Phase 1 System Requirements Specification (SyRS)

Heart of Iowa Regional Transit Agency ITS4US Deployment Project

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Final Report — January 24, 2022
FHWA-JPO-21-882

COMPLETE TRIP
ITS4US

U.S. Department of Transportation

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16. Abstract

The Heart of Iowa Regional Transit Agency (HIRTA) is one of the 5 awardees for Phase 1 of the Complete Trip – ITS4US contract for its proposed concept ***"Health Connector for the Most Vulnerable: An Inclusive Mobility Experience from Beginning to End"*** (Health Connector) by the United States Department of Transportation (USDOT). The HIRTA Team previously developed a Concept of Operations (ConOps) document after going through a stakeholder engagement process. The ConOps defines user needs and identifies relevant user scenarios for the Health Connector solution. The Systems requirements (SyRS) document builds on the needs and scenarios developed in the ConOps and develops requirements in this document. These requirements define system functionalities, identify performance criteria, define requirements for the interfaces with external systems and identify data and reporting needs along with other requirements for usability, security and infrastructure. Further, this document provides a matrix indicating traceability between requirements and user/system needs.

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Brianna Jasset, IBI Group	January 24, 2022	4.0	Revised to address USDOT comments and to make 508 compliant.	Brooke Ramsey

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1. Introduction

1.1. System Purpose

As shown in Figure 1, the Systems Requirements (SyRS) build upon the foundations built in the Concept of Operation of a system. Based on the deployment concepts for system functionalities and performance criteria as established in ConOps (Task 2), and data needs and performance evaluation approach as defined in Task 3 and 4, this SyRS document develops functional, performance, interface and data/workflow requirements. This document will serve as a high-level design guide for the project describing ***"what the Health Connector solution will do."***

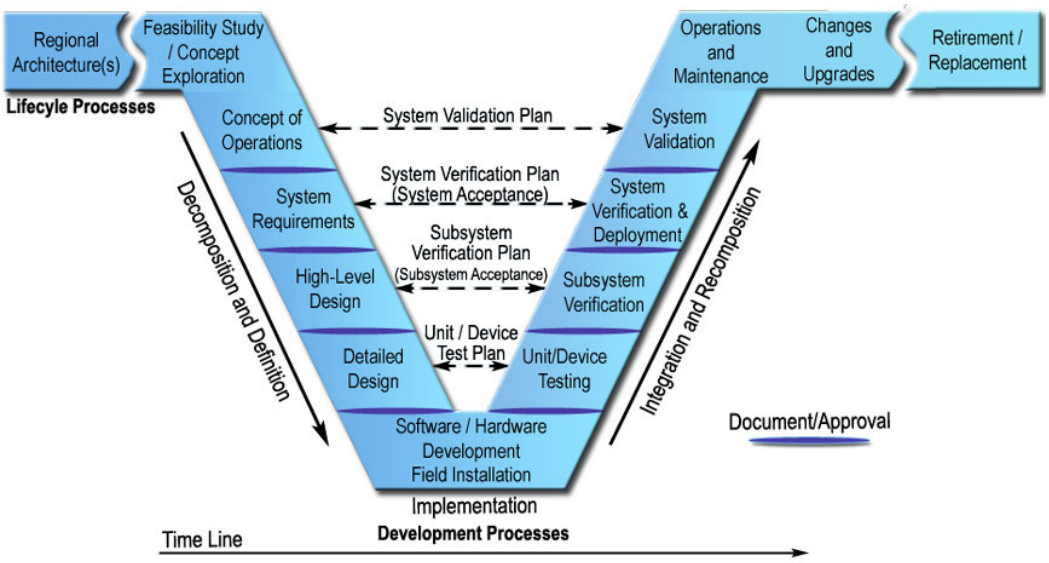

Figure 1. Systems Engineering "V " Diagram (Source: FHWA)

As shown in **Error! Reference source not found.**, the concepts explored and documented in the ConOps along with user needs and scenarios form the basis for developing various requirements for the system which indicate what functions the system will provide, what will be the performance criteria, what interfaces the system will accomplish and what data the system will generate, manage and share. **Error! Reference source not found.** illustrates how needs and scenarios described in the ConOps have led to the development of system requirements.

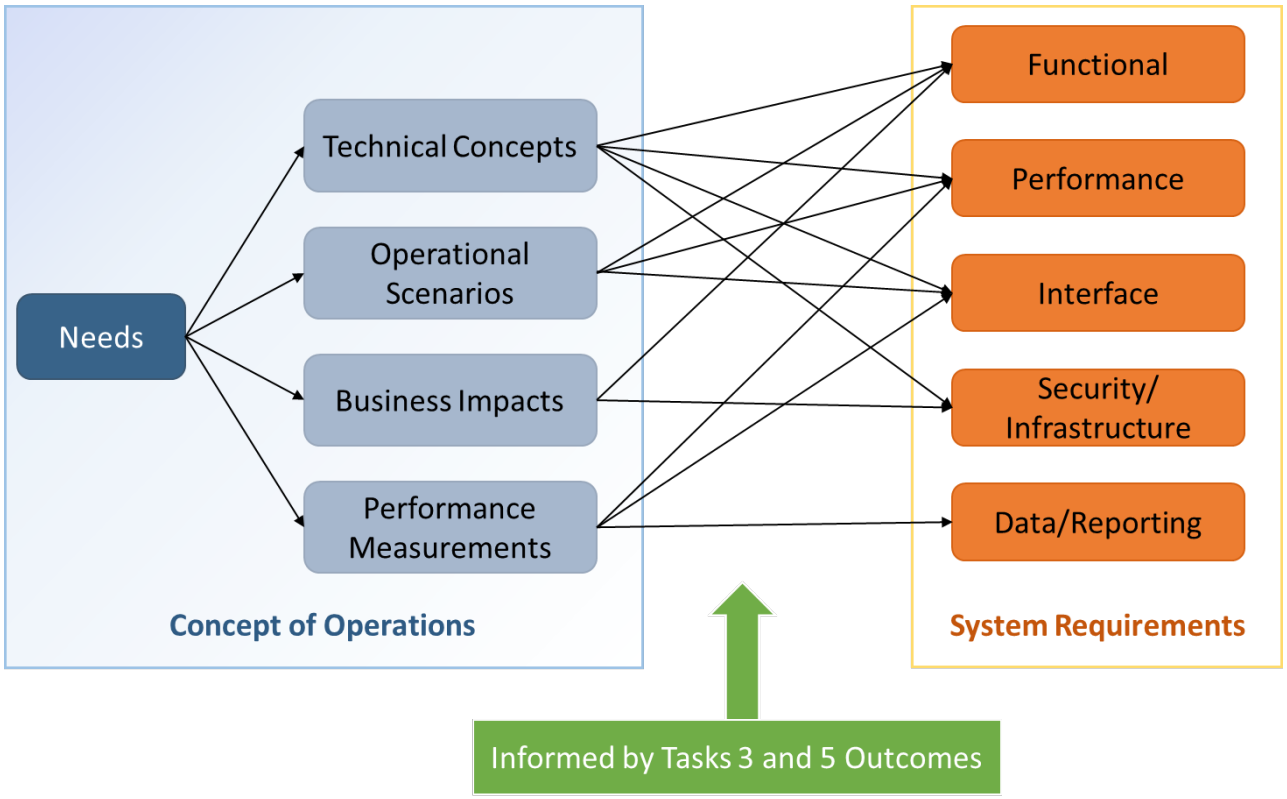

Figure 2. ConOps to Requirements (Source: HIRTA Team)

The requirements document in this SyRS document focus on the following core aspects: functional definition, usability, performance criteria, interface and integration; and data management and reporting. These requirements are developed by individual functional categories or modules such as trip planning and booking by travelers, reservation intake module for appointments, real-time and batch scheduling, dispatching and real-time service monitoring, electronic manifest management for drivers, real-time information and wayfinding for customers and their caregivers, billing/cost-allocation and payments and others.

1.2. System Scope

The Heart of Iowa Regional Transit Agency (HIRTA) is one of the 5 awardees for Phase 1 of the Complete Trip – ITS4US contract for its proposed concept ***"Health Connector for the Most Vulnerable: An Inclusive Mobility Experience from Beginning to End"*** (Health Connector) by the United States Department of Transportation (USDOT).

The Health Connector solution intends to demonstrate an innovative concept that will address various bottlenecks associated with healthcare access for HIRTA communities. Some of these challenges are the key reason behind missed appointments or unacceptable level of preventive or as-needed healthcare in HIRTA service area. For this deployment, the HIRTA team plan to implement a scalable and replicable solution that enables inclusive access to non-emergency medical transportation for all underserved populations and their caregivers by resolving access barriers with the use of advanced technologies. This solution will allow Dallas County residents

without access to transportation who may be seeking a medical appointment to explore their transportation alternatives and book both medical and transportation appointments at the same time. Further, this solution will include information and wayfinding services to guide them at every step of their trip.

The referenced underserved populations' mobility needs vary based on the individual. This deployment will provide enhanced access to healthcare options for "all travelers" in Dallas County with a specific focus on underserved communities, including persons with disabilities, low income, rural, older adults, veterans, and persons with limited English proficiency.

In addition to addressing mobility needs, the proposed deployment will recognize the net impact that access to health services have on patient health care outcomes as well as both the financial and health outcomes from the perspective of the health care community/Dallas County Health Department (DCHD).

Figure 3 provides an overview of the Health Connector concept.

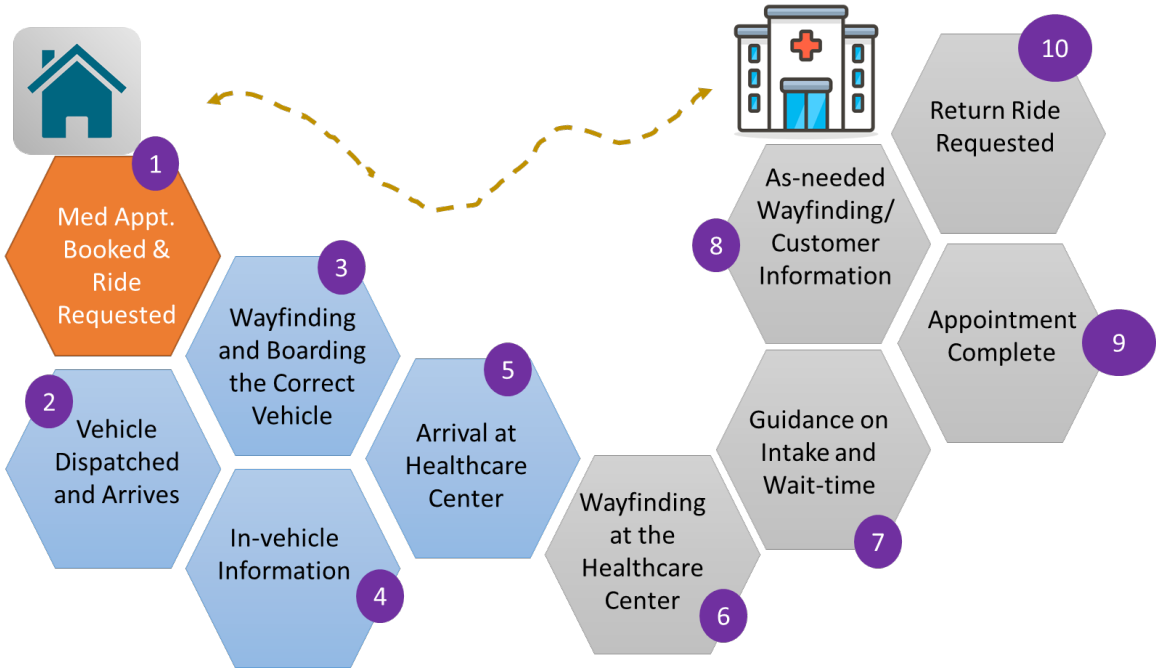

Figure 3. Overview of Health Connector System Concept (Source: HIRTA team)

1.3. Definitions, Acronyms, and Abbreviations

Access2Care

A transportation broker for State of Iowa Medicaid program that performs booking and scheduling and works with service providers such as HIRTA for successful delivery of Medicaid-eligible trips.

ADA – Americans with Disabilities Act

Refers to the civil rights legislation passed and signed into law in 1990 to prevent discrimination against people with disabilities.

API- Application Programming Interface

Software middleware that allows two devices or applications to exchange data with each other.

APN: Access Point Name

A communication gateway for enabling cellular data communications over a carrier network. Public or private APN configurations are used depending on data security needs.

AWS: Amazon Web Service

A commercial cloud-based hosting service provided by Amazon.

BAA- Broad Agency Announcement

A procurement instrument used by USDOT.

Billing

Refers to the process of invoicing third-party funding sources (e.g., Medicaid) after a successful delivery of a trip. Billing is typically done on a monthly basis.

CHNA - Community Health Needs Assessment

Refers to the Community Health Needs Assessment Report developed by Dallas County in 2019.

CCB- Change Control Board

A body of subject matter experts tasked to manage change control process for work products, schedule or other relevant matters related to a project or program.

CDL- Concept Development Lead

Key project team member tasked with leading Phase 1 concept development activities.

CO: Contract Officer

The CO will serve as the USDOT point of contact for any concerns related to the contracts.

COR - Contract Office Representative

The Contract Office Representative will serve as the USDOT representative for this project and is responsible for coordination and review of the proposer’s work.

Cost Allocation

Refers to the process of associating a funding source that should be billed for a trip in a shared ride scenario when riders covered by separate funding sources share the vehicle for their trips and trip purposes at the same time.

CSV- Comma Separated Value

A common text-based file format that is supported by many platforms and programs.

CT- Census Tract

A geographic region defined for the purpose of collecting census data.

CTAA – Community Transportation Association of America

One of the project Partners who will lead stakeholder engagement on this project.

DCHD – Dallas County Health Department

One of the project Partners who will lead integration with health care services.

DR-Demand Response

Refers to a service that is not run on a fixed route or a schedule (e.g., dial-a-ride, vanpool etc). This requires making trip booking by contacting the service provider (e.g., HIRTA). However, DR is different than an ADA Paratransit service which is provided as a complement to a fixed route and is governed by specific requirements provided in 49 CFR- Part F. HIRTA operates only DR Service in Dallas County and all discussion in this document is related to DR Service.

Dispatching

Refers to an operations management function which involves assigning vehicle, tracking fleet location, managing schedule adherence, managing trip manifests and other operational functions.

DMP – Data Management Plan

The Data Management Plan is Task 3 of Phase 1 and will describe the approach for data collection, processing, storage and utilization.

DOT – Department of Transportation

The government department responsible for transportation. In this report, this generally refers to either the State of Iowa's DOT or the United States DOT referred to as Iowa DOT and USDOT, respectively.

EDI – Electronic Data Interchange

In this context, refers to the electronic data interchange (EDI) format messages developed by HIPAA following American National Standards Institute (ANSI) X12 standard for electronic data exchange and are used to communicate with third-party health care provider systems (e.g., Medicaid).

EHR – Electronic Healthcare Record

Refers to the healthcare information management system used by hospitals for patients' healthcare-related appointments, transactions, and records management.

Epic

Epic is the EHR system utilized by Unity Point Health.

Evident/CPSI

Evident/CPSI is the provider of the Thrive EHR system. The Thrive EHR system is utilized by both Dallas County Hospital and Mercy one.

FHIR- Fast Healthcare Interoperability Record

A standard developed to describe and exchange health records in electronic format.

FHWA- Federal Highway Administration

A USDOT agency in-charge of highway transportation.

FTA- Federal Transit Administration

A USDOT agency in-charge of public transportation.

GTFS – General Transit Feeds Specification

GTFS is a standard to provide static public transportation schedule information. The standard has been expanded to include real-time passenger information (GTFS-real-time), flexible services (GTFS-flex) and accessible routing within stations (GTFS-pathways).

HIPAA – Health Insurance Portability and Accountability Act of 1996

Provides guidelines for data protection of sensitive patient health information.

HIRTA - Heart of Iowa Regional Transit Agency

Rural, regional public transit agency in central Iowa. HIRTA will serve as Proposer/Applicant for the Complete Trip - ITS4US project.

HL7 – Health Level Seven International

A not-for-profit, standards developing organization focused on electronic health information.

HN-Health Navigator

Refers to services provided by Dallas County Health Department to Dallas County residents in identifying resources as necessary for improving social determinants of health.

HUA- Human Use Approval Summary

A deliverable in Phase 1 for Task 8 that outlines the process to be used for human subject participation in the program for research and evaluation purposes.

HTTPS: Hyper Text Markup Language Secure

A protocol for accessing data/information over internet using Transport Layer Security (TLS)/ Secure Socket Layer (SSL).

ICTDP – Integrated Complete Trip Deployment Plan

The Integrated Complete Trip Deployment Plan is a deliverable of Task 13 under Phase 1.

I&R: Information and Referral

Refers to public and private entities that help their customers in identifying resources for health and human services and other needs.

IPFP - Institution, Partnership, and Financial Plan

The Institution, Partnership and Financial Plan is a deliverable of Task 10 under Phase 1.

IRB- Institutional Review Board

An institutional body that reviews and approves research methods to ensure ethical standards are followed, particularly when involving human subjects.

ISU– Iowa State University

Iowa State University is a public research university with multiple campuses in the State of Iowa and will be engaged as the research and evaluation partner in Phases 2 and 3.

IVR: Interactive Voice Response

A technology that allows humans relying on phone systems to interact with computer programs using natural voice or alphanumeric input using phone keys. This is an alternative used to provide services to populations that may not have access to web-based devices.

IP- Internet Protocol

A network layer protocol for enabling data exchange over Internet.

JSON: Java Script Object Notation

Open standard and human readable data format for storing and transmitting electronic data.

KPI – Key Performance Indicators

Represents primary metrics used to assess the success of a project or operations.

LEP – Limited English Proficiency

Refers to individuals who have a limited ability to read, speak, write, or understand English.

LTE: Long Term Evaluation

A telecommunication standard for wireless communications using mobile devices, also referred as 4th generation wireless.

MOD: Mobility-on-demand

A USDOT program that intends to support the develop of an ecosystem that provides safe, reliable and sustainable solution for all. MOD includes both trips made by Travelers or Trip replacements (e.g., courier network services (CNS) such as food delivery).

Meditech

Meditech is an EHR system utilized by Broadlawns Clinic.

MPM: Mobility Performance Metrics

MPM is a program being led by the FTA to develop performance measures that focus on new mobility modes (e.g., micromobility, TNC).

NDSP- Non-Dedicated Service Provider

NDSP refers to operators providing service under contract (e.g., taxis) to an agency (e.g., HIRTA).

NEMT – Non-emergency Medical Transportation

The provision of transportation to patients for medical appointments, lab visits, and other routine care. Generally, used in the context of Medicaid service only.

NOFO- Notice of Funding Opportunity

Formal announcement of availability of funding by US federal agencies for one of the financial assistance programs.

PII – Personally Identifiable Information

Refers to any data that can distinguish an individual, either alone or when linked with other available data.

PML-Program Management Lead

HIRTA project team member in-charge of managing all project and program management activities.

Provider

Provider in this context mainly refers to an entity performing service delivery for requested trips, sometimes also referred as service provider. the HIRTA team have also used healthcare partners as providers in some cases but referred as ‘healthcare providers.’

REL- Research and Evaluation Lead

HIRTA team member responsible for managing the research and evaluation as part of Phase 3 and guiding the concept development and deployment activities as part of Phase 1 and 2.

Reservation

Refers to the act of booking a trip based on a request from a customer. Reservation is available to only to registered customers.

REST- Representational State Transfer

A popular protocol to enable data exchange over the Internet using web APIs. HTTP/HTTPS is used for communication protocol and data in HTML, JSON, XML or other formats may be used for exchange.

SAE- Society of Automobile Engineers

Professional standards development organization, primarily focused on aerospace, automotive, and commercial vehicles (e.g., trucking).

Scheduling

Refers to the process of identifying driver and vehicle resources and their runs/shifts for a given work-day. Scheduling is typically performed for all requests received until 24 hours in advance. Booking within 24-hour notice and on-demand is offered but not encouraged due to limited system capacity and resources.

SDL- Systems Development Lead

HIRTA team member responsible for all systems engineering aspects of the project.

SEL- Stakeholder Engagement Lead

HIRTA team member responsible for stakeholder engagement focused activities.

SFTP- Secure File Transfer Protocol

Protocol used to securely transfer file between networked devices.

SEMP – System Engineering Management Plan

A System Engineering Management Plan describes how systems engineering process of planning, design, and deployment is applied to a project.

SHP- Shape File Format

Common spatial data format developed and regulated by Esri.

SMP – Safety Management Plan

A Safety Management Plan describes the steps to be taken to ensure the safety of the project stakeholders and beneficiaries.

Smart Device

Refers to smartphone, smartwatch and similar personal devices that may be internet enabled and are equipped with sensors.

TAG – Transportation Advisory Group

The TAG is a diverse group of community stakeholders and business representatives interested in the advancement and improvement of public transportation in the HIRTA service area.

TAZ- Traffic Analysis Zone

A geographical unit used to conduct traffic /transportation analysis, constructed using census block information.

TCP- Transmission Controls Protocol

A transport layer protocol that is focused on assured delivery of data packets over an IP network.

TDS: Transactional Data Standard

Open data standard for exchanging transactional data (booking, payment, service coordination) between different systems or system components. Available in TCRP Report 210 - Development of Transactional Data Specifications for Demand-Responsive Transportation (http://www.trb.org/Main/Blurbs/180593.aspx)

TMS- Transportation Management System

All systems and tools to be used by HIRTA for managing day-to-day delivery of transportation services. This will be provided by various products offered by Uber Technologies.

TNC – Transportation Network Company

Encompasses a group of companies that provide on-demand Ridehailing services.

UUID-Universal Unique Identifier

Encrypted label used for assigning a unique ID to a field in a computer system, network or program.

UDP- User Datagram Protocol

A transport layer protocol that uses connectionless datagrams for applications that need time-sensitive data transmission but do not require assured delivery

Wayfinding

Refers to the tools and technologies that assist in orientation, locating objects, and step-by-step navigation to destinations in outdoor and indoor environments using visual markers, sensors or physical signage.

1.4. References

1. USDOT, “Complete Trip- ITS4US Deployment Broad Agency Announcement (693JJ3-20-BAA-0004),”

2. HIRTA, “HIRTA - USDOT Complete Trip - final Proposal - v1.0 2020-07-31 (Volume 1),” July 2020.

3. Santosh Mishra et al., “Phase 1 Concept of Operations (ConOps), Heart of Iowa Regional Transit Agency ITS4US Deployment Project,” August 2021, US department of Transportation

4. Santosh Mishra et al., “Phase 1 Performance Management and Evaluation Support Plan (PMESP),” Heart of Iowa Regional Transit Agency ITS4US Deployment Project, August 2021, US department of Transportation.

5. Santosh Mishra et al., “Phase 1 Systems Requirements Data Management Plan,” Heart of Iowa Regional Transit Agency ITS4US Deployment Project,” August 2021, US department of Transportation.

6. Santosh Mishra et al., “Phase 1 Integrated Complete Trip Deployment Plan (ICTDP),” Heart of Iowa Regional Transit Agency ITS4US Deployment Project, January 2022 (expected), US department of Transportation.

7. Santosh Mishra et al., “Phase 1 Human Use Approval (HUA) Summary (HUA), Heart of Iowa Regional Transit Agency ITS4US Deployment Project, December 2021 (expected), US department of Transportation.

1.5. System Overview

The Health Connector solution intends to demonstrate an innovative concept that will address various bottlenecks associated with healthcare access for HIRTA communities. Some of these challenges are the key reason behind missed appointments or an unacceptable level of preventive or as-needed healthcare in HIRTA service areas. For this deployment, the HIRTA team plans to implement a scalable and replicable solution that enables inclusive access to non-emergency medical transportation (NEMT) for all underserved populations and their caregivers by resolving access barriers with the use of advanced technologies. This solution will allow Dallas County residents without access to transportation who may be seeking a medical appointment to explore their transportation alternatives and book both medical and transportation appointments at the same time. Further, this solution will include information and wayfinding services to guide them at every step of their trip.

Key capabilities of the proposed technology solution are as follows:

- Enable the customer to use a smart device (e.g., smartphone, smartwatch) application or equally effective alternate methods to schedule and manage medical appointments and transportation services all in one location (Health Connector App). Provide customers options to choose from available providers. Provide same day response if needed by customers.
- Send customers alerts before arrival and again when the vehicle is approaching.
- Keep customers informed on trip progress at all stages of the complete trip: pre-trip (e.g., planning, booking) on trip/en-route (e.g., waiting, boarding, on-board environment, drop off) and return trip booking.
- Provide directions (audible and visual) on where to meet the vehicle/driver. On arrival, drivers should have the ability to automatically confirm customer identity and assist with boarding as needed.
- Provide drivers the capability to request turn-by-turn navigation to a desired destination.
- The Health Connector App will enable the customer to utilize advanced wayfinding solutions with the help of indoor and outdoor navigation technologies to provide personal concierge-style travel from origin to destination. This will include:
    - Locating the vehicle outside origin and destination locations
    - Locating healthcare facility when dropped off by vehicles
    - Locating desired floor/room when inside the healthcare facility
- Customers will be able to use the Health Connector solution for any contactless payment needs at any point for transportation-related payments.
- Customers can initiate return trip when the appointment is complete and follow the similar process as the inbound trip to medical facility to locate and board the vehicle for the return trip.

If customers or their caregivers desire to book and pay for another local trip as an additional leg along with the medical trip, they will be able to do that using Health Connector solution.

Error! Reference source not found. Figure 4 provides a generic system context diagram with high-level flows and a description of the system is provided in Section 2.1. A more granular system diagram with detailed data flows is provided in Figure **5**.

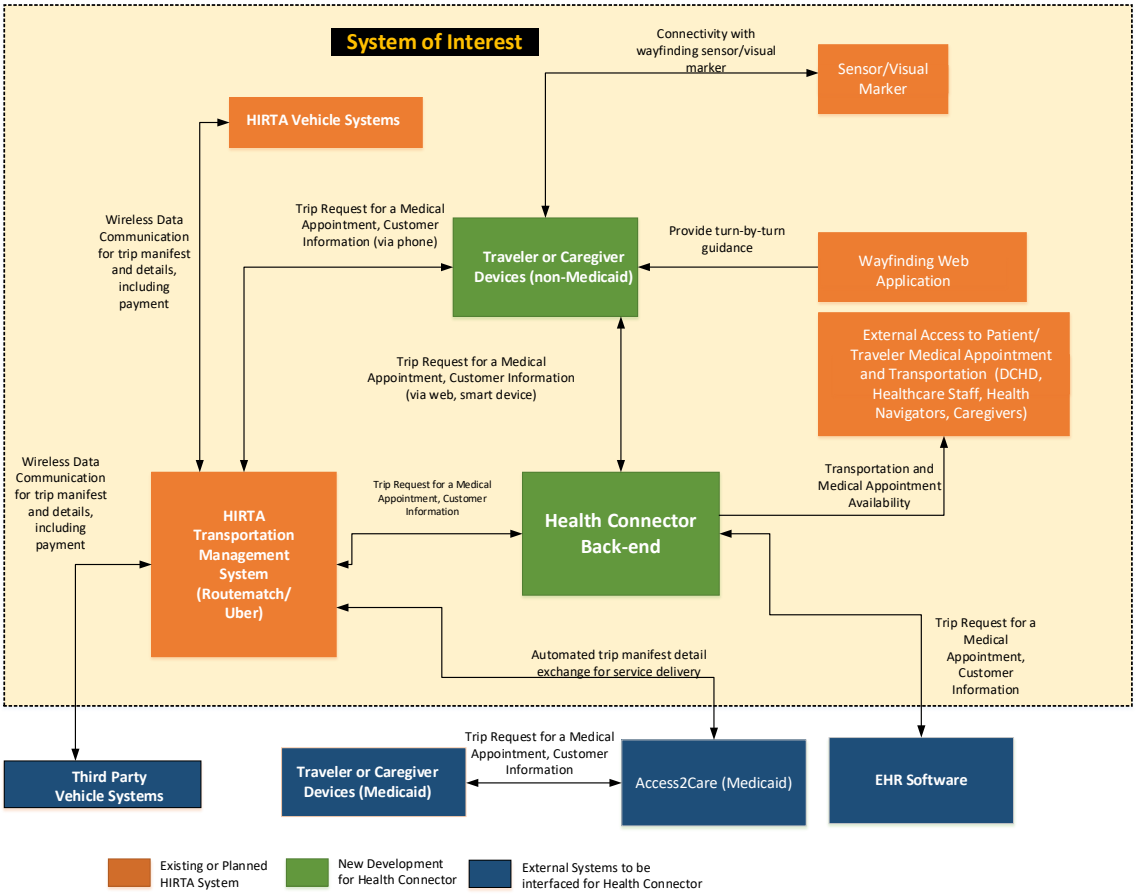

Figure 4. Health Connector Overview (Source: HIRTA team)

2. General System Description

2.1. System Context

The systems involved in the context of Health Connector, as shown in Figure 4 and **Error! Reference source not found.**, can be defined as follows:

- **Traveler-end Subsystem**: this subsystem includes the tools and technologies (phone/interactive voice response (IVR), mobile/smart devices, web-based tools) to be used by travelers or patients seeking transportation services for their medical appointments as part of pre-trip, en-route trip, on arrival and return trip activities.

  Currently, HIRTA customers have access to the following Traveler applications from Routematch by Uber:

  - Amble App: used for requesting trip and finding out status of trips. No capabilities for planning are there in the Amble App.
  - RMPay: used for maintaining prepaid balance to pay for completed trips.
  - IVR: used to send night-before reminders to Travelers per their subscription preferences for upcoming trips. Real-time/same-day reminders are not available.

