Phase 3 Data Management Plan (DMP)

Heart of Iowa Regional Transit Agency ITS4US Deployment Project

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Final Report — October 28, 2025

FHWA-JPO-22-975

ITS4US

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U.S. Department of Transportation

Produced by Heart of Iowa Regional Transit Agency (HIRTA)
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16. Abstract

Heart of Iowa Regional Transit Agency (HIRTA) is one of four awardees of the ITS4US Phase 2/3. The deployment site for this project is Dallas County, located in central Iowa, west of Des Moines. This deployment will provide enhanced transportation access to healthcare options for all travelers in Dallas County. The project will deliver a solution to provide transportation access to healthcare facilities located in Dallas County using HIRTA and its contractor vehicles. The solution will enable coordination among HIRTA and its partners (e.g., Dallas County Health Department, healthcare providers, State of Iowa Medicaid transportation broker, funding entities).In Phase 1, the deployment concept for the Health Connector application was developed. In Phase 2, the project shifted from establishing a conceptual framework to design and testing of the system. Phase 2 consisted of system architecture and design, data management planning, procurement of a Mobility-On-Demand (MOD) vendor, middleware development, and systems testing. In Phase 3, Health Connector is being deployed and pilot operations are being evaluated. The Data Management Plan (DMP) documents the data that are needed to deliver and evaluate Health Connector services, how those data will be collected, the roles of different stakeholders in creating, storing, managing, exchanging, and using those data, the data standards that the project team will use throughout, and how the data under discussion relate to the goals of the ITS4US program.

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Josh Albertson, Flexlynqs Santosh Mishra, Flexlynqs			• Section 1.2: Added clarity around Medicaid vendor • Section 1.3: Added reference to updated Phase 3 schedule. Updated Table 1. HIRTA DMP Schedule • Section 1.4: Added updates regarding Medicaid Broker acquisition, current EHR status, and eligibility status management • Section 1.5: Updated Table 3 to reflect medical appointment details, wayfinding setup, and IRB updates. • Section 1.5.1: Updated Table 4 to reflect current fields used by ISU for performance measure calculations • Section 2.6: Updated Table 7 to reflect current fields and calculations used by ISU • Section 3.1.6: Added info on Veradigm and updated Epic section to reflect future integration • Section 3.3.4: Added section to document Metadata Schema in Cloud Storage for middleware	
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1 Introduction

1.1 Document Purpose

The Data Management Plan (DMP) documents the data that are needed to deliver and evaluate Health Connector services, how those data will be collected, the roles of different stakeholders in creating, storing, managing, exchanging, and using those data, the data standards that the project team will use throughout, and how the data under discussion relate to the goals of the ITS4US program.

The DMP describes how this data will further the goals of the USDOT, how the data will be managed, how the data will be made accessible, how the data will be stored, and which data standard(s) will be used.

The DMP provides relevant information for data stakeholders that include the following: USDOT, government and funding agencies as defined in the ConOps, non-government stakeholders, as described in the ConOps, independent evaluators, researchers, third-party developers, and future implementers of the system. The DMP refers to and builds of off other key Health Connector deliverables, including the Performance Measurement and Evaluation Support Plan [1], Concept of Operations [2], Integrated Complete Trip Deployment Plan [3], Human Use Approval Summary [4], Data Privacy Plan [5], and System Architecture Document [6].

1.1.1 Organization of this Document

The DMP is organized as follows:

- Section 1 provides an overview of this Data Management Plan, an overview of the Health Connector deployment project, and an overview of the data schedule, needs, and summary.
- Section 2 describes the plan for data stewardship, including information about data stewardship and ownership, data storage and retention, the data sharing framework, an overview of the Health Connector approach to data privacy, and the data's relationship to performance measures.
- Section 3 lists the data standards that will be used across the project, including those related to creating, sharing, and exchanging data, how datasets will be versioned, and the approach to providing and updated metadata.

HIRTA, as the system owner, will be in charge of all data generated by the Health Connector system. In this role, HIRTA will also keep track of any changes to the system that may impact: 1) data collected; 2) data quality and integrity; 3) data structure and metadata; 4) access control;

and 5) other relevant changes to ensure data stakeholders have complete understanding of the data. Data generated by external parties such as the Medicaid transportation broker, wayfinding vendor, and healthcare partners will be accessed and used by the Health Connector system under agreements and processes as noted in Section 2 and in the Data Privacy Plan [5].

HIRTA has set up a change control board (CCB) for the project as identified for the User Needs Identification and Requirements Planning (UNIRP). This CCB consists of the lead project staff that include Project Management Lead (PML), System Development Lead (SDL), Concept Development Lead (CDL), Healthcare Lead (HL), Technology Lead (TL) and Stakeholder Engagement Lead (SEL) and Research and Evaluation Lead (REL). This CCB will be engaged in the management of the DMP as well.

As stated earlier, the DMP is a living document, and any updates approved by the CCB will be made when there are any changes to the data management process. Triggers for changes to the DMP will be based on the identification of gaps in the DMP in advance of or during the following activities:

- Testing of system components and features.
- Addition, modification, or deletion of a new feature in one or more system components.
- Replacement of a system component, either due to replacement of a system provider or due to availability of new/upgraded component from a provider.
- Modification in the server infrastructure used for the storage and providing data access.
- Modification in the schema or structure for data tied to system components, data format for the data made available, and metadata.
- Modifications in policies, system components, and tools related to data storage, management, access, and sharing.

HIRTA will follow the following process for the change control of the DMP:

1. **Change Identification**: HIRTA PML will keep track of any changes to the system that may impact any aspects of the data management per the triggers identified above.
2. **Change Evaluation**: In the event of a change identified, the HIRTA PML will consult with the CCB regarding any need to make changes to the existing DMP.
3. **Change Approval:** In the event a change is necessary, anticipating any impact on the way data is accessed and used by external third parties, the CCB will identify the scope of the changes needed and collectively approve those changes.
4. **Document Update:** The HIRTA SDL will update the document for approved changes on behalf of the HIRTA team.
5. **Notification to DMP Stakeholders:** Once the changes are made, the HIRTA PML will notify the stakeholders about changes in the DMP and share the updated DMP. If there are any concerns, the HIRTA PML will consult those with the CCB, take appropriate actions and follow

up with stakeholders. Once the stakeholder concerns are addressed, changes to the DMP will be fully authorized, and the new current version will be shared with the USDOT.

1.2 Deployment Concept

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

HIRTA was awarded a Phase 2 agreement under the ITS4US Program for its proposed concept *"Health Connector: Bridging the Gap Between Healthcare and Transportation"* (Health Connector) by the United States Department of Transportation (USDOT).

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

Figure 1 provides an overview of the Health Connector concept.

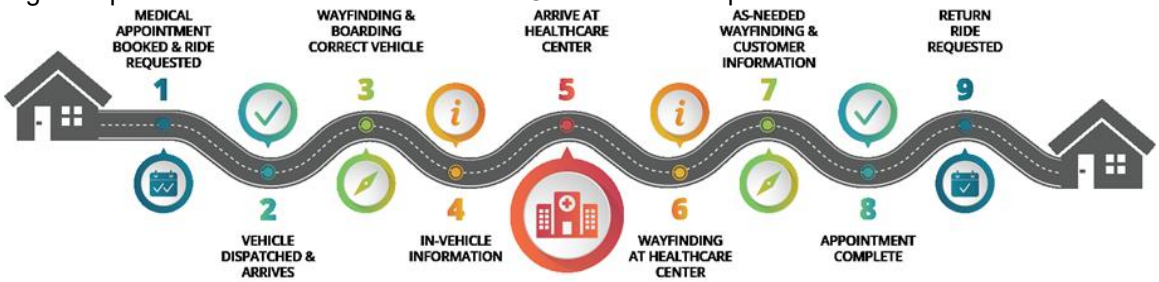

Figure 1. Overview of Health Connector System Concept (Source: HIRTA Team)

Figure 2 provides a generic system context diagram with high-level flows outside of the HIRTA concept. Figure 2 serves as a resource for peer agencies considering the adoption of a similar system.

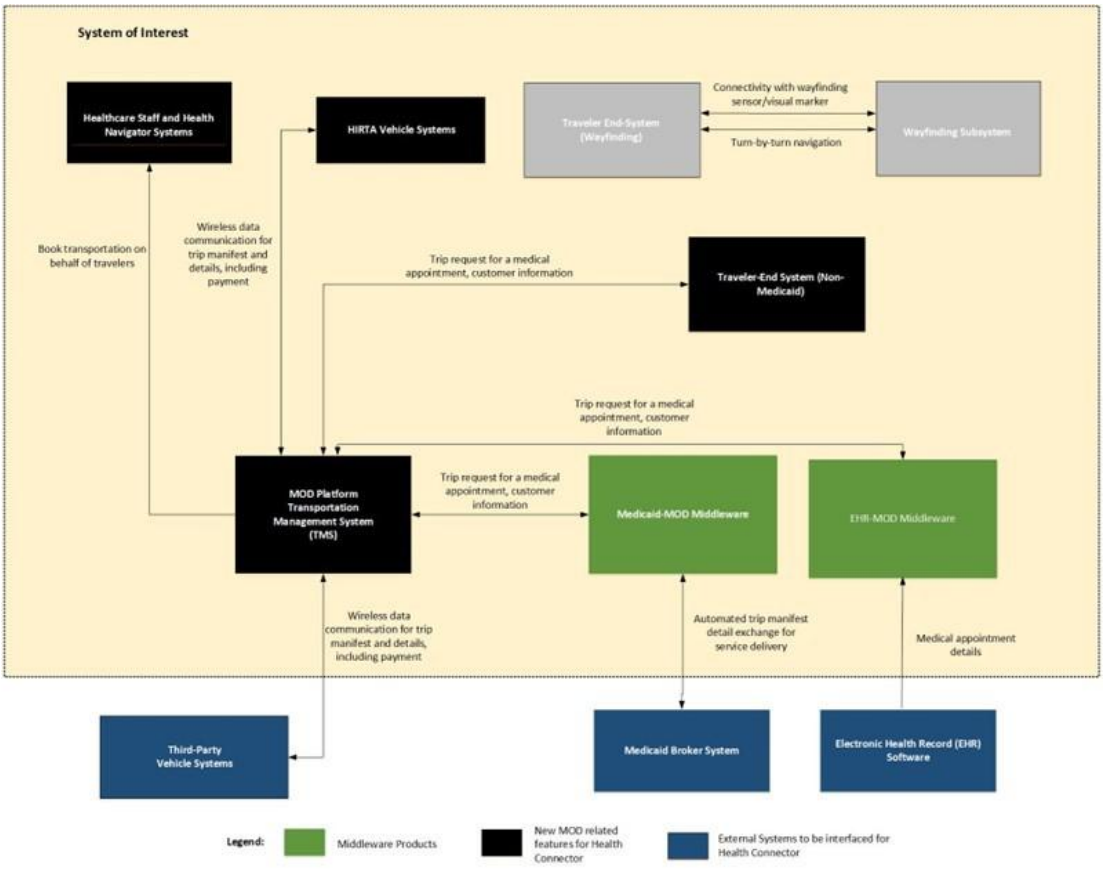

Figure 2. Generic System Concept Diagram (Source: HIRTA Team)

There are five main goals for Health Connector, which include:

- Improved health outcomes through increased access to medical transportation for Dallas County residents
- Self-reliance and spontaneity for all groups
- Efficient transportation management capabilities for medical transportation services
- Financial sustainability of medical transportation programs
- Safe medical transportation services

For more information regarding these goals and more detailed objectives and performance measures, please see the Performance Measurement and Evaluation Support Plan (PMESP) [1]. Throughout, 'Traveler' refers to those individuals who will use Health Connector services to access healthcare appointments. Furthermore, vendors for the following systems have been determined and are identified below:

- MOD Platform – Via
- Wayfinding System – NaviLens
- Medicaid Broker System– Access2Care was identified as the Medicaid Broker System at the start of Phase 2. Access2Care was since acquired by MTM who will become the new Medicaid Broker for the state of Iowa

Throughout this document, generic terminology to describe these systems is used in place of the selected vendor's platform name to facilitate replication of a similar system by interested agencies.

