

Addendum No. 1

1- Can NeoRide please confirm when the RFP is due? It is noted in two different sections two different times. As referenced on page 11, *Proposals are due: Friday [08/06/2021] [12:59]PM EST* and then on page 10, *All proposals must be submitted in accordance with requirements set forth in the RFP and must be received at NEORIDE's office at 11 Park Centre Dr. #300, Wadsworth, OH 44281 by [11:59]PM EST. Friday [08/06/2021].*

A: All submissions should be sent to NEORide at 11:59 PM EST by Friday August 6, 2021.

2-Can NeoRide confirm the time the final questions are due on Friday 7/23?

A: All questions should be submitted to NEORide by Friday, July 23, 2021 by 11:59 PM EST.

3- Is it NeoRide's expectation that additional NeoRide agencies will also join this contract?

A. Currently, Butler County Regional Transit Authority (BCRTA), Community Action Agency of Columbiana County (CARTS), Start Area Regional Transit Authority (SARTA), Western Reserve Transit Authority (WRTA), and Community Action Agency of Wayne County has expressed interest in participating in a contract. It has been NEORide's policy to open any contracts to all 17 of its members.

4- Please provide integration clarification/details/requirements related to the referenced Call Center found in section 2.2 of the RFP

A. NEORide has attached a copy of the One-Call Center Technology Study that was completed below. This is Appendix P.

5- Appendix P is referenced in section 2.2 of the RFP; Appendix P is not currently available for download on the NEORide web page. Can you please make Appendix P available?

A. See answer to question 4.

6-With multiple agencies, using scheduling and dispatching platforms, what are the expectations regarding the reconciliation process of equipment codes, funding programs,

A. It is our expectation that the system deployed would work cooperatively with all scheduling/dispatching platforms. There are cases in which a new system could replace the current system in place.

7-Would NeoRide be open to extending the due date by two (2) weeks?

A. Not at this time.

8- Will NeoRide be hosting a pre-bid conference call?

A. Not at this time.



One-Call Mobility Center Final Report

Prepared for NEORide
by IBI Group
May 2021



Document Control

CLIENT:	NEORide
PROJECT NAME:	Regional One-Call Mobility Center
REPORT TITLE:	Final Report
IBI REFERENCE:	126666
VERSION:	
DIGITAL MASTER:	
ORIGINATOR:	Angad Oberoi
REVIEWER:	Santosh Mishra, Doug Parker
AUTHORIZATION:	Santosh Mishra
CIRCULATION LIST:	
HISTORY:	Version 1

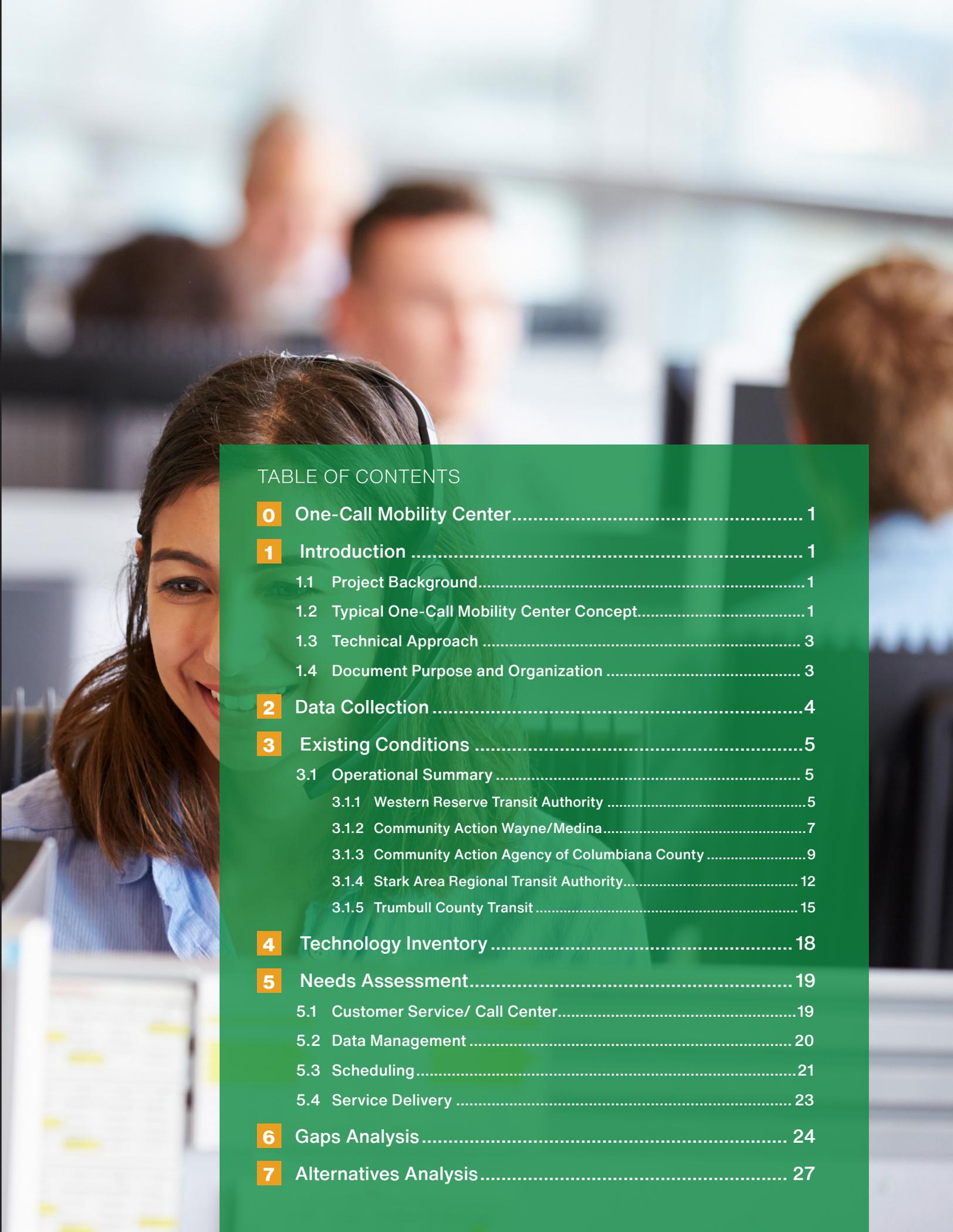


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1. Introduction

1.1 Project Background

NEORide in coordination with SARTA, WRTA, Wayne-Medina Community Action, CAA of Columbiana County, and Trumbull County Transit has selected IBI Group to conduct a technology feasibility study for setting up a regional mobility call center. The call center is planned to be located at one or more locations and would fulfill the call-taking, scheduling and customer service needs for multiple partner transit agencies as well as other potential non-profit or for-profit transit partners.

The envisioned One-Call Mobility Center will allow participating agencies to pool their resources regionally to enhance mobility management and serve their customers better across the 5-county region that includes Stark, Mahoning, Columbiana, Trumbull and Wayne (see Figure 1). Through this centralized call center, agencies will be able to increase availability of live customer service representatives (CSRs) and will also be able to utilize technologies better to communicate with customers when live CSRs may not be available. Further, such call-center will allow agencies in the 5-county region to be able to meet capacity needs by coordinating other resources (e.g., driver, vehicle) across multiple operators and funding sources while serving a combined population of over 1 million.

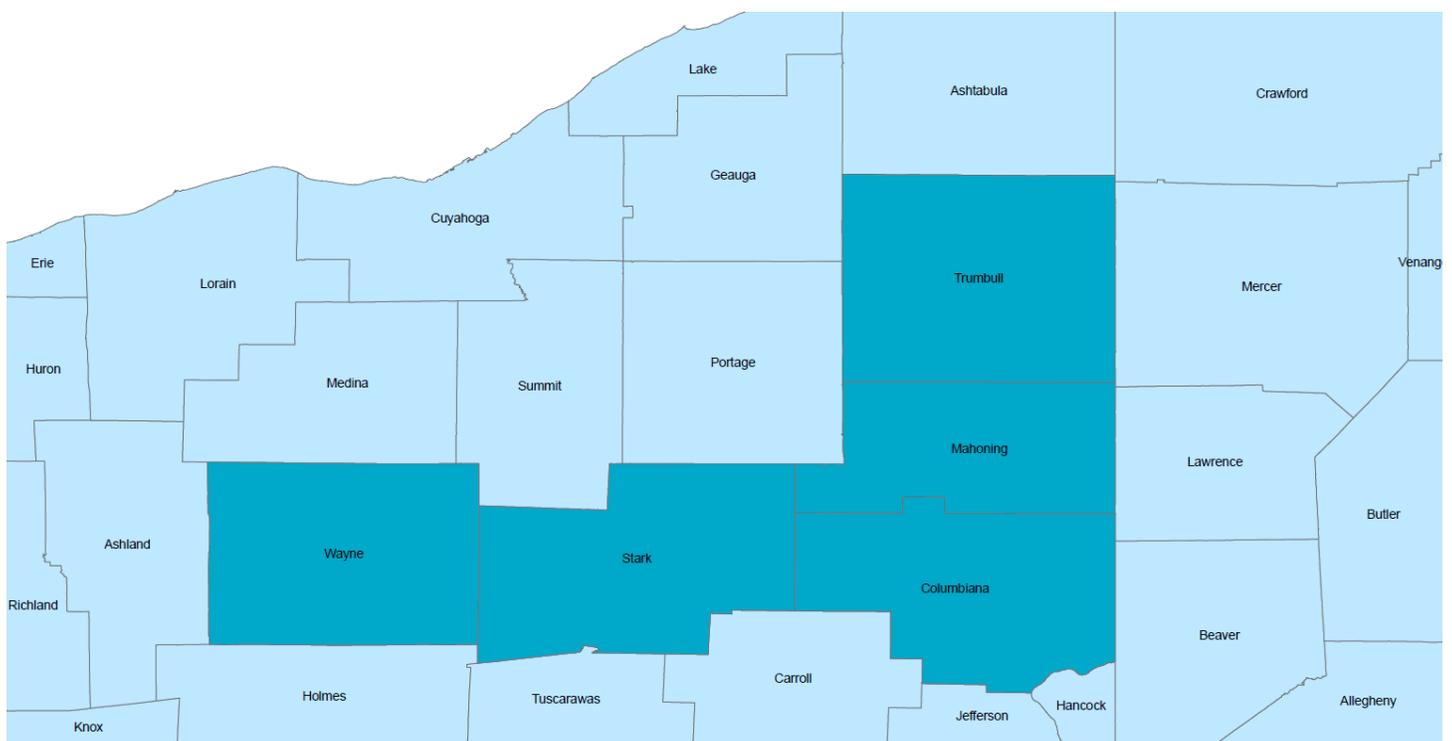


Figure 1. Study Service Area

1.2 Typical One-Call Mobility Center Concept

The concept of mobility management has been in practice in the United States for decades where agencies have used available resources to help residents in rural areas with limited transportation

access to meet their needs for access to job, healthcare, education and other mobility needs. The idea of a unified call center so customers have one number to call for all their transportation needs got major boost through the USDOT Mobility Service for All Americans program, started in mid-2000s that supported technology-driven approach for promoting regional coordination across multiple agencies (specifically referred as Travel Management Coordination Center). Since then several agencies have implemented one-call mobility concept. Community Transportation Association of America (CTAA) has also developed a one-call-one-click toolkit to help agencies plan for such coordination centers.

Figure 2. Typical One-Call Mobility Center Setup shows a simplified version of such vision. In such concept customers are able to connect to live CSRs during normal hours or are able to access resources through “virtual call center” that includes a mix of web, mobile and interactive voice response (IVR) technologies so customers can be served outside normal hours. Most of the participating agencies for this project are used to these features for their individual call-centers.

While all services related to a customer trip from call-taking to actual delivery of trip can be managed from such call/coordination center, level of functionalities that can be implemented depend on a variety of technical, institutional, financial/funding and other factors.

In this study, the project team is focused on only the following functions for the One-Call Mobility Center:

- **Customer Service/Communication:** attend customer calls for general service information, registration, eligibility management, trip request, information on booked trips and others.
- **Data Management:** centralized data management for a combined record of customers and their trip eligibility.
- **Scheduling:** booking of trips per appropriate funding source and transportation provider.
- **Service Delivery:** coordination in real-time on capacity in the event a participating agency does not have capacity to deliver a trip or return trip. It is assumed that dispatching of drivers/vehicles will be done by individual agencies from their individual control centers.

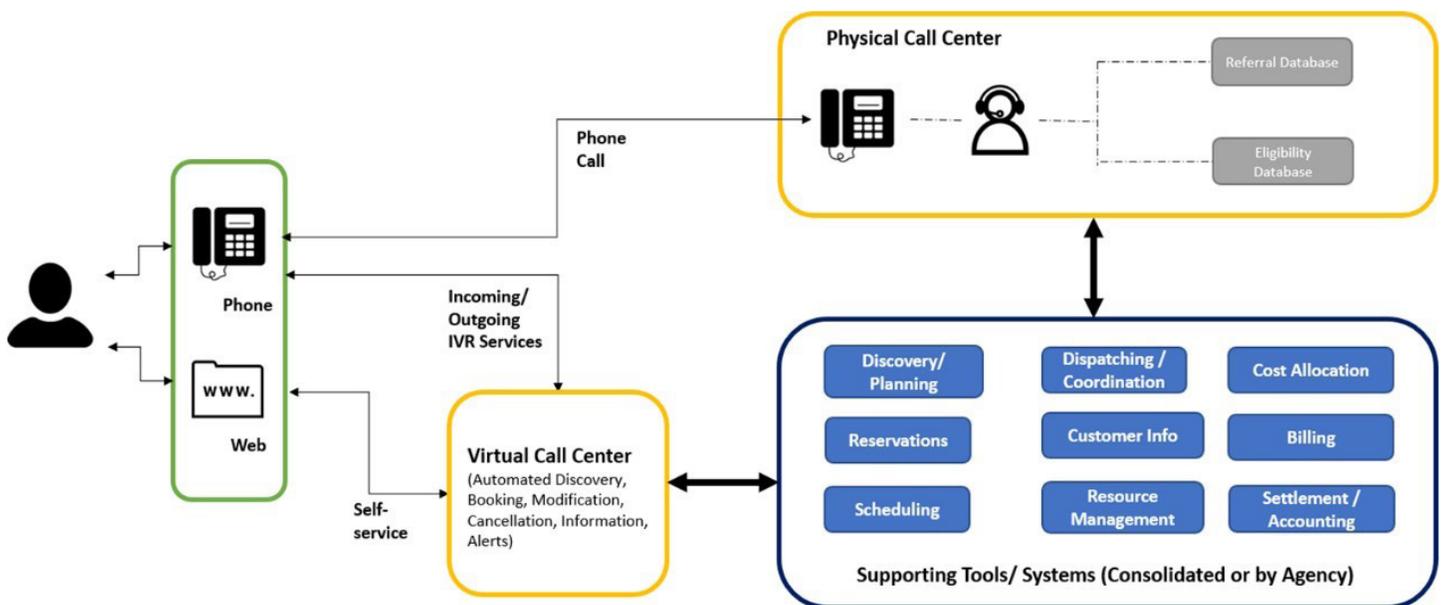


Figure 2. Typical One-Call Mobility Center Setup

1.3 Technical Approach

IBI Group conducted this One-Call Mobility Center technology feasibility study under the following tasks:

- **Task 1 - Needs Assessment:** developed understanding of existing operations and business processes at each of the participating agency. Further, documented needs related to a centralized call center for reservations, scheduling and customer service functions was done.
- **Task 2 - Technology Inventory:** developed inventory of all technologies currently in use.
- **Task 3 - Gap Analysis:** identified gaps in the current system environment with respect to the goal of developing a One-Call Mobility Center for participating agencies.
- **Task 4 - Alternatives with Cost Benefit Analysis:** developed a list of alternatives for call centers (e.g., one or more centers, integration with another call centers such as 211), phone systems and interactive voice response (IVRs), self-service web platforms, dispatching technology platforms (on-board equipment, common or distributed dispatch platforms), reporting and other relevant functions (e.g., billing, cost allocation) will be considered. Also, a cost/benefit analysis of available options was conducted to assist with recommendation development exercise.
- **Task 5 - Implementation Plan:** a phased plan was developed for implementing recommendations. The plan included guidance on schedule, procurement strategies, staffing plan and implementation process.
- **Task 6 - Final Plan:** final deliverable a draft and feasibility plan was developed which incorporated outcomes of the prior tasks.
- **Task 4 - Alternatives Analysis:** required identification of technology alternatives to support the daily functions of a centralized call center
- **Task 5 - Recommendations:** required developing recommendation of final list of technologies.
- **Task 6 - Final Plan:** required developing an implementation plan for the deployment of recommended technologies.