  Health Connector plans to implement capabilities to provide a new off-the-shelf unified application for planning, booking and payment. Also, this new application will provide real-time status on trips on-demand and through push notification services.

- **Transportation Management Subsystem:** this subsystem includes the technologies used to assist customer care and operations staff with Traveler registration, eligibility management, reservations, scheduling, dispatching, billing and administration activities. These products are commercially available from various providers of paratransit/demand response vendors. Currently, HIRTA utilizes capabilities in the Routematch Demand application from Routematch by Uber for completing transportation management functions. While limited capabilities exist to address same day requests (e.g., return trips), primarily Routematch Demand application is used to schedule trips at least a day in advance.

  Given Health Connector is focused on addressing same day and real-time requests, commonly referred to as mobility on-demand (MOD), HIRTA will procure such capabilities through an off-the-shelf MOD platform to augment existing TMS capabilities. The new MOD platform will also be fully integrated with the new Traveler and Driver applications. Further, this new platform will support utilizing third-party service providers for adding capacity when needed in real-time. Finally, limited access to this platform will be made

available to Health Navigators and healthcare providers so they are able to book trips directly without involvement of HIRTA staff.

At this time, HIRTA anticipates both Routematch Demand and the new MOD platform to co-exist to meet Health Connector functions. This is required given advanced capabilities within Routematch Demand application for managing the travel needs of underserved populations (e.g., older adults and persons with disabilities) which are either not available in off-the-shelf MOD platforms or are very limited. Therefore, for Health Connector, Routematch Demand platform will be used for functions such as managing eligibility (e.g., advanced capabilities for eligibility/funding tracking and managing the mobility needs of underserved) or prescheduled trips (e.g., 24-hour advance booking or subscription-based) and the MOD platform will be used for providing same day booking, and for enabling coordination with healthcare providers and health navigators. At least a daily data exchange will be enabled between the MOD platform and Routematch Demand to make all trips available in the MOD platform for dispatching on the day of the trip. Further details of this data exchange and desired frequency are still being discussed and will be finalized at the time of Phase 2 design.

While there are various commercially available MOD platforms that can provide the new capabilities needed for Health Connector, HIRTA team is planning to deploy Uber Transit platform given the integration needs with existing Routematch Demand application and lack of proven data standards/standard interfaces to integrate with other commercially available/off-the-shelf MOD platforms. However, requirements in this document are vendor-agnostic and are defined such that any commercially available platform can meet those.

- **Vehicle Subsystem (HIRTA and non-HIRTA vehicles)**: this subsystem refers to the technologies deployed on vehicles to support Driver-end functions for driver-dispatch communications, manifest management, support just-in-time dispatching, turn-by-turn navigation and outdoor wayfinding (e.g., to locate Travelers at the time of pick up), on-board customer information and fare payments. All HIRTA-owned vehicles, Drivers will use tablets running Driver app. On other vehicles, Drivers may use Driver app on their tablet or their phone.

- **Wayfinding Subsystem:** this subsystem refers to the technologies and infrastructure to be used for providing, outdoor wayfinding, indoor positioning, orientation, and step-by-step guidance on request to travelers**.** One or more commercially available wayfinding system providers may be used but the current plan is to utilize at least the system provided by HIRTA team partner, Navi Lens.

- **External Systems:** These systems are external to Health Connector that have been identified for close coordination among HIRTA and partners for providing efficient transportation services for medical trips or for collecting data for performance measurement needs.

    - **Access2Care**: this subsystem refers to State of Iowa Medicaid Brooker's system used for booking and managing Medicaid trips. HIRTA is one of the providers used by Access2Care. Medicaid trips will be booked by Access2Care when requested by Travelers and will be ingested in the HIRTA system when assigned

to HIRTA. At that point, Traveler using Medicaid benefits will be able to use Traveler tools provided by Health Connector.

HIRTA is planning to build a new interface with Access2Care to automate the data exchange and improve coordination for Medicaid-funded trips. Details of this interface are still under discussion and will be finalized by Phase 2 design.

- **Health Navigator-end Subsystem**: This subsystem includes the following components:
  - An Information and referral (I&R) product that is used by Health Navigators and the Health Administrator at the Dallas County Health Department (DCHD) to track the status of referral activities and for coordination with Dallas County residents health navigation/social care services. Currently, DCHD uses Microsoft Access-based program that recently replaced the previously used product from Healthleads. No integration is planned with this product for Health Connector. However, access to data may be needed for measuring Health Connector performance.
  - Limited access to TMS components will be provided to Health Navigators to arrange transportation services for the patients /Travelers they may be working with and coordinate with HIRTA or healthcare staff on the status of trip. This will also allow Health Navigators to access customer feedback and trip performance data on transportation services provided by Health Connector.
- **EHR/Medical Record Subsystem**: this subsystem refers to the systems used by partner hospitals and clinics for booking medical appointments and maintaining their appointments, including discharge and any subsequent referral activities.

  Health Connector will develop a new interface with at least one of the healthcare partner EHR.

Health Connector Back-end in Figure 4 and Figure **5** refers to new development as identified above.

- **Other**: Additional relevant details for the system to de deployed are as follows **Data Storage**: Traveler applications will store data locally as allowed by their devices and as authorized by Travelers. Vehicle and TMS subsystems will communicate over cellular data communication for operational data exchange. All data is exchanged in real-time (at a configurable frequency). Data is temporarily stored on the vehicle to support offline operations in the event of communication failures. On the central side, TMS data will be stored in a relational database in the AWS cloud storage. Data is stored in a live database to support real-time operations and then processed and archived for reporting in a historical database.

Error! Reference source not found. provides a system context diagram for HIRTA Health Connector along with identification of data flows between system components. Further, Table 1

provides a high-level overview of data flow between system components as identified in Figure **5** to provide a context of interfaces and data exchanged between internal and external systems along with subsystems involved. The DMP provides more details on how each of these datasets are generated, managed, stored and shared.

While Table 1 identifies datasets in the context of existing and future systems at HIRTA, the datasets are identified keeping the replicability of Health Connector system in mind. These datasets and terms used are common in paratransit/demand response industry and are applicable to most commercially available platforms/solutions. Most of the trip-related datasets are available in current Routematch Demand product, as indicated in Table 1.

Table 1. Data Needs Summary

ID	Data	High-level Description	Systems Involved	Collected in Existing Systems at HIRTA?
1	Traveler profile	Traveler's personal details as provided as part of registration.	Traveler-end subsystem, HIRTA TMS	Yes
2	Traveler eligibility	Traveler's eligibility for a funding source or program; also verified with funding entities (e.g., Medicaid).	HIRTA TMS, Eligibility Management subsystem/Funding Source	Yes
3	Fleet information	Details on HIRTA's vehicles; also, details on third-party vehicles	Supporting System (Driver and vehicle management), HIRTA TMS	Yes
4	Driver information	Details on HIRTA's drivers; also, details on third-party vehicles.	Supporting System (Driver and vehicle management), HIRTA TMS	Yes
5	Trip request	Traveler request for a trip from a web or mobile device; some Travelers may request over phone and use concierge/customer care service.	Traveler-end subsystem, HIRTA TMS	Yes
6	Trip modification or cancellation	Traveler's request for modification to an existing trip, including cancellation.	Traveler-end subsystem, HIRTA TMS	Yes
7	Trip status	Current information on upcoming trip.	Traveler-end subsystem, HIRTA TMS	Yes
8	Manifest	Time and location details on Travelers to be picked up and dropped off by a Driver during a shift.	Vehicle-end subsystem, HIRTA TMS	Yes
9	Vehicle location	Location and heading along with other details for a vehicle in service.	Vehicle-end subsystem, HIRTA TMS	Yes
10	Trip performance	Trip-level log of actual time and location for trips on the manifest along with any no-shows and cancellation events.	Vehicle-end subsystem, HIRTA TMS	Yes

ID	Data	High-level Description	Systems Involved	Collected in Existing Systems at HIRTA?
11	Driver performance	Driver-level log of operational performance on log on, on-time performance, manifests completed.	Vehicle-end subsystem, HIRTA TMS	Yes
12	Travel time	On-board travel time needed to perform a trip.	Processed using Trip Performance Data	Yes
13	Driver Messages	Log of messages sent by Drivers to Dispatchers.	Vehicle-end subsystem, HIRTA TMS	Yes
14	Dispatcher Messages	Log of messages sent by Dispatchers to Drivers.	Vehicle-end subsystem, HIRTA TMS	Yes
15	Fare Payment Log	Log of amount paid for a trip and method of payment.	Vehicle-end subsystem, HIRTA TMS	Yes
16	Manifest (third party)	Time and location details on Travelers to be picked up and dropped off by a third-party Driver during a shift.	Vehicle-end subsystem, HIRTA TMS	No
17	Trip performance (third party)	Trip-level log of actual time and location for trips on the manifest along with any no-shows and cancellation events for trips delivered by a third-party provider.	Vehicle-end subsystem, HIRTA TMS	No
18	Vehicle location (third party)	Location and heading for a vehicle in service along with other details for a third-party provider.	Vehicle-end subsystem, HIRTA TMS	No
19	Driver Messages (third party)	Log of messages sent by Drivers to Dispatchers.	Vehicle-end subsystem, HIRTA TMS	No
20	Dispatcher Messages (third party)	Log of messages sent by Dispatchers to Drivers.	Vehicle-end subsystem, HIRTA TMS	No
21	Fare Payment Log (third party)	Log of amount paid for a trip and method of payment.	Vehicle-end subsystem, HIRTA TMS	No
22	Medicaid trip requests	Traveler request for Medicaid-funded trips from a web or mobile device through Access2Care; some Travelers may request over phone and use concierge service.	Traveler-end subsystem (Medicaid), Access2Care subsystem	Yes
23	Medicaid trip performance	Trip-level log of actual time and location for trips on the manifest along with any no-shows and cancellation events for trips delivered for Medicaid-funded trips.	Access2Care subsystem, HIRTA TMS	Yes
24	Medical appointment details	Consists of medical appointment date, time and location (facility address and doctor's office) for a particular Traveler	EHR subsystem, Health Connector Back-end	No

ID	Data	High-level Description	Systems Involved	Collected in Existing Systems at HIRTA?
25	Aggregated Summary	Aggregated data on driver, vehicle and trip performance.	TMS Reporting	Yes
26	Traveler wayfinding request	Requests initiated by Travelers to the wayfinding system.	Traveler-end subsystem, Wayfinding subsystem	No
27	Traveler wayfinding guidance	Log of wayfinding information provided to Travelers.	Traveler-end subsystem, Wayfinding subsystem	No
28	Safety event	Log of incident and accidents by vehicle/driver/trip.	Vehicle-end subsystem, HIRTA TMS, Supporting System (Safety Management)	Yes (limited)
29	Safety event report	Detailed reports by a safety event (incident, accident) with response.	Supporting System (Safety Management)	Yes (limited)
30	Trip history playback	Replay of trip events performed along with location trail during a shift by a driver.	HIRTA TMS	Yes
31	System performance	Log of system performance, including any failures.	HIRTA TMS	Yes
32	Information/referral (I&R) request	Information and referral request.	HIRTA TMS, DCHD I&R	No
33	Customer complaints log	Log of customer complaints received and actions taken.	Supporting System (Customer Service)	Yes
34	Customer survey data and results	Customer data and survey conducted by ISU of human use participants and control group	Local database at ISU	No
35	Processed data for controlled sharing	Data accessible to researchers, Independent evaluation team and USDOT	TMS Reporting	Yes (limited)
36	Public data for USDOT Data Hub	Data to be made available to the general public after further processing and anonymization	USDOT -managed System	No
37	Cost and revenue data	Cost and revenue data by trip, including actual cost, fare paid, funding source share	HIRTA TMS and Supporting System (Accounting)	Yes
38	Wheelchair failure log	Summary of wheelchair failure by vehicle	HIRTA TMS/Reporting	Yes (limited)
39	Medical appointment status	Real-time status of progress on a medical appointment	HIRTA TMS, EHR subsystem	No
40	Discount coupon/credit	Discounts coupons or credits applied by trip	HIRTA TMS, Funding Entity	No

ID	Data	High-level Description	Systems Involved	Collected in Existing Systems at HIRTA?
41	Call center log	Call center statistics available from HIRTA, DCHD and healthcare providers, as available from phone systems or manual logs.	Phone systems at HIRTA, DCHD and healthcare providers	No
42	Missed medical appointments linked to lack of transportation access	Anonymized missed appointments linked to transportation access	EHR or other systems internal to healthcare providers	No
43	Trip request (partners)	Trips manually requested by DCHD and healthcare providers using HIRTA TMS. To be tracked separately to assess the benefit of such capability.	HIRTA TMS	No

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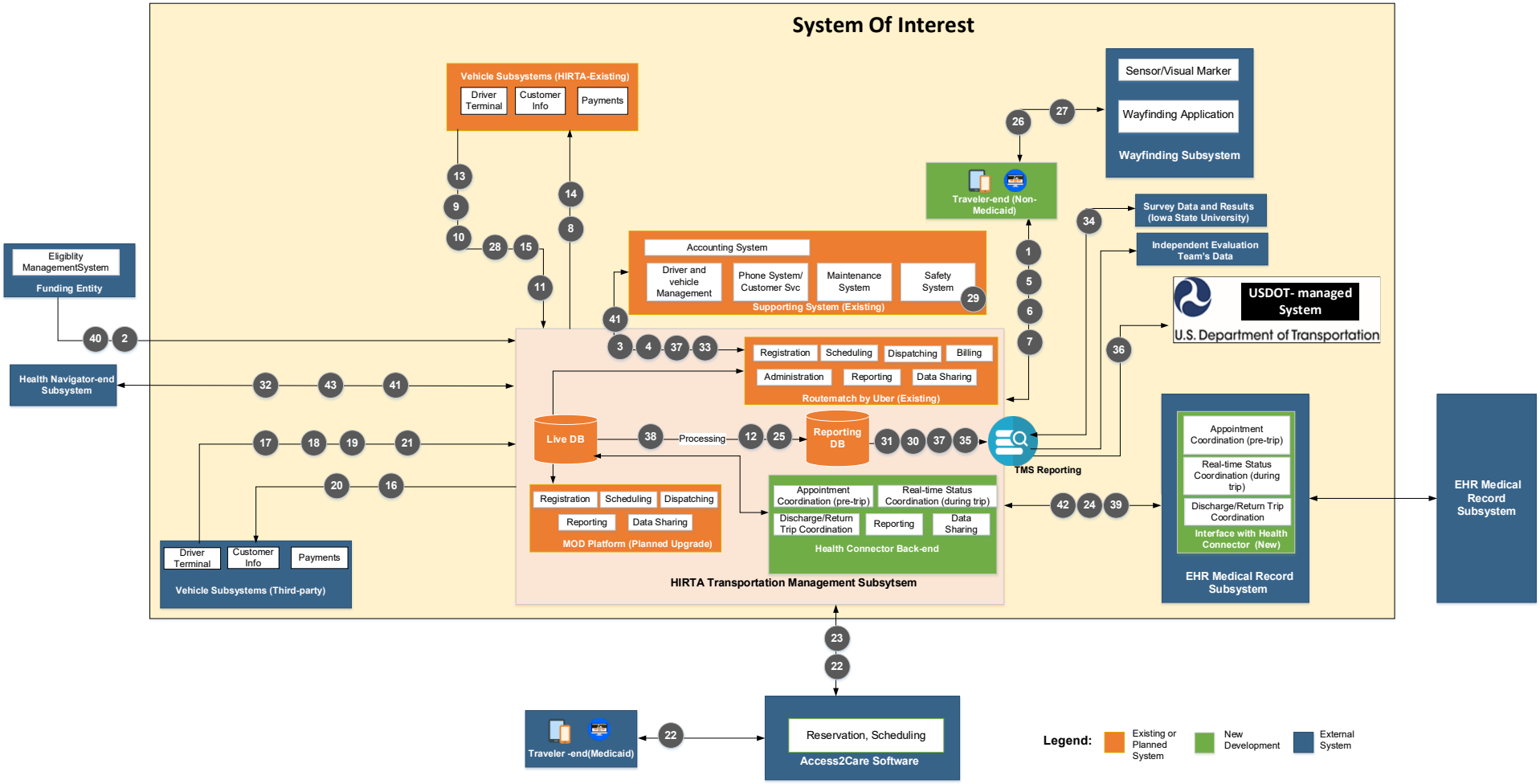

Figure 5. System Context Diagram and Data Flows (Source: HIRTA Team)

2.2. Major System Capabilities

This section describes high-level capabilities of the system and identifies features by subsystems and components.

2.2.1. Traveler-end Subsystems

The system will provide the following capabilities either via a smart device application or via customer care professionals that are requesting such services via a phone call. Wayfinding application will be available only to those customers that have access to smart devices given reliance on built in device capabilities (e.g., camera, audio guidance).

Health Connector will provide access to medical appointment information only which will include date, time and location of a medical appointment for a customer along with a unique identifier. Details of this interface are currently unclear, however, the identifier will be anonymized to avoid exposure to any privacy data in either TMS or EHR system.

Referral and Health Navigation Services

1. *Referral Services*: Provide the capability to connect to a referral service using an information and referral (I&R) database to discover transportation and healthcare options available in Dallas County.

2. *Health Navigation/Social Care Services*: Provide the capability to connect to a Health Navigator or Social Worker assisting with the healthcare needs to find out assistance at any point before/during/after a trip.

Booking and Modification of Medical and Transportation Appointments

1. *Registration and Preference Management*: Provide the ability to register to receive HIRTA services if not an existing customer and allow travelers to enter their booking preferences (e.g., mobility aid, personal companion need, notification preferences, favorite pick-up location and others).

2. *Funding Eligibility Information:* Provide customers to enter and update the status of their funding and eligibility information.

3. *Appointment Booking:* Provide customers the ability to book a medical appointment if already registered with a healthcare provider. Non-registered customers will work directly with the healthcare provider for registration needs.

4. *Trip Request:* Provide customers the capability to view their upcoming medical appointment (non-Medicaid) and request a transportation service for that appointment. Also, provide the capability to book a return trip if needed.

5. *Mobility Aid:* As currently supported in Routematch platform, the Health Connector application will accommodate any mobility aids requested by Travelers, either based on their preferences in the profile or based on request at the booking. This may include details such as wheelchair seats or service animal or personal companion.

6. *Trip Discovery:* Provide the capability to discover transportation mode options.

7. *Appointment Modification:* Provide Travelers the ability to modify their medical appointments. The medical appointment modification will automatically retrieve associated transportation appointment for modification, as necessary.

8. *Appointment and Trip Cancellation:* Provide customers the ability to cancel their medical appointment and associated trip request at the same time. Cancellation will be allowed per policies as already established by both the healthcare provider and HIRTA.

9. *Trip Status:* Provide real-time information related to the trip to customers on-request. Also, provide notification alerts if such service is requested by customers according to their preferences.

10. *Return Trip Booking:* Provide the ability to book return trip using on-demand transportation modes available after the Traveler/Patient is discharged.

11. *Follow-up Appointment and Trip Booking:* If follow-up care is needed the same day at another facility or at a later date, Traveler will have the ability to book medical and transportation appointments at the same time for those needs.

12. *Adding a Stop:* Provide the capability to insert a stop to return trip as needs may arise (e.g., picking up a personal companion to assist on home arrival, trip to a pharmacy to pick up medicines).

13. *Trip Booking for Alternate Destination:* Provide the capability to book a trip to another location other than home should such need arise even if such a trip may not be covered by a funding entity.

14. *Telehealth Appointment:* Provide the capability to book telehealth appointment if that is recommended by the healthcare provider for follow-up. Telehealth appointment-related services (e.g., video visit) will be provided in the healthcare provider application.

15. *Reminder:* Provide day-before reminder for upcoming trips. Allow cancellation of both medical and transportation appointment using the same interface if such trip is no longer required.

Translation Services

1. *Translation Services As Needed:* Provide access to translation services for before/during/after trip when needed by Travelers with Limited English proficiency (LEP) needs. Translation services will provide both audio and visual assistance.

On-board Vehicle Experience

1. Vehicle Identity Verification: Provide the capability through the wayfinding solution for Travelers to identify the correct vehicle for boarding.

2. Patient Identify Verification: Provide the capability to show electronic Traveler profile to the driver if requested for verification.

3. *Real-time Information*: Provide the ability for travelers to be able to obtain real-time information related to their appointment and trip status (e.g., traffic delay, delayed arrival, delayed check-in time).

4. *Orientation/Information on Healthcare Services on Arrival (TBD)*: If requested by Travelers, provide information on wayfinding capability and check-in process on arrival. Such capability will be provided via Traveler devices or infotainment screens installed within vehicles.

5. *Electronic Check-in When Approaching*: Provide the capability to check-in few minutes before arrival as the vehicle is approaching the healthcare care facility drop-off location. Travelers must be able to identify assistance needs (e.g., wheelchair, navigation guidance), modify pre-set preferences (e.g., service animal, companion), and confirm preferences present.

6. *Notifying on Delayed Arrival:* Provide the capability to notify healthcare provider on delayed arrival due to delays related to transportation (e.g., traffic delay).

7. *Personal Safety:* Provide the capability to indicate immediate personal safety concern to driver or HIRTA dispatcher or healthcare provider. They must have the ability to notice the level of emergency (e.g., if emergency medical transportation is needed).

Payments

1. *Electronic Payments*: Provide the ability for travelers to be able to pay for their trips electronically using mode of payment available in their accounts.

2. *Account Debit*: Traveler will be allowed to pay for their trip by debiting their HIRTA account. They will have the capability to replenish the account if balance goes below a certain limit or on-demand.

3. *Discount Codes/Coupons*: Travelers will also be able to apply any discount code or other digital cash available to them for the medical transportation needs.

4. Unbanked/Underbanked: Travelers will be able to replenish their debit account by providing cash or check.

Real-time Information

1. *Pick-up Location*: Provide the capability to notify exact pick-up location for medical appointment and return trips that Travelers can use for wayfinding and boarding the vehicle.

2. *Arrival Notification*: Provide the capability to notify the Traveler of upcoming vehicle arrival at a pre-determined interval configured by the Traveler. Also, notify the Traveler automatically if there are any delays and allow customers to communicate with HIRTA for alternatives if there is an impact on medical appointment due to transportation delay. The Traveler will have the capability to respond with a confirmation or will have the ability to modify or cancel if allowed per HIRTA policy.

3. *Real-time Vehicle Location:* Provide the capability to view vehicle location in real-time on a map-based interface.

4. Vehicle Image: Provide the capability to view the vehicle image and vehicle license plate or van number.

5. Real-time Trip Progress: Provide the capability to view current trip progress and estimated time of arrival at the destination.

Wayfinding

1. *Locate Correct Vehicle for Pick-up at Origin Location for Inbound trip to Healthcare Facility:* Provide the capability to find the vehicle upon its arrival.

2. *Locate Correct Building after Drop-off*: Provide the capability to locate the correct building, navigate to the correct door entrance, and provide turn-by-turn guidance as needed.

3. *Locate Correct Office after Entering the Building:* Provide the capability to locate the correct floor and correct office and provide turn-by-turn guidance as needed. Distinguish between ambulatory and non-ambulatory Travelers for guidance (e.g., use of escalator/stairs versus elevator).

4. *Locate the check-in Desk*: Provide the capability to locate check-in desk upon arrival at the healthcare provider's office.

5. *Locate other referred buildings/offices on Discharge:* Provide the capability to locate other buildings/facilities and offices on the campus based on referral by the provider upon discharge.

6. *Locate Vehicle Pick-up Location for Return Trip*: Provide the capability to locate the correct location for pick-up for return trip.

7. *Locate the Door Entrance (if needed):* Provide the capability to be able to locate the door entrance for boarding.

8. *Addressing the Needs of Underserved Groups:* Provide the capability such that the needs of various underserved groups are addressed as follows:

    a. Persons who are blind have audio guidance available.

    b. Persons who are deaf are able to visually see the instructions.

    c. Persons who are not ambulatory are able to select suitable direction (e.g., no use of escalator or staircases).

    d. Persons with cognitive disability are able to easily interpret the information by seeing visual markers and simple instructions (e.g., turn arrows).

    e. Persons who are not able to afford large data plans are still able to use the features.

f. Older adults are able to see and comprehend instructions through use of large fonts, color contrast and other necessary features.

g. Persons with LEP are able to see instructions in the language of their choice.

2.2.2. Transportation Management Subsystems

This section describes the capabilities needed within the system to be used by HIRTA, Access2Care and third-party service provider for managing the transportation services used for delivering medical trips.

HIRTA

HIRTA's system capabilities are described by customer care staff, scheduling staff, operations staff, and administration staff. As described in Section **Error! Reference source not found.**, most of these capabilities currently exist but those are designed to work for trips booked in advance only and do not have the capabilities to do any coordination in real time with external entities, as intended by the Health Connector system.

Reservations and Customer Service Module

1. *Traveler Registration:* For Travelers not registered with HIRTA, provide the capability to perform the registration.

2. *Customer Profile:* Add pertinent details in the Traveler profile as provided, including funding eligibility and expiration details.

3. *Eligibility Verification:* Provide the capability to verify eligibility in real-time for funding sources that provide such feature and require verification before a trip can be provided.

4. *Trip Booking:* Provide the capability to Travelers requesting a recurring or ad-hoc trip in advance (24 hours or earlier, per current policy) or same-day for their medical appointment needs. CSRs will have the capability to view medical appointment time and determine pick-up and/or drop off times.

5. *Medical Appointment Information:* CSR will have the capability to view the medical appointment details and its status at any point until the return trip is complete to proactively assist Travelers with their transportation needs.

6. *Trip Modification:* Provide the capability to modify appointments on Traveler's behalf as requested.

7. *Trip Cancellation:* Provide the capability to cancel appointments on Traveler's behalf as requested and per allowed policy.

8. *Assistance with Broker or Third-Party Contractor Trips:* Provide the capability to assist travelers with trips that were booked by Access2Care (Medicaid Broker) and are being delivered by HIRTA or the trips that were booked by HIRTA but are being provided by a third-party service provider (e.g., Uber TNC).

9. *Assist Travelers needing Assistance with Self-Service Tools:* Provide the capability to assist travelers that need assistance with web or mobile-based tools available to them but are having difficulty for any reason (e.g., internet connectivity, technical difficulty with user interface).

10. *Contact Travelers:* Provide tools to connect with Travelers according to their preference to assist with any aspect of their trips.

11. *Translation Service:* Provide automated tools to request translation service when needed to assist customers.

12. *Trip History:* CSR will have the capability to view Traveler trip history and any relevant KPIs (e.g., number of no-shows, number of cancellations, number of completed trips against what is allowed quota under a funding source).

13. *Referral to Other Providers:* CSR will be able to identify other providers and notify travelers when HIRTA is not able to provide services for requested purposes (e.g., origin/destination location not in a service area)

Scheduling Module

1. *Advance and Real-time Scheduling:* Provide the capability to schedule trips in advance or in real-time. Even with advance booking, pick-up time will be confirmed in real-time.

2. *Driver/Vehicle Assignment:* Provide the capability to assign trips to drivers/vehicles per labor/work rules as configured in the system.

3. *Batch optimization for Trips Booked in Advance*: Provide the capability to optimize trips booked in advance the day before for appropriate utilization of driver/vehicle resources. Parameters to be used for such optimization (e.g., grouping, on-board travel time, dwell time, modification of travel time for street segments) will be configurable.

4. *Real-time Optimization*: Provide the capability to optimize trips in real-time to better utilize the driver/vehicle resources.

Operations Management Module:

1. *Driver Manifest Management*: Provide the capability to manage electronic manifests to be performed by HIRTA drivers in real-time.

2. *Managing Third-Party Provider Trips:* Manifests performed by third-party providers will be managed in separate systems owned by those providers but status on those will be accessible to HIRTA Operations staff.

3. *Managing Acces2Care Trips:* Trip requests from Access2Care customers will be managed in that system but monitored by HIRTA Operations staff.

4. *Dynamic Vehicle Reassignment:* Provide the capability to reassign trips to another vehicle in the event of an incident/accident if needed.

5. *Real-time Capacity Management:* Provide the real-time information on current system capacity across all HIRTA vehicles and third-party providers to accommodate real-time requests or better utilization of resources.

6. *Real-time Trip Details:* Provide real-time status on trips with appropriate level of details.

7. *Medical Appointment Information:* CSR will have the capability to view the medical appointment details and its status at any point until the return trip is complete to proactively assist Travelers with their transportation needs.

8. *Communication with Healthcare Provider*: Provide the capability to connect with healthcare Provider to notify about abnormalities related to trip status and any needed changes.

9. *Communication with Driver:* Provide the capability to communicate with the driver when needed.

10. *No-Show Management:* When a no-show is reported by the driver, allow operations staff to confirm with Travelers.

11. *Translation Service*: Assist the Driver with any translation service needs during a trip is in progress.

12. *Arranging Emergency Medical Transportation*: Provide the capability to directly connect with a medical transportation if such request is made by the Driver or Traveler.

13. *Traveler Safety*: If safety message is received from the Traveler, provide the capability to follow appropriate actions per HIRTA's safety protocol.

Billing and Administration Module

1. *Trip Verification*: Provide the capability to verify trips if necessary prior to cost allocation and billing

2. *Billing and Invoicing:* Provide the capability to perform cost-allocation and billing and generate appropriate invoices accordingly.

3. *Reimbursement and Accounting*: As currently setup, provide the capability to account for any reimbursements received from funding entities electronically.

Reporting and Data Module

1. *Reporting*: Provide the capability to report on defined KPIs for measuring system performance and measuring the project (and service delivery) outcomes.

2. *Data Sharing:* Provide the capability to share data per data sharing agreements in the Data Management Plan.

Access2Care

1. Manage Medicaid Trips: Provide the capability to manage trips booked by Access2Care. Currently Trips are not managed within Routematch.