1.3 Data Schedule

Figure 3 provides a tentative schedule for all three phases of the Health Connector that are used as a reference for developing a schedule for the maintenance of the DMP.

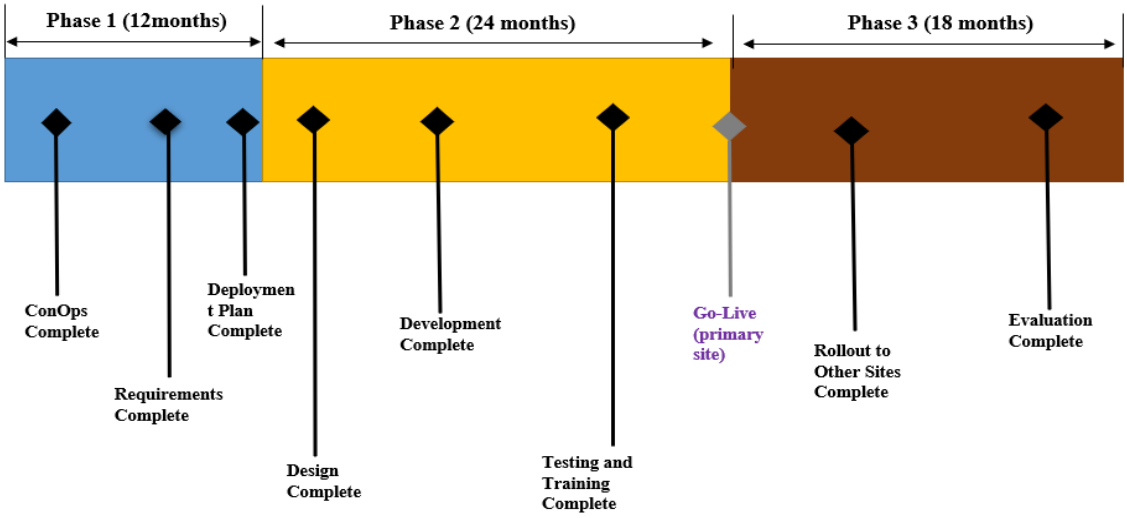

Figure 3. Health Connector Deployment Schedule (Source: HIRTA Team)

Table 1 provides a preliminary schedule for maintaining the DMP. The schedule below provides an overview of start and end dates for Phase 2 and 3 events.

Table 1. HIRTA DMP Schedule

ID	Event Title	Description	Phase	Date
1	Baseline data collection starts	Initial collection of data on current conditions starts	Phase 2	Dec 2023
2	Baseline data provided to USDOT	Complete Baseline data sets are uploaded to USDOT and the IE	Phase 2	Feb 2024
3	Month of testing of applications begins	Initial upload after datasets are collected through testing	Phase 2	March 2024
4	Phase 2 DMP finalized	DMP updated with any changes from testing and sample data schema.	Phase 2	May 2024
5	Initial data samples provided to USDOT	Initial Data samples are created validated and submitted to USDOT for review.	Phase 2	June 2024
6	Data transferred to USDOT	Daily updates of after case data (testing and go-live) are provided to USDOT and IE	Phase 2/3	June 2024 – Jan 2026
7	Initial meeting with USDOT data team to review data	Meeting to review data with USDOT and walkthrough the data schema and DMP	Phase 2	June 2024
8	Go-live	Go-live	Phase 3	August 2024
9	Data Review	Data Review conducted with USDOT and IE to ensure datasets are complete	Phase 3	Sep 2024
10	Public-facing First Submission	Raw data used to calculate performance measures submitted to USDOT.	Phase 3	December 2024

ID	Event Title	Description	Phase	Date
11	Phase 3 DMP finalized	DMP updated with any changes from Phase 3 operations and operational data schema.	Phase 3	June 2025
12	Public-facing Data Mid-Year Submission	Raw data used to calculate performance measures submitted to USDOT.	Phase 3	June 2025
13	Public-Facing Data Final Submission	Final submission of all raw data used to calculate performance measures submitted to USDOT.	Phase 3	February 2026
14	Draft Performance Measure Summary Memo	Draft performance measure analysis summary report submitted to USDOT	Phase 3	January 2026
15	Final Performance Measure Summary Memo	Final performance measure analysis summary report submitted to USDOT	Phase 3	February 2026

1.4 Data Needs Summary

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

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

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

- **HIRTA Transportation Management System (TMS):** A TMS refers to any systems related to the operational backend functions involved in service delivery. HIRTA's TMS includes the Mobility-on-Demand TMS in addition to other functions that support Health Connector from outside of the MOD platform such as the call center software. The HIRTA TMS will also host two interfaces (middleware products) being developed by the HIRTA team and made freely, publicly available on GitHub under a permissive license to support interfacing with State of Iowa Medicaid transportation broker(s) and the EHR system.

  - **MOD TMS (also referred to as "VOC"):** Provided by Via and includes the technologies used to assist customer care and operations staff with Traveler

registration, eligibility management, reservations, scheduling, dispatching, billing, and administration activities. For a visual representation of their interconnections please refer to Figure 4.

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

- **Wayfinding Subsystem:** refers to the technologies and infrastructure to be used for providing outdoor wayfinding, indoor positioning, orientation, and navigation on request to Travelers. It may also assist with translation functionality. One or more commercially available wayfinding system providers may be used. One of those providers will be NaviLens.

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

    - **Medicaid Transportation Broker**: refers to the State of Iowa Medicaid broker. At the start of Phase 2, Access2Care's system was used for booking and managing Medicaid trips. HIRTA was one of the providers used by Access2Care. In October 2024, Access2Care was acquired by MTM who will act as the new Medicaid Broker. Medicaid trips will continue to be booked by the Medicaid Broker when requested by Travelers. Medicaid trips will be ingested in the HIRTA system when assigned to HIRTA. At that point, a Traveler using Medicaid benefits will be able to use Health Connector Traveler tools.

    - **Health Navigator- and Healthcare-end Subsystem**: refers to the limited access MOD platform that will be available to health navigators and healthcare customer care staff to request trips, modify trip requests, and check on trip status on behalf of Travelers. Additionally, health navigators and the health administrator at the Dallas County Health Department (DCHD) use a Microsoft Access-based information and referral (I&R) product to track the status of referral activities and for coordination with Dallas County residents' health navigation/social care services.

    - **EHR/Medical Record Subsystem**: refers to the systems used by partner hospitals and clinics for booking medical appointments and maintaining their appointments, including discharge and any subsequent referral activities. Participating Healthcare partners currently use different EHR services. The following bullet points outline participating healthcare partners and the EHR systems they currently employ during Phase 3.

        - Dallas County Hospital – Currently using Veradigm EHR, transitioning to Epic EHR

    Health Connector may look to expand to additional partners overtime, including:

        - Mercy One Hospital – Epic EHR, Epic EHR provides a publicly available API
        - Other regional clinics – Veradigm EHR

    - **Eligibility Management System:** refers to the system that manages traveler registration and funding eligibility. Travelers register for Health Connector directly through HIRTA by completing a registration form hosted on HIRTA's Health Connector website. Funding eligibility is designated and managed with Via's system.

- **Other**: Additional relevant details for the system to be deployed are as follows:

    - **Supporting systems**: These are existing systems and are not part of the Health Connector project. However, the TMS will exchange data with these systems or HIRTA staff may interact with these systems for certain operational functions, as needed. Specifically, this refers to the phone system, payroll, driver or vehicle information management, vehicle maintenance management, customer service management, safety event reporting, and other systems and processes for data collection and reporting.

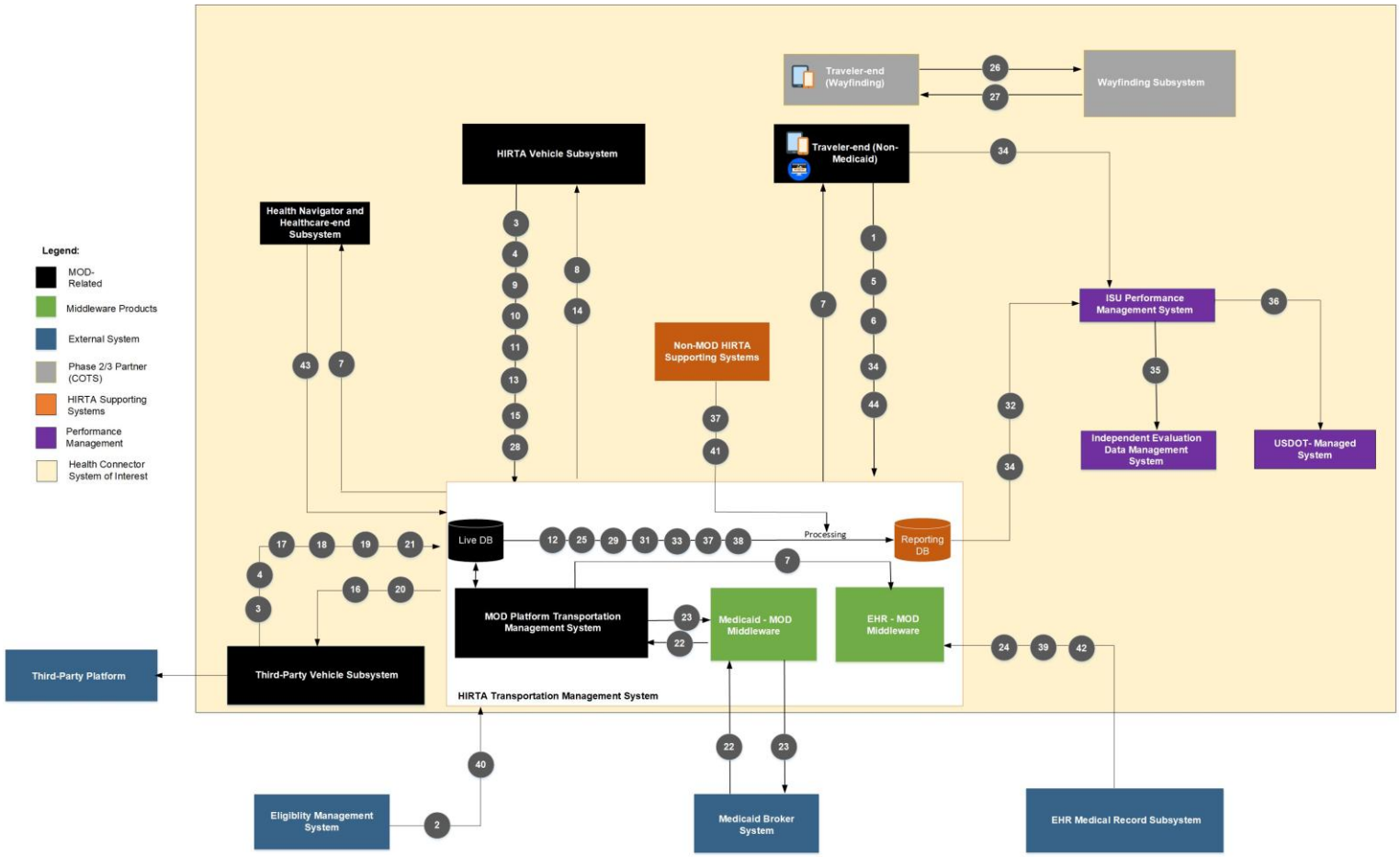

Figure 4. Detailed System of Interest Diagram (Source: HIRTA Team)

Figure 4 provides an overview of data flow between system components identified earlier. HIRTA will be the owner of all data generated by the system (exceptions listed in Section 3), and the data generated by the Health Connector system will be collected, stored, processed, analyzed, and archived both within the HIRTA TMS (for the provision of service and for relevant reporting and invoicing) and within the local Iowa State University (ISU) data system for performance evaluation, provision of controlled access for researchers and the Independent Evaluation team, and for public data provision for USDOT and the general public. Data collected and generated by the wayfinding system will be stored within that system and will be made available on-demand per HIRTA-defined terms and conditions.

