Price Proposal Form.

The Contractor shall either provide their proposed system’s source code to Gadabout, establish an escrow account with the exact version of the source code being implemented at Gadabout, or provide an alternative solution to ensure that Gadabout has unrestricted access to and use of the source code in the event the Contractor ceases to exist, ceases to support the application, or otherwise terminates its relationship and/or ownership to the product.

The Contractor shall supply the specifications for workstations and monitors, which Gadabout will supply and/or procure.

For hosted approach, the Proposer shall clearly define the approach for software hosting and access (e.g., Citrix’s independent computing architecture [ICA] protocol, Microsoft’s remote desktop protocol [RDP] over secure virtual private network (VPN) connection, completely web-based application accessible via hypertext transport protocol secure [HTTPS]) on standard web browsers (e.g., Microsoft Internet Explorer, Mozilla Firefox, Google Chrome and Apple Safari).

The Contractor shall implement a test environment, with all software components installed (1) on parallel server hardware at Gadabout (site installation) or (2) at the data center (hosted installation), where software updates and configuration changes can be tested prior to being implemented in the production system. Any future updates or upgrades must be tested in the test environment before being implemented on production servers.

All software upgrades or changes required by the Contractor must be made in the test environment and certified prior to moving into a production environment.

Using a hosted approach, at least two parallel data centers in two different geographic locations shall be utilized.

The Central system shall be setup in redundant configuration by default. So, if the primary application fails, the secondary application that is configured to run in hot-standby mode shall automatically start running as the primary application to ensure fail-safe operation. Each Proposer shall provide a clear description of their approach for enabling redundant server configuration.

For hosted solution, Proposers shall describe the minimum computer hardware and browser requirements (e.g., minimum Random Access Memory [RAM] requirements for map rendering, java run-time environment [JRE] for java-based web applications).

## Information Security

The Contractor shall be asked to comply with best practices with all areas of IT Security as outlined by Health Insurance Portability and Accountability Act (HIPAA) rules. Gadabout has specific policies in the following areas, if you require additional information please contact Gadabout IT to discuss in more detail.

* Acceptable Use
* Automatic Log-Off
* Data Backup
* Emergency Access to EHR
* Encryption and Decryption
* IT Risk Management Program
* Malware Protection
* Password Management
* Portable Computing Device Privacy and Security
* Privacy and Security of Protected Health Information
* Termination of Access
* Transmission Security
* Unique User ID
* Workstation Use and Security

All software applications must support role-based security.

The Contractor shall follow the Gadabout IT Security Policies, which will be provided at a later date.

For a locally-installed solution, all software applications must have the ability to use Windows Authentication based upon Active Directory setup. For a hosted solution, please describe the administrative needs to add users to the system.

The methods used for encrypting stored passwords must be disclosed. Industry standard encryption methods utilizing at least 256 bit encryption techniques are required.

The Proposer must disclose provisions to secure the database in its proposal.

Any vulnerabilities or exploits discovered by the Contractor or others for the proposed application must be reported to Gadabout immediately with a proposed mitigation strategy.

The Contractor shall support Microsoft security patches and updates within fifteen (15) days of release.

The system must track all activities performed by software users for auditing purposes (e.g., system configuration changes, trip booking, modifications and client data editing).

The methods used for encrypting stored passwords must be disclosed. Industry standard encryption methods utilizing at least 256 bit encryption techniques are required. Applications may not store or transmit passwords in clear text.

Any software which stores personally identifying information, including but not limited to, “unique identifier number,” driver’s license numbers, etc., or any financial information, such as credit card numbers, bank routing information, etc., must fully protect the information for the entire duration of Gadabout’s use of the software, as defined in the eventual contract with the successful Contractor, and disclose the methods of protection used, access protection methods, and life cycle handling of this data. Industry standard encryption methods utilizing at least 256-bit encryption techniques are required.

Any HIPAA-related information must be protected in the database and application according to the law (e.g., display only last four digits of the Social Security Number (SSN)).

The Contractor shall supply Gadabout with current HIPAA test results or be willing to be tested with regards to compliance with HIPAA policies on a yearly basis.

## Database

All database-related components of the solution (e.g. tables, stored procedures, scripts, extensible markup language [XML] schema, and related information) shall be fully accessible and available for support and use by Gadabout and Gadabout staff.

Proposer’s solutions should be developed and configured using prescribed standards for SQL Server, and be flexible enough to run in consolidated database environments with other applications using different schemas and virtualization.

Data shall be retained in a read-only historical database for use by management and other Gadabout staff to plan and assess system performance, and to address inquiries, conflicts and other related issues.

The system shall allow all such data to be retrieved, even if it has been archived.

All queries made to the database shall be logged for audit purposes. Gadabout shall have the ability to view these logs when required.

The online data storage system shall ensure data integrity in the event of a disk-drive failure.

In addition, the system shall include a means of archiving transaction data, or restoring data from an archive, while the system is in operation. It shall not be necessary to shut down the database to perform a successful backup operation.

Proposers shall determine and describe the need and procedure for an incremental, daily or other time frame-based backup of data. Other needs related to the archiving of data, such hardware and software, shall also be determined and described by each Proposer.

Data kept for archive purposes must be in location that is still subject to all HIPAA testing and be tested for compliance on a yearly basis.

The system administrator account shall not be used with SQL server applications. If it is, the solution must allow Gadabout staff to change the system administrator password on a periodic basis without limitations.

The Contractor must provide the following:

* Scripts in order to recreate database;
* An entity relationship diagram;
* Database schema with a data dictionary detailing all database entities (e.g., tables, columns, and attributes; and
* Recommended practices document for support and maintenance of the database.

### General

The system shall allow PSDS system data to be retrieved, even if it has been archived.

In addition, the system shall include a means of archiving transaction data, or restoring data from an archive, while the system is in operation. It shall not be necessary to shut down the database to perform a successful backup operation.

The Proposer shall determine and describe the need and procedures for an incremental, daily or other time frame-based backup of the data (but not less than daily). Other needs related to the archiving of the data shall also be determined and described by the Proposer.

The Contractor must provide the following:

* Scripts in order to create and recreate database schemas, stored procedures;
* Entity relationship diagrams;
* Database schema with a data dictionary detailing all database entities (e.g., tables, columns, and attributes); and
* Documentation of recommended practices for support and maintenance of the database.

### Data Management

Data shall be retained in a database for use by Gadabout staff to plan and assess operational, financial and system performance, and to address inquiries, conflicts and related issues. Storage capacity must be large enough to retain operational history data for at least two fiscal years.

After two fiscal years, the operational and financial data will be archived in a “non-live”[[1]](#footnote-2) database, and will remain readily accessible when needed.

Data backup for both live and non-live databases must be archived at redundant offsite locations.

Proposers must describe the time it would take to restore the data into the database from the backed-up files in the event of a database crash.

The Contractor shall develop a long-term archival plan to store information on optical (e.g., Digital Versatile Discs [DVD]) or magnetic storage (e.g., external hard drives) devices in coordination with Gadabout. This data should be stored in such a way that it is mountable or searchable, and arranged by year so, as it moves beyond the number of years mandated in Gadabout’s document retention policy, it can be permanently destroyed.

The Proposer shall determine and describe in their proposal the need and procedures for an incremental, daily backup of the data. Other needs related to the archiving of the data, such hardware and software, shall also be identified and described by the Proposer.

### Data Logging and Retrieval

All incoming and outgoing data shall be stored in a read-only historical database for retrieval, analysis, display and printing.

This historical information shall include all data exchanged between vehicles and dispatch (e.g., location data, vehicle logon/logoff data, device alarms, and canned data messages); and all central software user logons and logoffs.

The stored data shall be time and date stamped, and shall contain sufficient information to enable selective sorting and retrieval based on user-specified selection criteria. At a minimum, the following sorting and selection criteria shall be supported for accessing the historical data from both the online and archived storage: date and time, GPS latitude/longitude, vehicle number, vehicle operator number, dispatcher number, run number, and incident type (where needed).

## Data Access

The database structures and any proprietary interfaces shall be documented in the proposal.

The proposed system shall follow an open architecture model, providing the capability for Gadabout to independently develop system interfaces or enable integration with other internal or third-party systems. The use of standard network communication protocols (e.g., Transmission Control Protocol/Internet Protocol [TCP/IP] and system interfaces (e.g., Open Database Connectivity [ODBC] for databases) is required.

Gadabout shall be allowed royalty-free access to the database tables, and royalty-free use of the data and interfaces. If necessary, Gadabout shall be allowed to extend such access and use to third party vendors for integration purposes.

All system data shall be the property of Gadabout and shall be immediately available to Gadabout. The Contractor shall acknowledge in writing that Gadabout will own any and all data and the database where the data resides.

## Customer Support

Customer support shall be available 24 hours a day, 365 days a year. All technical requests from Gadabout must be addressed within one hour of the notification of a problem. If an issue requires a longer timeframe for resolution, Gadabout must be advised accordingly and an expected reasonable timeframe for resolution must be provided.

Gadabout must be able to view the status of their support request(s) at any time through an online tracking system to be provided by the Contractor.

For on-site support, the proposal shall include a list of the support firms, their support responsibilities and the response arrangements.

The Contractor shall arrange for support from one or more qualified firms to be available on-site on a four-hour response basis when needed by Gadabout to assist with fault diagnosis or component replacement.

If a support firm does not respond within the agreed-to response timeframe, or when a support firm is not able to provide the needed support, the Contractor shall provide, during the warranty period, supplementary support in accordance with an agreed-to escalation procedure. The escalation procedure can initially involve telephone support, but must culminate in the Contractor providing on-site support, if needed. The proposal must define the proposed support escalation procedures.

Gadabout must be able to view the status of their support request(s) at any time through an online tracking system to be provided by the Contractor.

### Site Installation

The Contractor will provide needed service technicians to assist with installation of product within the Gadabout network. Gadabout will make available, resources to assist with all aspects of installation with regards to personnel or additional system needs if virtualization approach is deemed possible. The Contractor will be required to comply with current data center restriction policies and must be willing to submit to background check if deemed necessary by the data center. Gadabout personnel will accompany contractor staff at all times during the installation and may assist as needed.

### Hosted Approach

Customer support shall be available 24 hours a day, 365 days a year. All technical requests from Gadabout must be addressed within one hour of the notification of a problem. If an issue requires a longer timeframe for resolution, Gadabout must be advised accordingly and an expected timeframe for resolution must be provided.

Gadabout must be able to view the status of their support request(s) at any time through an online tracking system to be provided by the Contractor.

All servers, routers, switches, data center security and facility power shall be monitored electronically 24 hours a day, 365 days a year. In the event there are any out of tolerance conditions with any server components, technical support shall be automatically notified. The technical support must respond to these issues within one hour of notification.

The data centers to be used for hosting must have existing scheduled routine maintenance and emergency situation management plans. Proposers must submit maintenance schedules and emergency plans with proposal for contractor review.

The data centers must comply with all HIPAA requirements as pertains to security and verification of credentials as well as any access to physical systems containing Gadabout data.

### Follow-up Analysis

The Contractor shall provide onsite follow-up analysis, including a written report on the findings of this analysis, on how the system is being used and provide training to address the issues. This follow-up analysis shall be conducted every six months under the warranty period and the first visit shall be conducted six months after the system acceptance. The follow-up analysis report shall categorize discovered issues under the following categories:

* Issues due to lack of training;
* Issues that require configuration changes;
* Issues that require system enhancements and can be addressed by upgrading to a more recent version of the system; and
* Issues that require system enhancements and will be fresh development for the Contractor.

## Software Updates and Upgrades

Proposers must describe their maintenance update and upgrade approaches in their proposals.

Proposers shall describe the difference in processes and costs associated with updates and upgrades.

The Contractor is required to notify Gadabout at least one month in advance of the installation when new software releases become available.

The Contractor is required to notify Gadabout at least six months in advance when it is expected that the current releases and related systems will no longer be supported.

The Contractor shall ensure that all existing software configurations are protected after the system has been upgraded or updated for the entire duration of the time when Gadabout uses the product.

The Contractor must comply with Gadabout’s change management process when making any changes to supported systems. These changes must be reported to the Gadabout Project Manager.

# Wireless Data Communication Requirements

## General

The Proposer shall describe the data communication infrastructure required to satisfy the following communication needs for this project:

* Wireless data communication between vehicles located at the Gadabout facility and the central system; and
* Wireless data communication between the central system and all revenue vehicles throughout Gadabout’s service area.

The Proposer shall identify the specific on-board and central hardware and software that will be required to establish a wireless communication infrastructure.

The Proposer shall identify the necessary cellular data requirements for their proposed solution and include such pricing in the cost proposal using the Price Proposal Form.

## Wireless Data Communications

The Proposer shall provide estimates of the bandwidth required for data exchange between the central system and vehicles (in terms of megabytes [MB] per month per unit).

The Contractor shall provide a report to monitor data usage by vehicle on a monthly basis.

### Wireless Data Communications Network

Proposers are required to submit a solution that shall provide data communication as stated in Section 4.1. The solution shall ensure the transfer of data between the central system and each vehicle in the Gadabout fleet via a cellular data connection.

The proposed communications protocol shall follow the open system interconnection (OSI) model.

Gadabout will select a cellular data provider in consultation with the Contractor, suitable to support the data communications requirements of the system as best available based on the cellular communications options commercially available to Gadabout.

Proposers shall describe any additional power backup provisions that will be incorporated into the proposed system to maintain operation of the central system, including the cellular data gateway during a power supply failure, and for how long power can be so maintained.

The description of the proposed communication solution shall include at least the following information:

1. Description of the communications protocol to be used (e.g., inter-asterisk exchange [IAX], session initiation protocol, skinny call control protocol [SCCP], and extensible messaging and presence protocol [XMPP]);
2. Description of any data compression and encryption techniques being used for data packets exchanged between Gadabout vehicles and the central system. In the event when no encryption is being used, Proposers must clarify the steps taken to ensure data security over the public wireless network; and
3. Information on the bandwidth needed to support the data exchange between vehicles and the central system. Proposers shall assume that location updates shall be provided at an interval of 15 seconds or less from each vehicle. Further, location updates shall be provided at the time of vehicle departure from each pickup and dropoff.

### On-Board Hardware

#### Data Communication Hardware

The Contractor shall provide cellular data modem and other relevant hardware for system data communication needs using a commercial cellular network.