Third-Party Service Provider

1. *Manage Trips Served by Third Party Providers:* Provide the capability to view the real-time status of trips served by third-party providers

2. *Communicate with Third Party Providers:* Provide the capability to communicate with Third Party Providers in real-time.

2.2.3. Vehicle Subsystems

This section provides the capabilities to be provided in the subsystem installed on-board that will include a driver terminal with communication capabilities.

1. *Identifying Travelers*: Provide the capability to verify Traveler boarding the vehicle.

2. *Trip Details and Status*: Provide the capability to view details of a trip at any point. Also, provide the trip status when the trip is in progress.

3. *Communication with HIRTA Operations*: Provide the capability to communicate with HIRTA Operations.

4. *Performing Trips:* Provide the capability to perform required activities on arrival for pick-up or drop-off. Allow drivers to report no-show and take action per HIRTA policy.

5. *Turn-by-turn Navigation*: Provide turn-by-turn direction for the pick-up or drop off locations as requested by the Driver.

6. *Translation Service*: Provide translation service to assist a Driver when requested.

7. *Wheelchair Status:* Monitor wheelchair functional status and alert the Driver in the event of a malfunction.

8. *Notification on Delayed Arrival:* Provide the capability to notify HIRTA Operations and Healthcare Customer Care staff in the event of an expected delayed arrival.

9. *Payment Status Update*: Provide the capability to view required payment for a trip and update fare paid (if not automated).

2.2.4. Wayfinding Subsystem

The system will provide the capability to address features listed in Section 2.2.1. This subsystem will include the following:

1. Wayfinding infrastructure: this includes the physical assets that will be installed for the wayfinding application to detect the object (vehicle, beacon or visual marker inside a building) and provide turn-by-turn guidance.

2. Central wayfinding software: The central software will guide the application used by the Travelers with indoor and outdoor wayfinding. Also, this software will be used to manage the physical assets used for providing wayfinding capability.

2.2.5. Integration with External Systems

The Health Connector system is intended to interface the following external systems as follows:

- **Access2Care Software**: For Medicaid participants, whether enrolled in traditional (fee-for-service) or managed care, transportation is centralized through Access2Care, but there are specific practices and procedures that need to be followed, and there can be issues around the need to ensure that an eligible person is receiving allowable care or services from an approved provider, and challenges around what to do if proper procedures aren't followed, even if the transportation would otherwise be eligible.

  Access2Care uses its own proprietary application for scheduling of Medicaid-funded trips for its customers. The application has both a Traveler component and a central component for customer care staff. Access2Care requires that all trips that are Medicaid eligible are booked through their system.

  Once the trips are scheduled, Access2Care makes trips available to service providers such as HIRTA for service delivery via a web-based portal. At that point, HIRTA manually enters Medicaid trips into the TMS (currently Routematch Demand) at least a day before the travel. Once trips are entered in TMS, those are available to be managed by HIRTA staff as regular trips. Once completed, trips are invoiced to Access2Care using the web-based portal.

- Electronic Healthcare Record (**EHR Software)**: HIRTA's partners use the following EHR/Medical Record software:

  - Unity Point Health: Epic
  - Dallas County Hospital/Mercy One: Evident/CPSI
  - Broadlawns Clinic: Meditech

  Interfaces with each of these products is available through custom interfaces only. At this time, the team is planning to interface with EHR systems that provide open API (e.g., Epic) and use an alternate approach for other systems (e.g., a secure web-based access to the central TMS) where healthcare staff will be able to use the-TMS for booking transportation appointments while booking a medical appointment.

  Also, for Epic, the HIRTA team is exploring if a middleware approach may be more appropriate since Unity Point currently partners with Kaizen Health for providing medical transportation. Kaizen Health is a commercial off-the-shelf platform designed to offer healthcare staff with capabilities similar to Health Connector. It allows staff such as customer care staff and discharge planners to arrange transportation per traveler needs for a booked medical appointment. Kaizen Health platform acts as the broker for a range of transportation options available through their network.

- **DCHD/Health Navigation Information and Referral System**: DCHD uses a Microsoft Access -based product for managing the needs and services provided to Dallas County residents. This system currently does not connect with any medical record systems. Based on discussions with DCHD, HIRTA project team does not see a need to interface

with this system, particularly since DCHD intends to switch to another product in the future. Any data needed for performance management will be provided based on request from DCHD. DCHD staff will also be provided access to health Connector for booking and management of transportation appointments on behalf of their customers.

Further details on desired interfaces are provided in the following subsections

Access2Care Software

1. *Trip Ingestion*: Provide the capability automatically ingest trips when submitted by Access2Care into the Health Connector system.

2. *Trip Status Reporting:* Provide the capability to monitor the real-time status of trips as other trips and provide updates to Access2Care system in real-time.

3. *Billing*: Provide the capability to perform cost allocation and billing for Medicaid funded trips and submit billing to Access2Care/Medicaid system electronically.

4. *Reimbursement*: Provide the capability to get reimbursed electronically by Access2Care/Medicaid.

5. *Access to Data/Reporting:* Provide the capability access reporting and needed data as defined for Medicaid trips.

Electronic Healthcare Record (EHR) Software

1. *Transportation Booking while Booking Medical Appointment:* Provide the capability to book transportation when requested by a Patient/Traveler for any origin or destination location within Dallas County using Health Connector system if Patients/Travelers are registered with HIRTA.

2. *Transportation Booking for Referral Facilities or Return Trips*: Provide the ability to book transportation when requested by Patients/Travelers for return trips upon discharge for any origin or destination location within Dallas County using Health Connector system if Patients/Travelers are registered with HIRTA.

3. *Real-time Status on Transportation*: Provide the capability to view real-time status of trips for Travelers/Patients who have medical appointments scheduled.

4. *Contact Travelers/Patients:* Provide the capability to connect with Travelers/Patients regarding their medical transportation.

5. *Contact HIRTA Customer Service*: Provide the capability to connect with Travelers/Patients regarding booking of a new trip or real-time status of an already booked trip.

6. *Access to Data/Reporting:* Provide the capability to obtain reports and needed appointment time and location data for patients/travelers to measure KPIs.

DCHD Information and Referral Software

1. *Access to Medical Appointment Availability:* Provide the capability to view medical appointment availability for a DCHD customer.

2. *Access to Transportation Service Availability*: Provide the capability to view transportation service availability for a DCHD customer for an available medical appointment.

3. *Access to status of a Medical Appointment, As Authorized*: Provide the capability to review the status of a medical appointment booked for a DCHD customer.

4. *Access to status of a Booked Traveler Trip, As Authorized:* Provide the capability to review the real-time status of trip booked for a DCHD customer.

5. *Contact Travelers/Patients:* Provide the capability to connect with Travelers/Patients regarding their medical transportation.

6. *Contact Healthcare Customer Care:* Provide the capability to connect with Travelers/Patients regarding medical needs for a DCHD customer.

7. *Contact HIRTA Customer Service:* Provide the capability to connect with HIRTA customer care regarding transportation needs for a DCHD customer.

8. *Access to Data/Reporting:* Provide the capability to obtain reports and needed data for patients/travelers to measure KPIs (TBD).

2.3. Major System Conditions, Constraints, Assumptions and Dependencies

2.3.1. Assumptions

The following bullets presents discussion of assumptions and constraints in advancing the system change scenarios presented herein.

- **Current system environment:** The current system, Routematch, while configured, is not optimized to be used for same day response trips. Also, some of the other capabilities needed for Health Connector, for example, engaging third party providers, are currently not configured. Further, Traveler access to real-time information is available through limited channels. Given Uber platform, which is optimized for same day response service, is available through Routematch, the HIRTA team is defining the vehicle, central and customer-end solution framework that will be available for Health Connector as further explained in Section **Error! Reference source not found.**.
- **Complexity of Medicaid Program:** Medicaid trips are booked using systems provided by Access2Care and the system determines the appropriate transportation mode which may or may not be HIRTA. Also, given Travelers will be using two separate applications, the experience may not be seamless.
- **Smart Device and Data Plans**: Health Connector provide alternate methods but assumes that Travelers will be able to utilize smart devices using internet data plans to get the most

benefit out of the proposed solution. Based on stakeholder discussions, while smartphone penetration is high (85%+) senior population may not be comfortable with small devices and some may not have data plans to be able to utilize all features provided.

- **Fragmented Nature of Electronic Health Record (EHR) Platforms:** The heterogeneous nature of EHR platforms used by the Dallas County health community may present a challenge in developing a transportation booking and medical appointment booking interface. We are exploring alternatives to a direct interface with EHR.
- **Partnership with Third Party/Non-dedicated Service Providers (NDSP)**: HIRTA will have to rely on NDSP vehicles (e.g., TNCs, taxis) if same day demand grows after the launch of the Health Connector. However, there is limited pool of such providers in rural areas.
- **Training Customers to use non-HIRTA Vehicles**: It was identified in stakeholder discussions that some customers (e.g., refugee population) may not be comfortable with vehicles that do not have HIRTA logo. Training and outreach program will have to address such concerns.
- **Wayfinding:** Most wayfinding systems require a companion smart device. However, some of the underserved population (e.g., senior, LEP) may not be comfortable with that approach unless effective training is provided. Also, most wayfinding solutions require extensive installation of infrastructure (e.g., beacons or visual markers) which will require approval from healthcare partners.

2.3.2. Anticipated Constraints and Changes in Operational Policies

Anticipated constraints and changes in operational policies for HIRTA, DCHD and healthcare partners are listed below.

HIRTA

Operational polices and constraints for HIRTA as anticipated in the context of Health Connector are as follows:

- **Hours of Operation:** Currently, HIRTA's services are available 7AM-5PM Monday through Friday. Given HIRTA is planning to provide after-hours services through Health Connector, new polices will have to be developed and published by HIRTA.

  Any future changes in service hours must be automatically communicated to appropriate parties (e.g., healthcare providers, DCHD) and communicated to customers through appropriate channels.
- **Third Party Service Providers:** With the deployment of Health Connector, HIRTA will have the capability to partner with third-party providers for providing services after office hours. However, detailed policies and procedures will have to be developed.
- **IT-related Policies:** No major IT infrastructure-related changes are anticipated as part of this project but partners will have to be provided access to Health Connector and HIRTA will be responsible for providing access and maintaining appropriate security and access levels for those partners.
- **Staffing:** The project will not result in increased staffing levels but roles may have to be adjusted given efficiency gains observed due to reduced level of coordination per trip.

- **Budget/Financial Constraints:** HIRTA is still finalizing the list of vendor partners at this point so ongoing support fees are still to be determined. Also, additional funding entities and partners may get identified per subsidy levels as those are determined during financial planning in later stage of Phase 1.
- **Definition of Standard Operating Procedures** (**SOPs) for Health Connector:** While Health Connector will be part of HIRTA's DR Service, detailed SOPs will have to be developed, describing roles and responsibilities and organizational structure prior to system launch, most likely during Phase 2**.** The SOPs will cover how system will operate under different modes of operation as described in Section **Error! Reference source not found.**.
- **Service Level Agreements (SLAs):** The following types of SLAs will have to developed:
    - SLAs with vendors will have to be made available for providing Health Connector service to meet the required system performance needs. ConOps will be updated once these are finalized during system requirements development.
    - Partnership agreements will have to be made with healthcare partners for certain business functions (e.g., exchange of medical appointment data) and appropriate SLAs will be developed and agreed upon.
    - Additional SLAs may have to be identified and developed as part of the development of SOPs for Health Connector.
    - Also, once third-party contractors are determined, SLAs will have to be established for the provision of services through them.

Healthcare Providers

Constraints and changes to operational policies as applicable to healthcare providers are listed below:

- **Access to Health Connector:** As discussed earlier, HIRTA will have to provide an appropriate level of access to Health Connector system to authorized staff at healthcare providers for management of healthcare appointments and monitoring of transportation services for those appointments.

- **Access to Appointment Data:** Either using the currently established process for information release at healthcare provides or through new release authorization terms and conditions (to be determined), healthcare providers will have to provide access to medical appointment data which will at least include 1) customer identifier; 2) customer/caregiver contact; 3) time of appointment; 4) day of appointment; 5) location of appointment; 4) doctor's office contact information. Required details will be finalized at the time of detailed design**.**

- **Funding Source Definition and Billing:** Most healthcare providers have mentioned that they have access to funds which can be used towards covering the cost of persons with low income. HIRTA has the capability to define funding sources in its system and healthcare providers can be listed as a funding source. For eligible trips, such funds will be used and the healthcare providers will be billed per agreed upon terms and conditions.

- **Coordination on hours of operation:** When there is a change in healthcare provider service hours for non-emergency visits, Health Connector system will be updated and HIRTA will be notified.

- **Staffing:** HIRTA already coordinates with dedicated Social Worker/Health Navigator staff at healthcare providers. However, this process will have to be finalized and enhanced communication access through Heath Connector solution will be made available to minimize any manual coordination.

- **Tracking Transportation Access and Missed Appointments:** Currently, there is limited capability in linking missed appointments with transportation access and subsequent impact due to lost patient opportunities. With access to Health Connector, healthcare providers should define appropriate and relevant KPIs and track and analyze data for measuring the KPIs.

DCHD

Constraints and changes to operational policies as applicable to DCHD are listed below:

- **Access to Health Connector:** As discussed earlier, HIRTA will have to provide appropriate level of access to DCHD to authorized staff for management of healthcare appointments and monitoring of transportation services for those appointments, as authorized by their customers.
- **Access to Data and Reporting as relevant to Measuring health Outcomes:** DCHD currently relies on data in their I&R system for measuring the success of efforts in linking Dallas County residents with resources. Health Connector will provide the ability to track not just successful connections but will also allow follow-ups after appointments are complete and take any subsequent actions if necessary. However, polices for such additional efforts will have to be defined by DCHD.

2.4. User Characteristics

Users in the context of this project refer to the following:

- Customers seeking HIRTA services for medical appointments due to lack of transportation access or their inability to drive themselves.
- Call center and Operations staff at HIRTA responsible for using the system for reservations, scheduling, dispatching and administrative needs, including measuring of project outcomes.
- Community health partners, call center and reservations staff and other relevant staff at healthcare facilities using the system for coordinating medical and transportation appointments and performance measurement.
- Referral entities and health navigators, who connect customers with potential healthcare providers and transportation providers.

This section describes the different user groups or actors who will interact with the system. The user group represents responsible parties for performing an activity or supporting a business function related to the customer journey as part of their Complete Trip. This includes activities conducted pre-trip (e.g., referral, discovery, planning, booking), during the trip (e.g., boarding, payment, customer information) and after the trip (e.g., return trip booking, follow-up appointment booking, trips to pharmacies).

Table 2 provides a list of user groups used for the proposed deployment.

Table 2. HIRTA Health Connector User Groups

Organization	User Group	Abbreviation	Short Description
DCHD	Health Navigators	HNV	Refers to the employees of the Dallas County Health Department (DCHD) who connect customers/patients with healthcare providers and HIRTA (or other transportation service providers) by providing information and referral services.
DCHD	Health Administrator	HAD	Dallas County Health Commissioner (or individuals in similar role) responsible for wellbeing of the community. Users of the system for measuring performance and health outcomes.
HIRTA	Trip Scheduler	SCH	HIRTA staff who processes customer requests and schedules rides.
HIRTA	Transportation Operations Staff	OPS	HIRTA staff who assigns trips to vehicles, monitors trips, coordinates with drivers in real-time (e.g., their ability to perform additional trips, assisting to find origin or destination locations, help resolve no-show or cancellation) and makes reassignments if necessary. At times, this process may also be fully automated and performed by the dispatching algorithm (e.g., TNC that may be used as third-party provider for real-time trips include algorithm that does dynamic ride-matching with available driver pool without manual interaction).
HIRTA	Customer Service Staff	CSR	Refers to HIRTA customer service staff who responds to travelers' requests for all aspects of their trip experience beyond trip booking/modifications.
HIRTA	Driver	DRV	Refers to HIRTA or contractor employees who pick up and drop off customers for their requested trips. There are no major changes expected for drivers as part of this implementation but relevant needs are documented.

Organization	User Group	Abbreviation	Short Description
HIRTA	Administration	ADM	HIRTA staff responsible for administrative functions such as verification of trip data, cost allocation, third-party billing (e.g., to funding sources), accounting and reporting. Most of this process will not change but certain flows are planned to be automated (e.g., interface with Medicaid).
Contractor	Third Party Service Provider	CTR	Refers to contractors that may work with HIRTA in the future to provide services when HIRTA does not have the capacity through its own fleet.
Healthcare Partner	Healthcare Customer Care Staff	HCR	Healthcare staff who take calls and intake customer request for medical appointments. Customer care staff may do other coordination related to medical appointments as well.
Healthcare Partner	Healthcare Operations Staff (e.g., customer care, nursing, community health partnership)	HOP	Staff that is responsible for interacting with customer on check-in and check-out. Also, includes staff that interacts with HIRTA, DCHD and other community partners on behalf of patients related to their appointments.
Healthcare Partner	Community Health Partner	CHP	Staff that interacts with HIRTA, DCHD and other community partners for improving experience for patients vising healthcare facilities.
Other	Traveler	TRV	Individuals, who are HIRTA clients and are requesting transportation services for their medical appointments. These services may be performed using HIRTA-operated vehicles or through HIRTA contractors.
Other	Patients	PTN	Individuals who may not be HIRTA customers but are looking for transportation services for their medical appointments, referral appointments or follow-up appointments or other medical needs.
Other	Referral Agents	RFR	Individuals employed by organizations that connect the public to the providers according to their service requests. In this context services may be related to healthcare or transportation.
Other	Funding Entity	FND	Organizations funding customer trips (e.g., Medicaid) that will interface with the system for automated billing and payment processing

Organization	User Group	Abbreviation	Short Description
Other	Community Partners	CPS	Stakeholders representing underserved groups and will help identify needs for the groups they are representing. They will interface with the system for measuring performance of the system in meeting health outcomes within their communities
Other	Government Partner Agencies	GPA	Refers to local and state Government entities that partner with HIRTA and will help identify broad community-based needs (e.g., social determinants of health) and will use the system to stay informed on project outcomes

Most user groups for the current systems will also be the users of the Health Connector system. Figure 6 provides a mapping of user groups listed in Table 2 to illustrate preliminary mapping of touchpoints. Arrows are labeled to show the type of information exchanged between different user groups.

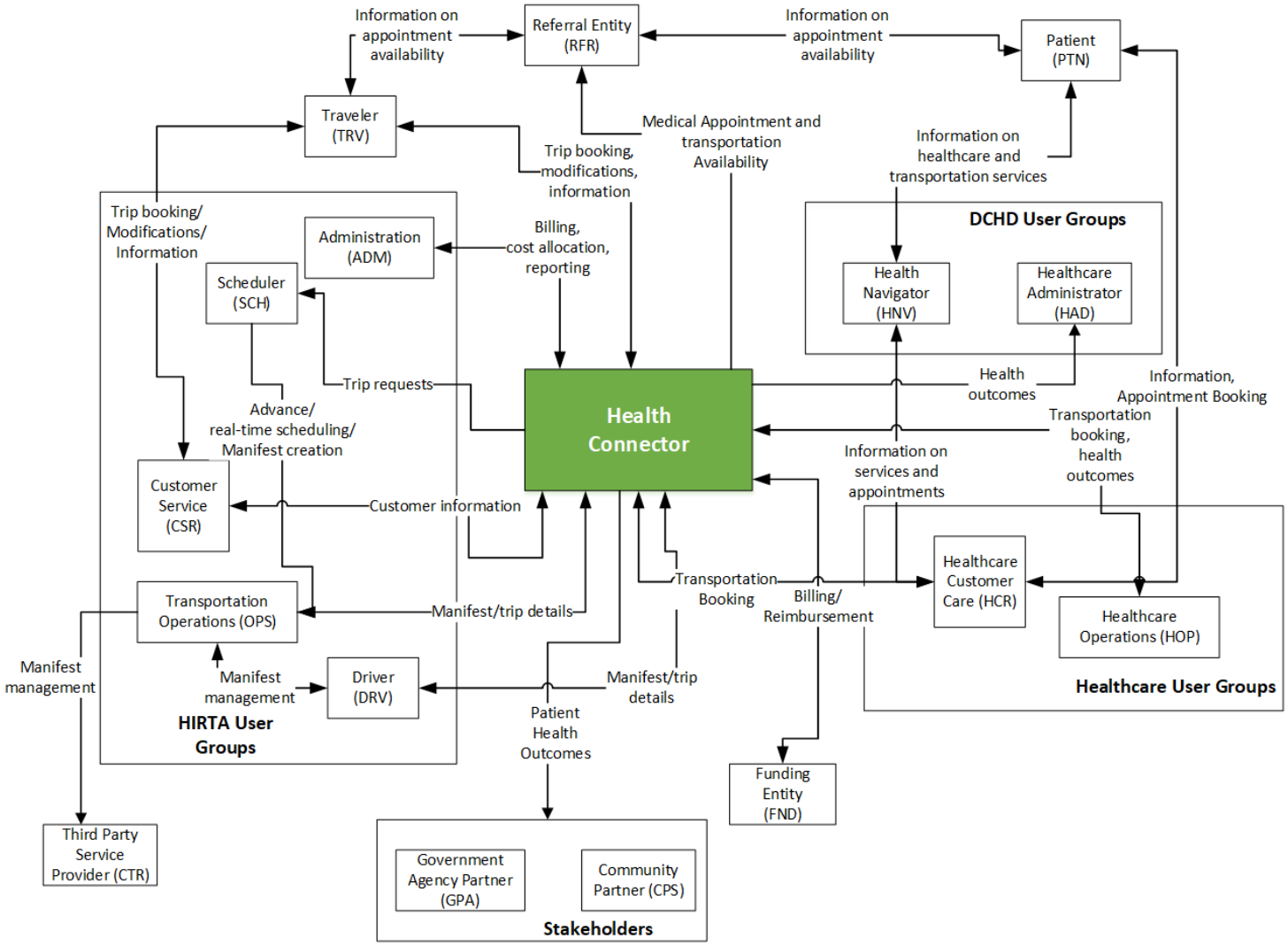

Figure 6. Mapping of Touchpoints across Different User Groups with respect to Health Connector Functions (Source: HIRTA Team)

2.5. Operational Scenarios

Health Connector system will interact with at least 4 distinct operational environments: HIRTA, third-party service providers, healthcare providers and health navigation/social care providers. Therefore, the HIRTA Project team has developed scenarios considering situations faced by specific user groups pertaining to those operational environments.

For Travelers, scenarios play out differently if their healthcare is paid through Iowa's Medicaid program. For Medicaid participants, whether enrolled in traditional (fee-for-service) or managed care, transportation is centralized through the state's broker, Access2Care, but there are specific practices and procedures that will need to be followed, and there can be issues around the need to ensure that an eligible person is receiving allowable care or services from an approved provider (see Scenario 6, as an example), and challenges around what to do if proper procedures aren't followed, even if the transportation would otherwise be eligible. For persons not covered by Medicaid, the scenarios are more diverse and more complex, and include the risk that needed medical transportation might not be available, accessible, affordable, or appropriate. The five scenarios below (Scenarios 4 – 7) illustrate a few of these complexities.

Scenarios 1-3 describe how system will perform in normal and degraded/failure modes as part of overarching discussion of system operations.

Overarching Scenario-Normal Operations

1. **Scenario 1**: A person with disability who is qualified for Medicaid due to low income and age criteria lives in rural part of Dallas County. An appointment is needed for routine exam and a specialist appointment with a specialist for a minor procedure. Traveler is not sure of the return time and will book a same day appointment after the procedure is complete. Traveler has requested to accommodate a personal companion to go with them. Also, Traveler wants to visit family before returning home

Degraded or System Failure Scenarios

2. **Scenario 2**: A Traveler has a requested a trip for a routine exam at a hospital. System operational in degraded mode since HIRTA TMS server is down due to unexpected maintenance issue during return trip.
3. **Scenario 3**: A Traveler has an appointment scheduled for a routine exam at a hospital. Complete System Failure caused by communication outage after a severe weather event.

Travelers (Non-Medicaid)

4. **Scenario 4**: Traveler looking for transportation for a recurring medical appointment (e.g., dialysis) scheduled with a hospital/clinic.
5. **Scenario 5**: Traveler looking for a prenatal appointment and will need transportation. It is recurring but not on a fixed schedule.
6. **Scenario 6**: Traveler looking for preventative care appointment.
7. **Scenario 7**: Traveler looking for a medical appointment for one-off procedure. They will not be able to take taxi/TNC home and will need someone to accompany them.

Travelers (Medicaid/MCO)

8. **Scenario 8:** Traveler is approved to take Medicaid eligible trip but they would like family to accompany them so can be helped. Outbound trip is 45 mins long so they may be

looking to be dropped off at a friend's house so they can rest and arrange their own transportation later for ride home. Medicaid will pay for only eligible portion of the trip.

DCHD/Health Navigators

9. **Scenario 9**: A customer just moved to Dallas County and has to get medical appointment scheduled but doesn't know Doctors in the area and does not have transportation.

Hospital/Clinic

10. **Scenario 10**: A blind Traveler/patient was dropped off by a friend for a routine medical appointment but doesn't have return transportation; Customer not comfortable with a taxi or TNC and prefers HIRTA service. Hospital customer care staff requested to book directly using HIRTA system.
11. **Scenario 11**: Customer has a planned discharge based on progression of recovery for next day. Discharge Planner to set up transportation to residences and/or skilled care facilities.

HIRTA

12. **Scenario 12**: HIRTA is not able to find out if customers who were dropped off for medical appointment have already been discharged. Customer had booked the return trip and driver is waiting for pick-up at the medical facility. Customer does not use App and is relying on HIRTA service for coordination.
13. **Scenario 13**: Customer was a no-show for outbound trip to medical appointment (or cancelled without providing a reason) but the customer had also booked a return trip and HIRTA has to follow-up with both customer and the hospital to find out if the customer needs the return trip before their trip back to home can be cancelled.

Third party Service Providers

14. **Scenario 14:** A third-party service provider (taxi/volunteer or another agency in the region such as DART) would like to be part of this solution particularly when trips are outside HIRTA service area and would like to be integrated so their services are available to customers per terms and conditions agreeable to HIRTA.

3. System Capabilities, Conditions, and Constraints

System requirements in this section are described under the following subsystems:

- **Traveler-end Subsystem**: this subsystem includes the tools and technologies to be used by travelers or patients seeking transportation services for their medical appointments as part of pre-trip, en-route trip, on arrival and return trip activities. Key components of this subsystem are:
    - *Traveler Application*: provides planning, booking, payment and Traveler information/notification capabilities to customers using a smart device or web-browser based interface.
    - *Wayfinding Application*: provides outdoor and indoor wayfinding capabilities using a smart device to localize/orient, obtain information, and locate a vehicle, facility, and/or offices inside a facility.
- **Transportation Management Subsystem:** this subsystem includes the tools and technologies used to assist customer care and operations staff with reservations, scheduling, dispatching and administration activities. Key components involved in this subsystem are:
    - *Reservation and Customer Service*: provides the “concierge” service capability to assist customers with registration, and reservation to Travelers who need assistance or are not able to use the Traveler Application.
    - *Scheduling*: provides the ability to schedule a trip, generate manifest and assign trips to a HIRTA vehicle or broker to a third-party provider. The capabilities are automated but the system also allows manual adjustments as needed.
    - *Dispatching*: provides the ability to manage operations in real-time.
    - *Administration*: provides the ability to manage interfaces with supporting subsystem for driver/vehicle resource management, data verification, billing, and invoicing.
    - *Reporting*: refers to the system reporting capability.
    - *Data Management*: refers to the system capability to collect, store, and share data.
    - *System Administration*: refers to the system tools to operate and maintain the system.

- **Wayfinding Subsystem**: this subsystem refers to the wayfinding infrastructure in form of 1) sensor/visual marker, and 2) central wayfinding application.

- **Supporting Subsystem**: this subsystem refers to the tools used by HIRTA for managing driver vehicle resources, customer service and other administrative functions.

- **Vehicle Subsystem**: this subsystem refers to the technologies deployed on vehicles to support driver-end functions for manifest management, on-board customer information and customer payments. Key component is a Driver terminal, used by Drivers for in-vehicle operational functions.

- **DCHD/Health Navigator-end Subsystem:** this subsystem refers to the tools used by DCHD health Navigators.

- **EHR/Medical Record Subsystem:** this subsystem refers to the tools used by hospitals and clinics for booking medical appointments and maintaining their appointments, including discharge and any subsequent referral activities.

- **Funding Entity/External Subsystem:** Currently this refers to only the eligibility subsystems used by external funding entities. An interface with such systems may be needed to do a real-time verification of funding eligibility.

3.1. Functional System

This section provides high-level functional requirements of the system. The requirements are grouped by subsystems and subsystem components.

3.1.1. Traveler Subsystem

Traveler Application

RM-TRV-1.1 -The system shall include a Traveler Application to provide trip planning capabilities.

RM-TRV-1.1.3 -The Traveler Application shall allow Travelers or any authorized individuals by Travelers to search for transportation options for given origin and destination locations.

RM-TRV-1.1.4 -The Traveler Application shall allow Travelers or any authorized individuals by Travelers to search for transportation options for selected pick-up and drop-off times.

RM-TRV-1.1.5 -The Traveler Application shall allow Travelers or any authorized individuals by Travelers to search for transportation options for identified mobility needs.

RM-TRV-1.3 -The system shall allow the logging of search queries from Travelers as part of the trip planning function. The logging shall be allowed only after the Traveler provides their consent to do so.

RM-TRV-1.4 -The Traveler Application shall allow the Travelers to book a trip for their preferred trip alternative.

RM-TRV-1.4.1 -The Traveler Application shall allow booking of transportation up to 30 days in advance.

RM-TRV-1.4.2 -The Traveler Application shall allow booking of a single ride or allow pooling of trips with other Travelers.

RM-TRV-1.4.3 -The Traveler Application shall allow booking of a trip to an alternate destination other than home even if that may not be covered by the funding source. The Traveler shall pay out of pocket in such situations.

