

# Phase 1 Concept of Operations (ConOps)

## Heart of Iowa Regional Transit Agency ITS4US Deployment Project

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# 1. Scope

As shown in Figure 1, the Concept of Operation (ConOps) step serves as a critical milestone in the system planning and implementation process as it serves as the foundational document for subsequent activities that include system requirements, high-level and detailed design, development, integration, launch and operations.

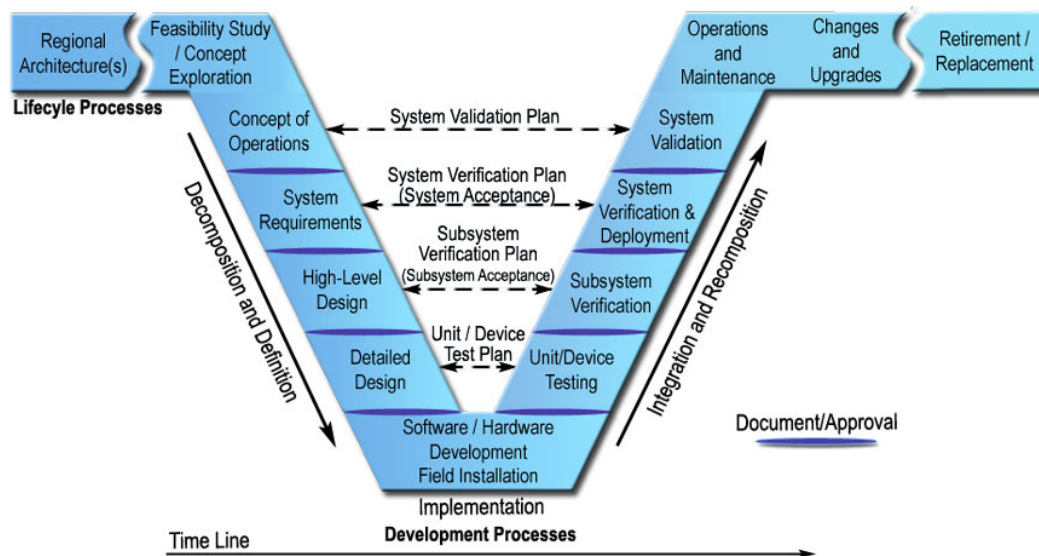


Figure 1. Systems Engineering "V" Diagram (Source: FHWA)

The ConOps document will serve as the guiding document for the Health Connector Phase 1 planning activities, and subsequent deployment and operations and maintenance (O&M) activities in Phases 2 and 3. This document will be used to communicate overall quantitative and qualitative system characteristics to the end user, developer, agencies, organizations, and staff involved in the system.

This is a user-oriented document that defines applicable user groups and documents needs for those groups as collected and compiled through a stakeholder engagement process. The document also describes the current system and operating environment supporting users seeking transportation for their healthcare needs and identifies necessary improvements in the current environment to meet user needs. The document also describes the Health Connector concept and how it will help the underserved population in various applicable Complete Trip operational scenarios when they are seeking healthcare transportation services.

## 1.1. Project Background

The Heart of Iowa Regional Transit Agency (HIRTA) is one of the 5 awardees for Phase 1 of the Complete Trip – ITS4US contract for its proposed concept ***“Health Connector for the Most***

***Vulnerable: An Inclusive Mobility Experience from Beginning to End***” (Health Connector) by the United States Department of Transportation (USDOT).

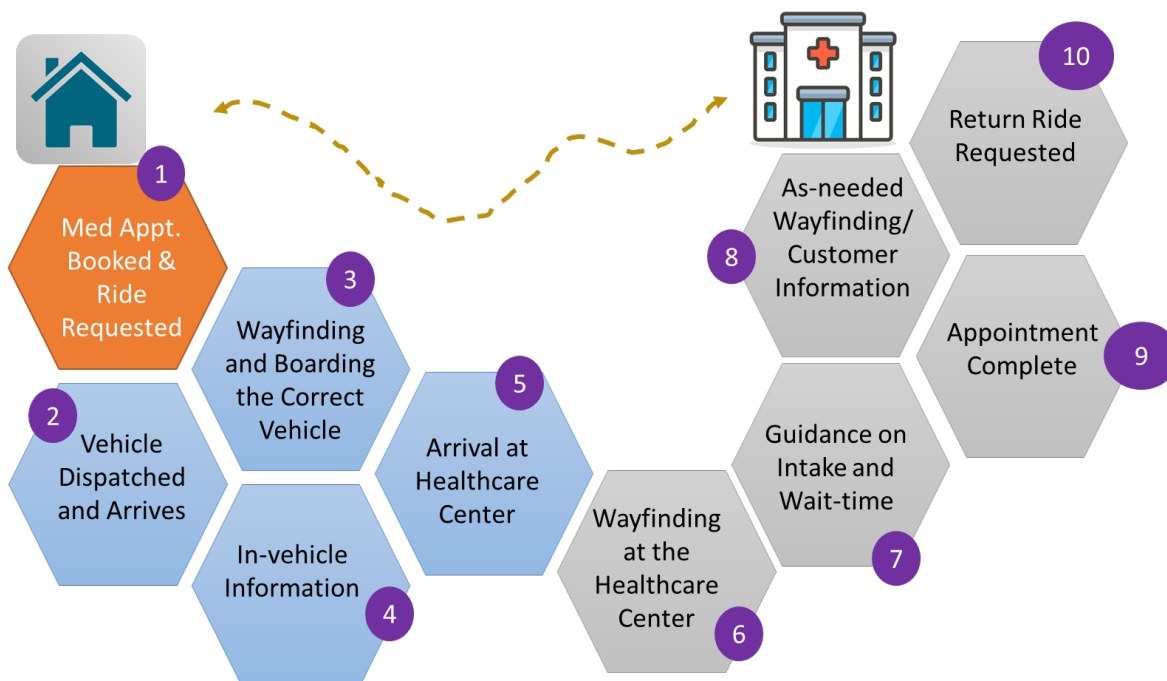
The Health Connector solution intends to demonstrate an innovative concept that will address various bottlenecks associated with healthcare access for HIRTA communities. Some of these challenges are the key reason behind missed appointments or unacceptable level of preventive or as-needed healthcare in HIRTA service area. For this deployment, we plan to implement a scalable and replicable solution that enables inclusive access to non-emergency medical transportation for all underserved populations and their caregivers by resolving access barriers with the use of advanced technologies. This solution will allow Dallas County residents without access to transportation who may be seeking a medical appointment to explore their transportation alternatives and book both medical and transportation appointments at the same time. Further, this solution will include information and wayfinding services to guide them at every step of their trip, as explained further in Section 1.4.

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

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

Figure 2 provides an overview of the Health Connector concept.

**Figure 2. Overview of Health Connector System Concept (Source: IBI Group, 2020)**



## 1.2. Acronyms and Glossary

### 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.

### 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.

### 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.

### **CTAA – Community Transportation Association of America**

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

### **DCHD – Dallas County Health Department**

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

### **DR-Demand Response**

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

### **Dispatching**

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

### **DMP – Data Management Plan**

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

### **DOT – Department of Transportation**

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

### **EDI – Electronic Data Interchange**

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

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**EHR – Electronic Healthcare Record**

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

**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.

**ICTDP – Integrated Complete Trip Deployment Plan**

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

**Information and Referral**

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

**IPFP - Institution, Partnership, and Financial Plan**

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

**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.

**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.

### **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.

### **PII – Personally Identifiable Information**

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

### **Provider:**

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

### **Reservation:**

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

### **RWP – Requirements Working Group**

Is subset of identified stakeholders that will guide the requirements development process.

### **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.

### **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.

### **SMP – Safety Management Plan**

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



**Smart Device**

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

**TAG – Transportation Advisory Group**

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

**TNC – Transportation Network Company**

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

**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.

## 1.3. Document Overview

The rest of this document is organized as follows:

- Section 2 lists all documents referenced while preparing the ConOps.
- Section 3 provides a description of the current system environment as applicable to healthcare transportation services in the Dallas County.
- Section 4 documents current challenges and user needs as collected through the stakeholder engagement process.
- Section 5 describes the system components of the proposed system concept and relevant operational policies and constraints.
- Section 6 lists applicable operational scenarios and provides pertinent details on how system will be utilized for those use cases.
- Section 7 provides a summary of impacts expected on HIRTA, DCHD and healthcare partner operations.
- Section 8 provides an analysis of the proposed system in terms of advantages, disadvantages and alternatives/tradeoffs considered.

## 1.4. System Overview

The project proposes to deploy emerging and innovative technologies and services through an inclusive customer-focused design process to engage stakeholders to address the mobility needs

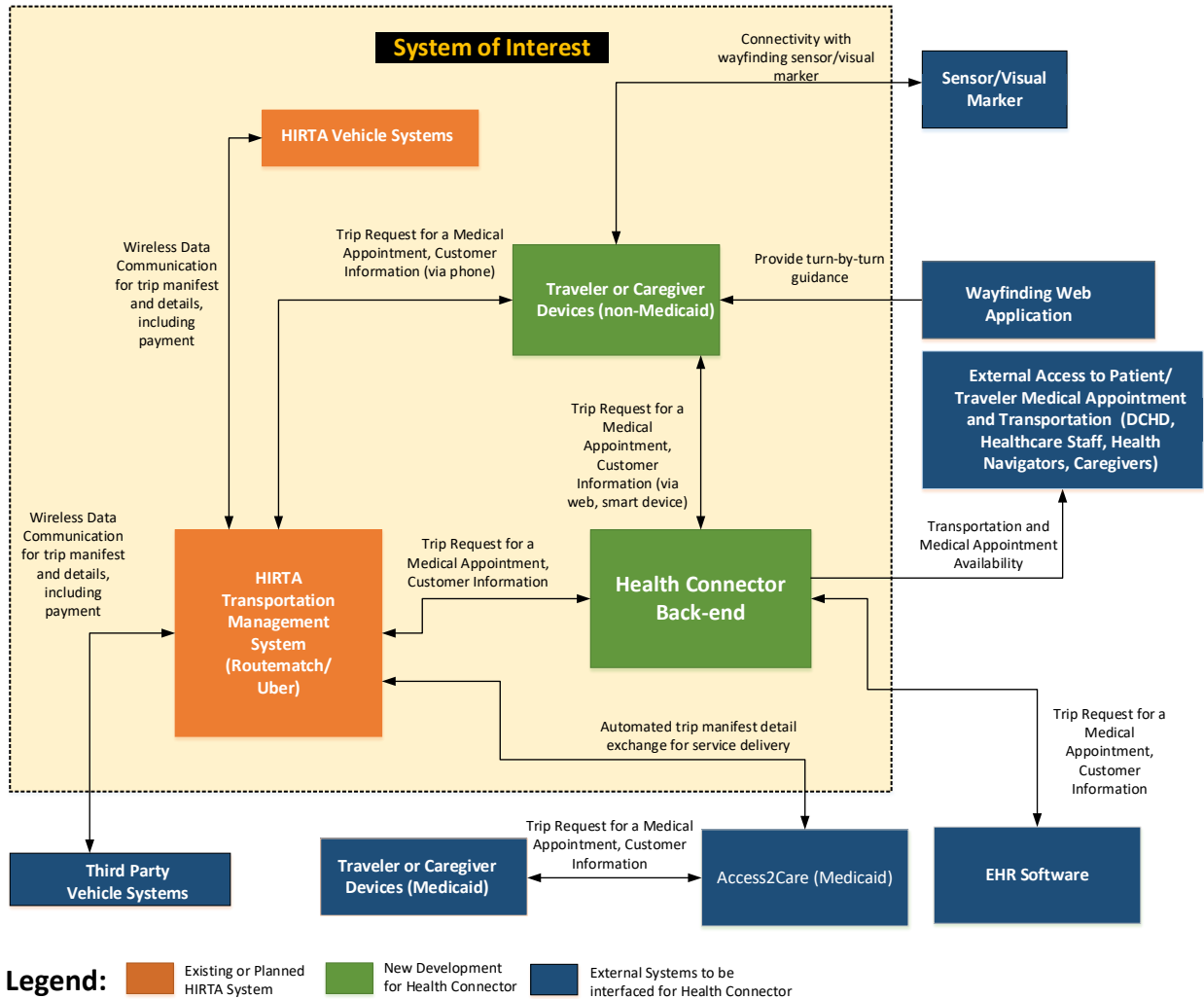
of underserved populations. The proposed solution will utilize emerging technologies to enable the customer to schedule and manage medical appointments and transportation services through a unified application. Further, the application will provide context sensitive wayfinding and customer information to enhance end-to-end experience. This solution 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.

Key capabilities of the proposed technology solution are as follows:

- Enable the customer to use a smart device (e.g., smartphone, smartwatch) application or equally effective alternate methods to schedule and manage medical appointments and transportation services all in one location (Unified Health Connector App). Provide customers options to choose from available providers. Provide same day response if needed by customers.
- Send customers alert before arrival and again when the vehicle is approaching.
- Keep customers 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 customer identity.
- The Health Connector App will enable the customer to utilize advanced wayfinding solutions with the help of indoor and outdoor navigation technologies to provide personal concierge-style travel from origin to destination. This will include:
  - Locating the vehicle outside origin and destination locations
  - Locating healthcare facility when dropped off by vehicles
  - Locating desired floor/room when inside the healthcare facility
- Customers will be able to use the Health Connector solution for any contactless payment needs at any point for transportation-related payments.
- If customers or their caregivers desire to book and pay for another local trip as an additional leg along with the medical trip they will be able to do that using Health Connector solution.

Figure 3 provides a context diagram for the proposed system concept. This diagram provides a high-level overview of various components of the system of interest (SOI) that will be developed and deployed. The SOI primarily refers to the system components that the HIRTA team will be able to modify to deliver the intended solution. The diagram also identifies third party systems that the SOI will interface with.

Figure 3. Generic Context Diagram for ConOps





## 2. Referenced Documents

The following documents were referenced while preparing this document

1. HIRTA “2021 and Beyond” Business Plan, available at <https://irp.cdn-website.com/bdcffb01/files/uploaded/2021%20and%20Beyond%20Final.pdf>.
2. 2019 Community Health Needs Assessment, Dallas County Iowa, available at <https://www.dallascountyiowa.gov/home/showpublisheddocument/24330/637159077404770000>.
3. HIRTA Brochure, available at <https://irp-cdn.multiscreensite.com/bdcffb01/files/uploaded/Brochure%202020.09.pdf>.
4. HIRTA Service Policies, available at <https://irp-cdn.multiscreensite.com/bdcffb01/files/uploaded/Service%20Policies%202020.0827.pdf>.
5. HIRTA Impaired Vision Assistance Brochure, available at <https://irp-cdn.multiscreensite.com/bdcffb01/files/uploaded/Impaired%20Vision%20Brochure.pdf>.
6. HIRTA Limited English Proficiency Plan, available at <https://irp-cdn.multiscreensite.com/bdcffb01/files/uploaded/Limited%20English%20Proficiency%20Plan%202020%20Approved.pdf>.
7. HIRTA No show policy, available at <https://irp-cdn.multiscreensite.com/bdcffb01/files/uploaded/No%20Show%20Policy%202020.0801%20%2800000002%29.pdf>.
8. HIRTA Public Participation Plan, available at <https://irp.cdn-website.com/bdcffb01/files/uploaded/Public%20Participation%20Plan%202020.0827.pdf>.
9. Routematch Amble App Brochure, available at <https://irp.cdn-website.com/bdcffb01/files/uploaded/Amble%20App%20Instructions.pdf>.
10. FTA Title VI Program, Iowa Department of Transportation, available at <https://irp-cdn.multiscreensite.com/bdcffb01/files/uploaded/FTA%20Title%20VI%20Program%202020%20Approved.pdf>.
11. HIRTA ITS4US Deployment Proposal: “Health Connector for the Most Vulnerable- An Inclusive Mobility Experience from Beginning to End”
12. Phase 1 User Needs Identification and Requirements Planning (UNIRP) Publication Number: FHWA-JPO-21-854
13. Phase 1 User Needs Summary- HIRTA ITS4US Deployment Project
14. Phase 1 Stakeholder Registry and ConOps Review Panel Roster

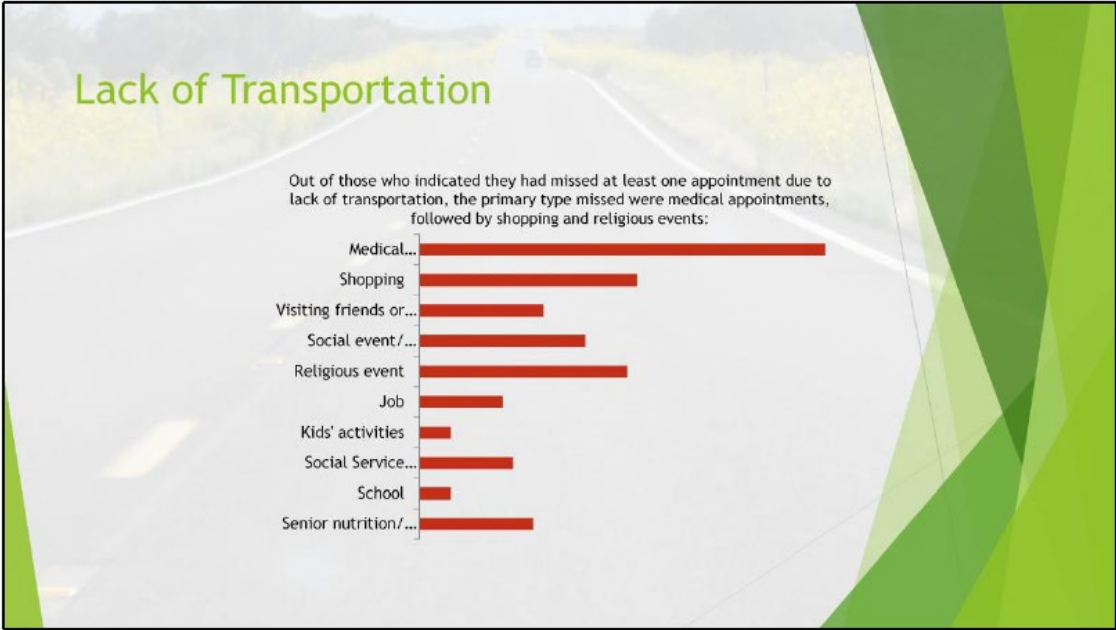


# 3. Current System and Situation

Dallas County is home to a transportation system that features public transportation services provided by HIRTA, a network of US and State of Iowa highways, such as Interstate 80, US-6, and US-169, and sidewalks at various conditions in the municipalities. For many residents, transportation alternatives consist of HIRTA, a single occupant vehicle, biking, walking, or ride from a family member/caregiver/friend.

Underserved populations in Dallas County often experience challenges accessing medical care due to a lack of transportation, including information and services. In fact, according to a 2014 National Leadership Academy for the Public’s Health (NLAPH) survey of Dallas County residents (see Figure 4), approximately 39% of respondents (out of a total of 144 Dallas County respondents) cited missing at least one healthcare appointment due to lack of available transportation options. Further, it is noteworthy that approximately 70% of total respondents relied on either HIRTA or family/friends for their transportation needs.

**Figure 4. Excerpt of Survey Response from 2014 NLAPH Survey of Dallas County Residents**



Respondents who had reported transportation as a barrier cited major issues as the following: 1) not knowing it was available (20% of respondents); 2) unable to afford to use it (19% of respondents); 3) and not going to destinations needed (19% of respondents). Other issues that were pointed out included 1) limited availability of wheelchair accessible vehicles with taxis; 2) discovering travel options that meet disability needs; 3) unavailability of travel options for same day appointments.

In addition, the 2019 Dallas County Community Health Needs Assessment (CHNA) cited stakeholder survey respondents (available at <https://idph.iowa.gov/Portals/1/userfiles/91/CHNA%26HIP/2020%20CHNA%26HIPs/Dallas%20County%20HIP%205-21-20.pdf>) as ranking “access to healthcare” as the top factor for a “healthy community.”

These findings were confirmed during stakeholder discussions conducted through a series of focus groups and one-on-one discussions conducted between March and May 2021. Also, it was discussed that often times, underserved populations are faced with a lack of access to healthcare options due to physical, cognitive, language, and other challenges. These barriers are also impacted by a lack of information on transportation options to access healthcare and clinical services, or assistance available at the facility being visited (e.g., information available in accessible format or wayfinding assistance).

This HIRTA project deployment seeks to identify and meet these needs by designing several new, innovative services and technology system for all travelers, especially underserved populations, to access healthcare options.

Further, transportation and mobility-related issues present financial and health care outcome impacts on the Dallas County Health District (DCHD) specifically as they relate to missed appointments and ‘lost patient opportunities.’ Healthcare staff in the Dallas County or HIRTA currently have very limited resources to track such data and concerns with lack of transportation contributing to no shows was based on anecdotal references and limited survey responses. However, the impact of missed appointments on healthcare system is a major problem recognized nationally. A study presented by SCI Solutions, published in Health Management Technology magazine in May 2017 issue, highlighted that the impact of missed appointments on healthcare systems nationally is approximately \$150 Billion based on a national no-show rate of up to 30%. The same study also recognized scheduling as a major barrier and is a cause of stress for both healthcare staff and patients given most of the scheduling (over 70%) is done through call attendants and only less than 3% bookings are done through self-service tools.

## 3.1. Background and Scope

### 3.1.1. Background

This Health Connector ITS4US Complete Trip deployment project is being led by HIRTA, a state-designated regional rural public transportation provider, which operates across seven counties in central Iowa, including Dallas County. The proposed pilot project will focus on Dallas County, which has a total population of 93,453 and covers 588 square miles.

Commencing services in 1981, HIRTA is a quasi-state/local governmental agency under agreement through the State of Iowa’s Chapter 28E. HIRTA provides coordinated door to door public transit and contracted human service transportation in Iowa Department of Transportation (IDOT) Region 11, comprising seven (7) counties in central Iowa, including Boone, Dallas, Jasper, Madison, Marion, Story, and Warren. HIRTA’s mission and vision statements are as follows:

***Mission Statement:*** *Provide customer-focused community transportation with a commitment to excellence in safety and service promoting independent lifestyles for central Iowa residents.*



***Vision Statement:*** *To become the transit provider of choice making a positive difference by enhancing community livability through safe, innovative, sustainable regional transportation options and promoting independent lifestyles for central Iowa residents.*

HIRTA provides public transportation to all travelers across the region with an emphasis on underserved communities, such as persons with disabilities, older adults, low income residents, veterans, and persons with limited English proficiency. Providing services in a diverse and innovative way ensures public transportation continues to be an essential asset and keeps the community moving forward. HIRTA's funding fluxes from year to year, largely determined by outside factors, as mentioned earlier. HIRTA partners with over numerous stakeholder organizations in Dallas County to provide transportation services, as listed in Section 3.3. In addition, HIRTA partners with many local, state, and federal organizations in providing services in the county and region.

Different categories of underserved populations are covered by funding sources for which they are deemed eligible. Eligibility verification is part of the customer registration process as further explained in Section 3.2.1. However, customers apply to get approved by funding sources through a separate application process where HIRTA is not directly involved. While Medicaid has several information resources available online, customers do need help with identifying other funding sources for transportation as often times they are not aware due to lack of readily available resources. DCHD Health Navigators work directly with Dallas County residents in identifying such resources and coordinate with customers, HIRTA and funding sources directly via phone calls and emails to help customers understand how transportation can be funded for a particular trip. We have also learned that often times healthcare facilities have funds available that could contribute towards transportation for their customers. However, this information is not readily available to customers. This presents a significant need for a tool that can help consolidate such resources by linking with information and referral (I&R) databases either available with DCHD or regional I&R agencies.

HIRTA invoices funding sources directly after cost allocation and billing process is complete on a monthly basis. While customers pay their share after each trip is complete, passenger fare revenue covers only limited operating expenses for HIRTA. HIRTA services are subsidized by operating assistance available from federal, state and local authorities. Additional funding sources include contract revenues, passenger fare, donations and others.

HIRTA completed its Business Plan, "2021 and Beyond" to create a vision for providing financially sustainable transportation while preserving and expanding service capacity in the entire 7 county region. In their desire to provide service to everyone, HIRTA is planning to act on actions identified in the Business Plan by focusing on financial sustainability, streamlining services, and making sure communities are not left behind. To accomplish this, HIRTA emphasized on the need to have a consistent funding model where local stakeholders have an established mechanism determining the level of service received. HIRTA's goal is to operate services within the financial support received, allowing for some reserve funds to be established.

Health Connector concept is a direct outcome of actions identified in the HIRTA Business Plan. It will allow HIRTA to leverage existing and emerging technologies in serving the needs of all underserved groups. Financial sustainability will also be essential for operation and maintenance (O&M) of Health Connector system. HIRTA has already identified state and local funds that will be used for the O&M and Institutional Partnership and Financial Plan will include further details on

state and local assistance and other funding sources through partners (e.g., healthcare providers), as applicable.

### 3.1.2. Summary of Key Elements of Scope

The following subsections summarize the scope by providing an overview of the key mobility challenges that were the motivation behind conceptualization of the Health Connector solution; identifying key components of the Health Connector system; and listing high-level desired outcomes.

#### **Mobility Challenges**

The proposed deployment will provide enhanced access to healthcare options for “all travelers” in Dallas County with a specific focus on underserved communities, including persons with disabilities, low income, rural, older adults, veterans, and persons with limited English proficiency. The referenced underserved populations’ mobility challenges vary based on the individual as identified through stakeholder meetings and shown in Table 1. Detailed needs that were identified by stakeholders and confirmed some of these challenges during focus group sessions and interviews are listed in detail in Section 4.2.2.

**Table 1. Challenges Faced by Underserved Population Group**

Population Group	Topics
<b>Persons with Disabilities (Mobility/Wheelchair User, Vision, Hearing, Cognitive/Developmental)</b>	(1) Wayfinding services (provided in both audio and visual modes) to the transit vehicle, into the healthcare facility, and to their specific appointment location; (2) Smart device accommodations for blind and deaf/hard of hearing persons; (3) Smart device – user-based settings for ease of use and services preferences;
<b>Older Adults</b>	(1) Smart device - larger screen setting; (2) Smart Device – user-based settings for ease of use and services preferences; (3) Telephone number to call for services; (4) Maintains independence; (5) Solution/service ease of use
<b>Low Income</b>	(1) Contactless Payments: unbanked/underbanked customers; (2) Alternate modes needed due to limited number of personal vehicles per household.
<b>Rural</b>	(1) Limited access to healthcare appointments due to long distance travel; (2) Challenges in coordinating appointment times with availability of transportation; (3) Cost effective transportation solutions; (4) Maintaining independence; (5) Solution/service ease of use; (6) Long distance travel may present stamina challenges.