The Contractor shall conduct a coverage test, or rely on already available data provided by Gadabout’s IT staff, to determine the carrier with best data coverage in the Gadabout service area.

#### Antenna Hardware

If applicable, proposed antenna hardware shall help limit the number of antenna hardware to be installed on each vehicle. An antenna which can support a combination of global positioning system (GPS) connection, cellular network connection and wireless fidelity (Wi-Fi) connection using a single unit (e.g., dual-mode antenna, tri-band antenna) may be used for the proposed solution.

The Contractor must use low-profile antenna hardware.

#### On-board Mobile Router Gateway (OMRG)

The modem shall provide a cellular connection over the cellular network to be selected by Gadabout.

The Proposer shall describe the ability of modems and supporting hardware (e.g., network card) to support multiple types of wireless data networks using a single hardware unit (e.g., 4G/3.5G, 3G, 2.5G/2G type cellular data connectivity over a particular carrier network).

The modems shall have the ability to utilize a 4G wireless data connection when such networks are available. The proposed hardware shall be able to automatically switchover to a lower bandwidth network (e.g., from 4G to 3G, and from 3G to 2.5G or 2G) in the event a higher bandwidth connectivity is not available.

The hardware may also have the capability to utilize Institute of Electrical and Electronic Engineers (IEEE) 802.11x (commonly known as wireless fidelity [Wi-Fi]) or 802.16x (commonly known as wireless interoperability for microwave access [WiMax]) hotspots where such networks are available.

The modem/router shall support Quality of Service (QoS) in order to ensure protected bandwidth for multiple sub-channels. The CAD/AVL data will need to be guaranteed a QoS to maintain desired throughput for simultaneous transmission of both types of data. The same will be true for video that could be provided by an on-board video surveillance system, which may be procured in the future.

The vehicular modem must be capable of withstanding normal wear and tear, dust and water intrusion, and weather conditions associated with field use inside paratransit vehicles.

### Central Wireless Communication Gateway Software

#### General

A mobile data communications gateway shall be established with the cellular data carrier selected by Gadabout to enable the central system to exchange data messages over the leased cellular accounts with vehicles. The gateway internet connection shall be sufficient to support a data rate that can simultaneously carry all the data traffic for the entire fleet.

The gateway shall have the ability to support multiple wireless networks simultaneously.

The gateway shall be setup in a highly redundant configuration.

The Proposer shall describe the wireless coverage of the proposed cellular carrier. The Proposer’s solution must not depend on a specific cellular carrier.

The Contractor, in coordination with Gadabout’s IT staff, shall arrange for a pool plan with the selected cellular carrier for the Gadabout fleet to accommodate all vehicles.

The Proposer shall provide the following information in the proposal in terms of megabytes (MB) per month per unit based on their experience: bandwidth required for data exchange between the central system and vehicles.

The software shall process data messages in the order they are received or based on their associated priorities to be defined by Gadabout.

Gadabout shall provide the required data connectivity and firewall configurations to the cellular data provider.

#### Data Message Processing

The software shall process data messages received from the vehicles, and pass these to the central software.

The software shall process data messages received from the central software and pass these to an individual vehicle or a group of vehicles.

The system shall log relevant details about a data message including but not limited to the following:

* Sender and receiver of a message;
* Type of the message; and
* Follow-up action to a message, if applicable (e.g., acknowledgement.

## Wireless Local Area Network (WLAN) Data Exchange

### General

Wireless communication between vehicles and the central system will be provided at Gadabout’s office using Institute of Electrical and Electronics Engineers (IEEE) 802.11x WiFi hotspots.

The Contractor shall install WLAN access points at Gadabout’s office to upload and download data when vehicles are within close proximity to the office, as necessary. The Contractor must coordinate with Gadabout's IT staff for approval of access point locations.

The Contractor shall conduct a survey of Gadabout’s office to determine the number of wireless access points required.

The service set identifier (SSID) for access points shall be not broadcast publicly and must be accessible to only Gadabout vehicles. The access points shall avoid significant signal availability outside of the intended coverage area.

WLAN access points shall be installed such that wireless signals are not obstructed by any barrier.

### Access Point Hardware

The WLAN access points shall support the Wireless Protected Access 2 (WPA2) security standard, or an approved alternate superior security standard ratified by the time of implementation. Gadabout shall have the ability to independently change the encryption keys as often as desired.

Gadabout shall have the ability to independently adjust the signal strength of each WLAN access point.

Gadabout shall approve the specifics of proposed access point locations, signal levels and antenna type/orientations for an acceptable balance between expected coverage in outlying parts of the intended coverage area and minimizing signal availability outside the facility. WLAN access points shall meet or exceed the following environmental capabilities:

* Non-operating (storage) temperature: -40 to 185°F (-40 to 85°C);
* Operating temperature: -4 to 131°F (-20 to 55°C); and
* Operating humidity: 5 to 97 percent (non-condensing).

WLAN access points must be National Electrical Manufacturers Association (NEMA) 4 or IP65 rated for dust and water resistance.

### WLAN Data Transfer Support Software

The WLAN data transfer support software shall manage the WLAN data transfers between vehicles and the central software using the new garage WLAN. Wi-Fi hotspots will be required at Gadabout’s office to upload/download the following information to/from Gadabout vehicles:

* Schedule/manifest data to vehicles; and
* Configurations, firmware upgrades, and patches to vehicles.

Once a vehicle has successfully associated with a Gadabout WLAN access point, the WLAN data transfer software shall receive the file uploads initiated by the on-board mobile data terminal (MDT).

When the WLAN data transfer software has a download available for a vehicle that has successfully associated with a Gadabout WLAN access point, the WLAN data transfer software shall check with that MDT whether it has already received that download and if not initiate and complete that download.

Any new download file shall be downloaded to the entire fleet within one day, if each vehicle returns to WLAN coverage each night and is configured to remain on for a set time configurable by Gadabout (e.g., at least 15 minutes after the ignition is turned off).

The system shall report on the status of the current status of downloads (e.g., download in progress, downloaded or download failed) for the Gadabout fleet.

Updates or changes to schedule data shall be able to be downloaded prior to their effective date for service and then accessed the first time a driver logs on for service for that effective date.

# GIS and Mapping

## Map Source

The Proposer shall identify the source of GIS maps data to be used for the proposed PSDS system. It is assumed that the Contractor will supply the base map, unless Gadabout specifies otherwise. If the base map is supplied by the Contractor, the Contractor is required to provide updates to the map within two weeks from the date when the updates are available. Third-party mapping systems (e.g., Google Maps, Bing Maps) may be used as far as they meet the requirements described in in this specification.

## Built-in GIS Support

The software shall incorporate GIS capabilities that allow users to view maps of the service area and individual trip patterns, each at various specified user-defined zoom levels. GIS features shall be closely integrated with the individual modules of the PSDS system and access to maps shall be seamless within the PSDS system modules.

In addition to supporting the primary demand-response service functions, the GIS functionality of the proposed software shall support other GIS analyses and be capable of converting geographic files from other sources (e.g., Tele Atlas or Navteq) to the format used by the Contractor’s GIS (e.g., MapInfo or ESRI).

## Spatial Layer Management

### Map Overlay

GIS functionality shall include the ability to develop overlays for the coverage of municipal, township, census tracts or block groups, and zip code boundaries.

The system shall allow overlay of terrain, aerial or satellite layers on base maps when such layers are available.

### Definition and Management of Geographic Boundaries

The system shall allow definition of polygon layers when such layers are not readily available for overlay. The system shall allow the user to assign a specific service characteristic to a polygon layer. These characteristics shall include but are not limited to the following:

* Agency service area for demand response and other services;
* Americans with Disabilities Act (ADA) complementary paratransit service area;
* Town boundaries; and
* Fare zones.

### Definition of Physical Barriers

The system shall allow the definition or import of physical features that act as barriers to routing (e.g., rivers and lakes, road closures).

The system shall recognize these barriers when routing vehicles.

### Definition of Point of Interest (POI) Locations

The system shall be capable of defining and displaying point files that may represent landmarks, TCAT bus stops, major transfer points, major destinations of travel, or other POI locations (e.g., hospitals/medical centers, assisted living facilities, shopping centers, tourist attractions).

### Import/Export of Map Layers

The system shall have the ability to import and export map layers in standard geographic file formats (e.g., Environmental Systems Research Institute’s [ESRI’s] SHP file format or Keyhole Markup Language [KML] format).

The system shall have the ability to import location data (customer address or POI database) if available in standard “point” file format (SHP or KML) that consist of latitude and longitude data.

## Management of Spatial Attributes

The system shall allow authorized users to edit the base map layers (e.g., to add new streets, change municipal boundaries, define any incomplete address ranges).

A service area map shall include current data for all street segments to ensure, in part, that every segment is appropriately connected in the network and contains the necessary data for scheduling. For each street segment, this data shall include at a minimum a defined street name and address range, and segment speeds by time of day and day of week. The street network definition shall include segment characteristics (e.g., speed limits, one-way direction).

## Geocoding

The system shall have full geocoding capability, allowing the system to locate the address on the map for an address input. The geocoding capability shall be seamlessly integrated with relevant features in the rest of the PSDS system (e.g., address input in the Reservations module, discussed later in Section 6.5).

The street segments database shall be sufficiently complete to assure a geocoding success rate of 90 percent or better based on a sample of addresses developed by Gadabout. The system shall be capable of handling various abbreviations of names (e.g. St. for Street and Av. or Ave for Avenue) in the geocoding process.

## Miscellaneous GIS Features

### Distance Computation

The system shall allow the user to calculate the distance between points or along a specified portion of the street or road network.

The system shall allow the software user to select the unit of measurement (e.g., feet, mile) when computing distance.

### Zoom/Pan

The system shall allow software users to zoom in, zoom out and pan map views.

The system shall allow software users to zoom in to a street-level view.

The system shall allow software users to select custom zoom level (e.g., 400% or 50%).

The system shall provide an “inset” view that can be turned on or off by users. The inset view shall display an overview map within the detailed map view and shall allow “pan” capability.

### Save and Reload Map View

The system shall allow users to bookmark or save a particular view on the screen.

The system shall allow users to reload saved map views.

### Spatial Search

The system shall allow geographic search within PSDS modules and shall support search based on at least the following data:

* Customer address;
* Trip origin or destination location;
* Current vehicle location; and
* POI location.

The system shall be able to identify whether or not a customer address is located within a buffer zone (e.g., ¾ mile) around a TCAT route. The parameter for the buffer zone shall be configurable.

The PSDS shall allow a user to view a list of all trips to a location or town within a specific time frame. This allows users to see which drivers are already in the area to do non-scheduled trips. This shall be displayed in a map view including real-time vehicle locations and in a table.

### Legend

The system shall have the ability to display legend of the layers included in the GIS subsystem. The use shall have the ability to turn this feature on or off, as needed.

### Printing

The system shall be capable of printing maps to peripheral devices (e.g., printers, plotters) directly attached to a workstation or available over a Local Area Network (LAN) or wireless LAN.

The system shall allow users to print and save a PDF version of the map view.

The system shall provide users the ability to format the layout of maps before printing. As a minimum the following capabilities shall be available: adjusting margins, adding title, adding legend.

## Visualization

The system shall display vehicle locations on the map when such data is available from vehicles (see Section 10.2.1.3 for AVL tracking).

The vehicle icon on the map view shall display additional information (e.g., operator id, vehicle id) upon user request if such information is available in the system (please see Section 6.10 for MDT interface).

The map view shall support context sensitive menus and shall allow users to communicate with vehicles directly from the map view when such capabilities are implemented by Gadabout (please see data communication requirements in Section 4).

## Map Update Process

The system shall provide Gadabout the capability to update the base map, whether it is supplied by the Contractor or by another source.

Map updates, when available, must be made to the mapping data stored on the Gadabout server or hosted system. Map updates should not be performed while a user is accessing the map.

For Contractor provided maps, Gadabout shall be notified in advanced of the map update schedule.

## Third-party Mapping (Google Maps, Google Earth, Bing Maps, MapQuest) Overlay/Integration [Optional]

The system shall have the ability to utilize a third-party GIS subsystem for geographic information display when built-in GIS capabilities are not available. When both capabilities are available in the proposed solution, the Proposers shall provide a comparison of features available in both GIS subsystems in their proposals.

Proposers must describe any user-licensing terms and conditions associated with using third-party mapping products.

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# Paratransit Scheduling and Dispatching Software (PSDS)

## Existing Trip and Client Database Conversion

The Contractor shall be responsible for converting the following databases from Easy Rides (existing software) at Gadabout:

* Existing client database; and
* At a minimum, the most recent year client trip history.

The Contractor will work with the Gadabout Project Manager to develop a list of fields that will be converted from the existing database to the new database. This development shall include the logic required to populate fields in the new database that have no match in the old database.

In the event that certain fields within the existing client and trip history databases, and associated business logic to derive those fields are not supported in the selected system, the Contractor shall notify Gadabout and negotiations shall be held to determine the importance of the field and whether Gadabout will require customization of the system client database structure to incorporate new fields.

The Proposer must explain how the conversion is accomplished.

The proposal shall identify specific quality control procedures to ensure that data is accurately converted and to ensure its integrity.

Prior to performing any data conversion, the Contractor must prepare and deliver a data conversion plan to Gadabout for review and approval.

## Client Registration

The client database shall include at least the fields shown in Table 2. Specific characteristics associated with the entry of data elements are described after the name of the data field.