For external systems from the Medicaid Broker and third-party service providers, data exchange will be based on APIs, and relevant data will be stored within the HIRTA TMS and local ISU database per approved terms and conditions between HIRTA and external parties, as discussed in Section 3.

Table 2 outlines the data necessary to support service operation, performance management, and project evaluation. We anticipate the data required to support independent evaluation (IE) efforts led by the USDOT will be met with the performance data used by our team. Our team will also make updates to the following table as we become more aware of the IE data needs.

Table 2 identifies datasets in the context of existing and future systems at HIRTA, the datasets are identified keeping the replicability of Health Connector system in mind. An ID number has been provided for each data to facilitate cross-referencing between additional tables in this document and other documents such as the Data Privacy Plan. The datasets and terms used are common in paratransit/demand response industry and are applicable to most commercially available platforms/solutions. In Table 2, 'System(s) of Interest Involved' is defined as the system(s) in which data will be created before being exchanged or processed, or otherwise used. Other systems involved in accessing and using the relevant data are further identified in Table 1 of the Data Privacy Plan [5].

Table 2. Data Needs Summary

ID	Data	High-level Description	System(s) of Interest Involved
1	Traveler profile	Traveler's personal details as provided as part of registration.	MOD Platform TMS; Eligibility management system/funding source
2	Traveler eligibility	Traveler's eligibility for a funding source or program; also verified with funding entities (e.g., Medicaid).	Eligibility management system/funding source; MOD Platform TMS
3	Fleet information	Details on HIRTA's vehicles; also, details on third-party vehicles.	MOD Platform TMS; third-party platform
4	Driver information	Details on HIRTA's drivers; also, details on third-party vehicles.	MOD Platform TMS; third-party platform
5	Trip request	Traveler request for a trip from a web or mobile device; some Travelers may request over phone and use concierge/ customer care service.	MOD Platform TMS

ID	Data	High-level Description	System(s) of Interest Involved
6	Trip modification or cancellation	Traveler's request to cancel an existing scheduled trip. To modify an existing trip, Travelers will cancel existing reservations and submit new booking requests.	MOD Platform TMS
7	Trip status	Current information on upcoming trip.	MOD Platform TMS
8	Manifest	Time and location details on Travelers to be picked up and dropped off by a driver during a shift.	MOD Platform TMS
9	Vehicle location	Location and heading along with other details for a vehicle in service.	MOD Platform TMS
10	Trip performance	Trip-level log of actual time and location for trips on the manifest along with any no-shows and cancellation events.	MOD Platform TMS
11	Driver performance	Driver-level log of operational performance on log on, on-time performance, manifests completed.	MOD platform TMS
12	Travel time	Time needed to perform on-board component of a trip.	MOD Platform TMS
13	Driver messages	Messages sent by drivers to dispatchers.	MOD Platform TMS
14	Dispatcher messages	Messages sent by dispatchers to drivers.	MOD Platform TMS
15	Fare payment log	Log of amount paid for a trip and method of payment.	MOD Platform TMS
16	Request for third-party trips	Time and location details on Travelers to be picked up and dropped off by a third-party driver during a shift.	MOD Platform TMS
17	Trip performance (third party)	Trip-level log of actual time and location for trips on the manifest along with any no-shows and cancellation events for trips delivered by a third-party provider.	Third-party platform
18	Vehicle location (third party)	Location and heading for a vehicle in service along with other details for a third-party provider.	Third-party platform
19	Driver messages (third party)	Messages sent by drivers to HIRTA dispatchers.	MOD Platform TMS
20	Dispatcher messages (third party)	Messages sent by HIRTA dispatchers to drivers.	MOD Platform TMS
21	Fare payment log (third party)	Log of amount paid for a trip and method of payment.	Third-party platform
22	Medicaid trip requests	HIRTA-accepted request for Medicaid-funded trips through Medicaid broker platform.	Medicaid broker system

ID	Data	High-level Description	System(s) of Interest Involved
23	Medicaid trip performance	Trip-level log of actual time and location for trips on the manifest along with any no-shows and cancellation events for trips delivered for Medicaid-funded trips.	MOD Platform TMS
24	Medical appointment details	Consists of medical appointment date, time, and location (facility address and doctor's office) for a particular Traveler.	EHR
25	Aggregated summary	Aggregated data on driver, vehicle, and trip performance.	MOD Platform TMS
26	Traveler wayfinding request	Requests initiated by Travelers to the wayfinding system.	Wayfinding Subsystem
27	Traveler wayfinding guidance	Log of wayfinding information provided to Travelers.	Wayfinding Subsystem
28	Safety event	Log of incidents and accidents by vehicle/driver/trip.	MOD Platform TMS
29	Safety event report	Detailed reports by a safety event (incident, accident) with response.	MOD Platform TMS
31	System performance	Log of system performance, including any failures.	MOD Platform TMS; HIRTA supporting systems
32	Anonymized and/or aggregated data for performance evaluation	Anonymized/aggregated Traveler, trip, and operations data (as described in Table 3. Scope and Availability of Private Data in the Data Privacy Plan [4]) to support Health Connector performance evaluation.	MOD Platform TMS
33	Traveler complaints log	Log of Traveler complaints received and actions taken.	MOD Platform TMS
34	Traveler survey results	Customer data and survey conducted by ISU (including through the MOD platform) of human use participants and control group.	MOD Platform TMS; local data system at ISU
35	Processed data for controlled sharing	Controlled-access data available to researchers and the Independent Evaluation team.	Local data system at ISU
36	Data for public access	Aggregated trip summary at Census tract and/or traffic analysis zone (TAZ) level as defined in DMP (or another unit as refined in Phase 2) will be provided. Other data such as fleet, vehicle, and safety event (incident/accident) will also be provided.	Local data system at ISU
37	Cost and revenue data	Cost and revenue data by trip, including actual cost, fare paid, funding source share.	MOD Platform TMS

ID	Data	High-level Description	System(s) of Interest Involved
38	Wheelchair failure log	Summary of events referring to situations when wheelchair lift could not function at the time of pickup or drop-off.	HIRTA
39	Medical appointment status	Status of progress (updated hourly) on a medical appointment resulting in an impact on the pick-up time.	EHR
40	Discount coupon/credit	Discount coupons or credits applied by trip.	Eligibility management system/funding source
41	Call center log	HIRTA call center statistics available from phone systems or manual logs.	HIRTA supporting systems
43	Trip request (partners)	Trips requested by DCHD and healthcare providers using MOD platform. To be tracked separately to assess the benefit of such capability.	MOD Platform TMS

1.5 Data Overview

Table 3 provides an overview of the data to be collected in the Health Connector system. It references the data needs identified in Table 2 and provides additional information on the data to be collected, type and scale of data involved, and data collection methods.

Table 3 provides the following information for each dataset:

Data: Refers to distinct category of data exchanged between two systems. Distinction is provided by type of appointment (e.g., medical appointment or trip request (i.e., request for appointment to receive transportation service)), provider (e.g., in-house or contracted), and type of trip (e.g., Medicaid and non-Medicaid), since the level of aggregation or anonymization needed will be different. For more information related to PII data please refer to Table 3 of the Data Privacy Plan [5].

- **Dataset**: Refers to the dataset that acts as the container for the data identified as follows:
    - **Admin:** includes data that is required for administrative needs prior to a trip being provided (e.g., customer registration, eligibility management, fleet management/ maintenance). It also refers to any data that is part of routine process (e.g., safety management, complaints).
    - **Driver:** includes driver-level details including name, vehicle used, and their service performance (revenue miles, revenue hour, on-time performance).
    - **Trip:** includes trip-level data for Travelers and drivers including location, time, and fare payment. Traveler, driver, and trip identifiers are anonymized.
    - **Aggregated:** refers to aggregated summary for a chosen time interval. Summary available at Traveler, driver /vehicle, provider, and trip level.
    - **Survey:** refers to survey data and results. Survey results are collected via in-app questions and phone call. When reported, all traveler PII will be omitted per IRB.
    - **Healthcare appointment**: refers to medical appointment related data and any data collected by DCHD for health navigation purposes.

  - **System log:** refers to data logged in the system to assess system performance and reliability. Also may include supportive information (e.g., communication log indicating traffic delay)**.**
  - **Wayfinding**: refers to log of requests provided at device level**.**
- **Description**: Provides preliminary details on the fields available in a dataset. Further discussion on this is available in Table 1 of the Data Privacy Plan [5].
- **Type and scale**: Provides the type of data included in the dataset. Also, provides a high-level information on scale of data.
- **Collection method**: Provides information on how data is collected by the system.
- **Format:** Data that will be shared with the researchers and the USDOT will be in comma separated value (CSV) format for non-spatial data and JavaScript Object Notation (JSON) for spatial data. References to JSON are provided, as applicable in the table.