1.4 Document Purpose and Organization

This document is organized as follows:

- Section 1 provides overview of the project background and approach.
- Section 2 provides details on data collection methodology.
- Section 3 provides details on existing operating conditions at each agency.
- Section 4 provides a summary of existing technology at each agency.
- Section 5 provides details on needs of various agencies.
- Section 6 provides details on gaps analysis.
- Section 7 provides details on the alternatives for deploying technology to address the needs.
- Section 8 provides details on final recommendations for NEORide and its partner agencies.
- Section 9 provides details on the implementation plan for deploying selected alternative.

2. Data Collection

Given travel restrictions due to the COVID-19 pandemic, all data collection work was conducted remotely. We first conducted a kickoff meeting with key stakeholders to understand the high-level objectives of the One-Call Mobility Center project.

The kickoff meeting was followed by a survey to develop an understanding of existing operations and systems environments for each agency. Thereafter, the project team conducted workshops with individual agencies for detailed discussions regarding One-Call Mobility Center concept as applicable to their business needs.

Further details on each of these data collection activities are as follows:

- **Kickoff:** A kickoff meeting was conducted on September 18, 2020 which was attended by the executive staff at each participating agency.
- **Data Survey:** The project team designed an exhaustive survey to collect information on trip details, operational resources (drivers/vehicles), call center operations, technologies and customer information resources. The survey provided insights into the existing infrastructure in each of the 5 agencies and guided the workshop sessions with those agencies.
- **Remote Workshops:** Workshops with each of the 5 agencies were conducted late October through early November 2020. These workshops were designed to collect information on all business functions related to the agency paratransit/demand response service operations as they relate to the envisioned regional One-Call Mobility Center. Purpose of the workshops was to:
 - Gather information on operational procedures and functioning of each agency;
 - Discuss and identify issues with current system and operations; and
 - Discuss and identify needs

Sections 3 and 4 provide details on the findings from the survey and the workshops.

3. Existing Conditions

Information on existing conditions was gathered through the survey and individual workshop with all the agencies and is summarized in this section as follows:

- **Operational Summary:** provides a summary of existing business operations related to call taking, reservations, scheduling, dispatching, driver/vehicle management and other daily functions.
- **Technology Inventory:** summarizes technologies in use at agencies for performing daily business functions. A detailed list of all technologies in use is provided in Appendix A.

3.1 Operational Summary

3.1.1 Western Reserve Transit Authority

The Western Reserve Transit Authority (WRTA) provides two types of paratransit trips:

- **ADA All-Access:** ADA All-Access service is for ADA eligible customers and customers who are 65 years or older. ADA All-Access service provides door-to-door service to eligible customers within the WRTA service area.
- **Countywide:** This origin to destination (curb-to-curb) service is offered in Mahoning and Trumbull Counties, allowing everyone, including seniors, workers and disabled individuals to have reliable transportation within the two counties. Countywide is a flex service that is offered with small buses and vans.

Customer Service

ADA All-Access and Countywide rides can be booked over the phone through CSRs. All-Access trips can also be booked online as well, but customers prefer to book over the phone due to the inconsistencies with the online booking system.

There are 12 phone lines that CSRs use to receive and make calls from customers during their operating hours which are 7 AM to 4:30 PM Monday through Friday. If a customer calls outside of normal operation hours, available dispatchers can make a booking or enter in a cancellation if they are available.

Customers can book a trip anywhere from 7 days up to 24 hours in advance of their requested trip time and, if the trip is two-way, can book their return trip at the same time.

Customers can also book subscription trips and currently 30% of WRTA trips are subscription based.

Phone system is provided by Telsolutions and on average 50 calls per day are received. Average call duration is 3 minutes.

Eligibility Management

For ADA All Access, customers must mail their application to the WRTA for review. For seniors, this must include proof that they are 65 years of age or older. Unless customers want to qualify for disability fare, there is no application or approval process.

If a customer is eligible for disability fare, they must fill out and send the WRTA a package including proof of their disability.

While WRTA would prefer to automate some of the current processes related to eligibility determination, they have had negative experience in the past with similar efforts. WRTA, however, currently has an RFP out for outsourcing assessments related to ADA certification. Eligible customers must apply every 3 years for recertification after initial approval. WRTA provides only full or temporary eligibility. Conditional eligibility is not granted given it is difficult to assess and enforce.

Scheduling

Scheduling is done using the TripSpark PASS system and trips are booked in real-time. Scheduling can become difficult when the call center is at capacity. This typically occurs when many people call around the same time, which is usually around 7-8am.

The cancellation window is up to 2 hours in advance of a customer's scheduled pick-up time and if there is a no show, penalties are enforced.

Although PASS can schedule for multiple passengers on a vehicle at once, group bookings are not common.

Customers are notified of upcoming trips using IVR via automated dial out function of PASS. Currently, no inbound IVR functions are in use.

Service Delivery

Vehicles are equipped with Avail Mobile Data Terminals (MDT) which facilitate information exchange between dispatchers and drivers. These MDTs are used by drivers to view their manifest and complete arrive/perform events for a particular trip. Drivers also have the ability to perform no-shows when a customer does not board a vehicle within 5 minutes of vehicle arrival.

Dispatchers can insert, delete or modify trip details in real-time which are reflected on-board MDTs. Drivers can also enter other information such as odometer and fare payment information which is reflected in PASS automatically.

Customers can pay fares on-board using cash or EZ-Fare. Currently, there are no EZ-Fare validators on vehicles.

The fleet is owned by WRTA, and no third-party providers are used. WRTA is considering use of cabs and Transportation Network Companies (TNCs) and are in the process of selecting one through an RFP.

WRTA has also started a same day response service pilot in partnership with Spare Labs.

Administration/Reporting

Reports can be obtained from TripSpark PASS. However, in most cases, back-office functions are paper-based, and a lot of work is involved.

Figure 3 Illustrates high-level workflow at WRTA.

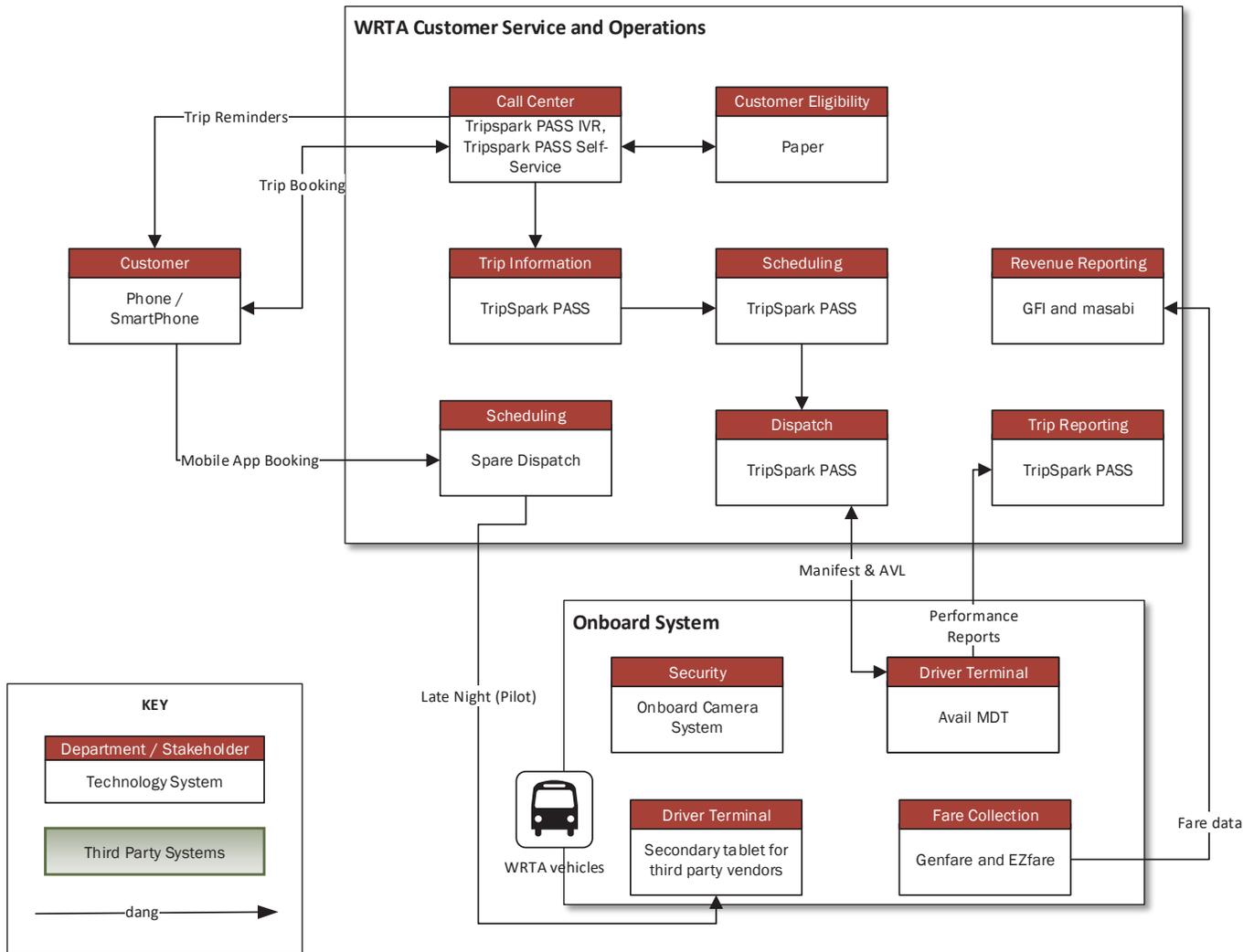


Figure 3. WRTA Workflow

3.1.2 Community Action Wayne/Medina

Community Action Wayne/Medina (CAWM) offers a Free/Out-of-county service and a Rural Mobility Service (RMS).

Customer Service

The Free/Out-of-county service can be booked over the phone with a CSR. This accounts for about 60 rides a month, including 1-2 wheelchair rides.

Over-the-phone booking can be done between 8AM and 4:30 PM and must be booked 48 hours in advance to guarantee a trip. Although, customers can call at a later hour, such as 24 hours in advance, and still receive services if a trip can be made available. While most customer book up to 7 days in advance, there is currently no time limit on how much in advance customers can call and request a ride.

For RMS, trips must be booked online or in-person and booking requires a 24-hour notice. These trips are booked and managed in CTS TripMaster software.

Given Free/Out-of-County service and RMS service are handled differently, there is currently no consolidated customer database. Except for RMS, all work is manual and requires extensive paper-based or spreadsheet-based data management.

CAWM does not have enough agents to handle the current call volume. Some customers in particular call after-hours and those calls are handled by transportation providers directly. There are 5 providers for the free/out-county service and 2 providers for the RMS service.

RMS trips can also be requested through a self-service portal but someone needs to book those trips in the system manually based on trip request information.

All calls handled via mobile phones are on the Verizon network.

Eligibility Management

Applications for the Free/Out-of-county service must be done in person. Given the pandemic, these applications are being submitted over the phone, since there is no online application.

Once an application has been filled out, a customer can email it or drop it off in person. For RMS, applications can be done online but require a photo ID which can be sent via fax, text, or email. Once the application is received, it is reviewed, and the applicant is called to go over their application; Salvation Army (Shelter Manager) often helps clients with this application process. Information regarding the application is manually logged into TripMaster and requires verification once a year.

CAWM also conducts assessments but are currently looking to contract these out. CAWM would also like to make some of this process electronic.

Scheduling

Once a customer books a trip, a CSR will manually log the trip and call the transportation providers to log the information into a spreadsheet. Customers can also call transportation providers directly after hours instead of going through CAWM. Except for RMS, booking process for other trips is fully manual.

After booking, a customer has a cancellation window of up to 1 hour before their scheduled pickup. A trip can be cancelled by calling or texting the staff or by using the Para-portal app (for RMS). If a cancellation is done through the app, this must also be manually cancelled in CAWM's backend.

The IVR system run by TripMaster reminds users of their trips both 24 hours and 1 hour in advance of their ride. To book their trip, customers can book via a web portal, though it is not typically used.

Free/Out-of-county riders can also call into the central office to book, while RMS riders must call a specific cell-phone number to book. Booking is also available through text.

Service Delivery

Free/Out-of-county trips do not have a trip tracking system other than manual logging by the providers; user trips are not entered in TripMaster or tablets.

RMS rides are tracked in TripMaster. RMS tracks availability and accounts, and a manifest is created that can be seen on the tablets in their vehicles. Sometimes staff has to override the system and manually input a trip, and RMS still uses spreadsheets and paper to distribute manifests.

CAWM would consider implementing an app to allow drivers to download the manifest electronically.

Free/Out-of-country trips are free of charge for customers and are paid for by the providers of the program. RMS rides are not free, and riders use a ride card that be loaded over the phone or in person.

CAWM does not use any third-party providers but are currently looking for more contractors in coordination with SARTA. A new contractor will be selected through an RFP process.

