

Phase 2 System Requirements Specification (SyRS)

Heart of Iowa Regional Transit Agency
ITS4US Deployment Project

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Final Report — July 24, 2024
FHWA-JPO-21-882

The logo for ITS4US features the text "ITS4US" in a bold, dark grey sans-serif font. The number "4" is stylized in blue and white, with a red location pin icon at its top and bottom. A dashed orange line runs diagonally across the "4". A horizontal orange line is positioned below the text.

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Produced by *Heart of Iowa Regional Transit Agency ITS4US Deployment Phase 2*
U.S. Department of Transportation
Intelligent Transportation Systems Joint Program Office
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Federal Transit Administration

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16. Abstract The Heart of Iowa Regional Transit Agency (HIRTA) is one of the 4 awardees for Phase 2 of the ITS4US contract for its proposed concept "Health Connector: Bridging the Gap Between Healthcare and Transportation" (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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Name	Date	Version	Summary of Changes	Approver
			<p>requirements have been added into this document.</p> <ul style="list-style-type: none"> • Updates to Phase 1 requirements: The HIRTA team documented any deletions or changes to requirements that were made by the change control board as part of procurement and design. Any such updates are noted in italics next to the original text of requirements in section 3. Generally, these changes are grouped into three categories: <ul style="list-style-type: none"> ○ Requirements that were modified or flagged for descoping by the HIRTA team because of necessary changes to system design. For this category, additional explanation is provided for why changes were made. ○ Requirements that were deleted because they were determined to be infeasible during contract negotiations with the MOD vendor. ○ Requirements that were modified for consistency with other requirements (i.e., deleting duplicates, clarifying language, etc.). 	

Table of Contents

1. Introduction	1
1.1. Changes since Phase 1	1
1.2. System Purpose	1
1.3. System Scope	3
1.4. Definitions, Acronyms, and Abbreviations	4
1.5. References	11
1.6. System Overview	12
2. General System Description	15
2.1. System Context	15
2.2. Major System Capabilities	27
2.2.1. Traveler-end Subsystem	27
2.2.2. Transportation Management Subsystem	30
2.2.3. Vehicle-End Subsystem	33
2.2.4. Wayfinding Subsystem	35
2.2.5. Integration with External Systems	35
2.3. Major System Conditions, Constraints, Assumptions and Dependencies	36
2.3.1. Assumptions	36
2.3.2. Anticipated Constraints and Changes in Operational Policies	37
2.4. User Characteristics	39
2.5. Operational Scenarios	44
3. System Capabilities, Conditions, and Constraints	47
3.1. Functional System	48
3.1.1. Traveler Subsystem	48
3.1.2. TMS Subsystem	56
3.1.3. Vehicle Subsystem	69
3.1.4. Wayfinding Subsystem	71
3.1.5. External Systems	73
3.2. Data	73
3.2.1. Traveler Subsystem	73
3.2.2. TMS Subsystem	74
3.2.3. Vehicle Subsystem	77
3.2.4. Wayfinding Subsystem	78
3.2.5. External Systems	78
3.3. Interface	78
3.3.1. Traveler Subsystem	78

3.3.2. TMS Subsystem	79
3.3.3. Vehicle Subsystem	82
3.3.4. External Systems	83
3.4. Performance	83
3.4.1. Traveler Subsystem.....	83
3.4.2. MOD TMS Subsystem	85
3.4.3. Vehicle Subsystem	86
3.4.4. Wayfinding Subsystem.....	86
3.5. Reliability.....	86
3.5.1. TMS Subsystem	87
3.6. Maintainability.....	87
3.6.1. TMS Subsystem	87
3.7. Security	88
3.7.1. Traveler Subsystem.....	88
3.7.2. TMS Subsystem	89
3.7.3. Vehicle Subsystem	90
3.8. Accessibility	90
3.8.1. Traveler Subsystem.....	90
3.8.2. Wayfinding Subsystem.....	92
3.9. al.....	92
3.9.1. Wayfinding Subsystem.....	92
3.10. Installation	92
3.10.1. Traveler Subsystem.....	93
3.10.2. Wayfinding Subsystem.....	93
3.11. Hardware	93
3.11.1. Traveler Subsystem.....	93
3.11.2. Vehicle Subsystem	93
Appendix A. Needs-to-Requirements Traceability Matrix.....	95

List of Tables

Table 1. Data Needs Summary	17
Table 2. HIRTA Health Connector User Groups.....	39

List of Figures

Figure 1. Systems Engineering "V " Diagram (Source: FHWA).....	2
Figure 2. ConOps to Requirements (Source: HIRTA Team)	2
Figure 3. Overview of Health Connector System Concept (Source: HIRTA team).....	4
Figure 4. Generic System Concept Diagram (Source: HIRTA Team)	13
Figure 5. Detailed System of Interest Diagram (Source: HIRTA Team).....	26
Figure 6. Traveler-end Subsystem (Source: HIRTA Team).....	27
Figure 7. Transportation Management Subsystem (Source: HIRTA Team).....	31
Figure 8. Vehicle-end System (Source: HIRTA Team).....	34
Figure 9. Health Connector User Group Touchpoints (Source: HIRTA Team).....	43

1. Introduction

1.1. Changes since Phase 1

While Health Connector system objectives and most requirements to meet those objectives remain unchanged since Phase 1, several updates to this document and to the associated requirements traceability matrix (RTM) have been made. These include the following types of changes:

- General document updates: Several images and descriptions in this document were updated to align with other Phase 2 documents and a more current approach to system design and implementation.
- Section 3 formatting updates: Previous iterations of this document outlined requirements in a way that did not match the most components used in the system design document (SDD) and RTM. These sections were overhauled to better map to those documents and present more clearly the categories of requirements as they appear in Phase 2.
- Adding new requirements: Middleware components for Health Connector did not have requirements associated with them in Phase 1. In Phase two these were established and these requirements have been added into this document.
- Updates to Phase 1 requirements: The HIRTA team documented any deletions or changes to requirements that were made by the change control board as part of procurement and design. Any such updates are noted in italics next to the original text of requirements in section 3. Generally, these changes are grouped into three categories:
 - Requirements that were modified or flagged for descoping by the HIRTA team because of necessary changes to system design. For this category, additional explanation is provided for why changes were made.
 - Requirements that were deleted because they were determined to be infeasible during contract negotiations with the MOD vendor.
 - Requirements that were modified for consistency with other requirements (i.e., deleting duplicates, clarifying language, etc.).

1.2. System Purpose

As shown in Figure 1, the Systems Requirements (SyRS) step builds 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, 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.”***

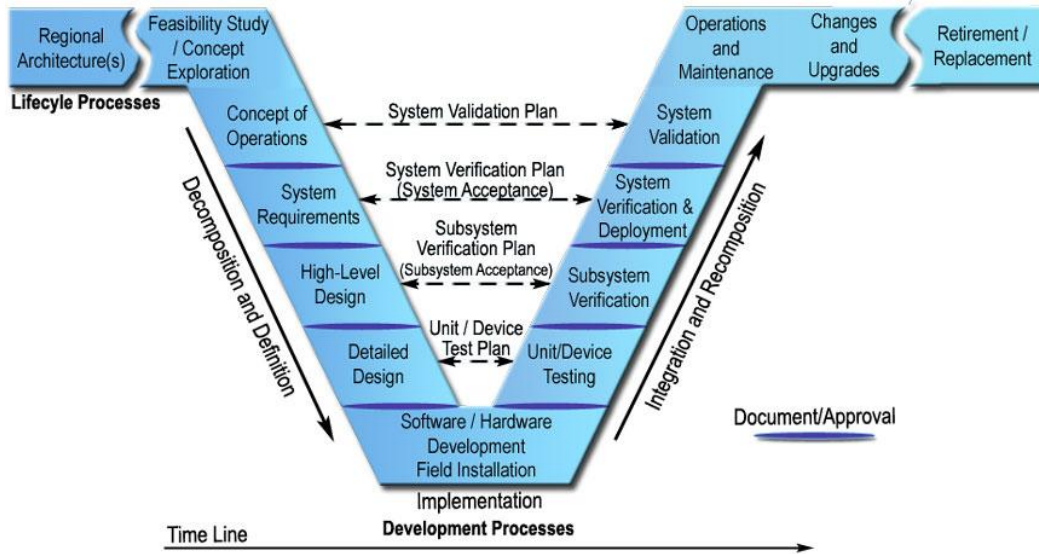


Figure 1. Systems Engineering "V " Diagram (Source: FHWA)

As shown in Figure 2, the concepts explored and documented in the ConOps, along with user needs and scenarios, form the basis for developing requirements for the system which reflect system functions, performance criteria, system interfaces, and what data the system will generate, manage, and share.

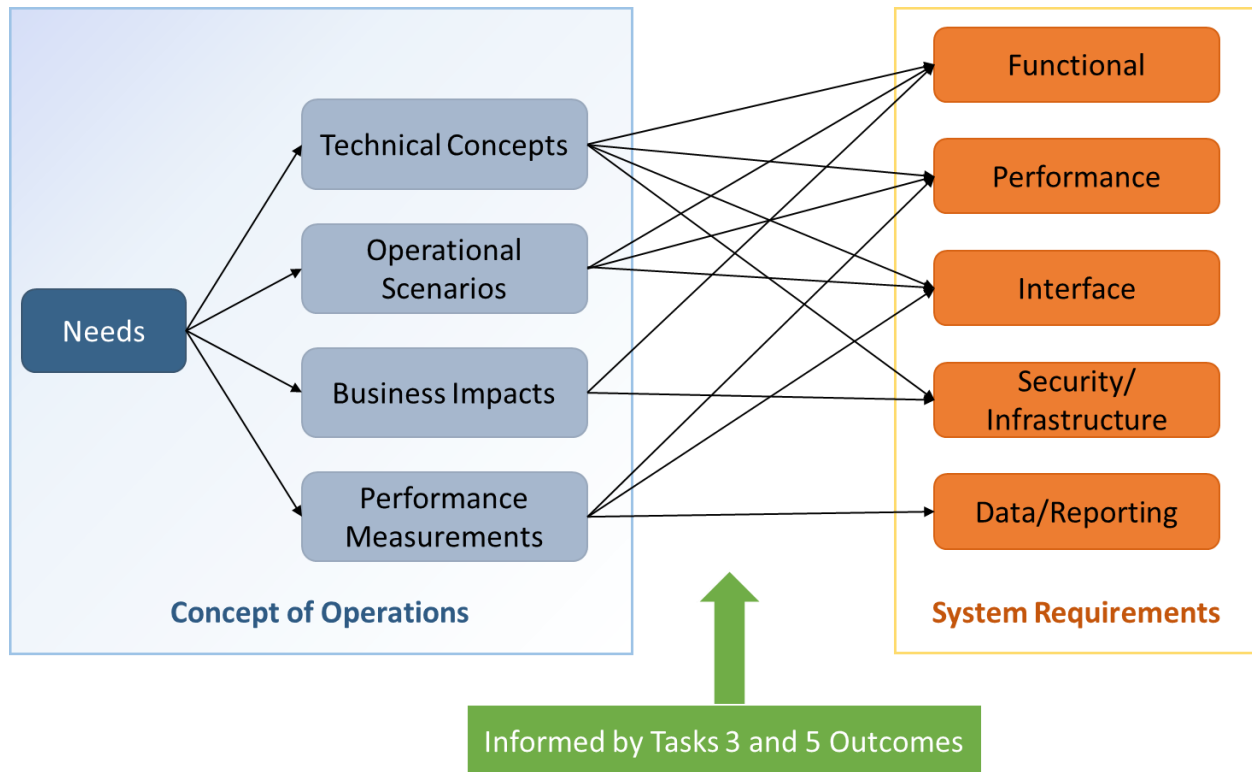


Figure 2. ConOps to Requirements (Source: HIRTA Team)

The requirements documented 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 Travelers and their caregivers, billing/cost-allocation and payments and others.

1.3. System Scope

The Heart of Iowa Regional Transit Agency (HIRTA) provides 300,000 Traveler rides and operates 95,000 hours (2019 estimates; pre-pandemic) along with 1.3 million miles of service within the seven-county region encircling the Des Moines urban area. HIRTA provides demand response services to Travelers for all trips booked from 24 hours to up to 14 days in advance. If capacity is available, HIRTA also provides trips to meet same day requests. HIRTA also acts as a service provider for the State of Iowa Medicaid broker, Access2Care.

HIRTA was awarded a Phase 2 agreement of the Complete Trip - ITS4US contract for its proposed concept *“Health Connector: Bridging the Gap Between Healthcare and Transportation”* (Health Connector) by the United States Department of Transportation (USDOT).