Table 3. Data Overview

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
1	Traveler profile	Admin	Consists of personal details (e.g., name, addresses, contact information, eligibility) and travel preferences (e.g., mobility aid, notification) for Travelers stored in Traveler profile.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 100 or fewer customers	Traveler input; HIRTA or partner staff input as concierge service (HIRTA customer care, healthcare customer care, health navigator)	CSV
2	Traveler eligibility	Admin	Status of eligibility for each Traveler for a funding source, as stored in Traveler profile.	**Type:** Text data, Numerical data **Scale:** 100 or fewer customers	Traveler input; provided by funding entity	CSV
3	Fleet information	Admin	Consists of information on fleet (e.g., age, number of seats, accessibility).	**Type**: Text data, numerical data **Scale:** 15 vehicles	As entered by HIRTA staff and by third-party contractor(s) and as maintained by HIRTA in driver and vehicle management (supporting) system	CSV
4	Driver information	Driver	Consists of information on driver identifier and their status (e.g., experience, part time, full time, contract, shift).	**Type:** Text data, numerical data **Scale:** 15 drivers	As entered by HIRTA staff and by third-party contractor(s) and as maintained by HIRTA in driver and vehicle management (supporting) system	CSV

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
5	Trip request	Trip	Consists of customer identifier, trip identifier, date, time, and locations of pick-ups and drop-offs.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 150 trips per day	Traveler input; HIRTA or partner staff input as concierge service.	CSV
6	Trip modification or cancellation	Trip	Consists of customer identifier, trip identifier, date, time, and locations of pick-up and drop-off.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 150 trips per day	Traveler input; HIRTA staff, health navigators, and healthcare staff input as concierge service.	CSV
7	Trip status	Trip	Consists of estimated time of arrival and/or delay status, as applicable, along with pick-up location.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 150 trips per day	System-generated using vehicle location and driver/vehicle performance data received in real-time.	CSV
8	Manifest	Admin	Consists of all trips to be performed by a driver on a particular shift. Trip details provide necessary information needed for a driver to perform a trip (e.g., trip identifier, customer info, pick-up and drop-off locations and times, fare to be paid, mobility-aid needed). This dataset is listed for reference purpose only and is meant for internal operations management. This will not be made accessible to external entities. Trip request, trip status, and trip performance datasets provide necessary information for external parties. For on-demand services, manifest may not be needed as vehicles are dispatched in real time.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** Up to 10 trips a day per driver manifest	System-generated using confirmed trips after runcutting and driver assignment process is complete. Real-time updates are made to the trips and driver/vehicle manifests if there are any changes through automated data transmission by HIRTA TMS communicating to the vehicle-end system using cellular communications. Changes to manifest are not stored.	CSV (unformatted) / PDF (formatted)

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
9	Vehicle location	Trip	Consists of vehicle location and heading along with time, speed, and vehicle or driver identifier. This dataset is listed for reference purpose only and is meant for internal operations management and Health Connector performance evaluation only.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** Up to 20,000 records per day at 30 second refresh rate	Automated data transmission at a configurable interval over cellular communications.	CSV, JSON
10	Trip performance	Trip	Consists of actual times and locations for pick-up and drop-off. Also includes information about no-shows and cancellations, as applicable. Reasons for no-shows and cancellations will be included, if available.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 150 trips per day	Automated data transmission over cellular communications; driver input on on-board terminals.	CSV
11	Driver performance	Driver	Consists of driver performance at trip or aggregated level (e.g., miles driven as revenue or deadhead, on-time performance).	**Type:** Text data, numerical data, temporal data, positional data **Scale:** For up to 50 drivers	System-generated based on trip performance data.	CSV
12	Travel time	Aggregated	Consists of time taken by driver/vehicle for a particular trip leg, available by origin and destination.	**Type:** Numerical data, positional data **Scale:** 150 trips a day	System-calculated using trip performance data.	CSV, JSON

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
13	Driver messages	System log	Consists of data messages sent by drivers. Includes vehicle, driver identifier. This data is included to support analysis, as in some cases results may not be conclusive due to confounding factors, but relevant messages explaining a situation may be available (e.g., construction detour, traffic delay, slippery conditions, unexpected dwell time due to wheelchair cycle issue).	**Type:** Text data, positional data, temporal data **Scale:** 5-10 messages per day per driver	Driver input on on-board terminals.	CSV
14	Dispatcher messages	System log	Consists of data messages sent by dispatchers. Includes vehicle and driver identifier. This data is included to support analysis, as in some cases results may not be conclusive due to confounding factors, but relevant messages explaining a situation may be available (e.g., driver asked to swap vehicle mid-shift by dispatcher, no-show not approved, Traveler waiting at another pickup spot).	**Type:** Text data, positional data, temporal data **Scale**: 100 messages per day	Dispatcher input in HIRTA TMS.	CSV
15	Fare payment log	Trip	Consists of log of fare paid by Traveler and method of payment. Includes trip identifier and customer identifier.	**Type**: Text data, numerical data **Scale**: 150 trips per day	Automated data transmission over cellular communications; driver input on on-board terminals for actual amount paid (some customers may overpay, and balance is applied to their account which can be used towards future trips).	CSV

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
16	Request for third-party trips	Admin	Consists of all trips to be performed by third-party contractor(s). Trip details provide necessary information needed for driver to perform the trip (e.g., trip identifier, customer info, pick-up and drop-off locations and times, fare to be paid, mobility-aid needed). This dataset is listed for reference purpose only and is meant for internal operations management. This will not be made accessible to external entities. Trip request, trip status and trip performance datasets provide necessary information for external parties.	**Type:** Text data, numerical data, temporal data, positional data **Scale**: 50-75 trips per day	Automated data transmission over cellular communications; driver input on on-board terminals.	CSV (unformatted) /PDF (formatted)
17	Trip performance (third party)	Trip	Consists of actual times and locations for pick-up and drop-off. Also includes information about no-shows and cancellations as applicable. Reasons for no-shows and cancellations will be included, if available.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 50-75 trips per day	Automated data communication over cellular; driver input on on-board terminals.	CSV
18	Vehicle location (third party)	Trip	Consists of vehicle location and heading along with time, speed, and vehicle identifier. Driver identifier may not be available. This dataset is listed for reference purpose only and is meant for internal operations management and Health Connector performance evaluation only.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** Up to 5,000 records per day at 30 second refresh rate	Automated data communication over cellular.	CSV, JSON

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
19	Driver messages (third party)	System Log	Consists of data messages sent by drivers. Includes vehicle, driver identifier. This data is included to support analysis, as in some cases results may not be conclusive due to confounding factors, but relevant messages explaining a situation may be available (e.g., construction detour, traffic delay, slippery conditions, unexpected dwell time due to wheelchair cycle issue).	**Type:** Text data, positional data, temporal data **Scale:** 5-10 messages per day per driver for a total of 20 drivers.	Driver input on on-board terminals.	CSV
20	Dispatcher messages (third party)	System Log	Consists of data messages sent by dispatchers. Includes vehicle and driver identifier. This data is included to support analysis, as in some cases results may not be conclusive due to confounding factors, but relevant messages explaining a situation may be available (e.g., driver asked to swap vehicle mid-shift by dispatcher, no-show not approved, Traveler waiting at another pickup spot).	**Type:** Text data, positional data, temporal data **Scale**: 50 messages per day	Dispatcher input in HIRTA TMS.	CSV
21	Fare payment log (third party)	Trip	Consists of log of fare paid by Traveler and method of payment. Includes trip identifier and customer identifier.	**Type**: Text data, numerical data **Scale**: 150 trips per day	Automated data transmission over cellular communications for actual amount paid.	CSV

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
22	Medicaid trip requests	Trip	Trips requested by Travelers for Medicaid. Consists of customer identifier, trip identifier, date, time, and locations of pick-ups and drop-offs.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 50-80 trips a day	Traveler/concierge input into the Medicaid Broker system. From the Medicaid Broker, trips assigned to and accepted by HIRTA will be ingested in HIRTA TMS. Current process of ingestion is manual, and it is currently done on a daily basis for the trips scheduled for the next day. For ad-hoc/same day trips, the Medicaid Broker calls HIRTA to confirm, and trips are entered at that point. A more frequent ingestion will be needed for same-day requests (e.g., return trips), which are critical to Health Connector.	CSV
23	Medicaid trip performance	Trip	Consists of actual times and locations for pick-up and drop-off. Also, includes information about no-shows and cancellations as applicable. Reasons for no-shows and cancellations will be included, if available.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 50-80 trips a day	Automated data transmission over cellular communications; driver input on on-board terminals.	CSV

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
24	Medical appointment details	Healthcare appointment	Consists of medical appointment date, time, and location (facility address and doctor's office) for a particular customer. Patient details include patient unique ID, patient name, email and phone number. Whether or not transportation was requested or a telehealth appointment was requested will be included. Linked to a customer identifier and trip identifier if corresponding transportation is booked. Data to be shared will include anonymized data on any link between medical appointment and transportation provided for those appointments.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 100 trips a day	Data entry in EHR or medical appointment system.	CSV
25	Aggregated summary	Aggregated	Consists of aggregated data on trip performance by different providers (e.g., revenue miles, fares collected, on-time performance, travel time, no-shows, cancellations, missed trips).	**Type:** Text data, numerical data, temporal data, positional data **Scale:** Up to 150 trips a day	System-generated.	CSV, JSON
26	Traveler wayfinding request	Wayfinding	Consists of NaviLens Code (QR code) scanned by a Traveler, including on-vehicle codes and those located indoors and outdoors at partner facilities.	**Type:** Positional data, Text **Scale:** Requests for up to 50 trips a day	Data entry by Travelers/ caregivers on devices.	CSV/ JSON
27	Traveler wayfinding guidance	Wayfinding	Consists of the information returned to a Traveler upon scanning a NaviLens code. This may include vehicle details, location details, and static information related to wayfinding at a partner facility. This includes translated information as well.	**Type:** Positional data, Text **Scale:** Requests for up to 50 trips a day	Data entry by HIRTA/Healthcare facilities on NaviLens platform.	CSV/ JSON

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
28	Safety event	Admin	Consists of any incident or accident event reported by driver; trip, vehicle, and driver identifier included for internal analysis but only aggregated data by safety event type per day will be available for external use.	**Type:** Text data, Numerical data, positional data, temporal data **Scale:** 10 events per months	Driver input using on-board terminals for a particular safety event. Initial incident data per report entered into HIRTA TMS by dispatcher. Final report after investigation filed in safety management system by Safety Program Manager.	CSV
29	Safety event report	Admin	Consists of details of report after investigation by the Safety Program Manager. Trip, vehicle, and driver identifier included for internal analysis but only aggregated data by safety event type per day will be available for external use.	**Type:** Text data, Numerical data, positional data, temporal data **Scale:** 10 events per month	Filed in the safety management system by Safety Program Manager.	CSV
31	System performance	System log	Consists of data on system reliability. It will be generated on a daily basis and will be grouped by failure type and system component.	**Type:** Numerical. **Scale:** N/A	System-generated; analysis.	CSV

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
32	Anonymized and/or aggregated data for performance evaluation	Aggregated	Anonymized/aggregated Traveler, trip, and operations data (as described in Table 3 of the Data Privacy Plan [5]) to support Health Connector performance evaluation.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 150 trips a day	System-generated by processing information stored in the reporting database. The reporting database stores historical operations and performance data, that can be further anonymized and/or organized as needed before being accessed for performance measurement and evaluation. Data in the reporting database is static and stored within CyBox folders. Data can then be accessed by ISU and HIRTA via secure login.	CSV, JSON
33	Traveler complaints log	Admin	Consists of Traveler complaint received complaint date, resolution, and resolution date. Will be aggregated by complaint type and provider type at daily level for tracking Traveler complaints received.	**Type:** Text, numerical, temporal **Scale:** 10 complaints per month	Data entry by Travelers/caregivers through Heath Connector app; data entry in customer service system.	CSV
34	Traveler survey results	Survey	Consists of analysis of survey data designed to measure the project outcomes. It will be managed by ISU. Results will be shared after using appropriate anonymization and aggregation. Survey includes questions related to Traveler satisfaction and missed medical appointments and has been reviewed and received IRB approval.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** Every three months	Data entry by Travelers using in-app survey administered by Via using Survey Monkey. Results are shared by HIRTA monthly with ISU via email.	CSV (non-spatial), SHP format (spatial), charts