Administration/Reporting

In order to track customer eligibility, CAWM uses Ocean, a statewide customer tracking system. For day to day operations, a spreadsheet is used to track user data. Most reporting is done using spreadsheets and paper.

Billing Management for Free/Out-of-county rides are manually tracked and for reporting finances and resources, they are both manually reported using a spreadsheet and reported using paper.

Figure 4 Illustrates high-level workflow at CAWM.

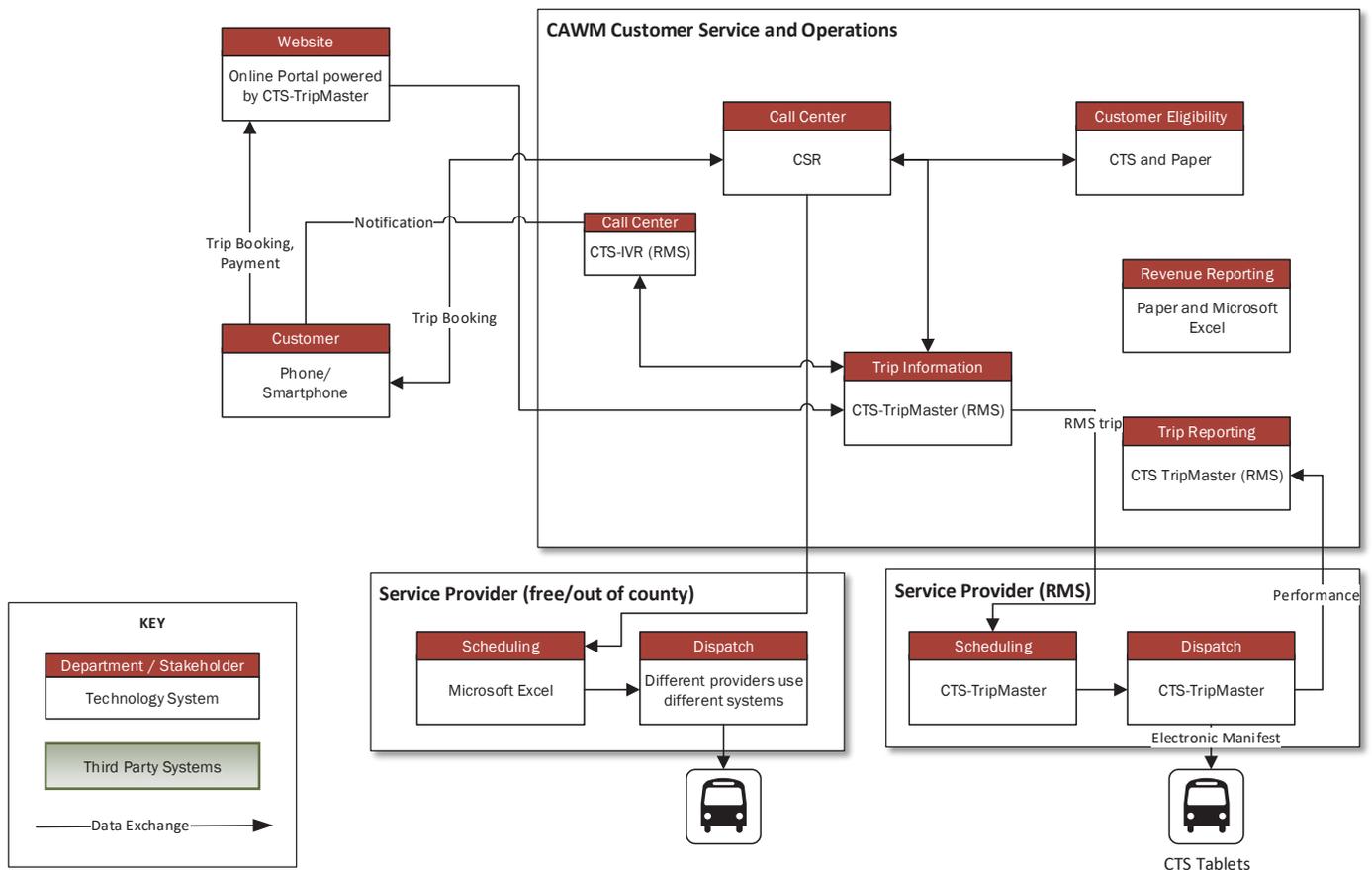


Figure 4. CAWM Workflow

3.1.3 Community Action Agency of Columbiana County

Customer Service

Riders can book with The Community Action Agency of Columbiana County (CAACC) over the phone with CSRs. Riders can also book trips online through CTS TripMaster software or book through other agencies such as senior centers. The call center is also available to address any questions and concerns.

There are 5 CSRs working at a time on calls and they are available from 3am to 4pm.

CAACC is also looking to upgrade CTS software to include a mobile app so customers can use that to get trip information or to request new trips.

Customers are asked to book 48 hours in advance as scheduling is based on availability. CSRs schedule customers in any time that is available which can be same day if there is availability or if there are cancellations. Users can schedule by pick-up or drop-off priority and are scheduled 15 minutes early to ensure they are on time. CAACC provides door-to-door service but cannot book connecting trips with other agencies. So, if a customer requests such trip then they transfer them to a mobility manager.

Customers can debit their CTS account at the time of booking, can pay with cash or check on the bus, or can call in to pay with a credit card.

CAACC also has IVR capability built into the CTS system which sends automated dial out notifications to remind customers for upcoming trips.

CAACC recently switched to a new VoIP phone system provided by Digium Switchvox D6X.

Eligibility Management

To apply for CAACC programs, customers are required to send an application along with proof of disability. CSRs handle eligibility applications and, once approved, file them both within CTS and physically on paper. The CAACC has one employee that does functional assessments, although no ADA paratransit assessment or physical assessments are performed. Completed applications are stored in physical file locations. The application can either qualify users for the CAACC paratransit service or their flex-route shuttle service.

The user eligibility database is maintained within CTS and authorized users can view information about the client's availability, qualified programs, funding source, and any other relevant information. User needs (like wheelchair) and data are also tracked within CTS software. This database includes a mix of several thousand seniors and non-seniors they serve for 300 trips a day (500 a day before the pandemic).

Scheduling

CTS can be used for automatic scheduling, but CAACC is currently manually scheduling every trip. Agency may return to automatic scheduling when the system starts to receive around 500 customer requests a day which was pre-pandemic levels.

After scheduling is done the trips are locked and the system will inform the operators if there are any violations. CTS software is still available for online booking, but CAACC advocates customers to book through the CSRs. CSR booking is preferred as there have been issues with online booking.

For trip booking over the phone, there is a single number available to connect users with a live CSR. Once a user has booked a trip, the IVR system reminds them of their trip through a call or text the evening before it is scheduled.

CAACC sometimes receives complaints from users that their trip takes too long because the bus picks up more people along the way. To minimize on-board time for riders, the system groups customers going to the same place from the same area and puts others on a different vehicle to minimize the on-board time for passengers.

Service Delivery

Drivers have tablets through CTS system which provide them access to electronic manifests. Tablets are also used for communication between drivers and dispatch. Tablets are also used for providing routing information.

Trips outside of the county are a small percentage of trips but take up a large percentage of time; this is why they are adding a route with WRTA for Cleveland trips and are trying to coordinate longer trips outside the county.

CAACC does want to start crossing state lines again to serve customers going into Pennsylvania and West Virginia and want to start coordinating trips at a regional level.

The tablet on-board vehicles allow customers who have a pass to scan their pass and debit their trip. The pass is mostly bought by those who regularly use CAACC services. Although, CAACC is currently running fare free because of the pandemic.

The CAACC fleet consists of 37 vehicles owned by the county, but currently only run 30 of them.

Administration/Reporting

For billing management, reports already existing in CTS can be utilized or reports can be created from scratch. Operators create reports and use table data to pool reports for payment.

CAACC performs a daily audit to see that everything is syncing with the driver tablets on-board vehicles. This helps with identification of issues if a driver switched to a different vehicle during the day and forgets to update the system which in turn effects reporting.

Figure 5 Illustrates high-level workflow at CAAOFCC.

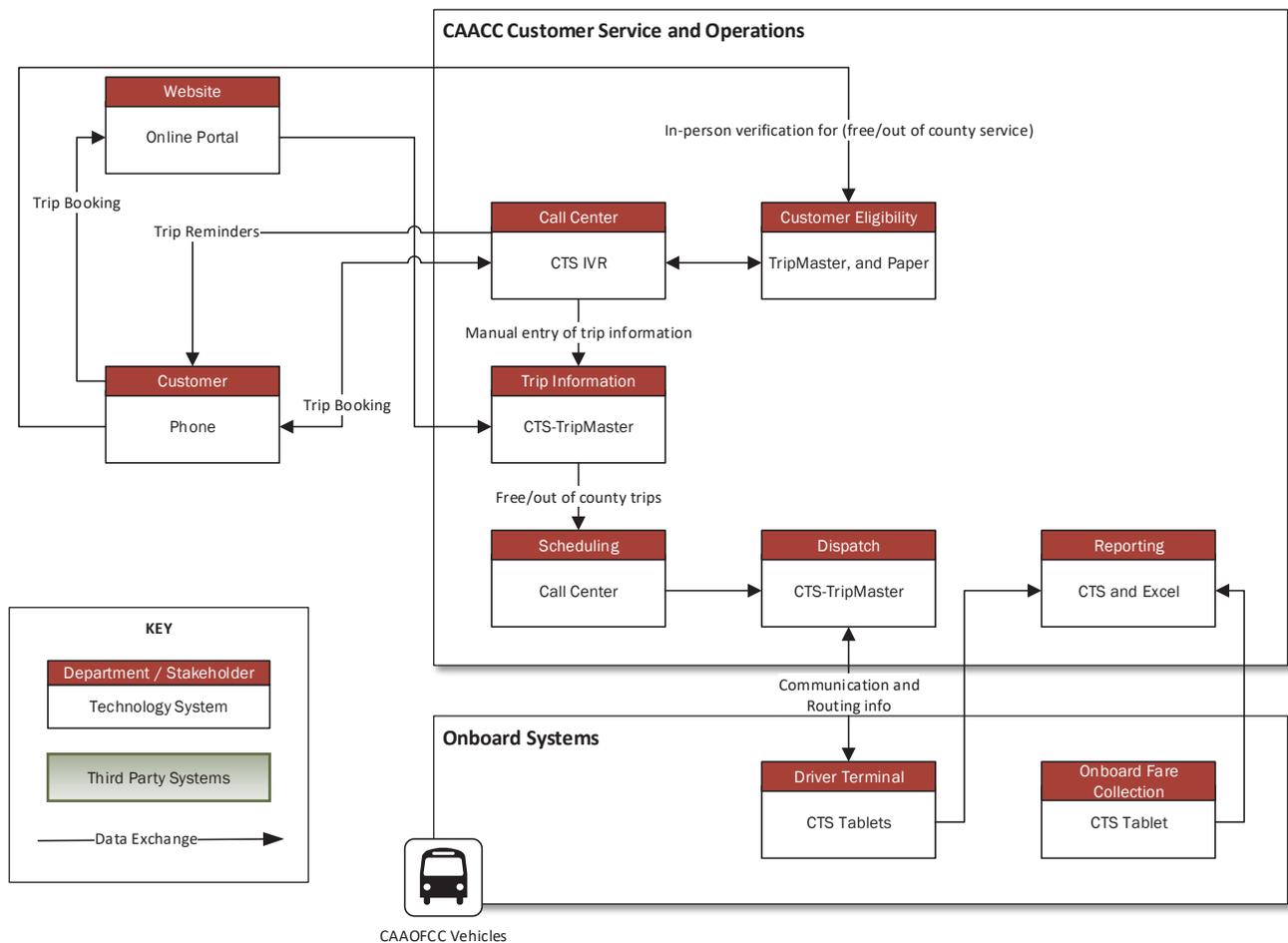


Figure 5. CAAOFCC Workflow

3.1.4 Stark Area Regional Transit Authority

The Stark Area Regional Transit Authority (SARTA) offers 6 types of services.

- The first is their fixed-route bus service that is open to everyone.
- The second is their Proline, ADA, service. This is the only paratransit service that SARTA operates and does not contract out.
- Third and fourth are their Medicaid services which include the MedLine and PASSPORT services. Although these are grouped under the same provider, they are accessed using different phone numbers.
 - The MedLine service is a certified non-medical transportation provider for I/O and Level 1 waivers through the Stark County Department of Developmental Disabilities. They provide transport to employment sites, adult day support, and vocational training.
 - The PASSPORT service is approved through the Direction Home Akron Canton
- Area Agency on Aging and Disabilities and allows SARTA to work with Adult Day Care Centers and

provide transportation for their clients to and from their programs.

- Lastly, SARTA has partnered with the Stark County Veterans' Service Commission (VSC) to provide Stark County Veterans with free rides to the Wade Park VA Hospital for medical appointments. This is a fixed route service and customers must call VSC to get a ticket and schedule a ride.

Customer Service

As described earlier, SARTA offers different lines for various services they run: customer service, priority care, Proline, travel training, veterans, contract services, and Cleveland services.

CSRs are not signed into all these lines at once, but if the lines get busy SARTA can let CSRs know what extra lines they need to sign into. Customers can get to the correct line or provider by calling the customer service line on their general number, or by using the direct line for a contractor.

SARTA has 7 CSRs agents during the week and Sunday and 6 on Saturdays. The CSRs work from 7:30 AM to 4:30 PM during weekdays and from 8:30 AM to 2:30 PM on the weekend. CSRs work at 4 different call centers and together have on average 300 incoming calls and 35 outgoing calls per day.

SARTA has a CSR that is the main contact for contract rides and will transfer users to the correct contractor. When a customer calls in to schedule a trip, CSRs ask health related questions and perform a COVID-19 screening.

Riders can schedule their trip by pick-up or drop off time and will get a 30-minute pickup window. Customers are reminded to schedule their return trip at the same time as their departure trip because there may be no availability if they try to book it the day of.

For the veteran service, customers must book 24 hours in advance for the use of mobility aids. Proline customers can book up to 3 days before and can call in on the same day, but it is not guaranteed there will be an available trip if they do so.

SARTA customers can also book subscription trips, but currently only have 12% of customers on subscriptions. Subscription services usually lock-up time and hence reduce SARTAs ability to offer non-scheduled trips.

For tracking vehicle and trip status, SARTA is moving to the latest version of Trapeze PASS-WEB which will give CSRs the ability to see the paratransit routes and vehicle status like they can see the fixed route SARTA offers. Currently, CSRs do not have this functionality and can only see the fixed route service through the pinpoint system. Customer data is also tracked in Trapeze and the different services can access this data. Customers also have their own account in this system that they can access.