Health Connector is an innovative solution that will address various bottlenecks associated with transportation access to healthcare for HIRTA communities. Some of these challenges are key reasons behind missed appointments or the unacceptable level of preventive or as-needed healthcare in the HIRTA service area. For this deployment, the HIRTA team plans to implement a scalable and replicable solution that enables access to non-emergency medical transportation for all populations and their caregivers by resolving transportation 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 through a smart device (e.g., smartphone, smartwatch) application or equally effective alternate method. Further, this solution will include information and wayfinding services to guide them at every step of their trip.

This deployment will provide enhanced transportation access to healthcare options for all travelers in Dallas County with a specific focus on underserved communities, rural travelers, older adults, and veterans. In addition to addressing mobility needs, the proposed deployment will recognize the net impact that access to health services has on patient healthcare outcomes as well as both the financial and health outcomes from the perspective of the healthcare 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)

1.4. 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 describes 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 Travelers 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 Traveler. Reservation is available to only to registered Travelers.

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.

SSIS- SQL Server Integration Services

A Microsoft SQL Server database that provides a data warehousing tool for high-performance data integrations.

TAG – Transportation Advisory Group

The TAG is a 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.

1.5. 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.

1.6. System Overview

Health Connector is an innovative solution that will address various bottlenecks associated with transportation access to healthcare for HIRTA communities. Some of these challenges are key reasons behind missed appointments or the unacceptable level of preventive or as-needed healthcare in the HIRTA service area. For this deployment, the HIRTA team plans to implement a scalable and replicable solution that enables access to non-emergency medical transportation for all travelers by resolving transportation 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 through a smart device (e.g., smartphone, smartwatch) application or equally effective alternate method. Further, this solution will include information and wayfinding services to guide them at every step of their trip. Health Connector will leverage already existing demand response service management technologies at HIRTA and bring other advancements. Any additional capacity needs will be fulfilled by seamless integration with Transportation Network Companies (TNCs), taxis, and other third-party service providers.

This deployment will provide enhanced transportation access to healthcare options for all travelers in Dallas County with a specific focus on underserved communities, rural travelers, older adults, and veterans. In addition to addressing mobility needs, the proposed deployment will recognize the net impact that access to health services has on patient healthcare outcomes as well as both the financial and health outcomes from the perspective of the healthcare community/Dallas County Health Department (DCHD).

Key capabilities of the proposed technology solution are as follows:

- Enable the Traveler to use a smart device (e.g., smartphone, smartwatch) application or equally effective alternate methods to schedule and manage transportation services to medical appointments through the Health Connector Traveler app.
- Provide Travelers options to choose from available providers. Provide same day response if needed by Travelers.
- Send Travelers an alert before arrival and again when the vehicle is approaching.
- Keep Travelers informed on trip progress.
- Provide directions (audible and visual) on where to meet the vehicle/driver. On arrival, drivers should have the ability to automatically confirm Traveler identity.
- Health Connector wayfinding app will provide the Traveler with wayfinding solutions through indoor and outdoor navigation technologies to provide personal concierge-style travel from origin to destination. This will include:
 - Locating the healthcare facility entrance when dropped off by vehicles
 - Locating the desired floor/room when inside the healthcare facility
- Travelers will be able to use Health Connector for any contactless payment needs at any point for transportation-related payments.
- If Travelers 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.
- Healthcare staff will be able to book transportation for patients at the same time that medical appointments are made, by using the Health Connector online trip request portal.
- HIRTA staff will have access, through Health Connector middleware, to a webpage to track the status of linked transportation and healthcare appointments to ensure that any changes to medical appointments include an accompanying change to transportation services.

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.

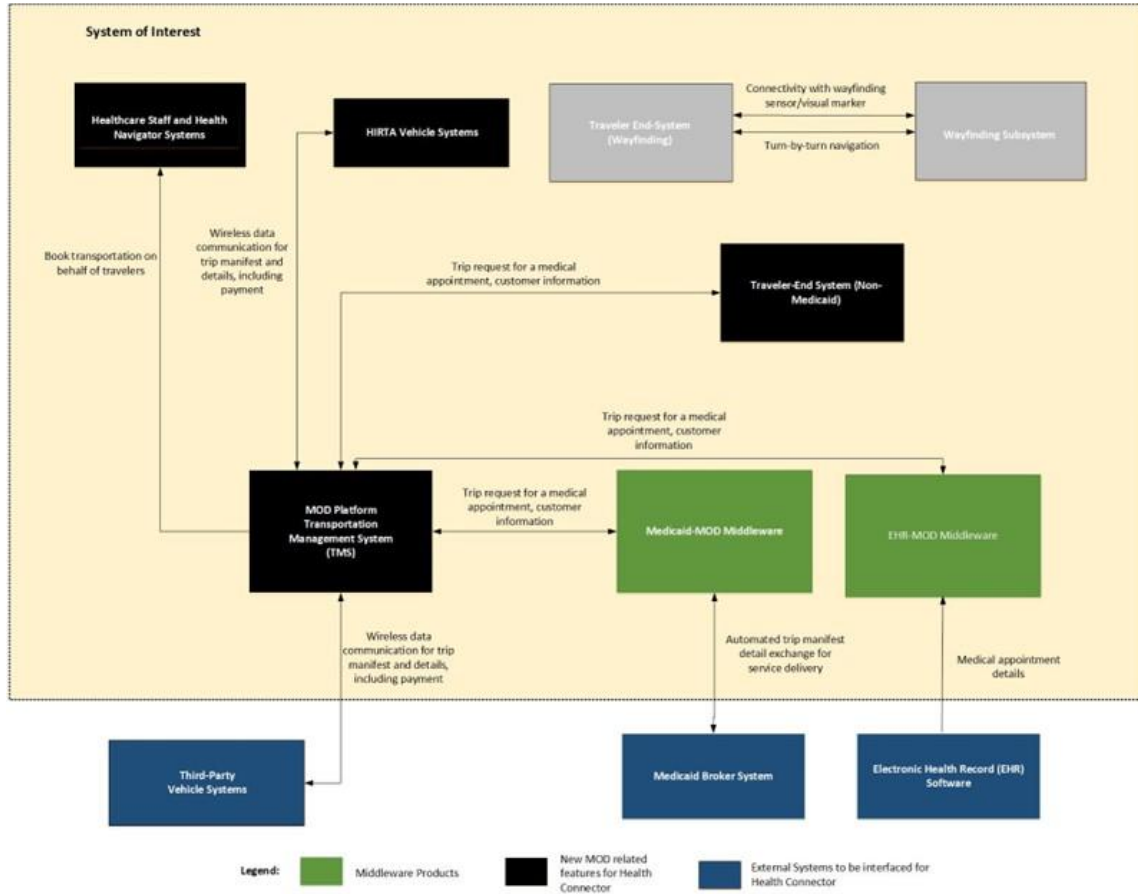


Figure 4. Generic System Concept Diagram (Source: HIRTA Team)

2. General System Description

2.1. System Context

The systems involved in the context of Health Connector, as shown in Figure 4 and Figure 5, can be defined as follows:

Figure 4 represents the block diagram of the systems and interfaces in the HIRTA Health Connector system. This view illustrates the result of design decisions made by the HIRTA team for implementing the Health Connector systems and its subsystems. Furthermore, these figures present the physical architecture that is used by the project team to establish plans for system integration and testing, as well as to track and report readiness for deployment. The next subsections describe each entity in the figure and the logical connections between them.

- **Traveler-end Subsystem:** includes the tools and technologies (phone/interactive voice response (IVR), mobile/smart devices, web-based tools) to be used by Travelers seeking transportation services for their healthcare appointments as part of their pre-trip, during trip, on arrival, and return trip activities. This includes both a mobility-on-demand (MOD) application for planning, booking, and payment, as well as a wayfinding application for more detailed guidance within care facilities.

This application, provided by Via, the selected MOD vendor for Health Connector, also provides real-time status of trips on demand and through push notification services and allows Travelers to discover options and plans trips. Mobile/smart devices will be used as part of the Traveler-end subsystem but are not a part of this procurement.

- **HIRTA Transportation Management Subsystem (TMS):** A TMS refers to any systems related to the operational backend functions involved in service delivery. HIRTA's TMS includes the Mobility-on-Demand TMS in addition to other functions that support Health Connector from outside if the MOD platform such as the call center software. The MOD Platform TMS will also host two interfaces (middleware products) being developed by the HIRTA team and made freely and publicly available on GitHub under a permissive license to support interfacing with State of Iowa Medicaid transportation broker(s) and the EHR system.
 - **MOD Platform TMS (also referred to as "VOC"):** Provided by Via and includes the technologies used to assist Traveler care and operations staff with Traveler registration, eligibility management, reservations, scheduling, dispatching, billing, and administration activities.
- **Vehicle 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 pickup), on-board information and fare payments. On all HIRTA-owned vehicles, drivers will use tablets running the driver app. On other vehicles, drivers may use the driver app on their tablet or their phone.

- **Wayfinding Subsystem:** refers to the technologies and infrastructure to be used for providing outdoor wayfinding, indoor positioning, orientation, and navigation on request to travelers. It may also assist with translation functionality. One or more commercially available wayfinding system providers may be used. One of those providers will be NaviLens. Others include SafeFleet (for infotainment devices) and RedyRef (for the wayfinding kiosk).
- **External Systems:** These systems, external to Health Connector, 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.
 - **Medicaid Transportation Broker:** refers to the State of Iowa Medicaid broker. Currently, Access2Care's system is used for booking and managing Medicaid trips. HIRTA is one of the providers used by Access2Care. Medicaid trips will continue to be booked by Access2Care when requested by Travelers. Medicaid trips will be ingested in the HIRTA system when assigned to HIRTA. At that point, a Traveler using Medicaid benefits will be able to use Health Connector Traveler tools.
 - **Health Navigator- and Healthcare-end Subsystem:** refers to the limited access MOD platform that will be available to health navigators and healthcare Traveler care staff to request trips, modify trip requests, and check on trip status on behalf of Travelers. Additionally, health navigators and the health administrator at the Dallas County Health Department (DCHD) use a Microsoft Access-based information and referral (I&R) product to track the status of referral activities and for coordination with Dallas County residents' health navigation/social care services.
 - **EHR/Medical Record 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. Participating healthcare partners use different EHR services. The following bullet points outline participating healthcare partners and the EHR systems they currently employ. Health Connector will develop a new interface with at least one healthcare partner's EHR system.
 - Mercy One Hospital – Transitioning to Epic EHR, in the near future
 - Dallas County Hospital – Veradigm EHR until at least 2026, then transitioning to Epic EHR
- **Other:** Additional relevant details for the system to be deployed are as follows:
 - **Supporting systems:** These are existing systems and are not part of Health Connector. However, the TMS will exchange data with these systems or HIRTA staff may interact with these systems for certain operational functions, as needed. Specifically, this refers to the phone system, payroll, driver or vehicle information management, vehicle maintenance management, Traveler service management, safety event reporting, and other systems and processes for data collection and reporting.

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.

Table 1. Data Needs Summary

ID	Data	High-level Description	System(s) of Interest Involved
1	Traveler profile	Traveler’s personal details as provided as part of registration. These details may be entered by the Traveler or by HIRTA CSRs. The Traveler profile may be accessed by the MOD Platform TMS and third-party transportation providers in the course of providing service but cannot be accessed or used for any purposes outside of required reporting, invoicing, and providing transportation services to the Traveler.	MOD Platform TMS
2	Traveler eligibility	Traveler’s eligibility for a funding source or programs. These details may be entered by the Traveler or by HIRTA CSRs, will be verified with funding entities (e.g., Medicaid). Traveler eligibility may be accessed by the MOD Platform TMS and third-party transportation providers in the course of providing service but cannot be accessed or used for any purposes outside of required reporting, invoicing, and providing transportation services to the Traveler.	Eligibility management system/funding source
3	Fleet information	Details on HIRTA’s vehicles; also, details on third-party vehicles. These will be entered by HIRTA operations staff and third-party transportation providers. Fleet information will be used by the MOD Platform TMS and HIRTA administration and accessed by Travelers through the MOD Platform TMS.	MOD Platform TMS; third-party platform