Table 2. Required Client Data Fields

| **Data Type** | **Data Field Name and Requirement** |
| --- | --- |
| Demographics / Eligibility Determination | **Client name**. The system shall require entry of first name, last name, middle initial and suffix (e.g., Sr., Jr., III). When entering data, the system shall detect and alert the user if there may already be a client database entry under this name. Different clients with the same name shall be allowed. |
| Demographics / Eligibility Determination | **Client’s date of birth**. The system shall require entry of the client date of birth using an interactive calendar interface or drop-down menu, or by entering the date manually. The system shall automatically calculate the client age, expressed in years, based on the current date and the date of birth information. |
| Demographics / Eligibility Determination | **Client’s gender**. The system shall allow for manual entry or for the field to remain blank. |
| Demographics / Eligibility Determination | **Client’s eligibility status**. The system shall allow user selection from a pre-defined list of eligibility definitions that include physical and mental disabilities as well as DHHS categories such as protective custody. An “other” category shall be provided to allow manual entry of explanatory notes. |
| Demographics / Eligibility Determination | **Income data to determine eligibility for low income programs**. Income data is not required. If not provided, the client will not be eligible for certain trips available to low income individuals. |
| Address / Phone | **Client’s home address**. This text field becomes the default pickup address in the absence of another address that is identified as the default pickup address (see below in Client’s common locations).  The system shall allow entry of an address that contains a “½” or “c/o” and shall ensure that the full address is printed on the manifest (e.g., 123 ½ West Market St.). |
| Address / Phone | **Client’s mailing address if different than the home address**. This text field is used in case the client uses a non-street mailing address. The system shall allow entry of an address that contains a “½” or “c/o” and shall ensure that the full address is printed on the manifest (e.g., 123 ½ West Market St.). |
| Address / Phone | **Client’s common locations**. The system shall allow multiple address entries for common client pickup locations. If none are entered, the client’s home address shall become the default pickup address. The locations shall be text fields and allow all characters necessary to accurately store and print on the manifest (e.g., 123 ½ West Market St.). |
| Address / Phone | **Directions to assist in locating pickup address**. The system shall allow entry of a text field for special instructions for subsequent printing on manifests to assist in locating the client address. For example, where it is known that the actual address is different from the geocoded address, this would be noted in this text field for the manifest |
| Address / Phone | **Client phone numbers**. Multiple fields for home phone, work phone including phone extension, mobile phone and phone number where messages can be left (if different from other phone numbers). The system shall require that one of these numbers is identified as the default client contact phone number. All fields that contain phone numbers shall contain the standard 10 digits for a phone number (xxx-xxx-xxxx). |
| Address / Phone | **Backup client contact**. The system shall allow entry of a backup client contact phone number. |
| Contacts | **Care-giver/emergency contact name, address and phone number to be used in the event of an emergency**. The system shall allow entry of the name, address and phone number of a client’s care-giver/emergency contact. |
| Contacts | **Caseworker/social worker contact name, address and phone number**. The system shall allow entry of the name, address and phone number of a client’s caseworker/social worker. |
| Comments / Notes / Special Needs | **Client’s mobility aid(s)**. The system shall allow entry in a field indicating whether the client uses a mobility aid. The system shall allow selection from among a list of pre-defined mobility aids that includes an “other” category and allows manual entry of explanatory notes. The system shall allow entry of more than one type of mobility-aid. |
| Comments / Notes / Special Needs | **Disability status**. The system shall require entry in a field specifying disability status. The system shall allow user selection from a pre-defined list of disability definitions that includes an “other” category and allows manual entry of explanatory notes. |
| Comments / Notes / Special Needs | **Client car seat**. The system shall allow entry in a field indicating whether the client requires a car seat. The system shall allow entry of the type of car seat in a drop down box, with the following options listed: 5 point, High back, Flat and None. |
| Comments / Notes / Special Needs | **Client mode restriction.** The system shall allow entry in a field indicating if the client is restricted to a particular mode of transportation. |
| Comments / Notes / Special Needs | **Manifest comments**. This system shall allow entry of comments or information that will appear on all manifest trip entries for that client. The system shall allow a scheduler to view these comments and notes when taking a reservation. |
| Comments / Notes / Special Needs | **Additional information**. This system shall allow entry of additional information about the client in a text field. Information in this field shall not appear on any manifest trip entry for that client since it may contain HIPAA-sensitive information. |
| Funding / Billing | **Authorization date**. The system shall allow entry of a date defining when the client is authorized to begin receive service. If this field is left blank the client is authorized to receive service. Since some clients have temporary eligibility, the system shall also allow entry of a certification expiration date. Automatic notifications will be sent to the reservationist or scheduler when authorization will expire within the next week or has expired. |
| Funding / Billing | **Service suspension date range**. This system shall allow entry of the start and end date for the time period when a client’s ridership privileges are suspended. The system must allow an override of these dates in order to schedule a ride for the client (see Section 6.5.1). |
| Funding / Billing | **Funding sources/Billing codes**. The system shall allow entry of one or more billing codes for each client, indicating a third party to be billed for certain trip purposes. The system shall allow user selection from a pre-defined list of trip purposes and selection of a billing code for each selected trip purpose.  Effective and expiration dates must be capable of being specified separately for specific funding sources. This defines the time period the client is authorized to receive service from a specific funding source. The system shall allow the expiration date to be left blank to indicate the service is ongoing until further notice. Dates shall be entered using an interactive calendar interface or drop-down menu, or entered manually. Also, the system shall allow entry of the limit of the number of units of service allowed per time period (e.g., week, month or year). |

The system shall identify and automatically geocode the location associated with each entered address. If the automatic geocoding fails, the system shall provide alternative methods of establishing x- and y- map coordinates for the address. One of the alternative methods supported shall be clicking on a map location with the mouse.

The system shall track the number of trips taken by customers by funding source/billing code and alert the scheduler when the allowed number of trips for a customer for a given timeframe for a specific funding source/billing code has been met (e.g., only ten (10) trips per customer in a month may be allowed).

The system shall allow software users to attach files to a customer profile in order to store any relevant information. Proposers shall describe the file formats that can be supported in their proposed solution. At a minimum, the following formats must be supported: DOC, JPG, PDF, and WAV. The system shall allow the reservationist or scheduler to view these files when taking a reservation.

The system shall allow Gadabout to select specific client information that should be included in the driver manifest.

If necessary, the client record shall be stored with incomplete data. All fields other than last name may be left blank. An alert shall warn the user that there is missing information.

If the proposed system contains additional fields to be considered in client registration, Proposers must include a description of these fields in their proposals.

The system shall assign a unique client identification number for each client entry in the database. The unique client identification number shall be used to link to other tables in the database (scheduled trips, trip history, etc.). The system shall allow a client record to be retrieved by the client identification number.

The system shall allow multiple authorized users to edit customer details in the database at any time.

The system shall keep track of client demographics and maintain a history each time the client details are changed. Gadabout relies on this history for audit purposes.

## Client Data Management

### Edit Personal Details/Preferences

The system shall allow authorized users to edit customer details in the database at any time.

The system shall keep track of client demographics and maintain a history each time the client details are changed. Gadabout relies on this history for audit purposes.

### Future Tracking of ADA Eligibility by Client

In the future, the system shall be able to track ADA Eligible clients which shall be billed to ADA, based on start and ending eligibility dates and eligibility type.

The system shall automatically suspend standing orders on holidays when Gadabout services are not in operation. The system shall provide a function to allow the reservationist to enter or adjust such holidays. The system shall notify the reservationist upon accessing a client profile within one month of a scheduled trip that a recurring trip will fall on a holiday.

In the future, the system shall track at least the following attributes for each client:

* ADA eligibility start date;
* ADA eligibility end date; and
* Eligibility type such as “Conditional,” “Pending,” “Ineligible,” and “Temporary.”

In the future, the system must alert the scheduler regarding any upcoming expiration dates for client eligibilities.

## Agency Resource Management

### Driver Management

The system shall provide the ability to manage a list of drivers that include both agency and volunteer drivers. Because some data, such as driver’s license information, needs to be stored securely, only authorized users shall have access to this part of the system.

The system shall allow Gadabout to specify at least the following attributes for each driver:

* Employment status: whether a driver is employed full time, part time, or volunteer;
* Date of birth (DOB)
* Driver’s License Number
* Date of hire (hire date for agency drivers and date when a volunteer driver started driving for Gadabout)
* Employment status: whether a driver is active or inactive (particularly relates to volunteer drivers)
* Driver association: whether driver is a Gadabout employee or a volunteer;
* License information: current status of driver license and type of license (Commercial Driver's License [CDL] or non-CDL), issuing state and license number;
* Medical certifications/licenses (e.g., CPR);
* Status of background checks: date that background checks were performed and due date for the next check;
* Date that driver is due for medical exam;
* Whether driver has agency-issued pager, and if so, the pager number;
* Whether driver has agency-issued cell phone, and if so, the cell phone number;
* Whether driver has agency-issued keys;
* Volunteer driver schedules: availability and preferences. The system must allow the entry of a permanent schedule (e.g. every Monday, Tuesday and Wednesday) and temporary schedule changes (not available for a range of dates for medical reasons, for example);
* Status of driver training: date that driver received specific training and due date for the next scheduled training;
* Whether a safety seat has been issued to the volunteer driver;
* Whether volunteer driver has been fingerprinted;
* Address: contact address for the driver; and
* Phone number: primary and alternate contact numbers for the driver.

The system shall have the ability to alert Gadabout when a driver’s license renewal or medical exam is due. The thresholds for alerts shall be configurable.

The system shall allow Gadabout to track volunteer driver details as well as information on the vehicle(s) they drive (see Section 6.4.2). Multiple management and operation reports are based on these data collection fields.

The system shall allow definition of the type of a volunteer driver which could be defined as “personal choice,” “hardship” or “regular” volunteer driver. This field can be left blank.

The system shall be able to track when this volunteer was approved to provide transportation services to clients.

The system shall provide a view of the unconfirmed volunteer trips for a day, showing pickup and dropoff times and locations, and towns. On the same screen, the system shall display a list of volunteer drivers. Clicking on a driver’s name shall display their schedule for that day. This allows the user to easily search driver’s schedules to find a driver that 1) is already going to that town or 2) has the time to do the trip.

The system shall allow software users to attach files to a driver profile in order to store any relevant information. Proposers shall describe the file formats that can be supported in their proposed solution. At a minimum, the following formats must be supported: DOC, JPG, PDF, and WAV.

The system shall be able to generate reports on a monthly basis listing volunteers who will have an expired driver’s license or background checks required within a given timeframe.

### Vehicle Management

The system shall provide the ability to manage a list of agency-owned and volunteer-owned vehicles.

The system shall provide the ability to maintain at least the following data about vehicles:

* Vehicle type: agency or volunteer
* Vehicle Identification Number (VIN)
* Make;
* Model;
* Model year;
* Date when vehicle was purchased for agency-owned vehicles;
* Vehicle size;
* Number of seats
* Wheelchair capacity
* Wheelchair access: lift or ramp
* Fuel type;
* Owner (Gadabout or volunteer driver);
* Registration status and tag number;
* Vehicle insurance information;
* Maintenance schedule;
* Insurance cards
* Availability status (available, in-service or in-maintenance); and
* Date or odometer reading when next service is due for Gadabout vehicles;
* Restricted uses
* Other information (e.g., funded by a particular grant or organization, cost broken out by Federal/state/local).

The system shall have the ability to alert Gadabout staff regarding vehicles for which the insurance or registration is about to expire. The thresholds for alerts shall be configurable.

The system shall also be able to track the annual check date for volunteer as well as the volunteer vehicles, insurance and registration Information.

The system shall have the ability to generate a report about the vehicles for which the registration, safety inspection or insurance will expire in a given time period.

The system shall be able to generate reports on a daily basis, listing vehicles which are due for a state inspection and scheduled preventive maintenance based on mileage and intervals set by Gadabout.

The system shall be able to generate reports on a monthly basis, listing vehicles which are due for an annual vehicle inspection (including volunteer vehicles).

## Reservations

### Trip Booking

The system shall permit the call takers and scheduler to retrieve client records by entering the client ID number, client last name, or other data field such as telephone number. All fields that contain phone numbers shall contain the standard 10 digits for a phone number (xxx-xxx-xxxx). Once a client is selected, a trip booking data entry screen shall be displayed to the call taker or scheduler pre-populated with all data for that client which remains constant (e.g., ID numbers, mobility limitations).Along with the client data, the system shall display to the reservationist or scheduler all trips booked for a specific client. Also, the system shall allow the reservationist and scheduler to modify and/or cancel any future trips booked for a specific client.

The system shall display an alert if a client has already met the quota of trips allotted to them for a given funding source for a given time period, is suspended for traveling during a given time period, or has an excess of no-show trips. The number of no-show trips and time periods shall be defined by Gadabout.

The system shall also record the name of the person making the reservation; the date and time the caller requested the trip; the number of attendants/escorts; scheduled date of service; requested pickup time; required arrival time at destination; specifics/comments; same information for return trip, if applicable; day(s) of service (if subscription trip); agency billing codes; and required vehicle type, if applicable.

The system shall allow for multiple funding sources to be assigned to a trip. However, the system shall automatically determine funding eligibility and allow the scheduler to change the selected funding source(s) for which the client is eligible.

The system shall automatically present in the trip booking screen the address configured as the default pickup address. The system shall allow entry of an alternative pickup address using keystroke entry or from a list of common locations.

The system shall allow selection of the dropoff address from a list of common locations, including frequently and/or recently used dropoff addresses for that client. The system shall allow entry of an alternative dropoff address using keystroke entry or from a list of common locations.

The system shall provide the ability to book a return trip for a client trip. The system shall allow the return pickup time to be left blank if the client will contact Gadabout when they are ready to be picked up.

The system shall provide the ability to book multi-legged trips by allowing entry of the pickup and dropoff addresses for each leg.

The trip date shall be entered using an interactive calendar interface. The system shall be capable of accepting trip bookings up to 180 days in advance of the requested trip date for subscription trips and 14 days from the requested trip date for regular trips. These thresholds shall be configurable by Gadabout.

The system shall allow entry of a start and end date for the time period when a client’s ridership privileges are suspended. If the selected trip date is within a time period that the client’s services are suspended, the system shall alert the scheduler that the trip booking cannot be completed for this reason. The system must allow the scheduler to override the suspension.

During the trip booking process, the system shall allow entry of the names of any Personal Care Attendants (PCAs) or other companions (e.g., children) that will accompany the client on the trip.

The system shall permit trip booking while the client is on the phone. The system shall be capable of booking both subscription (standing-order) and demand response trips in this manner.

Pick-up time negotiation requirement, if utilized, is no more than one hour before or after the client's desired departure time. The system shall require entry of a requested pickup time and allow entry of a negotiated pickup time within the limits of this window.

The system shall allow the scheduler to link trips together for a group of two or more individuals traveling to a common destination that will be scheduled, as a matter of system policy, to the same run. The system shall allow the scheduler to remove the link and/or delete the trips.

The system shall allow the scheduler to designate any completed trip booking as a group booking (e.g., a trip for a group of two or more individuals traveling to a common destination that will be scheduled, as a matter of system policy, to the same run), and then add or delete individual clients from the group booking.