IVR calls go out the day before a customer's booked trip between 12-6 PM and again on the day of the trip 10-15 minutes before SARTA will arrive for pickup. The IVR system is managed by PASS IVR and allows customers to confirm or cancel at the time of the call.

Eligibility Management

For Proline services, customers must apply and receive acceptance to use the service. To apply, a questionnaire must be filled out by the rider and doctor that is then sent through by fax or mailed to SARTA. The application is scanned into SARTA's database and CSRs may call applicants if they have any follow up questions for them. Before the pandemic this application had to be an original copy, but they have managed to move to fax due to the circumstances. Once a customer is confirmed by a CSR, they can call in to schedule a trip. Eligibility lasts for a year and if anything on the customers end changes

within this time SARTA will update their database and adjust any needs accordingly.

Before the pandemic, SARTA assessed mobility devices by having customers come in to test their device and ensure that it could be accommodated on buses. Now, this assessment is not performed, and mobility device needs are only noted in customer applications which can make the assessment very difficult.

Agencies that SARTA contracts run their own eligibility determination process as SARTA only handles Proline applications.

To manage eligible riders, SARTA has a database that application forms are scanned into and filed for easy access.

Scheduling

For all trips except Proline, contractors schedule rides, which are all subscription-based. The contractor sends SARTA a pickup form that allows them to book the customer in and identify their needs. SARTA then calls the customer directly to give them information about their subscription service.

Proline customers can book over the phone and online through the GoLine booking system; it is easier to book a specific time over the phone so many Proline customers book this way. Although, since SARTA is requiring a COVID-19 health screening at time of booking, all trips must currently be booked over the phone with CSRs.

IVR system can also be used to book trips, but this is not being used because of the health screening.

SARTA tracks different types of cancellation and there are approximately 24 at-door cancellations and 65 late cancellations, within one hour of a customer's pickup window, per month. Overall, there are also about 1,200 early cancellations a month, but these are less disruptive since SARTA usually has enough time to schedule other customers into the cancelled time.

Service Delivery

Electronic manifest information is exchanged between vehicle's MDTs and dispatch using Trapeze PASS, PASS-MON, and Avail CAD/AVL.

Functionality for Avail and PASS interface are similar to as described in Section 3.1.1.4

Drivers will wait at most 5 minutes at the pickup location for them. If more time passes, the driver will call dispatch to call the passenger or enter a no-show into their system.

Customers pay on board or at SARTA's transit center to buy passes to use at the farebox on the bus. Also, SARTA is currently expanding to EZ-fare payments for paratransit.

For service delivery, SARTA uses only SARTA owned vehicles and do not coordinate with other agencies for trips but are considering doing so in the future. SARTA is also considering TNCs for increasing capacity in meeting potential higher demand for trips in the future.

Administration/Reporting

Standard reporting is available from PASS and Shortel phone system.

SARTA will be improving fare collection through ongoing AFC upgrade project and EZFare deployment for better data collection and reporting while enhancing customer experience.

Figure 6 Illustrates high-level workflow at SARTA.

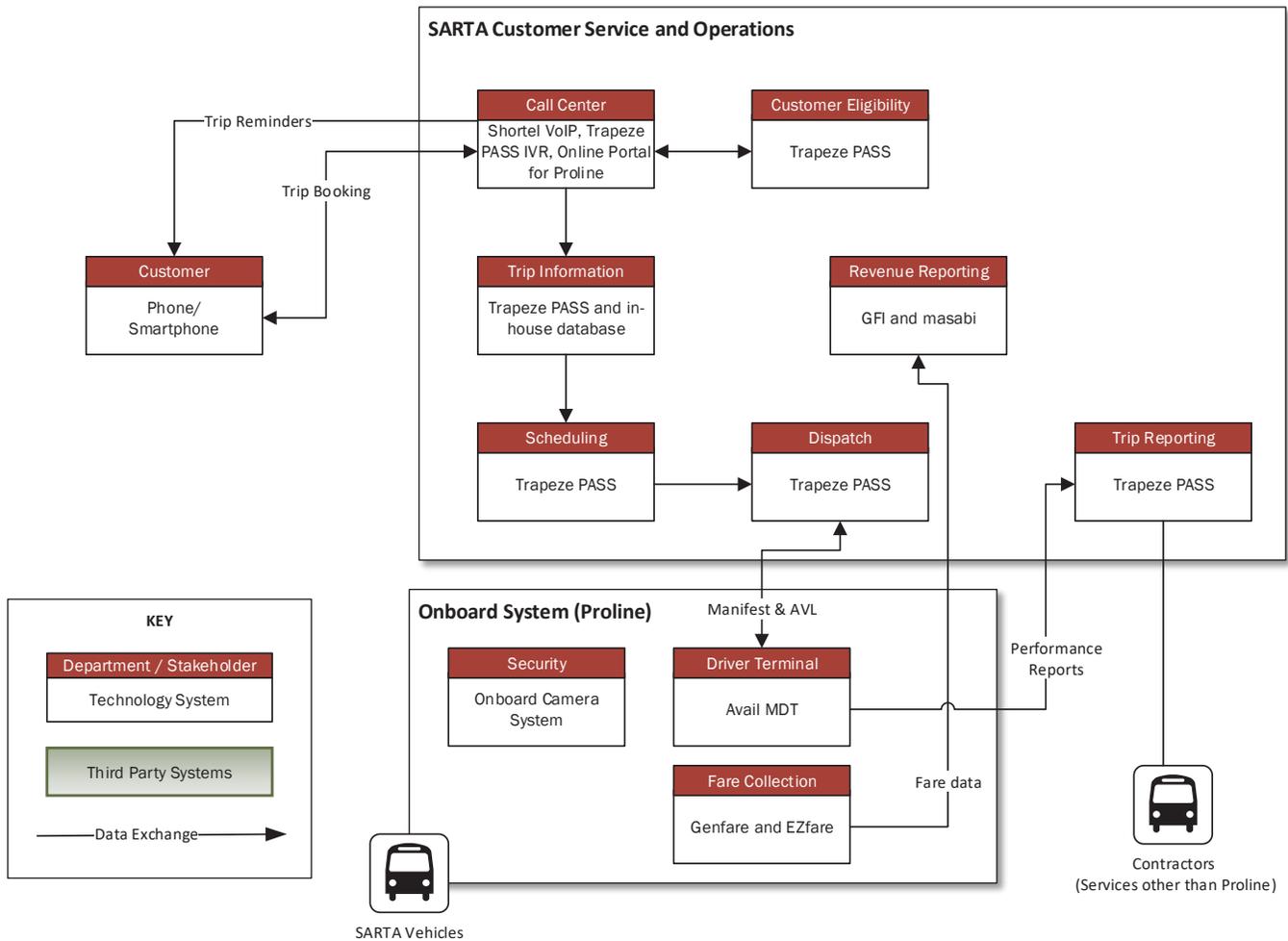


Figure 6. SARTA Workflow

3.1.5 Trumbull County Transit

Customer Service

There are three phone numbers that Trumbull County Transit (TCT) customers can call to book trips or express any needs. Customers are connected to different vendors for trips depending on their address.

New users have to fill out an application to prove that they are the residents of Trumbull County and are seniors eligible for service. Upon approval of their application, Trumbull County sends the applicant details of what service providers are available to them.

If a customer calls the wrong service provider, they are connected with the correct one. Once a trip has been booked, the separate vendor calls the user the day before their trip to remind them but will not do so if the trip is on subscription. For Medicaid trips, riders can call a different number which connects them with a call center where they can work with a CSR to book a trip. There is no limit to when customers can call to book their trip in advance however, it is required that they call at least 48 hours before the trip. Also, customers have the option to book subscription trips with service provider in their region.

Furthermore, Trumbull County has started working with the WRTA and are directing some users to them. Apart from this new service, Trumbull takes in Medicaid trips, offers a paratransit service, and offers a demand-response service.

Eligibility Management

Trumbull County uses the standard ADA application process for eligibility determination. They check if the customer's age is over 60; if they are on Medicare or Medicaid; if they have a supplemental insurance policy that can help pay for transportation (about 5% of current customers do); and see if they are qualified for the Senior Levy county program for transportation which is a tax levied on real estate that covers services for seniors. Trumbull County also checks whether a customer's trips should be characterized as medical or nonmedical.

Trumbull County allows customers to have a mobility aid, but they do not assess customers to determine if they are eligible by requiring a medical sign-off.

Medicaid sometimes has county officials call doctor's offices to see if an appointment has occurred to ensure that a customer did not use their 'medical' trip for another purpose.

Scheduling

Each service provider uses their own scheduling software, like EcoLane and DispatchBot. The County does not have a no-show policy, however in case of repeated no-shows (3 or more), the county stops servicing specific users.

One of the major issues with current operational procedures is that customers call when they are done with their appointment to request a pick-up which means that service provider must adjust their trips on the fly. Customers must do this because medical appointment usually do not work out on schedule and in response the County usually sends the closest vehicle in the area to pick them up.

Another challenge is that for very long trips operators usually stay with the patient which takes up a lot of an operator's time for a single customer. Every day Trumbull County has 20-30% of their schedule cancelled by patients. About 10% of these are no-shows which are the worst for Trumbull County since they cannot fill this cancelled time slot with another customer.

Service Delivery

When County batches trips, they try to make the runs mandatory because the county serves rural customers which might block the driver for a single passenger for a long duration. Drivers and dispatchers use a tracking system and cellphones to communicate the manifest; they are currently satisfied with this system.

County uses 4 service providers who own the vehicles. There are no standards for onboard vehicle systems. Only one service provider has wheelchair accessible vehicles. Given the lack of standard systems there are no performance measurement metrics. The county relies on passenger wait times as a measure of performance.

Within the county, there is one service provider that mostly serves the north end while the two other vendors provide general service throughout the county. Medicaid trips mostly serve medical trips within the county.

County also inform the customer what their fare will be at the time of booking because multiple agencies

have different fare structures; customers can have a co-pay, medical vs. non-medical fare structure, and an additional fare structure if the customer needs to travel more than 30 miles outside of the county. Customers can pay by cash, credit or debit cards on the vehicle. Drivers have knowledge through the manifest of how much each user must pay and will take the money collected throughout the day to the office where this can be reconciled.

Administration

The software Trumbull uses allows them to report on how long customers are waiting but does not allow them to see the volume of calls.

Customer data is stored in Ecolane or Microsoft Excel. This includes data on funding source, customer needs and other user information. This does not include WRTA fixed route and door-to-door service.

County has the option to perform cost allocation using Ecolane, but because all funders have different ways of reporting and billing, they do not normal use Ecolane and instead send specific vendors the information they want.

Figure 7 Illustrates high-level workflow at Trumbull County Transit.

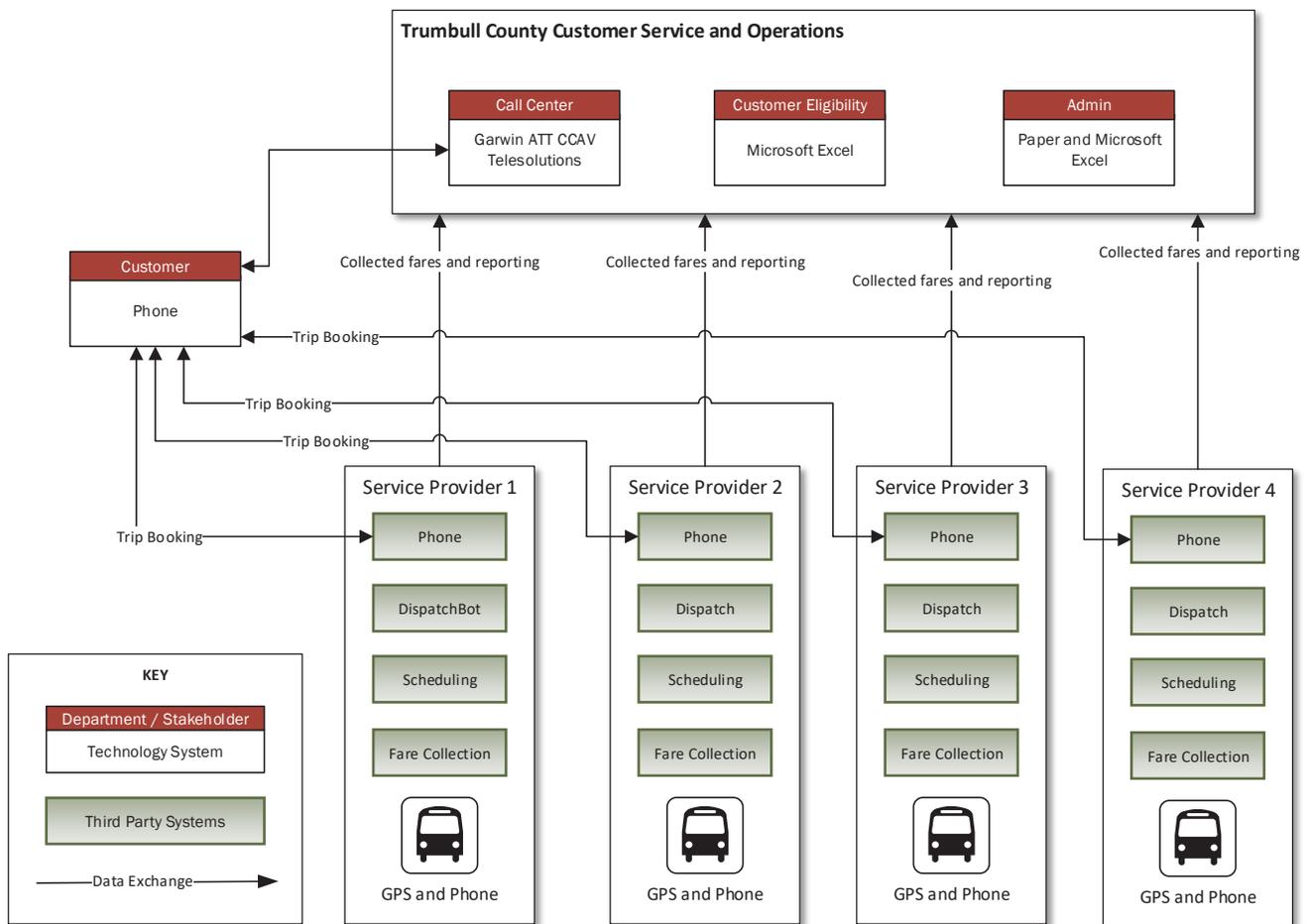


Figure 7. Trumbull County Transit Workflow

4. Technology Inventory

As a part of the survey and workshops, information on existing technology and infrastructure at the agencies was also gathered. While there might be an overlap of technology being used for fixed route and paratransit services, the technology inventory in this effort is focused on paratransit services. Detailed information on technology at each agency is available in the inventory in Appendix A.

A summary of current technology by each agency is provided in **Table 1**.