ID	Data	High-level Description	System(s) of Interest Involved
4	Driver information	Details on HIRTA's drivers; also, details on third-party vehicles. These will be entered by HIRTA operations staff, HIRTA drivers, and third-party transportation providers. Driver information will be used by the MOD Platform TMS and HIRTA administration and accessed by Travelers through the MOD Platform TMS. This information can only be accessed and used for required reporting and for the provision of service to Travelers and cannot be accessed for other purposes.	MOD Platform TMS; third-party platform
5	Trip request	Traveler request for a trip from a web or mobile device. These details may be entered by the Traveler, HIRTA CSRs, health navigators, or healthcare customer care staff. Trip request information will be used by the MOD Platform TMS and accessed by HIRTA operations staff and third-party transportation service providers through the MOD Platform TMS in the course of providing service or fulfilling reporting requirements. Details also may be provided by Travelers via the middleware that connects with the Medicaid Broker-generated trip requests. Trip request information cannot be accessed or used for any purposes outside of required reporting, invoicing, and providing transportation services to the Traveler.	MOD Platform TMS
6	Trip cancellation	Traveler's request to cancel an existing trip. These details may be entered by the Traveler, HIRTA CSRs, health navigators, or healthcare customer care staff. Trip cancellation information will be used by HIRTA administration and the MOD Platform TMS and accessed by HIRTA drivers, HIRTA operations staff, and third-party transportation services providers through the MOD Platform TMS in the course of providing service or fulfilling reporting requirements. Trip cancellation information cannot be accessed or used for any purposes outside of required reporting, invoicing, and providing transportation services to the Traveler.	MOD Platform TMS

ID	Data	High-level Description	System(s) of Interest Involved
7	Trip status	Current information on upcoming trip made available through the MOD Platform TMS, including automated information from third-party transportation service providers. Travelers may request status updates directly via the MOD Platform TMS or through HIRTA CSRs, health navigators, or healthcare customer case staff. Trip status information cannot be accessed or used for any purposes outside of providing transportation services to the Traveler.	MOD Platform TMS
8	Manifest	Time and location details on Travelers to be picked up and dropped off by a driver during a shift. This information will be generated through the MOD Platform TMS with input from HIRTA operations staff and will be accessed by HIRTA drivers. The manifest cannot be accessed or used for any purposes outside of required reporting, invoicing, and providing transportation services to the Traveler.	MOD Platform TMS
9	Vehicle location	Location and heading along with other details for a vehicle in service made available through the MOD Platform TMS. Travelers may request status updates directly via the MOD Platform TMS or through HIRTA CSRs. Vehicle location cannot be accessed or used for any purposes outside of providing transportation services to the Traveler.	MOD Platform TMS
10	Trip performance	Trip-level log of actual time and location for trips on the manifest along with any no-shows and cancellation events made available through the MOD Platform TMS, including information entered by HIRTA drivers. Information will be used by HIRTA administration and by CSRs when cancellation or no-show events impact the Traveler profile. Trip performance information cannot be accessed or used for any purposes outside of required reporting, invoicing, evaluating Health Connector performance, and providing transportation services to the Traveler.	MOD Platform TMS

ID	Data	High-level Description	System(s) of Interest Involved
11	Driver performance	Driver-level log of operational performance on log on, on-time performance, manifests completed made available through the MOD Platform TMS, including information entered by HIRTA drivers. Information will be used by HIRTA administration. Driver performance information cannot be accessed or used for any purposes outside of required reporting and providing transportation services to the Traveler.	MOD Platform TMS
12	Travel time	Time needed to perform on-board component of a trip made available through the MOD Platform TMS, including information entered by HIRTA drivers. Information will be used by HIRTA administration and by the ISU team for performance evaluation. Travel time information cannot be accessed or used for any purposes outside of evaluating Health Connector performance and providing transportation services to the Traveler.	MOD Platform TMS
13	Driver messages	Messages sent by drivers to dispatchers made available through the MOD Platform TMS. Information will be used by HIRTA operations staff and by ISU and HIRTA admin staff to provide insight into events that impact performance. Driver messages cannot be accessed or used for any purposes outside of evaluating Health Connector performance and providing transportation services to the Traveler.	MOD Platform TMS
14	Dispatcher messages	Messages sent by dispatchers to drivers made available through the MOD Platform TMS. Information will be used by HIRTA operations staff and by ISU and HIRTA admin staff to provide insight into events that impact performance. Dispatcher messages cannot be accessed or used for any purposes outside of evaluating Health Connector performance and providing transportation services to the Traveler.	MOD Platform TMS

ID	Data	High-level Description	System(s) of Interest Involved
15	Fare payment log	Log of amount paid for a trip and method of payment that will be entered directly by Travelers or drivers into the MOD Platform TMS. This information will be accessed directly by HIRTA administration and used for invoicing external organizations that fund trips. Fare payment information cannot be accessed or used for any purposes outside of required reporting, invoicing, and providing transportation services to the Traveler.	MOD Platform TMS
16	Request for third-party trips	Time and location details on Travelers to be picked up and dropped off by a third-party driver during a shift. This information will be made available through the MOD Platform TMS and will be accessed by third-party drivers and by HIRTA administration for performance evaluation. The manifest cannot be accessed or used for any purposes outside of required reporting, invoicing, and providing transportation services to the Traveler.	MOD Platform TMS
18	Vehicle location (third party)	Location, heading of, and other details of a third-party provider vehicle in service, made available through the MOD Platform TMS. Travelers may request status updates directly via the MOD Platform TMS or through HIRTA CSRs. Vehicle location cannot be accessed or used for any purposes outside of providing transportation services to the Traveler.	Third-party platform
19	Driver messages (third party)	Messages sent by drivers to dispatchers, made available through the MOD Platform TMS. Information will be used by HIRTA operations staff or third-party dispatchers (depending on system configuration) and by ISU and HIRTA admin staff to provide insight into events that impact performance. Driver messages cannot be accessed or used for any purposes outside of evaluating Health Connector performance and providing transportation services to the Traveler.	MOD Platform TMS
20	Dispatcher messages (third party)	Messages sent by dispatchers to drivers made available through the MOD Platform TMS. Information will be used by HIRTA operations staff or third-party dispatchers (depending on system configuration) and by ISU and HIRTA admin staff to provide insight into events that impact performance. Dispatcher messages cannot be accessed or used for any purposes outside of evaluating Health Connector performance and providing transportation services to the Traveler.	MOD Platform TMS

ID	Data	High-level Description	System(s) of Interest Involved
21	Fare payment log (third party)	Log of amount paid for a trip and method of payment that will be entered directly by Travelers or third-party drivers into the MOD Platform TMS. This information will be accessed directly by HIRTA administration and used for invoicing external organizations that fund trips. Fare payment information cannot be accessed or used for any purposes outside of required reporting, invoicing, and providing transportation services to the Traveler.	Third-party platform
22	Medicaid trip requests	Traveler request for Medicaid-funded trips from a web or mobile device through the Medicaid Broker; some Travelers may request over phone and use concierge service. Information will be transferred to the MOD Platform TMS via Health Connector middleware, used by the MOD Platform TMS, and accessed by HIRTA operations staff and third-party transportation services providers through the MOD Platform TMS in the course of providing transportation services, invoicing, or fulfilling reporting requirements. Medicaid trip request information cannot be accessed or used for any purposes outside of those listed.	Medicaid broker system
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. Information will be made available through the MOD Platform TMS. Information will be used by HIRTA administration and by CSRs when cancellation or no-show events impact the Traveler profile. Medicaid trip performance information cannot be accessed or used for any purposes outside of required reporting, invoicing, evaluating Health Connector performance, and providing transportation services to the Traveler.	MOD Platform TMS
24	Medical appointment details	Consists of medical appointment date, time, and location (facility address and doctor's office) for a particular Traveler. Data will be provided by Traveler or by healthcare customer care staff and will be used by MOD Platform TMS to allow for identification of appointment changes and accompanying transportation needs. Medical appointment details cannot be accessed or used for any purposes outside of providing transportation services to the Traveler.	EHR

ID	Data	High-level Description	System(s) of Interest Involved
25	Aggregated summary	<p>Aggregated data on driver, vehicle, and trip performance, automatically generated by the MOD Platform TMS and used by HIRTA administration and ISU for performance evaluation.</p> <p>Trip summary will be made available to ISU as described in Table 2 for the provision of data for public access (Data ID #36).</p>	MOD Platform TMS
26	Traveler wayfinding request	Requests initiated by Travelers to the wayfinding system. Traveler wayfinding requests cannot be accessed or used for any purposes outside of providing wayfinding services to the Traveler.	Wayfinding subsystem
27	Traveler wayfinding guidance	Log of wayfinding information provided to Travelers. Traveler wayfinding guidance cannot be accessed or used for any purposes outside of providing wayfinding services to the Traveler.	Wayfinding subsystem
28	Safety event	<p>Log of incidents and accidents by vehicle/driver/trip.</p> <p>Safety event data will be made available to ISU as described in Table 2 for the provision of data for public access (Data ID #36).</p>	MOD Platform TMS
29	Safety event report	<p>Detailed reports by a safety event (incident, accident) with response.</p> <p>Safety event report data will be made available to ISU as described in Table 2 for the provision of data for public access (Data ID #36).</p>	HIRTA supporting systems
31	System performance	Email notifications of system wide failures and or downtime.	MOD Platform TMS; HIRTA supporting systems

ID	Data	High-level Description	System(s) of Interest Involved
32	Anonymized and/or aggregated data for performance evaluation	Anonymized/aggregated Traveler, trip, and operations data to support Health Connector performance evaluation. Data will be automatically generated by the MOD Platform TMS and created through other HIRTA systems and will be provided to ISU.	MOD Platform TMS
33	Traveler complaints log	Log of Traveler complaints received and actions taken. Information will be provided by the Traveler, drivers, or HIRTA CSRs and will be used by HIRTA operations and administration.	MOD Platform TMS; HIRTA supporting systems
34	Traveler survey results	Traveler data and survey conducted by ISU of human use participants. Information will be provided by Travelers directly and through Health Connector and will be used by ISU for performance evaluation. Final results will be shared back with Travelers.	MOD Platform TMS; local data system at ISU
35	Processed data for controlled sharing	Data based on Data ID #32 and #34, processed, hosted, and made available by ISU. Data will be accessible to researchers, independent evaluation team, and USDOT.	Local data system at ISU
36	Public data for USDOT – managed system	Trip summary data and performance measurement results aggregated by time period will be provided. Other aggregated data such as fleet, vehicle, and safety event (incident/accident) information will also be provided.	Local data system at ISU
37	Cost and revenue summary	Cost and revenue data by trip, including actual cost, fare paid, funding source share, automatically generated by the MOD Platform TMS or created through other HIRTA systems based on MOD Platform TMS and other data.	MOD Platform TMS; HIRTA supporting systems

ID	Data	High-level Description	System(s) of Interest Involved
38	Wheelchair failure log	<p>Summary of events referring to situations when wheelchair lift could not function at the time of pick-up or drop-off.</p> <p>Wheelchair failure log data will be made available to ISU for the provision of data for public access (Data ID #36).</p>	MOD Platform TMS; HIRTA supporting systems
39	Medical appointment status	Real-time status of progress on a medical appointment resulting in an impact on the pick-up time. Data will be provided by healthcare customer care staff and made available to the Traveler and driver through the MOD Platform TMS via Health Connector middleware.	EHR
40	Discount coupon/credit	<p>Discount coupons or credits applied by trip.</p> <p>Aggregated and/or anonymized Discount coupon/credit data may be accessed by ISU for evaluating Health Connector performance.</p>	Eligibility management system/funding source
41	Call center log	<p>Call center statistics available from HIRTA, DCHD and healthcare providers, as available from phone systems or manual logs.</p> <p>Log of Traveler complaints received and actions taken. Information will be used by HIRTA operations and administration.</p>	HIRTA supporting systems
43	Trip request (partners)	<p>Trips manually requested by DCHD and healthcare providers using the MOD Platform TMS. To be tracked separately to assess the benefit of such capability.</p> <p>Trip request information cannot be accessed or used for any purposes outside of required reporting, invoicing, evaluating Health Connector performance, and providing transportation services to the Traveler.</p>	MOD Platform TMS