RM-TRV-1.4.4 -The Traveler Application shall allow booking of a single-leg or multi-legged trip.

RM-TRV-1.5 -If applicable, The Traveler Application shall allow the Travelers to pay for a trip using a preferred method of payment after the booking for the selected alternative is complete.

RM-TRV-2.1 -Health Connector shall allow new Travelers to register and create their profile.

RM-TRV-2.2.2 -Traveler registration process shall be configured to meet the current policies as set by HIRTA and its funding source providers.

RM-TRV-2.3 -Health Connector shall allow booking of a trip even if the funding status of Travelers may not be current or known.

RM-TRV-2.4 -Health Connector shall allow booking even if a customer declines to register and proceeds in "guest" mode.

RM-TRV-2.4.1 -Guest mode shall require contact information such as first name, last name, email address and mobile phone number.

RM-TRV-2.4.2 -“Guest” mode shall only require a customer to pick-up address, and drop-off address and accessibliity need for requested trip.

RM-TRV-3.1 -Travelers that use Medicaid benefits shall be able to use the Health Connector Traveler Application to search for transportation options that may be applicable to them.

RM-TRV-3.2 -If no transportation options are available through the Health Connector Traveler Application, the Application shall direct the Traveler to the application provided by Access2Care or other primary provider.

RM-TRV-4.1 -Health Connector shall provide contact information or a webpage URL for accessing Information and Referral (I&R) services.

RM-TRV-5.1 -Health Connector shall provide contact information or the webpage URL for connecting with a Health Navigator at the Dallas County Health Department (DCHD).

RM-TRV-6.1 -The Traveler Application shall be available via a platform-independent web browser and shall provide all capabilities available through a Traveler Application on a mobile device.

RM-TRV-7.1 -The Traveler Application shall allow searching for transportation options using an interface in requested language of choice by Travelers. Per HIRTA's LEP Plan, preferred top

languages are: Spanish, French, German, Russian, Korean, Chinese, Vietnamese, Tagalog, and Arabic.

RM-TRV-7.2 -The Traveler Application shall allow booking of transportation using an interface in the language of their choice in the Traveler Application.

RM-TRV-7.3 -The Traveler Application shall allow Travelers to identify notification preferences in the language of their choice in the Traveler Application.

RM-TRV-7.4 -The Traveler Application shall have the ability to quickly translate any public service information posted online or physically posted inside vehicles or at other locations (e.g., physical stop, HIRTA facilities, healthcare facilities, strategic locations for public information dissemination) by HIRTA or healthcare providers as those pertain to Traveler trips.

RM-TRV-8.2 -The Traveler Application shall allow Travelers to successfully book trips using third-party services even when HIRTA services are not running

RM-TRV-8.3 -When no transportation options are available, the Traveler Application shall direct Travelers to contact the HIRTA customer service.

RM-TRV-9.1 -The Traveler Application shall provide tools (e.g., links to frequently asked questions, in-app help functions) that do not require relying on help from third parties.

RM-TRV-9.2 -The Traveler Application shall provide tools (e.g., first-time use guide to each button's function, travel training videos) to familiarize with application functions.

RM-TRV-10.1 -Traveler Application shall provide real-time availability of transportation options to allow same-day booking of a new return trip from the healthcare facility to home destination.

RM-TRV-10.2 -Traveler Application shall allow modification of a previously booked appointment for another transportation available the same day.

RM-TRV-11.1 -Traveler Application shall allow searching for transportation offered for HIRTA for a trip to another medical facility when a follow-up medical appointment (e.g., X-ray, blood work) is booked after the treatment.

RM-TRV-11.1.2 -If suggestion transportation option does not meet Traveler needs (e.g., mobility preferences, longer than acceptable on-board time), they shall be able to contact HIRTA customer service or healthcare staff for booking other transportation.

RM-TRV-11.1.3 -The Traveler Application shall provide allow Travelers to select any mobility needs for requested transportation. Mobility needs may be different than the previously requested trip.

RM-TRV-11.1.4 -The Traveler Application shall successfully book trips based on transportation option selected by the Traveler and provide booking confirmation.

RM-TRV-11.1.5 -Once the trip is booked, the Traveler Application shall keep Traveler informed on the status of trip per requirements as described for requirements RM-TRV-17.x and RM-TRV-17A.x.

RM-TRV-11.1.6 -The Traveler Application shall alert the Traveler if a return trip was already booked and prompt them to modify the return trip.

RM-TRV-11.1.7 -If no return trip was previously booked, The Traveler Application shall allow Travelers to book return trip to home or primary medical facility, as needed, if return time is known.

RM-TRV-12.1 -Health Connector shall provide the ability to modify a medical appointment using the application available from the healthcare provider.

RM-TRV-12.2 -Health Connector shall provide the ability to modify a transportation appointment linked to a medical appointment when the medical appointment is modified.

RM-TRV-12.3 -If medical appointment is modified based on the trip status, the Traveler shall be notified by the healthcare staff.

RM-TRV-13.1 -For follow-up care, Health Connector shall provide the ability to book a telehealth appointment using the application provided by the healthcare provider.

RM-TRV-14.1 -The Traveler Application shall allow Travelers to identify a personal companion at the time of booking a trip.

RM-TRV-14.2 -A personal companion shall be allowed regardless the ability to pay by the Traveler or their funding source.

RM-TRV-14.3 -The Traveler Application shall allow a different location for pick-up than Traveler's own pick-up location.

RM-TRV-14.4 -The Traveler Application shall confirm the booking of a personal companion on the same vehicle as the Traveler.

RM-TRV-15.1 -The Traveler Application shall allow Travelers to identify number of people in their group at the time of booking.

RM-TRV-15.2 -The Traveler Application shall allow identification of any accommodation needed for the persons in their group (e.g., child seat).

RM-TRV-15.3 -The Traveler Application shall confirm the booking of all family members on the same vehicle.

RM-TRV-16.1 -The Traveler Application shall identify the physical location for boarding as part of the trip confirmation.

RM-TRV-16.2 -The physical location shall be an identifiable geo-location on a map or a fixed stop outside a residence or facility.

RM-TRV-17.1 -TThe Traveler shall be able to subscribe to receive notifications on the status of their upcoming trips per their preferences or update notifications configurations using in-app settings.

RM-TRV-17.2 -The System shall provide at least 1) day before reminders; 2) provide any updates on the day of trip before a vehicle is dispatched; and 3) provide any updates once a vehicle is dispatched.

RM-TRV-17.3 -The Traveler shall be able to the types of alerts of they wish to receive.

RM-TRV-17.4 -The Traveler shall be able to identify primary and secondary contact information to receive alerts by email, text messages or IVR.

RM-TRV-17.5 -The Traveler shall be able to select their contact information or another contact of their choice (e.g., healthcare provider, Health Navgiator, caregiver). The Traveler shall be able to identify up to unique 5 individuals for receiving alerts.

RM-TRV-17.6 -The Traveler Application shall provide advance notification to riders on pick-up time and pick-up location about an upcoming trip day before the trip.

RM-TRV-17.7 -The Traveler Application shall provide updates in pick up time and location on the day of travel, if any changes, before a vehicle is dispatched.

RM-TRV-17.8 -Once a vehicle is dispatched, the Traveler Application shall provide real-time notification on the trip status (e.g., assigned Driver, assigned vehicle, ETA) per a configurable threshold by the Traveler (e.g., number of minutes prior to arrival).

RM-TRV-17.9 -The Traveler Application shall provide any updates (e.g., delayed pick-up time, alternate vehicle/driver assignment), if necessary, for the pick-up location, along with pick-up time alert.

RM-TRV-17A.1 -The Traveler shall be provided an option to confirm or cancel their trip when they receive notification on an upcoming pick-up per HIRTA policy (e.g., cancellation up to x minutes before pick-up time). Traveler action will be required only on those notifications that impact the trip delivery.

RM-TRV-17A.2 -The Traveler shall be able to confirm the pick-up time when they receive a notification. If not acceptable, the Traveler shall be able to be allowed to book an alternate trip that meets their preferences.

RM-TRV-17A.3 -The Traveler shall be able to confirm the pick-up location when they receive a notification. If not acceptable, the Traveler shall be able to be allowed to notify their preference for pick-up location/spot to the Driver and HIRTA customer service.

RM-TRV-17A.4 -The Traveler shall be able to communicate via call or text messages with HIRTA customer service or Driver to find out about additional details in the event of delays.

RM-TRV-17A.5 -The Traveler shall be able to communicate via call or text messages with Health Navigators or caregivers to notify them on delays or other updates with transportation.

RM-TRV-17A.6 -The Traveler shall be able to communicate via call or text messages with healthcare providers to notify them on delays or other updates with transportation that may impact the medical appointment.

RM-TRV-18.1 -Travelers shall be able to view the current location of their vehicle in real-time.

RM-TRV-20.1 -Travelers shall be able to use the Traveler Application to stay informed about any delays and estimated time of arrival (ETA).

RM-TRV-22.1 -The Traveler Application shall provide the ability for Travelers to notify healthcare staff on the status of their trips to the medical facility. The notification shall be automated. However, Travelers shall have the capability to notify directly using text messaging or voice call capability available within the Traveler Application.

RM-TRV-22.2 -The Traveler shall be able to notify the healthcare provider a few minutes prior to arrival and request any necessary accommodation manually via a phone call or text message (e.g., to be escorted by a healthcare facility staff).

RM-TRV-22.2.1 -The Traveler Application shall require that contact information be entered at the time of booking to send notifications automatically.

RM-TRV-22.2.2 -The Traveler Application shall provide confirmation of accommodation requested by Travelers and any additional instructions as necessary.

RM-TRV-22.2.3 -In the event Traveler requests an attendant, the Traveler Application shall provide the name of the person assigned to meet the Traveler at the drop-off location.

RM-TRV-23.1 -The Traveler Application shall allow booking of a new return trip for the same day when requested by Travelers.

RM-TRV-23.2 -The Traveler Application shall allow Travelers to choose the transportation option of their choice if more than one (1) options are presented.

RM-TRV-24.1 -The Traveler Application shall allow modification of an already booked return trip to choose a different destination.

RM-TRV-25.1 -The Traveler Application shall allow Travelers to insert at least one new destination if required.

RM-TRV-25.2 -The Traveler Application shall allow Travelers to choose pick-up/drop-off times and vehicles separately for each leg of the trip, if needed.

RM-TRV-25.3 -The Traveler Application shall present the Traveler the option to book all legs of the trip with the same vehicle, if possible.

RM-TRV-26.1 -The Traveler Application shall provide real-time notification on the trip status per a configurable threshold for the return trip (e.g., number of minutes prior to arrival).

RM-TRV-26.2 -The Traveler Application shall provide real-time status updates, as described in requirements RM-TRV-17.x and RM-TRV-17A.x for inbound trips, regardless the service provider.

RM-TRV-27.1 -The Traveler Application shall identify the physical location for boarding as part of the return trip confirmation.

RM-TRV-27.2 -The Traveler Application shall identify a fixed stop for Traveler pickup if such infrastructure is available at the healthcare facility.

RM-TRV-28.1 -The Traveler shall be able to use the Wayfinding Application to identify a fixed pick-up spot if such infrastructure is available (e.g., a fixed bus stop at a healthcare facility).

RM-TRV-28.2 -When using turn-by-turn navigation, the Traveler shall have the ability to review pathways direction prior to proceeding.

RM-TRV-28.3 -Traveler shall be able to turn on or off the step-by-step direction at any point during the walk. When restarted at a point on the pathway, the system shall immediately calculate turn-by-turn direction from that point.

RM-TRV-29.1 -The Traveler shall be able to use the Wayfinding Application to identify the vehicle upon its arrival for pick-up.

RM-TRV-29.2 -Blind Travelers shall be able to use the Wayfinding Application to identify the entrance door as needed.

RM-TRV-30.1 -The Traveler Application shall notify the Traveler of the due amount at the start of the trip.

RM-TRV-30.2 -The Traveler Application shall allow payment for their trip once the trip is complete.

RM-TRV-30.3 -The Traveler Application shall allow selecting the method of payment.

RM-TRV-30.4 -On HIRTA vehicles, the Traveler shall be able to pay using the following methods: 1) cash; 2) check; 3) tickets; 4) prepaid account debit; 5) discount coupon applied to prepaid account to cover the due amount.

RM-TRV-30.5 -On non-HIRTA vehicles, Traveler will pay using prepaid account debit.

RM-TRV-31.1 -The Traveler Application shall allow identification of funding source at the time of booking.

RM-TRV-31.2 -The Traveler Application shall verify if the Traveler is eligible for requested funding source. If Traveler is not eligible, the Traveler shall be advised to select an alternate funding source, pay out of pocket or contact HIRTA customer service.

RM-TRV-32.1 -The Traveler Application shall allow applying a discount coupon to the Traveler account which they may have obtained from healthcare provider, HIRTA or another participating entity approved by HIRTA.

RM-TRV-32.2 -The Traveler Application shall verify the validity of the discount code.

RM-TRV-32.3 -If discount coupon is not immediately used, the Traveler shall have the capability to store the value in their account for later use.

RM-TRV-33.1 -The Traveler Application shall provide access to a prepaid/cash account.

RM-TRV-34.1 -The Traveler Application shall be able to replenish the prepaid account by cash, bank card and a discount coupon.

RM-TRV-34.2 -The Traveler Application shall allow checking balance of the prepaid account at any time.

RM-TRV-34.3 -The prepaid account shall be configurable to auto-load using a preferred payment method from a Traveler based on a predefined trigger set by the Traveler (e.g., balance below $10).

RM-TRV-34.4 -The prepaid account shall support pass product where a Traveler shall not be charged after a certain number of trips amounting to a certain amount within a defined timeframe (e.g., month) have been completed. This shall be configurable based on policy defined by HIRTA.

Wayfinding Application

RM-TRV-19.1 -The Traveler shall be able to use the Wayfinding Application to identify a fixed pick-up spot if such infrastructure is available (e.g., a fixed bus stop at a healthcare facility).

RM-TRV-19.2 -The Traveler shall be able to use the Wayfinding Application to identify the vehicle upon its arrival for pick-up.

RM-TRV-19.3 -Blind Travelers shall be able to use the Wayfinding Application to identify the entrance door as needed.

RM-TRV-20.2 -The Wayfinding Application shall provide tools so any personalized real-time updates relevant to a trip (e.g., expected inclement weather later in the day affecting trip performance, expected long wait at the facility, expected detour due to a water main break, modified entry and check-in procedures due to a repair work scheduled for that day) can be communicated using on-board information infrastructure and Wayfinding Application

RM-TRV-20.3 -The Wayfinding Application shall translate the information in the language of choice as requested by a Traveler. Per HIRTA's LEP Plan, preferred top languages are: Spanish, French, German, Russian, Korean, Chinese, Vietnamese, Tagalog, and Arabic.

RM-TRV-21.1 -Upon getting dropped off at the healthcare facility, the Traveler shall be able to use the Wayfinding Application to navigate to the door entrance, as needed (e.g., persons who are blind).

RM-TRV-21A.1 -The Wayfinding Application shall use the indoor navigation infrastructure to navigate to the check-in desk after entering the facility.

RM-TRV-21A.2 -The Wayfinding Application shall provide step-by-step directions per traveler preferences to locate other offices inside the building.

RM-TRV-21A.3 -The Wayfinding Application shall provide updated step-by-step guidance as soon as it detects that the Traveler has reoriented.

RM-TRV-21A.4 -The Wayfinding Application shall let the Traveler confirm the need for updated directions before overriding the previously suggested step-by-step guidance.

RM-TRV-21B.1 -The Wayfinding Application shall be able to identify the correct office desired by the Traveler when at the correct floor.

RM-TRV-21B.2 -The Wayfinding Application shall use the indoor navigation infrastructure to provide the turn-by-turn navigation in accessible format to reach the correct office location when at the correct floor.

RM-TRV-21B.3 -The Wayfinding Application shall use the indoor navigation infrastructure to provide the turn-by-turn navigation in accessible format to reach an office located inside another building on the same medical campus..

RM-TRV-21C.1 -The Wayfinding Application shall be able to provide the capability to obtain relevant information in accessible format inside healthcare facilities.

RM-TRV-21C.2 -The Wayfinding Application shall help locate customer service desk for patient services as made available by the healthcare facilities.

Wayfinding Kiosk

RM-TRV-21C.3 -If Wayfinding Kiosks are installed by healthcare facilities for patient services, the Wayfinding Application shall be able to locate that kiosk.

In-vehicle Infotainment

RM-TRV-20.4 -HIRTA vehicles shall be equipped with infotainment screens to provide information relevant to a trip in progress as well as general overview of the destination facility.

3.1.2. TMS Subsystem

Reservation

RC-CSR-1.1 -The CSR shall have access to Transportation Management System (TMS) to register new customers.

RC-CSR-2.1 -The TMS shall allow CSR to create a customer profile as part of the registration process and store that data in the TMS database. The following information shall be needed for registration: first name, last name, contact information (email address, home phone number, mobile phone number), home address, favorite POI locations, mobility need, eligibility for a funding source.

RC-CSR-3.1 -The TMS shall allow CSR to identify funding source eligibility in the customer profile.

RC-CSR-3.2 -As necessary, the TMS shall allow CSR to obtain and keep an evidence of Traveler’s funding eligibility in the TMS.

RC-CSR-4.1 -The TMS shall allow CSR to identify the type of eligibility in the TMS. Eligibility types shall include the following categories: 1) temporary; 2) conditional; 3) unconditional.

RC-CSR-4.2 -For temporary eligibility, the CSR shall be able to identify the reason and expiry date.

RC-CSR-4.3 -For conditional eligibility, the CSR shall be able to identify any applicable conditions (e.g., severe winter weather).

RC-CSR-5.1 -The TMS shall allow CSR TMS to assist Travelers at every stage of their Complete Trip.

RC-CSR-5.1.1 -The TMS shall allow CSR to help riders with registration and creation of customer profile.

RC-CSR-5.1.2 -The TMS shall allow CSR to help riders with trip planning.

RC-CSR-5.1.3 -The TMS shall allow CSR to help riders with trip booking and modification of an already booked trip as described in RM-CSR-6.X and RM-CSR-7.X.

RC-CSR-5.1.4 -The TMS shall allow CSR to provide information to Travelers on the status of their trips. The CSR shall be able to inform on current location of vehicle, ETA, assigned vehicle, assigned driver, and whether or not mobility need is met by the assigned vehicle.

RC-CSR-5.1.5 -The TMS shall allow CSR to assist Travelers that require assistance when they are on-board or after they are dropped off (e.g., recording safety event, providing contact for healthcare staff to assist with directions to the doctor’s office).

RC-CSR-6.1 -The TMS shall allow CSR to assist with trips to be scheduled in advance according to HIRTA policies.

RC-CSR-6.2 -The TMS shall allow CSR to assist with trips to be scheduled the same day of the trip according to HIRTA policies.

RC-CSR-6.3 -The TMS shall allow CSR to assist with a single leg or multi-legged trip. For multi-legged trips, the CSR shall be able to choose pick-up/drop-off times and vehicles separately for each leg of the trip, if needed.

RC-CSR-7.1 -The TMS shall allow CSR to notify Travelers on current location and ETA for an upcoming third-party vehicle.

RC-CSR-7.2 -The TMS shall allow CSR to view any changes in third-party provided vehicle or driver assigned to a trip and communicate that to the Traveler.

RC-CSR-7.3 -If TMS does not have accurate information available, the CSR shall be able to use TMS to contact the third-party service provider on an updated status of driver and vehicle information, current location of vehicle and ETA for an upcoming trip.

RC-CSR-7.4 -The TMS shall allow CSR to notify Travelers on delayed status when ETA is not available. If Traveler intends to reschedule or cancel trip in the case of a severe delay, the TMS shall allow CSR to make trip modification based on Traveler’s approval.

RC-CSR-8.1 -The CSR shall be able to determine status of all trips being completed by HIRTA or its partner vehicles, even if trips are booked by non-HIRTA systems such as Access2Care before getting assigned to HIRTA.

RC-CSR-10.1 -The CSR shall have the ability to contact a healthcare customer care representative using voice call or text message to determine the status of a medical appointment and its impact on booked transportation.

RC-CSR-9.1 -The CSR shall have access to contact information for Travelers or their caregivers.

RC-CSR-9.2 -The CSR shall be aware of any necessary accommodation needed to address Traveler communication preferences (e.g., language, persons with disabilities).

RC-CSR-9.3 -The CSR shall be able to contact Travelers as needed to provide them relevant status information about their trip.

RC-CSR-11.1 -The CSR shall have access to a language translation assistance service to assist a Traveler who is looking for a translation service when on a phone.

RC-CSR-11.2 -The CSR shall have access to tools to communicate using text message with a Traveler in a language of their choice. Per HIRTA's LEP Plan, preferred top languages are: Spanish, French, German, Russian, Korean, Chinese, Vietnamese, Tagalog, and Arabic.

RC-CSR-12.1 -The CSR shall have the ability to manually override a restriction on booking of a trip caused by the expiration of eligibility for an applicable funding source.

RC-CSR-12.2 -The system shall note the manual override action as an exception and shall make this event available for reporting when requested by HIRTA.

RC-CSR-13.1 -The CSR shall have the ability to review the recent history of trips taken by a Traveler.

RC-CSR-13.2 -The CSR shall be able to filter the list of trips by a funding source.

RC-CSR-13.3 -The CSR shall be able to review if a Traveler has already completed an allowed number of trips under a funding source.

RC-CSR-14.1 -The CSR shall have the ability to view the number of no-shows for recently booked trips by a Traveler.

RC-CSR-14.2 -The CSR shall be able to filter the list of trips by a funding source.

RC-CSR-14.3 -The CSR shall be able to review the reason for no-show for a past trip.

RC-CSR-14.4 -If HIRTA policy allows restricting booking of trips by number of no-show events, the system shall assist CSR to comply with the no-show policy.

RC-CSR-14.5 -If there is a restriction policy by a funding source based on the number of no-show events, the system shall assist CSR to comply with the no-show policy.

RC-CSR-14A.1 -The CSR shall have the ability to review the number of cancellations for recently booked trips by a Traveler.

RC-CSR-14A.2 -The CSR shall be able to filter the list of trips by a funding source.

RC-CSR-14A.3 -The CSR shall be able to filter the list of trips by the cancellation types: 1) advance cancellation; 2) same day cancellation.

RC-CSR-14A.4 -The CSR shall be able to review the cancellation reason for a past trip.

RC-CSR-15.2 -The CSR shall be able to filter transportation providers by their jurisdiction and service criteria.

RC-CSR-16.2 -If real-time eligibility verification is not available, the CSR shall have the ability to override any restrictions presented by the system so trips are not denied. Any manual override event shall be logged by the system and shall be made available for reporting upon request from HIRTA.

Scheduling

RC-SCH-1.1 -The system shall be able to perform batch scheduling for trips that are booked in advance.

RC-SCH-1.2 -The system shall be able to optimize trips booked in advance the day before those are assigned to vehicles using parameters listed under requirement RC-SCH-2.1.

RC-SCH-1.3 -The system shall have the capability to book trips in real-time and assign to vehicles in real-time.

RC-SCH-2.1 -The system shall be capable of scheduling, in batch mode, all bookings for the next travel day. Proposers must describe the parameters used in scheduling customer trips. At least the following parameters shall be included:

RC-SCH-2.1.1 -Scheduling optimization parameters shall include dwell time at a pick-up or drop-off location as one of the variables.

RC-SCH-2.1.2 -Scheduling optimization parameters shall include available on-board capacity as one of the variables.

RC-SCH-2.1.3 -Scheduling parameters shall include average vehicle speed profile for street segments as one of the variables to calculate realistic travel times.

RC-SCH-2.1.4 -Scheduling parameters shall include grouping of trips on manifest based on geographic location of origin and destination of trips.

RC-SCH-2.1.5 -Scheduling optimization parameters shall include avoidance of street segments with detours/road closures.

RC-SCH-2.1.6 -Scheduling optimization parameters shall include accessibility needs/mobility aids as applicable to trips.

RC-SCH-3.1 -The system shall provide continuous optimization function to optimize the schedule in real-time for appropriate utilization of resources.

RC-SCH-3.2 -The optimization algorithm shall not move the time for trips that must be anchored (e.g., critical care appointments booked in advance).

RC-SCH-4A.1 -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 pick-up and drop-off location, and listing the trip events in chronological order.

RC-SCH-4A.2 -When creating a daily manifest, the system must take into account any vehicle assignment restrictions (e.g., wheelchair accessible vehicle, child seat, capacity or needed seats in the vehicle, space to stow mobility device).

RC-SCH-4A.3 -Once generated, the system shall be able to display all manifests with all driver instructions for a given day.

RC-SCH-4A.4 -The system shall provide tools to allow manual adjustments to the run manifests, including manually adding notes and moving trips between manifests.

RC-SCH-4B.1 -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).

RC-SCH-4B.2 -The system shall also perform validation checks to ensure that policies limiting travel times for individual passengers are not violated.

RC-SCH-5.1 -The system shall accommodate personal caregiver on the same vehicle as Traveler when scheduling a trip.

RC-SCH-5.2 -The system shall accommodate family member that are required to accompany a Traveler..

RC-SCH-5.3 -The system shall accommodate any mobility aid needed for accompanying Traveler family member (e.g., child seat for accompanying children)

RC-SCH-6.1 -For co-located addresses when multiple Travelers are sharing a vehicle, the system shall perform appropriate grouping to maximize optimum utilization of resources.

RC-SCH-6.2 -The system shall allow manual adjustments of grouping.

RC-ADM-1.1 -HIRTA shall be able review trip performance data in real-time.Dispatching

Dispatching

RC-OPS-1A.1 -The system shall automatically assign trips to drivers and vehicles pool based on preconfigured business rules (e.g., type of trip, service zones).

RC-OPS-1A.3 -The OPS staff shall have the ability to assign a trip to a HIRTA vehicle and driver pool.

RC-OPS-1A.4 -The OPS staff shall be able to verify the availability of a vehicle for a service prior to assigning a trip.

RC-OPS-1B.1 -The system shall track the location and available capacity along with any constraints (e.g., wheelchair space) on HIRTA contractor vehicles in real-time.

"RC-OPS-1B.2 -Third party contractor vehicle pool shall include: a) taxis;

b) volunteer vehicles; c) transportation network companies (TNCs)."

RC-OPS-1B.3 -The system shall be able to automatically assign trips to contractor vehicles. Trips shall be assigned according to the following factors:

RC-OPS-1B.4 -Trips shall be assigned according to pre-configured business rules (e.g., type of trips, service zones).

RC-OPS-1B.5 -Trips shall be assigned according to Traveler's mobility needs (e.g., wheelchair, personal companion).

RC-OPS-1B.6 -Trips shall be assigned according to travel constraints (e.g., maximum on-board time, required boarding time).

RC-OPS-2.1 -The system shall track availability of wheelchair accessible vehicles for HIRTA and non-HIRTA vehicles.

RC-OPS-2.2 -The OPS staff shall have access to the real-time status of functional status of wheelchair/lift at all times.

RC-OPS-4.1 -The OPS staff shall be able to compare current vehicle location with current Traveler location to verify the validity of a reported no-show event.

RC-OPS-4.2 -If Traveler location is not known, the OPS staff shall be able to contact Traveler to verify the validity of a reported no-show event.

RC-OPS-5.1 -The OPS staff shall have the ability to contact a healthcare customer care representative using voice call or text message to determine the progress status of a medical appointment and its impact on booked transportation.

RC-OPS-5.2 -The TMS shall provide the OPS staff the ability to determine any impact on scheduled return transportation caused by anticipated delays to a medical appointment.

RC-OPS-5.3 -The OPS shall be able to make adjustments to a scheduled return transportation in the event of a significant delay per configurable threshold (e.g., expected delay of 30 minutes or more).

RC-OPS-6A.1 -The OPS staff shall be able to reassign a trip to a new vehicle in the event of a vehicle breakdown or another issue that requires a vehicle swap.

RC-OPS-6A.3 -The system shall recommend vehicles for reassignment per Traveler profile and trip preferences. In the event there are more than one Traveler on the manifest, all Travelers' preferences shall be taken into account.

RC-OPS-6A.4 -The system shall consider all applicable vehicle/driver pools for reassignments.

RC-OPS-6A.5 -The OPS staff shall be able to override the system recommendation.

RC-OPS-6A.8 -If a Traveler is being accompanied by a personal caregiver/companion, both of them shall be accommodated in the same vehicle in the event of a reassignment.

RC-OPS-6A.9 -If a Traveler is being accompanied by one or more family members, all members shall be accommodated in the same vehicle in the event of a reassignment. Appropriate accommodation, as needed, (e.g., child seat) shall be taken into account.

RC-OPS-6A.10 -In the event of reassignment, Health Navigator, healthcare provider and Traveler, all shall be notified about the details of the new vehicle and driver.

RC-OPS-6B.1 -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 pick-up and drop-off location, listing the trip events in a chronological order.

RC-OPS-6B.2 -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.

RC-OPS-6B.4 -The OPS staff shall be able to configure which portions of the upcoming manifest entries shall be sent to the vehicle (e.g., the next X trips, all trips in the next Y minutes).

RC-OPS-6B.5 -Additional portions of the manifest shall be automatically sent to the vehicle on an ongoing basis as trip events are completed, in accordance with the HIRTA-configured manifest transmission parameters.

RC-OPS-6B.6 -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 vehicle assigned to that manifest.

RC-OPS-6B.7 -The system shall provide tools to allow manual adjustments to the run manifests, including manually moving trips between manifests.

RC-OPS-7.1 -The OPS staff shall have the ability to contact a healthcare customer care representative using voice call or text message to the healthcare customer care staff to notify about any anticipated delays based on estimated time of arrival (ETA).