The system shall allow for subscription trips and shall allow the following data to be entered: number of passengers; names of passengers (if necessary); date and time of reservation request; requested days of pickup (by date or day of week); pickup location; destination location; required arrival time at destination; requested pickup time for return trip; specifics/comments; agency billing code; same information for return trip: contact person (making reservation); service type (door-to-door or curb-to-curb); ability to lock trip out from future reservations; reservationist or scheduler code; required vehicle code (agency-specific; ambulatory; lift equipped; car seat).

The system shall show whether trips that were requested during the previous 48 hours were actually assigned to a driver. Further, the system shall show whether trips that were scheduled were scheduled and taken; scheduled and not taken [e.g. cancelled or failure to board]; or never scheduled and never taken.

Once all other trip booking information has been entered, the system shall indicate to the scheduler any applicable fare(s) to be paid by the client and any companions.

Once data has been entered, the system shall determine the most appropriate trip options based on client preferences and eligibilities, as stored in the client profile, and present those to the or scheduler. The or scheduler shall select one of the options to conclude the trip booking process.

The system shall, at the conclusion of the trip booking process, confirm to the reservationist or scheduler that the booking was successfully entered into the system. Also, the system shall present a summary of the booked trip to the reservationist or scheduler.

During each trip booking, the system shall display, using the GIS software capabilities described in Section 5, the map locations for the pickup and dropoff locations.

The system shall alert the call taker or scheduler if the client has previously booked a trip with a trip time period that is in conflict with the selected booking pickup time. The system shall allow the call taker or scheduler to book the trip nonetheless by overriding this feature. The system shall flag all trip bookings for which this override was applied.

In the future, the system shall monitor the percentage of standing order (subscription) trips out of all trips, for ADA-eligible clients, to ensure compliance with ADA regulations (40 CFR Part 37.133(b)).

The system shall permit trip booking while the scheduler is on the phone with the client. The system shall be capable of booking both subscription (standing-order) and demand response trips in this manner.

The system shall be capable of booking same day trips. On the service day, the system shall allow for last-minute changes that modify runs based on last-minute passengers. These changes must be communicated immediately to dispatcher(s) and drivers.

### Management of Standing Order (Subscription) Trips for Clients

The system shall allow the entry of standing order (subscription) trip bookings, with flexible options to specify recurring travel dates. At minimum, the system shall support selection of a recurring daily trip; recurring weekly day or days (e.g., every Tuesday or every Monday through Friday), a recurring monthly day (e.g., every 2nd Wednesday) or a recurring monthly date (e.g., the 4th of every month).

The system shall allow for subscription trips and the following data to be entered: number of passengers; names of passengers (if necessary); date and time of reservation request; requested days of pickup (by date or day of week); pickup location; destination location; required arrival time at destination; requested pickup time for return trip; specifics/comments; agency billing code; same information for return trip: contact person (making reservation); ability to lock trip out from future reservations; scheduler code; required vehicle code (agency-specific; ambulatory; lift equipped; car seat).

The system shall allow the scheduler to temporarily suspend a particular subscription, with entry of both start and end dates of the suspension time period. These dates shall be entered using an interactive calendar interface or drop-down, or entered manually.

The system shall automatically suspend subscriptions on holidays when provider or agency services are not in operation. The system shall provide a function to allow the entry or adjustment of such holidays. The system shall notify the scheduler upon accessing a client profile within one month of a scheduled recurring trip that will fall on a holiday.

Once all other trip booking information has been entered, the system shall display any applicable fare(s) to be paid by the client and any companions.

Once data has been entered, the system shall display the most appropriate trip options based on client eligibilities and restrictions. The system shall confirm that the booking was successfully entered into the system and present a summary of the booked trip.

The system shall alert the user if the client has previously booked a trip with a trip time period that is in conflict with the selected booking pickup time. The system shall allow the user to book the trip nonetheless by overriding this feature. The system shall flag all trip bookings for which this override was applied.

### Trip Modification/Cancellation

The system shall allow the reservationist or scheduler to access existing trip bookings to edit the pickup address, dropoff address, trip date, and/or pickup time upon client request. The system shall assign a unique identification number to each trip booking record to facilitate trip editing. The unique identification number shall not be automatically reset at any time and must remain unique for a period of at least one year.

The system shall permit cancellation of any trip booking, when consistent with Gadabout policies. The system shall retain the trip booking and flag it with the date and time when it was cancelled to facilitate Gadabout’s management of its cancellation policies. The system shall track late cancellations and no-shows.

The system shall provide the capability to enter a reason for trip cancellations (e.g., cancellation initiated by client/doctor/caregiver/Gadabout, or caused by weather or some other reason).

If the cancellation is received after a certain time-window, as defined by Gadabout, it shall be identified as a late cancellation. The system shall allow for recording of whether the ride was taken or if the client failed to board without cancelling the ride.

Any trip modification or cancellation shall generate an audit record – one in which the reservationist’s or scheduler’s name is noted along with the date and time the change was made, the type of modification that was made, and the reason for the modification (if one is noted).

## Scheduling

The system shall record the dates and user identifiers when trips are booked and scheduled.

The system shall allow trips to be scheduled with Gadabout or volunteer drivers.

The system shall be capable of scheduling, in batch mode, all bookings for a future range of dates. Proposers must describe the parameters used in scheduling customer trips. For example, scheduling may be based on the actual street network in the Gadabout service areas, using parameters associated with street network segments as established in the GIS system (e.g., physical barriers, running speed by time of day, and appropriate dwell times for the boarding and alighting of passengers). At least the following parameters shall be included:

* Dwell time;
* On-board capacity;
* Average vehicle speed profile for street segments;
* Grouping based on geographic location of origin and destination of trips;
* Avoidance of street segments with detours/road closures; and
* Accessibility needs/mobility aids.

In the future, the system shall permit Gadabout to set priority levels on all ADA complementary paratransit trips, which require higher service standards. Proposers shall describe how the system processes trip priorities during scheduling.

The system shall produce a daily manifest for each run, indicating pull-in and pull-out times, the projected arrival time of a vehicle at each pickup and dropoff location, and listing the trip events in chronological order.

When creating a daily manifest, the system must take into account any vehicle assignment restrictions. For example, certain vehicles can provide only a specific type of trip (e.g., buses with wheelchair ramps).

Once generated, the system shall be able to display all manifests with all driver instructions for a given day. The system shall provide tools to allow and track manual adjustments to the daily manifests, including manually adding notes and moving trips between manifests. The system shall allow manifests to be viewed on a map using GIS coordinates to display pickup and destination points.

The system shall have internal validation checks to ensure that manifests do not violate work and labor rules (e.g., driver work hours and breaks). The system shall also perform validation checks to ensure that policies limiting travel times for individual passengers are not violated.

The system shall allow easy dispatcher entry of trip event completion times (i.e., as written on the manifest by the driver or reported by radio).

The system shall allow subscription run templates to be developed, based on standing orders (subscriptions). The system shall optimize the templates for least distance and/or travel time, based on the street network segment parameters stored in the system.

The system shall schedule each run based on an assigned vehicle, recognizing the accessibility needs of the scheduled clients and vehicle capacity constraints.

The system shall allow trips to be added to an existing run on the same day as the run. The system shall identify and display a range of alternatives for assigning the trip to existing runs for that day so as to best satisfy the requirements of the reservation while minimizing any impact on existing reservations. The system shall present these alternatives in rank order with a numerical “score” to indicate the degree of difference between choices presented to the reservationist or scheduler.

The system shall allow trips to be assigned to a taxi company if no vehicle is available to provide a mandatory trip (such as court ordered visitations or dialysis). The system shall allow for entry of the taxi fare in a trip cost field.

The system shall allow a volunteer driver dispatcher to manually assign trips to volunteer drivers. The system shall present a list of available drivers for a trip, based on their stored schedules. The system shall allow certain trips to be marked priority to indicate a trip where a driver must be found.

The system shall provide a daily view of volunteer trips with no assigned driver, showing pickup time, pickup location and town, dropoff time, and dropoff location and town. At the same time, the system shall present a list of volunteer drivers. Clicking on a volunteer driver’s name shall display their schedule for that day, allowing the user to easily search for a driver that is able to do the trip. The system shall allow the user to easily assign the trip to a selected volunteer driver.

The system shall show whether trips that were requested during the previous 48 hours were actually assigned to a driver. Further, the system shall show whether trips that were scheduled were scheduled and taken; scheduled and not taken [e.g. cancelled or failure to board]; or never scheduled and never taken. The scheduler will enter the date and time of the request, and the system shall be capable of producing a report that shows the trip request was then scheduled and assigned to a driver.

## Dispatching

### Trip Management

The system shall allow dispatchers to access run manifests using the run number, vehicle number, client number, or client name. The system shall display the run number, the list of passengers, the scheduled pick up and drop off times for each passenger, funding source for each trip, the scheduled arrival time for each pickup and dropoff, and any special circumstances. The run manifest display shall list trip events in chronological order, beginning with the next upcoming trip event.

The system shall automatically display any same day manifest changes to the dispatcher, so that the dispatcher can convey these changes to the affected drivers. The system shall allow dispatcher to enter road closure or detour information with respect to a road segment.

The system shall allow the dispatcher to use sorting functions to make changes that improve productivity using manual override, computer assisted, and fully automated modes of trip scheduling. After modifying runs, the system will allow the dispatcher to print each run’s stops and routes in order to have fully updated schedules.

The system shall allow the dispatcher to define a region and display a region’s runs on the computer screen with maps.

The system shall allow dispatchers to process no-shows when reported by drivers. The system shall track any such events.

If a vehicle must be removed from service, the system shall allow the dispatcher to associate a newly assigned vehicle with the run. If no alternative vehicle is available and the run must be cancelled, the system shall attempt to dynamically reschedule all the affected trips onto existing runs, with priority to any trips that were already underway on the affected vehicle.

The system shall allow easy transfer of trip event completion data from a printed manifest (that the driver has used to report trip event data), mobile data terminal or reported by radio/phone. This data must include the trip status (taken, no-show, cancelled), actual arrival time at pickup point, actual time passenger boarded, actual dropoff time, pickup odometer reading, dropoff odometer reading and any notes made by the driver (such as complications with mobility devices or violation of policies [i.e., too many bags]).

The system shall allow dispatchers to add any vehicle event information associated with a trip. The system shall log the information in trip history with corresponding date and timestamp. The dispatcher shall be able to select from a list of pre-configured events or manually enter information.

The following trip data is needed for management information reports: actual arrival time at pickup point; actual time passenger boarded; actual dropoff time; actual odometer reading at beginning of trip (typically at pickup); actual odometer reading at end of trip (typically at dropoff); trip status (taken, no show or cancelled); was trip a subscription trip; trip number assigned; total vehicle and revenue miles for each vehicle; total vehicle and revenue hours for each vehicle; and any additional information required (manual entry).

### Incident Management

The system shall allow the dispatcher to initiate a new incident report. The new incident report form shall appear in a separate window, including an automatically generated date/time and a list of incident types.

The dispatcher shall be able to select an event to form the basis for an incident report, with the incident report form auto-populated with all information already known in the system about the event.

There shall be one central incident/accident report accessible from a server so everyone sees the same current report information, but only one instance of the report can be open at a time for editing.

The system shall allow authorized users to append to an existing open incident report, with other system users limited to read-only access.

The system shall allow authorized users to view and append to an existing open incident report, with other system users limited to read-only access. The user shall be able to select from a list of currently open incident reports that can be sorted by date/time, incident type or initiating dispatcher. The selected incident report shall appear in a separate window, and shall be available for editing.

The open incident report shall be repeatedly accessed and modified, until it is marked closed after which further modifications shall not be possible, unless by authorized personnel with specific authorization to do so.

The system shall allow authorized users to close an existing open incident report. The user shall be able to select from a list of currently open incident reports, which can be sorted by date/time, incident type or initiating dispatcher. The user shall be asked to confirm the selected incident report before the incident is closed.

The incident report database shall indicate for each incident report the date/time of opening the report, the incident type, the initial incident text, the initiating user, the date/time of each subsequent modification, each modified version of the text, the modifying user(s), the date/time the incident was closed and the closing user.

Authorized users shall have the ability to attach files (e.g. an image file) to the incident report.

The system shall track the user and date/time when the incident report is opened, modified or closed.

## Billing and Reporting

In order to enable the system to bill funding agencies, the system must be able to track number of trips, number of miles, tolls paid by volunteer drivers and trip status (trip taken, no-show, cancelled) by client for each funding source.

The Billing module shall allow Gadabout to define and customize the following information in order to implement and track multiple billing rules based on the terms of negotiated contractual agreements, and/or grant agreements. The system shall allow Gadabout the option of tracking this data by contract year, Gadabout’s fiscal year or other date range (e.g. year-to-date, quarterly).

### Funding Sources

The system shall be able to track as many funding sources as necessary.

The system shall allow definition of at least the following attributes related to funding sources:

* Unique system-generated identifier by funding source;
* Funding source name;
* Funding source address;
* Contract effective and expiration dates;
* Maximum contract dollar amount for the contract time period; and
* Funding source status to indicate whether funding source is currently active or whether it is used for historical or future trips.

### Billing Rates

The system shall be able to track multiple billing rates for each funding source. Per trip and mileage rates shall be entered for each mode (bus, volunteer, etc.). The system shall allow rate changes any time a new rate is put into effect. The old rate’s expiration date should be updated and the new rate added with a new effective date. Billing charges shall be calculated for each trip date using the billing rates applicable for that date.

Trip status must be taken into account when determining which trips to bill. For example, not all funding sources will pay for no-show trips.

Trips are charged at different rates based on trip mode category and include trip charge, mileage, tolls and taxi fares. The system shall allow and track the collection of donations (not fares) for trips billed to other funding sources.

### Fiscal Years

The system shall account for and manage each funding source’s fiscal year date range.

### Trip Mode Categories

The system shall be able to track multiple trip mode categories. Trip mode is a mandatory field in all billing and reporting options.

The system shall be able to track multiple trip mode descriptions such as “Van,” “Bus,” “Taxi,” “Self Transport” and “Volunteer.”

The system shall be able to track and implement rules which require specific codes for modes of transportation and HIPAA related codes, as well as reimbursement rates.

### Trip Purpose Categories

The system shall allow Gadabout to track multiple trip purpose categories based on specific billing source contractual agreements and billing rules. Some funding programs may define specific trip purpose categories which are correlated to eligibility, billing and reporting options.

### Driver Details Tracking

The system shall allow Gadabout to track details by Gadabout drivers as distinguished from volunteer drivers.