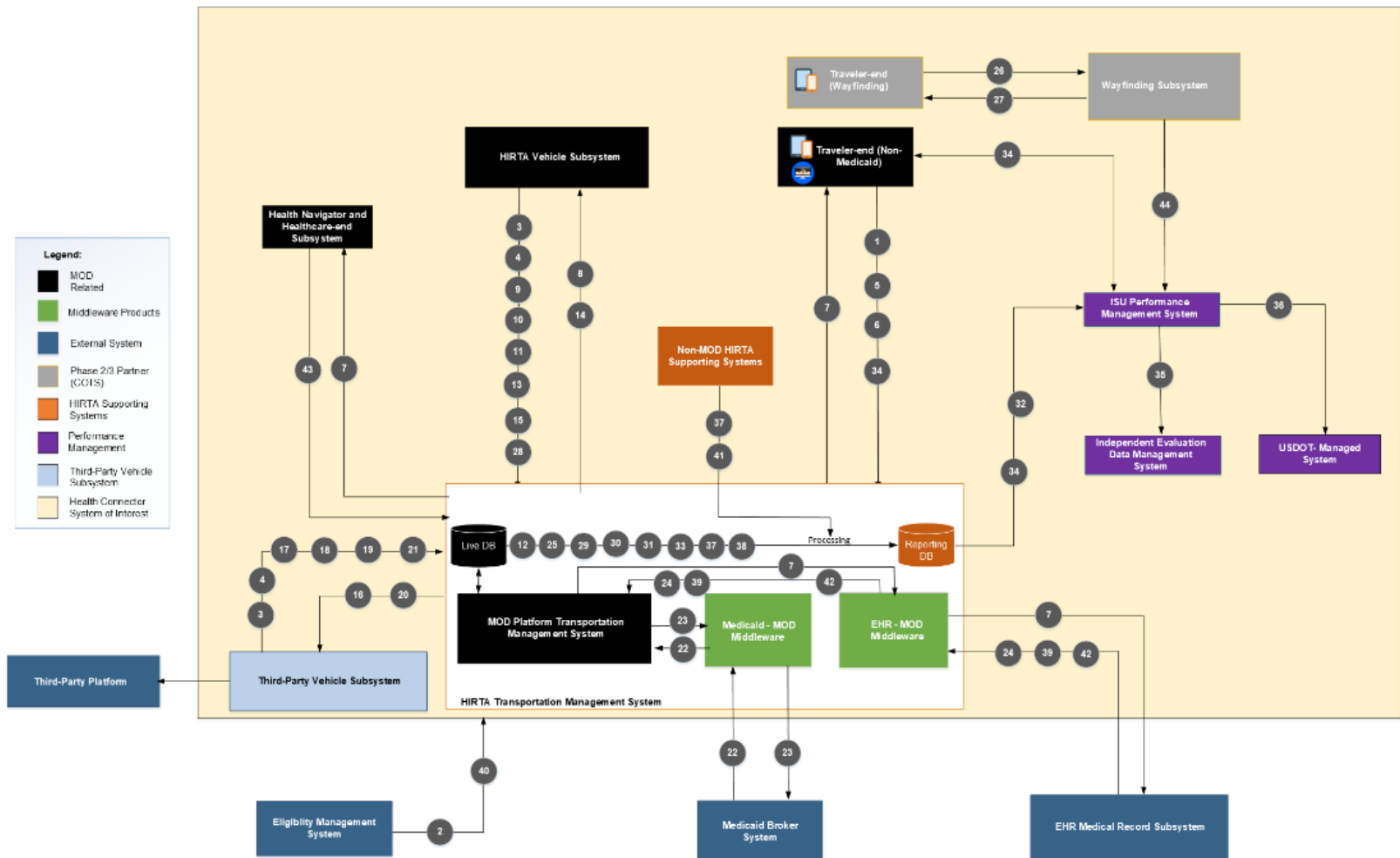


Figure 5. Detailed System of Interest Diagram (Source: HIRTA Team)

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 Subsystem

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

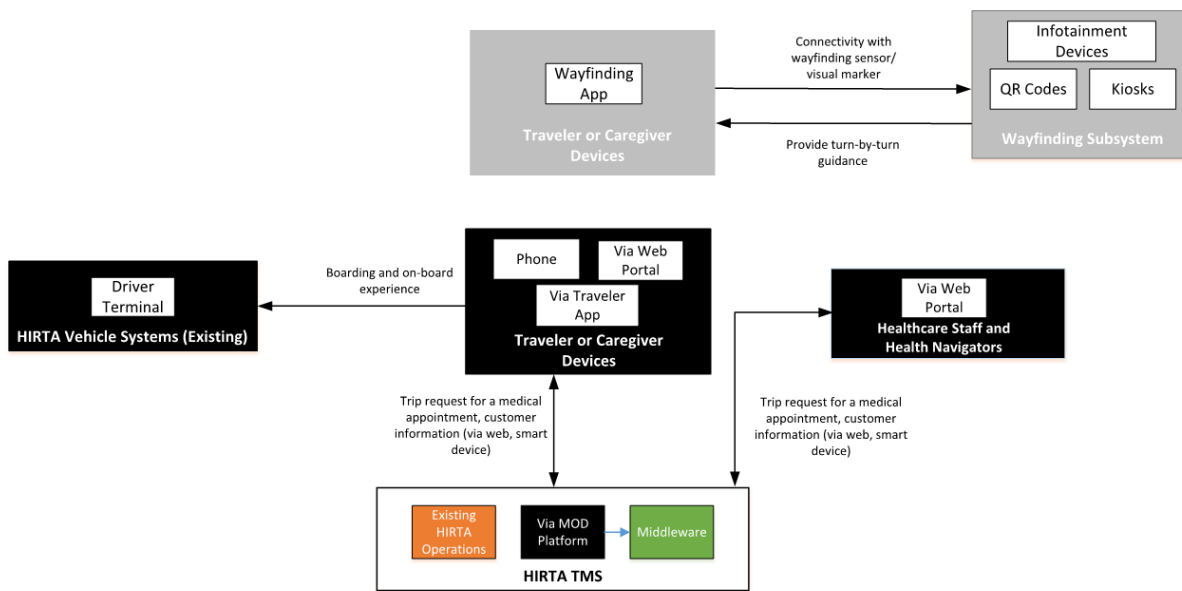


Figure 6. Traveler-end Subsystem (Source: HIRTA Team)

Health Connector will provide access to medical appointment information only, which will include date, time, and location of a medical appointment for a Traveler along with their first and last name and a unique identifier. All other services (e.g., lab results, communication with provider) will be completed in the healthcare provider applications.

Referral and Health Navigation Services

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 Traveler and allow travelers to enter their booking preferences (e.g., mobility aid, personal companion need, notification preferences, favorite pick-up location and others). For the purposes of the Health Connector pilot, registration is currently conducted outside of the Traveler app on HIRTA's website but can be migrated to an in-app process at any time.
2. *Funding Eligibility Information:* Allow Travelers to enter and update the status of their funding and eligibility information.
3. *Appointment Booking:* Connect Travelers with resources to book a medical appointment such as deep links to hospital scheduling portals and health navigation services.
4. *Trip Request:* Provide Travelers the capability to request a transportation service for a medical appointment. Also, provide the capability to book a return trip if needed.
5. *Mobility Aid:* Accommodate any mobility aids requested by Travelers, based on their preferences in the Traveler profile.
6. *Trip Discovery:* Provide the capability to discover transportation mode options.
7. *Trip Status:* Provide real-time information related to the trip to Travelers on-request. Also, provide notification alerts if such service is requested by Travelers according to their preferences.
8. *Return Trip Booking:* Provide the ability to book return trip using on-demand transportation modes available after the Traveler/Patient is discharged.
9. *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.
10. *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.
11. *Reminder:* Provide day-before reminder for upcoming trips. Allow cancellation of 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 Traveler application and Wayfinding application for Travelers to identify the correct vehicle for boarding.
2. *Patient Identity 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 trip status (e.g., traffic delay, delayed arrival,).
4. *Orientation/Information on Healthcare Services on Arrival*: Provide information on wayfinding capability on arrival. Such capability will be provided via wayfinding application or infotainment screens installed within vehicles.
5. *Notifying on Delayed Arrival*: Provide the capability for healthcare provider to check on trip status (e.g., traffic delay) through share a trip feature.

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 to HIRTA.

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 of upcoming vehicle at a pre-determined interval.
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 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 Building after Drop-off*: Provide the capability to locate the correct building, navigate to the correct door entrance.

2. *Locate Correct Office after Entering the Building*: Provide the capability to locate the correct floor and correct office or waiting area.
3. *Locate the Check-in Desk*: Provide the capability to locate check-in desk upon arrival at the healthcare provider's office.
4. *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.
5. *Locate the Door Entrance (if needed)*: Provide the capability to be able to locate the door entrance for boarding.
6. *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 Subsystem

This section describes the capabilities needed within the system to be used by HIRTA and third-party service providers for managing the transportation services used for delivering medical trips. It also includes functions that may be used by healthcare staff and health navigators for assisting Travelers with booking, modifying, or cancelling trips as well as providing trip information.

Figure 7 provides a context diagram for Transportation Management Subsystem.

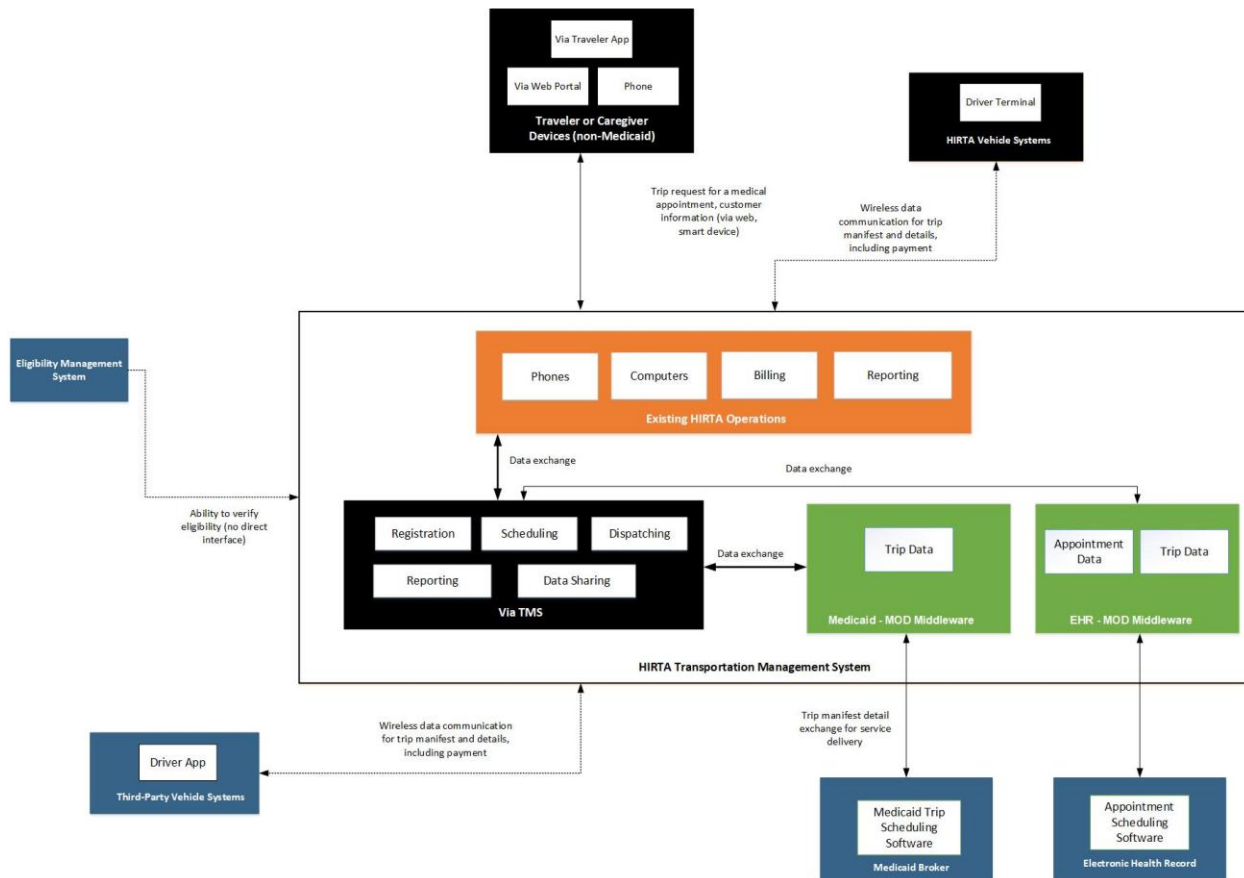


Figure 7. Transportation Management Subsystem (Source: HIRTA Team)

HIRTA

HIRTA's system capabilities are described by Traveler care staff, scheduling staff, operations staff, and administration staff. 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 Traveler Service Module

1. **Traveler Registration:** For Travelers not registered with HIRTA, provide the capability to perform the registration. This includes ability to complete registration and toggle Health Connector subservice 'on' for each participating Traveler.
2. **Traveler Profile:** Add pertinent details in the Traveler profile as provided, including funding eligibility and expiration details.
3. **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 through the MOD-EHR dashboard and determine pick-up and/or drop off times.

4. *Trip Modification*: Provide the capability to modify appointments on Traveler's behalf as requested. Trip time can be modified, for changes to trip location, CSRs can cancel and rebook.
5. *Trip Cancellation*: Provide the capability to cancel appointments on Traveler's behalf as requested and per allowed policy.
6. *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., TNCs, Taxis).
7. *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).
8. *Contact Travelers*: Provide tools to connect with Travelers according to their preference to assist with any aspect of their trips.
9. *Translation Service*: Provide tools to request translation service when needed to assist Travelers.
10. *Trip History*: Provide 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).

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 can be managed in separate systems or through the MOD Platform TMS; in either case, those manifests will be accessible to HIRTA Operations staff.