RC-OPS-8.1 -The system shall allow the OPS staff to view received text messages in a tabular display that also indicates the vehicle ID and the time of the message.

RC-OPS-8.2 -The system shall allow the OPS staff to send a text message to a single vehicle, a predefined group of vehicles, all vehicles within an area selected on the map display or all vehicles.

RC-OPS-8.3 -The system shall allow the OPS staff to select one of a set of predefined text messages or enter a free text message.

RC-OPS-8.4 -The system shall allow any message sent by the OPS staff to be flagged as requiring Driver acknowledgement, and shall allow the OPS staff to view a list of such messages that have not yet been acknowledged.

RC-OPS-9.1 -The OPS staff shall be able to contact an emergency medical transportation (EMT) service per the protocols set by HIRTA.

RC-OPS-10.1 -A non-medical emergency message may be sent from the Driver or the Traveler facing an unsafe situation which shall be received by the TMS.

RC-OPS-10.2 -The system shall notify the OPS staff that a non-medical emergency alarm message has been received, using HIRTA- approved user interface visual method.

RC-OPS-10.2.1 -There shall be a HIRTA-approved audio notification method.

RC-OPS-10.2.2 -HIRTA shall be able to configure the audio notification method as on or off.

RC-OPS-10.3 -The system shall not allow the OPS staff to send a text message transmission to a vehicle while it is emergency mode.

RC-OPS-10.4 -In non-medical emergency mode, the vehicle shall be capable of sending updated location information every 15 seconds or at a more frequent time interval, configurable by OPS staff.

RC-OPS-11.1 -The OPS shall have access to tools to assist Drivers with turn-by-turn navigation for a trip if the in-vehicle functionality to provide turn-by-turn navigation is not functional.

RC-OPS-11.2 -The OPS staff shall have access to tools to assist Drivers with wayfinding to the Traveler pick-up and drop-off location.

RC-OPS-12.1 -The OPS shall have access to language translation service to assist Drivers with translation needs.

RC-SYS-5.1 -Health connector shall provide ability to track safety events to ensure safe transportation at all times for medical appointment needs. The safety events will be categorized as 1) catastrophic; 2) critical; 3) marginal; 4) negligible, As defined in the Safety Management Plan (SMP).

Administration

RC-ADM-2.1 -The system shall track Travelers trips funded by separate sources in a shared scenario.

RC-ADM-2.2 -The system shall allow cost allocation per HIRTA policies.

RC-ADM-3.1 -The system shall allow generating invoices per business rules as configured by HIRTA.

RC-ADM-5.1 -The system shall allow collection of payment using electronic methods.

RC-SYS-9.1 -The system shall provide capability to manage vehicle resources for HIRTA and third-party service providers.

RC-SYS-9.4 -The system shall have the ability to report on validity of license and insurance for drivers so only credentialed drivers and valid vehicles are assigned for Health Connector trips.

RC-SYS-9.5 -The system shall provide tools to manage driver resources.

RC-SYS-9.6 -the system shall be able to obtain driver data from a master source at HIRTA, if available.

3.1.3. Vehicle Subsystem

Driver Terminal

RV-DRV-0.8 -The Driver terminal shall have the ability to function in offline mode. The terminal shall synchronize information with the TMS once the connection is restored.

RV-DRV-1.1 -The Driver shall be able to verify the identity of the Traveler boarding the vehicle.

RV-DRV-1.3 -The Driver terminal shall indicate whether or not the Traveler boarding the vehicle is assigned to the vehicle.

RV-DRV-2.1 -The Driver terminal shall indicate the amount due from the Traveler in the manifest details.

RV-DRV-2.2 -The Driver terminal shall allow Driver to update the amount paid by the Traveler based on the actual amount paid.

RV-DRV-2.3 -The Driver terminal shall allow Driver to apply a discount coupon or another prepaid cash balance to the trip.

RV-DRV-2.4 -In the event, the Traveler does not have money to pay, the Driver shall be able to notify as such to the OPS staff.

RV-DRV-3.1 -The Drivers shall be able to view the Traveler location on their terminal when they leave for a pick-up and any point during the trip.

RV-DRV-3.3 -The Driver shall wait for 5 minutes prior to notifying the OPS staff about a no-show. This threshold shall be configurable by HIRTA.

RV-DRV-4.3 -The Driver shall have the ability to immediately acknowledge a message from the OPS staff, if required.

RV-DRV-4.4.1 -The two-way radio shall operate independent of the Driver terminal.

RV-DRV-4.6.1 -The vehicle system shall automatically provide turn-by-turn navigation if needed by a Driver.

RV-DRV-4.6.2 -The Driver shall have the ability to switch the navigation on or off as needed.

RV-DRV-4.6.3 -The Driver shall have the ability to turn the audio guidance on or off.

RV-DRV-4.6.4 -The turn-by-turn navigation function shall recalculate the navigation if needed.

RV-DRV-4.6.5 -The turn-by-turn navigation function shall adjust the guidance based on real-time traffic conditions.

RV-DRV-4.7.1 -The Driver shall have access to translation service when serving persons with LEP.

RV-DRV-4.9.3 -The Driver shall be able to view the status of a trip on their manifest at any point when the trip is in progress..

RV-DRV-4.9.5 -The Driver manifest shall immediately delete a trip if a trip is cancelled by a Traveler.

RV-DRV-4.10.1 -The Driver shall be able to update any pertinent details after a trip is complete, if needed.

RV-DRV-4.10.4 -The Driver shall be able to notify the OPS staff in the event of a safety event using the Driver terminal.

RV-DRV-4.10.5 -The Driver shall have access to tools to complete any relevant safety reporting process per Safety Management Plan (SMP).

RV-DRV-4.11.1 -The Driver shall have access to tools to notify the OPS staff about a delay.

Wayfinding

RV-DRV-4.6A.1 -The Driver shall be able to use wayfinding capability when turn-by-turn navigation capability is not available to the pick-up or drop-off spot due to lack of GPS.

3.1.4. I&R Subsystem

RC-CSR-15.1 -The CSR shall have access to an information and referral (I&R) database of transportation providers that can service the entire HIRTA service area. The I&R database shall provide at least the following information on a provider: 1) services provided; 2) jurisdictional restrictions; 3) service type restrictions; 4) service hours; 5) availability of accessible vehicles; 6) contact information.

RC-RFR-1.1 -I&R entities shall have access to tools that provide real-time access to transportation alternatives.

RC-RFR-1.2 -I&R entities shall have access to tools that provide real-time access to information on availability of medical appointments.

RC-RFR-2.1 -I&R entities shall have access to tools and information that shall allow them to connect with DCHD, Travelers, HIRTA and healthcare provider.

3.1.5. Wayfinding Subsystem

Sensor/Visual Marker

RC-SYS-12.1 -The wayfinding system shall consist of sensors/ visual markers installed at strategic locations outdoors and indoors to guide a Traveler during their Complete Trip steps.

RC-SYS-12.9 -The sensor/visual marker shall indicate: 1) encoded node on a pathways network; 2) encoded information to guide Traveler.

Wayfinding Central Application

RC-SYS-12A.1 -The Wayfinding Central Application shall create and maintain a pathways network that shall consist of nodes and pathways linking the nodes.

RC-SYS-12A.2 -The Wayfinding Central Application shall generate step-by-step guidance using the pathways direction and provide to the Traveler Wayfinding Application upon request.

RC-SYS-12A.3 -The Wayfinding Central Application shall provide tools to encode the sensor/visual marker installed in the field.

3.2. Physical

Health Connector does not require any hardware installation or any infrastructure improvements except for the physical infrastructure required for wayfinding as that relates to the Traveler and Wayfinding subsystems; and Driver terminals on vehicles.

3.2.1. Driver Terminal

RV-DRV-0.1 -The Driver shall have access to a touch-screen mobile data terminal for completing operations-related functions on-board.

RV-DRV-0.1.1 -The terminal shall run an in-vehicle application preferably on Android or iOS platforms.

RV-DRV-0.2 -The Driver terminal shall have built-in GPS receiver and magnetometer (and/or gyroscope and accelerometer).

RV-DRV-0.2.1 -The built-in GPS receiver and magnetometer (and/or gyroscope and accelerometer) shall allow vehicle tracking and report at a predefined interval on vehicle latitude, longitude, and heading).

3.2.2. Wayfinding Kiosk

Hardware

RM-TRV-21C.4 -The Wayfinding Kiosk shall be a commercial off-the-shelf large touch-screen device capable of running Android, iOS-based app or a browser-based application.

RM-TRV-21C.8 -The Wayfinding Kiosk hardware shall have a mean time between failure (MTBF) rate of 60,000 hours.

RM-TRV-21C.7 -The Wayfinding Kiosk hardware shall be designed to withstand the indoor environment within a typical hospital or medical facility. At the least, the hardware shall be designed to withstand exposure to disinfectant or chemicals used in a typical healthcare facility.

Installation

RM-TRV-21C.6 -The Wayfinding Kiosk shall be installed as a standalone structure according to the current requirements as defined in the ADA Accessibility Guidelines (ADAAG).

3.2.3. Sensor/Visual Marker

Environmental

RC-SYS-12.2 -The sensor or visual marker shall be designed to withstand temperatures in the range of -40 degrees F to 130 degrees F.

RC-SYS-12.3 -The sensor or visual marker shall be designed to withstand humidly levels in the range of 5% to 95% non-condensing.

RC-SYS-12.4 -The sensor or visual marker shall be designed to withstand dust and water intrusion as well as snow and freezing temperatures, certified in compliance with or exceeding the NEMA4 or IP65 standard.

RC-SYS-12.5 -The sensor or visual marker shall be designed to withstand the harsh environment posed by the disinfectant or other chemical exposure as normal in a typical hospital environment.

Installation

RC-SYS-12.6 -The sensor or visual marker shall be installed inside and outside a healthcare facility according to approved installation design from an authorized healthcare facility coordinator

RC-SYS-12.7 -The sensor or visual marker shall be installed inside and outside HIRTA vehicles or at a HIRTA facility (e.g., fixed stop) according to approved installation design from HIRTA.

3.3. -System Performance Characteristics

This section defines performance criteria for subsystems and subsystem components.

3.3.1. Traveler Subsystem

Traveler Application

RM-TRV-1.1.1 -The system shall be able to search for at least 2 options within 10 minutes of pick-up time that meet Traveler's search criteria. If no options are found, the Application shall direct Travelers to contact HIRTA Customer Service.

RM-TRV-1.4.5 -Entire process of planning and booking shall not take more than 2 minutes for registered Travelers.

RM-TRV-1.4.6 -Entire process of planning and booking shall not take more than 1 minute when booking in 'guest' mode (without registration).

RM-TRV-1.4.7 -The Traveler App shall allow modification or cancellation of a trip up to 20 minutes in advance.

RM-TRV-8.1 -The Traveler Application shall provide at least 2 transportation options within 10 minutes of requested pick-up time when searched by Travelers that live in rural areas or areas with limited HIRTA services .

RM-TRV-11.1.1 -The Traveler Application shall offer at least 2 options within 20 minutes of requested pick-up time using HIRTA’s own vehicles or through third-party providers.

RM-TRV-18.2 -The location of the vehicle shall refresh at a configurable time interval by HIRTA. The system shall allow location refresh at least every 30 seconds, if needed.

RM-TRV-20.5 -The ETA shall be updated at least every 30 seconds.

RM-TRV-20.5.1 -The ETA accuracy shall conform to specific margins of error dependent upon the vehicle’s displayed ETA.

RM-TRV-20.5.1 -The ETA accuracy shall conform to specific margins of error dependent upon the vehicle’s displayed ETA.

RM-TRV-20.5.2 -When a vehicle is 0-5 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 1 minute (+/-1 min), 95% of the time.

RM-TRV-20.5.3 -When a vehicle is 6-10 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 2 minutes (+/-2 min), 95% of the time.

RM-TRV-20.5.4 -When a vehicle is 11-20 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 3 minutes (+/-3 min), 95% of the time.

RM-TRV-20.5.5 -When a vehicle is 20-30 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 4 minutes (+/-4min), 95% of the time.

RM-TRV-20.5.6 -When a vehicle is more than 30 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 5 minutes (+/-5min), 95% of the time.

Wayfinding Application

RM-TRV-19.4 -The Wayfinding Application shall be able to identify the correct vehicle 95% of the time.

RM-TRV-19.4.1 -The Traveler Application shall provide additional features to identify correct vehicle/Traveler combination before a trip can proceed to ensure Traveler safety.

RM-TRV-19.4.2 -The Traveler App shall provide the details (e.g., driver photo, vehicle image, vehicle license plate, van number) on the vehicle approaching to pick-up the Traveler.

RM-TRV-21.2 -The Wayfinding Application shall be able to detect the visual marker or sensor within 1 second of being in the range.

RM-TRV-21.2.1 -For visual markers, the Wayfinding Application shall be able detect within a wide reading angle of 160 degrees in all lighting conditions.

RM-TRV-21.2.2 -The Wayfinding Application shall be able to recognize the visual marker or sensor 95% of the time.

3.3.2. TMS Subsystem

Reservation

RC-CSR-14A.5 -The number of cancellations caused due to system reliability resulting in a missed trip shall be less than 5% for all trips requested within a month by a Traveler.

Scheduling

RC-ADM-1.2 -The trip performance data shall be refreshed based on a configurable threshold or when there is a change in a trip status.

Dispatching

RC-OPS-1B.7 -The system shall be able to successfully assign trips to the third-party contractor vehicles 95% of the time.

RC-OPS-6A.6 -The reassigned vehicle shall pick-up the Traveler within 10 minutes.

RC-OPS-6A.7 -The vehicle reassignment shall not delay the original drop-off time by more than 10 minutes.

System Administration

RC-SYS-7.1 -Health Connector scheduling parameters shall be configured to enhance system productivity and shall allow maintaining delivering at least 3 riders per hour.

RC-SYS-7.2 -The system optimization algorithm shall be such that the cost per trip shall not exceed $20 per trip after subsidy is applied.

RC-SYS-7.3 -The Health Connector solution shall help reduction in coordination for a trip to 2 minutes or less.

RC-SYS-8.1 -The system shall help HIRTA achieve at least 95% on-time performance target.

3.3.3. Vehicle Subsystem

RV-DRV-0.3 -The location report shall be provided at least every 30 seconds or as configured by HIRTA.

RV-DRV-0.4 -The location shall be accurate to up to 3 meters.

RV-DRV-4.9.2 -The ETA shall be updated at least every 30 seconds or immediately when a major delay is detected and an impact to the ETA is determined.

RV-DRV-4.9.4 -The Driver manifest shall update no later than 10 seconds after a change is made by the OPS staff or the TMS to a trip.

3.4. System Security and Privacy

This section defined security requirements by individual subsystem components.

3.4.1. Traveler Subsystem

RM-TRV-2.2.1 -The customer profile data shall not be stored locally on devices unless such consent is received from the Traveler.

RM-TRV-2.2.3 -Traveler data collected on servers as part of the registration process shall be stored in the Health Connector system as approved by Travelers and as governed by the privacy policy of HIRTA.

RM-TRV-21C.5 -The Wayfinding Kiosk shall be able to connect to cellular data network using a secure connection.The network connections shall be designed to ensure secure and encrypted data exchange with cloud-based servers using standards such as Secure Sockets Layer (SSL) or Transport Layer Security (TLS) and shall avoid any exposure to PII for Travelers. Alternatively, the Kiosk shall connect to a secure network connection made available by the healthcare provider.

3.4.2. TMS Subsystem

Data Management

RC-SYS-1.1 -The system shall collect data and report on data specific to a demographic profile without exposing Traveler's personal information.

RC-SYS-3.1 -Health Connector shall emphasize on privacy at all times and shall be compliant with HIPAA and HIRTA's privary policy (to be defined).

RC-SYS-3.2 -The system shall track, manage and report on user information without exposing actual user information to external systems through use of encrypted identifier, known as Universal Unique Identifier (UUID).

RC-SYS-3.2.1 -The system shall have a UUID for each Traveler in the system.

RC-SYS-3.2.2 -The system shall have a UUID for each driver in the system

RC-SYS-3.2.3 -The system shall have a UUID for each trip the system

RC-SYS-3.3 -The system shall use only UUID for sharing data externally, instead of actual Driver, Traveler or Trip identifier.

RC-SYS-3.4 -The system shall have permission levels for access to the system based on the user roles. Roles will be defined in Phase 2 design.

System Administration

RC-SYS-4.1 -The system shall require unique usernames and passwords to access the system.

RC-SYS-4.2 -The system shall require a minimum of 2 factor authentication to access the system.

RC-SYS-4.3 -Access to system shall be made available to external users using secure and encrypted data exchange with cloud-based servers using standards such as Secure Sockets Layer (SSL) or Transport Layer Security (TLS) to avoid any exposure to PII for Travelers.

3.4.3. Vehicle Subsystem

RV-DRV-0.5 -The Driver shall have access to data on the terminal only after a secure log on is complete.

RV-DRV-0.6 -The Driver shall have access to its manifest with all trip details upon a successful log on, as authorized by the OPS staff.

RV-DRV-4.10.3 -The system shall allow updates to only limited data by the Driver as configured by HIRTA to prevent data manipulation or loss.

3.5. Information Management

This section defines detailed requirements of the system to collect and manage information and data within the system.

Section 3.5.2 provides requirements for data currently managed using existing Supporting Systems that will be accessed by HIRTA staff.

3.5.1. Traveler Subsystem

RM-TRV-1.1.2 -The trip planning request shall require at least the following input : pick-up location/origin, pick-up time, drop-off location/destination, drop-off time, mobility need.

RM-TRV-2.2 -The customer profile shall include at least the following information: first and last name, address, contact information (e.g., home and mobile phone number, email address), eligible funding sources, travel preferences (e.g., mobility aid, notification preferences) and favorite locations.

3.5.2. TMS Subsystem

Dispatching

RC-OPS-3.1 -The OPS staff shall be able to view in real-time the performance status of all trips being performed by a HIRTA vehicle.

RC-OPS-3.1.1 -The trip performance information shall include current status of all trips on the driver manifest

RC-OPS-3.1.2 -The trip performance information shall provide details of each trip on the manifest (e.g., trip ID, customer name, pick-up and drop-off locations, pick-up and drop-off times).

RC-OPS-3.1.3 -The trip performance information shall provide include details on the vehicle delivering the trip (e.g., vehicle ID).

RC-OPS-3.1.4 -The trip performance information shall include details on the driver delivering the trip (e.g., driver ID).

RC-OPS-3.1.5 -The trip performance information shall include current vehicle location (e.g., latitude, longitude and heading).

RC-OPS-3.1.6 -The trip performance information shall provide current trip status (e.g., scheduled/not picked-up, in-progress, on-time, delayed, cancelled, no-show).

RC-OPS-3.2 -The OPS staff shall be able to view in real-time the status of all trips being performed by a non-HIRTA vehicle (e.g., contractor vehicle, taxi or TNC).

RC-OPS-3.2.1 -The status information shall provide trip details (e.g., trip ID, customer name, pick-up and drop-off locations, pick-up and drop-off times).

RC-OPS-3.2.2 -The status information shall provide vehicle delivering the trip (e.g., vehicle ID).

RC-OPS-3.2.3 -The status information shall provide driver delivering the trip (e.g., driver ID).

RC-OPS-3.2.4 -The status information shall provide current location (e.g., latitude, longitude and heading).

RC-OPS-3.2.5 -The status information shall provide current trip status (e.g., scheduled/not picked-up, in-progress, on-time, delayed, cancelled, no-show).

Administration

RC-ADM-6.1 -The system shall provide tools to report on system operational performance per KPIs defined in the PMESP.

RC-ADM-7.1 -The system shall provide tools to report on KPIs to measure project outcomes as defined in the PMESP.

RC-SYS-9.3 -The system shall maintain at least the following information on vehicles: vehicle ID, owner, pool type, license plate, age, number of seats, availability of wheelchair/lift, number of wheelchair seats.

RC-SYS-9.7 -The system shall maintain at least the following information on drivers: driver ID, first name, last name, vehicle ID

RC-SYS-9.8 -The system shall track validity of license and insurance for drivers..

Data Management

RC-SYS-1.2 -The system shall use personal data in connection with the following circumstances based on data sharing practices as identified in the DMP.

RC-SYS-1.2.1 -The system shall use personal data as needed for the safety and security of users and services.

RC-SYS-1.2.2 -The system shall use personal data as needed for customer support.

RC-SYS-1.2.3 -The system shall use personal data as needed for research and development.

RC-SYS-1.2.4 -The system shall use personal data as needed for enabling communication between users.

RC-SYS-1.2.5 -The system shall use personal data as needed for connections with legal proceedings.

RC-SYS-1.3 -The system shall collect cookies for improved user experience.

RC-SYS-1.3.1 -The cookies shall be collected for user authentication.

RC-SYS-1.3.2 -The cookies shall be collected for remembering user preferences and settings.

RC-SYS-1.3.3 -The cookies shall be collected for determining popularity of content.

RC-SYS-1.3.4 -The cookies shall be collected for analyzing site traffic & trends and generally understanding online behaviors and interest of users.

RC-SYS-2.1 -The system shall allow users to communicate with each other electronically using the platform.

RC-SYS-2.1.1 -The communication methods shall include voice calls.

RC-SYS-2.1.2 -The communication methods shall include text messages.

RC-SYS-2.1.3 -The communication methods may include sending files electronically.

RC-SYS-10.1 -The system shall maintain a log of trip planning results.

RC-SYS-10.2 -The system shall maintain a log of vehicle locations sent by the vehicle.

RC-SYS-10.3 -The system shall maintain a log of data messages exchanged between vehicles and drivers.

RC-SYS-10.4 -The system shall maintain a log of messages exchanged between Travelers and Drivers.

RC-SYS-10.5 -The system shall maintain a log of trip history by a Traveler.

RC-SYS-10.5.1 -The trip history shall maintain a log of scheduled pick-up and drop-off locations.

RC-SYS-10.5.2 -The trip history shall include actual pick-up and drop off locations.

RC-SYS-10.5.3 -The trip history shall include scheduled pick-up and drop-off times.

RC-SYS-10.5.4 -The trip history shall include actual pick-up and drop-off times.

RC-SYS-10.5.5 -The trip history shall include no-show status.

RC-SYS-10.5.6 -The trip history shall include cancellation status.

RC-SYS-10.5.7 -The trip history shall include fare quoted.

RC-SYS-10.5.8 -The trip history shall include fare paid.

RC-SYS-10.5.9 -The trip history shall include revenue mileage.

RC-SYS-10.5.10 -The trip history shall include deadhead mileage.

RC-SYS-10.6 -The system shall include a log of wayfinding request received from Travelers

RC-SYS-10.7 -The wayfinding data stored by the wayfinding central application shall include the following information: 1) device id; 2) start and end nodes; 3) step by step guidance provided; 4) step by step guidance followed by Travelers.

RC-SYS-10.8 -The system shall use trip history dataset to provide a playback function to review and investigate any issues with performance of a trip.

RC-SYS-11.1 -The system shall provide a data access portal for all authorized HIRTA partners to access reporting of predefined KPIs.

RC-SYS-11.2 -The system shall provide an open data portal for data sharing with the general public.

Reporting

RC-GPA-1.1 -Iowa Department of Transportation, Iowa Department of Public Health, Dallas County Health Department, Dallas County and the City partners shall be able to track the cost and revenue associated with the Health Connector program.

RC-GPA-1.2 -The System shall provide reports required for the National Transit Database.

RC-GPA-1.3 -The Government partners shall be able to measure the impact of reduction in the number of no-shows for medical appointments.

RC-CPS-1.1 -The Government partners shall be able to measure the impact of reduced no-shows on overall well-being of the community per KPIs defined in the PMESP.

3.5.3. Vehicle Subsystem

RV-DRV-4.9.1 -The Driver manifest shall provide detailed information for each trip, as needed, for delivering a Traveler trip.

RV-DRV-4.9.1.1 -Each trip on the Driver manifest shall include traveler first name and last name

RV-DRV-4.9.1.2 -Each trip on the Driver manifest shall include pick-up and drop-off locations.

RV-DRV-4.9.1.3 -Each trip on the Driver manifest shall include mobility aid needed.

RV-DRV-4.9.1.4 -Each trip on the Driver manifest shall include pick-up and drop-off times.

RV-DRV-4.9.1.5 -Each trip on the Driver manifest shall include fare due for a trip.

RV-DRV-4.9.1.6 -Each trip on the Driver manifest shall include relevant notes for the driver.

RV-DRV-4.9.1.7 -Each trip on the Driver manifest shall include ETA for pick-up or drop-off locations.

RV-DRV-4.10.2 -The Driver shall be allowed to update at least the following information: revenue mileage, fare paid..

3.5.4. I&R Subsystem

RC-RFR-3.2 -I&R entities shall be able to document results of referral activity when successful connections are accomplished..

3.6. System Operations

3.6.1. System Human Factors

This section defines requirements pertaining to human use of application, particularly considering any unique needs of the persons with disabilities and other underserved groups.

Traveler Subsystem

RM-TRV-1.2 -The Traveler Application shall be designed to be accessible to all underserved populations.

RM-TRV-1.2.1 -The Traveler Application shall allow searching for transportation options based on their mobility needs (e.g., wheelchair, service animal).

RM-TRV-1.2.2 -The Traveler Application shall be accessible to all persons with disabilities.

RM-TRV-1.2.2.1 -The Traveler Application shall provide audio guidance when needed by Travelers (e.g., persons who are blind).

RM-TRV-1.2.2.2 -The Traveler Application shall allow Travelers to configure to use visual cues instead of audio-based notifications.

RM-TRV-1.2.2.3 -The Traveler Application shall provide an intuitive user interface that could be used by persons with cognitive disabilties.

RM-TRV-1.2.3 -The Traveler Application shall allow users to change the font size and contrast.

RM-TRV-1.2.4 -The Traveler Application shall provide the capabiilty to meet the needs of Travelers who may be on limited capabiilty phones (e.g., government-provided phones through Medicaid program) and have limited data plans (e.g., 2GB per month).

RM-TRV-1.2.4.1 -The Traveler Application shall provide the ability to turn map view or other rich content on or off as needed.

RM-TRV-1.2.4.2 -The Traveler Application shall have the ability to turn off features that may require constant syncronization with cloud-based servers (e.g., to store search logs).

RM-TRV-1.2.4.2 -The Traveler Application shall notify Travelers when cellular network is being used to download high-bandwidth (1 MB or more per minute) content.

RM-TRV-1.2.4.3 -The Traveler Application shall allow users to enter and exit low data mode using application settings.

RM-TRV-6.1.1 -Traveler Application available on web-enabled mobile devices shall use accessibility options as available through iOS and Android operating systems for native applications on those devices.

RM-TRV-6.1.2 -The system shall comply with Section 508 of the Rehabilitation Act §1194.22 and Web Content Accessibility Guidelines (WCAG).

RM-TRV-6.2 -Travelers shall be able to contact HIRTA, Healthcare Provider or a Health Navigator for booking of their trips when web-enabled or smart devices are not available.

Wayfinding Subsystem

RM-TRV-21.3 -The Wayfinding Application shall provide indoor and outdoor information and directions in accessible format.

RM-TRV-21.3.1 -Travelers shall have audio guidance available for visual wayfinding instructions.

RM-TRV-21.3.2 -Travelers shall be able to visually see the instructions.

RM-TRV-21.3.3 -Travelers shall be able to select suitable direction per their mobility preferences (e.g., no use of escalator or staircases).

RM-TRV-21.3.4 -Travelers shall be able to easily interpret the information by seeing visual markers and simple instructions (e.g., turn arrows).

RM-TRV-21.3.5 -The wayfinding feature shall not use more than 1 MB of data per minute.

RM-TRV-21.3.6 -Travelers shall be able to see and comprehend instructions through use of large font and color contrast.

RM-TRV-21.3.7 -Travelers shall be able to see or hear instructions in the language of their choice.

3.6.2. System Maintainability

RC-SYS-13.1 -Technical support shall be available 24 hours a day, 365 days a year.

RC-SYS-13.2 -Technical support shall respond to a request per the service level agreement as agreed with HIRTA. At a minimum, the support staff shall respond to a request within one hour of notification of the problem.

RC-SYS-13.3 -HIRTA staff be able to track the status of reported issue at any time using a web-based tool.

RC-SYS-13.4 -The system shall monitor all networked subsystems and components for normal operations 24 hours a day, 365 days a year.

RC-SYS-13.5 -The data centers to be used for hosting shall have existing scheduled routine maintenance and emergency situation management plans.

RC-SYS-13.6 -HIRTA shall be notified in advance of any planned data maintenance.

RC-SYS-13.7 -HIRTA shall be notified of any ad-hoc data maintenance activity to resolve an issue with the system as soon as it is discovered.

RC-SYS-13.8 -HIRTA shall be notified in advance of availability of enhancements, releases, and newer versions of the software (including third party software), including all bug fixes, patches, and modifications, or any modifications to the system components.

RC-SYS-13.9 -System upgrades or updates shall be implemented only upon HIRTA approval.

3.6.3. System Reliability

RC-OPS-8.5 -The OPS staff shall be able to use two-way radio when a voice communication is required between the OPS staff and the Driver.

RV-DRV-4.4 -The Driver shall have access to two-way radio to communicate with the OPS staff using voice communication.

RC-SYS-6.1 -Health Connector system shall be highly reliable with no more than 1 hour of downtime per week (99.5% availability).

RC-SYS-6.2 -Health Connector shall have the ability to operate even when a subsystem or component is temporarily not functional.

RC-SYS-6.3 -Health Connector shall be able to function even when vehicle and central systems temporarily lose data connectivity.

RC-SYS-6.4 -Even when external entities (e.g., DCHD or healthcare provider) temporarily lose access to the system, HIRTA shall be able to provide services to its Travelers.

RC-SYS-6.5 -In the event of total failure, HIRTA shall still be able to use two-way radio and offline mode of the TMS application to perform its daily business functions.