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
35	Processed data for controlled sharing	Aggregated	Refers to anonymized and aggregated reports that will be provided to researchers and independent evaluators.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 150 trips a day	System-generated by processing information stored in the reporting database.	CSV, JSON
36	Data for public access	Aggregated	Refers to anonymized aggregated reports that will be provided for USDOT-managed system.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 150 trips a day	System-generated by processing information stored in the reporting database.	CSV, JSON
37	Cost and revenue data	Aggregated	Refers to the cost and revenue data, aggregated on a monthly basis.	**Type:** Text data, numerical data, financial data **Scale:** 150 trips a day	System-generated by processing information stored in the reporting database; data entry in customer service system.	CSV
38	Wheelchair failure log	Aggregated	Refers to wheelchair failure log aggregated on a daily basis by vehicle.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 150 trips a day	System-generated by processing information stored in the reporting database; data entry in customer service system.	CSV
39	Medical appointment status	Healthcare appointment	This is for internal use only and is needed to track any changes in medical appointments that also require changes in transportation appointments.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 100 trips a day	Data entry in EHR or medical appointment system.	CSV

ID	Data	Dataset	Description	Type/Scale	Collected Method	Format
40	Discount coupon/credit	Trip	Consists of a log of discount code applied to trips and amount of credit. Available at trip level and will be linked to fare payment log.	**Type:** Text data, numerical data, temporal data, positional data **Scale:** 100 trips a day	Entered by Traveler or concierge/ customer service staff.	CSV
41	Call center log	Admin	HIRTA call center statistics available from phone systems or manual logs.	**Type:** Text, numeric, temporal **Scale**: 500 calls per day	Generated from phone system.	CSV
43	Trip request (partners)	Trip	Trips requested by DCHD and healthcare providers using MOD platform. To be tracked separately to assess the benefit of such capability.	**Type:** Text data, numerical data, temporal data, positional data. **Scale:** 20 trips per day	Traveler input via health navigator or healthcare customer service representative.	CSV

1.5.1 Detailed Data Related to Performance Evaluation

During Phase 2, Data ID 32: 'Anonymized and/or Aggregated data for Performance Evaluation' was broken down and defined to include the following data.

Table 4. Anonymized and/or Aggregated data for Performance Evaluation

ID#	Variable	Resolution	Source	Description	Format
1	Request ID	Trip	VOC	Unique Trip Request ID	CSV
2	Status	Trip	VOC	Completed/Cancel/No Show	CSV
3	Driver ID	Trip	VOC	Unique Driver ID	CSV
4	Vehicle ID	Trip	VOC	Unique Vehicle ID	CSV
5	Wheelchairs	Trip	VOC	Number of wheelchairs for trip	CSV
6	Ride Shared	Trip	VOC	Yes/No	CSV
7	Shared Duration	Trip	VOC	Duration (minutes) of shared trip	CSV
8	Passengers	Trip	VOC	Number of passengers	CSV
9	Booking	Trip	VOC	Prebooking/On-demand	CSV
10	Preference	Trip	VOC	Depart At/Arrive At	CSV
11	Month	Trip	VOC	Month of trip request	CSV
12	Requested Pickup	Trip	VOC	Timestamp for requested pickup (if preference is Depart At)	CSV
13	Requested Dropoff	Trip	VOC	Timestamp for requested drop-off (if preference is Arrive At)	CSV
14	Original Pickup	Trip	VOC	Timestamp for original pickup time provided by Via at time of request	CSV
15	Cancellation Ahead	Trip	VOC	>= 2 day before In pickup window Early same day Early day before	CSV
16	Cancellation Source	Trip	VOC	Party responsible for cancelling trip (Admin)	CSV
17	No Show	Trip	VOC	Timestamp rider was marked by driver as a no show	CSV
18	Arrival Time	Trip	VOC	Timestamp of actual vehicle arrival time	CSV

ID#	Variable	Resolution	Source	Description	Format
19	Pickup Time	Trip	VOC	Timestamp of actual passenger pickup time	CSV
20	Dropoff Time	Trip	VOC	Timestamp of actual passenger drop-off time	CSV
21	Ride Distance	Trip	VOC	Trip distance (miles)	CSV
22	Ride Duration	Trip	VOC	Trip duration (minutes)	CSV
23	Direct Duration	Trip	VOC	Trip duration (minutes) if a trip has been only for the Traveler (solo trip)	CSV
24	Last Pickup	Trip	VOC	Last pickup time quoted to the Traveler	CSV
25	Last Dropoff	Trip	VOC	Last drop-off time quoted to the Traveler	CSV
26	Last Duration	Trip	VOC	Last trip time (minutes) quoted to the Traveler	CSV
27	Rating	Trip	VOC	Trip rating (out of 5)	CSV
28	Pickup Start	Trip	VOC	Timestamp for start of pickup window	CSV
29	Pickup End	Trip	VOC	Timestamp for end of pickup window	CSV
30	Vehicle Pickup	Trip	VOC	Timestamp when vehicle arrives for pickup	CSV
31	Vehicle Dropoff	Trip	VOC	Timestamp when vehicle arrives for drop-off	CSV
32	Pickup Status	Trip	VOC	Completed – On Time Completed – Late Early Cancel Missed – Not Transported No Show	CSV
33	Number of slots offered when booking	Monthly	Health Connector In-app survey	On a trip level basis, the number of time slots offered to a traveler upon the submission of a trip request	CSV
34	Percent satisfaction with slots offered	Monthly	Health Connector In-app survey	Satisfaction rating on transportation slots offered during booking	CSV
35	Seat unavailable and 'other error' alerts without finding a ride within one session	Trip	VOC	Trip requests returned as “Seat Unavailable” or “Other Error”	CSV
36	Traveler rating of pre-vehicle wayfinding	Monthly	Health Connector In-app survey	Traveler rating on ability to find pickup location using system wayfinding	CSV

ID#	Variable	Resolution	Source	Description	Format
37	Traveler rating of post-vehicle wayfinding	Monthly	Health Connector In-app survey	Traveler rating on ability to find destination using system wayfinding	CSV
38	Traveler perception of privacy	Monthly	Health Connector In-app survey	Traveler's opinion on how their location specific data are handled by the system in terms of privacy	CSV
39	Traveler perception of accessibility (language, mobility)	Monthly	Health Connector In-app survey	Traveler's opinion on how the system is able to accommodate personal needs and preferences (e.g., limited English proficiency, disabilities, access to transportation in rural areas)	CSV
40	Traveler perception about self-reliance	Monthly	Health Connector In-app survey	Traveler's opinion on how their personal preferences were accommodated, if they perceived bias in making travel arrangements, and if transportation access made it possible to access the care on their own with limited assistance	CSV
41	Number of customer complaints	Monthly	HIRTA	Number of complaints received by HIRTA overall and specifically related by Health Connector	CSV
42	Customer satisfaction rating	Monthly	HIRTA	Customer rating out of 5 across all trips delivered	CSV
43	Amount of time healthcare providers spend per trip helping Travelers	Monthly	HIRTA, Healthcare Providers, Health Navigators	Amount of time healthcare providers spend per trip helping Travelers	CSV
44	Amount of time HIRTA staff spend per trip helping Travelers	Monthly	HIRTA Operations Staff	Amount of time HIRTA staff spend per trip helping Travelers	CSV
45	Number of safety events	Monthly	HIRTA Operations Staff, 3rd party contractors	Safety events reported by Travelers or HIRTA operations staff	CSV

ID#	Variable	Resolution	Source	Description	Format
46	Number of missed medical appointments due to lack of transportation	Monthly	Health Connector Registration Page, Health Connector In-app Survey	Traveler reported medical appointments missed due to lack of transportation	CSV
47	Reduction in cost due to missed appointments	Monthly	NEMT cost tool.	Cost savings of reducing missed medical appointments * Data currently unavailable, under review	CSV
48	Cost of a missed appointment	Monthly	NEMT cost tool.	Cost of missed medical appointments * Data currently unavailable, under review	CSV
49	Date of service interruption	Monthly	HIRTA	Service interruption date as recorded by HIRTA operations	CSV
50	Time of service interruption	Monthly	HIRTA	Service interruption time as recorded by HIRTA operations	CSV
51	Number of trips provided by 3rd party provider (after hours)	Monthly	VOC	Number of trips provided by 3rd party provider (after hours)	CSV
52	HIRTA admin cost for Medicaid trips	Monthly	HIRTA	Administrative cost/hour for providing medical transportation coordination	CSV

2 Data Stewardship

2.1 Data Owner and Stewardship

Table 5, has been updated to acknowledge Via as the selected MOD vendor. Table 5 provides information on data title, data owner, data steward, and federal sponsor as follows:

- **Group ID:** Groups data with the same owner, steward, and sponsor for clarity.
- **Data Title**: Provides the title of the data and/or datasets that are assigned to the designated data owner and/or data steward. Data and/or datasets with different data owners and/or data stewards are listed separately.
- **Data Owner**: The data owner is the person or organization with the authority, ability, and responsibility to access, create, modify, store, use, share, and protect the data. Data owners have the right to delegate these privileges and responsibilities to other parties.
- **Data Steward**: The data steward, at the direction of the data owner, is the person or organization that is delegated the privileges and responsibilities to manage, control, and maintain the quality of a data asset throughout the data lifecycle. The data steward may also apply appropriate protections, restrictions, and other safeguards depending on the nature of the data, subject to the direction of the data owner.
- **Federal Sponsor**: Refers to the federal entity that is the sponsor for this deployment. The federal sponsor will assume the role of data owner once the dataset(s) are provided to them per BAA and notice of funding opportunity (NOFO) requirements later in the project.

'Data Title' corresponds to datasets listed in Table 2 and Table 3. Currently, HIRTA is listed as the owner of all data, except in the cases where data is generated in external systems. ITS JPO is the federal sponsor for all data sets created under the project. In future updates during Phases 2 and 3, as data is provided to the USDOT and made publicly available, USDOT may become the owner of the dataset.

Where federal sponsor is not applicable (e.g., dataset is generated in systems outside the scope of this project) it is marked N/A.

Where datasets are created from a combination of data sources (for example, Traveler complaints capture through the Health Connector app and through Traveler interactions with HIRTA CSRs), these data are represented in each relevant group.