3. *Managing Acces2Care Trips*: Trip requests from Access2Care Travelers will be submitted via Access2Care but can be assigned and managed by HIRTA Operations staff in the MOD Platform TMS.
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. *Communication with Driver*: Provide the capability to communicate with the driver when needed.
8. *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.

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-End Subsystem

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

Figure 8 provides an overview of Vehicle-end Systems.

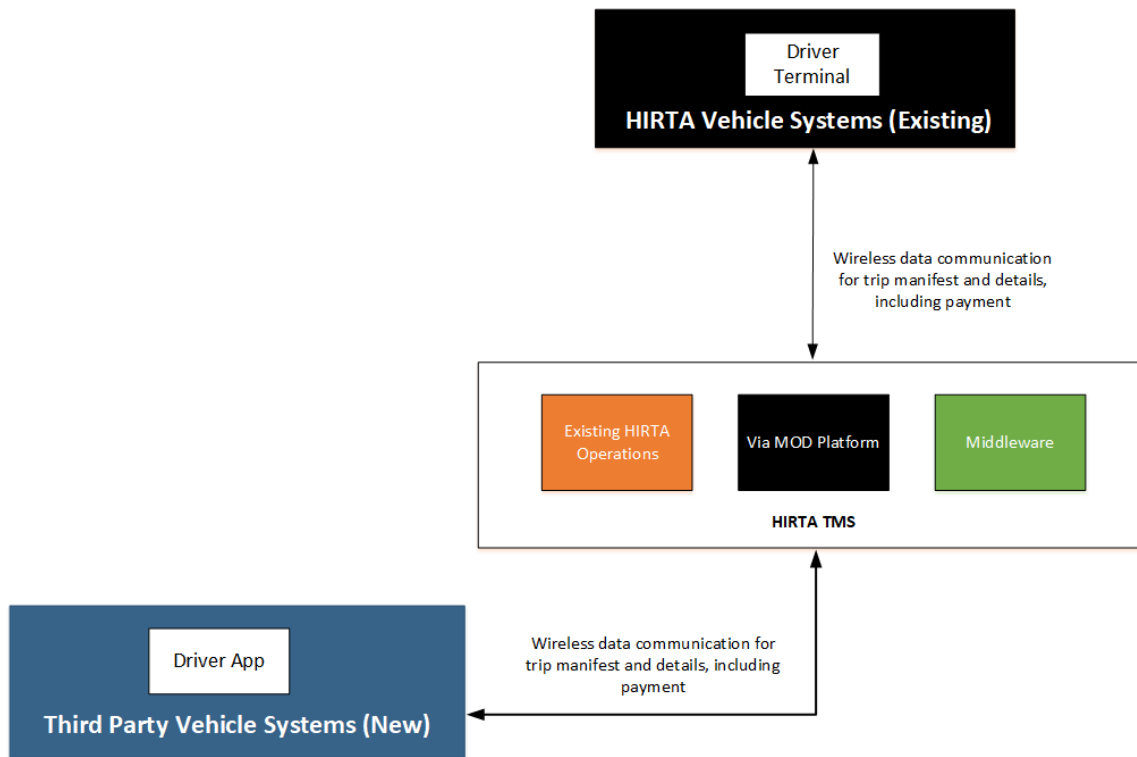


Figure 8. Vehicle-end System (Source: HIRTA Team)

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. *Notification on Delayed Arrival*: Provide the capability to notify HIRTA Operations in the event of an expected delayed arrival.
7. *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 (NaviLens codes) inside care facilities or affixed inside and outside of vehicles). It also includes the wayfinding kiosk at care facilities that can be used for trip booking or other wayfinding uses in the future, as well as infotainment devices onboard HIRTA vehicles that help with information and orientation for Health Connector Travelers.
2. **Central wayfinding software:** The central software will guide the application used by the Travelers with indoor and outdoor wayfinding using codes. This software will also be used to manage the physical assets used for providing wayfinding capability. In addition, there is a central end software for managing the wayfinding kiosk remotely and implementing security measures as needed. There is also a central-end software for the infotainment devices such that content can be managed remotely by HIRTA.

2.2.5. Integration with External Systems

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

- **Access2Care Software:** Access2Care uses its own proprietary application to schedule Medicaid-funded trips for its Travelers. The application has both a Traveler component and a central component for Traveler care staff. This ConOps defines the capabilities that will be accomplished through new middleware connecting the HIRTA TMS with the Access2Care software. A core function of the middleware application will be trip ingestion; in other words, providing the capability to automatically ingest trips when submitted by Access2Care into the Health Connector MOD Platform TMS.

Other desirable functionality includes:

1. *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.
 2. *Billing:* Provide the capability to perform cost allocation and billing for Medicaid funded trips and submit billing to Access2Care/Medicaid system electronically.
 3. *Reimbursement:* Provide the capability to get reimbursed electronically by Access2Care/Medicaid.
 4. *Access to Data/Reporting:* Provide the capability access reporting and needed data as defined for Medicaid trips.
- **Electronic Healthcare Record (EHR Software):** HIRTA's partners use the following EHR/Medical Record software:
 - Dallas County Hospital: Veradigm until 2026, then transitioning to Epic
 - Mercy One: Epic

As stated earlier, interface with each of these products is available through custom interfaces only. The HIRTA team has designed several options for integrating with EHR systems and has provided alternative appointment comparison options where integration is not possible. First, the HIRTA team has developed code to connect to APIs using Fast Healthcare Interoperability Resources (FHIR) standards (e.g., Epic). An alternate approach for other systems has been to explore implementation of automated SSIS reports which detail appointment changes (e.g. for Veradigm). Where neither is possible, the MOD-EHR dashboard that the team developed also includes a module for booking appointments in the web application, to allow for immediate comparison of appointment and transportation data.

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, as 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.
- **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 an interface to better coordinate transportation booking and medical appointment booking.
- **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 Travelers to use non-HIRTA Vehicles:** It was identified in stakeholder discussions that some Travelers (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 policies 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 policies will have to be developed and published by HIRTA.

A key factor for finalizing hours of operation will be healthcare facility hours. Our understanding is that most trips will be covered during HIRTA service hours. Only under rare circumstances will trips be requested during care facility hours outside of HIRTA service hours. On such occasions, HIRTA will also have to consider third-party service providers that may be available in the area to provide after-hours services. Also, HIRTA will have to determine the need for having at least one HIRTA dispatch staff on standby to assist in the event of delays or incidents. All these factors will drive the determination of hours of operation.

Any future changes in service hours must be automatically communicated to appropriate parties (e.g., healthcare providers, DCHD) and communicated to Travelers 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 with third-party providers when third-party agreements are finalized.
- **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. Security and access restrictions are discussed in the Phase 2 Data Privacy Plan.
- **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:** Budgeting as determined during Phase 2/3 proposal development will be used for deployment and long-term operations.
- **Definition of Standard Operating Procedures (SOPs) for Health Connector:** While Health Connector will be part of HIRTA's demand response service, detailed SOPs will have to be developed, describing roles and responsibilities and organizational structure prior to system launch during Phase 2. This process will begin in Task 2-B during system design, and will be finalized during Task 2-I.
- **Service Level Agreements (SLAs):** The following types of SLAs will have to be 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 Phase 2.
 - 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 providers or through new release authorization terms and conditions that healthcare providers are willing to adopt, healthcare providers will have to provide access to medical appointment data which will at least include 1) Traveler identifier; 2) Traveler/caregiver contact; 3) time of appointment; 4) day of appointment; 5) location of appointment; 6) doctor's office contact information. Required details, including a consent form regarding data release, will be finalized at the time of detailed design in Phase 2.

HIRTA has been including healthcare providers as part of stakeholder engagement sessions (e.g., ConOps walkthrough, SyRS walkthrough), so they are aware of the data needed for coordinating medical and transportation appointments. HIRTA has continued to engage with healthcare partners throughout Phase 2 design and has established the terms for informed consent form to be signed by the patients who will use Health Connector. Stakeholder input from healthcare providers is being documented in meeting minutes and any online meetings are recorded. Also, the HIRTA team will closely follow the currently established terms used by the healthcare partners to share data with caregivers to avoid any deviations from the currently established practices.

- **Funding source definition and billing:** Most healthcare providers have mentioned that they have access to funds which can be used towards covering the transportation cost for 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. Accounting for such funding source will follow the same tools and established processes used by HIRTA for other funds in use today.
- **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 and health navigator staff at healthcare providers. However, this process will have to be finalized, and enhanced communication access through Health 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. The HIRTA team is developing relationships with healthcare providers in Phase 2 and will assist with defining KPIs as needed.

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 Travelers.

Access to data and reporting as relevant to measuring health outcomes: DCHD currently relies on data in their information and referral 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.

2.4. User Characteristics

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

- Travelers 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 Travelers 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 Traveler 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, Traveler 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 Travelers/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.

Organization	User Group	Abbreviation	Short Description
HIRTA	Trip scheduler	SCH	HIRTA staff who processes Traveler 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	Traveler service staff	CSR	Refers to HIRTA Traveler 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 Travelers for their requested trips. There are no major changes expected for drivers as part of this implementation, but relevant needs are documented.
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 Traveler care staff	HCR	Healthcare staff who take calls and intake Traveler request for medical appointments. Traveler care staff may do other coordination related to medical appointments as well.

Organization	User Group	Abbreviation	Short Description
Healthcare Partner	Healthcare operations staff (e.g., Traveler care, nursing, community health partnership)	HOP	Staff that is responsible for interacting with Traveler 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 visiting 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 Travelers 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 Traveler trips (e.g., Medicaid) that will interface with the system for automated billing and payment processing. This includes Access2Care.
Other	Community partners	CPS	Stakeholders representing underserved groups and who 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, will help identify broad community-based needs (e.g., social determinants of health) and will use the system to stay informed on project outcomes
Other	MOD system	MOD	Refers to the MOD platform and supporting vendor staff.

Organization	User Group	Abbreviation	Short Description
Other	Wayfinding system	WAY	Refers to the wayfinding system and supporting vendor staff.
Other	Iowa State University	ISU	Refers to Iowa State University's Institute for Transportation (InTrans) and supporting staff.
Other	USDOT	USDOT	Refers to the USDOT-managed public data portal.

Most user groups for the current systems will also be the users of the Health Connector system. Figure 9 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.

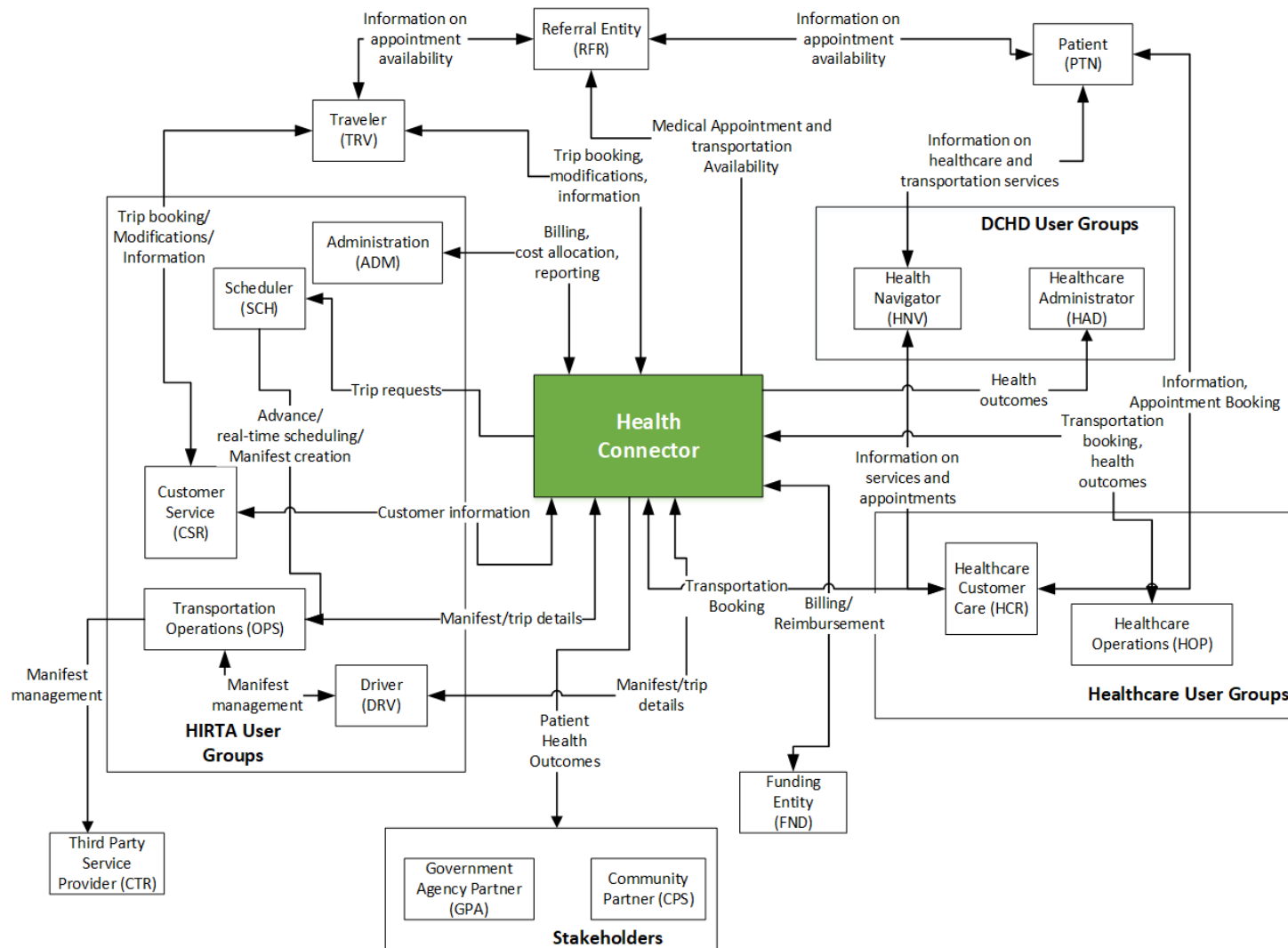


Figure 9. Health Connector User Group Touchpoints (Source: HIRTA Team)

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. 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 5, as an example), and challenges around what to do if proper procedures are not followed, even if the transportation would otherwise be eligible. For persons not covered by Medicaid, the scenarios are more complex, and include the risk that needed medical transportation might not be available, accessible, affordable, or appropriate. The five scenarios below (Scenarios 3 – 6) illustrate a few of these complexities.