Population Group	Topics
<b>Veterans</b>	(1) Access to veterans’ hospitals and other veteran support services; (2) Same challenges as all above subgroups.
<b>Persons with LEP</b>	(1) Technology system and services enabling the use of Spanish and other languages; (2) Support to understand all services and technology system developed (e.g., HIRTA travel trainers, DCHD, etc.); (3) Generally rely on human assistance even if tools (e.g., translation service) available to help with the appointment

**Technologies**

For the proposed Health Connector deployment, we plan to implement a one-stop access to healthcare and transportation appointment booking and management. Once the medical and transportation appointments are booked, the system will provide one-stop tools for travelers/patients, their caregivers, health navigators, and healthcare providers to track the status of appointment for return trips, no-shows, any need for adjustments to appointment times, accommodation of additional legs for related trips (e.g., trips to pharmacies).

Apart from appointment booking and management, the system will also provide tools for origin-to-destination wayfinding solutions by utilizing tools that provide indoor and outdoor navigation to assist with wayfinding needs such as navigating to pick-up spots, locating vehicles, locating specific buildings, entrance doors, and offices inside the medical complex and others.

The system will also help HIRTA better coordinate with Access2Care (Medicaid broker) for delivery of trips booked through their system. Also, the system will allow HIRTA to utilize non-dedicated service providers (e.g., taxis, TNCs, volunteer drivers, other agency vehicles) for increasing the capacity when demand cannot be met with HIRTA vehicles.

While the goal is to eventually have an integrated interface for all needs, we also recognize the complexity of interfaces between systems involved. Given this our focus will be on addressing user needs by making tools available to customers even if those are not fully integrated as part of the initial implementation.

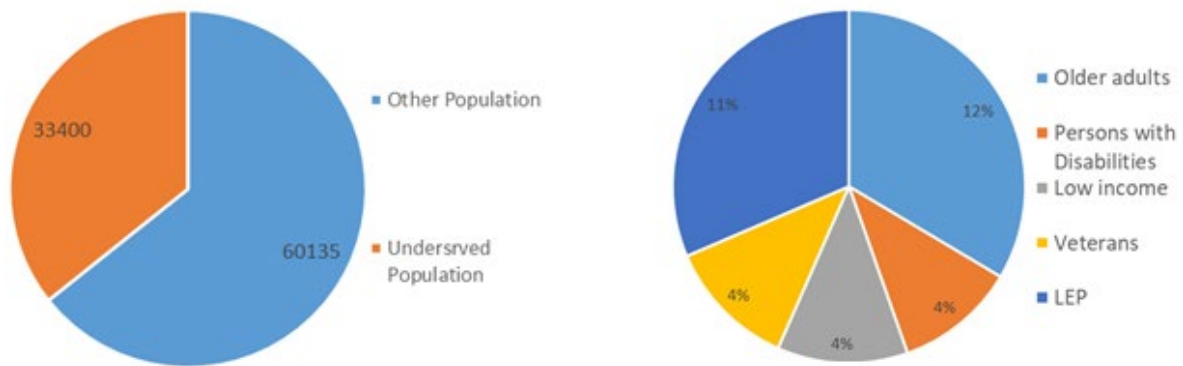
Further details of the system are provided in Section 5.

**Outcomes**

As one of the key outcomes of the project, the Health Connector will recognize the net impact that access to health services have on patient health care outcomes by potentially reducing no-shows caused by lack of transportation access. The Health Connector will provide improved healthcare access and outcomes for Dallas County residents through enhanced interaction with and utilization of the county's transportation infrastructure by making NDSP vehicles available to supplement HIRTA's capacity. Also, it will expand the extent to which health navigation services are provided to residents of Dallas County, both through an enhanced capacity for DCHD's Health Navigators and through the on-line health navigation using Health Connector.

### 3.2. Description of the Current System and Situation

Dallas County is one of the fastest growing counties in terms of population in the United States with an increase of 36.4% since 2010 focused largely on the southeastern portion of the county in the western Des Moines suburbs. In 2019, out of a total population of 93,000, the county was home to approximately 3,700 persons with disabilities, 11,200 older adults, 4,000 low income individuals, 4,000 veterans, and 10,500 people speaking language other than English. Dallas County’s aging population grew 12% from 2000 to 2010 and is expected to double by 2030. The overall growth represents a shift from an agricultural to suburban commuter community. Such challenges require HIRTA to utilize the available driver and vehicle resources in the most efficient manner.

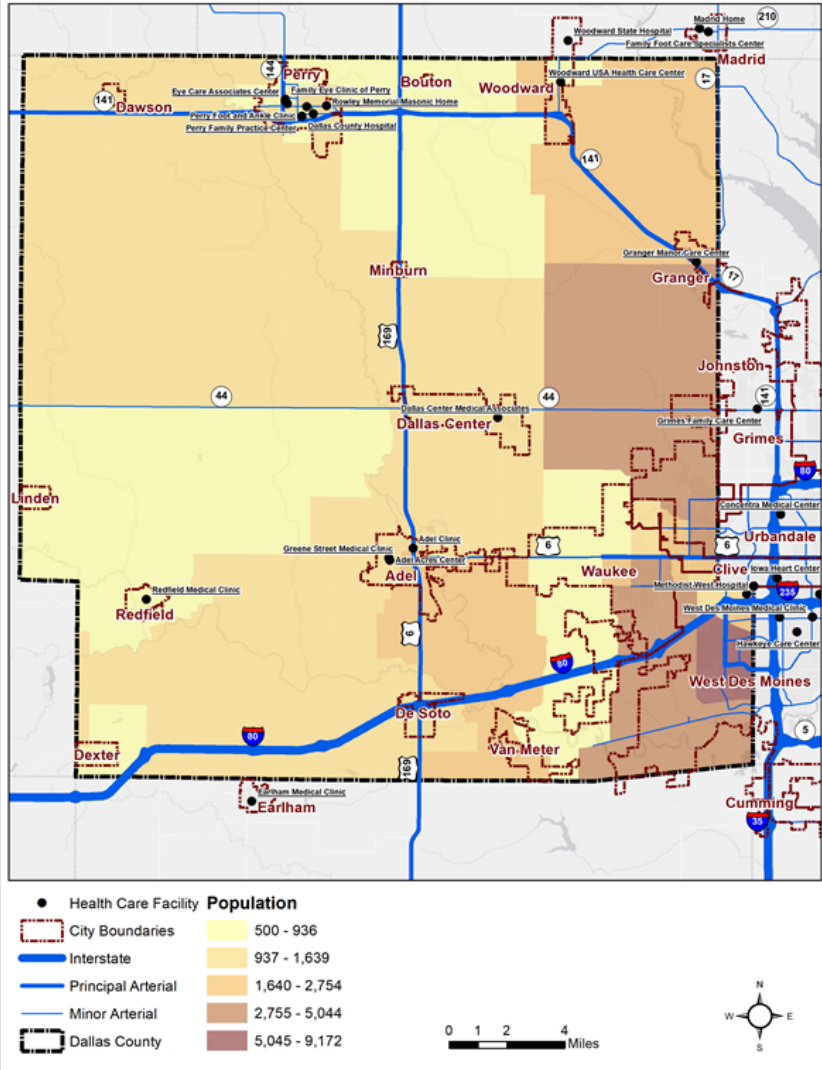


**Figure 5. Population Breakdown in Dallas County**

Dallas County comprises 18 municipalities with the largest being West Des Moines (population 66,641) and the smallest being Bouton (population 119). Portions of Dallas County are located in the Des Moines – West Des Moines Metropolitan Statistical Area and features a mixture of suburban and rural densities.

The change in population brings opportunity and access to health care services for many residents, but also exacerbates inequities between the affluent eastern side of the county and the rural and ethnically diverse communities to the north and west. Older adults make up a larger portion of rural populations (17%) than urban populations (13%) and rural residents with disabilities rely on public transit and take about 50% more public transit trips than those who do not have disabilities.

Figure 6. Dallas County, Iowa



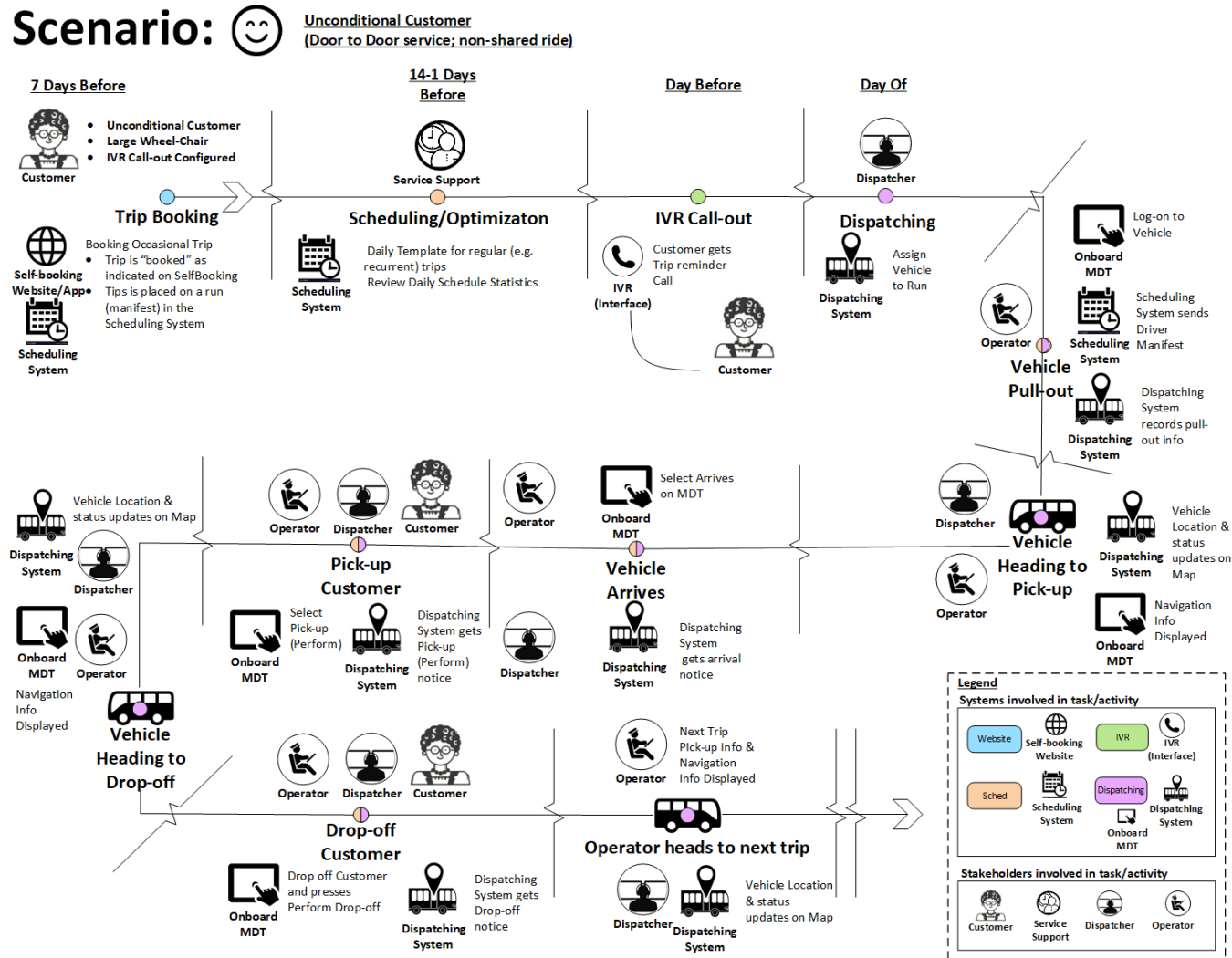
### 3.2.1. HIRTA

In 2019, HIRTA provided 300,000 customer rides and operated 95,000 hours along with 1.3 million miles of service within the seven-county region encircling the Des Moines urban area. HIRTA provides demand response public and human service transportation utilizing a total of eighty-seven (87) fully accessible vehicles with now 37 staff members (previously 90, prior to the COVID-19 pandemic) to meet regional service needs. HIRTA also provides customers with out-of-area medical services to the University of Iowa Medical Clinics in Iowa City, IA, and various locations within the Des Moines metro area. HIRTA's service area ranges from addressing counties with 554 square miles to the largest covering 730 square miles and serving county populations from 16,013 to 97,502, who have experienced a range of change from a decline of 0.36% to an increase of 30.71%.

Services under discussion on this project are demand response only not complementary ADA paratransit as HIRTA does not operate ADA paratransit se. This section presents an overview of

current business processes for service registration, trip reservations, scheduling, dispatching, trip management, payments, cost allocation and billing. HIRTA utilizes tools provided by Routematch for vehicle and central environment. Figure 7 provides an overview of a typical process used in a trip life cycle. The same process is utilized for both healthcare and non-healthcare trips.

Figure 7. Typical Scheduling and Trip Delivery Flow



- **Customer Registration:** Prior to booking of trips, all customers are required to be registered within the Routematch system. This can be done by customers calling in to the call center or by using the Amble App. Currently, majority of the customers call in as HIRTA is working towards the adoption of mobile app. As part of customer registration, HIRTA call center staff creates the customer profile and registers all their travel preferences (e.g., home address, contact information, mobility aid needs, point of interest locations, notification preferences). Customer profile also allows HIRTA to assign applicable funding sources (e.g., Medicaid) for a customer and note expiry dates.
- **Reservation:** HIRTA mostly allows advance booking and customers can book trips up to 1-14 day in advance. Customer details from their profiles are automatically populated when booking trips. Pick-up/drop-off times are confirmed in real-time when trips are being confirmed. A 20-minute (+/-10) window is used for pick-up and customers are required to be ready 10 minutes prior to the pick-up time. While not encouraged, HIRTA occasionally accommodates same day reservations.
- **Scheduling:** Schedules are finalized the day before. Routematch allows configuration of various parameters that are applied to Routematch Scheduling Engine (RSE) for the purpose of schedule optimization.
- **Manifest Building/Runcutting:** Once the schedules are finalized, vehicle manifests are created and pushed to vehicles wirelessly. These manifests include information on customer ID, name, pick-up /drop-off locations, time of pick up, any mobility aid (and/or driver assistance) needed and required fare payment.
- **Dispatching:** Drivers access electronic manifests using on-board tablets after vehicle pullout and logon. The size of manifest visible to drivers is configurable. Drivers perform pick-up and drop-off of customers by utilizing turn-by-turn navigation. Dispatchers have the capability to view real-time location of vehicles and can communicate with drivers in real-time using voice (two-way radios) and data communications (canned messages). Dispatchers can also adjust manifests (add/modify/delete trips) as necessary. Dispatchers also manage the no-show process per HIRTA policy if a Traveler is not available for pick-up per time and location in the manifest.
- **Cost Allocation and Billing:** In a shared ride scenario, when multiple riders funded by separate funding sources may be riding the vehicle, HIRTA performs cost allocation so funding sources are billed appropriately. Billing is conducted based on billing rules as configured in the system by funding source.
- **Customer Tools:** Customers have access to various self-service tools through the Amble App provided by Routematch for booking trips, accessing details for upcoming trips, finding out real-time information on trips in progress. Routematch also provide RMPay which allows HIRTA to maintain a cash account on behalf of customers within Routematch system. It allows HIRTA to deduct appropriate fare amount once a trip is complete for a customer. Customers can pay cash or check to drivers on-board to replenish the account.



### 3.2.2. HIRTA Travelers

While HIRTA is fully ADA compliant as well as has adopted LEP and Title VI plan to meet the needs of underserved groups, challenges still exist as discussed further in Section 3.1.2 and 4. Also, there is a need to lessen the administrative burden of health navigators and facilitate increased efficiencies and enhanced access to health services. These are not to be construed as challenges with current HIRTA operations but to enhance the experience for customers seeking transportation services for their medical appointments.

Dallas County was selected as a pilot area for this project since population growth, proximity to the Des Moines Metro and unique public health program services available in Dallas County stood out as key determining factors. While the Southeastern corner of Dallas County is part of the Des Moines Metro (Waukee and West Des Moines) most of the county is rural, including Perry with a population of 7,599 people (2019 estimate). Rural areas have unique challenges, Dallas County hospital has reported instances of cancer patients walking through corn fields to get to treatment and women crossing the four-lane highway, with no controlled intersections, to get to prenatal care appointments.

Underserved groups served by HIRTA represent persons with different types of disabilities (e.g., physical and/or intellectual). For persons with low income, there are many challenges such as disparities among low income rural residents versus low income metro residents; fewer transportation providers in rural areas contributing to longer trip length and higher costs; limited access to internet services among other others.

Persons with Limited English Proficiency (LEP) have additional barriers in accessing transportation; HIRTA has a LEP plan and is actively working to enhance access to translation services for the community and increase our inclusion efforts.

Section 3.2.1 provides an overview of how HIRTA manages its operations and the tools that are utilized. For medical transportation-related trips, typical process from the Traveler perspective is as follows:

- **Booking:** Process for booking varies for Medicaid and Non-Medicaid trips as follows:
  - Medicaid Trips: As further explained in Section 3.2.3, Medicaid trips are initiated within a system developed by Access2Care, State of Iowa Medicaid Broker. A Traveler/member reaches out to Access2Care via phone, through their website or via membership app to request transportation after the medical appointment is confirmed.
  - Non-Medicaid Trips: Once the medical appointment is confirmed, customers call HIRTA for transportation appointment and follow the process described in Section 3.2.1 for registration and reservation. Customers also have access to AMBLE app provided by Routematch by Uber but utilization is currently low.
- **Trip Status Updates:** HIRTA Travelers are notified of upcoming trips the day before via IVR, email or text messages, as subscribed. Currently, there are limited tools to provide trip status updates in real-time in an automated way, but customer service representatives can provide updates when they receive an inquiry. Also, Travelers can use the AMBLE app to find out trip status information.

- **Payments:** Payments are made by Travelers on-board using cash, check, tickets or mobile app (RMPay). As part of RMPay subsystem, HIRTA also maintains a wallet for Travelers within the Routematch system attached to Traveler account. Those wallets can be replenished by providing cash or check to drivers or by visiting customer service center. Travelers, if they prefer, can also use credit/debit card to replenish their accounts.

Currently, there are no tools for wayfinding other than physical signage to guide Travelers indoors and outdoors in and around the medical facilities.

### 3.2.3. Access2Care

Access2Care is the state-wide broker of Non-Emergency Medical Transportation (NEMT) funded by State of Iowa Medicaid. Access to Care works under contract to Iowa Total Care, a managed care organization for the State of Iowa. The NEMT services are for members with full Medicaid benefits, who need travel reimbursement or a ride to get to their medical appointments. Access2Care works with various service providers in the HIRTA service area along with HIRTA.

Access2Care requires that all trips that are Medicaid eligible are booked through their system. Once the trips are scheduled, Access2Care makes trips available to service providers such as HIRTA for service delivery 24 hours in advance. HIRTA Dispatcher checks for those trips on a daily basis as part of their routine as no automated alerts are received after trips are assigned. For late notice (same day or afternoon before), Access2Care calls HIRTA to confirm if HIRTA has the any availability to provide new trips.

Once the trips are assigned to HIRTA in the Access2Care system, at that point, HIRTA enters those trips in Routematch and manages those as any other type of trips. Once the trips are completed, HIRTA enters the details in the online portal provided by Access2Care. Medicaid trips make up about 20% of HIRTA's total trip volume.

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

### 3.2.4. Dallas County Health Department/Health Navigators

Health Navigators work with residents directly with all their needs related to identifying resources pertinent to their health. Access to transportation for healthcare needs is one of the items addressed by Health Navigators as well where they help residents connect with HIRTA or other providers in the area. In some cases, they help with booking and also follow-up on appointments. Their association with residents seeking health navigation services is generally short and may last up to 8 weeks.

DCHD uses a system from Healthleads where they maintain a database of residents seeking services. DCHD can track the needs and referral services provided to measure outcomes of services provided. Based on the most recent survey of Dallas County residents, DCHD has reported that transportation is 6<sup>th</sup> most common need experienced by their clients after food,

health, housing, behavioral health, and utilities. Transportation is a barrier to access other needs beyond just healthcare, however, it is an indicator of challenges transportation presents to Travelers seeking healthcare. Based on stakeholder discussions, transportation is a barrier in most cases due to limited number of cars per household, limited affordability for transportation options such as taxi and TNC and limited services from HIRTA.

### 3.2.5. Healthcare Operations

Health Connector intends to integrate medical appointment and transportation booking experience. Customers currently have to separately contact HIRTA after medical appointment is booked with a healthcare provider. If they have to modify the medical appointment, it requires contacting HIRTA again for making adjustment in their transportation plans. Also, often times, return trips are not scheduled for healthcare trips due to uncertainty in the completion time for certain medical appointments (e.g., dialysis, prenatal care). This presents challenges for HIRTA since HIRTA has limited capability to accommodate same day reservations. Given this, travelers have to rely on family or friends or make arrangements using unaffordable transportation means (e.g., taxis, TNCs). Some healthcare providers have mentioned that they have compassionate funds that can be used towards funding transportation for travelers in-need. However, currently, HIRTA does not have access to those funding sources.

HIRTA project team has been exploring efficient methods to automatically and securely exchange medical appointment record for customers which will include date, time and location of appointment along with some type of personal identifier. Some healthcare providers store such information in the Electronic Health record (EHR) system for all patients while others use separate systems for in-patient and out-patient cares and out-patient appointment may not be in an EHR system.

Caregivers and social works/health navigators at DCHD or those affiliated with healthcare providers can also book appointments and/or find out the status of appointment on behalf of customers they are working with. This requires signing off an information release authorization given health/privacy related data is involved. DCHD and healthcare providers have their separate processes for establishing such agreements.

For this proposed deployment, the HIRTA project team is partnering with the following four healthcare service providers:

- **Dallas County Hospital:** Located in Perry, Iowa, Dallas County Hospital is a 25-bed private care facility and is associated with Mercy One, another hospital located in West Des Moines. Along with common care, Dallas County Hospital also provides specialized healthcare services such as radiology including mammography, chemotherapy, surgical, lab services and therapy services.

Dallas County Hospital utilizes Thrive electronic health record (EHR) system provided by CPSI/Evident.

- **Mercy One Hospital:** Mercy One is located in West Des Moines and is full service private hospital providing a range of care to the residents of Dallas and surrounding counties. Mercy One also utilizes Thrive EHR system provided by CPSI/Evident.

- **Unity Point Health:** Unity Point medical center and clinics are part of the larger Unity Point Health network that is a collection of various healthcare facilities available in the 3-state region of Iowa, Wisconsin, and Illinois.

Unity Point Health uses Epic EHR System. Unity Point also partners with Kaizen Health that lets Unity Point customers book transportation for a confirmed medical appointment.

- **Broadlawns Clinic:** Broadlawns Clinic is a small medical facility located in Dallas Center, Iowa. Broadlawns utilizes Meditech EHR system.

While physical signage is installed, based on the discussions thus far none of the healthcare facilities provide technology-based wayfinding solution to guide their customers when they are trying to locate offices within the same facility or within a nearby facility where customers may get referred to for a follow-up care.

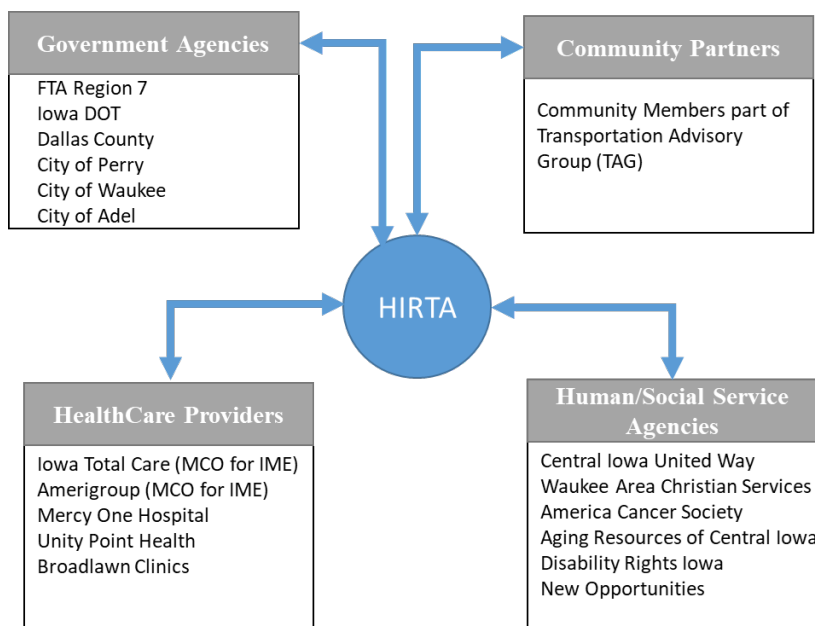
### 3.3. Current System Stakeholders

Primary stakeholders in the context of this project refer to the following:

- Customers seeking HIRTA services for medical appointments.
- Call center and Operations staff (e.g., customer care, drivers, dispatchers) at HIRTA responsible for using the system for reservations, scheduling, dispatching and administrative needs, including performance measurement.
- Community health partners, call center and reservations staff and other relevant staff at healthcare facilities using the system for coordinating medical and transportation appointments and performance measurement.
- Referral entities and health navigators, who connect customers with potential healthcare providers and transportation providers.

A full list of HIRTA/Dallas County Stakeholders (also part of the proposed deployment) are shown in Figure 8.

Figure 8. HIRTA Stakeholders



### 3.4. Support Environment

As stated earlier, HIRTA utilizes Routematch software for all transportation management needs. This system is hosted by Routematch. HIRTA has a maintenance contract with Routematch to support installed systems.

Day-to-day IT needs related to email servers, workstations, telephone systems, computer networking are provided by HIRTA's IT staff.

HIRTA vehicles are also equipped with two-way radios. These radios are used for communication between drivers and dispatchers when electronic communication may not be possible due to network or communication failure.

All facilities are leased or owned by another party. In some areas HIRTA has indoor bus parking, however in most communities' buses are stored outside and office space is limited or non-existent.

### 3.5. Modes of Operation for Current System

Different modes of HIRTA operations are reflected by current policies addressing trip delays or adverse weather conditions as reflected by the following processes/operating policies:

- **Normal:** In normal mode, the following capabilities exist:
  - HIRTA staff is able to utilize all functions within the Routematch by Uber software as installed.

- Drivers can perform manifests and are able to communicate with the HIRTA Operations staff.
- Routematch system can provide customer-focused functions which include real-time information on trips and automated notifications on trip status and vehicle arrival status.
- **Degraded/Delayed Vehicles:** HIRTA vehicles experience the same traffic and weather conditions as the rest of the commuting public. Occasionally, their buses may be late for a pick-up. If the vehicle has not arrived by the end of the 20-minute (+/- 10 min) pick-up window, customers are advised to contact the office and they will be advised of the expected time of arrival.
- **Server or Communication Failure:** Occasionally servers that host Routematch applications may fail disrupting operations. Also, issues with carrier network may disrupt communication between central system and vehicles which will impact HIRTA's ability to automatically find out trip status. In this scenario HIRTA would rely strictly on paper manifests and two-way radios.
- **Emergency/Adverse Weather:** HIRTA will make every effort to provide service, however in the event extreme weather conditions exist and make travel unsafe, HIRTA reserves the right to discontinue services until conditions are more favorable. If service is temporarily discontinued, all rides, regardless of trip purpose, may be cancelled.