The system shall allow tracking of pre-and post-inspection times for agency drivers.

### Trip Status Categories

The system shall allow Gadabout to customize and track as many trips statuses as necessary. Based on contractual agreements, only certain trip statuses may be billed. For example, No-Shows may have different billing rules under different funding programs. All reporting options shall use the trip status field in the criteria selection and sorting.

The system shall allow Gadabout to update status of a trip such as “scheduled taken,” “cancelled by client,” “cancelled by office,” “late cancel,” “no-show,” “driver no-show” or “inability to find driver.”

### Billing Status Categories

The system shall allow Gadabout to customize and track as many billing status categories as necessary.

### HIPAA Transportation and Other Codes

The system shall be able to track HIPAA compliant transportation and other service related codes based on mode of transportation.

### Trip Details by Client

The system shall be able to track multiple rides per client, using the unique client identification number as described in Section 6.2. This assumption is being used when defining specifications for tracking individual client trip details and billing options.

The system shall allow entry of the following information for billing with respect to the client trip data entered in the system as part of trip booking process (see Section 6.5.1)

* Funding Source Identification: to track the trip Funding Source ID
* Vendor ID: to track the Vendor ID for a taxi, common carrier or other public transit trip
* Volunteer ID: to track Volunteer ID.
* Mileage: used in all billing, management and operations processes and reports to track mileage statistics.
* Trip Charge: used in all billing, management, operations and associated processes to track trip charges per trip.
* Other charges: to track other charges when clients incur expenses for other services that are related to transportation needs, such as hotels, meals, tolls, parking fees. Rules need to identify and process such charges differently. These charges are not included in reporting and analysis options which summarize regular trip charges.
* Fare Amount: to track and look up fare amounts per trip. Cross Reference to Fare Amounts by Billing Source Fares specifications. The Contractor shall be given the fare matrix that will be necessary to look up fare amounts per trip.
* Invoice Date: to track when Invoices are balanced and generated.
* Billing Status: to track multiple billing statuses
* Resubmit Flag: A “Resubmit” is a trip record which was denied and needs to be billed again, after errors in processing are fixed. Resubmitted trips cannot be double counted, while reconciling and generating statistical agency wide reports.

### Other Contracts

The system must be able to generate billing reports/invoices for local partners, state agencies and third parties (e.g. other contracts).

The system shall be able to generate billing reports for internal accounting and specific contract required billing procedures that list clients, trips and mileage for a given time period.

### Fares

The system shall be able to generate a report of daily fares and donations broken down by run.

## Customer Service

The system shall have the ability to log and track the status of customer complaints and commendations.

The system shall automatically assign an identification number or a case number once the complaint or commendation is saved.

The system shall allow the input of at least the following information with respect to a complaint or commendation:

* Client identification number (when the customer is not registered, allow for information to be ignored or for passenger name to be entered instead);
* Reason for complaint (e.g., later arrival of vehicle) or commendation;
* Billing source;
* Mode of transportation (e.g., bus, volunteer, taxi) and name of volunteer or taxi company
* Date and time of complaint or commendation;
* Current status of a complaint or commendation;
* Current owner of the case (who is handling the complaint or commendation currently); and
* Ability to generate a report showing complaints and commendations for the month by program/billing source.

The complaints/commendation module shall support workflow management which shall allow agency staff members to assign a case to a specific agency employee’s queue (currently only one person handles complaints/commendations) depending on the nature of the complaint or commendation.

The system shall have the ability to alert the authorized management staff automatically about any complaints or commendations that have not been addressed for a defined period of time and closed out.

All data shall be stored in the PSDS database and Gadabout shall have ability to run reports that require access to this data.

## Mobile Data Terminal (MDT) Interface

Requirements in this section assume that Gadabout vehicles shall be equipped with MDTs and data modems. On-board equipment is described in Section 9.2.1.

### Data Messaging

The system shall allow the dispatcher to view received text messages in a tabular display that also indicates the vehicle ID and the time of the message.

The system shall allow the dispatcher to send a text message to a single MDT, a predefined group of MDTs or all MDTs within an area selected on the map display.

The system shall allow the dispatcher to select one of a set of predefined text messages or enter a free text message.

The system shall allow any message sent by dispatch to be flagged as requiring operator acknowledgement, and shall allow the dispatcher to view a list of such messages that have not yet been acknowledged.

### Manifest Transmission and Changes

The system shall produce a daily manifest for each run, indicating pull-in and pull-out times, the projected arrival time of the vehicle at each pickup and dropoff location, listing the trip events in chronological order.

The system shall be able to generate and display all manifests for a given day. The system shall provide tools to allow manual adjustments to the run manifests, including manually moving trips between manifests.

The system shall send manifest trip pickup and dropoff data to the MDT in the vehicle assigned to that manifest.

The system shall send the manifest for the next day to each driver via e-mail.

The dispatcher shall be able to configure which portions of the upcoming manifest entries shall be sent to the MDT (e.g., the next X trips, all trips in the next Y minutes).

Additional portions of the manifest shall be automatically sent to the MDT on an ongoing basis as trip events are completed, in accordance with Gadabout-configured manifest transmission parameters.

The system shall automatically display any same day manifest changes, such as trip additions, no shows or cancellations, to the dispatcher and transmit these manifest changes to the MDT in the vehicle assigned to that manifest, displayed in a different color text or highlighted.

### Trip Events Logging

The system shall receive trip pull-in, pull-out, pickup, no-show approval requests and dropoff event reports from MDTs, and use this data to update the time and reported location for each trip event.

The system shall acknowledge the receipt of trip event messages to the MDT.

The system shall store trip event messages sent to the MDT and acknowledged by the vehicle operator.

Based on the logged trip events, the system shall update the estimated time of arrival for the remaining manifest trips and display this information to the dispatcher. This does not change the actual manifest – this updated information informs the scheduler/dispatcher so that they can inform clients if their pickups are expected to be delayed.

The system shall receive no-show approval requests from MDTs, allow dispatchers to decide whether to authorize the no-show, record the time when the no-show was authorized, mark the pickup and dropoff in the manifest as a no show, and transmit the cancellation of the pickup and dropoff as manifest changes to the MDT in the vehicle assigned to that manifest.

### Passenger Signature for Medicaid Trips

For Medicaid trips, the passenger and driver must sign the manifest to attest that Gadabout has provided the trip. A record containing the two signatures, driver’s license number, vehicle number, and license plate number must be generated for use when Medicaid trips are processed for payment.

# Reports

The reporting system must first present data in a summary format and then allow users to drill-down and drill-through the tables for further details. Any graphical illustrations shall be provided as necessary.

The system must allow sorting, grouping and filtering of information on-the-fly by relevant data fields.

In addition to canned reports required in the system, the reporting tool must allow Gadabout to generate and save ad-hoc reports easily.

The system shall allow reports to be viewed on screen, sent to a printer or saved to a file.

The system shall allow Gadabout to access the database to create and execute stored procedures written by Gadabout.

The software shall provide standard reports based on the stored data. Proposers shall provide details in their proposal related to reports that are offered and degree to which they can be configured. The standard reports shall include at least reporting on:

* Logon/Logoff summary
* Trips provided
* Non-revenue vehicle hours (the time from when the bus leaves the garage to the bus’ first pickup, driver’s lunch time, time from the last drop-off to when the bus is fueled and brought back to the garage)
* Passenger travel time, by run or user group
* Number of cancellations
* Number of no-shows
* Number of vehicle hours/miles

The software shall have the capability to generate reports based on exceptions as per thresholds set by Gadabout.

# Future Capabilities

Gadabout does not currently bill any funding source using electronic billing requiring electronic data interchange (EDI). However, the Proposer shall describe in their proposal the capability to do electronic billing in the PSDS in the future.

Gadabout currently outsources all vehicle maintenance to TCAT. The Proposer shall describe in their proposal the capability to interface with third-party maintenance software that could be used by TCAT in the future.

Gadabout currently accepts cash and various printed paper tickets. The Proposer shall describe in their proposal the capability to integrate electronic fare media into the system in the future.

Proposers shall describe in their proposals the capability to add a silent alarm feature to the system in the future.

Proposers shall describe in their proposals the capability to integrate on-board cameras with the system in the future.

# Computer-aided Dispatch (CAD)/Automatic Vehicle Location (AVL) Functional Specifications

## General

### Environment

Equipment modules, cables, mounting hardware and connectors shall be designed to withstand the full range of operating environments found in the areas in which they are to be installed, and shall not interfere with the operation of existing onboard equipment.

Equipment shall operate in accordance with these specifications for ambient temperatures from -22 °F (-30°C) to 140 °F (+60°C). If not compliant, please provide operating temperature ratings for the equipment.

Equipment shall withstand without damage being stored for extended periods in ambient temperatures from -40°F (-40°C) to 158°F (+70°C). If not compliant, please provide storage temperature ratings for the equipment.

Equipment shall operate in accordance with these specifications for ambient humidity from 5% to 97%, non-condensing. If not compliant, please provide humidity ratings for the equipment.

Equipment shall be sealed against dust and water intrusion, certified in compliance with or exceeding the National Electrical Manufacturers Association 4 (NEMA4) or International Protection 65 (IP65) standard.

Equipment shall conform to the Federal Communications Commission (FCC) Part 15 Class A limits for conducted and radiated emissions of electromagnetic interference and radio frequency interference.

Equipment shall be tested and proven capable of withstanding power transients, electromagnetic interference and radio frequency interference without degradation at levels encountered in typical transit and paratransit operations.

Onboard equipment shall be specifically designed for the harsh transit environment and shall meet the requirements of this specification under all conditions encountered in typical transit operations.

Onboard equipment provided shall operate in accordance with these specifications while withstanding the vibration and shock forces encountered in typical transit operations.

Cabling and wiring shall be installed in accordance with these specifications while withstanding the vibration and shock forces encountered in typical transit operations.

### Installation

Proposers shall describe (through text, drawings or illustrations) the mounting mechanism by which the tablets will be installed in Gadabout vehicles. The proposed mount design shall account for the safety, performance, ergonomics and usability of the tablet by Gadabout staff. The mount shall have a locking mechanism to prevent theft or vandalism of the tablet.

The tablet mount shall comply with US heavy duty vehicle Society of Automotive Engineers (SAE) J1455 standard. Proposers are encouraged to provide crash and vibration testing ratings of the proposed mounting mechanism.

The installed location of onboard components shall be determined in collaboration with Gadabout. The Contractor shall submit Installation Design Documentation (IDD), for Gadabout approval prior to undertaking any installations.

The IDD shall provide text, drawings, illustrations and images using adequate detail to allow for quality installation by a technician without further training in conjunction with other installation instructions provided by the vendors of individual equipment components.

The IDD shall include details on (1) equipment installation locations/mounting; (2) routing, conductors, color-coding, labeling, and connectors for power, communications and vehicle ground circuits; (3) connections with, any required modifications to and restoration of existing infrastructure; (4) work area and equipment storage requirements; (5) methods and quality standards; and (6) supervision and quality assurance procedures.

The IDD shall include procedures for pre- and post-installation checklists for tests to be performed by installers. The installations shall not be considered complete unless Gadabout provides signoff on the pre and post installation checklist for each vehicle.

Equipment shall be properly grounded, with onboard equipment connected as directly as possible to the chassis ground.

Equipment components shall be replaceable as discrete units and identified by unique serial numbers. Each connector shall be keyed or otherwise configured so as to prevent inadvertent mis-wiring during MDT replacement.

Equipment inputs and outputs shall be protected, to absorb “routine” electrostatic discharges, over-voltages and reverse polarity conditions. In the event of “extraordinary” conditions, equipment shall be designed to sacrifice inexpensive and easily identifiable components when necessary to protect more expensive components or those less easy to troubleshoot.

Equipment shall be housed in enclosures that cannot be opened with standard hand tools, and resist damage from vandalism.

Onboard equipment shall operate from the vehicle electrical system, between 9 and 35 volts.

Onboard equipment shall be securely mounted in the interior of the vehicle, clear of obstructions and interference-generating devices, and so as to avoid blocking vehicle operator sightlines to front and side windows.

The MDT shall be mounted within comfortable reach of the controls from the seated position for the full range of vehicle operators and vehicle types.

The installed location and mounting method for the MDTs shall be determined in collaboration with Gadabout staff. If deemed necessary by Gadabout, the Contractor shall rearrange the installed locations of other onboard equipment to achieve a suitable overall arrangement of equipment (e.g., radio/handset).

Installations shall be performed at specific times during the day and as approved by Gadabout. The Contractor may be required to perform installations over nights and weekends, and installations may need to be performed at the vehicle’s home base.

Gadabout reserves the right to limit no more than 5% of its vehicle fleet to be out of service within any given 24-hour period to accommodate vehicle installations. Gadabout reserves the right to allow less of its vehicle fleet to be out of service if necessary in order to avoid disruption to revenue service in conjunction with maintenance requirements.

The Contractor shall ensure that all vehicles made available for overnight installation work are ready for revenue service by the start of the next service day.

The Contractor shall install and configure the entire system, including any Gadabout provided computer hardware and integration with existing systems.

The Contractor shall provide all necessary personnel, tools, test equipment, transportation, hardware and supplies for the successful and complete installation of all equipment and software.

The Contractor shall be responsible for their own and subcontractors' performance and safety.

Installations shall be performed in accordance with all Federal, State, and local laws and regulations.

The Contractor shall supply any electrical equipment necessary to operate system components using existing DC electrical power available on Gadabout vehicles and existing AC electrical power at the TCAT garage. If existing power arrangements are unsatisfactory, the Contractor must specify proposed alterations.

The capabilities of existing infrastructure affected by or to be integrated into the new system, such as Gadabout’s local area network(s) (LAN) and wide area network(s) (WAN) shall not be reduced at any time by system implementation.

The Contractor shall only be authorized to undertake installations after Gadabout approval of a pre-installation inspection for each installation site, documenting the existing condition of any existing infrastructure that may be affected by the installation.

Depending on installation needs, installations may be performed at TCAT’s garage.

Gadabout shall be in-charge of removing and recycling any existing Gadabout equipment replaced by equipment provided by the Contractor.

After installations, the Contractor shall be responsible for restoring the condition of any affected existing infrastructure at the installation site to its pre-installation condition.

The Contractor shall be responsible for the security of equipment prior to installation.