Table 1. Summary of Technologies

AGENCY	LEVEL OF TECHNOLOGY UTILIZATION	AVAILABLE TOOLS/SYSTEMS
WRTA	High	Phone System ¹ ; TripSpark (PASS, IVR, Web); Avail MDTs
CAWM	Medium	Verizon Cell Phones; CTS TripMaster and tablets on vehicles (only RMS); Web, Mobile and IVR (RMS only)
CAACC	Medium	Digium Phone System; CTS TripMaster and tablets on vehicles; Web and IVR applications
SARTA	High	Shortel Phone System; Trapeze PASS; Avail MDT, PASSWEB and PASS-IVR; Exploring COMM
TCT	Medium	Phone System ² ; Ecolane and DispatchBot by 2 providers; rest use cellphone and radios, GPS trackers on vehicles

1 To be clarified

2 To be clarified

5. Needs Assessment

Based on the data collected through survey and through discussions during remote workshops, the project team has categorized needs as follows:

- **Customer Service / Call Center:** these needs are focused on functions as they relate to communicating with customers.
- **Data Management:** these needs refer to items that relate to managing customer profiles, eligibility and other data necessary for scheduling trips.
- **Scheduling:** these needs are related to managing the booking process.
- **Service Delivery:** these needs relate to managing driver and vehicle resources by service providers for completion of trips.

All these needs are further divided into the following subcategories:

- **Technology:** refer to items that may be addressed through technology improvements.
- **Resources:** refers to items that are related to resource constraints.
- **Policies and Procedures:** refer to items that require policy and business process changes.
- **Institutional:** refer to items that will require institutional changes.
- **Financial:** refer to items that may require enhanced funding/financial resources.

5.1 Customer Service/ Call Center

Most of the agencies require better systems to improve efficiencies and accommodate larger call volumes as identified in **Table 2**.

Table 2. Customer Service Needs

AGENCY	NEEDS	CATEGORY
WRTA	Electronic management and approval of applications	Technology
	Centralized database and resources management for greater efficiency	Technology;
	Institutional	Technology; Policies and Procedures

AGENCY	NEEDS	CATEGORY
CAWM	Robust eligibility application management system with automatic approval/denial and tracking	Technology; Policies and Procedures; Financial
	New system for receiving calls and reducing load on staff members specially during non-operational hours including weekends	Technology; Resources; Financial
	Tools to help increase efficiencies in system to meet customer needs and handle larger call volumes	Technology; Resources; Financial
	Provide trip reminders to users through IVR or SMS and ability to cancel trips	Technology; Policies and Procedures
	Provide users ability to manage their account and be able to view number of trips left in their account	Technology
	Tools to reduce the need for in-person calls during after hours	Technology
CAACC	Vehicle location data and more avenues for customers to access location data	Technology
	Ability to book trips that connect users to a transit center (instead of having to transfer to mobility manager)	Technology; Policies and Procedures; Institutional
SARTA	Better tools to disseminate for information to CSRs	Technology
	Better assessment tool to validate users' needs and requirements (like wheelchair)	Technology; Policies and Procedures
	Allow CSR agents to see location of Proline vehicles	Technology; Policies and Procedures
TCT	Common call number and centralized information database	Technology; Policies and Procedures
	Better assessment tool to validate users' needs and requirements (like wheelchair)	Technology; Policies and Procedures
	Ability to accept payments at the call center	Technology; Policies and Procedures

5.2 Data Management

Due to the nature of service, there is a need for agencies to store customer profiles. Along with having to store data it is also critical that data is readily available for various business units and sometimes external entities like funding sources and contractors to have access to the same. There is a need for agencies to streamline data management and exchange between different departments. **Table 3** lists all needs identified by agencies regarding data management activities.

Table 3. Data Management Needs

AGENCY	DATA MANAGEMENT	CATEGORY
WRTA	Scheduling system that integrates trip providers (including third party providers) and tracks funding and billing sources for each trip	Technology; Policies and Procedures; Institutional; Financial
	Improved efficiencies to provide more service using existing resources	Technology;
	Expanded automatic booking (including alteration and cancellation) system for customers	Technology; Policies and Procedures
CAWM	Consolidated rider database for all providers	Policies and Procedures
	Tracking system to see customer profile and trip usage information	Technology; Policies and Procedures; Institutional
	Efficient reporting processes, possibly automated	Technology; Policies and Procedures; Institutional
CAACC	Improved system to keep track of maintenance including preventative maintenance	Technology; Policies and Procedures
	Better system to manage vehicles and drivers	Technology; Policies and Procedures
	Integration of payment systems with onboard and backend systems	Technology; Policies and Procedures
SARTA	Improved information exchange between contractors and SARTA	Technology; Policies and Procedures
TCT	Tool to track and store user information - need better systems for identifying needs for clients	Technology; Policies and Procedures
	Better tool to measure performance (call volume, passenger wait times, etc)	Technology; Policies and Procedures; Resources
	Assessment tool to determine whether or not clients can ride with specific providers	Technology; Policies and Procedures
	Integration between onboard and backend systems to automate reporting and generate better reports	Technology; Policies and Procedures; Resources; Institutional

5.3 Scheduling

Given the difference in operational procedures and nature of service, each agency has unique needs from their scheduling system to improve operations and increasing level of service. **Table 4** lists all needs related to scheduling as reported by agencies.

Table 4. Scheduling Needs

AGENCY	SCHEDULING	CATEGORY
WRTA	A brokerage system that can determine eligible funding sources and appropriate provider based on customer profile	Technology; Policies and Procedures; Institutional
	Improved assessment tool (possibly moved online)	Technology; Policies and Procedures; Resources
	Reports and data should flow to finance should be automated	Technology; Resources
CAWM	Expanded automatic booking and cancellation functionality for users	Technology
	Account based fare system for paratransit services	Technology; Policies and Procedures
	Ability to book trips on neighboring agency, to transfers and passenger inconvenience	Technology; Policies and Procedures; Institutional
	Scheduling systems that combines providers so that more trips can be offered	Technology; Policies and Procedures; Institutional
	Automatic billing approval	Technology; Policies and Procedures; Institutional
	Improving system efficiency to provide more service to riders at preferred time slots	Technology; Policies and Procedures; Institutional; Resources
	System providing automatic scheduling and forwarding to transit providers, and compatibility with both tablet and paper systems	Technology; Policies and Procedures; Institutional
CAACC	Allow users to schedule and pay for trips online, and to view ETA of buses	Technology
	Automatic functionalities for booking, cancellations, etc. so that users do not have to talk to a CSR	Technology
	Coordination at a regional level for finding efficiencies for state level trips	Technology; Policies and Procedures; Institutional
SARTA	Easy to use cancellation system	Technology
	Additional options and functionality to support booking, payments and trip management features	Technology; Policies and Procedures; Institutional
	Customers need more subscription services	Technology; Policies and Procedures; Resources; Financial
	Allow users to adjust exact pick-up times	Technology; Policies and Procedures; Resources
	Technology to help coordinate service with other agencies	Technology; Policies and Procedures; Institutional
TCT	Consolidate rides over agencies so their trips are more effective and better coordinated (combined single platform for scheduling)	Technology; Policies and Procedures; Institutional
	Reduce high cancellation and no-shows	Technology; Policies and Procedures
	Improved system to manage return trips	Technology; Policies and Procedures; Institutional
	System to support exchange of information between different service providers with different scheduling systems for better reporting and enabling centralized booking	Technology; Policies and Procedures; Institutional

5.4 Service Delivery

Different agencies have different operational procedures and infrastructure, one of the major challenges for agencies is to communicate and accommodate constant changes to the schedule. Also, some agencies own entire fleet while some of the agencies use third party service providers. Therefore, there is no standard onboard system across all the agencies. Table 5 provides a list of needs related to delivery of trips.

Table 5. Service Delivery Needs

AGENCY	DISPATCH	CATEGORY
WRTA	Integrated platform for different providers to better distribute rides	Technology; Policies and Procedures; Institutional
	Develop standards for consistent onboard systems for third party service providers in the future	Technology; Policies and Procedures; Institutional
	Potentially use third party providers to meet demands	Technology; Policies and Procedures; Institutional; Financial
CAWM	More coordination between providers to reduce delays	Policies and Procedures; Institutional
	Technology to support manifest sharing in case there are no tablets installed on the vehicle	Technology; Policies and Procedures; Institutional
	Provide additional avenues to pay for riders, including onboard payment accepting technology	Technology; Policies and Procedures
	Standard onboard equipment for reliable communication and exchange of information with all service providers	Technology; Policies and Procedures; Institutional
	System to help track and communicate with vehicles and operators	Technology; Policies and Procedures; Institutional
CAACC	Ability to accept onboard payments using electronic media and validation technology	Technology
	Better data exchange with third party service providers	Technology; Policies and Procedures; Institutional
SARTA	Ability to integrate with TNCs in the future to meet demand	Technology; Policies and Procedures; Institutional; Financial
TCT	System does not provide any information on performance	Technology; Policies and Procedures; Institutional
	Improved vehicle tracking system	Technology; Policies and Procedures; Institutional
	Electronic trip validation	Technology; Policies and Procedures; Institutional
	Better communication with riders to reduce idle time	Technology; Policies and Procedures

6. Gaps Analysis

Based on the data collected through survey and through discussions during remote workshops, the project team categorized needs as follows:

- **Customer Service / Call Center:** these needs are focused on functions as they relate to communicating with customers.
- **Data Management:** these needs refer to items that relate to managing customer profiles, eligibility and other data necessary for scheduling trips.
- **Scheduling:** these needs are related to managing the booking process.
- **Service Delivery:** these needs relate to managing driver and vehicle resources by service providers for completion of trips.

Needs Assessment and Technology Inventory, provided an overview of the existing conditions and required changes/improvements in the system to satisfy the needs of various stakeholders from the system.

Following the Needs Assessment, the team compared the existing systems and procedures with industry best practices and identified gaps. These gaps are essentially the missing technology, procedures, practices or features which inhibit the system from performing the desired functions efficiently.

The project team identified gaps in the system and then developed a list of alternative solutions to bridge these gaps. Identified solutions are required to achieve higher efficiencies and improve customer experience. The gaps have been categorized into the same 4 categories as the needs for consistency and traceability. **Table 6** lists the gaps and potential solutions to fill those gaps and address the needs.

Table 6. Gaps Analysis

CATEGORY	NEED	GAPS	SOLUTIONS TO MEET THE GAPS	AGENCIES
Customer Service	Improve customer application management for CSRs	<ul style="list-style-type: none"> Paper based processes for customer application process and storing information Lack of common platform for CSRs to enter and store customer application data electronically Communication infrastructure between funding sources, third party service providers and transit agency database 	<ul style="list-style-type: none"> Electronic customer application management system Infrastructure to support communication with funding sources 	WRTA, CAWM, SARTA and TCT
Customer Service	Electronic tools to help reduce workload on CSRs handling in-person calls	<ul style="list-style-type: none"> Phone systems with limited capabilities Lack of centralized database for easily accessing information for CSRs and other third-party systems 	<ul style="list-style-type: none"> IP-based phone systems with advanced call management features Interface between scheduling system and phone system to enable trip reminders 	TCT, CAACC, CAWM and WRTA
Customer Service	Improved customer experience with tools for trip booking and account management	<ul style="list-style-type: none"> Lack of web-based or mobile tools for customers Limited real-time information on service 	<ul style="list-style-type: none"> Web portal and mobile app to enable trip booking and account management Infrastructure to support real-time communication between scheduling system and customer facing interfaces 	WRTA, CAWM, CAACC, TCT
Data Management	Centralized database for customer profile and funding information	<ul style="list-style-type: none"> Customer information locally maintained by agencies Different vendors use different systems which do not communicate with each other Majority communication is done manually over the phone 	<ul style="list-style-type: none"> Central database with customer profiles and funding information Communication links to share information between different systems (transit agency, funding sources, third-party service providers) 	WRTA, TCT
Data Management	Database with customer trip information for third-party service providers	<ul style="list-style-type: none"> Multiple service providers with different systems Manual data management within the agency 	<ul style="list-style-type: none"> Communication links to share trip information between different vendor scheduling systems and trip booking systems 	
Scheduling	Scheduling system that integrates trip providers (regional transit agencies and third-party providers) and tracks funding and billing sources for each trip	<ul style="list-style-type: none"> Multiple scheduling systems Lack of electronic transfer of information between agency and third-party systems 	<ul style="list-style-type: none"> Common scheduling system Communication links between central scheduling system and different vendor dispatch systems 	All regional agencies
Scheduling	Improve efficiencies to provide service using existing resources	<ul style="list-style-type: none"> Lack of documented processes to identify synergies Lack of consistent electronic systems and formats to support information exchange 	<ul style="list-style-type: none"> Common trip booking and management platform Communication links between different systems to share scheduled trip information and resources Business rules to schedule and allocate trips based on funding sources and trip origin or destination to reduce idle time Establish communication channels between dispatchers of various agencies to accommodate on demand trips 	All agencies
Scheduling	Automated functionalities like booking and cancellations over web portal or mobile app to reduce work load on CSRs	<ul style="list-style-type: none"> Manual system management using paper and phone calls Lack of systems to support web portals and mobile apps 	<ul style="list-style-type: none"> Scheduling system with advanced functionalities like sending trip reminders Scheduling system linked to the phone system to accept trip cancellations and modifications through CSR, mobile app or web portal 	WRTA, CAWM, TCT, CAACC
Scheduling	Improved service coordination among agencies	<ul style="list-style-type: none"> Multiple dispatch systems Lack of use of electronic tools to manage service for some operators 	<ul style="list-style-type: none"> Agreements between agencies to set up business rules for trip allocation Communication across dispatch of various agencies and service providers 	All agencies
Scheduling	Platform to broker rides and allocate them to service providers (including TNCs) based on funding source, customer needs and trip O/D	<ul style="list-style-type: none"> Scheduling within individual systems at agencies Lack of communication between different systems on vehicle availability No integration with taxis or TNCs to provide service in case of high demand 	<ul style="list-style-type: none"> Standard onboard payment experience Additional modes of electronic payment including payments through web portal and mobile app Options for customers to pay at the time of booking 	WRTA, CAWM, CAACC

Table 6. Gaps Analysis

CATEGORY	NEED	GAPS	SOLUTIONS TO MEET THE GAPS	AGENCIES
Service Delivery	Improve trip payment experience	<ul style="list-style-type: none"> Lack of uniform payment experience across the region Lack of onboard infrastructure to accept electronic payments Additional electronic payment options for faster payment processing Infrastructure to include relevant trip information based on funding source 	<ul style="list-style-type: none"> Standard onboard payment experience Additional modes of electronic payment including payments through web portal and mobile app Options for customers to pay at the time of booking 	All agencies
Service Delivery	Improved reporting develop KPIs for performance measurement	<ul style="list-style-type: none"> Lack of standard infrastructure on-vehicle Lack of standard formats for reporting trip information 	<ul style="list-style-type: none"> Standard reporting formats and metrics 	All agencies

7. Alternatives Analysis

Based on the gaps and proposed solutions to meet the gaps, the project team created alternatives at different levels for developing a One-Call Mobility Center. Five levels of alternative were presented to stakeholders, as shown in Figure 1. These levels are not mutually exclusive, and rather present an incremental alternative approach to developing the system and increasing its functionality.