RC-SYS-12.8 -The sensor or visual marker shall be designed to withstand mean time between failure (MTBF) rate of 60,000 hours.

3.7. Policy and Regulation

Requirements as those relate to policy, procedures and regulatory constraints are still under discussions with partners. These details will be finalized prior to design stage in Phase 2. Requirements as currently known according to the details identified in Section 5.6 of the ConOps and Section 2.3 of this document are provided below.

1. HIRTA shall develop policies and procedures related to providing after-hours services.

2. HIRTA shall develop policies, contractual provisions and standard operating procedures related to utilizing third-party service providers.

3. HIRTA shall develop IT and cybersecurity policies for utilization of Health Connector system by its staff and partners.

4. HIRTA shall develop privacy policies for data collection, management and sharing with partners and external researchers.

5. HIRTA, DCHD and healthcare providers shall define details for informed consent for data release as that relates to Health Connector service utilization by Travelers.

6. HIRTA shall coordinate with healthcare providers on defining the process for utilizing funds available from them to pay for trips used by Travelers with low income.

7. HIRTA shall coordinate with DCHD and healthcare providers to establish a process for tracking missed medical appointments that can be linked to lack of transportation access.

8. HIRTA shall coordinate with healthcare providers for installing visual markers/sensors needed for providing wayfinding capabilities outdoors and indoors for Travelers vising the healthcare facilities.

9. HIRTA shall coordinate with DCHD on providing data needed to measure health outcomes because of improved transportation access through availability of Health Connector.

3.8. System Lifecycle Sustainment

The details of life cycle sustainment will be developed in Phase 2 as part of standard operating procedures (SOP) development. The following requirements are provided per the current knowledge of the HIRTA team.

1. HIRTA shall define SOP for describing roles and responsibilities and organizational structure prior to system launch in Phase 2**.**

    a) The SOP shall define how the system will be utilized by each user group.

    b) The SOP shall define troubleshooting and system support provisions for Health Connector system components.

    c) The SOPs shall cover how system will operate under different modes of operation as described in Section **Error! Reference source not found.** of the ConOps.

    d) The SOP shall define provisions for providing safe transportation services to Travelers per safety needs identified in the Safety Management Plan (SMP).

2. HIRTA shall identify service level agreements (SLAs) for each system provider for operations and maintenance of system during its entire lifecycle.

    1) The SLA shall define types of expected issues and their severity.

    2) The SLA shall identify vendor response time and level of support to be provided depending on the severity of issue and the level of support needed, in the event an issue is reported.

    3) The SLA shall define KPIs with respect to system performance.

4) The SLA shall provide guidance on planned system/data maintenance schedule.

5) The SLA shall define vendor support cost as applicable by the severity of an issue.

6) The SLA shall provide clear description on what may constitute as a maintenance update, system upgrade or new enhancement, and what is covered per the vendor-agency contract.

7) The SLA shall identify vendor credits as applicable in the event of a system outage /unavailability.

8) The SLA shall define terms and conditions attached to the data breach or other security issues.

9) The SLA shall define roles and responsibilities (vendor, agency, third parties) with respect to system maintenance and incident response.

3. HIRTA shall collect, manage, and share data per the needs as identified in the DMP for program evaluation needs as defined the PMESP.

4. System Interfaces

This section defines interface requirements for internal and external subsystems. Some of the details related to external subsystem interfaces with EHR and Medicaid brokerage subsystems are still unclear and will be updated as additional details become available during Phase 1 or in Phase 2. The HIRTA Project Team has met with project stakeholders for two Stakeholder Focus Groups, a discussion of Operational Scenarios, a ConOps Walkthrough and Public Webinar, and a System Requirements Walkthrough. Additional discussions are underway between HIRTA team's technology partner Uber and providers of systems for Access2care and Epic EHR for developing interface.

Interface requirements are grouped by subsystems and subsystem components.

4.1. Traveler Subsystem

RM-TRV-12.4 -If Transportation and EHR systems are interfaced, the Traveler shall be able to modify medical and transportation appointments at the same time.

4.2. TMS Subsystem

4.2.1. Reservation

RC-CSR-16.1 -The CSR shall have the ability to verify funding eligibility in real-time by accessing the eligibility database as approved by the funding source.

RC-CSR-16.3 -The CSR shall have access to reason behind ineligibility so they can advise Travelers for a corrective action by contacting directly with the funding provider.

4.2.2. Dispatching

RC-OPS-1A.2 -Trips for Access2Care shall not be assigned on non-HIRTA vehicles without getting approved by Access2Care.

RC-OPS-1A.5 -The OPS staff shall be able to import any trips by the Access2Care system for trips funded by Medicaid.

RC-OPS-6A.4.1 -When a Medicaid-funded trip is reassigned to a new vehicle, the system shall notify Access2care and get approval about this change prior to proceeding with the reassignment.

RC-OPS-6B.3 -The system shall send manifest trip pick-up and drop-off data to the vehicle assigned to that manifest.

RC-SYS-5.2 -Health Connector will have access to the HIRTA safety management system (SMS) for providing and accessing detailed assessment on reported safety events.

4.2.3. Administration

RC-ADM-4.1 -The system shall allow billing a funding source electronically.

RC-ADM-4.2 -The system shall receive an acknowledge from a funding source if an invoice was successfully submitted.

RC-SYS-9.2 -The system shall be able to obtain vehicle data from a master source at HIRTA.

4.3. Vehicle Subsystem

RV-DRV-0.7 -The Driver terminal shall stay connected to the TMS in real-time using a cellular data connection method.

RV-DRV-3.2 -The Driver shall be able to notify the OPS staff about a no-show if the Driver cannot locate a Traveler.

RV-DRV-4.1 -The Driver shall be able to send a data message to the OPS staff when needed. The message shall be sent using stored messages.

RV-DRV-4.2 -The Driver shall be able to receive a message from the OPS staff on their terminal.

RV-DRV-4.5.1 -The Driver shall be able to notify the OPS staff about a medical emergency as a highest priority message.

RV-DRV-4.5.2 -The Driver shall be able to notify the OPS staff about non-medical emergency as a high priority message.

RV-DRV-4.8.1 -The system shall track the status of the wheelchair/lift functional status.

RV-DRV-4.8.2 -The system shall detect failure in wheelchair/lift functional status and notify such failure to the Driver and the OPS staff.

RV-DRV-4.8.3 -The Driver shall be able to receive the modified manifest to arrange for a vehicle swap if a pick-up is impacted due to wheelchair/lift failure.

RV-DRV-4.11.2 -The Driver shall have access to tools to contact healthcare staff directly in the event of a severe delay that may impact the medical appointment.

4.4. EHR Subsystem

RC-HCR-1.2 -For TMS and EHR interface, the systems shall have access to data related to the Traveler (Patient) which shall at least include first name, last name and internal id.

RC-HCR-1.3 -The HCR staff shall be able to use HCR Application to request trips for customers looking for transportation at the time of booking of their medical appointments.

RC-HCR-1.4 -The HCR staff shall be able to use HCR Application to request trips for customers looking for return trips to home after the appointment.

RC-HCR-1.5 -HCR staff shall be able to use HCR Application to view conflict with any trips for the customer has already booked in the system.

RC-HCR-1.6 -HCR staff shall be able use HCR Application to modify an existing trip to change times, locations or mobility aids.

RC-HCR-2.1 -The HCR staff shall be able to use the HCR Application to book a single ride per customer request.

RC-HCR-2.2 -The HCR staff shall be able to use the HCR Application to book subscription/recurring trips per customer request.

RC-HCR-3.1 -The HCR staff shall be able to use the HCR Application to identify any customer mobility needs at the time of booking. Mobility needs supported in the application will be same as what is supported in HIRTA TMS- MOD platform.

RC-HCR-4.1 -The HCR staff shall have access to translation tools to assist with the booking.

RC-HCR-5.1 -The HCR staff shall be able to use the HCR Application to book same day trips on behalf of customers.

RC-HCR-5.2 -The HCR staff shall be able to book trips to destinations other than home at the same time when booking a medical appointment for a referral facility.

RC-HCR-6.1 -The HCR staff shall be able to use the HCR applications to connect with HIRTA staff using a voice call or text message .

RC-HCR-6.2 -The HCR staff shall be able to use HCR application to monitor the status of an upcoming or in-progress trip.

RC-HCR-7.1 -The HCR staff shall be able to book multi-legged trips.

RC-HCR-7.2 -The HCR staff shall be able to choose pick-up/drop-off times and vehicles separately for each leg of the trip, if needed.

RC-HCR-8.1 -The HCR shall be notified when a Traveler is a no-show for a scheduled trip for a medical appointment.

RC-HCR-8.2 -The HCR staff shall be able to view the reason for a no-show.

RC-HCR-8.3 -The HCR staff shall be able to note the no-show and no-show reason for transportation as the reason for no-show for the medical appointment.

RC-HCR-8.4 -The HCR shall be notified when a Traveler cancels a scheduled trip for a medical appointment.

RC-HCR-8.5 -The HCR staff shall be able to view the reason for a cancellation.

RC-HCR-8.6 -The HCR staff shall be able to note the cancellation and cancellation reason for transportation as the reason for no-show for the medical appointment.

RC-HCR-9.1 -The HCR staff shall be notified when there are delays encountered with the transportation for a medical appointment as follows:

RC-HCR-9.1.1 -The system shall notify HCR staff on late pick-up events

RC-HCR-9.1.2 -The system shall notify HCR staff on late arrival events at the healthcare facility.

RC-HCR-9.1.3 -The system shall notify HCR staff on delays while en-route resulting in modified ETA

RC-HCR-9.1.4 -The system shall notify HCR staff on delays in approaching the office after the drop-off at the facility.

RC-HCR-9.2 -The HCR staff shall have access to real-time information on the progress of a trip booked by the HCR staff as return trip.

RC-HCR-9.3 -The HCR staff shall be notified when there is a delay for pick-up at the facility for return trip to due to late arrival of a vehicle..

RC-HCR-9.4 -The HCR staff shall be notified when there is a delay for pick-up due to patient's late arrival at the pick-up spot.

RC-HCR-9.5 -The HCR staff shall be notified when a leg of a trip is successfully completed.

RC-HCR-9.6 -The HCR staff shall be notified when there are delays to any leg of the return trip.

4.5. Funding Entity Subsystem

RC-FND-1.1 -The funding entity shall be able to receive invoices electronically.

RC-FND-1.2 -The funding entity shall notify HIRTA when an invoice is successfully received.

RC-FND-1.3 -The funding entity shall be able to reimburse for submitted invoices electronically.

RC-FND-1.4 -The funding entity shall be notified when a payment is successfully completed for an invoice.

RC-FND-1.5 -The funding entity shall be notified about the transportation successfully provided under that funding source for a medical appointment.

RC-FND-1.6 -The funding entity shall be notified about the number of no-shows for a scheduled transportation under that funding source for a medical appointment.

RC-FND-1.7 -The funding entity shall be notified about the number of cancellations for a scheduled transportation under that funding source for a medical appointment.t.

Appendix A. Needs-to-Requirements Traceability Matrix

Table 1 provides traceability of requirements to user needs identified in in the ConOps. Need IDs that have been marked with an asterisk (*) indicate that those needs have been updates as part of requirements development process. Also, system needs which were not developed as part of ConOps are developed as part of requirements development. All of these needs will be updated in the ConOps document.

The table also identifies the capabilities that are met by the system currently in use at HIRTA and the capabilities to be deployed as follows:

- F: indicates capabilities that are fully met by the existing system and only minor augmentations will be made with the new system.
- P: indicates capabilities that are met in the current system for certain use cases (e.g., booking in advance) but needs for all user cases are not met (e.g., real-time availability of service, third-party brokerage).
- N: indicates capabilities that are not available in the current system.