### Gadabout Responsibilities

Gadabout will provide space for the Contractor to establish secure storage facilities adjacent to each installation area. The Contractor shall provide details on the space required for equipment storage and vehicle installation.

Depending on installation needs, installations may be performed at Gadabout’s bus wash bay.

Gadabout will provide space for central system installations and vehicle installations.

Gadabout will provide light and electrical service at the installation location, as well as access to compressed air at vehicle installation locations.

Gadabout will provide staff to move vehicles to and from the installation locations.

## On-board Systems

### Mobile Data Terminal (MDT)

#### General

Gadabout seeks a portable and standalone, tablet-based mobile data terminal (MDT) that can be easily transferred between vehicles and sites. In consultation with the Contractor, Gadabout will select and may furnish the tablets (rather than being furnished by the Contractor) which will serve as the vehicle-operator interface and MDT. Proposers shall recommend commercial off-the-shelf (COTS) hardware that can meet the requirements herein given their proposed software solutions.

The vehicle operator terminal shall be connected with or integrated into a Vehicle Logic Unit (VLU), and the combination will be subsequently referred to as the MDT. Gadabout is considering an MDT to be a tablet that Gadabout may be able to procure from sources other than the Contractor.

MDTs shall turn on automatically when the vehicle power is turned on, and shall shut down at an agency-configurable time after the vehicle power is turned off. The system shall have built-in battery backup to compensate for any loss of power draw from the vehicle battery when the vehicle is not running.

The MDTs, which serve as the controlling computing device, shall be capable of being locally and remotely configured, diagnosed and maintained. The local configurations shall use a laptop computer or other portable programming device (e.g., via a universal serial bus [USB] port, RS-232 console port or the operator terminal). The local configuration shall be accessible to the units and shall not require excessive customization between vehicle types (i.e., an identical location and connection shall be used for each type of vehicle).

The Proposer shall provide details on its capability to remotely configure and reset MDTs.

The MDT shall be equipped with a navigation assistance module to provide visual and audible turn-by-turn instruction for operators of all revenue vehicles.

##### Vehicle Operator Display

The operator terminal of the MDT shall use a color backlit display, readable by the vehicle operator from the seated position under the full range of ambient illumination conditions. This includes capabilities such as vehicle operator-controlled brightness/contrast control, anti-glare coating, and adjustable orientation mounting.

The color combination to be used on the MDT terminal shall provide legibility for the color blind.

The operator terminal shall be operated using either at least eight programmable function keys with tactile and audible feedback or touch screen programmable buttons with visual and audible feedback.

The MDT speaker shall provide audible feedback when a function key or on-screen key is pressed.

The operator shall not be able to manually shut off or disconnect the operator terminal power or manually shut down the MDT application software.

##### “Safe Driving” Mode

For driver safety, the MDT shall have the *“safe driving* mode enabled when the vehicle is moving above a configurable speed limit (e.g., 5 miles/hour).

The safe driving mode shall allow Gadabout management to determine the criteria that will prevent vehicle operators from interacting with MDTs when driving. The MDT shall allow Gadabout to enable the following screen configurations under safe driving mode:

* Blank display on the screen;
* Disabled MDT buttons to stop vehicle operators from performing any actions on the screen; and
* Display of information relevant to vehicle operators when of high priority (e.g., navigation, manifest, or missed messages or calls from dispatchers).

Gadabout shall have the ability to remotely change the configurations for the safe driving mode.

Gadabout shall be able to change the safe driving mode configurations by vehicle operator login. For example, the safe driving mode could be disabled for maintenance or training purposes.

##### Navigation Assistance

The MDT shall be equipped with a navigation assistance module to provide visual and audible turn-by-turn instruction to vehicle operators.

The MDT shall display a map showing the current location of the vehicle, the location of the next pickup or dropoff, and a continuously updated suggested routing between them, at the closest zoom level where this route fits on the display. As the vehicle travels, the map view will automatically pan and zoom to continue to show this entire routing at the closest possible zoom level.

The MDT shall allow operators to override the map zoom level or pan the map display, and to select for the display to return to the default mode that automatically follows the routing.

The driving instructions shall include both the turn directions and the name of the street, and this information shall be provided at a Gadabout-configurable distance in advance of the turn.

The navigation module shall allow the operator to activate and deactivate the navigation map display and/or the audible instructions as desired.

The navigation map shall be updateable over the bulk data transfer using the WLAN.

If the navigation application is active when a manifest change notification or text message is received, the audible alert tone shall be provided without interrupting the navigation application. This will allow the operator to acknowledge and review the manifest changes or text messages at the next appropriate opportunity without interrupting the navigation support.

The navigation assistance system shall not direct vehicles operators to streets that have restrictions for their vehicles (e.g., restrictions on bridge clearance for oversized vehicles).

##### Vehicle Operator Logon

The MDT shall allow vehicle operator logon using operator ID and run ID entry. The MDT shall check with the central system to validate that the operator ID and run ID are valid (and not already logged in on another MDT). In the event of a conflict, the system shall notify the vehicle operator of an “invalid” logon. If the operator ID and run ID received from the MDT are valid, a message shall be sent to the MDT indicating whether the logon attempt was successful or failed.

Once the operator and run IDs have been validated, the MDT shall complete the logon by selecting the schedule/manifest data stored in the MDT that corresponds with that run/trip.

The system shall provide dispatchers the ability to manually logon a vehicle operator to an appropriate run.

After logon, the operator terminal shall display the current run, route, trip, next time point, and vehicle operator ID.

The MDT shall track whether or not a wheelchair lift was cycled (if applicable) before the vehicle is moved an agency configurable distance after logon, and report to central software in real time if it was not cycled.

The MDT shall allow the vehicle operator to logoff by selecting the logoff key.

The MDT shall send a message to the dispatcher as a confirmation of the vehicle operator logoff.

The MDT shall periodically attempt to send a logon or logoff message until it receives an acknowledgement message from the central system, or if no response is received from the central system within a Gadabout-configurable time, the MDT shall provide the operator with a “no logon response” message, and the system will continue to attempt to send the logon or logoff message.

##### Electronic Pre- and Post-Trip Inspection

Upon successful login, the MDT shall present the vehicle operator with a pre-trip checklist. The pre-trip checklist shall be configurable by Gadabout and shall be designed to prompt the vehicle operator to confirm that pre-trip procedures were performed. The pre-trip screen shall include standard pre-trip procedures as defined by Gadabout. A log of the pre-trip input shall be transmitted to and retained in the central system database.

The MDT shall provide an electronic interface to record results of the pre- and post-trip inspections to be conducted by drivers.

The Contractor shall design the inspection forms in coordination with Gadabout to comply with existing inspection process.

The inspection forms shall provide the capability for drivers to record their “electronic signatures,” allowing the vehicle operator to submit an electronic signature or other text to the central system using a finger or stylus.

The system shall record the driver id, vehicle id, location (where the vehicle is parked or garaged) id and date and time of form completion once form is electronically signed.

The inspection data shall be automatically uploaded to the central system in real-time and shall be available to the authorized staff to review as needed.

#### Geo-fencing

The system shall provide the ability to define geo-triggers around pre-defined locations in the Gadabout service area.

The system shall allow Gadabout to associate geo-triggers with specific actions. The actions shall be activated when vehicle enters the defined geo-trigger and shall deactivate as soon as the vehicle leaves the geo-trigger.

#### Vehicle Location Tracking

##### GPS Receiver and Antenna

The GPS receiver shall report date and time, latitude, longitude, speed, direction of travel and whether or not the receiver has a GPS position lock.

The GPS receiver shall be at least eight channel parallel tracking receivers, capable of simultaneously tracking at least four GPS satellites in the best available geometry, while also tracking at least the four next best and/or upcoming (rising) satellites.

The on-board GPS receiver must be Wide Area Augmentation System (WAAS)-capable, providing position accuracy within ten feet (or three meters) 95 percent of the time. In the event that the GPS receiver is not WAAS compliant, the Proposer shall indicate how the GPS accuracy requirement is met.

The GPS receiver shall have a cold start solution time of 60 seconds or less and a re-acquisition time of 15 seconds or less.

Velocity measurements provided by the GPS equipment shall be accurate to within 0.3281 feet (0.1 meters) per second.

The MDT shall utilize an internal GPS antenna or shall be integrated with a GPS antenna securely mounted on the exterior of the vehicle. If mounted externally, the antenna, mounting and sealants shall be impervious to physical and chemical penetration by automatic vehicle washing equipment.

The Contractor shall interface with vehicle odometers and provide a gyroscope to compensate for the loss of GPS signals. In the event that location data is not available from GPS receiver, the MDT shall be able to calculate vehicle location based on vehicle speed, odometer readings and gyroscope data.

##### Location Reports

MDTs shall send a location report to the central system immediately when polled by the central system, or automatically once a configurable number of minutes have passed since the previous location report.

All transmitted data shall be stamped with following information: date and time, “GPS lock” status, latitude and longitude, heading, run number, vehicle number, and vehicle operator ID number.

##### Location Tracking

The system shall receive location reports from vehicles at a configurable time period as determined by Gadabout. The system shall receive and store latitude and longitude information stamped with date, time, vehicle, vehicle operator, run, and trip information from MDTs.

The display shall provide an indication if the last reported location being displayed is older than the reporting interval. In the event when location of a vehicle on the AVL map is shown to be older than a minute, the system shall allow the dispatcher to manually poll/locate a vehicle.

The system shall display on the map the last reported location for all vehicles, using an icon indicating vehicle direction and labeled with the vehicle ID, trip ID or operator ID as selected by the user.

The time interval at which location reports are received shall be configurable by Gadabout.

##### Location Playback

Gadabout staff shall be able to review on the map display the chronological sequence of reported locations for a specified vehicle(s) over a specified time period.

The software shall provide controls to view the entire sequence of reported locations from the beginning of the time period or to step through the sequence incrementally forwards or backwards.

The replay data shall include location reports and schedule adherence status.

The system shall allow replay for a single vehicle, selected set of vehicles or all vehicles on the selected map view for selected time period.

The system shall allow selection of any time period for the historical data stored in the database.

The system shall be able to be store a playback in a format that can be exported for viewing on any computer.

#### Canned Data Messaging

The MDT shall not allow vehicle operators to send or view a canned data message when the safe driving mode is enabled on their vehicles.

The MDT shall allow the vehicle operator to send a canned data message to the central system by selecting from a set of pre-defined messages. All canned messages to dispatch shall include the date, time, location (latitude and longitude) and odometer value.

When a canned data message is received from dispatch and available for viewing, the MDT shall indicate this with a distinct audible tone and visual alert.

The system shall allow for any message sent by dispatch to be flagged as requiring vehicle operator acknowledgement, a Y/N response and shall allow the dispatcher to view a list of such messages that have not yet been acknowledged.

The MDT shall store up to a configurable number of canned data messages received from dispatch, indicate to the vehicle operator when there are unread text messages, and allow stored messages to be viewed or deleted. The MDT shall allow the vehicle operator to view received messages that are longer than can fit on one line of the display.

The MDT shall allow the vehicle operator to send an acknowledgement or Yes/No response to certain messages received from the central system.

The MDT shall periodically attempt to send a canned data message or response until it receives an acknowledgement message from the central system.

The system shall allow the dispatcher to view received canned data messages in a tabular display that also indicates the vehicle ID and the time of the message.

The system shall allow the dispatcher to send a message to a single MDT, a predefined group of MDTs, all MDTs within an area selected on the map display or all MDTs operating.

The system shall be configurable to allow for audible and visual alerts for incoming messages.

The system shall allow the dispatcher to select one of a set of predefined messages (canned data messages) or enter a free text message.

##### Manifest Management

Manifests and manifest updates sent by a dispatcher shall be displayed on the MDT screen. The screen shall display upcoming pickup or dropoff trip events in summary format including at least event type (e.g., pickup, dropoff), arranged pickup time, appointment time (if applicable), client name, gender, event location, fare amount (if appropriate), mobility assistance requirements, image of the client, and other pertinent information, as determined by Gadabout.

The MDT shall allow the vehicle operator to select a trip event to get full detail on the pickup or dropoff on a separate screen, which shall include, at a minimum, pickup/dropoff, first and last name, client id, gender, appointment time, pickup time, location, location comments, fare amount, fare type, number of passengers and Personal Care Attendant (PCA).

The MDT shall request manifest data from the PSDS on a periodic, ongoing basis to display at least the next 10 trip events or trip events scheduled in the next 60 minutes, with these thresholds being configurable by Gadabout.

The MDT shall not allow a request for no-show until an Gadabout configurable time interval has passed after the ‘arrive’ trip event or the start of the customer pickup time window, as determined by Gadabout.

Once any of these trip events are selected on the MDT, the MDT shall send a message including the date, time, and location to the central software.

The MDT shall require that the vehicle operator acknowledge the receipt of an insertion, deletion or change to the current manifest (including no-show events). There shall be an audible tone from the MDT when any such manifest change notification is received. All changes in the manifest will be highlighted in distinct colors.

##### Trip Events

The MDT shall send a corresponding message to the PSDS when the vehicle operator selects a pull-out, pull-in, pickup, no-show requests, no-show event (after requesting a no-show from dispatch), or dropoff trip event.

The operator shall use the MDT to select an ‘arrive’ event by pressing a button when first arriving at the location, and then again use the MDT to select a ‘perform’ event when about to depart the location. The vehicle must not be in motion to select ‘arrive’ and ‘perform’ events.

In the case of grouped trip events, the vehicle operator shall register a single ‘arrive’ event.

The MDT will be configured to not allow the ‘arrive’ event unless the vehicle reaches within configured radius of the pickup location.

If the customer is not available at the location, the operator shall use an MDT button to request a ‘no-show’.

Pickups with a pending no-show request or that have been cancelled due to a no-show shall be indicated to the dispatcher.

The MDT shall not allow a request for no-show until an agency configurable time interval has passed after the ‘arrive’ trip event or the start of the customer pickup time window, whichever is later.

Once any of these trip events are selected on the MDT, the MDT shall send a message including the date, time, location and odometer value to the central software.

The operator shall have the opportunity to update the fare type at the time of selecting the perform trip event and send the updated information to the PSDS.

The trip event message shall include the date/time, trip event type, location and odometer value. Prior to sending the trip information, the operator shall be allowed to verify and adjust the odometer value for that trip.

The MDT shall continue to periodically attempt to send a trip event report until it receives an acknowledgement from the central software that the report was received.