HIRTA will place cancellation announcements on Television Stations KCCI and WHO, as well as, on our website and social media outlets. HIRTA also notifies customers via channels of their preference of a service is cancelled using phone/IVR, email or text message.

The following may occur when hazardous road conditions exist:

- Travel time may increase.
- Some trips may be cancelled, or service hours shortened.
- Bus service may be cancelled on non-plowed or un-sanded roads.
- Bus is not allowed to travel on alleyways.
- In case of severe weather, all customers may be taken home immediately.

## 3.6. Operational Policies and Constraints

### 3.6.1. HIRTA

Applicable operational policies and constraints for HIRTA are listed below:

- **Hours of Operation:** Currently, HIRTA's services are available 7AM-5PM Monday through Friday.
- **After Hours Services:** Currently, there are no services to assist customers looking for services beyond regular hours.
- **Coordination with Healthcare Providers:** HIRTA coordinates with healthcare providers and health navigators when serving customers that have requested trips for medical appointments. All these coordination activities are conducted via phone or email.

- **IT-related Policies:** Given the scale of operations, HIRTA's IT policies are basic in scope and are related to email and internet security. Routematch-provided systems are vendor-hosted and follow strict policies as outlined by the hosting data center and data security and privacy policies per HIPAA.
- **Staffing:** Current staffing includes administrator, business development manager, customer care staff, operations and safety staff, accounting staff, marketing/outreach staff, and maintenance staff.
- **Budget/Financial Constraints:** Like all transit systems, HIRTA funding does have limitations. HIRTA has not established who all of the partners are at this point so no ongoing support fees are still to be determined.
- **Service Level Agreements (SLAs):** No relevant SLAs currently exist.

### 3.6.2. Healthcare Providers

Applicable policies and constraints are as follows:

- **Hours of Operation:** Hours vary by healthcare provider and some are open 24 hours for emergency needs. However, HIRTA services, as mentioned earlier, are available only during limited hours.
- **Data Access:** As stated earlier, a release form has to be signed for caregivers or Health Navigators to have access to customer/patient info for appointment booking purpose. HIRTA currently does not have access to such information. Specific details and terms vary by healthcare provider.
- **Funding:** Healthcare providers have access to some funds for helping low-income Travelers looking for financial help but there is no formal process for managing and allocating such funds.





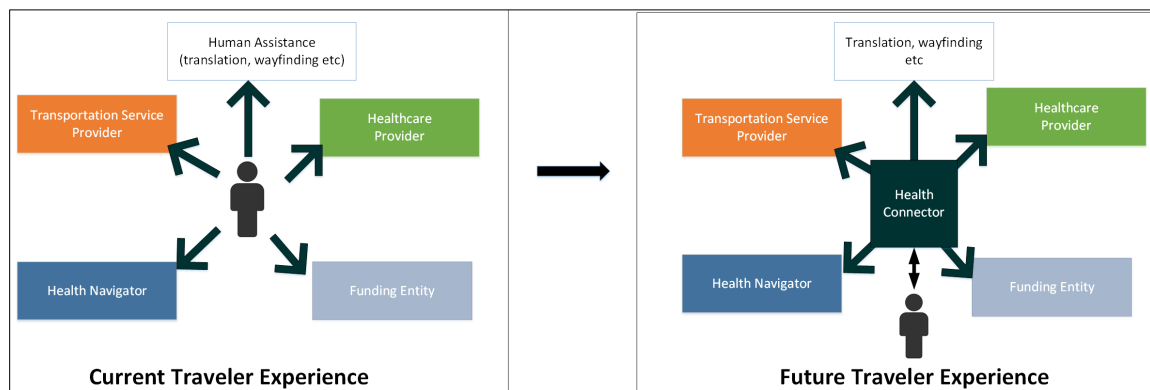
## 4. Justification for and Nature of Changes

This section provides a description of limitations in the current systems in use at HIRTA for transportation and wayfinding related stakeholder needs for their medical trips. Subsection 4.1 summarizes necessary changes in the way current tools function and fall short in meeting user needs. Subsection 4.2 lists the user groups and actors that will interact with the new system and lists needs relevant to those users along with priorities. Subsection 4.4 summarizes alternatives considered but not included and subsection 4.5 lists relevant assumptions and applicable constraints.

### 4.1. Justification of Changes

Figure 9 provides a graphical overview of current and planned traveler experience. In current environment, travelers connect with individual organizations separately through the customer engagement channels (e.g., phone, email, website, smartphone app) made available to them by those organizations. For example, separate phone calls or email communications are required to book medical and corresponding transportation appointments. There may also be a need to coordinate with the funding source to understand if the traveler's eligibility is valid for utilizing the funds for paying for transportation. Therefore, often times, a single medical appointment may require connecting with multiple entities. Also, in the event of an appointment modification, multiple follow-ups may be needed. Health Connector will help to streamline customer engagement channels associated with different parties and will help them communicate with customers through an integrated system. This diagram summarizes the needs and discussions we have had with stakeholders through a series of focus group meetings and one-on-one interviews.

**Figure 9. Comparison of Current Customer Experience and Future Experience**



Overall, based on stakeholder discussions, the unmet needs can be summarized as follows:

- **Lack of Awareness About Available Transportation Options:** One of the major barriers regarding lack of access to transportation was pointed out as having limited information on options beyond personal (or arranged via family/friends) transportation for medical trips. Health Connector will provide a platform that will allow customers to explore availability of HIRTA and its partner vehicles through a “trip discovery” feature within Health Connector.
- **Lack of Integrated Booking and Trip Management Experience:** The planned Health Connector deployment concept seeks to address a longstanding need to integrate transportation and healthcare scheduling, management, and day of services monitoring functions for ultimate “one stop” experience for all travelers for their mobility needs, with specific focus on underserved populations. This solution will help Dallas County residents who are not able to make their medical appointments due to lack of access to a transportation mode, will be able to explore their options and book and manage a ride at the schedule of their choice.
- **Challenges in Meeting the needs of Underserved Groups:** Through stakeholder engagements, HIRTA team has identified many challenges faced by underserved population groups in the Dallas County as listed in Table 1. Some of the key issues relevant to transportation access to healthcare services in the context of HIRTA services are as follows:
  - Return trip is a major issue for all groups since end-time for appointments cannot be accurately determined ahead of time. HIRTA tries to accommodate customers’ requests for same day service, particularly for return trips, but due to limited driver/vehicle and financial resources it is not possible to address the needs of all customers. Sometimes customers don't want to be on the same vehicle with others which creates additional burden on resources and capacity to provide single ride transportation.
  - DCHD Health Navigators spend a lot of time and resources, often times arranging multi-party calls, given the lack of access to consolidated information (funding eligibility, transportation availability, healthcare service availability) from a single tool. While most underserved groups are affected due to this limitation, persons with LEP need the most assistance and are severally impacted.
  - HIRTA currently offers services in limited hours which does not meet the needs of many Travelers who may be interested in using HIRTA vehicles but cannot and miss their appointments. Also, some people are not aware of HIRTA or they do not take it because of the fee (e.g., \$5.00 one way).
  - Most of the customers that Iowa Health and Human Services works with are on Medicaid and Medicare. The elderly groups are on Social Security Income (SSI) and getting Medicaid, which covers some part of the transportation. However, Medicaid has very strict requirements as what qualifies and if it does not, that could be a big barrier for the customer.
  - Older adults have identified lack of comfort with the use of smart devices as a major issue and have mentioned devices with larger font specifically designed for older adults as preferred device (e.g., Grand Pad). However, those devices have

limited functions. Applications to be used by older adults must have the ability to adjust user experience by utilizing accessibility functions either available in the operating system or supplemented by built-in advanced capabilities within the application. Also, extensive training will be required so older adults are self-reliant in using the capabilities offered by the Health Connector solution. Overall, making the system as simple as possible with larger fonts or design to increase usability for populations that are not tech-savvy would be most helpful.

- Persons with disabilities have limited mobility options when booking transportation due to lack of accessible vehicles or those that can accommodate mobility needs such as walkers, oxygen tank, service animals and others. All HIRTA vehicles are accessible but commercial vehicles (e.g., taxis or TNCs) provide limited fleet of accessible vehicles.
- Even at smaller facilities, wayfinding is an issue. Customers may have first appointment on one side of facility and second on another side, but they may not remember. Drivers typically have to coordinate with Dispatchers to find out exact pick-up location/spot.
- Customer experience during initial trips is critical. If customers had to wait long or services were not available when needed for an appointment, customers are likely to prefer other transportation options. Most trips are on time but when there are delays those customers may have miserable experience.
- Customer's ability to pay for trips is a major issue. While HIRTA services are offered at a fixed low fare for customers that are covered by funding sources, many low-income customers may still not be eligible for those services due to the income criteria established by those programs (e.g., Medicaid). Also, low income population may rely on cash since they typically do not use banking and financial institutions.
- Persons with LEP prefer to have someone accompany them for medical appointments so they can be helped. They may not use the tools and services available (e.g., translation service) as may not feel comfortable.
- Getting customers to go where they need to is an additional cost to hospitals at times. While there are Social Workers and Health Navigators affiliated with hospitals who help customers looking for transportation services, the process of registering and booking trips creates an administrative burden due to a largely manual process. Also, healthcare providers have only limited funds available to help customers who may not have funds to pay for services arranged. One of the healthcare providers, in particular, mentioned that coordination for follow-up care, coordinating the time and availability for the patients and the provider, educating the patient on their options, and communicating with the provider ends up being a time-consuming process for healthcare professionals.
- Healthcare customer coordinators currently rely on manual methods (e.g., phone calls, emails, in-person coordination, spreadsheets) to assist customers who may be looking for transportation services. They would prefer electronic capabilities as conceived within Health Connector, particularly real-time information on transportation services.

- Many customers live in rural areas where broadband access is an issue. Also, low income population has limited data plans which limit their ability to use applications that may require extensive data bandwidth.
- **Limited Capabilities with current Transportation Modes:** Apart from HIRTA vehicles, there are limited modes that can meet the needs of underserved groups related to language barrier; visual, hearing and learning disabilities and other limitations. The proposed project deployment will be universally designed to meet the needs of all Dallas County's underserved population, including persons with disabilities, low income, rural, older adults, veterans, and persons with limited English proficiency. As needs vary by the individual, underserved citizens may qualify for one or more these subgroups (i.e. the person may be an older adult, a veteran, a person with a disability and lives in a rural area).
- **Limited Wayfinding Capabilities:** Another missing link in medical transportation has been wayfinding both for locating the vehicle on arrival or wayfinding/navigating to the correct destination inside a facility upon arrival. The Health Connector solution will provide a seamless wayfinding experience from the same application.
- **Same Day Reservation and Service Capacity Issues:** HIRTA typically does not provide same day reservation. Uncertainty with return trips may often times generate need for same day booking or modifications creating capacity challenges in meeting customer demand. Health Connector will augment such capacity through a seamless integration with taxi, TNC and other NDSPs. Please note that these services are expensive and will have to be subsidized so the Traveler share is comparable to the use of other HIRTA services. Final subsidy levels will be developed as part of the financial planning exercise in the later stage of the project. HIRTA will be invoiced by NDSPs on a monthly basis for trips successfully performed.
- **Limited Coordination among Different Organizations:** The proposed deployment seeks to further integrate the operations and services provided by HIRTA, DCHD, and the Dallas County healthcare community to maximize outcomes for the community and reduce the level of manual coordination by phone calls and emails.
- **Data Sharing and Reporting:** Currently, healthcare providers, DCHD and HIRTA do not have any ability to share data or report on booking and delivery of medical trips. HIRTA has those trips captured within the Routematch software but there is not enough data to analyze health outcomes of those trips. Health Connector will allow tracking of medical and transportation appointment related data so DCHD, HIRTA, community partners, funding entities and government partner agencies are able to monitor the impact of improved transportation access.

## 4.2. Description of Desired Changes

The Health Connector solution was conceived to solve the most pressing issues that act as barriers to providing safe and efficient transportation to customers seeking healthcare services within the Dallas County but do not have access to transportation. This solution will be fully driven by the user needs and the needs are being identified early on during Phase 1. These needs will serve as the basis for subsequent steps of the systems engineering process that include concept

of operations development, requirements definition, design, deployment and testing. It is extremely critical to identify all user and stakeholder needs for the overall success of the project.

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

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

#### 4.2.1. User Groups and Actors

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

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

**Table 2. HIRTA Health Connector User Groups**

Organization	User Group	Abbreviation	Short Description
DCHD	Health Navigators	HNV	Refers to the employees of the Dallas County Health Department (DCHD) who connect customers/patients with healthcare providers and HIRTA (or other transportation service providers) by providing information and referral services.
DCHD	Health Administrator	HAD	Dallas County Health Commissioner (or individuals in similar role) responsible for wellbeing of the community. Users of the system for measuring performance and health outcomes.
HIRTA	Trip Scheduler	SCH	HIRTA staff who processes customer requests and schedules rides.

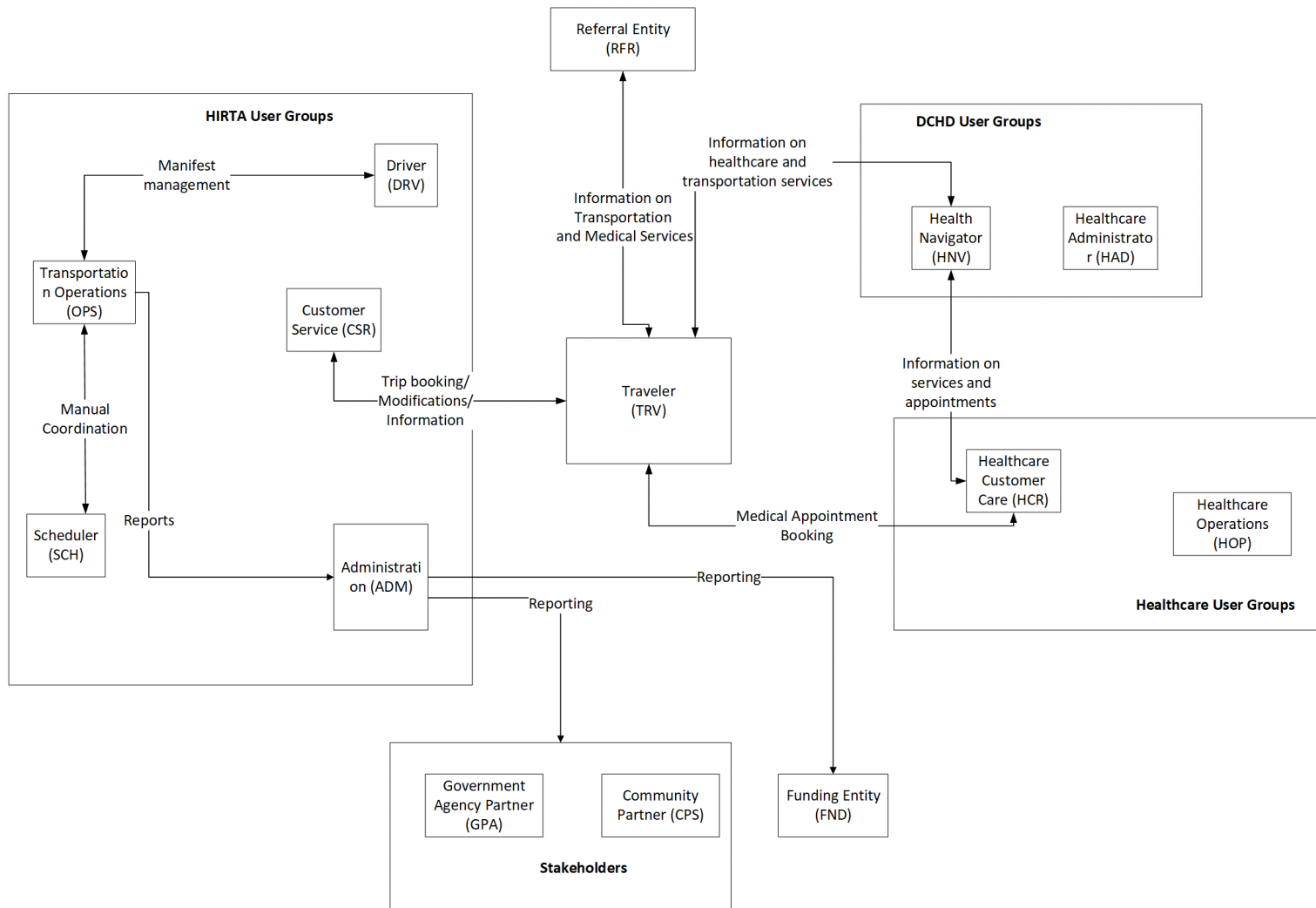
Organization	User Group	Abbreviation	Short Description
HIRTA	Transportation Operations Staff	OPS	HIRTA staff who assigns trips to vehicles, monitors trips, coordinates with drivers in real-time (e.g., their ability to perform additional trips, assisting to find origin or destination locations, help resolve no-show or cancellation) and makes reassignments if necessary. At times, this process may also be fully automated and performed by the dispatching algorithm (e.g., TNC that may be used as third-party provider for real-time trips include algorithm that does dynamic ride-matching with available driver pool without manual interaction).
HIRTA	Customer Service Staff	CSR	Refers to HIRTA customer service staff who responds to travelers' requests for all aspects of their trip experience beyond trip booking/modifications.
HIRTA	Driver	DRV	Refers to HIRTA or contractor employees who pick up and drop off customers for their requested trips. There are no major changes expected for drivers as part of this implementation but relevant needs are documented.
HIRTA	Administration	ADM	HIRTA staff responsible for administrative functions such as verification of trip data, cost allocation, third-party billing (e.g., to funding sources), accounting and reporting. Most of this process will not change but certain flows are planned to be automated (e.g., interface with Medicaid).
Contractor	Third Party Service Provider	CTR	Refers to contractors that may work with HIRTA in the future to provide services when HIRTA does not have the capacity through its own fleet.
Healthcare Partner	Healthcare Customer Care Staff	HCR	Healthcare staff who take calls and intake customer request for medical appointments. Customer care staff may do other coordination related to medical appointments as well.
Healthcare Partner	Healthcare Operations Staff (e.g., customer care, nursing, community health partnership)	HOP	Staff that is responsible for interacting with customer on check-in and check-out. Also, includes staff that interacts with HIRTA, DCHD and other community partners on behalf of patients related to their appointments.

Organization	User Group	Abbreviation	Short Description
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 customers but are looking for transportation services for their medical appointments, referral appointments or follow-up appointments or other medical needs.
Other	Referral Agents	RFR	Individuals employed by organizations that connect the public to the providers according to their service requests. In this context services may be related to healthcare or transportation.
Other	Funding Entity	FND	Organizations funding customer trips (e.g., Medicaid) that will interface with the system for automated billing and payment processing
Other	Community Partners	CPS	Stakeholders representing underserved groups and will help identify needs for the groups they are representing. They will interface with the system for measuring performance of the system in meeting health outcomes within their communities
Other	Government Partner Agencies	GPA	Refers to local and state Government entities that partner with HIRTA and will help identify broad community-based needs (e.g., social determinants of health) and will use the system to stay informed on project outcomes

Most user groups for the current systems will also be the users of the Health Connector system. Figure 10 provides a mapping of user groups listed in Table 2 in the current system context. Arrows are labeled to show the type of information exchanged between different user groups.

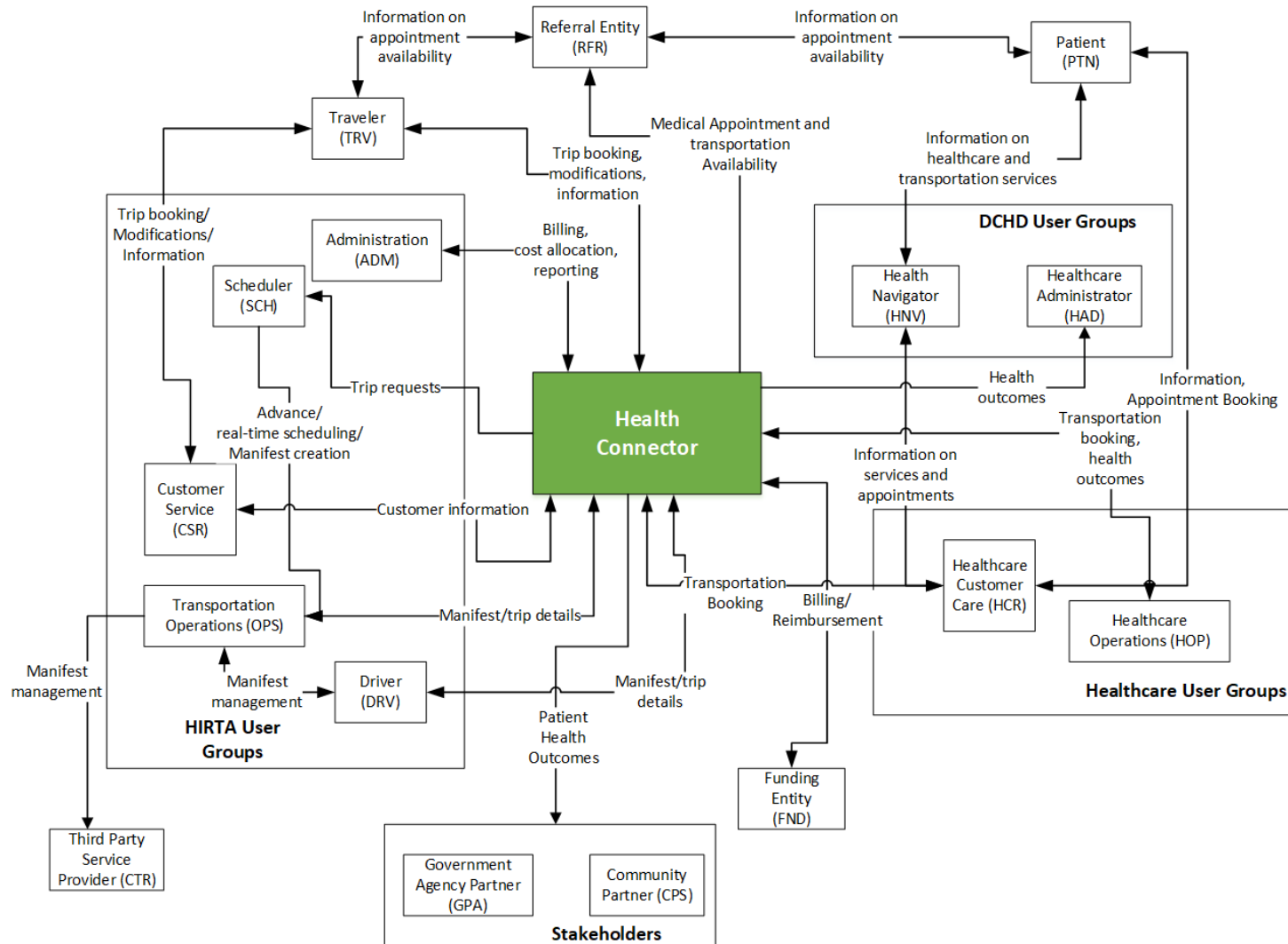
Also, as a comparison, Figure 11 provides a context diagram of user groups listed in Table 2 to illustrate preliminary mapping of touchpoints. Arrows are labeled to show the type of information exchanged between different user groups.

**Figure 10. Mapping of User Touchpoints in the Current System Context**





**Figure 11. Preliminary Mapping of Touchpoints across Different User Groups with respect to Health Connector Functions**



## 4.2.2. User Needs Breakdown

The needs development process focused on the following:

- Needs are uniquely identifiable to ensure that they refer to a unique capability desired for the system.
- Needs must include a capability statement that call for a major feature that is desired in the new system.
- Needs should be technology- or solution-agnostic so subsequent steps of requirements definition and design are not tied to a specific solution.
- Needs statement must identify why a change is needed in the current capability of a system/solution.

A detailed process for defining user needs is provided in the Section 2 of User Needs Identification and Requirements Planning (UNIRP) document.

Table 3 provides a preliminary list of needs identified so far by User Groups. The table also identifies, based on stakeholder input, specific underserved groups that are related to a specific need. These groups include seniors (SNR), persons with disabilities (DIS), low income (INC), Limited English Proficiency (LEP), rural population (RLP) and veterans (VET).

Needs in the Table 2 are categorized as follows:

- **Essential needs.** Needs that must be provided by the new system.
- **Desirable needs.** Needs that should be provided by the new system.
- **Optional needs.** Needs that might be provided by the new system.

The initial prioritization was done by the project team based on the outcome of discussions at the focus group meetings and one-on-one stakeholder interviews. Further we validated these priorities with stakeholders during ConOps walkthrough and an online survey. HIRTA team recognizes that needs may vary by underserved group since a particular group may recognize a need as 'essential' while it may be 'optional' for others. To simplify the assessment, we have identified needs that are absolutely essential for a particular group and marked those as such in Table 2. Since the system will be designed for all population groups for "equally effective" experience, any desired feature relevant to a need and related to a specific underserved group will be addressed during requirements definition.

Further, the table identifies whether or not a particular need is met by the existing system in any capacity as follows:

- Fully Addressed (F): need is addressed in the current system but is identified here so the enhanced system still meets those needs.
- Partially Addressed (P): need is addressed in the current system in some capacity, but enhancements are needed.
- Not Addressed (N): need is not at all addressed in the current system.