Scenarios 1-2 describe how system will perform in normal and degraded/failure modes as part of overarching discussion of system operations.

Degraded or System Failure Scenarios

1. **Scenario 1:** A Traveler has 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.
2. **Scenario 2:** 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)

3. **Scenario 3:** Traveler looking for transportation for a recurring medical appointment (e.g., dialysis) scheduled with a hospital/clinic.
4. **Scenario 4:** Traveler looking for a prenatal appointment and will need transportation. It is recurring but not on a fixed schedule.
5. **Scenario 5:** Traveler looking for preventative care appointment.
6. **Scenario 6:** 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)

7. **Scenario 7:** 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

8. **Scenario 8:** A Traveler 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

9. **Scenario 9:** A blind Traveler/patient was dropped off by a friend for a routine medical appointment but doesn't have return transportation; Traveler not comfortable with a taxi or TNC

and prefers HIRTA service. Hospital Traveler care staff requested to book directly using HIRTA system.

10. **Scenario 10:** Traveler 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

11. **Scenario 11:** HIRTA is not able to find out if Travelers who were dropped off for medical appointment have already been discharged. Traveler had booked the return trip and driver is waiting for pick-up at the medical facility. Traveler does not use App and is relying on HIRTA service for coordination.
12. **Scenario 12:** Traveler was a no-show for outbound trip to medical appointment (or cancelled without providing a reason) but the Traveler had also booked a return trip and HIRTA has to follow-up with both Traveler and the hospital to find out if the Traveler needs the return trip before their trip back to home can be cancelled.

Third party Service Providers

13. **Scenario 13:** 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 Travelers 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 Travelers 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.
 - *Personal Devices:* provides relevant hardware for operating the Traveler application and adjusting settings related to data, language and more.
- **Transportation Management Subsystem (TMS):** this subsystem includes the tools and technologies used to assist Traveler care and operations staff with reservations, scheduling, dispatching and administration activities. Key components involved in this subsystem are:
 - *MOD Platform TMS:* provides the key central-end application that is used to assist travelers and drivers, perform daily operations and track system performance.
 - *Health Navigator & Healthcare-end Subsystem (Limited View MOD Platform TMS):* provides a limited view of the MOD Platform TMS that meets the needs for the healthcare personnel to perform relevant operations.
 - *MOD-EHR Middleware:* refers to the tools used by hospitals and clinics for booking medical appointments and maintaining their appointments, including discharge and any subsequent referral activities.
 - *MOD-Medicaid Middleware:* refers to the solution that ingests and automatically assigns trips being assigned from the state Medicaid broker (Access2Care) to HIRTA.
- **Wayfinding Subsystem:** this subsystem refers to the wayfinding infrastructure in form of 1) sensor/visual marker, and 2) central wayfinding application.
 - *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.

- Wayfinding Kiosk: provides planning, booking, payment and Traveler information/notification capabilities to Travelers using a commercial off-the-shelf large touchscreen device installed at relevant locations.
- Wayfinding Codes: provides ability to contextualize one's outdoor and indoor surroundings through their mobile phones. .
- Infotainment Devices: screens on the vehicles that assists travelers with relevant trip information during their journey.
- **Vehicle Subsystem**: this subsystem refers to the technologies deployed on vehicles to support driver-end functions for manifest management, on-board Traveler information and Traveler payments.
 - Driver Application: Key component of the Vehicle subsystem used by Drivers for in-vehicle operational functions such as navigation, Traveler pick-up, no-shows and more.
- **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.
 - Funding Entity: refers to the different external funding entities under which an user may be eligible for the service.
 - Information and Referral: provides a common source for the data stored relevant to external entities.

Each of these subsystems contain requirements that were grouped into 'categories' as defined in the requirements traceability matrix. These include: Accessibility, Data, Environmental, Functional, Hardware, Installation, Interface, Maintainability, Performance, Reliability, and Security. The requirements for each subsystem and component are organized by these categories in the sections that follow.

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

General

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.

Registration

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

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

RM-TRV-2.4 -The Traveler application shall not validate information provided in registration, and as such Travelers are able to proceed with a booking as long as they enter a name, phone number, and email address to create a profile. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)*

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

(Via does not offer guest mode, all riders must have an account. Requirement was accepted by HIRTA CCB because design and testing illustrated that the intent of the requirement was met by collecting first name, last name, email and phone number for all participants.)

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

Trip Planning

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 logging of search queries for administrative analysis from Travelers as part of the trip planning function provided the Traveler requests trip proposals. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)*

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. *(Requirement was deleted. Does not fit with current understanding of how Travelers will use A2C system - they will coordinate with A2C directly and would not need to be directed through Via app.)*

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-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.

Trip Information

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.

(Requirement was flagged to be descoped in the design phase- Notifying healthcare staff cannot be automated. Only traveler's registered contact information will get notification)

RM-TRV-22.2 -Participating healthcare providers shall be able to see any necessary accommodation in the ride notes (e.g., to be escorted by a healthcare facility staff). *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

RM-TRV-26.2 -The Traveler Application shall provide real-time status updates, as described in requirement RM-TRV-17 for inbound trips, regardless the service provider. *(Requirement was modified to clarify reference to other requirement)*

Trip Booking

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-1.4.4 -The Traveler application shall allow booking of a single-leg round-trip as part of the same transaction. Additional legs will need to be booked in single transactions.

RM-TRV-2.3 -The Traveler application shall allow booking of a trip even if the funding status of Travelers may not be current or known pending any limiting logic HIRTA may have in place (i.e. if certain areas are only eligible for certain funding sources). *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)*

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.

(Via does not offer guest mode, all riders must have an account. Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)

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.

(Requirement was deleted. Does not fit with current understanding of how Travelers will use A2C system - they will coordinate with A2C directly and would not need to be directed through Via app. .)

RM-TRV-8.2 -The Traveler application shall allow Travelers to successfully book trips using third- party services when HIRTA services are not running provided the third-party services have available supply in the TMS and are utilizing the driver application. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement. Removed 'even'.)*

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

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-10.1 -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 cancellation of a previously booked appointment and booking for another transportation available the same day. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement. Clarification on 'modification' not being supported.)*

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 requirement RM-TRV-17. *(Clarified requirement reference)*

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 -The Traveler application shall provide the ability to modify a medical appointment by linking to the application available from the healthcare provider if applicable. *(Requirement was modified and accepted by HIRTA CCB as part of design. Medical appointment booking is not part of app.)*

RM-TRV-12.2 -The Traveler application shall provide the ability to modify or rebook a transportation appointment linked to a medical appointment. *(Requirement was modified and accepted by HIRTA CCB as part of design. Medical appointment booking is not part of app.)*

RM-TRV-13.1 -For follow-up care, Health Connector shall provide the ability to book a telehealth appointment by linking to the application provided by the healthcare provider. *(HC App will only provide a reference info for healthcare provider.)*

RM-TRV-14.1 -The Traveler application shall allow Travelers to identify that they are travelling with a personal companion at the time of booking a trip. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)*

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.

(Requirement was deleted. – Determined to be infeasible during contract negotiations with MOD Vendor)

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-15.3 -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-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 if permitted by HIRTA. *(Requirement was modified and approved by CCB.)*

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.

(Requirement was deleted – Determined to be infeasible during contract negotiations with MOD Vendor)

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

(Requirement was flagged for deletion – Determined to be infeasible during contract negotiations with MOD Vendor)

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

Traveler Notifications

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 Navigator, 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 HIRTA (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 through the application 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. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)*

RM-TRV-17A.2 -The Traveler shall be able to receive a notification which includes the pick-up time. If not acceptable, the Traveler shall be able to be allowed to cancel their initial ride and request an alternate trip that meets their preferences. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)*

RM-TRV-17A.3 -The Traveler shall be able to receive a notification which includes the pick-up location. The Traveler shall be able to contact customer service to update notes associated with a specific pick-up. Additionally, if permitted by HIRTA, the Traveler shall be able to call the driver when they approach to relay pick-up spot preference. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)*

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.

(Requirement was flagged to be descoped during functional testing stage- Communication with healthcare staff will not be done through the traveler app. This requirement was originally marked essential and will be revised to desirable.)

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.

(Requirement was flagged to be descoped during functional testing stage- Communication with healthcare staff will not be done through the traveler app. This requirement was originally marked essential and will be revised to desirable.)

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

Travel Assistance

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.

Translation Services

RM-TRV-7.1 -The Traveler application shall allow searching for transportation options using an interface in the requested language of the user, provided the app is available in the requested language. The app is available in Spanish, English, and Mandarin. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

RM-TRV-7.2 -The Traveler application shall allow booking for transportation options using an interface in the requested language of the user, provided the app is available in the requested language. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

RM-TRV-7.3 -The Traveler application shall allow Travelers to identify notification preferences in the language of their choice in the Traveler application, provided the app is available in the requested language. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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.

(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

Payments

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-1.5 -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-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 should HIRTA wish to reveal this field to Travelers. The exact flow for riders would be scoped with HIRTA throughout the launch process as currently either all or no funding sources can be revealed.

(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement. HIRTA has a policy to not have riders select the funding source.)

RM-TRV-31.2 -The Traveler application shall verify if the Traveler is eligible for the requested funding source provided the source is a rider account level logic. Specific logic to be scoped with HIRTA during the launch process. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement. HIRTA has a policy to not have riders select the funding source.)*

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.

(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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).

(Requirement was flagged for descoping at Functional Testing Stage. Auto-load function is not needed.)

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.

3.1.2. TMS Subsystem

MOD Platform TMS

Reservations and Customer Service

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

RC-CSR-2.1 -The TMS shall allow CSR to create a Traveler 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. *(Requirement was modified to specify what fields are required versus optional for account registration)*

RC-CSR-3.1 -The TMS shall allow CSR to identify funding source eligibility in the Traveler 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.
(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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. *(Requirement was modified as types of eligibility are not needed. Required to be tracked only for ADA para.)*

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). *(Requirement was modified as types of eligibility are not needed. Required to be tracked only for ADA para.)*

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 Traveler profile.

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

(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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.

(Requirement was deleted – Repeat of RC-CSR-14.2)

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.

(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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 by making no-shows by rider prominent on the rider's profile as well as available in the data generator. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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 time in relation to the trip time to determine which cancellations were in advance or same day. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

RC-CSR-17.1 -The system shall have the ability to record any complaints received from Travelers related to any aspect of a trip.

RC-CSR-17.2 -The CSR staff shall be able to review complaints by a predefined list of categories, as configured by HIRTA.

RC-CSR-17.3 -The CSR staff shall be able to track the status of received complaints while those are being resolved.

RC-OPS-12.1 -The OPS staff shall have access to language translation service to assist Drivers with translation needs. *(Requirement was revised to OPS staff for consistency with other requirements)*

Scheduling

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-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 two-legged trip. For two-legged trips, the CSR shall be able to choose pick- up/drop-off times and vehicles separately for each leg of the trip.

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 provided these trips are currently in the TMS.