Table 3. Needs-to-Requirements Traceability Matrix

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
TRV-1	Traveler	One-stop-shop transaction	RM-TRV-1.1	The system shall include a Traveler Application to provide trip planning capabilities.	N
			RM-TRV-1.1.1	The system shall be able to search for at least 2 options within 10 minutes of pick-up time that meet Traveler's search criteria. If no options are found, the Application shall direct Travelers to contact HIRTA Customer Service.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-1.1.2	The trip planning request shall require at least the following input: pick-up location/origin, pick-up time, drop-off location/destination, drop-off time, mobility need.	N
			RM-TRV-1.1.3	The Traveler Application shall allow Travelers or any authorized individuals by Travelers to search for transportation options for given origin and destination locations.	N
			RM-TRV-1.1.4	The Traveler Application shall allow Travelers or any authorized individuals by Travelers to search for transportation options for selected pick-up and drop-off times.	N
			RM-TRV-1.1.5	The Traveler Application shall allow Travelers or any authorized individuals by Travelers to search for transportation options for identified mobility needs.	N
			RM-TRV-1.2	The Traveler Application shall be designed to be accessible to all underserved populations.	N
			RM-TRV-1.2.1	The Traveler Application shall allow searching for transportation options based on their mobility needs (e.g., wheelchair, service animal).	N
			RM-TRV-1.2.2	The Traveler Application shall be accessible to all persons with disabilities.	N
			RM-TRV-1.2.2.1	The Traveler Application shall provide audio guidance when needed by Travelers (e.g., persons who are blind).	N
			RM-TRV-1.2.2.2	The Traveler Application shall allow Travelers to configure to use visual cues instead of audio-based notifications.	N
			RM-TRV-1.2.2.3	The Traveler Application shall provide an intuitive user interface that could be used by persons with cognitive disabilities.	N
			RM-TRV-1.2.3	The Traveler Application shall allow users to change the font size and contrast.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-1.2.4	The Traveler Application shall provide the capability to meet the needs of Travelers who may be on limited capability phones (e.g., government-provided phones through Medicaid program) and have limited data plans (e.g., 2GB per month).	N
			RM-TRV-1.2.4.1	The Traveler Application shall provide the ability to turn map view or other rich content on or off as needed.	N
			RM-TRV-1.2.4.2	The Traveler Application shall have the ability to turn off features that may require constant synchronization with cloud-based servers (e.g., to store search logs).	N
			RM-TRV-1.2.4.3	The Traveler Application shall notify Travelers when cellular network is being used to download content over 10 MB.	N
			RM-TRV-1.2.4.4	The Traveler Application shall allow users to enter low data mode.	N
			RM-TRV-1.3	The system shall allow the logging of search queries from Travelers as part of the trip planning function. The logging shall be allowed only after the Traveler provides their consent to do so.	N
			RM-TRV-1.4	The Traveler Application shall allow the Travelers to book a trip for their preferred trip.	P
			RM-TRV-1.4.1	The Traveler Application shall allow booking of transportation up to 30 days in advance.	P
			RM-TRV-1.4.2	The Traveler Application shall allow booking of a single ride or allow pooling of trips with other Travelers.	P
			RM-TRV-1.4.3	The Traveler Application shall allow booking of a trip to an alternate destination other than home even if that may not be covered by the funding source. The Traveler shall pay out of pocket in such situations.	P
			RM-TRV-1.4.4	The Traveler Application shall allow booking of a single-leg or multi-legged trip.	P
			RM-TRV-1.4.5	Entire process of planning and booking shall not take more than 2 minutes for registered Travelers.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-1.4.6	Entire process of planning and booking shall not take more than 1 minute when booking in 'guest' mode (without registration).	P
			RM-TRV-1.4.7	The Traveler App shall allow modification or cancellation of a trip up to 20 minutes in advance.	N
			RM-TRV-1.5	If applicable, The Traveler Application shall allow the Travelers to pay for a trip using a preferred method of payment after the booking for the selected trip is complete.	F
TRV-2	Traveler	Registration for trip request	RM-TRV-2.1	Health Connector shall allow new Travelers to register and create their profile.	N
			RM-TRV-2.2	The customer profile shall include at least the following information: first and last name, mailing address, contact information (e.g., home and mobile phone number, email address), eligible funding sources, travel preferences (e.g., mobility aid, notification preferences) and favorite locations.	N
			RM-TRV-2.2.1	The customer profile data shall not be stored locally on devices unless such consent is received from the Traveler.	N
			RM-TRV-2.2.2	Traveler registration process shall be configured to meet the current policies as set by HIRTA and its funding source providers.	N
			RM-TRV-2.2.3	Traveler data collected on servers as part of the registration process shall be stored in the Health Connector system as approved by Travelers and as governed by the privacy policy of HIRTA.	N
			RM-TRV-2.3	Health Connector shall allow booking of a trip even if the funding status of Travelers may not be current or known.	N
			RM-TRV-2.4	Health Connector shall allow booking even if a customer declines to register and proceeds in "guest" mode..	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-2.4.1	Guest mode shall require contact information such as first name, last name, email address and mobile phone number.	N
			RM-TRV-2.4.2	Guest mode shall only require a customer to pick-up address, and drop-off address and accessibility need for requested trip.	N
TRV-3	Traveler	Trip discovery	RM-TRV-3.1	Travelers that use Medicaid benefits shall be able to use the Health Connector Traveler Application to search for transportation options that may be applicable to them.	N
			RM-TRV-3.2	If no transportation options are available through the Health Connector Traveler Application, the Application shall direct the Traveler to the application provided by Access2Care or other primary provider.	N
TRV-4	Traveler	Connect with referring entities (RFR)	RM-TRV-4.1	Health Connector shall provide contact information or a webpage URL for accessing Information and Referral (I&R) services.	N
TRV-5	Traveler	Connect with Health Navigator	RM-TRV-5.1	Health Connector shall provide contact information or the webpage URL for connecting with a Health Navigator at the Dallas County Health Department (DCHD).	N
TRV-6	Traveler	Reduced reliance on smart devices or and information availability in accessible format	RM-TRV-6.1	The Traveler Application shall be available via a platform-independent web browser and shall provide all capabilities available through a Traveler Application on a mobile device.	P
			RM-TRV-6.1.1	Traveler Application available on web-enabled mobile devices shall use accessibility options as available through iOS and Android operating systems for native applications on those devices.	P
			RM-TRV-6.1.2	The system shall comply with Section 508 of the Rehabilitation Act §1194.22 and Web Content Accessibility Guidelines (WCAG).	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-6.2	Travelers shall be able to contact HIRTA, Healthcare Provider or a Health Navigator for booking of their trips when web-enabled or smart devices are not available.	P
TRV-7	Traveler	Addressing language barriers	RM-TRV-7.1	The Traveler Application shall allow searching for transportation options using an interface in requested language of choice by Travelers. Per HIRTA's LEP Plan, preferred top languages are: Spanish, French, German, Russian, Korean, Chinese, Vietnamese, Tagalog, and Arabic.	N
			RM-TRV-7.2	The Traveler Application shall allow booking of transportation using an interface in the language of their choice in the Traveler Application.	N
			RM-TRV-7.3	The Traveler Application shall allow Travelers to identify notification preferences in the language of their choice in the Traveler Application.	N
			RM-TRV-7.4	The Traveler Application shall have the ability to quickly translate any public service information posted online or physically posted inside vehicles or at other locations (e.g., physical stop, HIRTA facilities, healthcare facilities, strategic locations for public information dissemination) by HIRTA or healthcare providers as those pertain to Traveler trips.	N
TRV-8	Traveler	Booking medical appointments at a facility of choice	RM-TRV-8.1	The Traveler Application shall provide at least 2 transportation options within 10 minutes of requested pick-up time when searched by Travelers that live in rural areas or areas with limited HIRTA services.	P
			RM-TRV-8.2	The Traveler Application shall allow Travelers to successfully book trips using third-party services even when HIRTA services are not running.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-8.3	When no transportation options are available, the Traveler Application shall direct Travelers to contact the HIRTA customer service.	N
TRV-9	Traveler	Reduce reliance on others for booking medical appointments	RM-TRV-9.1	The Traveler Application shall provide tools (e.g., links to frequently asked questions, in-app help functions) that do not require relying on help from third parties.	P
			RM-TRV-9.2	The Traveler Application shall provide tools (e.g., first-time use guide to each button's function, travel training videos) to familiarize with application functions.	P
TRV-10	Traveler	Return-trip Booking	RM-TRV-10.1	Traveler Application shall provide real-time availability of transportation options to allow same-day booking of a new return trip from the healthcare facility to home destination.	P
			RM-TRV-10.2	Traveler Application shall allow modification of a previously booked appointment for another transportation available the same day.	P
TRV-11	Traveler	Booking for same day follow-up appointments	RM-TRV-11.1	Traveler Application shall allow searching for transportation offered for HIRTA for a trip to another medical facility when a follow-up medical appointment (e.g., X-ray, blood work) is booked after the treatment.	P
			RM-TRV-11.1.1	The Traveler Application shall offer at least 2 options within 20 minutes of requested pick-up time using HIRTA's own vehicles or through third-party providers.	P
			RM-TRV-11.1.2	If suggestion transportation option does not meet Traveler needs (e.g., mobility preferences, longer than acceptable on-board time), they shall be able to contact HIRTA customer service or healthcare staff for booking other transportation.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-11.1.3	The Traveler Application shall provide allow Travelers to select any mobility needs for requested transportation. Mobility needs may be different than the previously requested trip.	P
			RM-TRV-11.1.4	The Traveler Application shall successfully book trips based on transportation option selected by the Traveler and provide booking confirmation.	P
			RM-TRV-11.1.5	Once the trip is booked, the Traveler Application shall keep Traveler informed on the status of trip per requirements as described for requirements RM-TRV-17.x and RM-TRV-17A.x.	P
			RM-TRV-11.1.6	The Traveler Application shall alert the Traveler if a return trip was already booked and prompt them to modify the return trip.	P
			RM-TRV-11.1.7	If no return trip was previously booked, The Traveler Application shall allow Travelers to book return trip to home or primary medical facility, as needed, if return time is known.	P
TRV-12	Traveler	Rebooking medical appointment	RM-TRV-12.1	Health Connector shall provide the ability to modify a medical appointment using the application available from the healthcare provider.	N
			RM-TRV-12.2	Health Connector shall provide the ability to modify a transportation appointment linked to a medical appointment when the medical appointment is modified.	N
			RM-TRV-12.3	If medical appointment is modified based on the trip status, the Traveler shall be notified by the healthcare staff.	N
			RM-TRV-12.4	If Transportation and EHR systems are interfaced, the Traveler shall be able to modify medical and transportation appointments at the same time.	N
TRV-13	Traveler	Telehealth appointments	RM-TRV-13.1	For follow-up care, Health Connector shall provide the ability to book a telehealth appointment using the application provided by the healthcare provider.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
TRV-14	Traveler	Personal companion to accompany	RM-TRV-14.1	The Traveler Application shall allow Travelers to identify a personal companion at the time of booking a trip.	P
			RM-TRV-14.2	A personal companion shall be allowed regardless the ability to pay by the Traveler or their funding source.	P
			RM-TRV-14.3	The Traveler Application shall allow a different location for pick-up than Traveler's own pick-up location.	P
			RM-TRV-14.4	The Traveler Application shall confirm the booking of a personal companion on the same vehicle as the Traveler.	P
TRV-15	Traveler	Booking trips with family members	RM-TRV-15.1	The Traveler Application shall allow Travelers to identify number of people in their group at the time of booking.	P
			RM-TRV-15.2	The Traveler Application shall allow identification of any accommodation needed for the persons in their group (e.g., child seat).	P
			RM-TRV-15.3	The Traveler Application shall confirm the booking of all family members on the same vehicle.	P
TRV-16	Traveler	Information on pick-up location	RM-TRV-16.1	The Traveler Application shall identify the physical location for boarding as part of the trip confirmation.	N
			RM-TRV-16.2	The physical location shall be an identifiable geo-location on a map or a fixed stop outside a residence or facility.	N
TRV-17	Traveler	Vehicle arrival notification	RM-TRV-17.1	The Traveler shall be able to subscribe to receive notifications on the status of their upcoming trips per their preferences or update notifications configurations using in-app settings.	P
			RM-TRV-17.2	The System shall provide at least 1) day before reminders; 2) provide any updates on the day of trip before a vehicle is dispatched; and 3) provide any updates once a vehicle is dispatched.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-17.3	The Traveler shall be able to the types of alerts of they wish to receive.	P
			RM-TRV-17.4	The Traveler shall be able to identify primary and secondary contact information to receive alerts by email, text messages or IVR.	P
			RM-TRV-17.5	The Traveler shall be able to select their contact information or another contact of their choice (e.g., healthcare provider, Health Navigator, caregiver). The Traveler shall be able to identify up to unique 5 individuals for receiving alerts.	P
			RM-TRV-17.6	The Traveler Application shall provide advance notification to riders on pick-up time and pick-up location about an upcoming trip day before the trip.	P
			RM-TRV-17.7	The Traveler Application shall provide updates in pick up time and location on the day of travel, if any changes, before a vehicle is dispatched.	P
			RM-TRV-17.8	Once a vehicle is dispatched, the Traveler Application shall provide real-time notification on the trip status (e.g., assigned Driver, assigned vehicle, ETA) per a configurable threshold by the Traveler (e.g., number of minutes prior to arrival).	P
			RM-TRV-17.9	The Traveler Application shall provide any updates (e.g., delayed pick-up time, alternate vehicle/driver assignment), if necessary, for the pick-up location, along with pick-up time alert.	P
TRV-17A	Traveler	Traveler feedback on arrival notifications	RM-TRV-17A.1	The Traveler shall be provided an option to confirm or cancel their trip when they receive notification on an upcoming pick-up per HIRTA policy (e.g., cancellation up to x minutes before pick-up time). Traveler action will be required only on those notifications that impact the trip delivery.	P
			RM-TRV-17A.2	The Traveler shall be able to confirm the pick-up time when they receive a notification. If not acceptable, the Traveler shall be able to be allowed to book an alternate trip that meets their preferences.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-17A.3	The Traveler shall be able to confirm the pick-up location when they receive a notification. If not acceptable, the Traveler shall be able to be allowed to notify their preference for pick-up location/spot to the Driver and HIRTA customer service.	N
			RM-TRV-17A.4	The Traveler shall be able to communicate via call or text messages with HIRTA customer service or Driver to find out about additional details in the event of delays.	P
			RM-TRV-17A.5	The Traveler shall be able to communicate via call or text messages with Health Navigators or caregivers to notify them on delays or other updates with transportation.	P
			RM-TRV-17A.6	The Traveler shall be able to communicate via call or text messages with healthcare providers to notify them on delays or other updates with transportation that may impact the medical appointment.	P
TRV-18	Traveler	Real-time location	RM-TRV-18.1	Travelers shall be able to view the current location of their vehicle as well as their own location in real-time.	P
			RM-TRV-18.2	The location of the vehicle shall refresh at a configurable time interval by HIRTA. The system shall allow location refresh at least every 30 seconds, if needed.	P
TRV-19	Traveler	Boarding the right vehicle	RM-TRV-19.1	The Traveler shall be able to use the Wayfinding Application to identify a fixed pick-up spot if such infrastructure is available (e.g., a fixed bus stop at a healthcare facility).	N
			RM-TRV-19.2	The Traveler shall be able to use the Wayfinding Application to identify the vehicle upon its arrival for pick-up.	N
			RM-TRV-19.3	Blind Travelers shall be able to use the Wayfinding Application to identify the entrance door as needed.	N
			RM-TRV-19.4	The Wayfinding Application shall be able to identify the correct vehicle 95% of the time.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-19.4.1	The Traveler Application shall provide additional features to identify correct vehicle/Traveler combination before a trip can proceed to ensure Traveler safety.	N
			RM-TRV-19.4.2	The Traveler App shall provide the details (e.g., driver photo, vehicle image, vehicle license plate, van number) on the vehicle approaching to pick-up the Traveler.	N
TRV-20	Traveler	In-vehicle information	RM-TRV-20.1	Travelers shall be able to use the Traveler Application to stay informed about any delays and estimated time of arrival (ETA).	P
			RM-TRV-20.2	The Wayfinding Application shall provide notifications so any personalized real-time updates relevant to a trip (e.g., expected inclement weather later in the day affecting trip performance, expected long wait at the facility, expected detour due to a water main break, modified entry and check-in procedures due to a repair work scheduled for that day) can be communicated using on-board information infrastructure and Wayfinding Application	N
			RM-TRV-20.3	The Wayfinding Application shall translate the information in the language of choice as requested by a Traveler. Per HIRTA's LEP Plan, preferred top languages are: Spanish, French, German, Russian, Korean, Chinese, Vietnamese, Tagalog, and Arabic.	N
			RM-TRV-20.4	HIRTA vehicles shall be equipped with infotainment screens to provide information relevant to a trip in progress as well as general overview of the destination facility.	N
			RM-TRV-20.5	The ETA shall be updated at least every 30 seconds.	P
			RM-TRV-20.5.1	The ETA accuracy shall conform to specific margins of error dependent upon the vehicle's displayed ETA.	P
			RM-TRV-20.5.2	When a vehicle is 0-5 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 1 minute (+/-1 min), 95% of the time.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-20.5.3	When a vehicle is 6-10 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 2 minutes (+/-2 min), 95% of the time.	P
			RM-TRV-20.5.4	When a vehicle is 11-20 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 3 minutes (+/-3 min), 95% of the time.	P
			RM-TRV-20.5.5	When a vehicle is 20-30 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 4 minutes (+/-4min), 95% of the time.	P
			RM-TRV-20.5.6	When a vehicle is more than 30 mins away from the pickup location, the margin of error in the ETA of vehicle, calculated by the system, shall be within 5 minutes (+/-5min), 95% of the time.	P
TRV-21	Traveler	Wayfinding at the facility-outdoor	RM-TRV-21.1	Upon getting dropped off at the healthcare facility, the Traveler shall be able to use the Wayfinding Application to navigate to the door entrance, as needed (e.g., persons who are blind).	N
			RM-TRV-21.2	The Wayfinding Application shall be able to detect the visual marker or sensor within 1 second of being in the range.	N
			RM-TRV-21.2.1	For visual markers, the Wayfinding Application shall be able detect within a wide reading angle of 160 degrees in all lighting conditions.	N
			RM-TRV-21.2.2	The Wayfinding Application shall be able to recognize the visual marker or sensor 95% of the time.	N
			RM-TRV-21.3	The Wayfinding Application shall provide indoor and outdoor information and directions in accessible format.	N
			RM-TRV-21.3.1	Travelers shall have audio guidance available for visual wayfinding instructions.	N
			RM-TRV-21.3.2	Travelers shall be able to visually see the instructions.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-21.3.3	Travelers shall be able to select suitable direction per their mobility preferences (e.g., no use of escalator or staircases).	N
			RM-TRV-21.3.4	Travelers shall be able to easily interpret the information by seeing visual markers and simple instructions (e.g., turn arrows).	N
			RM-TRV-21.3.5	The wayfinding feature shall not use more than 1 MB per minute.	N
			RM-TRV-21.3.6	Travelers shall be able to see and comprehend instructions through use of large font and color contrast.	N
			RM-TRV-21.3.7	Travelers shall be able to see or hear instructions in the language of their choice.	N
TRV-21A	Traveler	Wayfinding at the facility-indoor/floor levels	RM-TRV-21A.1	The Wayfinding Application shall use the indoor navigation infrastructure to navigate to the check-in desk after entering the facility.	N
			RM-TRV-21A.2	The Wayfinding Application shall provide step-by-step directions per traveler preferences to locate other offices inside the building.	N
			TM-TRV-21A.3	The Wayfinding Application shall provide updated step-by-step guidance as soon as it detects that the Traveler has reoriented.	N
			TM-TRV-21A.4	The Wayfinding Application shall let the Traveler confirm the need for updated directions before overriding the previously suggested step-by-step guidance.	N
TRV-21B	Traveler	Wayfinding at the facility-indoor-offices	RM-TRV-21B.1	The Wayfinding Application shall be able to identify the correct office desired by the Traveler when at the correct floor.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-21B.2	The Wayfinding Application shall use the indoor navigation infrastructure to provide the turn-by-turn navigation in accessible format to reach the correct office location when at the correct floor.	N
			RM-TRV-21B.3	The Wayfinding Application shall use the indoor navigation infrastructure to provide the turn-by-turn navigation in accessible format to reach an office located inside another building on the same medical campus.	N
TRV-21C	Traveler	Wayfinding at the facility-inside offices	RM-TRV-21C.1	The Wayfinding Application shall be able to provide the capability to obtain relevant information in accessible format inside healthcare facilities.	N
			RM-TRV-21C.2	The Wayfinding Application shall help locate customer service desk for patient services as made available by the healthcare facilities.	N
			RM-TRV-21C.3	If Wayfinding Kiosks are installed by healthcare facilities for patient services, the Wayfinding Application shall be able to locate that kiosk.	N
			RM-TRV-21C.4	The Wayfinding Kiosk shall be a commercial off-the-shelf large touch-screen device capable of running Android, iOS-based app or a browser-based application.	N
			RM-TRV-21C.5	The Wayfinding Kiosk shall be able to connect to cellular data network using a secure connection. The network connections shall be designed to ensure secure and encrypted data exchange with cloud-based servers using standards such as Secure Sockets Layer (SSL) or Transport Layer Security (TLS) and shall avoid any exposure to PII for Travelers. Alternatively, the Kiosk shall connect to a secure network connection made available by the healthcare provider.	N
			RM-TRV-21C.8	The Wayfinding Kiosk hardware shall have a mean time between failure (MTBF) rate of 60,000 hours.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-21C.7	The Wayfinding Kiosk hardware shall be designed to withstand the indoor environment within a typical hospital or medical facility. At the least, the hardware shall be designed to withstand exposure to disinfectant or chemicals used in a typical healthcare facility.	N
			RM-TRV-21C.6	The Wayfinding Kiosk shall be installed as a standalone structure according to the current requirements as defined in the ADA Accessibility Guidelines (ADAAG).	N
TRV-22	Traveler	Notification to healthcare staff upon arrival	RM-TRV-22.1	The Traveler Application shall provide the ability for Travelers to notify healthcare staff on the status of their trips to the medical facility. The notification shall be automated. However, Travelers shall have the capability to notify directly using text messaging or voice call capability available within the Traveler Application.	N
			RM-TRV-22.2	The Traveler shall be able to notify the healthcare provider a few minutes prior to arrival and request any necessary accommodation manually via a phone call or text message (e.g., to be escorted by a healthcare facility staff).	N
			RM-TRV-22.2.1	The Traveler Application shall require that contact information be entered at the time of booking to send notifications automatically.	N
			RM-TRV-22.2.2	The Traveler Application shall provide confirmation of accommodation requested by Travelers and any additional instructions as necessary.	N
			RM-TRV-22.2.3	In the event Traveler requests an attendant, the Traveler Application shall provide the name of the person assigned to meet the Traveler at the drop-off location.	N
TRV-23	Traveler	Return trip upon discharge	RM-TRV-23.1	The Traveler Application shall allow booking of a new return trip for the same day when requested by Travelers.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-23.2	The Traveler Application shall allow Travelers to choose the transportation option of their choice if more than one (1) options are presented.	P
TRV-24	Traveler	Trip modification due to referral	RM-TRV-24.1	The Traveler Application shall allow modification of an already booked return trip to choose a different destination.	P
TRV-25	Traveler	Trip modification due to an additional destination	RM-TRV-25.1	The Traveler Application shall allow Travelers to insert at least one new destination if required.	P
			RM-TRV-25.2	The Traveler Application shall allow Travelers to choose pick-up/drop-off times and vehicles separately for each leg of the trip, if needed.	P
			RM-TRV-25.3	The Traveler Application shall present the Traveler the option to book all legs of the trip with the same vehicle, if possible.	P
TRV-26	Traveler	Real-time information on return trip vehicle	RM-TRV-26.1	The Traveler Application shall provide real-time notification on the trip status per a configurable threshold for the return trip (e.g., number of minutes prior to arrival).	P
			RM-TRV-26.2	The Traveler Application shall provide real-time status updates, as described in requirements RM-TRV-17.x and RM-TRV-17A.x for inbound trips, regardless the service provider.	P
TRV-27	Traveler	Notification on pick-up location for return trip	RM-TRV-27.1	The Traveler Application shall identify the physical location for boarding as part of the return trip confirmation.	P
			RM-TRV-27.2	The Traveler Application shall identify a fixed stop for Traveler pickup if such infrastructure is available at the healthcare facility. If there is no fixed stop, it will be treated as a regular pick-up.	P
TRV-28	Traveler	Wayfinding from provider's office to the pick-up location	RM-TRV-28.1	The Traveler shall be able to use the Wayfinding Application to identify a fixed pick-up spot if such infrastructure is available (e.g., a fixed bus stop at a healthcare facility).	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RM-TRV-28.2	When using turn-by-turn navigation, the Traveler shall have the ability to review pathways direction prior to proceeding.	N
			RM-TRV-28.3	Traveler shall be able to turn on or off the step-by-step direction at any point during the walk. When restarted at a point on the pathway, the system shall immediately calculate turn-by-turn direction from that point.	N
TRV-29	Traveler	Boarding the correct vehicle for return trip	RM-TRV-29.1	The Traveler shall be able to use the Wayfinding Application to identify the vehicle upon its arrival for pick-up.	N
			RM-TRV-29.2	Blind Travelers shall be able to use the Wayfinding Application to identify the entrance door as needed.	N
TRV-30	Traveler	Trip payment	RM-TRV-30.1	The Traveler Application shall notify the Traveler of the due amount at the start of the trip.	F
			RM-TRV-30.2	The Traveler Application shall allow payment for their trip once the trip is complete.	F
			RM-TRV-30.3	The Traveler Application shall allow selecting the method of payment.	F
			RM-TRV-30.4	On HIRTA vehicles, the Traveler shall be able to pay using the following methods: 1) cash; 2) check; 3) tickets; 4) prepaid account debit; 5) discount coupon applied to prepaid account to cover the due amount.	F
			RM-TRV-30.5	On non-HIRTA vehicles, Traveler will pay using prepaid account debit.	F
TRV-31*	Traveler	Payment methods	RM-TRV-31.1	The Traveler Application shall allow identification of funding source at the time of booking.	F
			RM-TRV-31.2	The Traveler Application shall verify if the Traveler is eligible for requested funding source. If Traveler is not eligible, the Traveler shall be advised to select an alternate funding source, pay out of pocket or contact HIRTA customer service.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
TRV-32*	Traveler	Discount Coupons	RM-TRV-32.1	The Traveler Application shall allow applying a discount coupon to the Traveler account which they may have obtained from healthcare provider, HIRTA or another participating entity approved by HIRTA.	N
			RM-TRV-32.2	The Traveler Application shall verify the validity of the discount code.	N
			RM-TRV-32.3	If discount coupon is not immediately used, the Traveler shall have the capability to store the value in their account for later use.	N
TRV-33	Traveler	Maintaining debit account	RM-TRV-33.1	The Traveler Application shall provide access to a prepaid/cash account.	F
TRV-34	Traveler	Debit account replenishment	RM-TRV-34.1	The Traveler Application shall be able to replenish the prepaid account by cash, bank card and a discount coupon.	F
			RM-TRV-34.2	The Traveler Application shall allow checking balance of the prepaid account at any time.	F
			RM-TRV-34.3	The prepaid account shall be configurable to auto-load using a preferred payment method from a Traveler based on a predefined trigger set by the Traveler (e.g., balance below $10).	N
			RM-TRV-34.4	The prepaid account shall support pass product where a Traveler shall not be charged after a certain number of trips amounting to a certain amount within a defined timeframe (e.g., month) have been completed. This shall be configurable based on policy defined by HIRTA.	N
CSR-1	Customer Service	Traveler registration	RC-CSR-1.1	The CSR shall have access to Transportation Management System (TMS) to register new customers.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
CSR-2	Customer Service	Entry of Traveler details	RC-CSR-2.1	The TMS shall allow CSR to create a customer profile as part of the registration process and store that data in the TMS database. The following information shall be needed for registration: first name, last name, contact information (email address, home phone number, mobile phone number), home address, favorite POI locations, mobility need, eligibility for a funding source.	F
CSR-3	Customer Service	Eligibility Traveler Assessment	RC-CSR-3.1	The TMS shall allow CSR to identify funding source eligibility in the customer profile.	F
			RC-CSR-3.2	As necessary, the TMS shall allow CSR to obtain and keep an evidence of Traveler's funding eligibility in the TMS.	F
CSR-4	Customer Service	Eligibility type and details	RC-CSR-4.1	The TMS shall allow CSR to identify the type of eligibility in the TMS. Eligibility types shall include the following categories: 1) temporary; 2) conditional; 3) unconditional.	F
			RC-CSR-4.2	For temporary eligibility, the CSR shall be able to identify the reason and expiry date.	F
			RC-CSR-4.3	For conditional eligibility, the CSR shall be able to identify any applicable conditions (e.g., severe winter weather).	F
CSR-5	Customer Service	Assisting Travelers having difficulty with self-service tools	RC-CSR-5.1	The TMS shall allow CSR TMS to assist Travelers at every stage of their Complete Trip.	F
			RC-CSR-5.1.1	The TMS shall allow CSR to help riders with registration and creation of customer profile.	F
			RC-CSR-5.1.2	The TMS shall allow CSR to help riders with trip planning.	N
			RC-CSR-5.1.3	The TMS shall allow CSR to help riders with trip booking and modification of an already booked trip as described in RM-CSR-6.X and RM-CSR-7.X.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-CSR-5.1.4	The TMS shall allow CSR to provide information to Travelers on the status of their trips. The CSR shall be able to inform on current location of vehicle, ETA, assigned vehicle, assigned driver, and whether or not mobility need is met by the assigned vehicle for upcoming trip.	F
			RC-CSR-5.1.5	The TMS shall allow CSR to assist Travelers that require assistance when they are on-board or after they are dropped off (e.g., recording safety event, providing contact for healthcare staff to assist with directions to the doctor's office).	F
CSR-6	Customer Service	Assist with future or same day trip	RC-CSR-6.1	The TMS shall allow CSR to assist with trips to be scheduled in advance according to HIRTA policies.	F
			RC-CSR-6.2	The TMS shall allow CSR to assist with trips to be scheduled the same day of the trip according to HIRTA policies.	P
			RC-CSR-6.3	The TMS shall allow CSR to assist with a single leg or multi-legged trip. For multi-legged trips, the CSR shall be able to choose pick-up/drop-off times and vehicles separately for each leg of the trip, if needed.	F
CSR-7	Customer Service	Assist with third-party contractor trips	RC-CSR-7.1	The TMS shall allow CSR to notify Travelers on current location and ETA for an upcoming third-party vehicle.	P
			RC-CSR-7.2	The TMS shall allow CSR to view any changes in third-party provided vehicle or driver assigned to a trip and communicate that to the Traveler.	N
			RC-CSR-7.3	If TMS does not have accurate information available, the CSR shall be able to use TMS to contact the third-party service provider on an updated status of driver and vehicle information, current location of vehicle and ETA for an upcoming trip.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-CSR-7.4	The TMS shall allow CSR to notify Travelers on delayed status when ETA is not available. If Traveler intends to reschedule or cancel trip in the case of a severe delay, the TMS shall allow CSR to make trip modification based on Traveler's approval.	N
CSR-8	Customer Service	Assist with broker-coordinated trips	RC-CSR-8.1	The CSR shall be able to determine status of all trips being completed by HIRTA or its partner vehicles, even if trips are booked by non-HIRTA systems such as Access2Care before getting assigned to HIRTA.	P
CSR-9	Customer Service	Contact Travelers	RC-CSR-9.1	The CSR shall have access to contact information for Travelers or their caregivers.	F
			RC-CSR-9.2	The CSR shall be aware of any necessary accommodation needed to address Traveler communication preferences (e.g., language, persons with disabilities).	P
			RC-CSR-9.3	The CSR shall be able to contact Travelers as needed to provide them relevant status information about their trip.	F
CSR-10	Customer Service	Contact healthcare partner	RC-CSR-10.1	The CSR shall have the ability to contact a healthcare customer care representative using voice call or text message to determine the status of a medical appointment and its impact on booked transportation.	P
CSR-11	Customer Service	Assist with translation needs	RC-CSR-11.1	The CSR shall have access to a language translation assistance service to assist a Traveler who is looking for a translation service when on a phone.	F
			RC-CSR-11.2	The CSR shall have access to tools to communicate using text message with a Traveler in a language of their choice. Per HIRTA's LEP Plan, preferred top languages are: Spanish, French, German, Russian, Korean, Chinese, Vietnamese, Tagalog, and Arabic.	N
CSR-12	Customer Service	Override eligibility restrictions	RC-CSR-12.1	The CSR shall have the ability to manually override a restriction on booking of a trip caused by the expiration of eligibility for an applicable funding source.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-CSR-12.2	The system shall note the manual override action as an exception and shall make this event available for reporting when requested by HIRTA.	F
CSR-13	Customer Service	Review past trips	RC-CSR-13.1	The CSR shall have the ability to review the recent history of trips taken by a Traveler.	F
			RC-CSR-13.2	The CSR shall be able to filter the list of trips by a funding source.	F
			RC-CSR-13.3	The CSR shall be able to review if a Traveler has already completed an allowed number of trips under a funding source.	F
CSR-14	Customer Service	Review past no-shows	RC-CSR-14.1	The CSR shall have the ability to view the number of no-shows for recently booked trips by a Traveler.	F
			RC-CSR-14.2	The CSR shall be able to filter the list of trips by a funding source.	F
			RC-CSR-14.3	The CSR shall be able to review the reason for no-show for a past trip.	F
			RC-CSR-14.4	If HIRTA policy allows restricting booking of trips by number of no-show events, the system shall assist CSR to comply with the no-show policy.	F
			RC-CSR-14.5	If there is a restriction policy by a funding source based on the number of no-show events, the system shall assist CSR to comply with the no-show policy.	F
CSR-14A	Customer Service	Review cancellation	RC-CSR-14A.1	The CSR shall have the ability to review the number of cancellations for recently booked trips by a Traveler.	F
			RC-CSR-14A.2	The CSR shall be able to filter the list of trips by a funding source.	F
			RC-CSR-14A.3	The CSR shall be able to filter the list of trips by the cancellation types: 1) advance cancellation; 2) same day cancellation.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-CSR-14A.4	The CSR shall be able to review the cancellation reason for a past trip.	F
			RC-CSR-14A.5	The number of cancellations caused due to system reliability resulting in a missed trip shall be less than 5% for all trips requested within a month by a Traveler.	F
CSR-15	Customer Service	Refer to other providers/referral services	RC-CSR-15.1	The CSR shall have access to an information and referral (I&R) database of transportation providers that can service the entire HIRTA service area. The I&R database shall provide at least the following information on a provider: 1) services provided; 2) jurisdictional restrictions; 3) service type restrictions; 4) service hours; 5) availability of accessible vehicles; 6) contact information.	P
			RC-CSR-15.2	The CSR shall be able to filter transportation providers by their jurisdiction and service criteria.	P
CSR-16	Customer Service	Eligibility verification	RC-CSR-16.1	The CSR shall have the ability to verify funding eligibility in real-time by accessing the eligibility database as approved by the funding source.	N
			RC-CSR-16.2	If real-time eligibility verification is not available, the CSR shall have the ability to override any restrictions presented by the system so trips are not denied. Any manual override event shall be logged by the system and shall be made available for reporting upon request from HIRTA.	F
			RC-CSR-16.3	The CSR shall have access to reason behind ineligibility so they can advise Travelers for a corrective action by contacting directly with the funding provider.	F
CSR-17*	Customer Service	Complaints log	RC-CSR-17.1	The system shall have the ability to record any complaints received from Travelers related to any aspect of a trip.	F
			RC-CSR-17.2	The CSR staff shall be able to review complaints by a predefined list of categories, as configured by HIRTA.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-CSR-17.3	The CSR staff shall be able to track the status of received complaints while those are being resolved.	F
OPS-1A*	Operations	Driver and vehicle assignment	RC-OPS-1A.1	The system shall automatically assign trips to drivers and vehicles pool based on preconfigured business rules (e.g., type of trips, service zones).	F
			RC-OPS-1A.2	Trips for Access2Care shall not be booked on non-HIRTA vehicles without getting approved by Access2Care.	F
			RC-OPS-1A.3	The OPS staff shall have the ability to assign a trip to a HIRTA vehicle and driver pool.	F
			RC-OPS-1A.4	The OPS staff shall be able to verify the availability of a vehicle for a service prior to assigning a trip.	N
			RC-OPS-1A.5	The OPS staff shall be able to import any trips by the Access2Care system for trips funded by Medicaid.	N
OPS-1B*	Operations	Addressing service capacity issues.	RC-OPS-1B.1	The system shall track the location and available capacity along with any constraints (e.g., wheelchair space) on HIRTA contractor vehicles in real-time.	P
			RC-OPS-1B.2	Third party contractor vehicle pool shall include: a) taxis; b) volunteer vehicles; c) transportation network companies (TNCs).	N
			RC-OPS-1B.3	The system shall be able to automatically assign trips to contractor vehicles.	N
			RC-OPS-1B.4	Trips shall be assigned according to pre-configured business rules (e.g., type of trips, service zones).	N
			RC-OPS-1B.5	Trips shall be assigned according to Traveler's mobility needs (e.g., wheelchair, personal companion).	N
			RC-OPS-1B.6	Trips shall be assigned according to travel constraints (e.g., maximum on-board time, required boarding time).	N
			RC-OPS-1B.7	The system shall be able to successfully assign trips to the third-party contractor vehicles 95% of the time.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
OPS-2	Operations	Availability of wheelchair accessible vehicles (WAV)	RC-OPS-2.1	The system shall track availability of wheelchair accessible vehicles for HIRTA and non-HIRTA vehicles.	P
			RC-OPS-2.2	The OPS staff shall have access to the real-time status of functional status of wheelchair/lift at all times.	N
OPS-3	Operations	Trip performance status	RC-OPS-3.1	The OPS staff shall be able to view in real-time the performance status of all trips being performed by a HIRTA vehicle.	F
			RC-OPS-3.1.1	The trip performance information shall include current status of all trips on the driver manifest.	F
			RC-OPS-3.1.2	The trip performance information shall provide details of each trip on the manifest (e.g., trip ID, customer name, pick-up and drop-off locations, pick-up and drop-off times).	F
			RC-OPS-3.1.3	The trip performance information shall provide include details on the vehicle delivering the trip (e.g., vehicle ID).	F
			RC-OPS-3.1.4	The trip performance information shall include details on the driver delivering the trip (e.g., driver ID).	F
			RC-OPS-3.1.5	The trip performance information shall include current vehicle location (e.g., latitude, longitude and heading).	F
			RC-OPS-3.1.6	The trip performance information shall provide current trip status (e.g., scheduled/not picked-up, in-progress, on-time, delayed, cancelled, no-show).	F
			RC-OPS-3.2	The OPS staff shall be able to view in real-time the status of all trips being performed by a non-HIRTA vehicle (e.g., contractor vehicle, taxi or TNC).	N
			RC-OPS-3.2.1	The status information shall provide trip details (e.g., trip ID, customer name, pick-up and drop-off locations, pick-up and drop-off times).	N
			RC-OPS-3.2.2	The status information shall provide vehicle delivering the trip (e.g., vehicle ID).	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-OPS-3.2.3	The status information shall provide driver delivering the trip (e.g., driver ID).	N
			RC-OPS-3.2.4	The status information shall provide current location (e.g., latitude, longitude and heading).	N
			RC-OPS-3.2.5	The status information shall provide current trip status (e.g., scheduled/not picked-up, in-progress, on-time, delayed, cancelled, no-show).	N
OPS-4	Operations	No-show confirmation	RC-OPS-4.1	The OPS staff shall be able to compare current vehicle location with current Traveler location to verify the validity of a reported no-show event.	F
			RC-OPS-4.2	If Traveler location is not known, the OPS staff shall be able to contact Traveler to verify the validity of a reported no-show event.	F
OPS-5	Operations	Medical appointment status	RC-OPS-5.1	The OPS staff shall have the ability to contact a healthcare customer care representative using voice call or text message to determine the progress status of a medical appointment and its impact on booked transportation.	N
			RC-OPS-5.2	The TMS shall provide the OPS staff the ability to determine any impact on scheduled return transportation caused by anticipated delays to a medical appointment.	N
			RC-OPS-5.3	The OPS shall be able to make adjustments to a scheduled return transportation in the event of a significant delay per configurable threshold (e.g., expected delay of 30 minutes or more).	N
OPS-6A*	Operations	Dynamic vehicle reassignment	RC-OPS-6A.1	The OPS staff shall be able to reassign a trip to a new vehicle in the event of a vehicle breakdown or another issue that requires a vehicle swap.	P
			RC-OPS-6A.3	The system shall recommend vehicles for reassignment per Traveler profile and trip preferences. In the event there are more than one Traveler on the manifest, all Travelers' preferences shall be taken into account.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-OPS-6A.4	The system shall consider all applicable vehicle/driver pools for reassignments.	P
			RC-OPS-6A.4.1	When a Medicaid-funded trip is reassigned to a new vehicle, the system shall notify Access2care and get approval about this change prior to proceeding with the reassignment.	P
			RC-OPS-6A.5	The OPS staff shall be able to override the system recommendation.	P
			RC-OPS-6A.6	The reassigned vehicle shall pick-up the Traveler within 10 minutes.	P
			RC-OPS-6A.7	The vehicle reassignment shall not delay the original drop-off time by more than 10 minutes.	P
			RC-OPS-6A.8	If a Traveler is being accompanied by a personal caregiver/companion, both of them shall be accommodated in the same vehicle in the event of a reassignment.	P
			RC-OPS-6A.9	If a Traveler is being accompanied by one or more family members, all members shall be accommodated in the same vehicle in the event of a reassignment. Appropriate accommodation, as needed, (e.g., child seat) shall be taken into account.	P
			RC-OPS-6A.10	In the event of reassignment, Health Navigator, healthcare provider and Traveler, all shall be notified about the details of the new vehicle and driver.	P
OPS-6B	Operations	Driver manifest management	RC-OPS-6B.1	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 pick-up and drop-off location, listing the trip events in a chronological order.	F
			RC-OPS-6B.2	The system shall be able to generate and display all manifests for a given day.	F
			RC-OPS-6B.3	The system shall send manifest trip pick-up and drop-off data to the vehicle assigned to that manifest.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-OPS-6B.4	The OPS staff shall be able to configure which portions of the upcoming manifest entries shall be sent to the vehicle (e.g., the next X trips, all trips in the next Y minutes).	F
			RC-OPS-6B.5	Additional portions of the manifest shall be automatically sent to the vehicle on an ongoing basis as trip events are completed, in accordance with the HIRTA-configured manifest transmission parameters.	F
			RC-OPS-6B.6	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 vehicle assigned to that manifest.	F
			RC-OPS-6B.7	The system shall provide tools to allow manual adjustments to the run manifests, including manually moving trips between manifests.	F
OPS-7	Operations	Connecting with healthcare customer care	RC-OPS-7.1	The OPS staff shall have the ability to contact a healthcare customer care representative using voice call or text message to the healthcare customer care staff to notify about any anticipated delays based on estimated time of arrival (ETA).	P
OPS-8	Operations	Communicating with Drivers	RC-OPS-8.1	The system shall allow the OPS staff to view received text messages in a tabular display that also indicates the vehicle ID and the time of the message.	F
			RC-OPS-8.2	The system shall allow the OPS staff to send a text message to a single vehicle, a predefined group of vehicles, all vehicles within an area selected on the map display or all vehicles.	F
			RC-OPS-8.3	The system shall allow the OPS staff to select one of a set of predefined text messages or enter a free text message.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-OPS-8.4	The system shall allow any message sent by the OPS staff to be flagged as requiring Driver acknowledgement, and shall allow the OPS staff to view a list of such messages that have not yet been acknowledged.	F
			RC-OPS-8.5	The OPS staff shall be able to use two-way radio when a voice communication is required between the OPS staff and the Driver.	F
OPS-9	Operations	Arranging emergency medical transportation (EMT)	RC-OPS-9.1	The OPS staff shall be able to contact an emergency medical transportation (EMT) service per the protocols set by HIRTA.	F
OPS-10	Operations	Addressing non-medical emergency	RC-OPS-10.1	A non-medical emergency message may be sent from the Driver or the Traveler facing an unsafe situation which shall be received by the TMS.	F
			RC-OPS-10.2	The system shall notify the OPS staff that a non-medical emergency alarm message has been received, using HIRTA- approved user interface visual method.	F
			RC-OPS-10.2.1	There shall be a HIRTA-approved audio notification method.	P
			RC-OPS-10.2.2	HIRTA shall be able to configure the audio notification method as on or off.	P
			RC-OPS-10.3	The system shall not allow the OPS staff to send a text message transmission to a vehicle while it is emergency mode.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-OPS-10.4	In non-medical emergency mode, the vehicle shall be capable of sending updated location information every 15 seconds or at a more frequent time interval, configurable by OPS staff.	P
OPS-11	Operations	Driver navigation assistance	RC-OPS-11.1	The OPS shall have access to tools to assist Drivers with turn-by-turn navigation for a trip if the in-vehicle functionality to provide turn-by-turn navigation is not functional.	F
			RC-OPS-11.2	The OPS staff shall have access to tools to assist Drivers with wayfinding to the Traveler pick-up and drop-off location.	F
OPS-12	Operations	Assistance with translation service	RC-OPS-12.1	The OPS shall have access to language translation service to assist Drivers with translation needs.	F
DRV-0*	Driver	Terminal	RV-DRV-0.1	The Driver shall have access to a touch-screen mobile data terminal for completing operations-related functions on-board.	F
			RV-DRV-0.1.1	The Driver Terminal shall run an in-vehicle application, preferably on Android or iOS platforms.	F
			RV-DRV-0.2	The Driver terminal shall have built-in GPS receiver and magnetometer (and/or gyroscope and accelerometer).	F
			RV-DRV-0.2.1	The built-in GPS receiver and magnetometer (and/or gyroscope and accelerometer) shall allow vehicle tracking and report at a predefined interval on vehicle latitude, longitude, and heading.	F
			RV-DRV-0.3	The location report shall be provided at least every 30 seconds or as configured by HIRTA.	F
			RV-DRV-0.4	The location shall be accurate to up to 3 meters.	F
			RV-DRV-0.5	The Driver shall have access to data on the terminal only after a secure log on is complete.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RV-DRV-0.6	The Driver shall have access to its manifest with all trip details upon a successful log on, as authorized by the OPS staff.	F
			RV-DRV-0.7	The Driver terminal shall stay connected to the TMS in real-time using a cellular data connection method.	F
			RV-DRV-0.8	The Driver terminal shall have the ability to function in offline mode. The terminal shall synchronize information with the TMS once the connection is restored.	F
DRV-1	Driver	Identifying customers	RV-DRV-1.1	The Driver shall be able to verify the identity of the Traveler boarding the vehicle.	N
			RV-DRV-1.3	The Driver terminal shall indicate whether or not the Traveler boarding the vehicle is assigned to the vehicle.	N
DRV-2	Driver	Customer payment	RV-DRV-2.1	The Driver terminal shall indicate the amount due from the Traveler in the manifest details.	F
			RV-DRV-2.2	The Driver terminal shall allow Driver to update the amount paid by the Traveler based on the actual amount paid.	F
			RV-DRV-2.3	The Driver terminal shall allow Driver to apply a discount coupon or another prepaid cash balance to the trip.	N
			RV-DRV-2.4	In the event, the Traveler does not have money to pay, the Driver shall be able to notify as such to the OPS staff.	F
DRV-3	Driver	No-show event	RV-DRV-3.1	The Drivers shall be able to view the Traveler location on their terminal when they leave for a pick-up and any point during the trip.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RV-DRV-3.2	The Driver shall be able to notify the OPS staff about a no-show if the Driver cannot locate a Traveler.	F
			RV-DRV-3.3	The Driver shall wait for 5 minutes prior to notifying the OPS staff about a no-show. This threshold shall be configurable by HIRTA.	F
DRV-4	Driver	Communication with OPS	RV-DRV-4.1	The Driver shall be able to send a data message to the OPS staff when needed. The message shall be sent using stored messages.	F
			RV-DRV-4.2	The Driver shall be able to receive a message from the OPS staff on their terminal.	F
			RV-DRV-4.3	The Driver shall have the ability to immediately acknowledge a message from the OPS staff, if required.	F
			RV-DRV-4.4	The Driver shall have access to two-way radio to communicate with the OPS staff using voice communication.	F
			RV-DRV-4.4.1	The two-way radio shall operate independent of the Driver terminal.	F
DRV-5	Driver	Reporting emergencies to OPS	RV-DRV-4.5.1	The Driver shall be able to notify the OPS staff about a medical emergency as a highest priority message.	P
			RV-DRV-4.5.2	The Driver shall be able to notify the OPS staff about non-medical emergency as a high priority message.	P
DRV-6	Driver	Navigation assistance	RV-DRV-4.6.1	The vehicle system shall automatically provide turn-by-turn navigation if needed by a Driver.	F
			RV-DRV-4.6.2	The Driver shall have the ability to switch the navigation on or off as needed.	F
			RV-DRV-4.6.3	The Driver shall have the ability to turn the audio guidance on or off.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RV-DRV-4.6.4	The turn-by-turn navigation function shall recalculate the navigation if needed.	F
			RV-DRV-4.6.5	The turn-by-turn navigation function shall adjust the guidance based on real-time traffic conditions.	F
DRV-6A	Driver	Wayfinding Assistance	RV-DRV-4.6A.1	The Driver shall be able to use wayfinding capability when turn-by-turn navigation capability is not available to the pick-up or drop-off spot due to lack of GPS.	N
DRV-7	Driver	Translation services	RV-DRV-4.7.1	The Driver shall have access to translation service when serving persons with LEP.	N
DRV-8	Driver	Wheelchair status	RV-DRV-4.8.1	The system shall track the status of the wheelchair/lift functional status.	N
			RV-DRV-4.8.2	The system shall detect failure in wheelchair/lift functional status and notify such failure to the Driver and the OPS staff.	N
			RV-DRV-4.8.3	The Driver shall be able to receive the modified manifest to arrange for a vehicle swap if a pick-up is impacted due to wheelchair/lift failure.	F
DRV-9	Driver	Trip Status	RV-DRV-4.9.1	The Driver manifest shall provide detailed information for each trip, as needed, for delivering a Traveler trip.	F
			RV-DRV-4.9.1.1	Each trip on the Driver manifest shall include traveler first name and last name.	F
			RV-DRV-4.9.1.2	Each trip on the Driver manifest shall include pick-up and drop-off locations.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RV-DRV-4.9.1.3	Each trip on the Driver manifest shall include mobility aid needed.	F
			RV-DRV-4.9.1.4	Each trip on the Driver manifest shall include pick-up and drop-off times.	F
			RV-DRV-4.9.1.5	Each trip on the Driver manifest shall include fare due for a trip.	F
			RV-DRV-4.9.1.6	Each trip on the Driver manifest shall include relevant notes for the driver.	F
			RV-DRV-4.9.1.7	Each trip on the Driver manifest shall include ETA for pick-up or drop-off locations.	F
			RV-DRV-4.9.2	The ETA shall be updated at least every 30 seconds or immediately when a major delay is detected and an impact to the ETA is determined.	F
			RV-DRV-4.9.3	The Driver shall be able to view the status of a trip on their manifest at any point when the trip is in progress.	F
			RV-DRV-4.9.4	The Driver manifest shall update no later than 10 seconds after a change is made by the OPS staff or the TMS to a trip.	F
			RV-DRV-4.9.5	The Driver manifest shall immediately delete a trip if a trip is cancelled by a Traveler.	F
DRV-10	Driver	Trip details	RV-DRV-4.10.1	The Driver shall be able to update any pertinent details after a trip is complete, if needed.	F
			RV-DRV-4.10.2	The Driver shall be allowed to update at least the following information: revenue mileage, fare paid.	F
			RV-DRV-4.10.3	The system shall allow updates to only limited data by the Driver as configured by HIRTA to prevent data manipulation or loss.	F
			RV-DRV-4.10.4	The Driver shall be able to notify the OPS staff in the event of a safety event using the Driver terminal.	P
			RV-DRV-4.10.5	The Driver shall have access to tools to complete any relevant safety reporting process per Safety Management Plan (SMP).	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
DRV-11	Driver	Delayed arrival	RV-DRV-4.11.1	The Driver shall have access to tools to notify the OPS staff about a delay.	F
			RV-DRV-4.11.2	The Driver shall have access to tools to contact healthcare staff directly in the event of a severe delay that may impact the medical appointment.	N
SCH-1	Scheduling	Advance scheduling	RC-SCH-1.1	The system shall be able to perform batch scheduling for trips that are booked in advance.	F
			RC-SCH-1.2	The system shall be able to optimize trips booked the day before they are assigned to vehicles using parameters listed under requirement RC-SCH-2.1..	F
			RC-SCH-1.3	The system shall have the capability to book trips in real-time and assign to vehicles in real-time.	P
SCH-2	Scheduling	Batch schedule optimization	RC-SCH-2.1	The system shall be capable of scheduling, in batch mode, all bookings for the next travel day. Proposers must describe the parameters used in scheduling customer trips. At least the following parameters shall be included:	F
			RC-SCH-2.1.1	Scheduling optimization parameters shall include dwell time at a pick-up or drop-off location as one of the variables.	F
			RC-SCH-2.1.2	Scheduling optimization parameters shall include available on-board capacity as one of the variables.	
			RC-SCH-2.1.3	Scheduling parameters shall include average vehicle speed profile for street segments as one of the variables to calculate realistic travel times.	F
			RC-SCH-2.1.4	Scheduling parameters shall include grouping of trips on manifest based on geographic location of origin and destination of trips.	F
			RC-SCH-2.1.5	Scheduling optimization parameters shall include avoidance of street segments with detours/road closures.	F
			RC-SCH-2.1.6	Scheduling optimization parameters shall include accessibility needs/mobility aids as applicable to trips.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
SCH-3	Scheduling	Real-time optimization	RC-SCH-3.1	The system shall provide continuous optimization function to optimize the schedule in real-time for appropriate utilization of resources.	P
			RC-SCH-3.2	The optimization algorithm shall not move the time for trips that must be anchored (e.g., critical care appointments booked in advance).	F
SCH-4A*	Scheduling	Manifest creation	RC-SCH-4A.1	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 pick-up and drop-off location, and listing the trip events in chronological order.	F
			RC-SCH-4A.2	When creating a daily manifest, the system must take into account any vehicle assignment restrictions (e.g., wheelchair accessible vehicle, child seat, capacity or needed seats in the vehicle, space to stow mobility device).	F
			RC-SCH-4A.3	Once generated, the system shall be able to display all manifests with all driver instructions for a given day.	F
			RC-SCH-4A.4	The system shall provide tools to allow manual adjustments to the run manifests, including manually adding notes and moving trips between manifests.	F
SCH-4B	Scheduling	Labor/work rules	RC-SCH-4B.1	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).	P
			RC-SCH-4B.2	The system shall also perform validation checks to ensure that policies limiting travel times for individual passengers are not violated.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
SCH-5	Scheduling	Account for personal companion or family members	RC-SCH-5.1	The system shall accommodate personal caregiver on the same vehicle as Traveler when scheduling a trip.	P
			RC-SCH-5.2	The system shall accommodate family member that are required to accompany a Traveler.	P
			RC-SCH-5.3	The system shall accommodate any mobility aid needed for accompanying Traveler family member (e.g., child seat for accompanying children)	P
SCH-6	Scheduling	Grouping of trips	RC-SCH-6.1	For co-located addresses when multiple Travelers are sharing a vehicle, the system shall perform appropriate grouping to maximize optimum utilization of resources.	P
			RC-SCH-6.2	The system shall allow manual adjustments of grouping.	P
ADM-1	Administration	Trip verification	RC-ADM-1.1	HIRTA shall be able review trip performance data in real-time.	F
			RC-ADM-1.2	The trip performance data shall be refreshed based on a configurable threshold or when there is a change in a trip status.	F
ADM-2	Administration	Cost allocation	RC-ADM-2.1	The system shall track Travelers trips funded by separate sources in a shared scenario.	F
			RC-ADM-2.2	The system shall allow cost allocation per HIRTA policies.	F
ADM-3	Administration	Billing/invoicing	RC-ADM-3.1	The system shall allow generating invoices per business rules as configured by HIRTA.	F
ADM-4	Administration	Electronic billing/invoicing	RC-ADM-4.1	The system shall allow billing a funding source electronically.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-ADM-4.2	The system shall receive an acknowledge from a funding source if an invoice was successfully submitted.	F
ADM-5	Administration	Electronic reimbursement	RC-ADM-5.1	The system shall allow collection of payment using electronic methods.	F
ADM-6	Administration	System performance reports	RC-ADM-6.1	The system shall provide tools to report on system operational performance per KPIs defined in the PMESP.	N
ADM-7	Administration	Reports on project outcomes	RC-ADM-7.1	The system shall provide tools to report on KPIs to measure project outcomes as defined in the PMESP.	N
RFR-1	I&R	Information resources	RC-RFR-1.1	I&R entities shall have access to tools that provide real-time access to transportation alternatives.	N
			RC-RFR-1.2	I&R entities shall have access to tools that provide real-time access to information on availably of medical appointments.	N
RFR-2	I&R	Connecting with all parties	RC-RFR-2.1	I&R entities shall have access to tools and information that shall allow them to connect with DCHD, Travelers, HIRTA and healthcare provider	N
RFR-3	I&R	Measuring outcomes	RC-RFR-3.2	I&R entities shall be able to document results of referral activity when successful connections are accomplished.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
HNV-1	Health Navigator	Coordination with HIRTA and healthcare providers	RC-HNV-1.1	Health Navigators shall have access to MOD platform within HIRTA TMS to assist their customers with transportation needs.	N
			RC-HNV-1.1.1	The System shall allow Health Navigators to search for transportation options for pick-up/drop-off times and pick-up/drop-off locations.	N
			RC-HNV-1.1.2	The System shall allow Health Navigators to book trips using preferred transportation option and booking preferences of Travelers.	N
			RC-HNV-1.2	Health Navigators shall be able to book single or multi-legged trips.	N
			RC-HNV-1.3	When booking multi-legged trips, Health Navigators shall be able to choose pick-up/drop-off times and vehicles separately for each leg of the trip, if needed.	
HNV-2	Health Navigator	Translation service request	RC-HNV-2.1	Health Navigator shall have access to language translation service when working with persons with LEP.	N
			RC-HNV-2.2	The Health Navigator shall be able to identify preferred language for Travelers when assisting them with transportation services so Driver and Traveler communication is possible without assistance from a Health Navigator.	N
HNV-3	Health Navigator	Future appointment booking	RC-HNV-3.1	The Health Navigator shall have access to tools to view upcoming medical appointments for their customers.	N
			RC-HNV-3.2	The Health Navigators shall be able to book recurring transportation appointments for recurring medical trips.	N
			RC-HNV-3.3	The Health Navigator shall be able to modify or cancel appointments as needed on behalf of their customers.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
HNV-4	Health Navigator	Wait time	RC-HNV-4.1	The Health Navigators shall have access to tools to determine the amount of wait time for their customers upon their arrival for an appointment.	N
HNV-5	Health Navigator	Medical appointment status	RC-HNV-5.1	The Health Navigators shall have access to tools to determine the amount of time needed for completion of a medical appointment to make any adjustments to the return appointment.	N
			RC-HNV-5.2	The Health Navigators shall be able to make adjustment to a return appointment in the event that appointment is expected to last longer than an allowed threshold (e.g., more than 30 minutes of delay).	N
HNV-6	Health Navigator	Medical appointment follow-up	RC-HNV-6.1	The Health Navigators shall have access to tools to follow-up with their customers after a trip is complete.	N
			RC-HNV-6.2	The Health Navigators shall have access to the outcome of the follow-up with their customers.	N
			RC-HNV-6.3	The Health Navigators shall be able to extract the feedback data for further analysis in the DCHD I&R system.	N
HAD-1	Health Administrator	Measuring outcome	RC-HAD-1.1	DCHD shall be able to use the system for assessing the success of Health Navigator in meeting the needs of the Dallas County residents. Assessment will be stored in the in DCHD system.	P
			RC-HAD-1.2.1	The system shall provide data for assessing DCHD's ability to meet the needs of equipped client placed on waitlist for two months or longer for a medical appointment but do not require any follow-up from Health Navigators .	P
			RC-HAD-1.2.2	The system shall provide data for assessing DCHD's ability to meet the needs of equipped clients who feel equipped to proceed without further follow up from Health Navigators.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-HAD-1.2.3	The system shall provide data for assessing DCHD's ability to meet the needs of clients who no longer want to work on their needs because their needs were met elsewhere or not a priority for them.	P
			RC-HAD-1.2.4	The system shall provide data for assessing DCHD's inability to meet the needs of clients due to lack of resources.	P
HCR-1	Healthcare Cust Care	Transportation booking by healthcare customer care	RC-HCR-1.1	Health Connector shall provide an HCR Application (access to MOD platform within HIRTA TMS) for HCR staff to manage Transportation for their customers.	N
			RC-HCR-1.2	For TMS and EHR interface, the systems shall have access to data related to the Traveler (Patient) which shall at least include first name, last name and internal id.	N
			RC-HCR-1.3	The HCR staff shall be able to use HCR Application to request trips for customers looking for transportation at the time of booking of their medical appointments.	N
			RC-HCR-1.4	The HCR staff shall be able to use HCR Application to request trips for customers looking for return trips to home after the appointment.	N
			RC-HCR-1.5	HCR staff shall be able to use HCR Application to view conflict with any trips for the customer has already booked in the system.	N
			RC-HCR-1.6	HCR staff shall be able use HCR Application to modify an existing trip to change times, locations or mobility aids.	N
HCR-2	Healthcare Cust Care	Single event or recurring appointments	RC-HCR-2.1	The HCR staff shall be able to use the HCR Application to book a single ride per customer request.	N
			RC-HCR-2.2	The HCR staff shall be able to use the HCR Application to book subscription/recurring trips per customer request.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
HCR-3	Healthcare Cust Care	Disability needs	RC-HCR-3.1	The HCR staff shall be able to use the HCR Application to identify any customer mobility needs at the time of booking. Mobility needs supported in the application will be same as what is supported in HIRTA TMS- MOD platform.	N
HCR-4	Healthcare Cust Care	Translation services	RC-HCR-4.1	The HCR staff shall have access to translation tools to assist with the booking.	N
HCR-5	Healthcare Cust Care	Booking transportation for patient referrals to new facilities	RC-HCR-5.1	The HCR staff shall be able to use the HCR Application to book same day trips on behalf of customers.	N
			RC-HCR-5.2	The HCR staff shall be able to book trips to destinations other than home at the same time when booking a medical appointment for a referral facility.	N
HCR-6	Healthcare Cust Care	Coordination with HIRTA	RC-HCR-6.1	The HCR staff shall be able to use the HCR applications to connect with HIRTA staff using a voice call or text message .	N
			RC-HCR-6.2	The HCR staff shall be able to use HCR application to monitor the status of an upcoming or in-progress trip.	N
HCR-7	Healthcare Cust Care	Booking of multi-leg return trips	RC-HCR-7.1	The HCR staff shall be able to book multi-legged trips.	N
			RC-HCR-7.2	The HCR staff shall be able to choose pick-up/drop-off times and vehicles separately for each leg of the trip, if needed.	N
HCR-8	Healthcare Cust Care	Tracking missed-appointments due to lack of transportation	RC-HCR-8.1	The HCR shall be notified when a Traveler is a no-show for a scheduled trip for a medical appointment.	N
			RC-HCR-8.2	The HCR staff shall be able to view the reason for a no-show.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-HCR-8.3	The HCR staff shall be able to note the no-show and no-show reason for transportation as the reason for no-show for the medical appointment.	N
			RC-HCR-8.4	The HCR shall be notified when a Traveler cancels a scheduled trip for a medical appointment.	N
			RC-HCR-8.5	The HCR staff shall be able to view the reason for a cancellation.	N
			RC-HCR-8.6	The HCR staff shall be able to note the cancellation and cancellation reason for transportation as the reason for no-show for the medical appointment.	N
HCR-9	Healthcare Cust Care	Trip status	RC-HCR-9.1	The HCR staff shall be notified when there are delays encountered with the transportation for a medical appointment.	N
			RC-HCR-9.1.1	The system shall notify HCR staff on late pick-up events.	N
			RC-HCR-9.1.2	The system shall notify HCR staff on late arrival events at the healthcare facility.	N
			RC-HCR-9.1.3	The system shall notify HCR staff on delays while en-route resulting in modified ETA.	N
			RC-HCR-9.1.4	The system shall notify HCR staff on delays in approaching the office after the drop-off at the facility.	N
			RC-HCR-9.2	The HCR staff shall have access to real-time information on the progress of a trip booked by the HCR staff as return trip.	N
			RC-HCR-9.3	The HCR staff shall be notified when there is a delay for pick-up at the facility for return trip to due to late arrival of a vehicle.	N
			RC-HCR-9.4	The HCR staff shall be notified when there is a delay for pick-up due to patient's late arrival at the pick-up spot.	N
			RC-HCR-9.5	The HCR staff shall be notified when a leg of a trip is successfully completed.	N
			RC-HCR-9.6	The HCR staff shall be notified when there are delays to any leg of the return trip.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
FND-1	Funding Entity	Billing	RC-FND-1.1	The funding entity shall be able to receive invoices electronically.	F
			RC-FND-1.2	The funding entity shall notify HIRTA when an invoice is successfully received.	F
FND-2	Funding Entity	Reimbursement	RC-FND-1.3	The funding entity shall be able to reimburse for submitted invoices electronically.	F
			RC-FND-1.4	The funding entity shall be notified when a payment is successfully completed for an invoice.	F
FND-3	Funding Entity	Measuring outcome	RC-FND-1.5	The funding entity shall be notified about the transportation successfully provided under that funding source for a medical appointment.	P
			RC-FND-1.6	The funding entity shall be notified about the number of no-shows for a scheduled transportation under that funding source for a medical appointment.	N
			RC-FND-1.7	The funding entity shall be notified about the number of cancellations for a scheduled transportation under that funding source for a medical appointment.	N
GPA-1	Government Partner	Measuring outcome of grants and services provided to communities	RC-GPA-1.1	Iowa Department of Transportation, Iowa Department of Public Health, Dallas County Health Department, Dallas County and the City partners shall be able to track the cost and revenue associated with the Health Connector program.	N
			RC-GPA-1.2	The System shall provide reports required for the National Transit Database.	P
			RC-GPA-1.3	The Government partners shall be able to measure the impact of reduction in the number of no-shows for medical appointments.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
CPS-1 -	Government Partner	Measuring outcome for services provided to communities	RC-CPS-1.1	The Government partners shall be able to measure the impact of reduced no-shows on overall well-being of the community per KPIs defined in the PMESP.	N
SYS-1*	System	Data collection	RC-SYS-1.1	The system shall collect data and report on data specific to a demographic profile without exposing Traveler's personal information.	P
			RC-SYS-1.2	The system shall use personal data in connection with circumstances based on data sharing practices as identified in the DMP.	N
			RC-SYS-1.2.1	The system shall use personal data as needed for the safety and security of users and services.	P
			RC-SYS-1.2.2	The system shall use personal data as needed for customer support.	P
			RC-SYS-1.2.3	The system shall use personal data as needed for research and development.	P
			RC-SYS-1.2.4	The system shall use personal data as needed for enabling communication between users.	P
			RC-SYS-1.2.5	The system shall use personal data as needed for connections with legal proceedings.	P
			RC-SYS-1.3	The system shall collect cookies for improved user experience.	P
			RC-SYS-1.3.1	The cookies shall be collected for user authentication.	P
			RC-SYS-1.3.2	The cookies shall be collected for remembering user preferences and settings.	P
			RC-SYS-1.3.3	The cookies shall be collected for determining popularity of content.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-SYS-1.3.4	The cookies shall be collected for analyzing site traffic & trends and generally understanding online behaviors and interest of users.	P
SYS-2*	System	Communication between users	RC-SYS-2.1	The system shall allow users to communicate with each other electronically using the platform.	P
			RC-SYS-2.1.1	The communication methods shall include voice calls.	P
			RC-SYS-2.1.2	The communication methods shall include text messages.	P
			RC-SYS-2.1.3	The communication methods may include sending files electronically.	P
SYS-3*	System	Data privacy	RC-SYS-3.1	Health Connector shall emphasize on privacy at all times and shall be compliant with HIPAA and HIRTA's privacy policy (to be defined in phase 2 design).	P
			RC-SYS-3.2	The system shall track, manage and report on user information without exposing actual user information to external systems through use of encrypted identifier, known as Universal Unique Identifier (UUID).	P
			RC-SYS-3.2.1	The system shall have a UUID for each Traveler in the system.	P
			RC-SYS-3.2.2	The system shall have a UUID for each driver in the system	P
			RC-SYS-3.2.3	The system shall have a UUID for each trip the system	P
			RC-SYS-3.3	The system shall use only UUID for sharing data externally, instead of actual Driver, Traveler or Trip identifier.	P
			RC-SYS-3.4	The system shall have permission levels for access to the system based on the user roles. Roles will be defined in Phase 2 design.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
SYS-4*	System	Secure access	RC-SYS-4.1	The system shall require unique usernames and passwords to access the system.	P
			RC-SYS-4.2	The system shall require a minimum of 2 factor authentication to access the system.	P
			RC-SYS-4.3	Access to system shall be made available to external users using secure and encrypted data exchange with cloud-based servers using standards such as Secure Sockets Layer (SSL) or Transport Layer Security (TLS) to avoid any exposure to PII for Travelers.	P
SYS-5*	System	Safety	RC-SYS-5.1	Health connector shall provide ability to track safety events to ensure safe transportation at all times for medical appointment needs. The safety events will be categorized as 1) catastrophic; 2) critical; 3) marginal; 4) negligible, As defined in the Safety Management Plan (SMP).	P
			RC-SYS-5.2	Health Connector will have access to the HIRTA safety management system (SMS) for providing and accessing detailed assessment on reported safety events.	P
SYS-6*	System	Reliability	RC-SYS-6.1	Health Connector system shall be highly reliable with no more than 1 hour of downtime per week (99.5% availability).	P
			RC-SYS-6.2	Health Connector shall have the ability to operate even when a subsystem or component is temporarily not functional.	P
			RC-SYS-6.3	Health Connector shall be able to function even when vehicle and central systems temporarily lose data connectivity.	P
			RC-SYS-6.4	Even when external entities (e.g., DCHD or healthcare provider) temporarily lose access to the system, HIRTA shall be able to provide services to its Travelers.	P