##### MDT-Odometer Interface

The MDTs shall be interfaced with the existing odometer, receiving the digital or analog signal and determining the distance traveled since the MDT was logged on, including the ability for Gadabout to adjust the odometer calibration. In the event when the GPS-odometer is proposed to be used in place of vehicle odometer, Proposers shall provide the documented evidence of GPS-odometer accuracy in their proposals.

The accumulated mileage data collected by MDTs shall be calibrated to be within 5% of observed mileage.

## Real-time Customer Information

Proposers shall describe their proposed system’s ability to independently provide or export through a standard protocol, appointment reminders to Gadabout staff and clients. The time period (e.g., X hours before a scheduled appointment) and format (e.g., Text Message, Automated Phone Call, etc.) in which reminders are provided shall be configurable by Gadabout or the Participant.

### Predicted Arrival Time

The system shall have the ability to dynamically generate and update the predicted arrival times for in-service Gadabout vehicles.

The system shall be able to account for at least the following operational anomalies in making corrections in the predicted arrival times:

* Travel time variability by day and time of day;
* Service disruption (e.g., vehicle breakdown or weather-related disruption) and detours; and
* Driver logon/logoff error.

### Web-based Trip Status

The system shall allow customers/relatives to view the status of their trip on the Gadabout website or web-enabled personal devices. Registered customers shall be able to view the status of their trips by logging onto their profile.

The system shall allow customers to view the location of their vehicles on a map-based interface.

### Email/Text Alerts

The system shall be able to send emails to customers based on their trip preferences.

The system shall be able to send text message to customers based on their trip preferences.

The system shall have the ability to respond to customer requests for real-time status of a prescheduled trip.

### Interactive Voice Response (IVR) Alerts and Reservation Access

The PSDS system shall have the ability to interface with an IVR system to provide customer alerts regarding ride reminders and real-time arrival information via IVR system.

The IVR shall allow customers to cancel their trips using a series of prompts to identify their trip reservation, cancel the reservations and confirm the cancellation.

#### General

The IVR system shall provide the capability for customers to access and be contacted with information about Gadabout services and reservations via telephone. The Contractor shall be responsible for supplying hardware and software, technical support, and warranty coverage on implemented hardware and software.

The IVR system shall be interfaced with the PSDS and predicted arrival time (described above) to provide current predicted arrival time for customers 30 minutes prior to the predicted arrival time.

The IVR shall contact customers with a reminder call about their trip the day before service.

If a customer’s trip is predicted to be delayed by more than a configurable number of minutes, the IVR shall contact the customer with an updated arrival time.

The Proposer shall indicate how the IVR system will be compliant with FCC Section 255 of the Communications Act and Limited English Proficiency requirements.

The system shall provide both a web- and phone-based customer interface for registering with the IVR system.

#### Phone System Integration

The IVR shall be integrated with the existing telephone system at Gadabout (see Section 2.4). Proposers shall describe and provide cost of any needed upgrades in the existing phone system to meet the IVR functionality.

#### Customer Interface

The customer interface shall consist of voice prompts to which the customer may respond by either voice commands or by touch-tone key selection.

The IVR system shall provide a welcoming message as its first response to incoming callers or call recipients. The system shall allow for an additional optional message to be spoken after the welcome message.

The IVR system shall be designed such that incoming calls with no touch-tone or voice response within a short period of time by the customer are acted upon automatically (time-out). Proposers shall specify proposed options for calls that time-out or for which there is no touch-tone service.

The voice prompts shall encourage incoming callers to use the automated menu-based interface as a first choice over communication with a live Customer Service Representative.

The voice system structure shall provide key-ahead of touch-tone inputs such that experienced users do not have to wait for voice messages or prompts to complete prior to making a touch-tone or voice selection.

At any time during the call, the customer may request a transfer to Gadabout Customer Service via touch-tone key or voice command. The touch-tone key used for this particular selection shall remain consistent throughout the customer interface.

#### Call Transfers

The proposed system shall handle at least 1,000 calls per day.

The proposed IVR system shall be capable of transferring calls to Gadabout Customer Service.

When a transfer request to Customer Service is initiated by a caller after business hours, the IVR system shall provide an informational message to the caller and then return the caller to the first level of the IVR system voice menu.

When a transfer request to Customer Service is initiated by the caller during regular business hours, the IVR system shall transfer the caller to Customer Service if a call taker or queue space is available.

When a transfer request to Customer Service is initiated by the caller during regular business hours but when call takers are busy and the queue is full, the IVR system shall detect the queue-busy condition, hold the call, announce the approximate amount of time the caller may be on hold and provide IVR menu options for automated assistance.

#### Usage Data Collection and Reporting

The IVR system shall collect customer call data and provide reports for administrative purposes.

The Contractor shall describe the level to which data may be collected for incoming customer calls and for the touch-tone responses to menu options.

The proposed system shall allow a system administrator to generate reports for specific time periods, including the following types of reports:

* Number of total incoming calls;
* Number of calls that transfer to Customer Service; and
* Call duration for each call.

The proposed IVR shall allow the system administrator the capability to generate the above reports by the following selectable periods: hourly, daily, range of days, weekly, monthly and yearly.

#### Vocabulary Management

The proposed IVR system shall provide the capability for the system administrator to record and edit vocabulary words, and construct the phrases that will be used by the IVR system.

The Contractor shall specify the method(s) for recording and editing vocabulary words, and constructing phrases.

The proposed IVR system shall provide speech editing features. The Contractor shall specify features supported by the vocabulary management environment, including but not limited to:

* Individual vocabulary edits;
* Pause deletions and insertion; and
* Undo/redo individual vocabulary edits.

The IVR system shall provide the capability to store and manage all vocabulary words and phrases used by the system. Contractor shall describe how the vocabulary words and phrases are to be stored and managed.

# Project Implementation

## General

The Contractor shall prepare all deliverables in both Microsoft Office (Word, Excel or PowerPoint) and Adobe PDF formats, with Gadabout granted full rights to reprint as needed.

## Required Project Schedule

Table 3 shows the required schedule of activities and deliverables that will be described in subsequent subsections.

**Table 3. Required Timeline of Activities and Deliverables**

| **Item** | **Description** | **Time Since Last Item** |
| --- | --- | --- |
| 1 | Notice to Proceed |  |
| 2 | Draft SIP | 2 Weeks |
| 3 | Kickoff Meeting/Requirements Review Meeting | 2 Weeks |
| 4 | Revised SIP | 2 Weeks |
| 5 | Preliminary Design Document (PDD) | 4 Weeks |
| 6 | Preliminary Design Review (PDR) Meeting | 4 Weeks |
| 7 | Final Design Document (FDD) | 3 Weeks |
| 8 | Final Design Review (FDR) Meeting | 3 Weeks |
| 9 | FDD Approval | 3 Weeks |
| 10 | Acceptance Test Procedures (ATP) for Factory Acceptance Test (FAT) | 4 Weeks |
| 11 | FAT | 3 Weeks |
| 12 | FAT Punch List, FAT Results Document and FAT Approval | 2 Weeks |
| 13 | Resolve FAT Punch List | 2 Weeks |
| 14 | Training Manuals and Training | 3 Weeks |
| 15 | ATP for Pilot/Installation Testing | 2 Weeks |
| 16 | Pilot/Installation Testing | 3 Weeks |
| 17 | Pilot/Installation Testing Punch List, Pilot/Installation Testing Results Document and Pilot/Installation Testing Approval | 2 Weeks |
| 18 | Resolve Pilot/Installation Testing Punch List | 2 Weeks |
| 19 | ATP for System/User Acceptance Testing | 4 Weeks |
| 20 | System/User Acceptance Testing | 3 Weeks |
| 21 | System/User Acceptance Testing Punch List, System/User Acceptance Results Document and System/User Acceptance Testing Approval | 2 Weeks |
| 22 | Resolve System/User Acceptance Testing Punch List | 2 Weeks |
| 23 | Burn-in/Rigorous Testing | 4 Weeks |
| 24 | Burn-in/Rigorous Testing Results Document and Burn-in/Rigorous Testing Approval | 2 Weeks |
| 25 | Resolve Burn-in/Rigorous Testing Punch List | 2 Weeks |
| 26 | Final System Acceptance | 2 Weeks |

## Project Management

### Project Status Tracking

The Contractor shall prepare a System Implementation Plan (SIP), including detailed implementation activities and a schedule for these activities, the roles and responsibility of parties (Contractor, Gadabout and other parties) in the proposed project team, progress milestones and status, and assigned Contractor staff.

Proposers must submit their data conversion plan as part of the draft SIP provided in the proposal. Potential risk items and their resolution must be clearly identified per the Proposers’ prior experience with similar implementations.

The initial draft of the SIP shall be provided to Gadabout within two weeks from Notice to Proceed (NTP).

The Contractor shall participate in a kickoff meeting with the Gadabout Project Manager, other Gadabout staff, and outside consultants as determined by the Gadabout Project Manager. The SIP shall be discussed at the kickoff meeting. After the kickoff meeting, the SIP must be revised by the Contractor based on comments made during the kickoff meeting and by Gadabout. The revised document shall be provided to Gadabout within two weeks after the kickoff meeting. Please refer to Table 3 for recommendations on high-level tasks that should be included in the SIP.

Also, the Contractor shall include a Safety Management Plan in their SIP, which shall detail their responsibilities and procedures for safety during the different phases of the project, including (1) conducting pre-installation surveys to identify potential project safety hazards; (2) identifying project hazard control procedures, including occupational (worker) and public hazards; (3) providing project safety orientation and training to its subcontractors and Gadabout staff who will be involved in the project; and (4) furnishing procedures and training for project accident reporting and investigations,

The SIP must be approved and accepted in writing by Gadabout before it can become effective.

An updated SIP shall be submitted to Gadabout at the beginning of each month, until project completion and system acceptance by Gadabout.

The SIP shall include a rollout plan for all Gadabout vehicles.

The Contractor shall maintain and provide to Gadabout an Action Items List (AIL), indicating for each item the following: (1) item number; (2) date generated; (3) item priority; (4) brief item descriptive title; (5) assigned person with lead resolution responsibility; (6) date resolved; and (7) ongoing dated notes on resolution status.

The AIL shall be sorted, primarily by unresolved vs. resolved items, priority, and by the date the item was generated. Gadabout reserves the right to negotiate additional items for the AIL prior to formal acceptance.

### Bi-Weekly Conference Calls

The Contractor shall participate in bi-weekly conference calls with the Gadabout Project Manager, other Gadabout staff, and outside consultants as determined by the Gadabout Project Manager.

The agenda for these meetings will be to discuss the most current status of and plans related to all issues identified in the recent releases of the SIP and AIL.

Gadabout reserves the right to identify for discussion any additional issues beyond those in the SIP and AIL.

A status report shall be issued to Gadabout at least two days prior to each conference call, including (1) an agenda for the upcoming conference call highlighting key discussion items; and (2) an updated AIL with the updates incorporating the discussions of the previous bi-weekly conference call as well as other subsequent developments since the previous AIL release.

The Contractor shall be represented in these conference calls by at minimum their Project Manager, as well as any additional Contractor staff necessary to properly address the current issues and project status.

Gadabout will be represented by their designated implementation management representatives. Outside consultants may attend or participate in all conference calls, as needed.

Conference call facilities will be arranged and paid for by the Contractor.

The Contractor shall submit minutes of the call within two days of each conference call. The minutes shall be included as a task on each AIL submitted following a conference call.

### Minimum Required Onsite Work

At the first onsite meeting, which is the Kickoff Meeting/Requirements Review (see Table 3, Item 3), the Contractor shall be prepared to discuss Gadabout’s feedback on the draft SIP and conduct a Requirements Review (RR).

At the second onsite meeting, which is the Preliminary Design Review (PDR), the Contractor shall be prepared to discuss Gadabout’s feedback on draft Design Review documentation.

During the third onsite meeting, which is the Final Design Review, the Contractor shall present the Final Design Review documentation for review. Based on discussion at this meeting, the Contractor shall make any final revisions to the FDD.

During subsequent onsite efforts, the Contractor shall install the system, configure system access and conduct acceptance testing. These onsite installation, system configuration and testing efforts will occur over an extended period, and will likely involve several different onsite trips and a range of different Contractor staff.

### Invoicing

The Contractor shall only submit an invoice once a fully-signed Acceptance Certificate is generated by Gadabout indicating that a progress payment milestone has been achieved.

Gadabout will withhold 10% retainage on each invoice. Upon acceptance by Gadabout, the total retainage will be paid to the Contractor.

## Design Reviews

### Requirements Review (RR)

The Contractor shall participate in the RR, as part of the first onsite meeting. The RR will initialize the Requirements Matrix and the Contractor will use this Matrix to produce the draft Design Document for conducting the Preliminary Design Review (PDR) at the second on-site meeting. The RR meeting shall discuss, for each contract requirement, the following: (1) the Gadabout design intent; (2) the intended Contractor design approach; and (3) the general Contractor approach to demonstration through the acceptance testing process.

Finalized contractual requirements will be prepared after the RR meeting and will be referred to as the Requirements Matrix (RM) hereafter.

### Preliminary Design Review

There shall be two design reviews in which the Contractor must participate. For the design reviews, the Contractor will be required to prepare comprehensive documentation on the technical details of the system before proceeding with the installation. The design review materials to be prepared by the Contractor will include overall system documentation, details for installation with each vehicle type/site and fixed facility, and an itemization of how their design responds to each individual specification requirement. An important principle with the design review process is that the Gadabout acceptance of the design review documentation will not represent acceptance of the system, which can only result from successful system acceptance testing.

The beginning of the design review process is a Preliminary Design Review (PDR) meeting, which deals with the Contractor’s initial version of the system design. This meeting is an important opportunity to identify any misunderstandings of the design intent and to adapt the design within the Contractor’s constraints to best suit Gadabout’s needs.

The Contractor shall prepare the Preliminary Design Document (PDD), which shall include the following materials: (1) a conceptual diagram illustrating all elements in the system and data flow will be required; (2) an overview of the equipment, system and configuration proposed for implementation; (3) detailed technical documentation for each equipment item; (4) detailed technical documentation on all software, addressing the functions of each module, the format of all user interface screens, the format of all reports, the data fields to be included in all data exchange interfaces and any other software aspects warranting advance agreement with Gadabout prior to system customization/configuration; and (5) a table providing cross-references for each section of the PDD to the appropriate element of the RM.