**Table 3. Health Connector User Needs**

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
<b>Travelers (TRV)</b>										
TRV-1	One-stop-shop transaction	Travelers need to be able to plan, book, pay for their trips and need to be able to connect with HIRTA, DCHD and healthcare providers for a medical appointment using a single application or call center so their experience during the entire trip chain is seamless.	N	Essential	X	X	X	X	X	X
TRV-2	Registration for trip request	Travelers need to be able to register and request HIRTA for transportation services regardless of the approval status of their funding eligibility, so Travelers are not denied a trip.	P	Essential	X	X	X	X	X	X
TRV-3	Trip discovery	Even if Travelers are required to use another application for their medical trips (e.g., Access2Care for Medicaid), they need to be able to determine available transportation options for their medical appointment so they are able to make appropriate arrangements per their preferences.	N	Desirable	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
TRV-4	Connect with referring entities (RFR)	Travelers need to be able to connect with referring entities (e.g., 211) if they are not aware of resources to contact for their healthcare and transportation services.	P	Desirable	X	X	X	X	X	X
TRV-5	Connect with Health Navigator	Travelers need to be able to connect with Health Navigators (HNV) if they are not aware of resources to contact for their healthcare and transportation services.	P	Essential	X	X	X	X	X	X
TRV-6	Reduced reliance on smart devices	Travelers need to be able to arrange transportation for their medical appointments and obtain required information through smart device applications or equally effective alternate methods (e.g., call center, accessible smart device application) to address the needs of underserved groups that may not be comfortable with the use of smart devices.	N	Essential	X	X	X			

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
TRV-7	Addressing language barriers	Travelers with language barriers need to be able to arrange transportation for their medical appointments and obtain required information in a timely manner so they don't have to rely on human assistance for interpretation or translation services.	P	Essential			X			
TRV-8	Booking medical appointments at a facility of choice	Travelers need to be able to explore and book transportation for a medical appointment at a facility located outside their own community within the Dallas County so they are able to be independent even if living in rural or remote locations.	P	Essential					X	
TRV-9	Reduce reliance on others for booking medical appointments	Travelers without access to personal transportation need to be able book transportation for their medical appointment so they do not have to rely on their friends or family.	P	Essential			X		X	X
TRV-10	Return-trip Booking	Travelers need to have the ability to view transportation availability in real-time so they can spontaneously modify their return trip if their medical appointment is delayed or ends early.	N	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
TRV-11	Booking for same day follow-up appointments	Travelers need to be able to book transportation for follow-up medical appointments the same day if needed at a partner facility so they are able to timely address their follow-up care needs.	N	Essential	X	X	X	X	X	X
TRV-12	Rebooking medical appointment	If travelers have to modify their medical appointments, they need to be able to view the next available medical provider availability and transportation service provider availability at the same time without contacting multiple entities so they can book both appointments simultaneously	N	Essential	X	X	X	X	X	X
TRV-13	Telehealth appointments	Travelers need to be able to book telehealth appointment if advised as such by the healthcare providers since healthcare providers may refer Travelers to follow-up care services such as behavioral therapy and discussion on lab results that do not require in-person visits.	N	Optional					X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
TRV-14	Personal companion to accompany	Travelers need to be able to book trips for themselves and for personal companions (PCA)/caregivers assisting them with their appointment in case Travelers have language barriers or are not able to make the trip independently.	P	Essential	X	X	X			
TRV-15	Booking trips with family members	Travelers need to be able to book trips for themselves and their family members (more than one person) if they want them to accompany them even if those trips are not covered by funding sources. This may be needed if Traveler does not have childcare support or if Traveler may have other situations that require more than one family member to travel with them.	P	Essential	X	X	X	X	X	X
TRV-16	Information on pick-up location	Travelers need to be informed regarding the physical location where they must board the vehicle.	N	Essential	X	X	X	X	X	X



Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
TRV-17	Vehicle arrival notification	Travelers need to be provided advance notification about upcoming vehicle to pick them up or if there are updates to the pick-up time or location due to delays so they have enough time to get ready and meet the driver. In the event of delays, Travelers will be able to notify the healthcare provider about the extent and nature of a delay.	N	Essential	X	X	X	X	X	X
TRV-17A	Traveler feedback on arrival notifications	Travelers need to be able to confirm the pick-up time and location upon receiving the imminent arrival notification.	N	Essential	X	X	X	X	X	X
TRV-18	Real-time location	Travelers need to be able to view real-time location of their vehicle so they can meet the driver at the correct location.	N	Essential	X	X	X	X	X	X
TRV-19	Boarding the right vehicle	Travelers need to be able to independently recognize and board the correct vehicle upon its arrival particularly when multiple vehicles may be arriving at the pick-up location (e.g., at a medical or senior center facility).	N	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
TRV-20	In-vehicle information	Once inside the vehicle, customers need to be informed about their trip progress without relying on drivers so they can take appropriate actions (e.g., notify doctor’s office in the event of a delay).	N	Essential	X	X	X	X	X	X
TRV-21	Wayfinding at the facility-outdoor	Travelers need to be able to locate the correct facility and entrance upon getting dropped off at the destination location without any support from any other individual.	N	Essential	X	X	X	X	X	X
TRV-21A	Wayfinding at the facility-indoor/floor levels	Travelers need to be able to locate the correct floor through appropriate access (e.g., elevator or escalator) without any support from any other individual.	N	Essential	X	X	X	X	X	X
TRV-21B	Wayfinding at the facility-indoor-offices	Travelers need to be able to locate a provider’s office after arriving at the correct floor level without any support from any other individual.	N	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
TRV-21C	Wayfinding at the facility-inside offices	Travelers need to be able to locate appropriate customer care services, as needed prior to appointment, (e.g., check-in desk, information resources) within the provider's office upon arrival without any support from any other individual.	N	Essential	X	X	X	X	X	X
TRV-22	Notification to healthcare staff upon arrival	Travelers need to be able to notify healthcare staff upon arrival so they are able to take any appropriate actions based on Traveler request.	N	Desirable	X	X	X	X	X	X
TRV-23	Return trip upon discharge	Travelers need to be able to book a return trip upon completion of check-out/discharge process if return trips were not booked earlier.	P	Essential	X	X	X	X	X	X
TRV-24	Trip modification due to referral	Travelers need to be able to modify return trip for a different destination if a referral to another facility is provided.	P	Essential	X	X	X	X	X	X
TRV-25	Trip modification due to an additional destination	Travelers need to be able to insert a new destination if they have to stop by pharmacy to pick up medicines or for other relevant travel needs to book a multi-legged trip.	P	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
TRV-26	Real-time information on return trip vehicle	Travelers need to be able to stay informed about the progress of upcoming vehicle for their pick-up for the return trip.	N	Essential	X	X	X	X	X	X
TRV-27	Notification on pick-up location for return trip	Travelers need to be notified of the pick-up location for their return trip.	N	Essential	X	X	X	X	X	X
TRV-28	Wayfinding from provider's office to the pick-up location	Travelers need to be able to navigate to the pick-up location from the healthcare provider's office independently.	N	Essential	X	X	X	X	X	X
TRV-29	Boarding the correct vehicle for return trip	Travelers need to be able to locate and identify the correct vehicle for their return trip prior to boarding.	N	Essential	X	X	X	X	X	X
TRV-30	Trip payment	Travelers need to be able to pay for their co-pay amount for transportation after the trip completion by cash, check, ticket, or an electronic method, as preferred.	P	Essential	X	X	X	X	X	X
TRV-32	Payment methods	Travelers need to be able to use eligible funding source (e.g., Medicaid) for trip payment or pay out of pocket.	P	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
TRV-32A	Discount Coupons	Travelers need to be able to apply discount coupons as offered by HIRTA or participating entities (e.g., healthcare providers) to their trips to partially or fully cover the cost of their trips. Specific discount codes may have eligibility criteria that will be determined by providers but all customers will be able to utilize such feature.	N	Essential	X	X	X	X	X	X
TRV-33	Maintaining debit account	Unbanked/Underbanked Traveler need to be able to setup and maintain a prepaid cash balance account with HIRTA that they can debit for co-payments amount for a trip.	P	Essential				X		
TRV-34	Debit account replenishment	Travelers need to be able to replenish prepaid accounts by providing check or cash and without having to maintain a bank account.	P	Essential				X		
<b>HIRTA-Customer Service (CSR)</b>										
CSR-1	Traveler registration	If Travelers are not registered with HIRTA, CSR need to be able to help customers with the registration process and guide them about applicable next steps.	F	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
CSR-2	Entry of Traveler details	As part of the registration, CSR needs to be able to add relevant customer details in their profile as necessary to book transportation for medical appointments.	F	Essential	X	X	X	X	X	X
CSR-3	Eligibility Traveler Assessment	As part of the registration, CSR needs to be able to complete necessary eligibility assessment per requirements from funding sources.	F	Essential	X	X		X		
CSR-4	Eligibility type and details	CSR needs to be able to include details and type of eligibility (e.g., conditional or temporary) in the customer profile.	F	Desirable	X	X		X		
CSR-5	Assisting Travelers having difficulty with self-service tools	CSR needs to be able to assist Travelers who may be having difficulty using the self-service tools with all aspects of their trip. Difficulty may occur due to a variety of reasons (e.g., no internet access, disability issues, technical difficulties with the system).	F	Essential	X	X	X	X	X	X
CSR-6	Assist with future or same day trip	CSR needs to have the ability to assist Travelers for their travel needs on a future date or on the same day.	F	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
CSR-7	Assist with third-party contractor trips	CSR needs to be able to inform Travelers on vehicle arrival time, trip delays and any other status information for trips scheduled with HIRTA vehicles or with third-party contractors (CTR).	N	Essential	X	X	X	X	X	X
CSR-8	Assist with broker-coordinated trips	CSR needs to be able to inform Travelers on vehicle arrival time, trip delays and any other status information for trips even if trips are booked by third-party systems (e.g., Access2Care brokerage system).	N	Desirable	X	X	X	X	X	X
CSR-9	Contact Travelers	CSR needs to be able to connect with customers according to the method of their preference to follow-up at any point during their trip.	N	Essential	X	X	X	X	X	X
CSR-10	Contact healthcare partner	CSR needs to be able to find out the status of healthcare appointment at any given point until the trip is complete.	N	Desirable	X	X	X	X	X	X
CSR-11	Assist with translation needs	CSR needs to be able to assist Travelers looking for translation services.	P	Essential			X			

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
CSR-12	Override eligibility restrictions	CSR needs to have the ability to override if Traveler eligibility has expired for a funding source so the trip is not denied.	P	Desirable	X	X	X	X	X	X
CSR-13	Review past trips	CSR needs to be able to view the recent trips taken by Travelers under a given funding source.	P	Optional	X	X	X	X	X	X
CSR-14	Review past no-shows	CSR needs to be able to view statistics on no-shows on record for the Traveler requesting for a trip.	P	Optional	X	X	X	X	X	X
CSR-14A	Review cancellation	CSR needs to be able to view statistics on cancellations on record for the Traveler requesting for a trip	P	Optional	X	X	X	X	X	X
CSR-15	Refer to other providers/referral services	CSR needs have access to information database to be able to connect/refer Travelers to another provider or a referring entity (RFR) if the request for Trip falls outside their jurisdiction so Travelers can contact them to make their own arrangements.	P	Desirable	X	X	X	X	X	X



Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group						
					SNR	DIS	LEP	INC	RLP	VET	
CSR-16	Eligibility verification	CSR needs to be able to verify eligibility in real-time with funding sources as needed so there are no delays in payments when the funding source is invoiced.	N	Optional	X	X					
<b>HIRTA-Operations Staff (OPS)</b>											
OPS-1	Addressing service capacity issues.	Operations (OPS) staff needs to be able to utilize contractor vehicles if HIRTA does not have the capacity to meet a Traveler's request with its own vehicles.	N	Essential	X	X	X	X	X	X	X
OPS-2	Availability of wheelchair accessible vehicles (WAV)	OPS staff needs to be able to assign non-ambulatory Travelers to wheelchair-equipped vehicles, either using HIRTA or contractor vehicles.	P	Essential		X					
OPS-3	Trip status	OPS staff needs to be able to view the status of trips in real-time for both HIRTA and contractors-provided services.	P	Essential	X	X	X	X	X	X	X
OPS-4	No-show confirmation	OPS staff needs to be able to compare Traveler location against the pick-up location and/or Vehicle/Driver location to confirm no-shows reported by Drivers. Alternatively, OPS staff needs to be able to contact Travelers to confirm no-shows reported by drivers.	P	Desirable	X	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
OPS-5	Medical appointment status	OPS staff needs to be able to find out any delays in a Traveler's medical appointment at any given point during the trip in the event a return trip time has to be adjusted.	N	Essential	X	X	X	X	X	X
OPS-5	Dynamic vehicle reassignment	OPS staff needs to be able to make dynamic vehicle reassignments in the event of a vehicle breakdown.	P	Essential	X	X	X	X	X	X
OPS-6	Driver manifest management	OPS staff needs to be able to modify driver manifest in real time to insert, modify or delete trips on the manifest and manage the capacity.	P	Essential	X	X	X	X	X	X
OPS-7	Connecting with healthcare customer care	OPS staff needs to be able to notify healthcare customer care (HCR) in the event of an anticipated delayed arrival of a vehicle for Patient/Traveler pick-up or drop-off.	P	Desirable	X	X	X	X	X	X
OPS-8	Communicating with Drivers	OPS needs to be able to communicate with Drivers at all times while they are actively performing a run using voice and data communications methods.	F	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
OPS-9	Arranging emergency medical transportation (EMT)	OPS staff needs to be able to arrange an EMT service in the event of a medical emergency during a trip reported by Drivers according to the safety operational procedures as established by HIRTA.	P	Essential	X	X	X	X	X	X
OPS-10	Addressing non-medical emergency	OPS staff needs to be able to monitor and address any non-medical emergencies reported by Drivers according to the safety operational procedures as established by HIRTA.	P	Essential	X	X	X	X	X	X
OPS-11	Driver navigation assistance	OPS staff needs to be able to assist Drivers with navigation assistance if requested.	P	Desirable	X	X	X	X	X	X
OPS-12	Assistance with translation service	OPS needs to be able to assist Drivers with translation needs if requested.	P	Essential			X			
<b>HIRTA-Driver (DRV)</b>										
DRV-1	Identifying customers	Drivers need to be able to verify that the customer boarding the vehicle indeed has a trip booked and has been assigned to their vehicle.	P	Desirable	X	X	X	X	X	X

4. Justification for and Nature of Changes

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
DRV-2	Customer payment	If a co-pay is required for a trip, Drivers need to be able to view the amount due and collect the payment from the customers.	F	Essential	X	X	X	X	X	X
DRV-3	No-show event	Drivers need to be able to view Traveler location when arriving at the pick-up location. In the event Driver is not able to locate a Traveler, they need to be able to notify OPS staff accordingly to mark the pick-up as a no-show event.	F	Desirable	X	X	X	X	X	X
DRV-4	Communication with OPS	Drivers need to be able to communicate with OPS staff at all times during their runs using voice and data communication methods.	F	Essential	X	X	X	X	X	X
DRV-5	Reporting emergencies to OPS	Drivers need to be able to report medical and non-medical emergencies to OPS for a prompt action according to HIRTA's safety operating procedures.	P	Essential	X	X	X	X	X	X
DRV-6	Navigation assistance	Drivers need to be able to get navigation assistance when driving to a Traveler origin or destination location.	F	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
DRV-6A	Wayfinding Assistance	Driver need to be able to use wayfinding capability to locate a Traveler if the turn-by-turn navigation does not provide detailed direction to the pick-up location (e.g., unmapped roads, indoor location)	N	Desirable	X	X	X	X	X	X
DRV-7	Translation services	Drivers need to be able to request translation service when serving a Traveler with LEP.	P	Essential			X			
DRV-8	Wheelchair status	Drivers need to be able to find out the actual functional status of wheelchair/lift using the on-board telemetry data so they can notify the OPS staff for vehicle swap.	P	Optional		X				
DRV-9	Trip Status	Drivers need to be able to view the on-time status of the trips on their manifests at all times so they can take appropriate actions.	F	Desirable	X	X	X	X	X	X
DRV-10	Trip details	Drivers need to be able to provide any necessary details (fare paid, odometer reading) when trips are complete for reporting within the central system.	F	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
DRV-11	Delayed arrival	Drivers need to be able to notify OPS and Healthcare Customer Care in the event of an anticipated delayed arrival at the medical facility so they can take appropriate actions (e.g., adjust appointment time).	F	Desirable	X	X	X	X	X	X
<b>HIRTA Scheduling Staff (SCH)</b>										
SCH-1	Advance scheduling	Scheduling staff needs to be able to conduct advance (batch) scheduling of trips and protect those schedules from changing (i.e., anchoring of trips for subscription trips).	F	Essential	X	X	X	X	X	X
SCH-2	Batch schedule optimization	Scheduling staff needs to be able to adjust parameters used for optimizing trip schedules to account for field performance of trips (e.g., actual dwell time, actual on-board time, actual travel time, street closures).	F	Desirable	X	X	X	X	X	X
SCH-3	Real-time optimization	Scheduling staff needs to be able to optimize trips in real-time to be able to make better use of available resources.	P	Desirable	X	X	X	X	X	X
SCH-4	Labor/work rules	Scheduling staff needs to be able to account for labor/work rule guidance when scheduling trips/runs.	F	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
SCH-5	Account for personal companion or family members	Scheduling staff needs to be able to account for requests where Travelers are looking to bring a personal companion or a larger group of family members.	F	Essential	X	X	X	X	X	X
SCH-6	Grouping of trips	Scheduling staff must be able to review and modify schedules for better grouping of trips to make the most of available resources.	F	Desirable	X	X	X	X	X	X
<b>HIRTA Administrative Staff (ADM)</b>										
ADM-1	Trip verification	Administrative staff needs to be able to verify trip details using data reported in real-time (e.g., fare paid, mileage).	F	Essential	X	X	X	X	X	X
ADM-2	Cost allocation	Administrative staff needs to be able to perform cost allocation when multiple sources may be used for funding different trips that are part of a driver manifest in a shared ride scenario.	F	Essential	X	X	X	X	X	X
ADM-3	Billing/invoicing	Administrative staff needs to be able to generate invoices based on preconfigured billing rules.	F	Essential	X	X	X	X	X	X

4. Justification for and Nature of Changes

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
ADM-4	Electronic billing/invoicing	Administrative staff needs to be able to electronically bill funding sources if such capability is offered by a given funding organization (e.g., Medicaid).	P	Desirable	X	X	X	X	X	X
ADM-5	Electronic reimbursement	Administrative staff needs to be able to request electronic payment if such capability is offered by a funding source.	P	Desirable	X	X	X	X	X	X
ADM-6	System performance reports	Administrative staff needs to be able to run reports to measure system performance as defined per key performance indicators (KPIs) for this project.	N	Essential	X	X	X	X	X	X
ADM-7	Reports on project outcomes	Administrative staff needs to be able to run reports to measure project/health outcomes as defined per key performance indicators (KPIs) for this project.	N	Essential	X	X	X	X	X	X
<b>Referral Entity (RFR)</b>										
RFR-1	Information resources	Referring entity need to be able to identify healthcare and transportation services per request from Travelers.	N	Optional	X	X	X	X	X	X



Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
RFR-2	Connecting with all parties	Referring entity need to have access to information database for travelers (TRV), HIRTA customer service (CSR) and/or healthcare customer care (HCR) so they are able to contact them for information and referral services.	P	Optional	X	X	X	X	X	X
RFR-3	Measuring outcomes	Referring entity need to be able to document result of the referral activity by individual Traveler. This will help RFR staff document whether or not an attempt to connect a Traveler with services was successful.	P	Optional	X	X	X	X	X	X
<b>DCHD Health Navigator (HNV)</b>										
HNV-1	Coordination with HIRTA and healthcare providers	Health Navigator needs to be able to book and manage (e.g., modify, track trip status, cancel) appointments with HIRTA and healthcare providers on behalf of their patients/travelers for booking of medical appointment and transportation.	P	Essential	X	X	X	X	X	X
HNV-2	Translation service request	Health Navigator needs to be able to request translation service when working with residents with LEP constraints.	P	Essential			X			

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
HNV-3	Future appointment booking	Health Navigator needs to be able to view future appointments for their customers and book transportation service as needed.	N	Essential	X	X	X	X	X	X
HNV-4	Wait time	Health Navigators needs to be able to find out the amount of wait time for a medical appointment upon Traveler's arrival.	N	Optional	X	X	X	X	X	X
HNV-5	Medical appointment status	Health Navigators needs to be able find out status of a medical appointment for their customers.	P	Desirable	X	X	X	X	X	X
HNV-6	Medical appointment follow-up	Health Navigators needs to be able to follow-up with customers on the medical transportation experience.	P	Essential	X	X	X	X	X	X
<b>DCHD Health Administrator (HAD)</b>										
HAD-1	Measuring outcome	Health Administrator needs to be able to measure the outcome of Health Navigation services provided. HAD will focus on measuring if there is a provider that is able to meet their customer's needs. Also, they will like to measure the type of healthcare services for which appointment/ transportation is needed	P	Essential	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
<b>Healthcare Customer Care (HCR)</b>										
HCR-1	Transportation booking by healthcare customer care	HCR staff needs to be able to view transportation service availability in real-time to book transportation for Patients lacking transportation access for return trips or future medical appointments.	N	Desirable	X	X	X	X	X	X
HCR-2	Single event or recurring appointments	HCR staff needs to be able to book both single event and recurring appointment.	N	Desirable	X	X	X	X	X	X
HCR-3	Disability needs	HCR staff needs to be able to identify any disability needs when booking appointments.	N	Essential		X				
HCR-4	Translation services	HCR staff needs to be able to request translation service when booking appointments.	N	Essential			X			
HCR-5	Booking transportation for patient referrals to new facilities	HCR staff needs to be able to book transportation for customers seeking transportation service for immediate/same-day referrals to another facility.	N	Desirable	X	X	X	X	X	X
HCR-6	Coordination with HIRTA	HCR staff needs to be able to coordinate with HIRTA customer service (CSR) as necessary.	N	Essential	X	X	X	X	X	X

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Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
HCR-7	Booking of multi-leg return trips	HCR staff needs to be able to book multi-leg return trip to account for trip to a referral facility or pharmacy.	N	Desirable	X	X	X	X	X	X
HCR-8	Tracking missed-appointments due to lack of transportation	HCR staff needs to be able to document patient no-shows as a direct result of transportation-related issues (unavailability, delays).	N	Desirable	X	X	X	X	X	X
HCR-9	Trip status	HCR staff needs to be able to view vehicle arrival status for a requested patient trip.	N	Desirable	X	X	X	X	X	X
<b>Funding Entity (FND)</b>										
FND-1	Billing	Funding entity needs to be able to receive electronic billing/invoicing if such capability exists (e.g., Medicaid)	P	Desirable	X	X	X	X	X	X
FND-2	Reimbursement	Funding entity needs to be able to reimburse for billed amount electronically if such capability exists (e.g., Medicaid).	P	Desirable	X	X	X	X	X	X
FND-3	Measuring outcome	Funding entity needs to be able to find out required reports as needed related to effective utilization of their funding program (e.g., number of no shows)	N	Desirable	X	X	X	X	X	X

Need ID	Need Area	User Need Statement	Addressed in Current System?	Priority	Underserved Group					
					SNR	DIS	LEP	INC	RLP	VET
<b>Government Partner Agency (GPA) and Community Partner Organization (CPS)</b>										
GPA-1	Measuring outcome of grants and services provided to communities	GPA needs to be able to measure the outcome of grants funded or coordinated by them or for their communities.	N	Desirable	X	X	X	X	X	X
CPS-1	Measuring outcome for services provided to communities	CPS needs to be able to measure the outcome of health outcomes and other KPIs (to be determined) for the communities represented by them.	N	Desirable	X	X	X	X	X	X



### 4.3. Priorities among Changes

Please see Table 3.

### 4.4. Changes Considered but not Included

The following changes were considered but are currently not included:

- **Medicaid Broker Integration:** According to Access2Care, the Medicaid-funded trips must be booked via their member application. Routematch does offer an interface to connect with Access2Care but given the low volume of trips the interface seems cost prohibitive so HIRTA enters those trips manually. HIRTA may revisit this as we explore the integration further during Phase 1 with stakeholders to provide the same level of experience to Medicaid customers and non-Medicaid customers. This possibility of interface implementation has been discussed with both Routematch by Uber and Access2Care.

***Example Use Case - Medicaid/MCO: 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 which will only cover Traveler's visit to the doctor's office.***

- **Direct Integration with All Healthcare Partner Systems:** Each EHR system requires a proprietary interface to accomplish data exchange with external systems (in this case Routematch by Uber). Given the complexity, at this time the HIRTA team is considering interfacing with Epic that supports and has published open APIs. Other systems do not have published APIs using the same standard. Also, the interface with EHR systems is limited to appointment data only and no health or privacy related information will be exchanged as part of the interface.

***Example Use-Case: A Traveler is looking to book an appointment for same day medical appointment and would like to be able to take HIRTA service to any hospital which is the closest.***

- **Providing details such as Wait Time at Hospital:** While we considered notifying Travelers of expected wait time upon arrival for their doctor's visit or other medical needs, we currently do not have any indication of availability of such data at hospitals.
- **Additional capabilities** that are currently not included, but the team is planning to explore during Phase 1 are as follows:
  - Partner with third-party infotainment service providers (through new in-vehicle screens) for multi-lingual customer-applicable information. Examples include: information on in-take process for new customers.
  - Explore integrated payment opportunities for third-party billing for transportation services and insurance billing from a single account. Explore any efficiency gains

through integrated payments for all activities related to the trip (e.g., insurance billing, third-party billing).

## 4.5. Assumptions and Constraints

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

**Current system environment:** The current system, Routematch, while configured, is not optimized to be used for same day response trips. Also, some of the other capabilities needed for Health Connector, for example, engaging third party providers, are currently not configured. Further, Traveler access to real-time information is available through limited channels. Given Uber platform, which is optimized for same day response service, is available through Routematch, the HIRTA team is defining the vehicle, central and customer-end solution framework that will be available for Health Connector as further explained in Section 5.

**Complexity of Medicaid Program:** Medicaid trips are booked using systems provided by Access2Care and the system determines the appropriate transportation mode which may or may not be HIRTA. Also, given Travelers will be using two separate applications, the experience may not be seamless.

**Smart Device and Data Plans:** Health Connector provide alternate methods but assumes that Travelers will be able to utilize smart devices using internet data plans to get the most benefit out of the proposed solution. Based on stakeholder discussions, while smartphone penetration is high (85%+) senior population may not be comfortable with small devices and some may not have data plans to be able to utilize all features provided.

**Fragmented Nature of Electronic Health Record (EHR) Platforms:** The heterogeneous nature of EHR platforms used by the Dallas County health community may present a challenge in developing a transportation booking and medical appointment booking interface. We are exploring alternatives to a direct interface with EHR.

**Partnership with Third Party/Non-dedicated Service Providers (NDSP):** HIRTA will have to rely on NDSP vehicles (e.g., TNCs, taxis) if same day demand grows after the launch of the Health Connector. However, there is limited pool of such providers in rural areas.

**Training Customers to use non-HIRTA Vehicles:** It was identified in stakeholder discussions that some customers (e.g., refugee population) may not be comfortable with vehicles that do not have HIRTA logo. Training and outreach program will have to address such concerns.

**Wayfinding:** Most wayfinding systems require a companion smart device. However, some of the underserved population (e.g., senior, LEP) may not be comfortable with that approach. Also, most wayfinding solutions require extensive installation of infrastructure (e.g., beacons or visual markers) which will require approval from healthcare partners.



# 5. Concepts for the Proposed System

This section provides a description of the technical concepts for the proposed Health Connector system, provides a list of stakeholders and actors, identifies the supporting environment, defines modes of operations, and describes operational policies and constraints.

## 5.1. Background and Scope

As summarized in Section 4 in the needs summary, the disconnect between healthcare and transportation systems impacts customer experience for those looking for transportation services for their medical appointments given, currently, those appointments have to be booked and coordinated through separate phone calls or web transactions. Also, Health Navigators and Social Workers coordinating such transportation services on behalf of customers have to interact with multiple entities, mostly via phone or emails. Further, customers have difficulty navigating outdoors and indoors as part of their trip (e.g., finding vehicle on its arrival for pick-up, or finding the actual building after drop-off at the medical facility). The Health Connector concept combines individual capabilities available within the HIRTA's Transportation Management System, EHR/Medical Record systems at hospitals, software/tools used by Health Navigators along with introducing a state of the art wayfinding system.

