

7 RECOMMENDED STEPS to Making Transit Technology Accessible for All

Insights from the MI Ride Paratransit Project in Southeast Michigan

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Insights from the MI Ride Paratransit Project in Southeast Michigan

Introduction

Across the United States, new technologies are being deployed in mobility innovation almost daily. From tech start-ups with fewer than 10 downloads in the app store to Fortune 500 companies, there is an unbelievable amount of excitement in the transportation industry. With all this funding and momentum, one would expect that technology platforms would emphasize the creation of technology that enables all riders to use their systems. Unfortunately, that is not always the case.

In this white paper, we provide a case study wrapped in a user guide for making transit app technology accessible as part of a \$1 million project from the Michigan Mobility Challenge grant competition.

In early 2019, the Michigan Department of Transportation awarded a grant to the Regional Transit Authority of Southeast Michigan to pilot an innovative technology solution that would allow users to manage and book paratransit rides across the region more accurately and expediently. Feonix - Mobility Rising was honored to take the role of project integrator to deploy the technology and coordinate the deployment of services with the riders and transit agencies.

As part of the project, we at Feonix had the opportunity to work hand in hand with Menlo Innovations and two different technology companies to take standard transit apps and mold them into accessible applications based on user experiences and testing. The process was tedious but incredibly rewarding, and the results were life changing for many of the passengers.

Some of the most well-established transit platforms in the industry, with millions of downloads, can't even be opened by a user with a screen reader, and in some cases, the platform's date and time picker requires such extreme sensitivity for selection that, if the rider has any dexterity challenges, that app is rendered useless. Why, in 2022—when we're so far ahead in other aspects of mobility and sensor technology—do these challenges still exist?

While there are many factors to consider when designing accessible technology, there is very little specific guidance about what accessibility means and how to achieve it in transit technology apps. There is also very little guidance on how to ensure that the “proof is in the pudding” when an app claims to be accessible. In this white paper, we will walk through the steps we took in the Michigan Ride Paratransit Project and provide recommendations for other transportation providers and technology companies committed to making their apps accessible for all users.



Project Partners



Michigan Department of Transportation (DOT):

The Michigan DOT is responsible for all facets of transportation within the state of Michigan. MDOT's Office of Passenger Transportation administers MDOT's passenger transportation programs, including local public transit, ferryboat, intercity bus, and passenger-for-hire motorcoach safety regulation, to provide a safe and balanced statewide network of passenger transportation services to enhance the social and economic well-being of the state. The Michigan DOT is one of the most innovative and forward-focused departments of transportation in the United States and leads the way in developing new and better ways to serve travelers. This project would not have been possible without the funding provided by the Michigan Department of Transportation as the sponsor of this grant.



Southeast Michigan Regional Transit Authority (RTA):

The RTA is a 10-member board appointed by governing bodies in the counties it serves, the city of Detroit, and the governor of the state of Michigan. The mission is to manage and secure transportation resources that significantly enhance mobility options, to improve quality of life for the residents, and to increase economic viability for the region. Its goal is to create a region with sufficient and stable funding to support improved public transit options that will advance equity by increasing accessibility; satisfy the integrated mobility needs of Southeast Michigan communities; and promote livable, healthy, and sustainable growth. The Southeast Michigan RTA was the direct recipient of the grant funds that supported this project.

Project Partners



Feonix - Mobility Rising:

Feonix is a nonprofit with a mission to create mobility solutions for the health and wellbeing of every person in every community. Feonix serves as a mobility integrator, working at the cross section of technology vendors, transportation providers, community leaders, and riders to improve mobility for all. Feonix supported communication among all of the stakeholders in this grant and provided direct support to passengers and transportation provider personnel as they embraced a new way of managing transportation arrangements through the MI Ride app. Feonix partnered with two software companies to deploy the technology – Kyyti and SkedGo.



SkedGo:

Feonix selected the technology vendor SkedGo to step in as the technology provider for the MI Ride Paratransit Project. Based in Australia and with offices globally, including San Francisco in the United States, SkedGo provides personalized trip planning, corporate mobility, and other mobility-as-a-service technology for governments, corporations, and start-ups.

Their senior developer team creates tailored solutions that leverage their unique API, SDK, and white labels. For this project, they created the white-labeled MI Ride app to integrate directly with each public transit provider participating in the pilot. SkedGo replaced the original vendor, Kyyti - a Finnish based Demand Responsive Transport (DRT) platform, which enabled user-friendly access to sustainable and intermodal mobility. Both organizations worked very hard to transfer responsibilities for the pilot without missing a month of ridership for the pilot riders.

Project Partners



Menlo Innovations:

Menlo Innovations is a software design consulting company that focuses on returning joy to technology. Their mission is to end human suffering in the world as it relates to technology. They do this through a process they call High-Tech Anthropology®. The value of High-Tech Anthropology® is in mitigating project risk. They do this by answering three critical questions: 1. What problem are you trying to solve? 2. Who are you solving it for? and 3. What is the right solution for the problem? This risk-mitigation process ensures that solutions meet a real need and are widely and joyfully adopted by users. For the MI Ride Paratransit project, Menlo brought the user experience to front and center, talking to users, involving users in the software design and build, and gathering feedback from users during the testing phases.