Table 5. Data Owner and Steward Information

Group ID	Data Title	Data Owner	Data Steward	Federal Sponsor
A	1) Traveler profile 3) Fleet information 4) Driver information 28) Safety event 29) Safety event report 31) System performance 33) Traveler complaints log 37) Cost and revenue data 38) Wheelchair failure log 41) Call center log	HIRTA	HIRTA	ITS JPO
B	5) Trip request 6) Trip modification or cancellation 7) Trip status 8) Manifest 9) Vehicle location 10) Trip performance 11) Driver performance 12) Travel time 13) Driver messages 14) Dispatcher messages 15) Fare payment log 16) Request for third-party trips 19) Driver messages (third party) 20) Dispatcher messages (third party) 23) Medicaid trip performance 25) Aggregated summary 31) System performance 33) Traveler complaints log 37) Cost and revenue data 43) Trip request (partners)	HIRTA	MOD platform	ITS JPO
C	17) Trip performance (third party) 18) Vehicle location (third party) 19) Driver messages (third party) 20) Dispatcher messages (third party) 21) Fare payment log (third party)	HIRTA	Third-party contractor(s)	ITS JPO
D	22) Medicaid trips requests	Medicaid transportation broker	HIRTA	N/A
E	24) Medical appointment details 39) Medical appointment status	Healthcare partner	Healthcare partner	N/A
F	26) Traveler wayfinding request 27) Traveler wayfinding guidance	Wayfinding system provider(s)	Wayfinding system provider)	ITS JPO
G	32) Anonymized and/or aggregated data for performance evaluation 34) Traveler survey results	HIRTA	ISU	ITS JPO
H	35) Processed data for controlled sharing 36) Data for public access	USDOT	ISU	ITS JPO

Group ID	Data Title	Data Owner	Data Steward	Federal Sponsor
I	2) Traveler eligibility 40) Discount coupon/credit	Eligibility management / funding source	HIRTA	N/A

2.2 Data Storage and Retention

Storing and retaining the data is a key part of the data steward's responsibilities to manage, control, and maintain the quality of a data asset throughout the data lifecycle. To ensure data availability for the duration of Phase 2 and Phase 3 of the Health Connector project as well as for the five years that HIRTA has agreed to continue to provide Health Connector service after Phase 3, HIRTA will contract with ISU to continue to ensure relevant data is available for seven years. After Phase 3, the data that Health Connector will continue to generate and make available to the USDOT and to researchers through controlled access with be those data included as described in Table 2 and Table 3 of the Data Privacy Plan [5].

HIRTA in collaboration with project stakeholders will determine the data storage and retention policies. These policies will include, but not be limited to, the following:

- **User Data Retention and Deletion Policy** - defines how long user data should be retained before it is deleted or anonymized and how long user data may be accessible by team members.
- **Exceptions to User Data Retention and Deletions Policy** - may include specific circumstances such as maintaining data for security, safety, fraud, and abuse. Other considerations would include legal proceedings or insurance claims.
- **Privacy Policies** - include how data/ information is collected, used, and shared and choices and options regarding this data/ information.
- **Access Management Policy** - policy specifically managing access to MOD platform data and information sources
- **Change Management Policy** - defining the change and release management requirements to be followed when implementing system changes to information and data resources.
- **Data Classification, Handling and Sharing Policy -** defining classification and handling requirements for processing and storing data using system information resources and sharing data with external entities.

2.2.1 Storage Systems

The system will be hosted on secure servers within the United States. Additional storage details have been determined through collaboration with the MOD vendor and are shown in Table 6 below.

Table 6. Summary of Storage Systems

Data Storage System Type	Description	Dataset Title(s)	Initial Storage Date	Frequency of Update	Archiving and Preservation Period
MOD platform cloud-based storage	Storage of all data collected via the MOD platform is primarily cloud-based and uses Snowflake cloud-based storage services.	Trip level data, Driver level data, Admin data, System logs, Survey data	Feb 2023	Daily	Through Feb 2026
MOD platform local data storage	Data may be temporarily stored on computers, tablets, or phones offline (e.g., due to data disconnection) before getting synchronized when reconnected.	Trip level data, Driver level data, Admin data, System logs	Feb 2023	Daily	Through Feb 2026

Data Storage System Type	Description	Dataset Title(s)	Initial Storage Date	Frequency of Update	Archiving and Preservation Period
Cybox (Reporting Database)	Once data is aggregated and anonymized, MOD data can be uploaded to the reporting database for access by HIRTA staff and the ISU Performance Management Team. Survey data from focus group surveys, HIRTA staff surveys, and third-party surveys will be stored here as well.	Aggregated data, Survey data	Feb 2023	Daily, Monthly, Annual	Through Feb 2026
MOD-EHR Middleware	Select data on customer profiles, transportation bookings, and medical appointments will be stored in a native data structure created for the middleware solution.	Trip level data, Healthcare appointment data	Feb 2023	Daily	Through Feb 2026

Data Storage System Type	Description	Dataset Title(s)	Initial Storage Date	Frequency of Update	Archiving and Preservation Period
MOD-Medicaid Middleware	Select data on customer profile and transportation status, service requests, and confirmations will be stored in a native data structure created for the middleware solution.	Trip level data	Feb 2023	Daily	Through Feb 2026
Wayfinding system	A log of wayfinding requests at device level	Wayfinding data	Feb 2023	Daily	Through Feb 2026
USDOT-managed system	Anonymized and aggregated data related to performance measurement will be available for storage in a USDOT repository for the duration of the project. This data would be accessible to the public.	Aggregated data	Feb 2023	Monthly	Five years

2.3 Data Sharing Framework

The data sharing framework consists of datasets to be shared, documentation, and the mechanism for accessing data. For further details about how data within specific datasets will be shared, please see Table 2 and Table 3 of the Data Privacy Plan [5].

Datasets: It is anticipated that the shared data will include trip details aggregated to a set time period (i.e. day). For instance, number of trips taken, number of cancellations, average trip duration, number of appointments missed, etc. for a 24-hour period would be reported as one row of information. Trip details (e.g., number of trips) will be reported as columns. The data format and reporting period will be determined once the team has had access to sufficient data so that they are familiar with the data, and so that anomalies in, and other issues with, the data have been

resolved. The data reporting period will be selected to provide as much detail as possible but will not allow reverse engineering to identify characteristics for an individual traveler. Data will be stored in a format, such as CSV or Excel spreadsheet, that can be easily accessed by most users.

Documentation: Documentation will include a report describing how the data were collected, any issues associated with the data, and appropriate uses for the data. A data dictionary will be developed for each category of datasets. Data dictionaries will describe each variable (column).

Mechanism for sharing: The data sharing mechanism is the method by which users can access the data. It is anticipated that users will be able to download the data directly. The mechanism is expected to be a webpage with instructions on what is available with access to contents.

2.4 Data Quality Control

Data quality control applies to data that will be utilized in performance metrics in order to identify issues with the data, such as missing data, inaccuracies, or inconsistencies sufficiently early so that they can be addressed. Data quality control consists of the following:

Accuracy: All data in the MOD platform is collected and uploaded automatically, minimizing the risk of invalid data uploads or human error in data entry and ensuring accuracy. In addition, to ensure data accuracy, the following processes will be used by the MOD platform:

- When collecting data from Travelers, format validation is used to ensure data accuracy. Once a Traveler enters their phone number or email into the customer facing application, the MOD platform will confirm the data entered complies with set standards (e.g., allowed number of characters, permitted character types, etc.)

- Once the data entered has been validated, The MOD platform vendor will utilize a two-factor authentication process to facilitate user identity verification. Upon a Traveler inputting their phone number or email into the customer facing application (that complies with set standards), the Traveler will receive a verification code via text message or email. This code must then be entered into the customer facing application to confirm the accuracy of the phone number or email address provided by the Traveler.

Relevancy: Format validation is also used to ensure the data entered is relevant. In addition, the MOD platform has the ability to filter reports to intentionally omit irrelevant data (e.g., data entries related to the testing phase of the project), ensuring only the most relevant data is analyzed.

Completeness and consistency: The MOD platform staff typically review errors on an hourly basis during hours of operation. Automatic alerts are put in place to notify staff through the VOC outside of hours of operation in the instance of a critical event. The MOD platform also utilizes a backfilling process that completes any data gaps that remain after code fixes were made.

Timeliness: Data can be downloaded for evaluation at least monthly, or more frequently as needed by the HIRTA team to ensure accuracy or perform analysis.

2.5 Privacy

Data privacy is critical to protect Travelers that take part in Health Connector. As a first line of protection, Health Connector will only collect information critical to service provision; sensitive information that is not required for trips (e.g., prescription history, social security numbers, etc.) will not need to be generated in the first place. As an additional layer of privacy protection, the HIRTA team has set access requirements for who is allowed to access specific types of data. Vendors associated with this project will not have the ability to ingest Health Connector data for their usage. Further discussion of the specific steps the HIRTA team will take to safeguard Traveler privacy and protect sensitive data can be found in the Data Privacy Plan [5].

2.6 Relationship to Performance Measures

Performance measures are based on the stated goals and objectives identified according to the ConOps [2]. For each performance measure, associated data will need to be collected in order to effectively analyze the impact of Health Connector. The table below provides a summary of the datasets for each Performance Measure. Relevant data and measures, as described in the Performance Measurement and Evaluation Plan [1], will be shared with the Independent Evaluation team through ISU's local data system. This data can be viewed as an enhanced look at Data ID #32 in the overarching data needs table, which calls for anonymized and aggregated data for performance measurement.

In April 2025, HIRTA received updated approval from IRB to begin data collection on existing HIRTA riders that were eligible to be transferred to Health Connector service. Because these riders and associated rides were not included in the data collection from September 2024 through April 2025, there are limitations on the ability to retroactively calculate performance measures including these unconsented riders. Table 7 identifies metadata that is unavailable for retroactive updates. From April 2025 onwards, all performance measures reflect both consented and unconsented riders.

Table 7. Performance Measure Relation to Collected Data

PM#	Title	Updated Data Needs
1	Ability to dynamically reassign vehicles to address service disruption	ID #1 – Request ID ID #11 – Request Month ID #12 - Pick-up time requested ID #28 – Pickup Start ID #19 - Actual pick-up time ID#24 – Last pickup time quoted ID #28 – Pickup window start ID #29 – Pickup window end ID #30 – Vehicle Arrival at Pickup ID #22 - Original estimated ride duration ID #26 – Last estimated ride duration before pickup ID #49 - Date of service interruption ID #50 - Time of service interruption * IDs 28, 29 and 30 are unavailable in historical datasets and therefore only consented riders will be included in calculations prior to April 2025.
2	Availability of transportation alternatives	ID #1 – Request ID ID #11 – Request Month ID #33 – Number of slots offered when booking ID #34 – Percent satisfaction with slots offered

PM#	Title	Updated Data Needs
3	Trips unfulfilled due to system unreliability	ID #1 – Request ID ID #11 – Request Month ID #11 - Trip request time (time when Traveler made request) ID #12 - Pick-up time requested ID #35 - Seat unavailable and 'other error' alerts without finding a ride within one session
4	ETA prediction accuracy	ID #1 – Request ID ID #11 – Request Month ID #12 - Pick-up time requested ID #14 - Original pick-up time offered (and accepted) ID #19 - Actual pick-up time ID #20 – Actual dropoff time ID #24 – Last offered pickup time ID #25 – Last offered dropoff time ID #28 – Pickup window start ID #29 – Pickup window end ID #30 – Vehicle arrival at pickup * IDs 28, 29 and 30 are unavailable in historical datasets and therefore only consented riders will be included in calculations prior to April 2025.
5	On-time performance	ID #1 – Request ID ID #11 – Request Month ID #12 - Pick-up time requested ID #14 - Original pick-up time offered (and accepted) ID #16 - Actual pick-up time ID #32 – Pickup status
6	On-board travel time prediction accuracy	ID #1 – Request ID ID #11 – Request Month ID #15 - Original pick-up time offered (and accepted) ID #22 – Ride duration ID #26 – Last offered duration
8	Reliability of the system in assisting with non-vehicle component of a complete trip	ID #36 - Traveler rating of pre-vehicle wayfinding ID #37 - Traveler rating of post-vehicle wayfinding
9	Traveler perception of privacy	ID #38 - Traveler perceptions about privacy
11	System ability to meet accessibility needs of Travelers	ID #39 - Traveler perception of accessibility (language, mobility)
12	Self-reliance	ID #40 - Traveler perception about self-reliance