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 by manually updating the expiration date. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

RC-CSR-12.2 -The system shall note the manual override action and shall make this event available in the Activity Monitor for HIRTA." *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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. Manual assignments and eligibility updates are logged in the Activity Monitor in the MOD Platform TMS. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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-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.3 -The system shall be able to automatically assign trips to contractor vehicles provided these vehicles use the Driver application. Trips shall be assigned according to the following factors: *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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

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 Traveler trips. At least the following parameters shall be included: *(Requirement was modified for wording clarification)*

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 known detours/road closures at the time of schedule creation.

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-4B.2 -The system shall not allow auto scheduling of trips where travel times for individual passengers exceed the maximum time onboard allowed. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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(s) that are required to accompany a Traveler, provided family member(s) are part of one booking. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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.

Dispatch

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.2 -Third party contractor vehicle pool shall include: a) taxis; b) volunteer vehicles; c) transportation network companies (TNCs).”

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 is more than one Traveler on the manifest, the operations staff will have discretion to take into account the Travelers’ preferences. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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 as a part of the same booking, 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 considered. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement. "family members" should be part of the same booking to be assigned to the same vehicle.)*

RC-OPS-6A.10 – In the event of reassignment, any stakeholder with access to the operations center or who receives ride notifications for the particular ride would have access to the details of the new vehicle and driver. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

RC-OPS-7.1 -The OPS staff shall have the ability to contact a healthcare Traveler care representative using voice call or text message to the healthcare Traveler care staff to notify about any anticipated delays based on estimated time of arrival (ETA).
(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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.
(Requirement was revised to OPS staff for consistency with other requirements)

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. *(Requirement was revised to OPS staff for consistency with other requirements)*

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.
(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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.

RC-OPS-9.1 -The OPS staff shall be able to contact an emergency medical transportation (EMT) service per the protocols set by HIRTA.
(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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.
(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

RC-OPS-10.2.1 -There shall be a HIRTA-approved audio notification method.
(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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.

(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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.

(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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.

(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

Manifest Building/Runcutting

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-6B.1 -The daily manifest shall indicate the projected arrival time of the vehicle at each pick-up and drop-off location, listing the trip events in chronological order. The pull-out time in the system is the start of the shift. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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-SCH-4A.1 -The daily manifest shall indicate the projected arrival time of a vehicle at each pick-up and drop-off location and shall list the trip events in chronological order. Pull-in and pull-out times are defined as the start and end of a shift in the TMS.

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).

Operations Management

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

RC-OPS-2.2 -The operations staff shall always have access to the real-time status of functional status of wheelchair/lift accessible vehicles. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement. W/C lift monitoring requires sensors that are not feasible for the vehicles involved.)*

RC-OPS-4.1 -The operations staff shall be able to compare current vehicle location with the scheduled pick-up location to verify the validity of a reported no-show event. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement. Traveler location is not monitored due to privacy.)*

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 to determine the status of a medical appointment and its impact on booked transportation. *(Requirement was revised to OPS staff for consistency with other requirements; Via language removed.)*

RC-OPS-5.2 -The TMS shall provide the OPS staff with the ability to see if a trip was dropped off late in the ride plan and to move scheduled return transportation to a later time as needed. *(Requirement was revised to OPS staff for consistency with other requirements)*

RC-OPS-5.3 -OPS staff shall be able to adjust a scheduled return transportation by manually assigning the trip to a later time and updating the communicated pickup window, by editing the trip if available, or by cancelling and rebooking the trip for a later time. *(Requirement was revised to OPS staff for consistency with other requirements)*

RC-OPS-11.2 -OPS staff can view Traveler pick-up and drop-off locations and assist drivers via voice calls. *(Requirement was revised to OPS staff for consistency with other requirements)*

RV-DRV-4.10.1 -The OPS staff shall be able to update pertinent details after a trip is complete, if needed. *(Requirement was revised to 'OPS' for consistency)*

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

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).

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 activate or deactivate drivers and vehicles 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 with ability to add drivers and attach drivers to vendors. *Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.*

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

Notifications

RC-OPS-10.1 -A non-medical emergency message may be sent from the driver via the silent alarm feature. The alarm is seen as an alert in the MOD Platform TMS. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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

Cost Allocation and Billing

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 HIRTA to access data to manage cost allocation per HIRTA policies.

RC-ADM-3.1 -The system shall allow HIRTA to pull data necessary to generate invoices per business rules as configured by HIRTA. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement. Invoicing is done in an accounting product.)*

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

Health Navigator & Healthcare-end Subsystem (Limited View MOD Platform TMS)

Reservations and Customer Service

RC-HNV-2.1 -Health Navigator shall have access to language translation service when working with persons with LEP.

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.

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.
(Requirement was descoped at Contract Negotiation Stage - Outside the current scope of the MOD TMS App. This requirement was optional.)

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.
(Requirement was descoped at Contract Negotiation Stage - Outside the current scope of the MOD TMS App. This requirement was optional.)

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).

RC-HNV-6.1 -The Health Navigators shall have access to tools to follow-up with their customers after a trip is complete.

RC-HNV-6.2 -The Health Navigators shall have access to the outcome of the follow-up with their customers.

RC-HNV-6.3 -The Health Navigators shall be able to extract the feedback data for further analysis in the DCHD I&R system.

(Requirement was descoped during the design phase- Health Navigators do not need this functionality; originally there was confusion around integration with I&R system but this is not needed per DCHD.)

Scheduling

RC-HNV-1.1 -Health Navigators shall have access to MOD platform within HIRTA TMS to assist their customers with transportation needs.

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.

RC-HNV-1.1.2 -The System shall allow Health Navigators to book trips using preferred transportation option and booking preferences of Travelers.

RC-HNV-1.2 -Health Navigators shall be able to book single leg trips, or multi-leg trips as part of separate transactions.

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.

RC-HNV-3.2 -The Health Navigators shall be able to book recurring transportation appointments for recurring medical trips.

RC-HNV-3.3 -The Health Navigator shall be able to modify or cancel appointments as needed on behalf of their customers.

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.

MOD-EHR Middleware

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

RC-HNV-3.1 -The Health Navigator shall have access to tools to view upcoming medical appointments for their customers.

RM-MODEHR-A -Interface with EHR (e.g., Epic, Veradigm)

RM-MODEHR-A1 -The middleware webpage shall retrieve and show all scheduled medical appointments and their status for all participants customers. The system shall retrieve such record on a pre-defined frequency (e.g., every 4 hours).

RM-MODEHR-A2 -The medical appointment data shall include the following fields:

RM-MODEHR-A2.a -Patient Identity (first name, last name, and SSN or Address)

RM-MODEHR-A2.b -Appointment identifier

RM-MODEHR-A2.c -Date of appointment

RM-MODEHR-A2.d -Start time of appointment

RM-MODEHR-A2.e -End time of appointment (if known)

RM-MODEHR-A2.f -Location of appointment

RM-MODEHR-A2.g -Appointment status (e.g., booked, cancelled, no-show)

RM-MODEHR-B -Interface with MOD

RM-MODEHR-B1 -The middleware shall request transportation appointment data from MOD vendor for a customer when requested by a system user on the middleware webpage.

RM-MODEHR-B2 -The transportation appointment data shall include the following fields:

RM-MODEHR-B2.a -First name

RM-MODEHR-B2.b -Last name

RM-MODEHR-B2.c -Pick up location

RM-MODEHR-B2.d -Drop off location

RM-MODEHR-B2.e -Pick up time

RM-MODEHR-B2.f -Pick up notes

RM-MODEHR-B2.g -Drop off notes

RM-MODEHR-B2.h -Assigned driver

RM-MODEHR-B2.i -Assigned vehicle

RM-MODEHR-B2.j -Space Type (e.g., wheelchair, ambulatory)

RM-MODEHR-B3 -The Middleware shall maintain a persistent database using a standard data structure for coordinating medical and transportation appointments.

RM-MODEHR-B4 -The Middleware data structure store information under the following categories

RM-MODEHR-B4.a -Customer profile using unique Health Connector ID (no HIPAA sensitive information)

RM-MODEHR-B4.b -Medical Appointment

RM-MODEHR-B4.c -Transportation Appointment

RM-MODEHR-B4.d -Coordination view

RM-MODEHR-B5 -The Customer Profile data shall follow the HIRTA Privacy Management Plan

RM-MODEHR-B6 -The Middleware shall implement a translator to convert data received through MOD vendor API into the native data structure format within Middleware.

RM-MODEHR-B7 -The middleware webpage shall show the status of scheduled appointments and if transportation has been scheduled in MOD vendor system for the scheduled appointments.

RM-MODEHR-B8 -If HIRTA is not able to provide transportation for a requested medical appointment, middleware webpage shall alert both HIRTA and healthcare staff.

RM-MODEHR-B9 -If medical appointment status changes for a customer in the EHR system, the middleware shall update the webpage to alert HIRTA staff to make changes in the transportation appointment.

RM-MODEHR-B10 -The middleware webpage shall use a visual indicator to show a modified medical appointment.

RM-MODEHR-B11 -The middleware will monitor the connection status to system endpoints and communicate to development team via email if connection is unable to be validated.

MOD-Medicaid Middleware

RM-MODMCD-A -Interface with Medicaid Broker (Lyft/ Access 2 Care) API (T-API)

RM-MODMCD-A1 -The Middleware shall automatically ingest all transportation requests received from a Medicaid broker through an Application Programming Interface (API), per guidance on https://developer.lyft.com/v1-trip-api/reference/post_tapi-trips. The T-API API has been developed by Lyft for A2C.

RM-MODMCD-A2 -The system shall ingest such records on a pre-defined frequency (e.g., every hour).

RM-MODMCD-A3 -The API shall provide at least the following data:

RM-MODMCD-A3.a -Rider ID: Masked/hashed so actual trip ID is not used in the message transmission. Translator is used to encode/decode the message at either ends.

RM-MODMCD-A3.b -Trip ID: Masked/hashed so actual trip ID is not used in the message transmission. Translator is used to encode/decode the message at either ends.

RM-MODMCD-A3.c -Date of trip: Date when the trip will occur

RM-MODMCD-A3.d -Scheduled Pickup Location: Location for pickup

RM-MODMCD-A3.e -Scheduled Pickup Time (optional if drop-off time is included): Time for pickup

RM-MODMCD-A3.f -Scheduled Dropoff Location: Location for drop-off

RM-MODMCD-A3.g -Scheduled Dropoff Time (optional if pickup time is included): Time for drop-off

RM-MODMCD-A3.h -Additional Passenger Information: Count of additional passengers

RM-MODMCD-A4 -The Middleware shall maintain a persistent database using a standard data structure to ingest data from any generic Medicaid broker API.

RM-MODMCD-A5 -The Middleware application shall provide a translator to convert the data retrieved from Medicaid broker API into the native data structure format of the Middleware application.

RM-MODMCD-A6 -The Middleware application shall provide a translator to convert the data retrieved from the Medicaid broker application to a format acceptable to the MOD vendor API for ingesting data into the MOD application.

RM-MODMCD-B -Interface with MOD Vendor (Via) API

RM-MODMCD-B1 -The MOD application shall automatically ingest all Medicaid transportation requests by the Middleware application through an Application Programming Interface (API). Middleware will interface with Via using API per guidance on <https://developer.ridewithvia.com/>. Verified system users of the MOD platform shall be able to do the following within the MOD platform with regard to the Medicaid trips:

RM-MODMCD-B1.a -View all Medicaid trip requests.

RM-MODMCD-B1.b -Manage Medicaid trip requests (assign drivers and vehicles and update trip status).

RM-MODMCD-B2 -The MOD application shall provide a service confirmation message for the trips that are successfully assigned to a driver/vehicle in the system.

RM-MODMCD-B3 -The service confirmation message shall be delivered to the Middleware application using a standard MOD vendor API that shall contain the following data:

RM-MODMCD-B3.a -Rider ID: Ideally masked/hashed so actual trip ID is not used in the message transmission. Translator is used to encode/decode the message at either ends.

RM-MODMCD-B3.b -Trip ID: Ideally masked/hashed so actual trip ID is not used in the message transmission. Translator is used to encode/decode the message at either ends.

RM-MODMCD-B3.c -Date of trip: Date when the trip will occur

RM-MODMCD-B3.d -Scheduled Pickup Location: Location for pickup

RM-MODMCD-B3.e -Scheduled Pickup Time: Time for pickup

RM-MODMCD-B3.f -Scheduled Dropoff Location: Location for drop-off

RM-MODMCD-B3.g -Scheduled Dropoff Time: Time for drop-off

RM-MODMCD-B3.h -Passenger type: Code for type of passenger: traveler, service animal, guest

RM-MODMCD-B3.i -Vehicle Type: Code for type of vehicle

3.1.3. Vehicle Subsystem

Driver Application

NavigationRV-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-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. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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 drive based on their local knowledge, and the navigation will re-route as the driver continues to drive.

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-4.6A.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.

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

Scheduling

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

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 provided the trip has not been cancelled.