High-level capabilities of the Health Connector system are as follows:

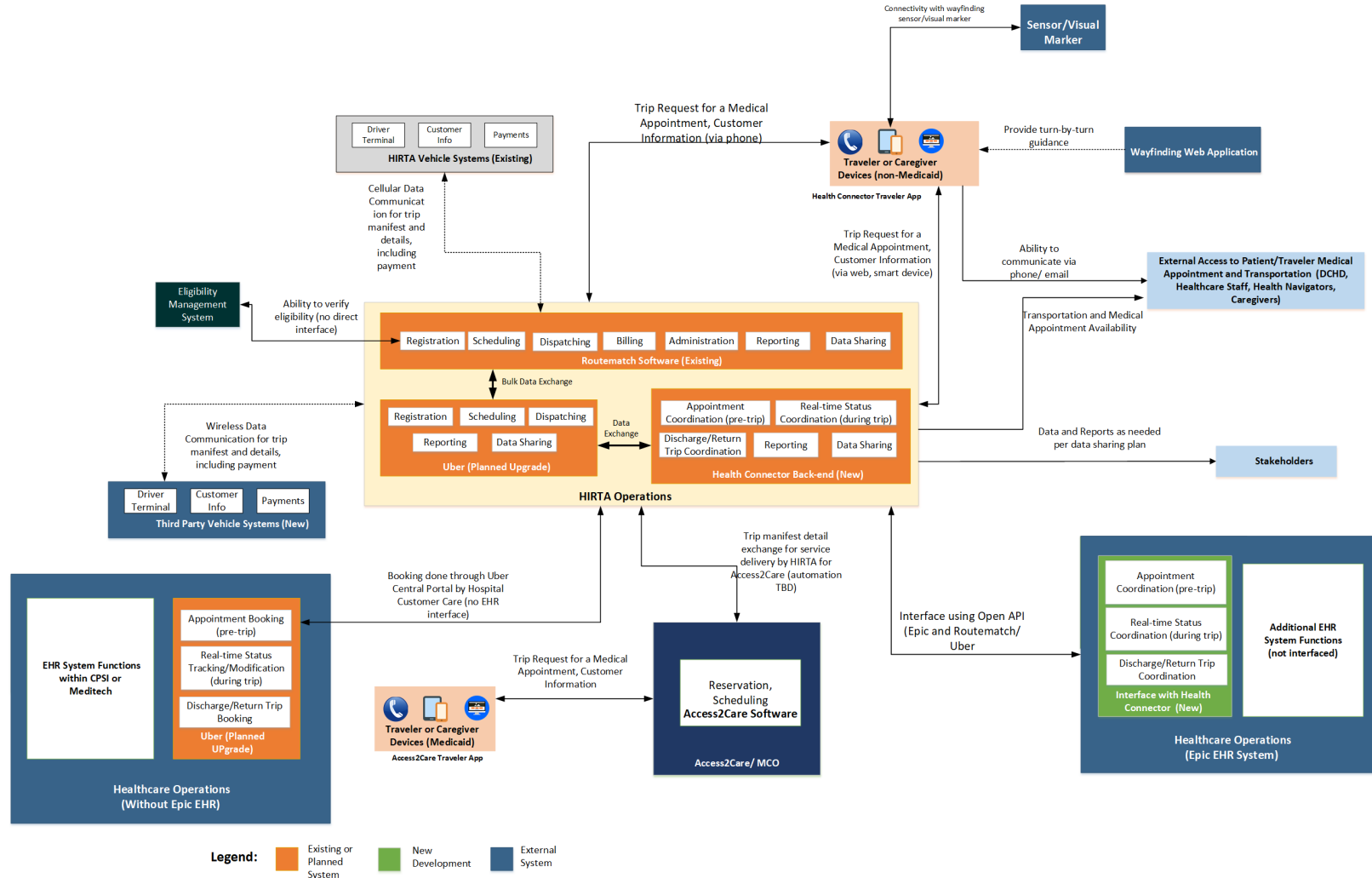
- Enable the customer to use a smart device (e.g., smartphone, smartwatch) application or alternate methods that are equally effective to schedule and manage medical appointments and transportation services. Provide customers options to choose from available providers. Provide same day response if needed by customers.
- Send customers alert before arrival and again when the vehicle is approaching.
- Keep customers 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 customer identity.
- The customer will have the ability to utilize advanced wayfinding technology when necessary in an unfamiliar environment (e.g., large medical complex such as Unity Point Health) to enable personal concierge-style travel from origin to destination. This will include:
  - Locating the vehicle outside origin and destination locations
  - Locating healthcare facility when dropped off by vehicles
  - Locating desired floor/room when inside the healthcare facility
- Wayfinding solution will be able to address the needs of persons with visual, hearing and cognitive disabilities and LEP.
- Customers will be able to use the app for any contactless mobile payment needs at any point during their trip. At this time, it is limited to transportation related needs only.

- If customers or their caregivers desire to book and pay for another local trip using TNCs for another need, they will have access to do that using the same app.

Figure 12, provides a context diagram of the Health Connector concept by identifying the core subsystems and data flows between those subsystems. These subsystems are:

- **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.
- **Transportation Management Subsystem:** this subsystem includes the tools and technologies used to assist customer care and operations staff with reservations, scheduling, dispatching and administration activities. This subsystem refers to both the currently utilized by HIRTA and Access2Care and Uber software that will be utilized to provide the planned capabilities for the Health Connector solution. Routematch and Uber applications are proprietary and, as stated earlier, HIRTA is already using Routematch. Uber is referred as 'new' in Figure 12 since that will be procured by HIRTA as an extension to Routematch. However, Health Connector back-end will include any new capabilities developed as part of this project and will be made available per open source/open licensing agreement requirements as agreed upon between Uber and USDOT.
- **Vehicle Subsystem:** this subsystem refers to the technologies deployed on vehicles to support driver-end functions for manifest management, on-board customer information and customer payments.
- **Health Navigator-end Subsystem:** this subsystem refers to the information and referral system used by Dallas County Health Department. This subsystem will be used to obtain medical and transportation appointment details or availability for a Dallas County resident health navigation/social care services.
- **EHR/Medical Record Subsystem:** this subsystem refers to the systems used by partner hospitals and clinics for booking medical appointments and maintaining their appointments, including discharge and any subsequent referral activities.
- **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.

Figure 12. Detailed Health Connector Context Diagram





## 5.2. Description of the Proposed System

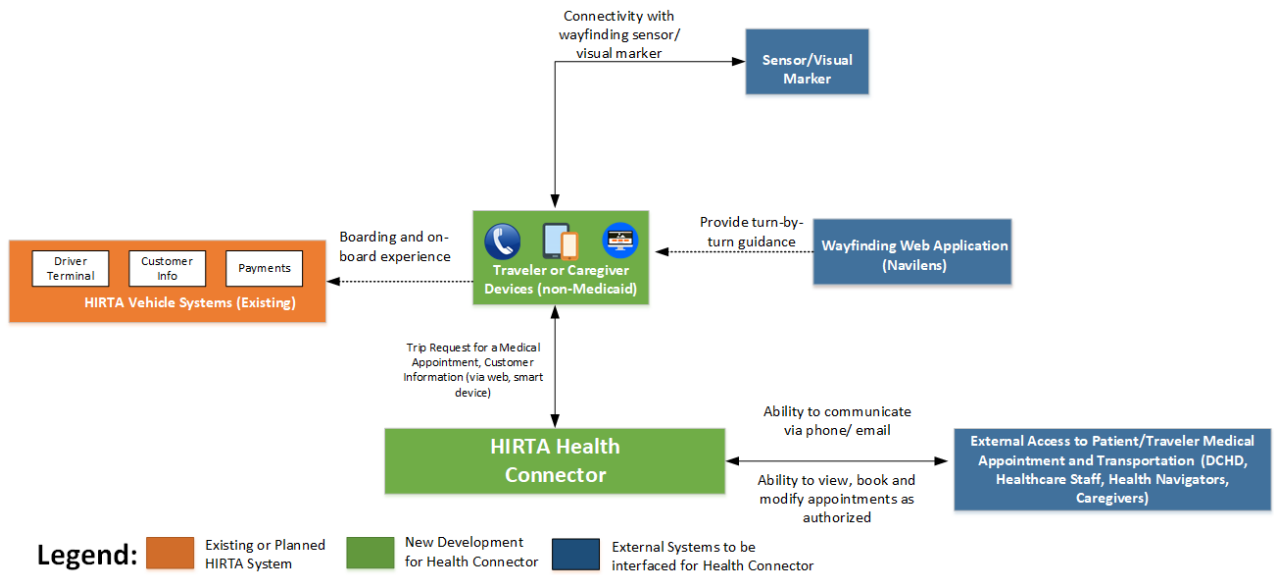
This Section describes system capabilities under the core subsystem definitions identified in Section 5.1.

### 5.2.1. Traveler-end Subsystems

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

Figure 13 provides a context diagram for Traveler-end Subsystems.

**Figure 13. Traveler-end Subsystems and Data Flows**



Health Connector will provide access to medical appointment information only which will include date, time and location of a medical appointment for a customer along with 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**

1. *Referral Services:* Provide the capability to connect to a referral service to discover transportation and healthcare options available in Dallas County.
2. *Health Navigation/Social Care Services:* Provide the capability to connect to a Health Navigator or Social Worker assisting with the healthcare needs to find out assistance at any point before/during/after a trip.

### **Booking and Modification of Medical and Transportation Appointments**

1. *Registration and Preference Management:* Provide the ability to register to receive HIRTA services if not an existing customer and allow travelers to enter their booking preferences (e.g., mobility aid, personal companion need, notification preferences, favorite pick-up location and others).
2. *Funding Eligibility Information:* Provide customers to enter and update the status of their funding and eligibility information.
3. *Appointment Booking:* Provide customers the ability to book a medical appointment if already registered with a healthcare provider. Non-registered customers will work directly with the healthcare provider for registration needs.
4. *Trip Request:* Provide customers the capability to view their upcoming medical appointment (non-Medicaid) and request a transportation service for that appointment. Also, provide the capability to book a return trip if needed.
5. *Mobility Aid:* As currently supported in Routematch platform, the Health Connector application will accommodate any mobility aids requested by Travelers, either based on their preferences in the profile or based on request at the booking. This may include details such as wheelchair seats or service animal or personal companion.
6. *Trip Discovery:* Provide the capability to discover transportation mode options.
7. *Appointment Modification:* Provide Travelers the ability to modify their medical appointments. The medical appointment modification will automatically retrieve associated transportation appointment for modification, as necessary.
8. *Appointment and Trip Cancellation:* Provide customers the ability to cancel their medical appointment and associated trip request at the same time. Cancellation will be allowed per policies as already established by both the healthcare provider and HIRTA.
9. *Trip Status:* Provide real-time information related to the trip to customers on-request. Also, provide notification alerts if such service is requested by customers according to their preferences.
10. *Return Trip Booking:* Provide the ability to book return trip using on-demand transportation modes available after the Traveler/Patient is discharged.
11. *Follow-up Appointment and Trip Booking:* If follow-up care is needed the same day at another facility or at a later date, Traveler will have the ability to book medical and transportation appointments at the same time for those needs.
12. *Adding a Stop:* Provide the capability to insert a stop to return trip as needs may arise (e.g., picking up a personal companion to assist on home arrival, trip to a pharmacy to pick up medicines).

13. *Trip Booking for Alternate Destination*: Provide the capability to book a trip to another location other than home should such need arise even if such a trip may not be covered by a funding entity.
14. *Telehealth Appointment*: Provide the capability to book telehealth appointment if that is recommended by the healthcare provider for follow-up. Telehealth appointment-related services (e.g., video visit) will be provided in the healthcare provider application.
15. *Reminder*: Provide day-before reminder for upcoming trips. Allow cancellation of both medical and transportation appointment using the same interface if such trip is no longer required.

### **Translation Services**

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

### **On-board Vehicle Experience**

1. *Vehicle Identity Verification*: Provide the capability through the wayfinding solution for Travelers to identify the correct vehicle for boarding.
2. *Patient Identify Verification*: Provide the capability to show electronic Traveler profile to the driver if requested for verification.
3. *Real-time Information*: Provide the ability for travelers to be able to obtain real-time information related to their appointment and trip status (e.g., traffic delay, delayed arrival, delayed check-in time).
4. *Orientation/Information on Healthcare Services on Arrival (TBD)*: If requested by Travelers, provide information on wayfinding capability and check-in process on arrival. Such capability will be provided via Traveler devices or infotainment screens installed within vehicles.
5. *Electronic Check-in When Approaching*: Provide the capability to check-in few minutes before arrival as the vehicle is approaching the healthcare care facility drop-off location. Travelers must be able to identify assistance needs (e.g., wheelchair, navigation guidance).
6. *Notifying on Delayed Arrival*: Provide the capability to notify healthcare provider on delayed arrival due to delays related to transportation (e.g., traffic delay).
7. *Personal Safety*: Provide the capability to indicate immediate personal safety concern to driver or HIRTA dispatcher or healthcare provider. They must have the ability to notice the level of emergency (e.g., if emergency medical transportation is needed).

### **Payments**

1. *Electronic Payments:* Provide the ability for travelers to be able to pay for their trips electronically using mode of payment available in their accounts.
2. *Account Debit:* Traveler will be allowed to pay for their trip by debiting their HIRTA account. They will have the capability to replenish the account if balance goes below a certain limit or on-demand.
3. *Discount Codes/Coupons:* Travelers will also be able to apply any discount code or other digital cash available to them for the medical transportation needs.
4. *Unbanked/Underbanked:* Travelers will be able to replenish their debit account by providing cash or check.

### **Real-time Information**

1. *Pick-up Location:* Provide the capability to notify exact pick-up location for medical appointment and return trips that Travelers can use for wayfinding and boarding the vehicle.
2. *Arrival Notification:* Provide the capability to notify of upcoming vehicle at a pre-determined interval. Also, notify automatically if there are any delays and allow customers to communicate with HIRTA for alternatives if there is an impact on medical appointment due to transportation delay. The Traveler will have the capability to respond with a confirmation or will have the ability to modify or cancel if allowed per HIRTA policy.
3. *Real-time Vehicle Location:* Provide the capability to view vehicle location in real-time on a map-based interface.
4. *Vehicle Image:* Provide the capability to view the vehicle image and vehicle license plate or van number.
5. *Real-time Trip Progress:* Provide the capability to view current trip progress and estimated time of arrival at the destination.

### **Wayfinding**

1. *Locate Correct Vehicle for Pick-up at Origin Location for Inbound trip to Healthcare Facility:* Provide the capability to find the vehicle upon its arrival.
2. *Locate Correct Building after Drop-off:* Provide the capability to locate the correct building and provide turn-by-turn guidance as needed.
3. *Locate Correct Office after Entering the Building:* Provide the capability to locate the correct office and provide turn-by-turn guidance as needed. Distinguish between ambulatory and non-ambulatory Travelers for guidance (e.g., use of escalator/stairs versus elevator).



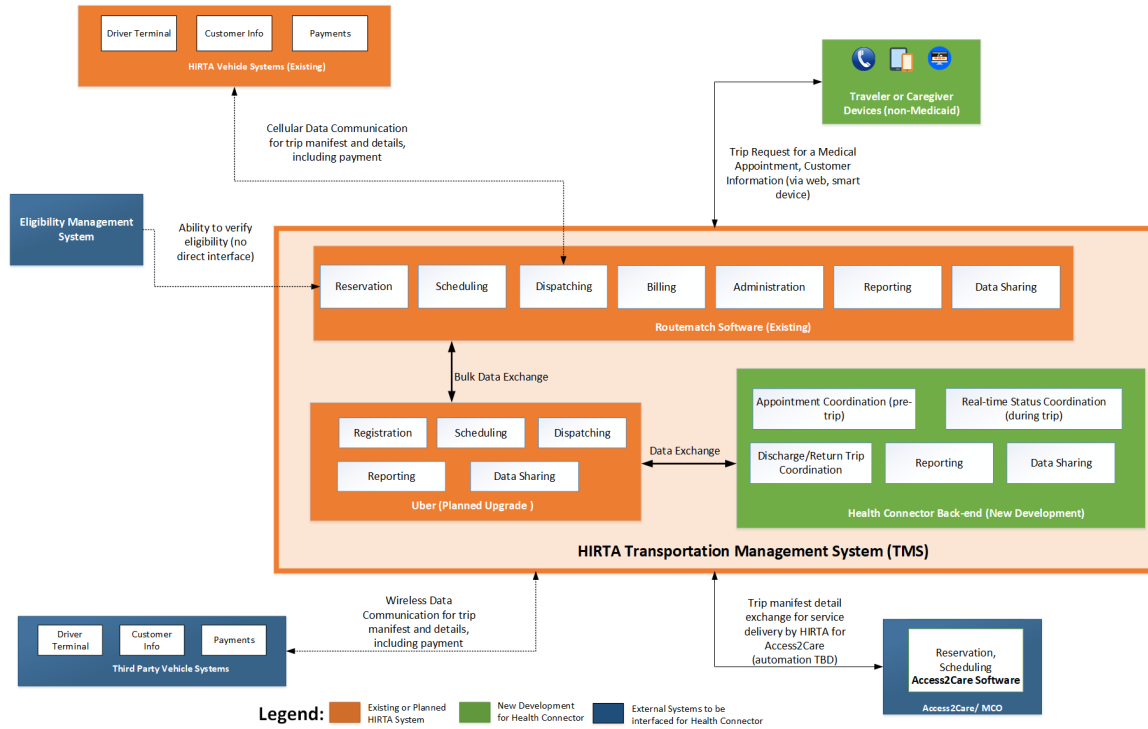
4. *Locate the check-in Desk*: Provide the capability to locate check-in desk upon arrival at the healthcare provider's office.
5. *Locate other referred buildings/offices on Discharge*: Provide the capability to locate other buildings/facilities and offices on the campus based on referral by the provider upon discharge.
6. *Locate Vehicle Pick-up Location for Return Trip*: Provide the capability to locate the correct location for pick-up for return trip.
7. *Locate the Door Entrance (if needed)*: Provide the capability to be able to locate the door entrance for boarding.
8. *Addressing the Needs of Underserved Groups*: Provide the capability such that the needs of various underserved groups are addressed as follows:
  - a. Persons who are blind have audio guidance available.
  - b. Persons who are deaf are able to visually see the instructions.
  - c. Persons who are not ambulatory are able to select suitable direction (e.g., no use of escalator or staircases).
  - d. Persons with cognitive disability are able to easily interpret the information by seeing visual markers and simple instructions (e.g., turn arrows).
  - e. Persons who are not able to afford large data plans are still able to use the features.
  - f. Older adults are able to see and comprehend instructions through use of large fonts, color contrast and other necessary features.
  - g. Persons with LEP are able to see instructions in the language of their choice.

### **5.2.2. Transportation Management Subsystems**

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

Figure 14 provides a context diagram for Transportation Management Subsystem.

**Figure 14. Transportation Management System**



**HIRTA**

HIRTA's system capabilities are described by customer care staff, scheduling staff, operations staff, and administration staff. As described in Section 3, most of these capabilities currently exist but those are designed to work for trips booked in advance only and do not have the capabilities to do any coordination in real time with external entities, as intended by the Health Connector system.

*Reservations and Customer Service Module*

1. **Traveler Registration:** For Travelers not registered with HIRTA, provide the capability to perform the registration.
2. **Customer Profile:** Add pertinent details in the Traveler profile as provided, including funding eligibility and expiration details.
3. **Eligibility Verification:** Provide the capability to verify eligibility in real-time for funding sources that provide such feature and require verification before a trip can be provided.
4. **Trip Booking:** Provide the capability to Travelers requesting a recurring or ad-hoc trip in advance (24 hours or earlier, per current policy) or same-day for their medical appointment needs. CSRs will have the capability to view medical appointment time and determine pick-up and/or drop off times.

5. *Medical Appointment Information:* CSR will have the capability to view the medical appointment details and its status at any point until the return trip is complete to proactively assist Travelers with their transportation needs.
6. *Trip Modification:* Provide the capability to modify appointments on Traveler's behalf as requested.
7. *Trip Cancellation:* Provide the capability to cancel appointments on Traveler's behalf as requested and per allowed policy.
8. *Assistance with Broker or Third-Party Contractor Trips:* Provide the capability to assist travelers with trips that were booked by Access2Care (Medicaid Broker) and are being delivered by HIRTA or the trips that were booked by HIRTA but are being provided by a third-party service provider (e.g., Uber TNC).
9. *Assist Travelers needing Assistance with Self-Service Tools:* Provide the capability to assist travelers that need assistance with web or mobile-based tools available to them but are having difficulty for any reason (e.g., internet connectivity, technical difficulty with user interface).
10. *Contact Travelers:* Provide tools to connect with Travelers according to their preference to assist with any aspect of their trips.
11. *Translation Service:* Provide automated tools to request translation service when needed to assist customers.
12. *Trip History:* CSR will have the capability to view Traveler trip history and any relevant KPIs (e.g., number of no-shows, number of cancellations, number of completed trips against what is allowed quota under a funding source).
13. *Referral to Other Providers:* CSR will be able to identify other providers and notify travelers when HIRTA is not able to provide services for requested purposes (e.g., origin/destination location not in a service area)

#### *Scheduling Module*

1. *Advance and Real-time Scheduling:* Provide the capability to schedule trips in advance or in real-time. Even with advance booking, pick-up time will be confirmed in real-time.
2. *Driver/Vehicle Assignment:* Provide the capability to assign trips to drivers/vehicles per labor/work rules as configured in the system.
3. *Batch optimization for Trips Booked in Advance:* Provide the capability to optimize trips booked in advance the day before for appropriate utilization of driver/vehicle resources. Parameters to be used for such optimization (e.g., grouping, on-board travel time, dwell time, modification of travel time for street segments) will be configurable.
4. *Real-time Optimization:* Provide the capability to optimize trips in real-time to better utilize the driver/vehicle resources.

*Operations Management Module:*

1. *Driver Manifest Management:* Provide the capability to manage electronic manifests to be performed by HIRTA drivers in real-time.
2. *Managing Third-Party Provider Trips:* Manifests performed by third-party providers will be managed in separate systems owned by those providers but status on those will be accessible to HIRTA Operations staff.
3. *Managing Acces2Care Trips:* Trip requests from Access2Care customers will be managed in that system but monitored by HIRTA Operations staff.
4. *Dynamic Vehicle Reassignment:* Provide the capability to reassign trips to another vehicle in the event of an incident/accident if needed.
5. *Real-time Capacity Management:* Provide the real-time information on current system capacity across all HIRTA vehicles and third-party providers to accommodate real-time requests or better utilization of resources.
6. *Real-time Trip Details:* Provide real-time status on trips with appropriate level of details.
7. *Medical Appointment Information:* CSR will have the capability to view the medical appointment details and its status at any point until the return trip is complete to proactively assist Travelers with their transportation needs.
8. *Communication with Healthcare Provider:* Provide the capability to connect with healthcare Provider to notify about abnormalities related to trip status and any needed changes.
9. *Communication with Driver:* Provide the capability to communicate with the driver when needed.
10. *No-Show Management:* When a no-show is reported by the driver, allow operations staff to confirm with Travelers.
11. *Translation Service:* Assist the Driver with any translation service needs during a trip in progress.
12. *Arranging Emergency Medical Transportation:* Provide the capability to directly connect with a medical transportation if such request is made by the Driver or Traveler.
13. *Traveler Safety:* If safety message is received from the Traveler, provide the capability to follow appropriate actions per HIRTA's safety protocol.

*Billing and Administration Module*

1. *Trip Verification:* Provide the capability to verify trips if necessary prior to cost allocation and billing
2. *Billing and Invoicing:* Provide the capability to perform cost-allocation and billing and generate appropriate invoices accordingly.

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

#### *Reporting and Data Module*

1. *Reporting:* Provide the capability to report per defined KPIs for measuring system performance and measuring the project (and service delivery) outcomes.
2. *Data Sharing:* Provide the capability to share data per data sharing agreements in the Data Management Plan.

#### **Access2Care**

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

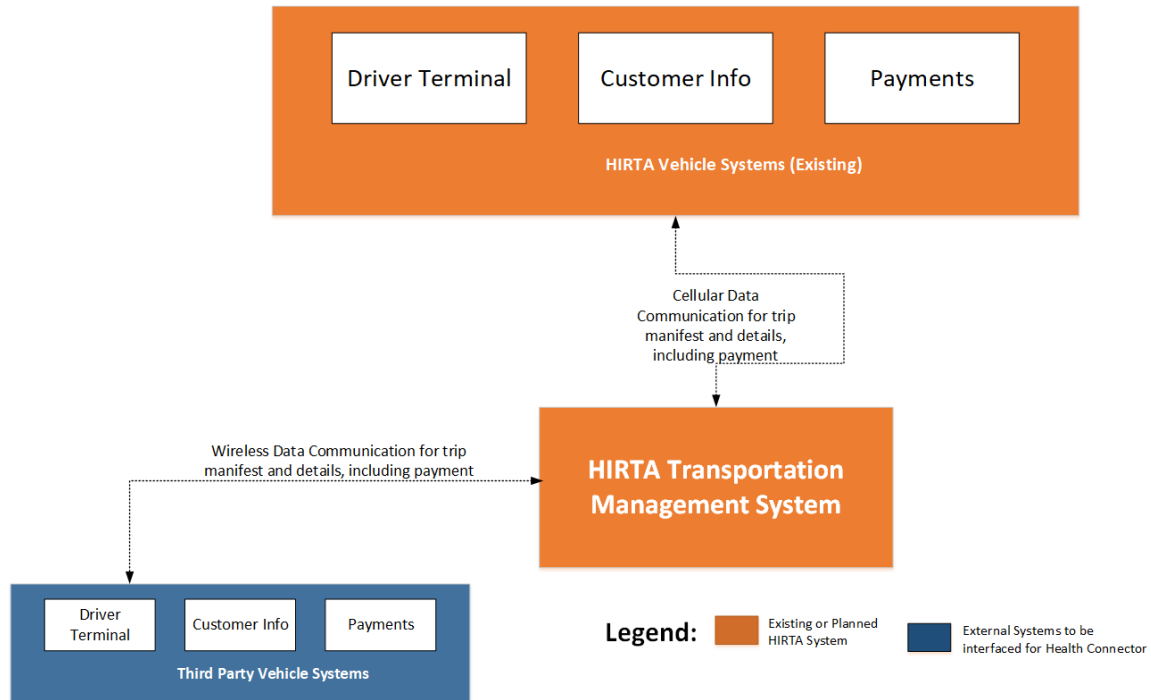
#### **Third-Party Service Provider**

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

### **5.2.3. Vehicle Subsystems**

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

Figure 15 provides an overview of Vehicle-end Systems.