The Suburban Mobility Authority for Regional Transit (SMART):

Serving since 1967, SMART is Southeast Michigan's largest regional public transportation provider, offering transportation for Macomb, Oakland, and Wayne counties. SMART's fixed-route and small bus services connect people to employment and educational institutions, as well as other destinations. SMART was the most active transit provider that allowed its paratransit riders to book and manage their rides through the MI Ride app.



The Detroit Department of Transportation (DDOT):

Detroit DOT is the largest public transit provider in Michigan that serves the City of Detroit, surrounding suburbs, and neighboring cities, including Highland Park and Hamtramck. DDOT was also one of the providers that allowed its paratransit riders to book and manage transportation through the MI Ride app.



Ann Arbor Area Transportation Authority (AAATA):

AAATA, also known as TheRide, is the main public transit provider for the greater Ann Arbor-Ypsilanti area. It was involved in putting the ideas of this program together.

Project Goals



While we will be focusing on app accessibility for this white paper, the MI Ride Paratransit Project had several goals.

- The primary goals were to:
- Enhance the passenger experience of booking rides;
- Reduce call-handling time for both the passenger and the transit agency;
- Improve ride coordination for cross-agency trips for both dispatch and the passenger; and
- Enhance reminders for passengers to reduce no-shows and confusion about pick-up times.

That might look like quite a lofty list of objectives for a relatively short pilot with a very complex passenger base, but we were all in and knew that if we didn't set the bar high, mediocre goals were not going to keep anyone at the table through the inevitable messy middle of these kinds of projects.

We also had secondary goals during the project, each of which we believed would be accomplished as a by-product of the primary goals. Those goals were to:

- Improve the transit contractor/staff accountability to rider requests;
- Enhance the efficiency of call takers and their ability to process app-requested rides during lower call volume times; and
- Enable more efficient trip cancellations for passengers and dispatchers.

While it would be a far stretch to say that we achieved all our goals and maximized the potential impact and improvement of the app and technology across all the transit agencies throughout the duration of the pilot, it can be demonstrated that we achieved these goals at a micro level for beta passengers in most cases.



Description of the technology

For both Kyyti and SkedGo technology systems, the technology was built as an app that feeds trip requests into a dashboard through which schedulers and dispatchers can manage rides and communicate with passengers. Given the intermittent nature of the pilot, an API was not available or able to be integrated for the paratransit ride-scheduling technologies used by the transit agencies. Instead, the dashboard functionality allowed agencies to schedule rides across platforms and coordinate cross-agency rides.



Pre-Intervention Insight

For straight-out-of-the-store installation, each app worked great if you were an experienced ride-booking app user, but if you needed to make any adjustments to the font size or used a screen reader, there were complications, errors, functional issues, and confusing buttons and workflows. You could muddle through in most cases after several practice sessions; however, users in 2022 have no patience or time for 30 minutes of education on how to use an app. If they don't get it quickly, they deem the app useless or too complicated and move on.

We do the same thing with restaurants as consumers. If we have a bad experience, we rarely give it a second chance, and if we have two bad experiences in a row, it could be years before we go back — if we go back at all.

The same is true for apps. Give me a bunch of errors the first couple of times I try to book rides and forget it — it's not worth the risk of missing an appointment. We have higher expectations of our technology, and we can't afford to miss the rides we're trying to schedule. So how do technology companies overcome these barriers and ensure that riders don't run away after their first attempt to book a ride?

We're going to walk through seven recommended steps to address the barriers to a successful deployment of a ride-booking app and enhanced rider satisfaction.



Seven Recommended Steps

While this is not an exhaustive list, this is an example of a framework to use as a transportation provider or transit technology company to make major strides in making your technology accessible for all users.

Seven Recommended Steps



Ensure Shared Vision and Goals – Start with Why

Before you begin down this path or go one step further, you need to ensure that all partners are committed to the mission of making the innovation accessible. Everyone needs to be aware of and on board with the goal and, most importantly, with why.

At Feonix, we believe this is an essential part of any successful project. The more layers of an organization that are committed to the “why” of a project, the better the chances of sustainability and effectiveness. For more information about this “why” factor, check out Simon Sinek’s TED Talk for inspiration. It has been viewed almost 60 million times and is worth the 17 minutes.

https://www.ted.com/talks/simon_sinek_how_great_leaders_inspire_action

Seven Recommended Steps



2

Gather “Before” User Feedback and Engage in User Testing

Whether we’re getting a new haircut, tackling a home renovation, or starting a new diet and workout plan, we need to document the starting point. This serves as a point of reference, as well as a point of motivation and pride. These beginning frames of reference also serve as goalposts as we progress.