PM#	Title	Updated Data Needs
14	Complaints and customer satisfaction	ID #41 - Number of complaints ID #42 – Customer satisfaction rating
15	System productivity	ID #1 – Request ID ID #11 – Month ID #31 – Vehicle dropoff ID #32 – Pickup status
16	Added capacity from third-party providers	ID #1 – Request ID ID #11 – Request Month ID #3 – Driver ID ID #4 – Vehicle ID ID #12 - Pick-up time requested ID #15 - Original pick-up time offered (and accepted) ID #16 - Actual pick-up time ID #32 – Pickup Status ID #51 - Number of trips provided by a third party (after hours) * As of August 2025, no after hour trips have been provided.
19	Increased cost efficiency	ID #44 – Amount of time HIRTA staff spend per trip helping travelers ID #52 – HIRTA admin cost for Medicaid trips
20	Improved coordination among HIRTA, healthcare providers, health navigators	ID #43 - Amount of time healthcare providers spend per trip helping Travelers
21	Delivery of safe healthcare transportation	ID #45 - Number of safety events * ID #45 in unavailable in historical datasets. Therefore, only consented riders will be included in reporting prior to April 2025, however, no safety incidents were reported prior to this time.
22	Reduction in medical appointment deferment due to lack of transportation	ID #46 – Number of missed medical appointments due to lack of transportation
23	Savings due to reduction in the number of missed medical appointments	ID #46 – Number of missed medical appointments due to lack of transportation ID #47 – Reduction in cost due to missed appointments ID# 48 - Cost of a missed appointment

2.6.1 Baseline Data

Baseline data will be collected in order to effectively determine the impact of Health Connector for any given performance measure. Below are the sources of baseline data for each performance measure (if applicable). This section has been updated to reflect Via as the selected MOD platform for the Health Connector project.

Table 8. Baseline Data Relation to Performance Measures

PM#	Performance Measures	Baseline Data Source
14	Complaints and customer satisfaction	Baseline will be established using data from existing HIRTA scheduling & dispatch vendor, Via.
19	Increased cost efficiency	HIRTA
20	Improved coordination among HIRTA, healthcare providers, health navigators	As available from current HIRTA and healthcare partner logs.
22	Reduction in medical appointment deferment due to lack of transportation	As available from current HIRTA and healthcare partner logs. Baseline data collected via registration form and surveying during incoming rider calls.

3 Data Standards

The following data standards were identified during Phase 1 and continue to govern data in Phase 2/3. These standards have continued to develop and the latest version of standards can be found in the SDO technical memo developed for this project. This is not a published document but can be shared by the project team upon request.

3.1 Data Standards

A list of standards, as applicable to vehicle, central environment, and data access and sharing are discussed in the following subsections.

3.1.1 Vehicle Data Standards

Currently, the only planned vehicle equipment is a tablet or a mobile device for drivers that will exchange data over cellular data network.

HIRTA team also plans to explore the potential to provide advanced infotainment service on vehicles to provide information to travelers (e.g., orientation information upon arrival at the hospital). This was identified as a low priority need during the ConOps stage. However, it is included as an optional requirement based on subsequent stakeholder discussions, and implementation approach (e.g., hardware and content management) has been confirmed during Phase 2.

None of the planned features require a vehicle area network (VAN) except obtaining real-time status on wheelchair availability. Fault codes can be received over Society of Automobile Engineers (SAE) J1939 network if a wheelchair lift interlock module is available on a vehicle. Based on system requirements discussions, the need for real-time monitoring of such failure is not considered essential.

3.1.2 Data Communication Standards

Vehicle-to-central communication will be accomplished using Internet Protocol (IP)-based transport protocols, Transmission Control protocol (TCP), or User Datagram Protocol (UDP).

Data transport will occur over 4G or 5G network with a carrier-level encryption using a private Access Point Name (APN).

3.1.3 Data Access Protocols

At least the following protocols will be used:

- HTTPS: Hypertext Transfer Protocol Secure (HTTPS) will be used for accessing data over the web or mobile browsers. Secure Socket Layer (SSL)-based security as provided at OS-level will be used by mobile apps.

- SFTP: Secure file transfer protocol (SFTP) will be used to make anonymized and aggregated data accessible to HIRTA and ISU through Cybox, the team's reporting database.

3.1.4 Data Sharing Standards

Data will be shared using the following standard formats:

- CSV: non-spatial data will be shared using text-based files using CSV format. Files will include a header and data. Details on the header fields will be available in the metadata.

- JSON: TMS reporting portal currently makes spatial data available over JSON and the same practice will be used for sharing spatial data.

3.1.5 Open Data Standards for Transactional Data

Overall, open data-based exchange is not applicable to this project, since there is currently no transactional data standard for functions such as booking, service management, and payment in use for demand response services in the industry. Existing and planned open data standards for transactional such as Transactional Data Standard (TDS), is still not ready for mainstream deployment based on our assessment. The HIRTA team will continue to monitor this development but is currently taking the open API approach for interfacing with external systems (the Medicaid Broker system, EHR system, or third-party service providers). This approach may differ for other agencies looking to replicate the Health Connector concept, since MOD vendors may be different, and other providers or subsystems could be included. Nevertheless, the core of HIRTA's system architecture will still be replicable for other sites, even if specific standards or approaches differ.

3.1.6 Open API

Interfaces with the Medicaid Broker system and Epic EHR are planned, using the MOD platform APIs. Detailed API documentation can be found at https://developer.ridewithvia.com/docs/via-api/p9x1ftjhos947-booking-and-rides.

HIRTA's active healthcare partner, Dallas County Hospital, is currently using Veradigm EHR. Veradigm requires a JSON Web Key Set (JWKS) to access a public key and appropriate URL submitted to its portal. Patient appointment information is received using SQL to query all appointment information.

The EHR Middleware has also been designed to work with Epic EHR, when available for integration. Epic's open API will be needed to access medical appointment data. Details of the API are available at https://open.epic.com/ (accessed Aug 2021). Epic APIs are also compliant with Fast Health Interoperability Record (FHIR) and use eXtensible markup language (XML) or JSON for data exchange. In the event Epic API cannot be used, the HIRTA team is pursuing Veradigm EHR integration for Dallas County Hospital. This may be done through APIs or through automated SQL reporting. As a third option, an appointment booking tool has been developed for

the MOD-EHR dashboard which allows for creation and matching of trips and appointment data without any integration into an existing EHR.

3.2 Versioning

Datasets released at a particular interval (e.g., daily, monthly) will follow a naming convention, so it is easily identifiable by users. The HIRTA team plans on using a data file naming convention following a format of 'Dataset name_Level of granularity_MMDDYYY'. Also, datasets will be accompanied by metadata, so users are able to determine information on what is included. If there are any changes in the data structure between versions, it will be identified in the metadata. Also, the DMP will be updated accordingly. Further details on metadata update process are described in Section 3.3.3.

Change and release management policies govern the release of updated versions for the system. Change management policies are established in the Project Management Plan (PMP).

3.3 Metadata

The MOD Platform TMS will generate and maintain the datasets identified in this document. Data will also be generated in external systems (EHR, the Medicaid Broker system, SurveyMonkey) and will be accessed by the MOD Platform TMS through secure interfaces. The wayfinding solution will contain its own data but will be shared with the performance management team.

The following sections provide further details on the Metadata that will be included with the shared data.

3.3.1 Metadata Types

In the context of the Health Connector project, metadata is defined as follows.

- **Business Metadata:** Data that is used to provide business value and context for the data. The following subcategories are used to define this metadata:
    - **Discovery:** Metadata that is used to allow other users to find and work with the data. This metadata includes information on why the data was collected, what type of data is included, general description of the dataset types, location where the data was collected, when it was collected, what techniques/technologies where used, and who created that data.

      DMP has identified data and datasets that will be generated, collected, stored, and archived by the Health Connector system in Table 3 and Table 5. Owner and steward of the data and datasets are also identified.

    - **Licensing:** Metadata that provides the licensing for the data and allows users to know the rights they have to use, any restrictions on copying, publishing, distributing, transmitting, citing, or adapting the data.

Table 2 and Table 3 of the Data Privacy Plan [5] define the access levels for public and private data per HIRTA team's current understanding. HIRTA submitted and received initial IRB approval to use the data as defined throughout this document upon consent from newly registered Health Connector riders. HIRTA submitted and received updated IRB approval to collect data from all consented and unconsented existing HIRTA riders that are eligible for Health Connector as no new data collection was required.

Terms and conditions of data use will be covered by the agreements between HIRTA and providers of systems as follows:

- Written agreements entered into between HIRTA and the MOD platform vendor; the mobile application's terms of use entered into by the customer; and MOD platform vendor's privacy policy shall govern the collection and use of the data generated through use of the software.
- Access to wayfinding system data will be governed by licensing terms set by the wayfinding solution vendor.
- Access to Medicaid data will be governed by terms of the agreement as entered into by HIRTA and the MOD platform vendor with the Medicaid Broker.
- The exchange of healthcare appointment data between the EHR and the MOD vendor will be via an open-source middleware product to be developed by the project team. Access to healthcare appointment data will be covered by 1) consent release signed by healthcare provider, Traveler/patient, HIRTA, and the MOD platform vendor; 2) terms and conditions as set by EHR provider (Epic) and the MOD platform vendor, and subsequently HIRTA and the MOD platform vendor. Note that the healthcare appointment data scope is limited to what is defined in this DMP, and data exchanged via the middleware will be masked as necessary to prevent any privacy violations.

In addition, access to data and use through TMS reporting will be governed by the MOD platform vendor's privacy policy.

- **Technical Metadata:** Data that is used to provide technical details on the data, as defined under the following categories
  - **Data Schema:** Metadata that documents the exact fields in the data including, field name, description, data type, and notes. Data schema can be found on the HIRTA middleware GitHub page, where it can be updated as needed and communicated publicly as any future changes are made.
  - **Data Processing:** Metadata that documents any data processing that was done to the data from the data inception (when the data was produced) to when it was delivered to the USDOT. This will be applicable to aggregated datasets which will be anonymized and aggregated, available through TMS reporting and the USDOT-managed system. Also, metadata as it relates to the processing of

- survey data (data cleanup exercise, anonymization, aggregation) will be included.

- **Data Impact Log**: Refers to metadata that provides information on any changes to data during the collection period. Any time the data changes in a unique way that is not expected in the experimental design either by internal or external forces, it will be documented. An example of changes expected are listed below:

    - Testing of system components and features.

    - Addition, modification, or deletion of a new feature in one or more system components.

    - Replacement of a system component, either due to replacement of a system provider or due to availability of new/upgraded component from a provider.

    - Modification in server infrastructure used for storage and providing data access.

    - Modification in schema or structure for data tied to system components, data format for the data made available, and metadata.

    - Modifications in policies, system components, and tools related to data storage, management, access, and sharing.

    Any changes required due to externalities will also be documented. Potential factors that may impact the data collection on the project include:

    - Extended impact of a severe weather event impacting data collection due to communication outage or other issues (e.g., flooding).

    - Regulatory changes, government policy changes, or unanticipated data needs from funding entities that require additional /reduced data collection.

    - Major change in trip volume as service expands.