**Figure 15. Vehicle-end System**

1. *Identifying Travelers*: Provide the capability to verify Traveler boarding the vehicle.
2. *Trip Details and Status*: Provide the capability to view details of a trip at any point. Also, provide the trip status when the trip is in progress.
3. *Communication with HIRTA Operations*: Provide the capability to communicate with HIRTA Operations.
4. *Performing Trips*: Provide the capability to perform required activities on arrival for pick-up or drop-off. Allow drivers to report no-show and take action per HIRTA policy.
5. *Turn-by-turn Navigation*: Provide turn-by-turn direction for the pick-up or drop off locations as requested by the Driver.
6. *Translation Service*: Provide translation service to assist a Driver when requested.
7. *Wheelchair Status*: Monitor wheelchair functional status and alert the Driver in the event of a malfunction.
8. *Notification on Delayed Arrival*: Provide the capability to notify HIRTA Operations and Healthcare Customer Care staff in the event of an expected delayed arrival.
9. *Payment Status Update*: Provide the capability to view required payment for a trip and update fare paid (if not automated).

### 5.2.4. Wayfinding Subsystem

The system will provide the capability to address features listed in Section 5.2.1. This subsystem will include the following:

1. **Wayfinding infrastructure:** this includes the physical assets that will be installed for the wayfinding application to detect the object (vehicle, beacon or visual marker inside a building) and provide turn-by-turn guidance.
2. **Central wayfinding software:** The central software will guide the application used by the Travelers with indoor and outdoor wayfinding. Also, this software will be used to manage the physical assets used for providing wayfinding capability.

### 5.2.5. Interfaces

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

- **Access2Care Software:** Access2Care uses its own proprietary application to with scheduling of Medicaid-funded trips for its customers. The application has both Traveler component and a central component for customer care staff. The project team is still evaluating the merit of this interface given the low trip volume. However, this ConOps defines the capabilities that will be accomplished if such interface is completed
- **EHR Software:** HIRTA's partners use the following EHR/Medical Record software:
  - Unity Point Health: Epic
  - Dallas County Hospital/Mercy One: Evident/CPSI
  - Broadlawns Clinic: Meditech

As stated earlier, interface with each of these products is available through custom interfaces only. HIRTA team will further define the level of interface needed and data exchange needs in the system requirements. However, at this time, the team is planning to interface with EHR systems that provide open API (e.g., Epic) and use an alternate approach for other systems (e.g., a secure web-based access to a central system provided by Health Connector) where healthcare staff will be able to use Health Connector application for simultaneous booking of medical and transportation appointments. Also, for Epic, we are exploring if a middleware approach may be more appropriate since Unity Point currently partners with Kaizen Health for providing medical transportation.

- **DCHD/Health Navigation Information and Referral System:** DCHD uses Healthleads software for managing the needs and services provided to Dallas County residents. This system currently does not connect with any medical record systems. HIRTA project team does not see a need to interface with this system at this time.

Further details on desired interfaces are provided in the following subsections

### **Access2Care Software**

1. *Trip Ingestion*: Provide the capability automatically ingest trips when submitted by Access2Care into the Health Connector system.
2. *Trip Status Reporting*: Provide the capability to monitor the real-time status of trips as other trips and provide updates to Access2Care system in real-time.
3. *Billing*: Provide the capability to perform cost allocation and billing for Medicaid funded trips and submit billing to Access2Care/Medicaid system electronically.
4. *Reimbursement*: Provide the capability to get reimbursed electronically by Access2Care/Medicaid.
5. *Access to Data/Reporting*: Provide the capability access reporting and needed data as defined for Medicaid trips.

### **Electronic Healthcare Record (EHR) Software**

1. *Transportation Booking while Booking Medical Appointment*: Provide the capability to book transportation when requested by a Patient/Traveler for any origin or destination location within Dallas County using Health Connector system if Patients/Travelers are registered with HIRTA.
2. *Transportation Booking for Referral Facilities or Return Trips*: Provide the ability to book transportation when requested by Patients/Travelers for return trips upon discharge for any origin or destination location within Dallas County using Health Connector system if Patients/Travelers are registered with HIRTA.
3. *Real-time Status on Transportation*: Provide the capability to view real-time status of trips for Travelers/Patients who have medical appointments scheduled.
4. *Contact Travelers/Patients*: Provide the capability to connect with Travelers/Patients regarding their medical transportation.
5. *Contact HIRTA Customer Service*: Provide the capability to connect with Travelers/Patients regarding booking of a new trip or real-time status of an already booked trip.
6. *Access to Data/Reporting*: Provide the capability to obtain reports and needed data for patients/travelers to measure KPIs (TBD).

### **DCHD Information and Referral Software**

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



3. *Access to status of a Medical Appointment, As Authorized:* Provide the capability to review the status of a medical appointment booked for a DCHD customer.
4. *Access to status of a Booked Traveler Trip, As Authorized:* Provide the capability to review the real-time status of trip booked for a DCHD customer.
5. *Contact Travelers/Patients:* Provide the capability to connect with Travelers/Patients regarding their medical transportation.
6. *Contact Healthcare Customer Care:* Provide the capability to connect with Travelers/Patients regarding medical needs for a DCHD customer.
7. *Contact HIRTA Customer Service:* Provide the capability to connect with HIRTA customer care regarding transportation needs for a DCHD customer.
8. *Access to Data/Reporting:* Provide the capability to obtain reports and needed data for patients/travelers to measure KPIs (TBD).

### **5.3. Stakeholders and Actors of the Proposed System**

A detailed list of user group for the proposed system is provided in Section 4 since needs are organized by those groups.

### **5.4. Support Environment**

Apart from the core systems, subsystems and system interfaces described in Section 5.2, the following systems will support the Health Connector functions:

- *Data Communication System:* A cellular carrier will be used for performing data communication between vehicles and the central system (similar to current system environment).
- *Voice Communication System:* A two-way voice communication system will be used for communication between vehicles and the central system (similar to current system environment).
- *Vehicle Maintenance System:* A maintenance software will assist with preventative and ad-hoc maintenance of vehicles.
- *Accounting System:* An accounting software will assist with recordkeeping on billing, reimbursements, and revenue management.
- *Mapping and Geocoding System:* A geographic information system (GIS)-based mapping system that is part of Routematch will provide geocoding and mapping capabilities. Web-based mapping will be used for Uber platform.

- *Phone and Email Communications:* Phone and email communications systems will be used where automated capabilities are not available.
- *Server Infrastructure:* Systems will be cloud-hosted.
- *Arrival Notification Platform:* An interactive voice response (IVR) service, currently in use today will provide day-before and real-time email and phones-based notifications.
- *Medical Record Systems:* Medical record systems in use at hospitals/clinics will store the health records and provide appointment, discharge, and referral information as needed.
- *Information and Referral Systems:* Information and referral systems used by DCHD and other social care organizations will provide referrals to HIRTA.
- *Physical Environment:* Physical facilities as currently available will be utilized.

## **5.5. Modes of Operations for Proposed System**

The following modes of operations apply to the Health Connector system:

### **5.5.1. Normal**

In normal mode, all capabilities will be available as intended. Travelers will be able to book both medical and transportation appointments simultaneously, monitor appointment status and use wayfinding functions.

### **5.5.2. Degraded**

A degraded mode likely apply in the event of partial system failure when one or more subsystems of the Health Connector system is not operational due to communication, network or computer/server infrastructure failure.

### **5.5.3. Weather Emergency**

A limited capability system will apply when external events such as weather emergency may enforce changes in standard operating procedures.

### **5.5.4. Medical Emergency**

A medical emergency mode will be limited to a Driver/Vehicle or Traveler when such incident occurs during transporting a Traveler for a medical appointment. In this event an Emergency Medical Transportation Service will be used and none of the functions provided by Health Connector will apply.

### 5.5.5. Complete Failure

A complete failure will occur when Health Connector system is not available due to network connectivity, server/storage infrastructure failure, power failure, severe weather event or other reasons. In such case, HIRTA standard operating procedures for a two-way voice communication-based approach will apply.

## 5.6. Operational Policies and Constraints

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

### 5.6.1. 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.  
  
Any future changes in service hours must be automatically communicated to appropriate parties (e.g., healthcare providers, DCHD) and communicated to customers through appropriate channels.
- **Third Party Service Providers:** With the deployment of Health Connector, HIRTA will have the capability to partner with third-party providers for providing services after office hours. However, detailed policies and procedures will have to be developed.
- **IT-related Policies:** No major IT infrastructure-related changes are anticipated as part of this project but partners will have to be provided access to Health Connector and HIRTA will be responsible for providing access and maintaining appropriate security and access levels for those partners. .
- **Staffing:** The project will not result in increased staffing levels but roles may have to be adjusted given efficiency gains observed due to reduced level of coordination per trip.
- **Budget/Financial Constraints:** HIRTA is still finalizing the list of vendor partners at this point so ongoing support fees are still to be determined. Also, additional funding entities and partners may get identified per subsidy levels as those are determined during financial planning in later stage of Phase 1.
- **Definition of Standard Operating Procedures (SOPs) for Health Connector:** While Health Connector will be part of HIRTA's DR Service, detailed SOPs will have to be developed, describing roles and responsibilities and organizational structure prior to system launch, most likely during Phase 2. The SOPs will cover how system will operate under different modes of operation as described in Section 5.5.
- **Service Level Agreements (SLAs):** The following types of SLAs will have to developed:
  - SLAs with vendors will have to be made available for providing Health Connector service to meet the required system performance needs. ConOps will be updated once these are finalized during system requirements development.
  - Partnership agreements will have to be made with healthcare partners for certain business functions (e.g., exchange of medical appointment data) and appropriate SLAs will be developed and agreed upon.

- Additional SLAs may have to be identified and developed as part of the development of SOPs for Health Connector.
- Also, once third-party contractors are determined, SLAs will have to be established for the provision of services through them.

### 5.6.2. 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 (to be determined), healthcare providers will have to provide access to medical appointment data which will at least include 1) customer identifier; 2) customer/caregiver contact; 3) time of appointment; 4) day of appointment; 5) location of appointment; 6) doctor's office contact information. Required details will be finalized at the time of detailed design.
- **Funding Source Definition and Billing:** Most healthcare providers have mentioned that they have access to funds which can be used towards covering the cost of persons with low income. HIRTA has the capability to define funding sources in its system and healthcare providers can be listed as a funding source. For eligible trips, such funds will be used and the healthcare providers will be billed per agreed upon terms and conditions.
- **Coordination on hours of operation:** When there is a change in healthcare provider service hours for non-emergency visits, Health Connector system will be updated and HIRTA will be notified.
- **Staffing:** HIRTA already coordinates with dedicated Social Worker/Health Navigator staff at healthcare providers. However, this process will have to be finalized and enhanced communication access through 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.

### 5.6.3. DCHD

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

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



## 6. Operational Scenarios

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

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

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

### Overarching Scenario-Normal Operations

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

### Degraded or System Failure Scenarios

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

### Travelers (Non-Medicaid)

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

7. **Scenario 7:** Traveler looking for a medical appointment for one-off procedure. They will not be able to take taxi/TNC home and will need someone to accompany them.

#### **Travelers (Medicaid/MCO)**

8. **Scenario 8:** Traveler is approved to take Medicaid eligible trip but they would like family to accompany them so can be helped. Outbound trip is 45 mins long so they may be looking to be dropped off at a friend's house so they can rest and arrange their own transportation later for ride home. Medicaid will pay for only eligible portion of the trip.

#### **DCHD/Health Navigators**

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

#### **Hospital/Clinic**

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

#### **HIRTA**

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

#### **Third party Service Providers**

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

Each of the above scenarios are explained further in Table 4 through Table 17. Each of the tables provide a description on a scenario, identify goals, constraints and actors (systems or users involved) for that scenario, and provide an illustration on step-by-step workflows along with a description, as applicable to the scenario.



**Table 4. Scenario 1-Overarching Scenario-Normal Operations**

Topics	Description
<b>Short Description</b>	In this scenario, a person with disability who is qualified for Medicaid due to low income and age criteria lives in rural part of Dallas County. An appointment is needed for routine exam and a specialist appointment with a specialist for a minor procedure. Traveler is not sure of the return time and will book a same day appointment after the procedure is complete. Traveler has requested to accommodate a personal companion to go with them. Also, Traveler wants to visit family before returning home.
<b>Goal</b>	The goal of this scenario is to identify steps involved in serving customers looking for transportation access to a healthcare appointment.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Traveler is not ambulatory.</li> <li>• Traveler is elderly.</li> <li>• Return trip not scheduled ahead of time.</li> <li>• Part of the trip may not be covered by the funding source.</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County but lives in rural area.</li> <li>• Require walking on sidewalk after the drop off.</li> <li>• Need to take stairs or elevator for the appointment inside the facility.</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Wayfinding Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> <li>• Personal Companion</li> </ul>

Topics	Description
<p><b>Illustration</b></p>	
<p><b>Preconditions</b></p>	<ul style="list-style-type: none"> <li>• Access2Care booking system is operational.</li> <li>• On-board vehicle system is operational.</li> <li>• Vehicles are equipped with wayfinding technology for identification.</li> <li>• Hospital is equipped with wayfinding infrastructure to support the wayfinding application.</li> <li>• EHR and HIRTA Central Software interface is functional.</li> </ul>

**Main Flow**

1. Traveler calls healthcare provider and books an appointment for a routine medical checkup. Traveler also inquires if they can book an appointment for a minor procedure since the specialist who will perform the procedure is scheduled to visit that day as well. The appointment for the minor procedure is also booked. Healthcare provider asks Traveler if they need transportation for the return trip, Traveler asks for options to be dropped off at a family member's house nearby. Healthcare provider searches and identifies HIRTA as an option and informs about the Health Connector and explains the process for getting the transportation booked.
2. Traveler understands that they have to use Access2Care system to book transportation appointment to utilize Medicaid-provided benefits. Traveler has to call to confirm if their eligibility is not expired and what portion of their trip is eligible for reimbursement by Medicaid. Traveler books their appointment while on the phone. Access2Care staff books and confirms the appointment.
3. Access2Care system selects HIRTA as the transportation provider and notifies the Traveler.
4. Traveler decides to use HIRTA for return transportation as well and uses Health Connector app to register. Once the registration is complete, Traveler, explores return transportation to go from healthcare provider location to family member house and subsequently from family member house to home. However does not book the trip since return trip time is not clear.
5. HIRTA checks Access2Care assigned-trips as part of daily routine. Traveler trip to the healthcare provider location is included along with other trips. HIRTA ingests all trips into their system. HIRTA sees that the Traveler needs a personal companion and an accessible vehicle so assigns vehicle accordingly during scheduling. No other trips are scheduled on that vehicle.
6. Since the Traveler is registered and has identified notification preferences, a reminder is sent by the HIRTA Central system about upcoming trip 24 hours in advance. Traveler confirms the trip.
7. A reminder is sent 15 mins prior to vehicle arrival and the pick-up location is identified as front entrance of house as stored in the Traveler profile. Traveler confirms the pick-up time and location.
8. Driver manifest prompts in advance that the Traveler is not ambulatory and uses a mobility aid and will need assistance. Also, it notifies that a personal companion will go with the Traveler.
9. Traveler waits at the pick-up spot along with the personal companion and identifies the vehicle on arrival using wayfinding application. Driver and Traveler are able to confirm the identity before boarding.
10. Driver assists the Traveler with boarding.
11. Driver does not have any other pick-up/drop-off on their manifest and heads over directly to the Traveler destination.
12. Driver runs into a delay due to an incident on the highway. Driver notifies about the delay to the Central system. Healthcare customer care staff also gets notified about the delay but does not see a need to make any changes to the appointment.
13. Few minutes prior to arrival (as configured), the system also notifies healthcare customer care representative of Traveler's arrival. Healthcare customer care staff gets the paperwork ready for check-in.
14. Driver arrives at the destination location. Upon arrival, the Driver terminal prompts for payment due as zero as the cost is covered by Medicaid. Customer alights.
15. Neither Traveler nor their companion is familiar with the facility and open the wayfinding application to locate the doctor's office.

Topics	Description
	<p>16. Upon arrival, Traveler completes intake process at the check-in desk and waits for the appointment.</p> <p>17. Once the first appointment is completed, Traveler has to go to another part of the facility for the second appointment for the procedure. Traveler uses the wayfinding application for step-by-step guidance.</p> <p>18. Upon arrival, Traveler waits for the second appointment. Personal Companion stays in the waiting room.</p> <p>19. Personal Companion gets an alert that the Traveler will be discharged in 1 hour. Personal Companion is authorized to use the Traveler's Health Connector account and books for return transportation to go to family member's house based on discharge information. HIRTA vehicle is confirmed to arrive at the requested time.</p> <p>20. 15 minutes prior to vehicle arrival, a notification is sent with information on the vehicle and driver along with a designated pickup spot for HIRTA vehicles. Personal Companion can track vehicle location.</p> <p>21. Given mobility assistance need and discharge instructions, healthcare customer care representative also gets notified of the booked trip and need for escorting the Traveler with a healthcare professional.</p> <p>22. Few minutes prior to the vehicle arrival, Traveler is escorted by the Healthcare staff to the designated pick-up location.</p> <p>23. Traveler locates and boards the vehicle on arrival with the assistance from Driver.</p> <p>24. Traveler arrives at their drop-off location and the system prompts for fare due as this portion of trip is not covered by Medicaid. Traveler applies a discount coupon provided by the healthcare staff to their account and pays the remaining share by cash in amount of \$10. Driver does not have a change and applies balance amount to the Traveler account.</p> <p>25. Driver assists the Traveler in alighting the vehicle.</p> <p>26. Traveler books another appointment to go home during after-hours. HIRTA vehicles are not operational so the system suggests an accessible TNC vehicle and meets Traveler needs. Personal Companion is also booked in the same vehicle.</p> <p>27. Traveler is able to apply a gift card provided by their friend to their account.</p> <p>28. Traveler arrives at the destination and the system automatically deducts the amount from the prepaid balance.</p> <p>29. Driver assists the Traveler in alighting the vehicle and the trip is complete.</p> <p>30. Healthcare provider follows-up and is able to schedule a telehealth appointment for the Traveler to check-in with the specialist on recovery from the procedure.</p> <p>31. HIRTA bills Access2Care/Medicaid for the eligible portion of the trip and gets reimbursed.</p>

Topics	Description
<b>Alternate Flow(s)</b>	<p>4a. Traveler calls HIRTA to register and understand the process of booking. Also, inquires more about Health Connector.</p> <p>12a. Due to a long delay and impact on other appointments, healthcare customer care staff modifies the first appointment. It does not impact the second appointment. Traveler and all authorized parties (Personal companion, HIRTA) are notified.</p> <p>17a. Wayfinding system is not operational and the Traveler asks the healthcare customer care staff for guidance.</p> <p>17b. Specialist could not visit the clinic that day and has to cancel appointment. Traveler makes a return trip arrangement to go home with HIRTA. A flow similar to second leg of the trip applies but Traveler does not have to pay for trip since the trip is back to home from the healthcare facility.</p>
<b>Post-conditions</b>	<ul style="list-style-type: none"> <li>Funding source is billed the incurred transportation expense.</li> </ul>
<b>Information Requirements</b>	<ul style="list-style-type: none"> <li>Medical appointment progress status.</li> <li>Trip progress status and real-time information on vehicle delay/arrival.</li> </ul>
<b>Related User Needs</b>	<p>TRV-2, TRV-3, TRV-4, TRV-5, TRV-8, TRV-9, TRV-10, TRV-14, TRV-15, TRV-17, TRV-18, TRV-20, TRV-22, TRV-23, TRV-25, TRV-26, TRV-27, TRV-30, TRV-31, TRV-32</p> <p>CSR-5, CSR-6, CSR-7, CSR-8, CSR-9, CSR-10, CSR-12, CSR-13, CSR-15, CSR-16</p> <p>OPS-1, OPS-2</p> <p>DRV-1, DRV-2, DRV-4, DRV-8, DRV-9, DRV-10</p> <p>SCH-1, SCH-2, SCH-5</p> <p>HCR-1, HCR-2, HCR-6, HCR-7, HCR-9</p>

**Table 5. Scenario 2-Degraded Operation**

Topics	Description
<b>Short Description</b>	In this scenario, Traveler is looking to book a transportation appointment for a routine medical visit appointment. Traveler is able to use the Health Connector to make arrangements but HIRTA TMS is down during return trip.
<b>Goal</b>	The goal of this scenario is to identify situations HIRTA TMS is down.
<b>Constraints</b>	Paper manifest needed
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>Covers travel area within the Dallas County.</li> <li>Require walking on sidewalk after the drop off.</li> <li>Need to take stairs or elevator for the appointment inside the facility.</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>Traveler Application</li> <li>Wayfinding Application</li> <li>Routematch/Uber Central Software</li> <li>EHR Application</li> <li>HIRTA Drivers</li> <li>Healthcare Customer Care Representative</li> <li>Traveler</li> <li>Phone system</li> <li>Two way radio</li> </ul>
<b>Illustration</b>	

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 Office of the Assistant Secretary for Research and Technology  
 Intelligent Transportation Systems Joint Program Office

Topics	Description
<b>Preconditions</b>	<ul style="list-style-type: none"> <li>• On-board vehicle system is operational.</li> <li>• Vehicles are equipped with wayfinding technology for identification.</li> <li>• Hospital is equipped with wayfinding infrastructure to support the wayfinding application.</li> <li>• EHR and HIRTA Central Software interface is functional.</li> <li>• Two-way radio is functional.</li> <li>• Phone system s operational.</li> </ul>
<b>Main Flow</b>	<ol style="list-style-type: none"> <li>1. Traveler uses the Health Connector app to book both medical and transportation appointment for routine medical exam few days in advance. Return trip is not booked.</li> <li>2. A reminder is sent by Central system about upcoming trip 24 hours in advance. Traveler confirms the pick-up.</li> <li>3. A reminder is sent 15 mins prior to vehicle arrival and the pick-up location is identified. Traveler confirms the pick-up.</li> <li>4. Traveler waits at the pick-up stop and identifies the vehicle on arrival using wayfinding application. Driver and Traveler are able to confirm the identity before boarding.</li> <li>5. Driver does not have any other pick-up/drop-off on their manifest and heads over directly to the Traveler destination.</li> <li>6. Driver arrives at the destination location. Upon arrival, the Driver terminal prompts for payment due. Fare is paid and customer alights.</li> <li>7. Few minutes prior to arrival (as configured), the system also notifies healthcare customer care representative of Traveler’s arrival.</li> <li>8. Traveler is familiar with the facility and does not request wayfinding.</li> <li>9. Traveler completes intake process at the check-in desk and waits for the appointment.</li> <li>10. Once the treatment is completed, Traveler tries to book an appointment for return trip but gets a message that HIRTA TMS is not operational and is asked to contact the HIRTA customer service.</li> <li>11. Traveler contacts HIRTA customer service to book a return trip. Given HIRTA TMS is not operational, customer service staff contacts Dispatcher if a vehicle is available to provide same day service. Dispatcher uses two-way radio system to contact drivers expected to be in the area according to their manifests.</li> <li>12. One of the drivers is able to pick-up in 20 minutes but the Traveler will have to share the vehicle with another customer. Traveler accepts the condition and the ride is confirmed. Traveler is advised to meet at a given time at a designated spot at least 10 minutes prior to expected arrival.</li> <li>13. Traveler meets the driver at the pick-up spot as advised.</li> <li>14. Traveler boards the vehicle on arrival.</li> <li>15. Traveler arrives at their drop-off location and is asked to pay the fare due.</li> <li>16. Traveler pays by cash.</li> <li>17. Driver confirms the passenger trip completion on their paper manifest.</li> <li>18. Driver submits the paper manifest after their shift is complete.</li> </ol>
<b>Alternate Flow(s)</b>	<ol style="list-style-type: none"> <li>11a. Traveler cell phone is not working and asks Healthcare Customer Care Rep to book a return trip for them. Customer care rep contacts HIRTA customer service by phone.</li> </ol>
<b>Post-conditions</b>	<ul style="list-style-type: none"> <li>• HIRTA Dispatcher manually enters the trip completion details in the system.</li> </ul>

Topics	Description
<b>Information Requirements</b>	<ul style="list-style-type: none"> <li>• Trip progress status and real-time information on vehicle delay/arrival.</li> </ul>
<b>Related User Needs</b>	TRV-8, TRV-9, TRV-10, TRV-11, TRV-17, TRV-17A, TRV-18, TRV-22, TRV-23, TRV-26, TRV-27, TRV-30, TRV-31, TRV-32 CSR-5, CSR-6, CSR-7, CSR-8, CSR-9, CSR-10, OPS-1, OPS-8; DRV-4; HCR-6



**Table 6. Scenario 3-System Failure Mode**

Topics	Description
<b>Short Description</b>	In this scenario, Traveler had scheduled an appointment but on the day of the appointment are intermittent issues with cellular communications due to severe weather events within the past few days and Health Connector system is completely non-operational. HIRTA TMS can still be accessed to view trip details but no real-time updates are available due to lack of vehicle to central connectivity.
<b>Goal</b>	The goal of this scenario is to identify situations when the Health Connector system falls back on two-way radio and phone system.
<b>Constraints</b>	Paper manifest needed
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County.</li> <li>• Require walking on sidewalk after the drop off.</li> <li>• Need to take stairs or elevator for the appointment inside the facility.</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Routematch/Uber Central Software</li> <li>• HIRTA Dispatchers</li> <li>• HIRTA Customer Service</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> <li>• Phone System</li> <li>• Two-way Radio System</li> </ul>

Topics	Description
<p><b>Illustration</b></p>	
<p><b>Preconditions</b></p>	<ul style="list-style-type: none"> <li>• Two-way radio is functional.</li> <li>• Phone system is operational.</li> <li>• HIRTA is able to access central system to access details of scheduled trips as the communication network at the HIRTA headquarters is operational. However, no real-time updates are available due to disruption in cellular communication.</li> </ul>