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

Trip Performance

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-2.2 -The driver terminal shall allow the driver to update the amount paid by the Traveler based on the actual amount paid. *(Requirement was modified to remove references to Via product development)*

RV-DRV-2.3 -The driver terminal shall allow the driver to update the rider's payment method should the rider wish to use a prepaid cash balance to pay for the trip. Discount codes must be applied in the rider app or administrative portal. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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-3.3 -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.
(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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

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 dispatcher shall have access to tools to complete any relevant safety reporting process per PMESP. *(Requirement was modified to remove Via comments from requirement)*

HIRTA Supporting Hardware

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

3.1.4. Wayfinding Subsystem**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-20.3 -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.

(Requirement was flagged for descoping at the design stage- turn-by-turn wayfinding not necessary in small facility and stakeholders want to start with free codes. Modified and approved by CCB.)

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

(Requirement was flagged for descoping at the design stage- No step by step guidance being used at care facility. Modified and approved by CCB.)

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

(Requirement was flagged for descoping at the design stage- turn-by-turn wayfinding not necessary in small facility and stakeholders want to start with free codes. Modified and approved by CCB.)

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.

(Requirement was flagged for descoping at the design stage- turn-by-turn wayfinding not necessary in small facility and stakeholders want to start with free codes. Modified and approved by CCB.)

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

(Requirement was flagged for descoping at the design stage- No codes to be installed at 'correct floor' after discussing with stakeholders. Modified and approved by CCB.)

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. *(Requirement was flagged for descoping at the design stage- turn-by-turn wayfinding not necessary in small facility and stakeholders want to start with free codes. Modified and approved by CCB.)*

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. *(Requirement was flagged for descoping at the design stage- turn-by-turn wayfinding not necessary in small facility and stakeholders want to start with free codes. Modified and approved by CCB.)*

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.

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.

RM-TRV-29.1 -The Traveler shall be able to use the Wayfinding Application to identify the vehicle upon its arrival for pick-up. *(Requirement noted as repeat)*

RM-TRV-29.2 -Blind Travelers shall be able to use the Wayfinding Application to identify the entrance door as needed. *(Requirement noted as repeat)*

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. *(Requirement was flagged for descoping at the design stage- nodes and pathways network with augmented reality not possible with free codes that the care facility would like to use. Original priority was essential and should be changed to desirable.)*

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. *(Requirement was flagged for descoping at the design stage- step-by-step wayfinding not necessary in small facility and stakeholders want to start with free codes. Original priority was essential and should be changed to desirable.)*

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

Wayfinding Codes

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.

Infotainment Devices

RM-TRV-20.2 -Infotainment Devices 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. *(Understanding that this can be provided through infotainment but not through the wayfinding application itself. Component has been updated accordingly.)*

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.

3.1.5. External Systems

I & R

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

3.2. Data

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

3.2.1. Traveler Subsystem

Traveler Application

Trip Planning

RM-TRV-1.1.2 - The trip planning request shall require at least the following input: pick-up location/origin, drop-off location/destination, pick-up or drop-off time, mobility need. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)*

Registration

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.

3.2.2. TMS Subsystem

MOD Platform TMS

RC-SYS-10.4 -The system shall maintain a log of messages exchanged between Travelers and Drivers. *(Requirement was flagged for descoping at contract negotiation stage- Determined to be infeasible with product offered by MOD Vendor. Original priority was essential and should be revised to desirable.)*

RC-SYS-11.2 -The system shall provide an open data portal for data sharing with the general public. *(Requirement was flagged for descoping at contract negotiation stage- Determined to be infeasible with product offered by MOD Vendor. Original priority was essential and should be revised to desirable.)*

Reservations and Customer Service

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

Dispatch

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

Operations Management

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., map position, speed, and heading) which can be viewed on the MOD Platform TMS. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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 include the current location of the vehicle (e.g., location on map, heading, and speed). *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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).

RC-SYS-9.3 -The system shall maintain at least the following information on vehicles: vehicle ID, owner, pool type, license plate, number of seats, availability of wheelchair/lift, number of wheelchair seats. *(Age is tracked separately- not needed for MOD software).*

RC-SYS-9.7 -The system shall maintain at least the following information on drivers: driver ID, first name, last name, phone number. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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 system shall allow calculation of deadhead mileage.

RC-SYS-10.5.10 -The system shall allow calculation of deadhead mileage.

Performance Management and Reporting

RC-ADM-6.1 -The system shall provide tools to report on system operational performance, as defined in the PMESP. *(Requirement was modified to clarify document)*

RC-ADM-7.1 -The system shall provide tools to report on system operational performance, as defined in the PMESP. *(Requirement was modified to clarify document)*

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.

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 provided the terms and conditions HIRTA defines in the rider app state this use as acceptable for users opting into this service.

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-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 dispatchers and drivers. *(Requirement was modified - Corrected vehicles to dispatchers to represent proper communication)*

RC-SYS-10.4 -The system shall maintain a log of messages exchanged between Travelers and Drivers.
(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

RC-SYS-10.7 -The system shall provide a data access portal for all authorized HIRTA partners to access the reporting section of the MOD Platform TMS

RC-SYS-10.8 -The system shall use trip history dataset 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 the reporting section of the MOD Platform TMS

Cost Allocation and Billing

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-SYS-11.2 -The system shall provide an open data portal for data sharing with the general public.
(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

Health Navigator & Healthcare-end Subsystem (Limited View MOD Platform TMS)

Performance Management and Reporting

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.

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

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.

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.

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.

3.2.3. Vehicle Subsystem

Driver Application

Scheduling

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.

Trip Performance

RV-DRV-4.10.2 -The system shall automatically collect at least the following information: revenue mileage, fare paid

3.2.4. Wayfinding Subsystem

Wayfinding Application

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

3.2.5. External Systems

I&R

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

3.3. Interface

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

3.3.1. Traveler Subsystem

MOD Platform TMS

Health Navigator & Healthcare-end 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.

(Requirement was deleted- Travelers will not be able to book within the same app and their capabilities are not reliant on this interface)

3.3.2. TMS Subsystem

MOD Platform TMS

Reservations and Customer Service

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.

Dispatch

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.

Manifest Building/Runcutting

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

Operations Management

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

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

Cost Allocation and Billing

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-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.

Safety Event Management

RC-SYS-5.2 -The HIRTA safety management system (SMS) shall prove detailed assessments on reported safety events. (*Health Connector will not have direct access but information will be available.*)

Health Navigator & Healthcare-end Subsystem (Limited View MOD Platform TMS)

Reservations

RC-HCR-4.1 -The HCR staff shall have access to translation tools to assist with the booking.

Scheduling

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-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-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.

Operations Management

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-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.

(Requirement was flagged for descoping at contract negotiation stage- Determined to be infeasible with product offered by MOD Vendor.)

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.

(Requirement was flagged for descoping at Installation Testing stage- this won't be covered in MOD platform TMS but is covered on the MOD-EHR dashboard.)

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.

MOD-EHR Middleware

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.

3.3.3. Vehicle Subsystem

Driver Application

Navigation

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-4.11.2 -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.

Trip Performance

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-4.5.1 -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.

HIRTA Supporting Hardware

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

3.3.4. External Systems

Funding Entity

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.

3.4. Performance

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

3.4.1. Traveler Subsystem

Traveler Application

Trip Planning

RM-TRV-1.1.1 -The Traveler application can be configured to provide up to 2 transportation options that meet Traveler's search criteria within 10 minutes of requested pick-up time 95% of the time if there is sufficient available vehicle supply. If no options are found, the application shall direct Travelers to contact HIRTA customer service. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)*

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.

Trip Booking

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).

(Requirement was deleted- Determined to be infeasible during contract negotiations with MOD Vendor. Approved by CCB.)

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

(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement)

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.

Trip Information

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-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 Application shall provide the details (e.g., driver photo, vehicle image, vehicle license plate, van number) on the vehicle approaching to pick-up the Traveler. *(Requirement was edited to match App-Application wording)*

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

(Requirement was deleted – Determined to be infeasible during contract negotiations with MOD Vendor.)

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

(Requirement was deleted – Determined to be infeasible during contract negotiations with MOD Vendor.)

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.

(Requirement was deleted – Determined to be infeasible during contract negotiations with MOD Vendor.)

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.

(Requirement was deleted – Determined to be infeasible during contract negotiations with MOD Vendor.)

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.

(Requirement was deleted – Determined to be infeasible during contract negotiations with MOD Vendor.)

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.

(Requirement was deleted – Determined to be infeasible during contract negotiations with MOD Vendor.)

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. *(Requirement was deleted – Determined to be infeasible during contract negotiations with MOD Vendor.)*

Wayfinding Application

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

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

3.4.2. MOD TMS Subsystem

MOD Platform TMS

Reservations and Customer Service

RC-CSR-14A.5 -The number of cancellations caused due to software system reliability resulting in a missed trip shall be less than 5% for all trips requested within a month by a Traveler. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

Scheduling

RC-SYS-7.1 -Health Connector scheduling parameters shall be configured to enhance system productivity and shall allow maintaining delivering at least 3 rides per hour. *(Requirement was Corrected to 3 rides/hour)*

Dispatch

RC-OPS-6A.6 -The reassigned vehicle shall pick up the Traveler within 10 minutes if there is adequate supply. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

Operations Management

RC-OPS-1B.7 - Given adequate supply, the system shall be able to successfully assign trips to the third-party contractor vehicles 95% of the time. *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

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.

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.

Notifications

RC-OPS-6A.7 -Although ETAs are impacted by factors outside of the control of the TMS, such as vehicle supply, Travelers shall be notified of any change in ETA, and automatic reassignments will not be made that do not improve lateness unless there is an operational factor (i.e. a vehicle has broken down and the

nearest available vehicle is far away). *(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement.)*

Cost Allocation and Billing

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.

3.4.3. Vehicle Subsystem

Driver Application

Scheduling

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 provided the driver has cell service in their area.

Navigation

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.

(Requirement was deleted. Determined to be infeasible during contract negotiations with MOD Vendor)

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.

3.4.4. Wayfinding Subsystem

Wayfinding Application

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.

3.5. Reliability

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

3.5.1. TMS Subsystem

MOD Platform TMS

Operations Management

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.

Vehicle

HIRTA Supporting Hardware

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

Wayfinding

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

3.6. Maintainability

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

3.6.1. TMS Subsystem

MOD Platform TMS

Operations Management

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.

3.7. Security

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

3.7.1. Traveler Subsystem

Traveler Application

Registration

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.

Wayfinding Kiosk

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. *(Requirement was modified to remove "cellular" as that is unnecessary. Hospital is providing the network connectivity.)*

3.7.2. TMS Subsystem**MOD Platform TMS***Operations Management*

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.

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) and shall avoid any exposure to PII for Travelers.

Performance Management and Reporting

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 privacy policy. *(Requirement was modified as HIRTA privacy policy has been 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-3.5 -Data accessed from the system by external entities shall be over secure file transfer protocols (SFTP).

3.7.3. Vehicle Subsystem

Driver Application

Scheduling

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.

Trip Performance

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.

3.8. Accessibility

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

3.8.1. Traveler Subsystem

Traveler Application

General

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

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 disabilities.

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

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.
(Requirement was modified and accepted by HIRTA CCB as part of MOD vendor procurement. Android App is fully compliant with WCAG. IOS needs compliance on some aspects of WCAG.)

Trip Planning

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

Travel Assistance

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.

(Requirement was flagged for descoping at Contract Negotiation Stage – Was determined to be infeasible during contract negotiations with MOD Vendor. Approved by CCB.)

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.

(Requirement was deleted – Was Determined to be infeasible during contract negotiations with MOD Vendor. Approved by CCB.)

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 Application

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

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.

Personal Devices

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).

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).

3.8.2. Wayfinding Subsystem

Wayfinding Application

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-21.3.3 -Travelers shall be able to select suitable direction per their mobility preferences (e.g., no use of escalator or staircases). *(Requirement was flagged for descoping by HIRTA CCB as part of design. Suitable directions using stairs and escalators were not relevant to implementation in the setting that was selected.)*

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

3.9. Environmental

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

3.9.1. Wayfinding Subsystem

Wayfinding Codes

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 humidity 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.

3.10. Installation

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

3.10.1. Traveler Subsystem

Wayfinding Kiosk

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).

3.10.2. Wayfinding Subsystem

Wayfinding Codes

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 coordinators.

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.

3.11. Hardware

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

3.11.1. Traveler Subsystem

Wayfinding Kiosk

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.

3.11.2. Vehicle Subsystem

HIRTA Supporting Hardware

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).

Appendix A. Needs-to-Requirements Traceability Matrix

Traceability of requirements to user needs identified in in the ConOps can be found in Appendix A attached to this document. Need IDs that have associated notes in italics indicate that those needs have been updated as part of requirements development process.

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