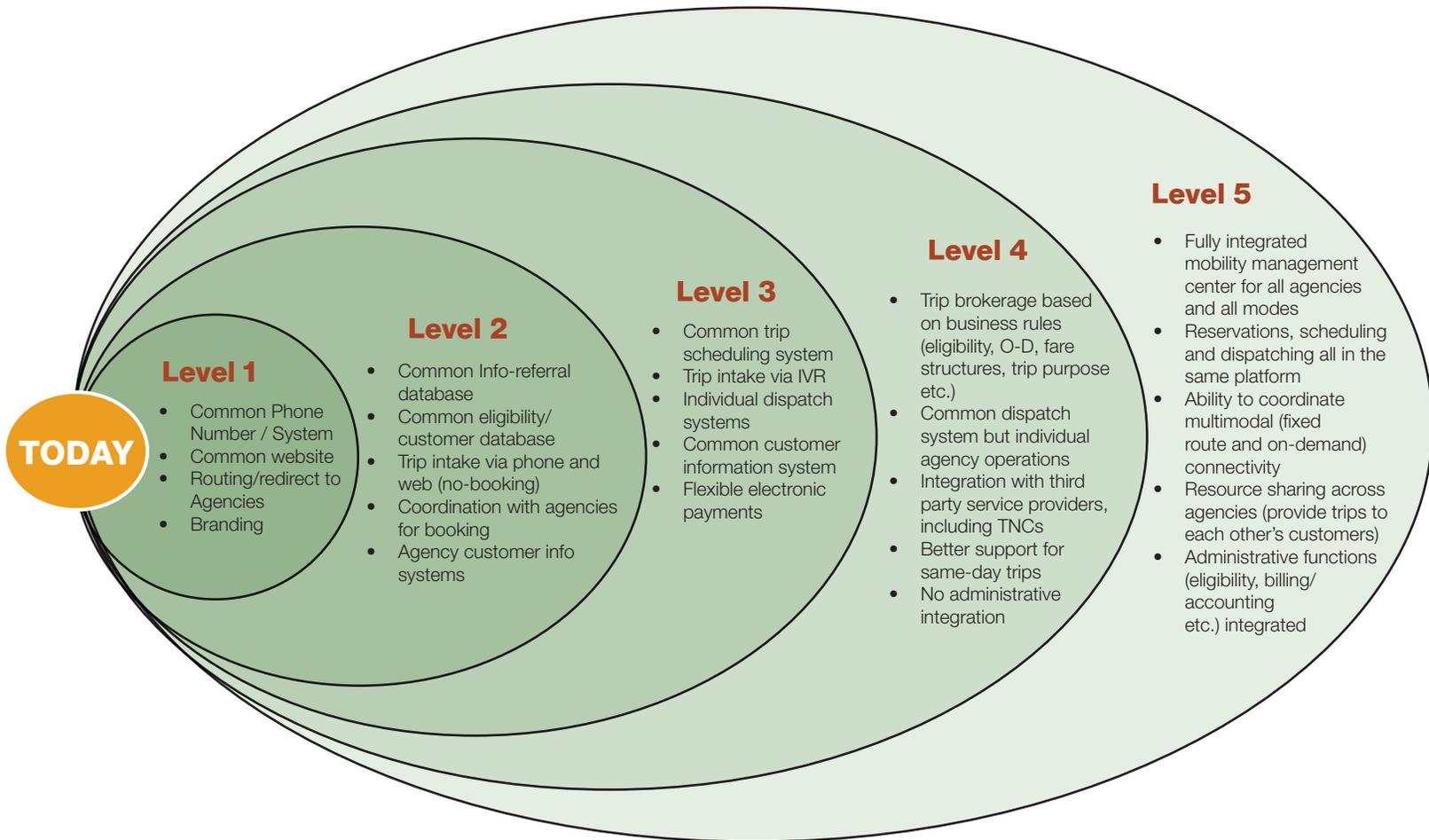


Figure 8. Alternatives for One-Call Mobility Center

Details on the presented levels presented have been included in Appendix B.

8. Final Recommendation

Stakeholders were presented with different versions and details, with each discussed through a presentation. The stakeholders selected Level 5 as the preferred option. The following sections describe various components of the Level 5 alternative, including an implementation plan.

The Level 5 alternative includes a Mobility Management Center, which would include technology to automate most current manual processes. This would help achieve the most efficient system, letting agencies focus on service delivery and serving their customers better. Figure 2 illustrates the envisioned system.

This system would be fully automated to provide a consistent user experience for customers and transit agencies across the region. Customers will have a common call center number, mobile app and web portal to book trips and manage their accounts across the region. On the agency side, one single platform would be used for managing customer accounts, scheduling trips, and dispatch. This would also include integrations with TNCs and other service providers, to help agencies meet the demand and provide same day on-demand services.

A Level 5 system will include the following features:

- Provide a one-stop solution for all customer transportation needs
- Fully integrated mobility management center for all agencies and all modes
- Reservations, scheduling and dispatch handled under a single entity
- Ability to coordinate multimodal connectivity
- Uniform customer experience with all agencies and services
- Standard reporting and performance measurement metrics across agencies
- Increased service capacity through including TNC and third-party integrations

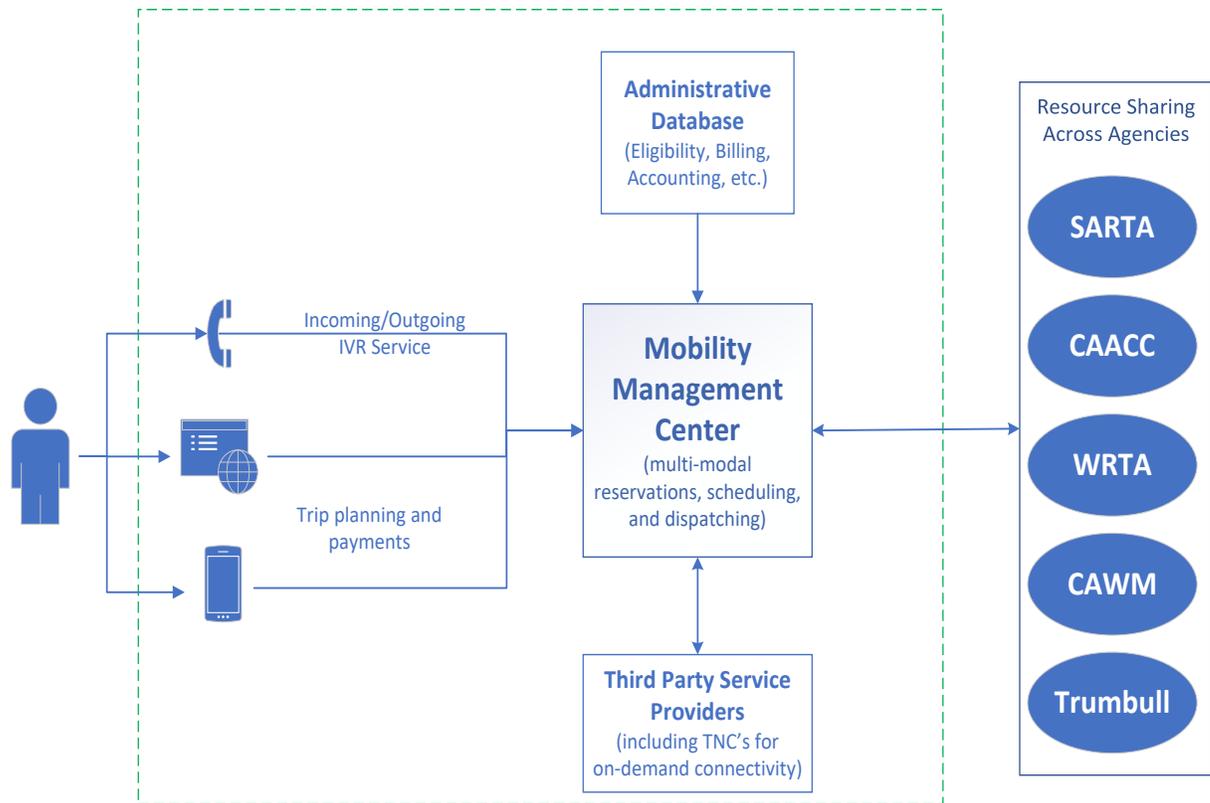


Figure 9. Overview of Level 5

The following sub-sections provide details on system components for the Level 5 alternative.

8.1 Technical Components

The preferred alternative envisions a single system established through the backend, which makes the user experience convenient and consistent. This system would cover the functionality of receiving calls, account management, scheduling, and dispatch. System components have been divided into the following sections based on business processes:

- Customer Service: Includes customer facing and call center components of the system
- Data Management: Addresses data warehousing and communication requirements
- Scheduling: Includes the scheduling system and links with other relevant systems
- Service Delivery: Includes central dispatch and onboard vehicle components

8.1.1 Customer Service

The Level 5 system would offer customers a consistent user experience for services across the region, with the following solutions included as a part of Level 5:

- IP-based phone system with advanced call management features

- Web portal to enable trip booking and account management
- Mobile app to enable trip booking and account management
- Infrastructure to support customers with trip information including real-time vehicle tracking
- Web portal to enable institutions and non-profits to manage their member accounts

8.1.2 Data Management

Given the centralized and integrated approach to Level 5, most data will be stored in a central server. Transit agencies and staff will be able to access this data in real-time over different locations. The following infrastructure will be included as part of Level 5:

- Central database with customer profiles, and funding information
- Communication links to share information between different systems (transit agency, funding sources, third-party service providers)
- Communication links to share information between scheduling system and customer facing components

8.1.3 Scheduling

Following functionality and features will be included as a part of the scheduling system:

- Common scheduling system for all participating transit agencies in the region. The scheduling system will also include advanced features like sending trip reminders, and accepting cancellations and modifications, through the CSR, mobile app and web portal.
- Scheduling system shall have the ability to automatically schedule and allocate trips based on funding sources, trip origin, or destination, based on agreements and business rules set between agencies.
- Common trip booking and management platform
- Scheduling system will use standard real-time information from operators
- Integration with TNCs and third-party service providers for allocating trips in case of high demand.

8.1.4 Service Delivery

Following functionality and features will be included as a part of service delivery:

- Standard onboard payment experience including additional modes of electronic payment through web portal and mobile app
- Standard real-time data requirements from vehicles
- Standard reporting formats and metrics

8.2 Cost

Level 5 is designed as a centralized system that can be offered by a single vendor, or by procuring

separate systems and developing integrations. To determine system costs, the project team has estimated costs for different functionalities since vendors usually charge by the size of the system and functionality being offered. In order to create estimates, the project team assumed that the system would be designed in a centralized architecture, having a single installation with licenses for 5 agencies. Also, we have assumed multiple users spread across different agencies and around 170 vehicles, which includes vehicles among all the agencies and third-party services providers.

A common scheduling system is the major cost driver of the Level 5 system. It is possible to upgrade the scheduling system with added functionality, to support mobile app integration for trip planning and booking, multimodal trip support, TNC integrations and customer profile database. The basic scheduling system is estimated to cost around \$375,000 for all the agencies. Costs for additional features are included in Appendix A. The second major cost driver for the system would be a common dispatch system, which is estimated to cost approximately \$170,000. The dispatch system would be a common platform for all agencies.

Overall capital costs are estimated at around \$1.75 Million for initial deployment of a Level 5 system. Apart from the capital costs, an estimated annual operating fee, which mostly includes licensing fee and ancillary services like mobile data connections, is estimated to be around \$335,000 for the complete system. Details and breakdown of these costs are included in Appendix C.

8.3 Benefits

Level 5 was chosen by stakeholders as the preferred system as it includes all eventually desired functionality by agencies. For customers, it would provide the following benefits:

- Plan and book a trip using multiple avenues like web portal, mobile app or call customer service
- Pay for trips
- Manage their accounts
- Consistent user experience across the region

On the agency side, the Level 5 system would greatly improve efficiencies and offer the following benefits:

- Standardize business processes across the region
- Improve data quality for better reporting and planning purposes
- Improve service levels by enabling resource sharing during demand surges
- Possibly reduce costs through economies of scale in system procurement and management

8.4 Business Impacts

Currently, each agency is different in terms of the systems they own, service delivery, payments, scheduling, and customer facing interfaces. The project goal is to standardize some processes and achieve efficiencies by using common systems. Since Level 5 is the most advanced method, there would be significant changes in operations for most agencies. Some key areas of impact would be:

- **Common Customer Service Center:** Currently, each transit agency has its own customer service

center. With Level 5, this would change as all CSRs will be using a common system. This would include creating standard procedures for dealing with customers and procedures for respective services. CSRs will not only be booking trips, but responsible for assisting customers with account management and sharing trip information with customers.

- **Customer Profiles and Eligibility:** A centralized database with customer profiles will be deployed. This would involve a common customer application portal used by all partner agencies to store information regarding customer profiles. A centralized database would make it easier for agencies to provide service and streamline payments by sharing information on funding sources associated with a customer. This would also help in scheduling, such as when trip allocation is dependent on funding source.
- **Common Scheduling and Dispatch System:** This would reduce the work-load on some agency staff currently dealing with systems supported by different service providers. This will also reduce the need to communicate over phone or email, making operations more efficient. Common scheduling and dispatch systems can also help agencies increase service levels, through sharing resources between agencies and assigning trips to vehicles available or nearby based on business rules set between the agencies.
- **Common Reporting and Metrics:** Having a common reporting standard across the region would greatly improve system performance measurement. Consistent reporting from all service providers will help agency staff including planners, finance and reconciliation, operations and decision makers gain more visibility into the system performance. Transit agencies will need onboard equipment to meet minimum reporting standards for payments (electronic validation), MDTs, and communications (e.g., radio).

8.5 Polices

To support a centralized system, a common set of policies will need to be developed and applied across all participating agencies. The following are key areas of consideration from the policy perspective to be addressed before any system is deployed.

- **Hours of Operation:** Agencies will need to establish common hours of operation for the call center. These would be the hours when CSRs would be available to help customers with requests. Given the greater efficiencies and shared resources, it might be possible for agencies to support longer hours of operation.
- **Customer Eligibility Assessment:** The system would include a common customer profile database which would include information from the customer application such as contact information, funding sources, account balance, and payment information. Agencies would establish common procedures and standardize customer applications to collect the required information. However, actual assessment process applicable to various programs managed by agencies may not change.
- **Common Scheduling/Brokerage and Dispatching:** Policies will have to be determined regarding scheduling of trips factoring resources from all agencies part of the One-Call Mobility Center framework to implement mobility management functionality. The system will include a brokerage function which will have built-in rules based on predetermined policies. Further, the system will include a common dispatch system that will allow agencies to manage their own resources and coordinate resources with other agencies and third party service providers (e.g., TNCs) in real time..