Topics	Description
<b>Main Flow</b>	<ol style="list-style-type: none"> <li>1. Traveler uses the Health Connector app to book both medical and transportation appointment for routine medical exam few days in advance. Return trip is also booked.</li> <li>2. A reminder is sent by Central system about upcoming trip 24 hours in advance. Traveler confirms the pick-up.</li> <li>3. HIRTA Customer Service calls the Traveler to notify that vehicle is on schedule to pick them up within 20 minutes and they must be at the front entrance 10 minutes prior to vehicle arrival.</li> <li>4. Traveler waits at the pick-up stop and boards the vehicle on arrival.</li> <li>5. Driver notes the actual pick-up time on the paper manifest</li> <li>6. Driver does not have any other pick-up/drop-off on their manifest and heads over directly to the Traveler destination.</li> <li>7. Driver arrives at the destination location. Upon arrival, the Driver notifies the Traveler of fare due per the paper manifest. Fare is paid and customer alights. Driver notes the amount of fare paid on the paper manifest.</li> <li>8. Traveler uses physical signage to locate the entrance and doctor's office.</li> <li>9. Traveler completes intake process at the check-in desk and waits for the appointment.</li> <li>10. Once the treatment is completed, Traveler calls HIRTA Customer Service to book an appointment for return trip.</li> <li>11. Customer service staff contacts Dispatcher if a vehicle is available to provide same day service. Dispatcher uses two-way radio system to contact drivers expected to be in the area according to their manifests.</li> <li>12. One of the drivers is able to pick-up in 20 minutes. Traveler accepts the condition and the ride is confirmed. Traveler is advised to meet at a given time at a designated spot at least 10 minutes prior to expected arrival.</li> <li>13. Traveler meets the driver at the pick-up spot as advised.</li> <li>14. Traveler boards the vehicle on arrival.</li> <li>15. Traveler arrives at their drop-off location and is asked to pay the fare due.</li> <li>16. Traveler pays by cash.</li> <li>17. Driver confirms the passenger trip completion on their paper manifest.</li> <li>18. Driver submits the paper manifest after their shift is complete.</li> </ol>
<b>Alternate Flow(s)</b>	<ol style="list-style-type: none"> <li>2a. Traveler cancels the appointment due to severe weather and cellular communications being unreliable. Trip is cancelled.</li> </ol>
<b>Post-conditions</b>	
<b>Information Requirements</b>	
<b>Related User Needs</b>	TRV-8, TRV-9, TRV-10, TRV-11, TRV-17, TRV-17A, TRV-18, TRV-22, TRV-23, TRV-26, TRV-27, TRV-30, TRV-31, TRV-32 CSR-5, CSR-6, CSR-7, CSR-8, CSR-9, CSR-10, OPS-1, OPS-8; DRV-4; HCR-6

**Table 7. Scenario 4-Traveler looking for Transportation for a Recurring Medical Appointment**

Topics	Description
<b>Short Description</b>	In this scenario, Traveler has already scheduled a recurring medical appointment with a healthcare provider for Dialysis treatment that will require 3 visits per week and would like to book transportation on the same schedule. Return trip will also have to be booked once the treatments are over and Patient/Traveler is discharged.
<b>Goal</b>	The goal of this scenario is to identify situations that the Health Connector system will have to address when trips are booked on a recurring and fixed schedule for a defined period.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Traveler may not be ambulatory.</li> <li>• Traveler may be elderly.</li> <li>• Return trip is typically not scheduled since there may be wait time after check-in and timeframe for treatment may vary.</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County.</li> <li>• Require walking on sidewalk after the drop off.</li> <li>• Need to take stairs or elevator for the appointment inside the facility.</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Wayfinding Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> </ul>

Topics	Description
<p><b>Illustration</b></p>	
<p><b>Preconditions</b></p>	<ul style="list-style-type: none"> <li>• On-board vehicle system is operational.</li> <li>• Vehicles are equipped with wayfinding technology for identification.</li> <li>• Hospital is equipped with wayfinding infrastructure to support the wayfinding application.</li> <li>• EHR and HIRTA Central Software interface is functional.</li> </ul>

Topics	Description
<b>Main Flow</b>	<ol style="list-style-type: none"> <li>1. Traveler trip is booked in advance using smartphone app for an upcoming medical appointment on a fixed recurring schedule. Trip is confirmed by the system.</li> <li>2. A reminder is sent by Central system about upcoming trip 24 hours in advance. Traveler confirms the pick-up.</li> <li>3. A reminder is sent 15 mins prior to vehicle arrival and the pick-up location is identified. Traveler confirms the pick-up.</li> <li>4. Traveler waits at the pick-up stop and identifies the vehicle on arrival using wayfinding application. Driver and Traveler are able to confirm the identity before boarding.</li> <li>5. Driver manifests prompts that the Traveler is not ambulatory and uses a mobility aid and will need assistance. Driver assists the Traveler with boarding.</li> <li>6. Driver does not have any other pick-up/drop-off on their manifest and heads over directly to the Traveler destination.</li> <li>7. Driver arrives at the destination location. Upon arrival, the Driver terminal prompts for payment due. Fare is paid and customer alights.</li> <li>8. Few minutes prior to arrival (as configured), the system also notifies healthcare customer care representative of Traveler's arrival and that the Traveler would need assistance. Healthcare staff meets the customer due to non-ambulatory condition.</li> <li>9. Healthcare staff is familiar with the facility and does not request wayfinding.</li> <li>10. Traveler completes intake process at the check-in desk and waits for the appointment.</li> <li>11. Once the treatment is completed, Traveler requests on-demand service for return trip, which is confirmed to arrive within 20 minutes. Traveler can track vehicle location.</li> <li>12. Given mobility assistance need, healthcare customer care representative also gets notified of the booked trip.</li> <li>13. Few minutes prior to the vehicle arrival, Traveler is escorted by the Healthcare staff to the designated pick-up location.</li> <li>14. Traveler locates and boards the vehicle on arrival with the assistance from Driver.</li> <li>15. Traveler arrives at their drop-off location and is assisted by the Driver in alighting the vehicle.</li> </ol>
<b>Alternate Flow(s)</b>	<p>9a. Healthcare staff is new and does not know the location of the doctor's office. Traveler opens the wayfinding application to provide turn-by-turn guidance.</p> <p>11a. Traveler may book a return trip at the same time when booking appointment and modify it if there is any delay in treatment.</p> <p>11b. Traveler may ask Healthcare Customer Care Rep to book a return trip for them.</p>
<b>Post-conditions</b>	<ul style="list-style-type: none"> <li>• Health navigator/Social care worker is notified of completion of treatment.</li> <li>• Funding source is billed the incurred transportation expense.</li> </ul>

Topics	Description
<b>Information Requirements</b>	<ul style="list-style-type: none"> <li>• Medical appointment progress status.</li> <li>• Trip progress status and real-time information on vehicle delay/arrival.</li> </ul>
<b>Related User Needs</b>	TRV-2, TRV-3, TRV-4, TRV-5, TRV-8, TRV-9, TRV-10, TRV-14, TRV-15, TRV-17, TRV-18, TRV-20, TRV-22, TRV-23, TRV-25, TRV-26, TRV-27, TRV-30, TRV-31, TRV-32 CSR-5, CSR-6, CSR-7, CSR-8, CSR-9, CSR-10, CSR-12, CSR-13, CSR-15, CSR-16 OPS-1, OPS-2 SCH-1, SCH-2, SCH-5 RFR-1, RFR-2 HNV-1, HNV-3, HCR-1, HCR-2, HCR-6, HCR-7, HCR-9

**Table 8. Scenario 5-Traveler looking for Transportation for a Recurring Medical Appointment on Irregular Schedule**

Topics	Description
<b>Short Description</b>	In this scenario, Traveler has recurring appointments for prenatal care, but those are not on fixed schedule. Traveler has difficulty communicating in English and will need assistance with the trip. Return trip will have to be booked once the appointment is over and follow-up lab work is complete.
<b>Goal</b>	The goal of this scenario is to identify situations that the Health Connector system will have to address when trips are scheduled on a recurring but irregular schedule and Traveler speaks limited English.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Return trip cannot be scheduled.</li> <li>• Traveler needs a companion due to LEP.</li> <li>• Follow-up lab work needed after the visit.</li> <li>• Transportation paid out of pocket.</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County</li> <li>• Traveler will need assistance with wayfinding inside medical facilities</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Wayfinding Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Translation Service</li> <li>• Traveler</li> <li>• Personal Companion</li> <li>• Health Navigator</li> </ul>



Topics	Description
Illustration	
Preconditions	<ul style="list-style-type: none"> <li>• On-board vehicle system is operational.</li> <li>• Vehicles are equipped wayfinding technology for identification.</li> <li>• Hospital is equipped with wayfinding infrastructure to support the wayfinding application.</li> <li>• EHR and HIRTA Central Software interface is functional.</li> <li>• Translation service is available.</li> <li>• Health Navigator has access to the system.</li> <li>• A personal companion can be accommodated.</li> </ul>

Topics	Description
<b>Main Flow</b>	<ol style="list-style-type: none"> <li>1. Given the LEP barrier, Traveler would like to confirm booking through a phone conversation. Traveler calls HIRTA Customer Service after medical appointment is booked. Customer Service arranges a multi-party call with Health Navigator/social worker who will also serve as caregiver/personal companion to translate and assist with booking. Booking is confirmed.</li> <li>2. A reminder is sent by the Central system about upcoming trip via a phone call 24 hours in advance to both Traveler and the caregiver. Traveler confirms the pick-up. Caregiver is also notified about the confirmation via a text message.</li> <li>3. Caregiver meets the Traveler 30 minutes prior to the trip at the trip origin location.</li> <li>4. A reminder is sent 15 mins prior (or as configured) for vehicle arrival via the app to both the Traveler and the caregiver. Caregiver confirms the pick-up time and location on Traveler's behalf.</li> <li>5. Traveler and personal companion wait at the pick-up location and identify the vehicle on arrival using the wayfinding application.</li> <li>6. Driver and Traveler are able to confirm the identity before boarding. Driver verifies on their terminal that a personal companion is allowed.</li> <li>7. Traveler and the caregiver board the vehicle and travel to the destination location.</li> <li>8. Payment is made via account debit upon arrival. Traveler and caregiver alight the vehicle.</li> <li>9. A few minutes prior, the Healthcare customer care representative is notified of the Traveler's arrival along with request for a wheelchair. Hospital care staff meet the Traveler and caregiver to provide the wheelchair.</li> <li>10. Wayfinding assistance is not needed for the appointment.</li> <li>11. Traveler and caregiver complete the intake process and wait for the appointment.</li> <li>12. Once the appointment is complete, provider refers the Traveler for lab work and ultrasound which are in a different building on the campus. Traveler and caregiver use the wayfinding app to get turn-by-turn direction for both follow-ups.</li> <li>13. After the appointment is complete, caregiver requests on-demand service for return trip which is confirmed to arrive within 20 minutes and pick-up location is confirmed. Caregiver and Traveler both can track vehicle location.</li> <li>14. Few minutes before the estimated vehicle arrival, the caregiver and the Traveler use the wayfinding application to arrive at the pickup location.</li> <li>15. Traveler and caregiver locate and board the vehicle on arrival.</li> <li>16. Traveler and caregiver arrive at the drop-off location. Upon arrival Driver gets the prompt on the terminal for payment due. Payment is made via account debit.</li> <li>17. Traveler and caregiver alight the vehicle.</li> </ol>

Topics	Description
<b>Alternate Flow(s)</b>	<p>1a. Traveler is not a HIRTA customer. When customer calls they are asked to go through the registration process. Customer is already eligible for the funding source they will use and provide the relevant information on request.</p> <p>4a: Traveler is provided on-demand video tutorial to learn more details about the appointment scheduled that day in their requested language of choice.</p> <p>12a. Given the lab work is walk-in, Traveler and caregiver may decide to complete that the next day after booking an appointment and request a trip accordingly. The booking application uses the customer name, origin and destination information from the medical appointment quickly to book the transportation appointment.</p>
<b>Post-conditions</b>	<ul style="list-style-type: none"> <li>• Nurse/provider can follow-up on lab work and ultrasound through video appointment as available through the healthcare provider system.</li> <li>• Caregiver can also follow-up with Traveler.</li> </ul>
<b>Information Requirements</b>	<ul style="list-style-type: none"> <li>• Medical appointment and transportation availability for later appointment</li> <li>• Medical appointment progress status</li> <li>• Trip progress status and real-time information on vehicle delay/arrival</li> </ul>
<b>Related User Needs</b>	<p>TRV-1, TRV-2, TRV-6, TRV-9, TRV-11, TRV-13, TRV-14, TRV-16, TRV-17, TRV-18, TRV-19, TRV-21, TRV-22, TRV-23, TRV-26, TRV-27, TRV-28, TRV-29, TRV-31, TRV-33, TRV-34</p> <p>CSR-6, CSR-7, CSR-11</p> <p>DRV-1, DRV-2, DRV-7, DRV-8, DRV-10</p> <p>SCH-5</p> <p>HNV-1, HNV-2, HNV-3, HNV-6</p> <p>HCR-4, HCR-6, HCR-9</p>

**Table 9. Scenario 6-Traveler Looking for a Preventive Care Appointment**

Topics	Description
<b>Short Description</b>	In this scenario, Traveler has an ad-hoc appointment for preventive care. Traveler is a retired veteran and gets their healthcare assistance through VA. Traveler has a limitation and uses a wheelchair. Traveler lives in a rural area with limited access to pharmacy and would like to stop by a pharmacy after the appointment.
<b>Goal</b>	The goal of this scenario is to identify situations where Travelers living in rural areas need healthcare access but prefer to make limited trips.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• The trip is almost an hour long so the return trip may be provided using a TNC if HIRTA vehicle is not available.</li> <li>• A video appointment with a psychiatrist will have to be booked after the preventative care visit. Note that Health Connector application will be used to only book the appointment and other actions related to the appointment will be completed in healthcare partner-provided application.</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County.</li> <li>• Travelers will need assistance with wayfinding inside medical facilities.</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Wayfinding Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• VA-provided application</li> <li>• Traveler</li> </ul>

Topics	Description
<p><b>Illustration</b></p>	
<p><b>Preconditions</b></p>	<ul style="list-style-type: none"> <li>• On-board vehicle system is operational.</li> <li>• Vehicles are equipped with wayfinding technology for identification.</li> <li>• Hospital is equipped with wayfinding infrastructure to support the wayfinding application.</li> <li>• EHR and HIRTA Central Software interface is functional.</li> </ul>

Topics	Description
<b>Main Flow</b>	<ol style="list-style-type: none"> <li>1. Traveler books both medical appointment and transportation appointment using the same application on their smart device.</li> <li>2. Traveler also tries to book return trip using HIRTA vehicle but it is not available so the Traveler books the return trip using a TNC vehicle provided through HIRTA. Traveler specifies the need for a wheelchair-accessible vehicle when booking.</li> <li>3. A reminder is sent by the Central system about upcoming trip 24 hours in advance. Traveler confirms the pick-up time and location.</li> <li>4. A reminder is sent 15 mins prior to vehicle arrival and the pick-up stop is notified. Traveler confirms the pick-up time and location.</li> <li>5. Traveler waits at the pick-up location and identifies the vehicle on arrival using wayfinding application.</li> <li>6. Driver and Traveler can confirm the identity before boarding. Driver assists Traveler to board the vehicle with wheelchair.</li> <li>7. The system notifies healthcare customer care representative of Traveler's arrival.</li> <li>8. Upon arrival, Traveler pays the fare amount that is due and alights the vehicle</li> <li>9. Traveler opens the wayfinding application to get turn-by-turn navigation to reach the doctor's office.</li> <li>10. Once the intake process is complete upon reaching the office, the Traveler waits for their appointment.</li> <li>11. Once the appointment is over, provider prescribes new medicines. Traveler modifies the return trip appointment using the app to add pharmacy as a stop on the return trip.</li> <li>12. Traveler gets a notification 15 minutes prior to vehicle arrival. Traveler confirms the pick-up time and location.</li> <li>13. Traveler is able to see the location on a map and reaches pick-up location few minutes prior to the vehicle arrival.</li> <li>14. Traveler locates and boards the vehicle on arrival. Driver assists with the boarding.</li> <li>15. Driver gets turn-by-turn navigation to the pharmacy. Upon arrival, Traveler picks up the medicine.</li> <li>16. Traveler boards the vehicle again for their trip to home destination.</li> <li>17. Upon arrival, fare is automatically paid via TNC application. Driver assists the Traveler in alighting the vehicle.</li> <li>18. Traveler books a video appointment with psychiatrist for follow-up. Video appointment is completed using healthcare provider system.</li> <li>19. Transportation services are billed to VA by HIRTA.</li> </ol>
<b>Alternate Flow(s)</b>	None
<b>Post-conditions</b>	VA representative can follow-up with the Traveler on the appointment.
<b>Information Requirements</b>	<ul style="list-style-type: none"> <li>• Medical appointment for video visit.</li> <li>• Medical appointment progress status.</li> <li>• Trip progress status and real-time information on vehicle delay/arrival.</li> </ul>

Topics	Description
<b>Related User Needs</b>	TRV-1, TRV-8, TRV-9, TRV-10, TRV-13, TRV-16, TRV-17, TRV-18, TRV-19, TRV-20, TRV-21, TRV-22, TRV-25, TRV-26, TRV-27, TRV-28, TRV-29, TRV-31, TRV-32 CSR-10 OPS-1, OPS-2, OPS-3, OPS-6, OPS-7 DRV-1, DRV-8 SCH-3 FND-1

**Table 10. Scenario 7-Traveler looking for an Appointment for an ad-hoc Procedure where a Companion is needed for Return Leg of the Trip**

Topics	Description
<b>Short Description</b>	In this scenario, Traveler has an upcoming appointment for an ad-hoc medical procedure. Traveler can be discharged the same day but he/she can't be allowed to return home alone, thus will need a personal companion on the way home. Traveler coordinates with a friend to company him/her, who will have to be picked up at a location close to the healthcare provider.
<b>Goal</b>	The goal of this scenario is to identify situations where Travelers' needs may be different for a return trip than the trip to the healthcare provider.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Traveler needs assistance boarding the vehicle for return trip.</li> <li>• Traveler needs a personal companion for return trip.</li> <li>• May need a follow-up care.</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County.</li> <li>• Travelers will need assistance with wayfinding inside medical facilities.</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Wayfinding Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> <li>• Personal Companion</li> </ul>



Topics	Description
<p><b>Illustration</b></p>	
<p><b>Preconditions</b></p>	<ul style="list-style-type: none"> <li>• On-board vehicle system is operational.</li> <li>• Vehicles are equipped with wayfinding technology for identification.</li> <li>• Hospital is equipped with wayfinding infrastructure to support the wayfinding application.</li> <li>• EHR and HIRTA Central Software interface is functional.</li> </ul>

Topics	Description
<b>Main Flow</b>	<ol style="list-style-type: none"> <li>1. Traveler can book both medical appointment and transportation appointment using the same application on their smart device. Traveler also books the return trip at the same time. For the return trip, Traveler identifies the need for a personal companion. Personal companion information is store in customer profile and will have to be picked up at a location near the hospital.</li> <li>2. A reminder is sent by Central system about upcoming trip 24 hours in advance. Traveler confirms the pick-up time and location.</li> <li>3. A reminder is sent 15 mins prior to vehicle arrival and the pick-up stop is notified. Traveler confirms the pick-up time and location.</li> <li>4. Traveler waits at the pick-up location and identifies the vehicle on arrival using wayfinding application. Driver and Traveler can confirm the identity before boarding.</li> <li>5. The system notifies healthcare customer care representative of Traveler's arrival.</li> <li>6. Upon arrival, Traveler pays the required fare and alights the vehicle.</li> <li>7. Traveler uses wayfinding application to reach the doctor's office.</li> <li>8. After the intake process is complete, Traveler waits for their appointment.</li> <li>9. Traveler undergoes the procedure. Once the procedure is done, Traveler waits until discharged.</li> <li>10. Traveler gets a notification 15 minutes prior to vehicle arrival. Traveler confirms pickup time and location.</li> <li>11. Healthcare staff is also notified that that the Traveler will need assistance to reach the pick-up location.</li> <li>12. Healthcare staff assists Traveler with locating and boarding the vehicle on arrival at the pick-up location.</li> <li>13. Upon arrival, Traveler identifies the vehicle and boards with Driver's assistance.</li> <li>14. Driver sees the personal companion pick-up as next trip on the manifest. Driver uses turn-by-turn navigation to arrive at the pick-up location for personal companion.</li> <li>15. Personal companion is also a user of Health Connector and gets notifications and real-time information similar to the Traveler.</li> <li>16. Personal companion is picked up.</li> <li>17. Traveler and personal companion arrive at the home location and alight the vehicle after fare payment.</li> </ol>
<b>Alternate Flow(s)</b>	<ol style="list-style-type: none"> <li>1a. Traveler does not book a return trip until the procedure is done.</li> <li>1b. Personal companion can meet the Traveler at the healthcare facility resulting in pickup of 2 passengers at the pick-up location for the return trip.</li> </ol>
<b>Post-conditions</b>	Funding source is billed
<b>Information Requirements</b>	<ul style="list-style-type: none"> <li>• Medical appointment progress status.</li> <li>• Trip progress status and real-time information on vehicle delay/arrival.</li> </ul>

Topics	Description
<b>Related User Needs</b>	TRV-1, TRV-9, TRV-14, TRV-17, TRV-18, TRV-19, TRV-20, TRV-21, TRV-22, TRV-25, TRV-26, TRV-27, TRV-31, TRV-32 OPS-7 DRV-1, DRV-9 SCH-5 ADM-4 HNV-1, HNV-5 HCR-1, HCR-7, HCR-9 FND-1

**Table 11. Scenario 8-Traveler looking for more than one Person as Accompaniment for a Medicaid-funded Trip**

Topics	Description
<b>Short Description</b>	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 or may request a return trip on a later date. Medicaid will pay for only eligible portion of the trip which is Traveler's trip to the doctor's office.
<b>Goal</b>	The goal of this scenario is to identify situations where Travelers may have needs that are not supported by their funding sources.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Accommodating a large group of people</li> <li>• Funding source can be billed only for part of the trip. Rest will be paid out of pocket</li> <li>• May need a return trip at a later date.</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County</li> <li>• Travelers will need assistance with wayfinding inside medical facilities</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Access2Care Application</li> <li>• Wayfinding Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> <li>• Family members as Personal Companion</li> </ul>

Topics	Description
<p><b>Illustration</b></p>	
<p><b>Preconditions</b></p>	<ul style="list-style-type: none"> <li>• Access2Care system is functional and accessible to HIRTA</li> <li>• On-board vehicle system is operational</li> <li>• Vehicles are equipped with wayfinding application for identification</li> <li>• Hospital is equipped with wayfinding infrastructure to support the wayfinding application.</li> <li>• EHR and HIRTA Central Software interface is functional</li> </ul>

Topics	Description
<b>Main Flow</b>	<ol style="list-style-type: none"> <li>1. Traveler books a transportation appointment using Access2Care app.</li> <li>2. HIRTA ingests trip into their system. Traveler calls and asks for accompanying family members on the same vehicle. HIRTA modifies the trip to book them as a group and accommodate on the same vehicle.</li> <li>3. A reminder is sent by Central system about upcoming trip 24 hours in advance. Traveler confirms pick-up time, location and the number of travelers.</li> <li>4. A reminder is sent 15 mins prior to vehicle arrival and the pick-up stop is notified. Traveler confirms the pick-up time, location and the number of travelers.</li> <li>5. Traveler's group waits at the pick-up location and identifies the vehicle on arrival using wayfinding application. Driver and Traveler confirm the identity before boarding. Driver also verifies the number of members in group that have to be picked up together at the same location based on details in the manifest.</li> <li>6. The system notifies healthcare customer care representative of Traveler's arrival.</li> <li>7. Traveler arrives at the destination, pays fare and alights the vehicle.</li> <li>8. Traveler uses the wayfinding application to reach the doctor's office.</li> <li>9. Traveler completes the appointment. No return trip is booked the same day and Traveler and their companion make their own arrangement for returning home.</li> <li>10. Medicaid is billed only for the Traveler. Rest of the fare is billed to the Traveler and is debited from their HIRTA prepaid account.</li> </ol>
<b>Alternate Flow(s)</b>	<ol style="list-style-type: none"> <li>9a. Traveler books a return trip for home the next day directly with HIRTA and will pay out of pocket.</li> </ol>
<b>Post-conditions</b>	<ul style="list-style-type: none"> <li>• Medicaid requires follow-up to check if Traveler indeed went to the provider's office for the appointment. HIRTA can verify looking at appointment status.</li> </ul>
<b>Information Requirements</b>	<ul style="list-style-type: none"> <li>• Medical appointment progress status</li> <li>• Trip progress status and real-time information on vehicle delay/arrival</li> </ul>
<b>Related User Needs</b>	<p>TRV-3, TRV-6, TRV-9, TRV-15, TRV-16, TRV-17, TRV-18, TRV-19, TRV-20, TRV-21, TRV-22, TRV-23, TRV-26, TRV-27, TRV-28, TRV-29, TRV-32, TRV-33            DRV-1, DRV-2, DRV-10            SCH-5            ADM-1, ADM-2, ADM-3, ADM-4            FND-1            GPA-1</p>

**Table 12. Scenario 9 (DCHD)-A New Dallas County Resident Looking for Information and Referral for Medical Care**

Topics	Description
<b>Short Description</b>	An elderly Traveler just moved to Dallas County with family and has to get a medical appointment scheduled with an Endocrinologist but doesn't know providers in the area and does not have transportation. Further, Traveler doesn't know who will pay; need help booking transportation and medical appointment.
<b>Goal</b>	The goal of this scenario is to identify situations where Travelers need help from a Health Navigator with their medical and transportation needs.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Traveler doesn't have medical and transportation resources identified</li> <li>• Traveler doesn't have funding source for transportation service</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• DCHD Software</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> <li>• Health Navigator</li> </ul>

Topics	Description
<b>Illustration</b>	
<b>Preconditions</b>	<ul style="list-style-type: none"> <li>• Traveler has reached out to DCHD for help</li> </ul>
<b>Main Flow</b>	<ol style="list-style-type: none"> <li>1. Traveler connects with Health Navigator via email/phone.</li> <li>2. Health Navigator identifies the needs and communicates with a Healthcare center to identify a doctor/provider and helps with registration.</li> <li>3. Health Navigator identifies a funding source that can pay for transportation needs related to Traveler’s medical appointment.</li> <li>4. Health Navigator helps Traveler to register with HIRTA</li> <li>5. Health Navigator uses application to book an appointment on Traveler’s behalf.</li> <li>6. Health Navigator explains the Traveler on how to use the Health Connector application.</li> <li>7. Traveler completes the trip as identified in other scenarios.</li> <li>8. Health Navigator is authorized to access Traveler’s medical and transportation appointments so they can follow-up and coordinate.</li> </ol>
<b>Alternate Flow(s)</b>	<p>None</p>



Topics	Description
Post-conditions	Health Navigator is notified of updates on medical and transportation appointments and is able to follow-up.
Information Requirements	<ul style="list-style-type: none"> <li>• Available healthcare providers</li> <li>• Available transportation providers</li> <li>• Status of medical and transportation appointments</li> </ul>
Related User Needs	TRV-2, TRV-5, TRV-6, TRV-9 CSR-1, CSR-2, CSR-3, CSR-4 SCH-1 HNV-1, HNV-3, HNV-6 HAD-1 HCR-2, HCR-6

**Table 13. Scenario 10 (Healthcare Provider)-Healthcare Provider Assists with Transportation Needs after the Appointment**

Topics	Description
<b>Short Description</b>	A blind Traveler/patient was dropped off by a friend for routine medical appointment but doesn't have return transportation; Traveler is not comfortable with a taxi or TNC and prefers HIRTA service. Hospital customer care staff requested to book directly using HIRTA system.
<b>Goal</b>	The goal of this scenario is to identify situations where Travelers need help from the Healthcare provider's office for only return transportation.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Same day trip is requested</li> <li>• Traveler blind</li> <li>• Traveler prefers services from HIRTA (or from their contractors)</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County</li> <li>• Traveler needs wayfinding</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> <li>• Health Navigator</li> </ul>