Gadabout shall review the PDD in advance of the PDR meeting, and finalize their review and comments on the PDD after the PDR meeting is held.

### Final Design Review

The second step in the design review process is a Final or Critical Design Review (FDR), which deals with the Contractor’s final system design, based on the results of the PDR and updated RM. The FDR meeting involves consensus building in an onsite meeting or conference call once the design is finalized.

Based on comments made by Gadabout on the PDD, the Contractor shall make revisions to prepare the final design document (FDD).

The FDD shall include the following materials: (1) updated PDD incorporating Gadabout feedback and comments; (2) final list of equipment to be procured; (3) final design and configurations of the system to be built including all customizations to be made to the system; (4) an updated table providing cross-references between sections is the FDD and elements of the RM; and (5) updates to the Project Schedule.

The Contractor shall conduct the FDR onsite or via conference call three weeks after the FDD has been submitted.

The PDD and FDD are intended only to reduce the chance of any misunderstandings on the design intent or interpretation of the contract requirements. The PDR and FDR shall not alter the need for the successful formal demonstration of each requirement through the Acceptance Testing process.

Once the FDD is complete and accepted by Gadabout, the Contractor shall provide a detailed list of equipment for the system.

The Contractor shall create a detailed list of system configurations. An example of these configurations is a list of canned messages, and list of incidents and accidents codes.

The Contractor shall document configurations of the computer hardware and networking infrastructure as part of the FDD.

## Testing

The Contractor shall submit an Acceptance Test Procedures document (ATP), for Gadabout approval prior to undertaking any testing.

The ATP shall clearly address: (1) how each testable contract requirement (listed in the RM) will be demonstrated, including the method for performing the test; (2) the results that will constitute success for each test; (3) responsibilities of both Contractor and Gadabout’s representatives during each test; and (4) a cross-reference to which contract requirements from the RM are being addressed by each test procedure.

The ATP shall include an updated RM from the design review documents, to include the test stage at which each contract requirement will be demonstrated; and a cross-reference to the test procedure(s) that serve to address each contract requirement.

The ATP document shall be submitted to Gadabout at least three weeks in advance of any intended testing.

The ATP shall reflect the following distinct testing stages for the proposed system: (1) Factory Acceptance Test (FAT); (2) Pilot Testing/Installation Testing; (3) System/User Acceptance Testing; and (4) Burn-in/Rigorous Testing.

FAT shall be completed before the equipment and software is shipped to Gadabout for installation, and deficiencies shall be rectified before shipping to Gadabout for installation.

FAT shall be witnessed by Gadabout’s representatives (Gadabout staff and/or designated support consultants).

Pilot/Installation Testing shall be completed for at least one type of each vehicle in Gadabout’s fleet, for any on-board systems. Installation testing will include the Contractor, working with Gadabout’s IT staff, installing Gadabout’s databases and the Contractor’s software, and operating the system in a test environment. Pilot and installation testing will be conducted on-site at Gadabout. The Contractor will be required to submit proposed test procedures, which will need to include a cross-referencing to identify which procedure(s) demonstrate each requirement from the Requirements Matrix (RM). Any deficiencies observed in a four-week period following Pilot/Installation testing shall be rectified before the initiation of System Testing (ST). Vehicles used during Pilot Testing will be in operation for four weeks to observe issues that arise in daily operations.

Prior to commencement of Pilot/Installation Testing, the Contractor shall validate scheduling parameters and on-board data configurations to ensure that they are reasonable and accurate.

Pilot/Installation Testing shall be witnessed by Gadabout representatives.

System/User Acceptance Testing shall be completed after the entire system has been installed, and deficiencies shall be rectified before the initiation of Burn-in/Rigorous Testing.

System/User Acceptance Testing will include operating the system using live data. This testing stage will be conducted on-site at Gadabout. The Contractor will be required to submit proposed test procedures, which will need to include a cross-referencing to identify which procedure(s) demonstrate each requirement from the Requirements Matrix (RM).

System/User Acceptance Testing shall include the testing of all spare components.

System/User Acceptance Testing shall be witnessed by Gadabout representatives.

Burn-in/Rigorous Testing shall involve revenue service use of the system over a 30-day period after the completion of System/User Acceptance Testing, and deficiencies shall be rectified before Gadabout will grant Final System Acceptance (SA) for the system. This testing stage will be conducted on-site. The Contractor will be required to submit proposed test procedures, which will need to include a cross-referencing to identify which procedure(s) demonstrate each requirement from the Requirements Matrix (RM).

Gadabout may authorize the Contractor to proceed to the next testing stage with certain deficiencies not yet resolved.

The Contractor shall provide written notice to Gadabout at least two weeks in advance of any testing, indicating the specific tests to be completed. The Contractor will coordinate the date, time and location of testing to minimize disruption of service.

The Contractor shall be required to reschedule testing if Gadabout witnessing representatives cannot be present or if other circumstances prevent testing from taking place.

The Contractor shall provide written Test Results Documentation (TRD) after completing each stage of testing.

The TRD shall document the results of each ATP procedure and provide an updated RM that indicates which contract requirements have been demonstrated.

The TRD must be approved before Gadabout grants System Acceptance.

System Acceptance will not be granted for the system until all contract requirements have formally demonstrated through Burn-in/Rigorous Testing.

The RM shall be used as a “punch list” to track which requirements have not yet been demonstrated at each stage of testing.

A requirement classified as having been “demonstrated” during a certain testing stage can be subsequently redefined as having been “not demonstrated” if compliance issues emerge prior to System Acceptance.

## Documentation

The Contractor shall provide an As-Built Document (ABD) to Gadabout for approval.

The ABD shall include: (1) an inventory of all on-board components supplied including supplier, model number, serial number and installation location; (2) an inventory of all spare on-board parts supplied including supplier, model number, serial number and storage location; (3) all reference and user manuals for on-board system components, including those components supplied by third parties; (4) all warranties documentation, including that for on-board components supplied by third parties; (5) a diagram indicating the as-built interconnections between on-board components; and (6) the version number of all software, including that supplied by third parties.

The Contractor shall provide Maintenance Manuals documenting (1) how the on-board system components were installed; (2) how to install and configure spare on-board components; and (3) the schedule/ procedures for preventative maintenance, inspection, fault diagnosis, component replacement and warranty administration on each on-board system component.

The Contractor shall provide User Manuals (UMs) for the users of the PSDS system, documenting use of all functions of the software.

The Contractor shall provide Vehicle Operator Manuals documenting use of the MDTs and on-board equipment.

The software application shall include context sensitive help capability.

The Contractor shall provide a Systems Manuals (SMs), documenting (1) the configuration of the PSDS system hardware and software; (2) PSDS system functions and operations; (3) scheduled maintenance required for the PSDS; and (4) database structure and data dictionary.

The Contractor must provide disaster recovery documentation highlighting how system can function and prevent any data loss in the event of a natural disaster or other unexpected events.

## Training

The Contractor shall provide training courses for at least the following positions:

* Reservationist / Scheduler / Dispatcher
* Administrative Staff
* System administrator/IT staff
* Vehicle operators
* Customer service representative;
* Systems administrator;
* Database Managers
* Managers

Gadabout will provide the actual number of staff for each of the above categories of trainees.

The Contractor will describe the necessary pre-requisite computer skills and knowledge expected for each of the training courses in order to develop training classes based on user skill level.

The Contractor shall provide all training materials in either Microsoft Office or Adobe PDF formats with a permission to reproduce copies later on.

The Contractor shall provide additional training to the original trainees after Final System Acceptance for the system at no additional cost if major modifications are made to the system after the initial training due to system upgrades or changes made under warranty; and/or Final System Acceptance occurs at least three months after the completion of training, due to delays for which the Contractor is responsible.

The Training Plan (TP), including the training schedule and course outlines, must be provided to Gadabout for review at least three weeks in advance of the start of training. Training must be conducted prior to the User Acceptance Testing.

Each Proposer shall provide a sample TP with the following details in their proposal:

* Total number of onsite training sessions proposed;
* Total number of web-based training session proposed;
* List of training courses;
* Number of classes per course;
* Maximum number of attendees per class; and
* Number of follow-up sessions (specify on-site or web-based) or itemize cost per session.

The TP must be approved in writing by Gadabout before the start of any training.

The Contractor shall furnish all special tools, equipment, training aids and any other materials required to train course participants, for use during training courses only.

The instructors shall demonstrate a thorough knowledge of the material covered in the courses, familiarity with the training materials used in the courses, and the ability to effectively lead students in a classroom setting.

If any instructor is considered unsuitable by Gadabout, either before or during the training, the Contractor shall provide a suitable replacement within five business days of receiving such notice from Gadabout.

The Contractor shall provide brief refresher versions of each training course to the original trainees between three to six months after System Acceptance of the system at no additional cost.

During the warranty period, the Contractor shall provide additional training to the original trainees after System Acceptance for the system at no additional cost if major modifications are made to the system after the initial training due to system upgrades or changes.

The Proposer shall provide the cost of additional training for staff after the System Acceptance period (new hires, etc.) on the Price Proposal Form.

# Warranty and Spares

## Warranty

The Contractor shall provide a single point of contact for all warranty administration during the warranty period.

The Contractor shall confirm that it has reviewed and evaluated all information furnished by Gadabout and has made all inquiries necessary such that the Contractor is fully aware of Gadabout's business requirements and intended uses of system, as set forth or referenced in the Request for Proposals (RFP) and any Addenda, Amendments or Final Proposal Requests, as well as in discussions held previous to the Proposer’s submission of the proposal and during the Pre-proposal Conference.

The Contractor shall warrant that the system satisfies the foregoing requirements in all material respects and will be fit for such intended uses.

The Contractor shall warrant that the design, materials, construction, software and workmanship of the equipment shall reflect the intended use of the equipment as a component of the overall transit management system in the Gadabout environment.

The Contractor shall warrant that equipment and software, including the initial supply of spare components, (1) are free from defects in design, material and workmanship, and shall remain in good working order, and (2) function properly and in conformity with this Contract.

The Contractor shall provide any software updates and patches for the current software version at no cost to Gadabout during the warranty period.

The Contractor shall warrant that Gadabout shall acquire permanent title to all equipment and non-proprietary software provided under the Contract, free and clear of all liens and encumbrances.

The warranty period for the system shall run concurrently for all system components from the date of SA, through to five (5) years from the date of SA, although the warranty must assure that data is available for a minimum of seven years.

Proposers shall offer pricing for an option to extend the warranty period for the system for additional years beyond five years. Gadabout may include an extended warranty in the contract with the Contractor. Proposers shall itemize the cost of each extended warranty period and document any differences in the warranty terms for these option years in their proposal.

Proposers shall describe the pricing and services offered as part of different levels of support available (e.g., basic, advanced and premium levels of support).

The Contractor shall warrant that the documentation provided shall completely and accurately reflect the operation and maintenance of the equipment and software, and provide Gadabout with all information necessary to maintain the system.

If there is a change in the production configuration of any equipment or software being installed prior to Final System Acceptance, Gadabout may require that all previously installed equipment and software be upgraded to match the updated configuration.

The Contractor shall warrant compliance with all applicable laws and regulations relating to the project.

During the warranty period, the Contractor shall, at no cost to Gadabout, furnish such materials, labor, equipment, software, documentation, services and incidentals as are necessary to maintain the system in accordance with the warranty.

The Contractor shall warrant that its employees, agents and Subcontractors assigned to perform services under this contract shall have the proper skill, training and background to perform in a competent and professional manner, and that all work will be so performed. Gadabout reserves the right to remove any subcontractors if their work is deemed incompetent or unprofessional.

In addition to the foregoing warranties, the Contractor shall assign to Gadabout, and Gadabout shall have the benefit of, any and all subcontractors', suppliers', and vendors' warranties and representations with respect to the deliverables provided.

In its agreements with subcontractors, suppliers and vendors, the Contractor shall require that such parties (1) consent to the assignment of such warranties and representations to Gadabout; (2) agree that such warranties and representations shall be enforceable by Gadabout in its own name; and (3) furnish documentation on the applicable warranties to Gadabout.

## Repair or Replacement of Faulty Components

During the warranty period, the Contractor shall repair or replace any faulty components, with the cost included in the warranty price. Gadabout will ship each faulty component to the Contractor, who shall return a new or repaired component within one week of originally receiving it.

If the Contractor determines that a returned component is not faulty, Gadabout shall receive the original component back in working order within two days of the Contractor originally receiving the returned component.

All components received back at Gadabout from the Contractor will be tested in accordance with the original ATP, and returned to the Contractor if faulty accompanied by a certification.

The Contractor shall pay all shipping charges to and from Gadabout, and any duties associated with the repair or replacement of faulty units.

Returned or replaced spare components shall be packaged, organized and labeled in the same manner as the original supply of spare components.

## System-wide Replacement

If at least 25% of a given component requires repair or replacement within the five-year warranty period, the component shall be deemed to warrant system-wide replacement.

System-wide replacement shall require the Contractor to replace all units of the suspect component throughout the system, whether or not they have exhibited any fault.

Even if the system-wide replacement activity extends beyond the end of the five-year warranty period, the Contractor shall be obligated to complete it if the need was documented before the end of the warranty period.

## Spare Components

The Contractor shall provide an initial supply of spare components to Gadabout for all installed hardware (e.g., tablets if procured from the Contractor), with a quantity of at least 10% of the installed quantity (with a minimum quantity of 1).

The proposal shall include a list of the spare components and quantities to be provided, including manufacturer, model numbers and unit prices. At any time during the warranty period, Gadabout shall be able to purchase additional spare components at the unit price stated in the price proposal form.

Spare components shall be delivered to Gadabout already organized and labeled such that they can be readily identified and found. The organization and labeling must be approved by Gadabout’s Project Manager.

Spare components shall be fully configured, including any license requirements, so that they may be immediately utilized in the event of component failure.

Spare components shall be packaged to protect their reliability, including providing for them to be identified, inspected, stored for long periods, and endure multiple inventories without damage or degradation.

Additional spare components purchased during the warranty period shall be packaged, organized and labeled in the same manner as the original supply of spare components, although additional storage provisions will not need to be provided.

# Appendix A: Price Proposal Form

# Appendix B: Compliance Matrix

1. “Non-Live” database refers to a “read-only” database that is not being accessed by any application. This database may not be up and running all the time and can be shut down or restarted, as needed. [↑](#footnote-ref-2)