8.6 Staffing

Existing staff will be trained to support the roles required for the new One-Call Mobility Center. In particular, some of the customer functions currently being completed by agencies could be pooled as part of the One-Call Mobility Center.

A detailed matrix of roles and responsibilities should be developed as part of the One-Call Mobility Center implementation by distinguishing the functions that will be centralized with the help of pooled resources with those that will be handled individually by agencies.

Staff will also have to be trained according to the roles and responsibilities assigned to them.

9. Implementation Plan

The preferred system would require changes in technology and also in business rules, policy and staffing. The project team proposes a phased approach to procurement, making incremental changes to the system as deployment resources become available. Following sections include details on the implementation plan for realizing the vision of a central mobility management center as described in Level 5.

9.1 Funding

There are multiple ways agencies could get project funding. Multiple federal, state and local programs support the users and activities of transportation one-call/one-click centers, including:

- Federal Transit Authority: From time to time, FTA releases grants to support One-Call/One-Click Centers. FTAs Urban (5307), Rural (5311), Job Access/Reverse Commute (5316), New Freedom (5317), and Elderly and Disabled Persons (5310) programs allow “mobility management as an eligible capital expense under the above programs at an 80% federal share. Veterans Transportation and Community Living Initiative funds can also cover some capital expenses.
- State level grants: NEORide and partner agencies can apply for state level grants working with Ohio DOT, which could possibly help in expanding the project to include more agencies and leveraging the technology to serve a larger population.

9.2 Procurement

Agencies can procure the Level 5 system in one procurement cycle. While a phased approach can be followed for deployment of the system, the procurement can be undertaken with multiple optional or expansion features which can be deployed based on agency chosen timelines. A single procurement reduces the level of effort required in multiple procurement cycles and provides the flexibility of deployment. In a single procurement, agencies can request the proposer to provide a scheduling system which can be expanded to a dispatch system and offer the ability to integrate with other additional services and systems. It would be the proposer’s responsibility to integrate with IVRs, phone systems and TNCs or provide the infrastructure to support these.

9.3 Implementation Process

Given the number of system components and complexity in integration, it is recommended that NEORide follow an agile deployment process. Implementation should be done in incremental steps. An incremental approach would offer the following benefits:

- Greater return on investment with smaller upfront capital requirements
- Ability to train staff to utilize the system
- Provides time for making incremental policy level changes
- Ability to adapt and improvise with changes in technology

System can be deployed in a phased approach with the following phases:

- Phase 1A: Deployment of common phone system hosted either in a cloud or central location. This also includes a central database for agencies to store customer information.
- Phase 1B: Deployment of a common reservation and scheduling system for all agencies.
- Phase 1C: Phase C is focused on customer facing components of the system which include the IVR, mobile app and web portal. This also includes multi-modal trip planning.
- Phase 2: This phase is focused on common dispatch system and onboard vehicle equipment.
- Phase 3: Focuses on fare collection system which includes components like mobile app , web portal and onboard fare collection equipment.

Figure 10 details the deployment timeline for various phases. Based on discussion with stakeholders, it has been determined that minimum level of sophistication desired by agencies is Level 3, to be procured and deployed over a 2 year timeframe for agencies. A key for the deployment timeline can be found on the following page in Figure 11.

			IMPLEMENTATION PHASING			
LEVEL	CATEGORY	TECHNOLOGY	Year 1	Year 2	Year 3	Year 4
Level 3	Phone System	A common phone system hosted at a central location	Green			
Level 3	Data Management	Customer profile database and eligibility management	Green	Green	Light Green	Light Green
Level 3	Scheduling	Common reservation and scheduling system	Orange	Orange	Orange	
Level 3	Customer Service	IVR software	Light Green	Grey	Grey	Light Green
Level 3	Customer Service	Trip intake using IVR		Grey	Grey	
Level 3	Customer Service	Web portal from para vendor	Light Green	Grey	Grey	Light Green
Level 3	Customer Service	Mobile app from para vendor		Grey	Grey	
Level 3	Customer Service	Multimodal trip planning	Light Green	Grey	Grey	Light Green
Level 3	Service Delivery	Masabi para vendor interface	Brown	Brown		
Level 3	Service Delivery	Validator	Brown	Brown	Light Green	Light Green
Level 4	Service Delivery	Common dispatch system			Blue	Blue
Level 4	Service Delivery	Mobile Data Terminals and Software License			Blue	Blue
Level 4	Service Delivery	Cellular Data Communications			Blue	Blue
Level 5	Service Delivery	Third party service provider integration				Blue

Figure 10. Deployment Timeline

KEY	
	Phase 1A
	Phase 1B
	Phase 1C
	Phase 2
	Phase 3

Figure 11. Key for Deployment Timeline

9.4 Design

Systems procured cannot be deployed ‘as is’ and extensive configuration is required which is documented as part of a design review process. The beginning of the design review process is a preliminary design review (PDR), which deals with the selected vendor’s initial version of the system design. The second step in the design review process (the third subtask) is a final or critical design review (CDR), which deals with the selected vendor’s final system design, based on the results of the PDR.

In recent years, the industry has started to adopt a hybrid of traditional systems engineering-based design and agile approach which allows design to be iterative. This is particularly important in situations when functionalities are not available in vendor products out-of-the-box and new development is required.

9.5 Testing

System testing should be exhaustive after every component is deployed. For use case-based deployment system testing, functionality will be tested so project outcomes can be evaluated on an ongoing basis. Every component deployment should follow three phases of testing wherever possible:

- Installation Acceptance Testing: Testing the system in agency environment with a test database to verify all system functionalities.
- User Acceptance Testing: Testing the system functionalities with agency database in non-revenue environment while all components are communicating with one another, including vehicle components.
- Burn-In Testing: Rigorous testing of the system in revenue operation for 30-60 days to verify system reliability and data quality.

9.6 Acceptance and Go-Live

System should not be accepted unless all testing is completed, and all issues discovered during testing have been addressed. For all customer facing technology, extensive marketing campaigns should be implemented to ensure customer education.

9.7 Operations and Maintenance

The envisioned One-Call Mobility Center will be supported by a centralized system with resources

shared between agencies. Most manual, time consuming tasks in the current system will be automated using technology. Staff will be able to focus on solving customer issues and providing better service. Most staff time will be for the customer service and service delivery business units.

Also, it is recommended that a vendor-hosted system is deployed so maintenance needs for agency staff are minimal. Vendor support contract will have to include service level agreement (SLA) so a desired level of service is guaranteed for the One-Call Mobility Center operation.

9.8 Training

Training is one of the most critical aspects of system deployment. Each component deployment should be followed by extensive training. Apart from training during system deployment, agencies should also organize follow up training sessions.

Train-the-trainer approach should be followed to develop in-house expertise and reduce the need for external training. The following systems would be used extensively by staff and training on these should recur either semi-annually or annually:

- Customer service portal
- Scheduling system
- Dispatch system
- Onboard systems

9.9 Contracting with Third Party Service Providers

The system may interface with third-party service providers and TNCs when the agency operated service is insufficient for demand. To enable this, agencies will have to establish contracts with TNCs and third-party service providers. Some critical factors in these contracts include:

- Service payment agreements
- Service level agreements
- Data sharing agreements

9.10 Call Center and Agency Staffing

Current agency call center staff will need to be trained on the new call center system. The common customer service center would have the following major responsibilities:

- Book customer trips directly in the scheduling system
- Assist customers with account management and updating about the status of customer applications
- Assist customers with payment management
- Provide customers with real-time information on their trips
- Coordination and troubleshooting on any issues with ongoing trips



Appendix A -
Technology
Inventory



A. Technology Inventory

CATEGORIES	TECHNOLOGY		WRTA	CAWN	CAACC	SARTA	TRUMBULL COUNTY
Customer Service	Call Taking/ Phone System	Incoming	Telesolutions Phone System	Verizon Mobile Phones for call/text	Digium Switchbox D6X VoIP phone system	Shortel VoIP Phone System	Garwin ATT CCAV Telesolutions
	Electronic Intake (Self-service)	Web	Tripspark PASS Self Service	CTS Self-service	N/A	Online portal for Proline service customers for trip booking	N/A
		Mobile	N/A	Para Portal App	N/A	N/A	N/A
		IVR	Tripspark PASS-IVR	CTS- IVR	CTS- IVR	Trapeze PASS - IVR	N/A
	Trip Information (Incoming)	Web	Tripspark PASS Self Service	CTS Self-service	N/A	N/A	N/A
		Mobile	N/A	Para Portal App	N/A	N/A	N/A
		IVR	N/A	N/A	N/A	Trapeze PASS - IVR	N/A
	Trip Information (Outgoing)	Web/ Email Alerts	N/A	N/A	N/A	N/A	N/A
		Mobile Alerts	Yes	Yes	Yes	Yes	Yes
		IVR		Tripspark PASS-IVR	CTS-IVR	CTS-IVR	Trapeze PASS IVR
Data Management	Eligibility Database		Paper based	CTS-TripMaster	CTS-TripMaster	In-house electronic database. Will be using Trapeze PASS.	Ecolane and Microsoft Excel
	Mapping/Geocoding		Tripspark PASS	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot
Scheduling	Driver		Tripspark PASS	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot
	Vehicle		Tripspark PASS	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot
	Basic Scheduling		Tripspark PASS	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot
	Optimization		N/A	N/A	N/A	Trapeze Pass	N/A
Dispatching	Vehicle Tracking		Tripspark PASS	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot
	Manifest Management		Tripspark PASS; Spare Labs (pilot) for same day	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot; Phone/ Radio
Vehicle	Electronic Manifest		Avail MDTs	CTS Tablets	CTS Tablets	Avail MDTs	GPS Trackers; cellphone
	Security		N/A	N/A	N/A	Onboard camera system	N/A
	Fare Collection		EZFare (masabi), GFI – Farebox (Cash)	Tablet with card readers	Tablet can deduct fares	EZFare and Farebox (GFI)	Cash collection by operators
Administration	Trip verification		Tripspark PASS	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot, paper, Excel
	Cost Allocation		Tripspark PASS	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot, paper, Excel
	Billing		Tripspark PASS	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot, paper, Excel
	Reporting		Tripspark PASS	CTS-TripMaster	CTS-TripMaster	Trapeze PASS	Ecolane; DispatchBot, paper, Excel

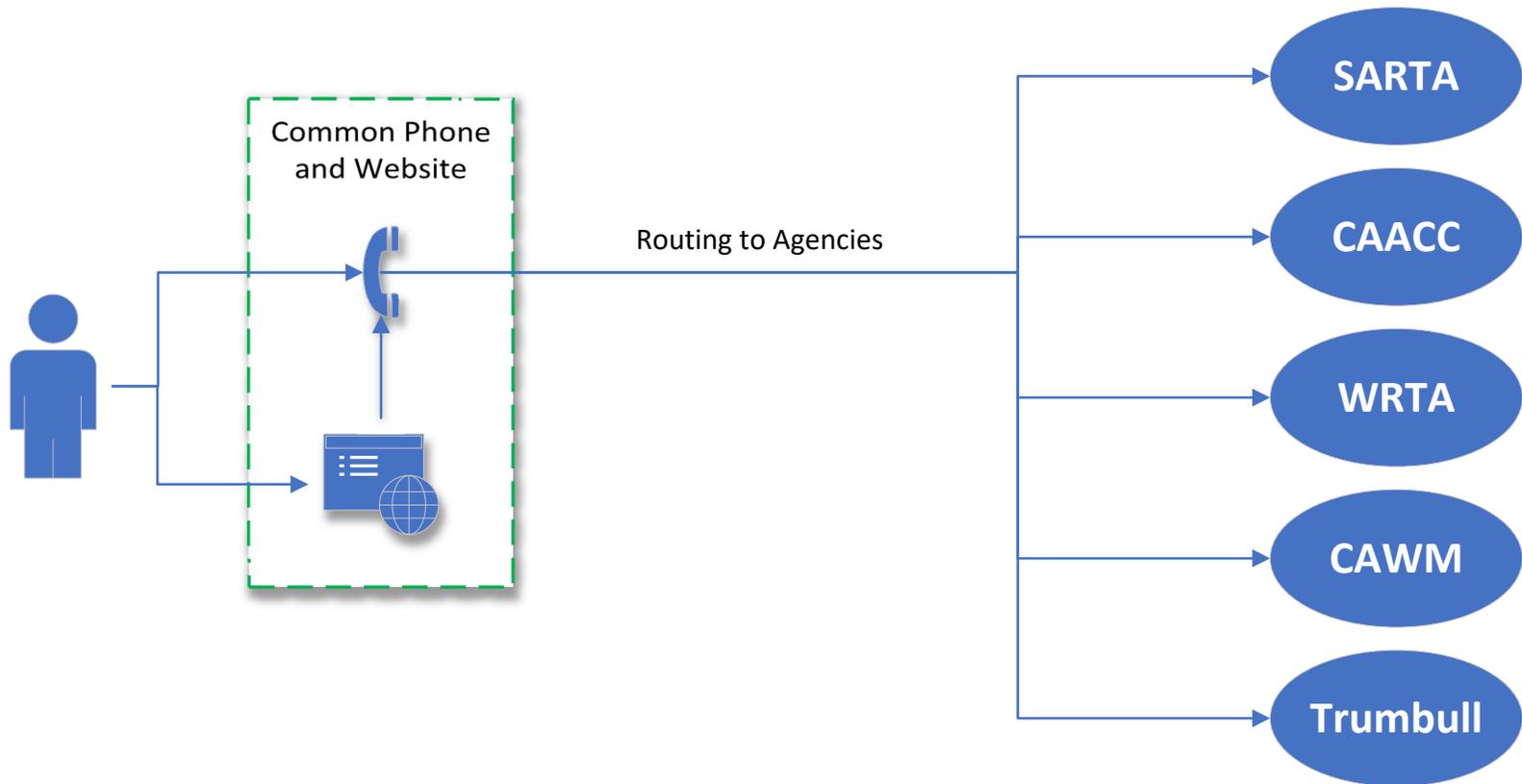
A photograph of a computer monitor on a desk. The monitor is black and has a microphone attached to its side. In the foreground, there are two orange sticky notes on the desk. The background is slightly blurred, showing a keyboard and a mouse. A green rectangular overlay covers the right side of the image, containing the text 'Appendix B - Alternatives' and a large white letter 'B' with a horizontal line above it.