- **Static Metadata:** Metadata that is mostly static that describes key parts of the project. Data on fixed pick-up and drop-off locations (e.g., designated spot outside a hospital or a senior center to pick up Travelers) along with any relevant details (e.g., any signage or digital infrastructure at the stop) as those get defined will be included. Also, this category of metadata will include the application inventory (list of applications involved, version installed, vendor, SLAs, owner, next planned update/upgrade, last update/upgrade, any other relevant information) and fleet inventory (ID, age, capacity, propulsion, digital infrastructure). Further, this category will include data on the sensor/visual marker installed outside and inside facilities to support outdoor and indoor wayfinding.

3.3.2 Metadata Structure

This section provides the structure used to communicate metadata information. Metadata will be provided in CSV format along with the datasets being provided.

Metadata will be stored with the data to allow the users of the data, including future deployers, researchers, and the public all key information in a single location. Files will be provided in a way that maintains the structure of the data, so users of the data can easily determine what is project metadata and what is specific dataset metadata.

Each metadata package will include:

- Summary information for datasets included in the package along with any other reference information as needed (e.g., DMP, privacy policy, public information on additional details on data collection, as available).
- CSV file with static metadata.
- For each dataset, technical metadata in CSV format with schema, processing, and license metadata.

3.3.3 Metadata Update Process

Metadata will be kept up to date, so the current version is always shared with the data when there is a change. The following steps will be followed:

1. When it is learned that any of the changes in the dataset trigger a change in metadata, CCB will meet to identify changes necessary in the metadata structure. In most cases, this meeting will occur months in advance of a change to the dataset.
2. If follow-up discussions and expert advice is needed, the CCB will meet with the subject matter expert from the dataset provider (e.g., MOD platform vendor, wayfinding solution vendor, ISU) to assess any impact on the metadata structure due to change in dataset (e.g., if column dropped or renamed in a new software release). The impact may be on business metadata, technical metadata, static metadata, or a combination of the 3 metadata types.
3. If changes to the metadata is necessary, the vendor will be requested to provide a modified metadata file in a similar format as described in Section 3.3.1.
4. The CCB will assess any changes to the DMP as discussed in Section 1.1.1 and approve the updates to the DMP.
5. HIRTA PML will obtain the revised metadata file and include that within the appropriate folder structure for file sharing.
6. HIRTA team will verify once the new dataset based on revised metadata structure is generated (e.g., when changes are in technical and static metadata).
7. Metadata structure will be updated to reflect the changes and appropriate files will be updated.
8. Updated metadata structure along with the new dataset is uploaded to the USDOT-managed system. For researchers accessing data through the ISU local data system, a

link to download the revised metadata structure will be provided at the time of accessing the data request.

3.3.4 Middleware Cloud Metadata Schema

Metadata used by the MOD-Medicaid Middleware, MOD-EHR Middleware and Kiosk is passed using AWS Lambda, described further on HIRTA's GitHub repository. The following tables outline the schema of tables used to store metadata in cloud storage using AWS DynamoDB. Given changes to Medicaid providers and associated APIs, the schema outlined below is representative of the anticipated data structure for future development. As development continues, the data schema will be updated on GitHub.

Table 9. Middleware Cloud Storage Schemas

Table Name	Title	Data Type	Description
MOD_Medicaid	Request_time	String	Datetime timestamp of when the Medicaid request is inserted into the DynamoDB table.
MOD_Medicaid	Atms_ride_id	String	Unique ID generated by middleware to represent trip request internally.
MOD_Medicaid	Tapi_trip_id	String	Trip ID provided in Medicaid request payload.
MOD_Medicaid	(*vendor*)_request_payload **Vendor will be updated to future Medicaid broker API provider*	JSON	Object containing entire Medicaid trip request payload. Includes: • Passenger Count • Requested Departure Time • Destination Lat, Long, & Address • Origin Lat, Long, & Address • Additional (Guest) Passenger Count • Subservice • Passenger First Name, Last Name, Phone Number, Email
MOD_Medicaid	Via_response_payload	JSON	Object containing response payload received from Via after initial trip request. Includes: • Broker Trip ID • Appointment Time • ATMS Ride ID • Destination Lat, Long & Address • Origin Lat, Long & Address • Rider First Name, Last Name, Phone Number, ATMS Rider ID • Vehicle Type
MOD_EHR	ID	String	Patient ID (per EHR system)

Table Name	Title	Data Type	Description
MOD_EHR	Location	String	Appointment location
MOD_EHR	Patient_name	String	Patient first and last name
MOD_EHR	Start_time	Timestamp	Appointment start time
MOD_EHR	End_time	Timestamp	Appointment end time
MOD_EHR	Status	String	Appointment status

Appendix A. Acronyms and Glossary

Table 10. Acronyms

Acronym	Meaning
ADA	Americans with Disabilities Act
API	Application Programming Interface
APN	Access Point Name
BAA	Business Associate Agreement
CCB	Change Control Board
CDL	Concept Development Lead
COTS	Commercial off the Shelf
CSV	Comma-separated values
DCHD	Dallas Country Health Department
DMP	Data Management Plan
DPP	Data Privacy Plan
EHR	Electronic Healthcare Record
FHIR	Fast Health Interoperability Record
GTFS	General Transit Feed Specification
GTFS-flex	General Transit Feed Specification for flexible and deviated-route transit services
HIRTA	Heart of Iowa Regional Transit Agency
HTTPS	Hypertext Transfer Protocol Secure

Acronym	Meaning
HL	Healthcare Lead
IP	Internet Protocol
ISU	Iowa State University
I&R	Information and Referral
IVR	Interactive Voice Response
JSON	JavaScript Object Notation
MOD	Mobility on Demand
NOFO	Notice of Funding Opportunity
PDF	Portable Document Format
PII	Personally Identifiable Information
PMESP	Performance Measure and Evaluation Support Plan
PML	Project Management Lead
PMP	Project Management Plan
REL	Research and Evaluation Lead
SAE	Society of Automobile Engineers
SDL	System Development Lead
SEL	Stakeholder Engagement Lead
SFTP	Secure File Transfer Protocol
SHP	Shape File Format
SPII	Sensitive Personally Identifiable Information
SSL	Secure Socket Layer

Acronym	Meaning
TCP	Transmission Control protocol
TDS	Transactional Demand Standard
TL	Technology Lead
TMS	Transportation Management System
UDP	User Datagram ProtocoL
UNIRP	User Needs Identification and Requirements Planning
USDOT	United States Department of Transportation
VAN	Vehicle Area Network
VOC	Via Operations Center
WAV	Wheelchair Accessible Vehicle
XML	eXtensible markup language

Table 11. Glossary

Term	Definition
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.
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.
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.

Term	Definition
Dispatching	Refers to an operations management function which involves assigning vehicle, tracking fleet location, managing schedule adherence, managing trip manifests and other operational functions.
EHR/Medical Record System	Refers to the systems used by partner hospitals and clinics for booking medical appointments and maintaining their appointments, including discharge and any subsequent referral activities. Participating Healthcare partners currently use different EHR services. The following bullet points outline participating healthcare partners and the EHR systems they currently employ. Health Connector will develop a new interface with at least one healthcare partner's EHR system. • MercyOne Hospital – Epic EHR, Epic EHR provides a publicly available API • Dallas County Hospital – Transitioning to Epic EHR • The Iowa Clinic. – Veradigm EHR
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.
Health Navigator and Healthcare End Subsystem	Refers to the limited access MOD platform that will be available to health navigators and healthcare customer care staff to request trips, modify trip requests, and check on trip status on behalf of Travelers. Additionally, health navigators and the health administrator at the Dallas County Health Department (DCHD) use a Microsoft Access-based information and referral (I&R) product to track the status of referral activities and for coordination with Dallas County residents' health navigation/social care services.
Information and Referral	Refers to public and private entities that help their customers in identifying resources for health and human services and other needs.
Medicaid Transportation Broker	Refers to the State of Iowa Medicaid broker. Currently, Access2Care's system is used for booking and managing Medicaid trips. HIRTA is one of the providers used by Access2Care. Medicaid trips will continue to be booked by Access2Care when requested by Travelers. Medicaid trips will be ingested in the HIRTA system when assigned to HIRTA. At that point, a Traveler using Medicaid benefits will be able to use Health Connector Traveler tools.
Middleware	Refers to an interface application that enables data exchange between two disparate systems or applications using API endpoints offered by those applications.

Term	Definition
Provider	Provider in this context mainly refers to an entity performing service delivery for requested trips, sometimes also referred as service provider. The HIRTA team has 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 Traveler. Reservation is available to only registered Travelers.
Scheduling	Refers to the process of identifying driver and vehicle resources and their runs/shifts for a given workday. 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.
Smart Device	Refers to smartphone, smartwatch and similar personal devices that may be internet enabled and are equipped with sensors.
Traveler	While 'customer' is commonly used by transit agencies and 'patient' or 'consumer' by healthcare facilities, for this project (and in this document), 'Traveler' will be used to identify individuals who may benefit from Health Connector.
Traveler-end Subsystem	Includes the tools and technologies (phone/interactive voice response (IVR), mobile/smart devices, web-based tools) to be used by Travelers seeking transportation services for their healthcare appointments as part of their pre-trip, during trip, on arrival, and return trip activities. This includes both a mobility-on-demand (MOD) application for planning, booking, and payment, as well as a wayfinding application for more detailed guidance within care facilities. This application, provided by Via, also provides real-time status of trips on demand and through push notification services and allows Travelers to discover options and plans trips. Mobile/smart devices will be used as part of the Traveler-end subsystem but are not a part of this procurement.
Transportation Management Subsystem (TMS)	TMS refers to any systems related to the operational backend functions involved in service delivery. Under this project, The MOD TMS (also referred to as "VOC") and the HIRTA TMS are commonly referenced as such systems.
Vehicle Subsystem	Refers to the technologies deployed on vehicles to support driver-end functions for driver-dispatch communications, manifest management, support just-in-time dispatching, turn-by-turn navigation and outdoor wayfinding (e.g., to locate Travelers at the time of pickup), on-board information and fare payments. On all HIRTA-owned vehicles, drivers will use tablets running the driver app. On other vehicles, drivers may use the driver app on their tablet or their phone.

Term	Definition
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.

Appendix B. References

[1] Phase 1 Performance Management and Evaluation Support Plan— Heart of Iowa Regional Transit Agency ITS4US Deployment Project (FHWA-JPO-21-877) https://rosap.ntl.bts.gov/view/dot/60580, to be updated

[2] Phase 1 Concept of Operations (ConOps): Heart of Iowa Regional Transit Agency ITS4US Deployment Project (FHWA-JPO-21-859) https://rosap.ntl.bts.gov/view/dot/57469

[3] Phase 1 Integrated Complete Trip Deployment Plan: Heart of Iowa Regional Transit Agency ITS4US Deployment Project (FHWA-JPO-22-946) https://rosap.ntl.bts.gov/view/dot/64709

[4] Phase 1 Human Use Approval Summary -- Heart of Iowa Regional Transit Agency ITS4US Deployment Project (FHWA-JPO-21-897) https://rosap.ntl.bts.gov/view/dot/61191, to be updated

[5] Data Privacy Plan (DPP):Heart of Iowa Regional Transit Agency ITS4US Deployment Project, to be published

[6] Phase 2 System Architecture Document: Heart of Iowa Regional Transit Agency ITS4US Deployment Project (FHWA-JPO-22-983) https://rosap.ntl.bts.gov/view/dot/68863

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