Topics	Description
Illustration	
Preconditions	<ul style="list-style-type: none"> <li>• Traveler is registered with HIRTA</li> </ul>
Main Flow	<ol style="list-style-type: none"> <li>1. Traveler notifies Healthcare Customer Care rep about their need for return trip upon arrival.</li> <li>2. Healthcare Customer Care rep looks for same day travel option available from HIRTA based on discharge plan after appointment completion.</li> <li>3. Traveler is notified over their app about all the details of their trip.</li> <li>4. Traveler receives a notification with audio alert 15 minutes prior to vehicle arrival. Traveler confirms the pick-up location and time.</li> <li>5. Traveler uses the wayfinding application to get audible turn-by-turn navigation guidance to approach the vehicle.</li> <li>6. Traveler locates and boards the right vehicle.</li> <li>7. Traveler arrives home. Payment is made out of pocket by debiting customer account. Traveler alights the vehicle at a safe spot from where they can navigate to their home.</li> </ol>

Topics	Description
<b>Alternate Flow(s)</b>	<p>1a: Traveler is not registered with HIRTA and customer care staff assists with registration which required a phone call with HIRTA staff. Traveler is also not eligible for any funding source and does not have money to pay for trip out of pocket. Customer care staff arranges for compassionate funds available at the hospital which is used as an eligible funding source for booking trip with HIRTA.</p> <p>6a. Vehicle is delayed and no concrete real-time information on estimated arrival is available except that system notifies that the vehicle is “delayed.” Traveler reaches out to HIRTA customer service since the information on delay is unclear from the Traveler application.</p>
<b>Post-conditions</b>	Healthcare customer care staff follows-up with the Traveler to ensure their safe arrival at their home destination.
<b>Information Requirements</b>	<ul style="list-style-type: none"> <li>• Available HIRTA services</li> <li>• Status of vehicle arrival and trip progress</li> </ul>
<b>Related User Needs</b>	TRV-6, TRV-9, TRV-21, TRV-27, TRV-28, TRV-29, TRV-31, TRV-33 CSR-5, CSR-7, CSR-9 OPS-3, OPS-9 DRV-1, DRV-11 HCR-1, HCR-5, HCR-6, HCR-9

**Table 14. Scenario 11 (Healthcare Provider)-Healthcare Provider Arranges Return Transportation for Patient prior to Discharge**

Topics	Description
<b>Short Description</b>	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.
<b>Goal</b>	The goal of this scenario is to identify situations where Healthcare provider arranges transportation based on when Traveler/Patient can be discharged.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Timing for return trip unclear</li> <li>• Unclear if Traveler should be discharged to go home or sent to a skilled care facility.</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> <li>• Health Navigator</li> </ul>
<b>Illustration</b>	
<b>Preconditions</b>	<ul style="list-style-type: none"> <li>• Traveler is registered with HIRTA</li> </ul>

Topics	Description
<b>Main Flow</b>	<ol style="list-style-type: none"> <li>1. Healthcare Customer Care rep coordinates with Discharge Planner regarding when Traveler can be discharged and if a follow-up care is needed.</li> <li>2. Discharge Planner updates the EHR details for discharge that provides time of discharge and the destination location of a skilled care facility.</li> <li>3. The system automatically determines the pick-up and drop-off locations and time for pick-up. Return trip is booked accordingly.</li> <li>4. Traveler is notified over their app about all the details of their trip.</li> <li>5. Traveler informs the Health Navigator working with them.</li> <li>6. Traveler receives a notification with audio alert 15 minutes prior to vehicle arrival. Traveler confirms the pick-up time and location.</li> <li>7. Traveler locates and boards the right vehicle. Customer care rep at the new facility can view trip progress from a central software.</li> <li>8. A few minutes prior to the arrival, the system notifies the customer care at the facility about the upcoming arrival.</li> <li>9. Traveler arrives at the new facility, pays fare and alights the vehicle.</li> <li>10. Traveler uses the wayfinding application to locate the correct building and check-in desk.</li> </ol>
<b>Alternate Flow(s)</b>	<p>4a. Traveler requests the Health Navigator to accompany them or arrange a personal companion. This requires the Healthcare Customer Care Rep to include a personal companion in the trip.</p> <p>10a: Personal companion assists the Traveler at the new facility.</p>
<b>Post-conditions</b>	Healthcare staff the discharging facility follows-up with Traveler about their experience with the arranged transportation.
<b>Information Requirements</b>	<ul style="list-style-type: none"> <li>• Available HIRTA services</li> <li>• Status of vehicle arrival and trip progress</li> </ul>
<b>Related User Needs</b>	TRV-1, TRV-9, TRV-14, TRV-16, TRV-17, TRV-18, TRV-19, TRV-20, TRV-21, TRV-22 DRV-1 HNV-1, HNV-3 HCR-1, HCR-5, HCR-6, HCR-9

**Table 15. Scenario 12 (HIRTA)-HIRTA to be aware of Medical Appointment Status to arrange the Return Trip**

Topics	Description
<b>Short Description</b>	HIRTA cannot find out if Traveler who was dropped off for a medical appointment has already been discharged. Traveler had booked the return trip and driver is waiting for pick-up at the medical facility. Traveler does not use the App and is relying on HIRTA service for coordination.
<b>Goal</b>	The goal of this scenario is to identify situations where HIRTA has to coordinate services since Traveler does not use smart devices.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Traveler does not use the app</li> <li>• Return trip booked but discharge timing is uncertain</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> </ul>

Topics	Description
<p><b>Illustration</b></p>	
<p><b>Preconditions</b></p>	<ul style="list-style-type: none"> <li>• Traveler is registered with HIRTA</li> <li>• HIRTA Central Software and EHR software interface is functional</li> <li>• Driver can communicate using on-board systems</li> </ul>
<p><b>Main Flow</b></p>	<ol style="list-style-type: none"> <li>1. Upon arrival for pick-up at the healthcare facility for Traveler’s return trip and after waiting for 5 minutes per HIRTA policy, Driver reports a no-show to the HIRTA Operations staff.</li> <li>2. HIRTA Operations/ Customer Service staff can view the status of medical appointment which is still in progress.</li> <li>3. HIRTA staff coordinates with Healthcare staff on expected completion time for the appointment. Appointment is expected to be completed within 15 minutes.</li> <li>4. HIRTA staff verifies impact of additional wait by driver on any other upcoming trips.</li> <li>5. Given no additional trips on the manifest, HIRTA staff allows Driver to wait for additional 15 minutes.</li> <li>6. Traveler meets the driver at the designated pick-up location after the appointment is complete.</li> <li>7. Traveler boards the vehicle and arrives home destination. Traveler pays fare and alights the vehicle.</li> </ol>



Topics	Description
Alternate Flow(s)	<p>1a. Healthcare staff gets an alert 30 minutes prior that Traveler may be late for an upcoming pick-up due to an appointment being still underway. Healthcare staff can modify the trip but has to coordinate with HIRTA staff since vehicle assignment is not confirmed. HIRTA staff assigns the vehicle and confirms that the return trip is pushed to a later time.</p> <p>5a. Given Driver is getting late for another pick-up, HIRTA allows Driver to leave and reassigns the trip to another vehicle/driver.</p> <p>5b. Given there are other passengers on the vehicle, HIRTA allows Driver to leave and reassigns the trip to another vehicle/driver.</p>
Post-conditions	
Information Requirements	<ul style="list-style-type: none"> <li>• Available HIRTA services</li> <li>• Status of vehicle arrival and trip progress</li> </ul>
Related User Needs	<p>TRV-6, TRV-9, TRV-16, TRV-19, TRV-27, TRV-29            CSR-5, CSR-10            OPS-3, OPS-4, OPS-5, OPS-7, OPS-9            DRV-1, DRV-3, DRV-4, DRV-9            SCH-3, SCH-6            HCR-6, HCR-9</p>

**Table 16. Scenario 13 (HIRTA)-HIRTA to Coordinate regarding Return Trip since Outbound Trip to Healthcare Facility a No-Show**

Topics	Description
<b>Short Description</b>	Traveler was a no-show for outbound trip to medical appointment (or cancelled without providing a reason) but the customer had also booked a return trip and HIRTA has to follow-up with both Traveler and the hospital to find out if the Traveler needs the return trip before their trip back to home can be cancelled. HIRTA policy is to typically cancel the outbound leg from a destination if incoming leg to the destination was cancelled or was a no-show. HIRTA will contact the Traveler before cancelling the trip in the event of a no-show for the inbound trip to the healthcare facility.
<b>Goal</b>	The goal of this scenario is to identify situations where inbound leg to the destination was cancelled and a coordination may be needed for return leg before cancellation.
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• Given no-show on the on-bound trip, there is no information on appointment status</li> <li>• Return trip booked but status unclear</li> </ul>
<b>Geographic Scope</b>	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County</li> </ul>
<b>Actors</b>	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> </ul>

Topics	Description
Illustration	
Preconditions	<ul style="list-style-type: none"> <li>• Traveler is registered with HIRTA</li> <li>• HIRTA Central Software and EHR software interface is functional</li> <li>• Driver can communicate using on-board systems</li> </ul>
Main Flow	<ol style="list-style-type: none"> <li>1. Driver reports a no-show to the HIRTA Operations staff for outbound trip. No-show is approved and trip is removed from the manifest. Return trip is flagged but not cancelled.</li> <li>2. HIRTA Operations/Customer Service staff is reminded to check on the status of return trip before Driver/Vehicle is dispatched to pick up the Traveler.</li> <li>3. HIRTA staff sees the appointment as active and coordinates with Healthcare staff on expected completion time for appointment. Also, HIRTA contacts the Traveler to confirm if return trip will be needed. Based on Traveler's positive response, return trip was not changed.</li> <li>4. Driver is dispatched for the pick-up.</li> <li>5. Traveler meets the driver at designated pick-up location after appointment is complete.</li> <li>6. Traveler returns home.</li> </ol>
Alternate Flow(s)	<ol style="list-style-type: none"> <li>3a. HIRTA staff finds out that the medical appointment was cancelled.</li> <li>4a. Driver is not dispatched for the pick-up and return trip is also cancelled.</li> </ol>
Post-conditions	

Topics	Description
Information Requirements	<ul style="list-style-type: none"> <li>Status of vehicle arrival and trip progress</li> </ul>
Related User Needs	TRV-16, TRV-19, TRV-27, TRV-29 CSR-10 OPS-3, OPS-4, OPS-5, OPS-7, OPS-9 DRV-1, DRV-3, DRV-4 HCR-6

**Table 17. Scenario 14 HIRTA to Contract with a Non-dedicated Service Provider (taxi, TNC, Volunteer driver) to Provide Trips During After Hours (TBD)**

Topics	Description
Short Description	<p>Traveler has booked an appointment late in the day for a vaccination. HIRTA does not operate services during those hours but has contracted with a Volunteer Driver network to assist.</p> <p><b>Note: no such service is currently offered by HIRTA but the launch is planned in the near future.</b></p>
Goal	The goal of this scenario is to identify situations where HIRTA does not have capacity or its services are not available. .
Constraints	<ul style="list-style-type: none"> <li>• HIRTA Services not available</li> <li>• HIRTA customer service staff is not available</li> <li>• Healthcare customer care staff is not available</li> </ul>
Geographic Scope	<ul style="list-style-type: none"> <li>• Covers travel area within the Dallas County</li> </ul>
Actors	<ul style="list-style-type: none"> <li>• Traveler Application</li> <li>• Routematch/Uber Central Software</li> <li>• EHR Application</li> <li>• HIRTA Drivers</li> <li>• Volunteer Driver</li> <li>• Healthcare Customer Care Representative</li> <li>• Traveler</li> </ul>

Topics	Description
<p><b>Illustration (example)</b></p>	
<p><b>Preconditions</b></p>	<ul style="list-style-type: none"> <li>• Traveler is registered with HIRTA</li> <li>• Volunteer Driver is trained to use the same platform as HIRTA Drivers</li> </ul>
<p><b>Main Flow</b></p>	<ol style="list-style-type: none"> <li>1. Traveler can book both medical appointment and transportation appointment using the same application on their smart device. Traveler also books the return trip at the same time.</li> <li>2. Traveler is alerted that the trip will be provided using a volunteer driver vehicle. Details of the driver and vehicle are provided along with the appointment confirmation.</li> <li>3. A reminder is sent by Central system about upcoming trip 24 hours in advance. Traveler confirms the pick-up time and location.</li> <li>4. A reminder is sent 15 mins prior to vehicle arrival and the pick-up stop is notified. Traveler confirms pick-up time and location.</li> <li>5. Traveler waits at the pick-up location and identifies the vehicle on arrival using wayfinding application. Driver and Traveler can confirm the identity before boarding.</li> <li>6. The system notifies healthcare customer care representative of arrival.</li> <li>7. Traveler uses wayfinding application to reach the healthcare provider's office.</li> <li>8. Traveler waits for the appointment after check-in/intake.</li> <li>9. Once the appointment is complete, Traveler waits for the return trip.</li> <li>10. System send a notification 15 minutes prior to the arrival of the vehicle for the return trip. Traveler confirms pick-up time and location.</li> <li>11. Traveler locates and boards the vehicle upon arrival after medical appointment is complete.</li> <li>12. Traveler arrives home, pays fare and alights the vehicle.</li> </ol>

Topics	Description
Alternate Flow(s)	<p>9a. Traveler modifies the destination to be dropped off at a different location. A different driver and vehicle information is provided along with the trip confirmation.</p> <p>12a. Traveler is dropped off at the location of their choice.</p>
Post-conditions	
Information Requirements	<ul style="list-style-type: none"> <li>• Medical appointment availability.</li> <li>• Status of vehicle arrival and trip progress</li> </ul>
Related User Needs	<p>TRV-1, TRV-9, TRV-16, TRV-17, TRV-18, TRV-19, TRV-20, TRV-21, TRV-22, TRV-24, TRV-26, TRV-27, TRV-28, TRV-29</p> <p>CSR-7</p> <p>OPS-1</p> <p>DRV-1</p> <p>HCR-9</p>





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# 7. Summary of Impacts

This section summarizes business impacts brought in by the Health Connector solution. This section currently provides information based on preliminary assessments and will be updated as we continue to discuss and discover further details on how healthcare operations will interact with this new system.

## 7.1. Operational Impacts

Anticipated impacts by user groups are as follows:

### 7.1.1. Travelers

Implementation of Health Connector will help HIRTA and its partners provide reliable, spontaneous, independent, safe, affordable, accessible, and efficient mobility options for all travelers. Most Travelers currently book medical appointment or transportation booking through call center which will change with Health Connector. To make this transition seamless, HIRTA will establish a process for training Travelers as part of the on-boarding process using travel training or other outreach programs.

Anticipated impacts to be brought in by this implementation are discussed below:

- **Reliability**
  - Travelers will now have access to both medical and transportation appointment availability through a single application which will help improve the reliability of medical transportation delivery.
  - Advanced mapping algorithms that use real-time traffic information will help improve the reliability of predicted arrival information.
  - Reliability of information provided by different entities to Travelers will increase given they will all be able to access the same information related to medical appointment and transportation services.
- **Spontaneity**
  - Inclusion of same-day response services will allow Travelers to make last minute reservations, often needed when return trip schedule cannot be determined in advance.
  - Health Connector will allow Travelers to arrange transportation for medical appointments that may be outside HIRTA's business hours.
- **Independence**

- Health Connector will make transportation services available to residents in the rural or remote areas, allowing them to make their medical appointments without help from family or friends.
- Inclusion of wayfinding tools will allow Travelers to navigate unfamiliar environment without any support from others.
- **Safety and Security**
  - Access to real-time information on driver/vehicle and personal safety features within the application will help ensure Traveler safety.
  - Wayfinding tools will be able to help travelers with visual and hearing disabilities and those with language barriers in safely navigating unfamiliar areas.
  - Travelers may require training to alleviate any concerns related to privacy. Training will allow Travelers to understand that the Health Connector application collects and manages data according to guidance from HIPAA and relevant privacy regulations.
  - Traveler will have to share their medical appointment details with HIRTA and Health Navigators according to the currently established process for release for such data.
- **Affordability**
  - Often times Travelers have to utilize transportation services (taxi, personal vehicle, TNC and others) that are expensive. Trips booked through HIRTA will be according to the fixed fare structure and will make medical transportation affordable to all travelers.
  - Health Connector will allow HIRTA and its partners to utilize discount coupons, compassionate funds and other funding sources to help low-income riders that may otherwise cannot travel transportation modes beyond family/friend vehicles.
- **Accessibility**
  - Access to wheelchair-equipped vehicles is a major concern with most commercial transportation options. Given all HIRTA vehicles are wheelchair-equipped, HIRTA will be able to make such vehicles available when needed while providing vehicles from contractors that may be able to meet the needs of other travelers.
  - Travelers with LEP rely on human assistance for translation needs. Health Connector will provide translation services either within the app or through the customer care staff.
  - Travelers with visual or hearing disabilities currently do not have any tools to guide them during their trips. This solution will provide those capabilities.
- **Efficiency Mobility**
  - Health Connector will provide a platform for enabling trip discovery, planning, booking and payment through a single application which will substantially enhance seamless mobility for all travelers.

### 7.1.2. HIRTA

- HIRTA will have the capability to identify any delays in the medical appointment to determine any adjustments needed for return trips.
- This solution will allow HIRTA to be able to use third-party service providers.
- HIRTA will have to install and maintain infrastructure needed for wayfinding technologies on its vehicles and at designated pick-up and drop-off locations.
- HIRTA will assist Travelers according to its standard operating procedures when they may report personal safety alert when being transported.

### 7.1.3. Healthcare Providers

- Healthcare staff will have the ability to book transportation service if requested by Travelers (patients).
- Healthcare providers will share medical appointment data for customers on their permission so transportation can be booked by HIRTA.
- Healthcare providers will share medical appointment data for customers on their permission so their needs can be coordinated by Health Navigators.
- Healthcare providers will have to agree to install and maintain infrastructure needed inside their facilities to assist with wayfinding.

### 7.1.4. Health Navigators

- Health Navigators will have access to medical and transportation services and their availability information as relevant to their customers.
- Health Navigators will also be able to obtain current status information (e.g., in progress, complete, delayed) for medical appointments and trips.

## 7.2. Organizational Impacts

Organizational changes as currently anticipated are as follows

### 7.2.1. HIRTA

- Operations and Customer Service staff will have to be trained to be familiar with functions that will be available with Health Connector solution.
- Driver will be trained about new capabilities being offered so they are able to assist customers when asked.

- HIRTA will likely need a full-time liaison that coordinates needs related to medical transportation and is in constant touch with Health Navigators and Healthcare Providers. However, this requirement does not indicate a new hire. Efficiency gains due to automation will HIRTA to utilize existing resources for such needs.

### **7.2.2. Healthcare Partners**

- Infrastructure needed to enable wayfinding applications (e.g., visual markers, beacons) will have to be installed and maintained by Healthcare Partner.
- Healthcare partner may designate a spot for pick-up and drop-off for better coordination with HIRTA and its contractor vehicles.

### **7.2.3. DCHD**

No organizational changes are anticipated for DCHD.

## **7.3. Impacts During Development**

Detailed assessment will be conducted during system requirements development but we anticipate the following impacts:

- Participation in design discussions and any related stakeholder engagement activities
- Review and approval of usability of applications and alternate methods available to users for utilizing Health Connector system by stakeholders, users and relevant advocacy groups.
- Participation in outreach programs.
- Participation in training sessions.
- Participation in testing.
- Parallel operation of existing and modified/new systems.
- Adjustments to modified standard operating procedures.

## 8. Analysis of the Proposed Systems

This Section provides an analysis of the benefits, limitations, advantages, disadvantages, and alternatives and trade-offs considered for the proposed system.

### 8.1. Analysis of the Proposed System

The following subsections describe system and the benefits and limitations/disadvantages of the system.

#### 8.1.1. Benefits

Key benefits identified through discussions thus far by user groups are as follows.

##### *Travelers*

1. Improvements in the accuracy, reliability and availability of real-time information on trip status through planned upgrades in central (e.g., better management of ETA) and customer-facing systems (e.g., provision of real-time information, currently not available).
2. Increased access to transportation services through same day response and after hour services for healthcare needs given availability of third-party vehicles along with HIRTA vehicles.
3. Reduction in the amount of time spent coordinating healthcare transportation needs through integration in the systems managing medical appointment and transportation services.
4. Reduction in the number of missed healthcare appointments through increased availability of reliable transportation services, particularly for same day trip requests.
5. Better comfort level (and reduced stress) in going to medical facilities with large campus environment with availability of wayfinding tools.
6. Better capabilities to connect with Health Navigators and Social Workers for healthcare needs as they have seamless access to Traveler's medical appointment and transportation services in a single application.
7. Measurable improvements in overall health and wellbeing through regular access to preventive care and other appointments as and when needed.
8. Enhanced on-board experience due to additional capabilities provided to make Travelers familiar with medical campus environment, if requested.
9. Improvements in terms of reduction in times (or wait times) between booking and arrival of vehicle for same-day bookings.
10. Reliability of the transportation service schedule (e.g., delta between the predicted and actual arrival time of the vehicle).

11. Improvements to address translation needs through seamless integration of translation services with booking, real-time information and wayfinding services.
12. Ability to seamlessly execute trip cost allocation/split between different providers (depending on the trip purpose and eligibility) and out-of-pocket expenses.
13. Providing spontaneity in booking, cancelling, changing, or modifying a trip based on the Travelers' spontaneous needs via new customer tools.
14. Addressing the needs of specific underserved groups by focusing on the product design and implementation to account for their specific needs. For example, accompanying visual or audio formats when needed for a user interface for persons with disabilities; font size and color contrast for older adults; consideration for limited broadband for those living in rural areas; and features for unbanked/underbanked to address the challenges of low income population.
15. Having a record of healthcare-related transportation activity/history at the palm of the Travelers' hands.
16. Ease of coordination and interaction with caregivers, companions, or translators through available of tools via Health Connector system.

#### ***HIRTA***

1. Reduced number of no-shows with better coordination capabilities with travelers and healthcare providers.
2. Improved experience while coordinating return trip given HIRTA, travelers, healthcare providers and caregivers all have access to the same set of information.
3. Better tools to assist underserved populations with incorporation of accessibility features within the Health Connector, as discussed earlier.
4. Access to data for predictive analytics to enhance customer experience and potential for providing customized services based on Travelers' trip patterns, appointment time preferences, appointment durations, healthcare provider choices, cancellation and no-show patterns, etc.
5. Increased on-demand capacity by engaging third-party providers for surge periods or service demands for outside of operating hours.

#### ***DCHD***

1. Reduction in the number of missed appointments caused by lack of access to transportation
2. Improved resources to identify medical and transportation resources
3. Improved access to tracking medical and transportation appointments for customers

#### ***Healthcare Providers***

1. Reduction in number of missed appointments due to lack of access to transportation
2. Improved patient experience due to transportation booking capability while booking a medical appointment

3. Improved patient experience in locating vehicle, entrances and office destinations due to availability of wayfinding capability.
4. Reduced level of effort expended in making transportation arrangements by healthcare staff or affiliated Social Workers,
5. Improved efficiency due to arrival tracking, real-time delay reporting, suggesting alternative methods such as telehealth, and other features that allow the healthcare providers to streamline schedules.
6. Improved patient experience due to provision of telehealth options.
7. Improved healthcare experience by offering immediate/same-day appointments for follow-ups, lab work, or pharmacy visits without having to deal with complex transportation scheduling processes to postpone or reschedule return trips

### **Community Partners**

1. Improved ability to monitor general wellbeing of the community influenced by enhanced access to transportation.
2. Access to data and reporting which can help better planning for funding and programs designed by targeting specific underserved groups

### **8.1.2. Disadvantages and Limitations**

The system has the following limitations:

- Custom interface with each EHR system or a middleware (e.g., Kaizen Health in the case of Unity Point) will be required to obtain medical appointment data. This limits the number of healthcare partners with which HIRTA can integrate the Health Connector application. Alternate approach of providing Health Connector central system to healthcare providers does not provide seamless integration and may still require some level of manual coordination.
- HIRTA project team is not integrating with information and referral systems used by DCHD or other referral entities given that was considered optional during stakeholder discussions. A seamless integration in the future may eliminate unnecessary manual coordination.
- HIRTA team is exploring alternatives to the current wayfinding system since that is completely reliant on use of smart devices. Also, extensive infrastructure will be required for indoor navigation.
- Given limited number of HIRTA vehicles, on-demand trips will most likely be provided by third-party contractors. This may not be preferred by some Travelers.
- It has been notified during stakeholder engagements that elderly population may not be comfortable with smart device-based capabilities due to low vision and technology familiarity issues. While alternate methods through customer service staff are available, it may not provide the spontaneity and immediate access to context sensitive information readily available through smart devices.

- Technology adoption could be big challenge due to a significant change in current travel experience. Some Travelers may prefer to continue with human assistance as they may feel more comfortable. This may lead to limited adoption of Health Connector if outreach is not effective. Apart from outreach, HIRTA team will also incorporate any potential adoption-related concerns in the design, deployment and testing stages building on the system requirements that will address the specific needs of underserved groups.

## 8.2. Alternatives and Trade-offs Considered

As discussed in Section 4.4, the following alternatives and trade-offs were considered in the ConOps development:

- **Medicaid Broker Integration:** According to Access2Care, the Medicaid-funded trips must be booked via their member application. Routematch does offer an interface to connect with Access2Care but given the low volume of trips the interface seems cost prohibitive. HIRTA may revisit this as we explore the integration further during Phase 1 with stakeholders to provide the same level of experience to Medicaid customers and non-Medicaid customers. This possibility of interface implementation has been discussed with both Routematch by Uber and Access2Care.
- **Direct Integration with All Healthcare Partner Systems:** Each EHR system requires a proprietary interface to accomplish data exchange with external systems (in this case Routematch by Uber). Given the complexity, at this time the HIRTA team is considering interfacing with Epic that supports and has published open APIs. Other systems do not have published APIs using the same standard. Also, the interface with EHR systems is limited to appointment data only and no health or privacy related information will be exchanged as part of the interface.
- **Advanced Wayfinding Tools:** HIRTA team is using simplified wayfinding solution as some of the technologies available for indoor navigation are still not mature. We have researched both infrastructure-based (visual markers, beacons) and infrastructure free (relying on sensors built in smart devices) to provide such capabilities. However, the team is continuing to explore appropriate solution as we complete other tasks within Phase 1.
- **Providing details such as Wait Time at Hospital:** While we considered notifying Travelers of expected wait time upon arrival for their doctor's visit or other medical needs, we currently do not have any indication of availability of such data at hospitals.
- **Additional capabilities that are currently not included,** but the team is planning to explore during Phase 1 are as follows:
  - Partner with third-party infotainment service providers (through new in-vehicle screens) for multi-lingual customer-applicable information. Examples include: information on in-take process for new customers.
  - Explore integrated payment opportunities for third-party billing for transportation services and insurance billing from a single account. Explore any efficiency gains through integrated payments for all activities related to the trip (e.g., insurance billing, third-party billing).



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