B

Appendix B - Alternatives

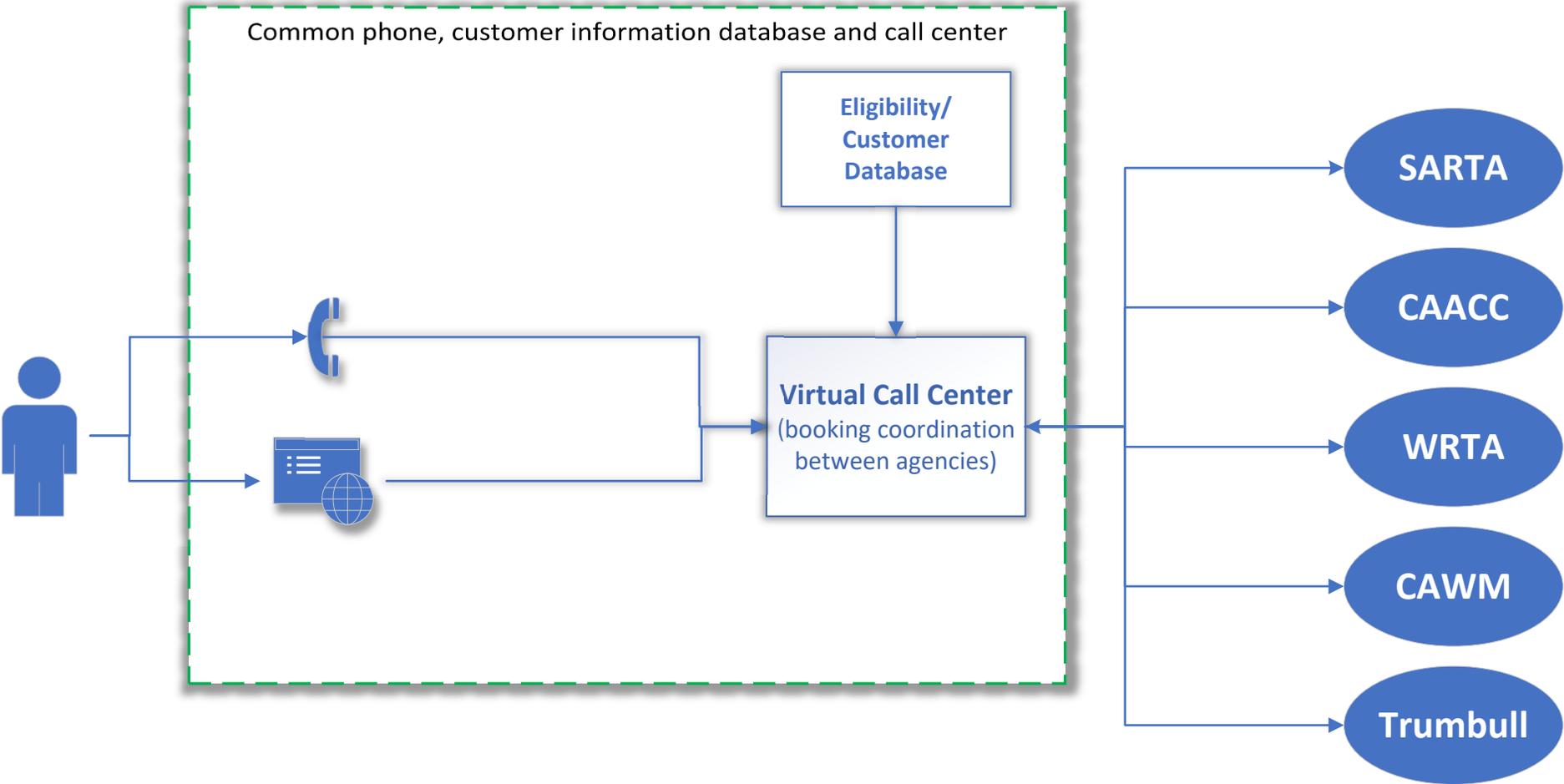
Level 1

- Common Phone System
- Common website
- Routing/redirect to agencies
- Common branding



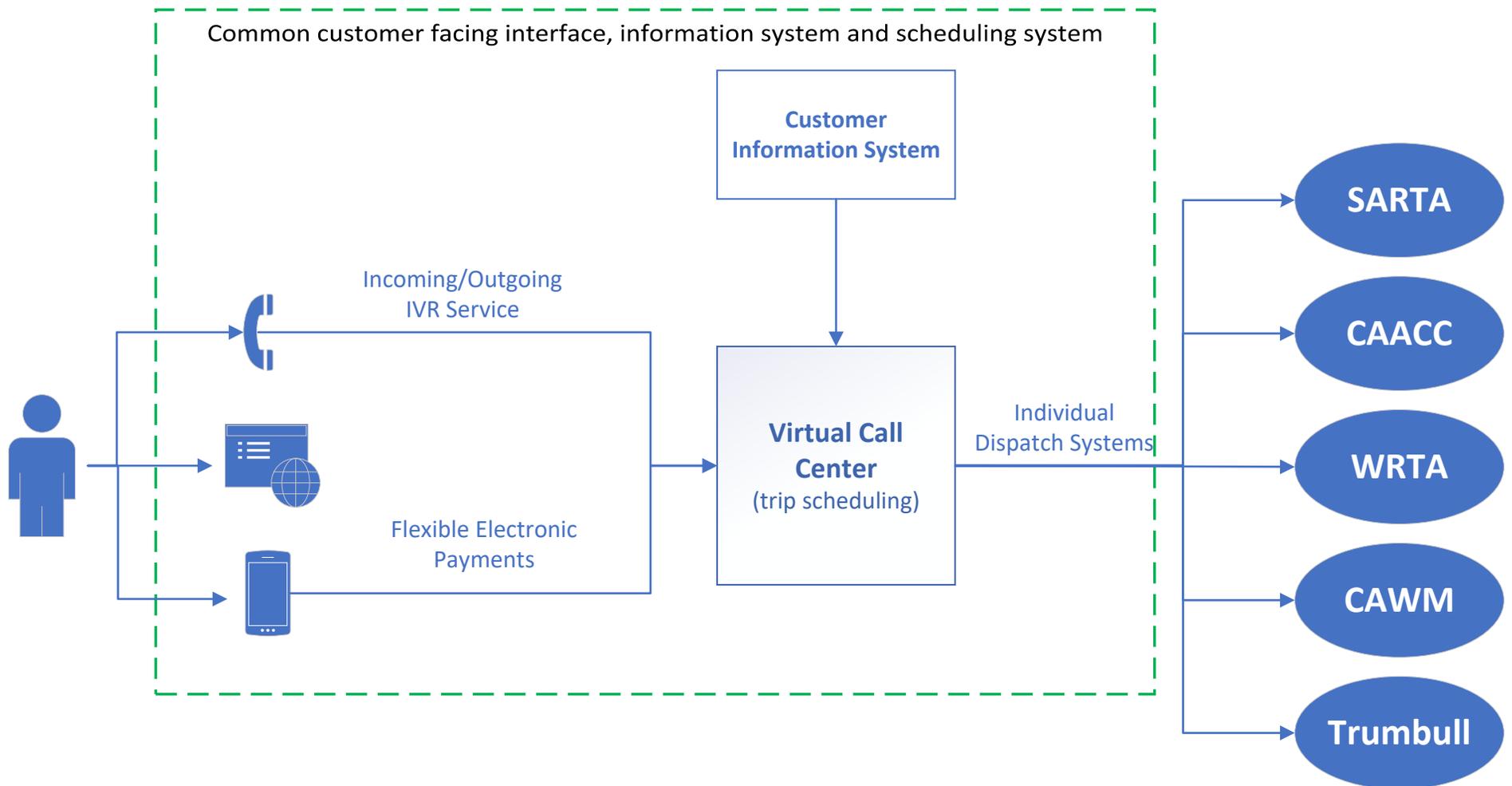
Level 2

- Common info-referral database
- Common eligibility/ customer database
- Trip intake via phone and web (no-booking)
- Coordination with agencies for booking
- Agency customer info systems



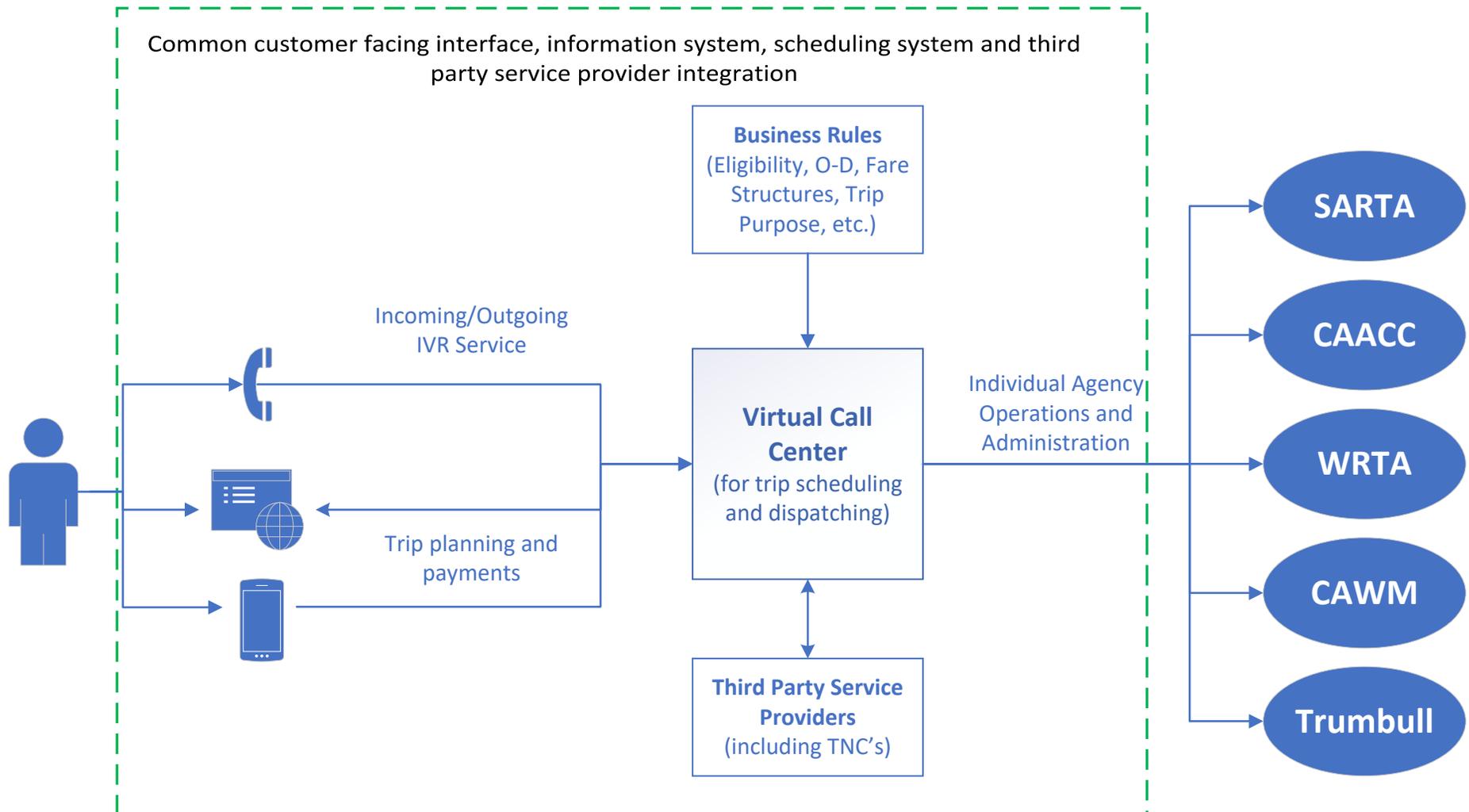
Level 3

- Common customer information system
- Common trip scheduling system
- Trip intake via IVR
- Individual dispatch systems
- Flexible electronic payments



Level 4

- Trip brokerage based on business rules (eligibility, O-D, fare structures, trip purpose etc.)
- Common scheduling and dispatch system but individual agency operations
- Integration with third party service providers, including TNCs
- Better support for same-day trips
- No administrative integration





Appendix C -
Cost Estimates



C. Cost Estimates

CATEGORY	TECHNOLOGY	CAPITAL COST	ANNUAL RECURRING COST	NOTES AND ASSUMPTIONS
Reservation, Scheduling and Dispatching	Customer profile database and eligibility management	\$50,000.00	\$10,000.00	Feature will be provided through paratransit scheduling vendor- A single database of customers for 5 agencies assumed
	Common reservation and scheduling system	\$375,000.00	\$75,000.00	Includes trip booking and scheduling modules
	Common dispatch system	\$175,000.00	\$35,000.00	Includes AVL and driver manifest management modules;. Feature will be provided through paratransit vendor. Pricing assumed for 5 agencies
Vehicle Technologies	Mobile Data Terminals and Software License	\$170,000.00	\$11,900.00	Agencies could procure tablet separately or even utilize phones in some cases.
	Cellular Data Communications		\$30,600.00	Annual cellular costs for tablets. Assuming \$15/vehicle/month
Customer Service Tools	Multimodal trips mobile app (trip discovery only)	\$0.00		Assuming Transit App can be used here which is typically available for free. However, it will not provide availability of demand response services unless GTFS-Flex feed is created for all agencies.
	Phone system	\$20,000.00	\$15,000.00	Assuming 10 lines/users
	Multimodal trips website (trip discovery only)	\$100,000.00	\$80,000.00	Open trip planner can be used here by customers and CSRs and hence separate pricing. Transit App does not provide website interface. Also assumed that GTFS-Flex feed will have to be created for 5 agencies to power the Open Trip Planner
	Web portal from para vendor	\$50,000.00		Feature will be provided through paratransit scheduling vendor. Pricing assumed for 5 agencies
	Mobile app from para vendor	\$50,000.00		Feature will be provided through paratransit scheduling vendor. Pricing assumed for 5 agencies
	Trip intake using IVR	\$50,000.00		Feature will be provided through paratransit scheduling vendor. Pricing assumed for 5 agencies
	IVR Software License and Hosting	\$25,000.00	\$40,000.00	Feature will be provided through paratransit scheduling vendor using hosted IVR solution from vendors like Twilio.

CATEGORY	TECHNOLOGY	CAPITAL COST	ANNUAL RECURRING COST	NOTES AND ASSUMPTIONS
Third Party Interfaces	Third party service provider integration	\$75,000.00		Feature to be provided by paratransit scheduling vendor as an additional module.
	Masabi para vendor interface	\$100,000.00		Both masabi and paratransit vendor would have to develop interface
	Validator	\$204,000.00	\$8,160.00	Pricing assumed is 1200/ validator and might change depending on existing NEORide-masabi contract.
Vendor Implementation	Project management and training	\$144,400.00		
Contingency		\$150,000.00	\$30,000.00	Assuming 10% contingency
	Grand Total	\$1,738,400.00	\$335,660.00	