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-SYS-6.5	In the event of total failure, HIRTA shall still be able to use two-way radio and offline mode of the TMS application to perform its daily business functions.	P
SYS-7*	System	Productivity	RC-SYS-7.1	Health Connector scheduling parameters shall be configured to enhance system productivity and shall allow maintaining delivering at least 3 riders per hour.	P
			RC-SYS-7.2	The system optimization algorithm shall be such that the cost per trip shall not exceed $20 per trip after subsidy is applied.	P
			RC-SYS-7.3	The Health Connector solution shall help reduction in coordination for a trip to 2 minutes or less.	P
SYS-8*	System	On-time performance	RC-SYS-8.1	The system shall help HIRTA achieve at least 95% on-time performance target.	P
SYS-9*	System	Resource management	RC-SYS-9.1	The system shall provide capability to manage vehicle resources for HIRTA and third-party service providers.	P
			RC-SYS-9.2	The system shall be able to obtain vehicle data from a master source at HIRTA.	P
			RC-SYS-9.3	The system shall maintain at least the following information on vehicles: vehicle ID, owner, pool type, license plate, age, number of seats, availability of wheelchair/lift, number of wheelchair seats.	F
			RC-SYS-9.4	The system shall have the ability to report on validity of license and insurance for drivers so only credentialed drivers and valid vehicles are assigned for Health Connector trips.	F
			RC-SYS-9.5	The system shall provide tools to manage driver resources.	F
			RC-SYS-9.6	the system shall be able to obtain driver data from a master source at HIRTA, if available.	F
			RC-SYS-9.7	The system shall maintain at least the following information on drivers: driver ID, first name, last name, vehicle ID	F
SYS-10*	System	Data logging	RC-SYS-10.1	The system shall maintain a log of trip planning results.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-SYS-10.2	The system shall maintain a log of vehicle locations sent by the vehicle.	F
			RC-SYS-10.3	The system shall maintain a log of data messages exchanged between vehicles and drivers.	F
			RC-SYS-10.4	The system shall maintain a log of messages exchanged between Travelers and Drivers.	F
			RC-SYS-10.5	The system shall maintain a log of trip history by a Traveler.	F
			RC-SYS-10.5.1	The trip history shall include scheduled pick-up and drop-off locations.	F
			RC-SYS-10.5.2	The trip history shall include actual pick-up and drop off locations.	F
			RC-SYS-10.5.3	The trip history shall include scheduled pick-up and drop-off times.	F
			RC-SYS-10.5.4	The trip history shall include actual pick-up and drop-off times.	F
			RC-SYS-10.5.5	The trip history shall include no-show status.	F
			RC-SYS-10.5.6	The trip history shall include cancellation status.	F
			RC-SYS-10.5.7	The trip history shall include fare quoted.	F
			RC-SYS-10.5.8	The trip history shall include fare paid.	F
			RC-SYS-10.5.9	The trip history shall include revenue mileage.	F
			RC-SYS-10.5.10	The trip history shall include deadhead mileage.	F
			RC-SYS-10.6	The system shall maintain a log of wayfinding request received from Travelers.	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-SYS-10.7	The wayfinding data stored by the wayfinding central application shall include the following information: 1) device id; 2) start and end nodes; 3) step by step guidance provided; 4) step by step guidance followed by Travelers.	N
			RC-SYS-10.8	The system shall use trip history dataset to provide a playback function to review and investigate any issues with performance of a trip.	F
SYS-11*	System	Data sharing and reporting	RC-SYS-11.1	The system shall provide a data access portal for all authorized HIRTA partners to access reporting of predefined KPIs.	P
			RC-SYS-11.2	The system shall provide an open data portal for data sharing with the general public.	N
SYS-12*	System	Wayfinding Infrastructure	RC-SYS-12.1	The wayfinding system shall consist of sensors/ visual markers installed at strategic locations outdoors and indoors to guide a Traveler during their Complete Trip steps.	N
			RC-SYS-12.2	The sensor or visual marker shall be designed to withstand temperatures in the range of -40 degrees F to 130 degrees F.	N
			RC-SYS-12.3	The sensor or visual marker shall be designed to withstand humidly levels in the range of 5% to 95% non-condensing.	N
			RC-SYS-12.4	The sensor or visual marker shall be designed to withstand dust and water intrusion as well as snow and freezing temperatures, certified in compliance with or exceeding the NEMA4 or IP65 standard.	N
			RC-SYS-12.5	The sensor or visual marker shall be designed to withstand the harsh environment posed by the disinfectant or other chemical exposure as normal in a typical hospital environment.	N
			RC-SYS-12.6	The sensor or visual marker shall be installed inside and outside a healthcare facility according to approved installation design from an authorized healthcare facility coordinator	N

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-SYS-12.7	The sensor or visual marker shall be installed inside and outside HIRTA vehicles or at a HIRTA facility (e.g., fixed stop) according to approved installation design from HIRTA.	N
			RC-SYS-12.8	The sensor or visual marker shall be designed to withstand mean time between failure (MTBF) rate of 60,000 hours.	N
			RC-SYS-12.9	The sensor/visual marker shall indicate: 1) encoded node on a pathways network; 2) encoded information to guide Traveler.	N
SYS-12*	System	Wayfinding central application	RC-SYS-12A.1	The Wayfinding Central Application shall create and maintain a pathways network that shall consist of nodes and pathways linking the nodes.	N
			RC-SYS-12A.2	The Wayfinding Central Application shall generate step-by-step guidance using the pathways direction and provide to the Traveler Wayfinding Application upon request.	N
			RC-SYS-12A.3	The Wayfinding Central Application shall provide tools to encode the sensor/visual marker installed in the field.	N
SYS-13*	System	Maintainability	RC-SYS-13.1	Technical support shall be available 24 hours a day, 365 days a year.	F
			RC-SYS-13.2	Technical support shall respond to a request per the service level agreement as agreed with HIRTA. At a minimum, the support staff shall respond to a request within one hour of notification of the problem.	F
			RC-SYS-13.3	HIRTA staff be able to track the status of reported issue at any time using a web-based tool.	F
			RC-SYS-13.4	The system shall monitor all networked subsystems and components for normal operations 24 hours a day, 365 days a year.	F
			RC-SYS-13.5	The data centers to be used for hosting shall have existing scheduled routine maintenance and emergency situation management plans.	F

Need ID	Group	Need Area	Requirement ID	Requirement Text	Met by Existing System?
			RC-SYS-13.6	HIRTA shall be notified in advance of any planned data maintenance.	F
			RC-SYS-13.7	HIRTA shall be notified of any ad-hoc data maintenance activity to resolve an issue with the system as soon as it is discovered.	F
			RC-SYS-13.8	HIRTA shall be notified in advance of availability of enhancements, releases, and newer versions of the software (including third party software), including all bug fixes, patches, and modifications, or any modifications to the system components.	F
			RC-SYS-13.9	System upgrades or updates shall be implemented only upon HIRTA approval.	F

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