User feedback can be gathered in several ways. It can be gathered individually while sitting side by side with a user, or it can be gathered virtually using a platform like Zoom, even sharing screens with the user. It also can be gathered in small groups, which enables users to feed off each other’s insights and experiences when providing their feedback. In a perfect world, you would be able to do both on a regular basis.

These sessions take time. They should be modestly structured, not rushed, and always include a time at the beginning for breaking the ice and building a sense of trust and respect. If the users testing the technology do not believe that their feedback matters or that you will sincerely listen to them, the level of insight you will garner will be significantly less valuable. In addition, users may feel guilty or awkward pointing out flaws or errors. Some may also feel embarrassed, thinking they messed up or failed. It needs to be explicitly stated, “We know it’s not perfect, and we are asking for your help so we can make it work better.”

Seven Recommended Steps

When creating user testing, it is a great idea to get feedback in stages, walking through each function of the app. In addition, each tester should document what type of phone or browser they are using when doing the testing. Your development team will thank you, as not all phones, operating systems, and browsers perform the same way, display the same errors, or look the same, and it's a lot less like whack-a-mole when trying to fix the issues if they know where they come from.

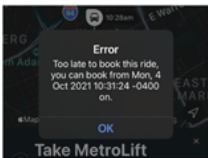
Examples of functions you want to provide in each platform include:

- Logging into the app
- Creating an account
- Booking a one-way trip
- Booking a round trip
- Changing trip details
- Canceling a trip
- Logging out of the account
- Receiving a push notification
- Receiving an email
- Other – based on the app or technology

And just to reiterate, you need to go step by step in Android, iOS, Chrome, and Safari (or others). It will be painful, but it will be worth it.


When testing the app, be sure to test the various user error issues to ensure clarity. Below is an example of Menlo Innovations testing the “error” messages that the app was providing when given various user scenarios for booking rides outside or beyond the approved trip request windows.

Request Rules and User feedback



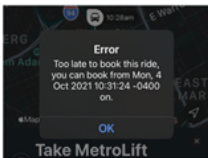
For Requesting a ride <48 hrs notice - message should read:

Rides cannot be requested less than 48 hours in advance. Please call for assistance.



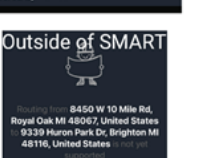
Requesting a ride > 2weeks advance - message should read:

Rides cannot be requested more than 14 days in advance. Please call for assistance.



Requesting a Saturday or Sunday ride after 12pm on Thursday - message should read

Weekend rides must be requested prior to 12:00 pm on Thursday afternoon prior to the ride. Please call for assistance.



Requesting a ride outside of the service area - message should read

Routing from ..to... is outside of the service area. Please call for assistance.

Note: gray font in dark mode is hard to read. Use true white

Note: If unique messages cannot be implemented for each case, please use “Rides must be requested 2 - 14 days in advance. Please call for assistance.” for all messages

Seven Recommended Steps



3

Identify Key Functionality Gaps in the Technology

Throughout the testing of the app or web portal, there are several factors that need to be considered on each screen, pop-up, email, or notification. Ensuring that you have a broad base of users in testing will help tremendously in garnering inclusive feedback. You will want to have testers that span a broad range of ages, disabilities, levels of technical literacy, languages and experience using public transit.

Seven Recommended Steps

Some factors that you will want to walk through and observe on each screen, for each function, on each platform, include:

- Content layout and flow
- Alt text for images
- App settings
- Order of the text flow for screen readers
- Font size and zooming
- Buttons
- Form fields
- Touchscreen gestures
- Color contrast
 - ▶ Light mode
 - ▶ Dark mode
- Terminology and instructions
 - ▶ Error messages
- Language
- Phone orientation
- Email
- Text notification
- Push notifications

For each error or confusing element noted by users in the testing group, have them get a screenshot or video, if possible, or have one of your team members get a screenshot or video, and start a spreadsheet that catalogues issues or concerns. The technology company should have a ticketing system for tracking errors and changes.

It's also important to conduct incremental and iterative testing during development, through the lens of the users. It is important that testing is conducted during development so that issues can be uncovered while they are still small and are easier to fix. Testing features through the lens of the target users ensures that the user experience will be intuitive and matches user needs and expectations. This is especially critical for users with accessibility tools, such as screen readers and voice command.

During our testing, Menlo Innovations walked through newly added application features while using the screen reader to verify that they met the design requirements and, therefore, would meet user needs and expectations. Combining testing with incremental user feedback from riders with accessibility tools allowed us to uncover issues that we would not have been aware of otherwise. For example, we learned that it was not useful to have the screen reader read out the contents of a map on the screen, and it was also not useful to include an "x" as an explicit indicator to close a fly-out menu when using a screen reader.

Seven Recommended Steps



Establish a Strong System for Tracking Changes Needed, Resolution, and Version Control

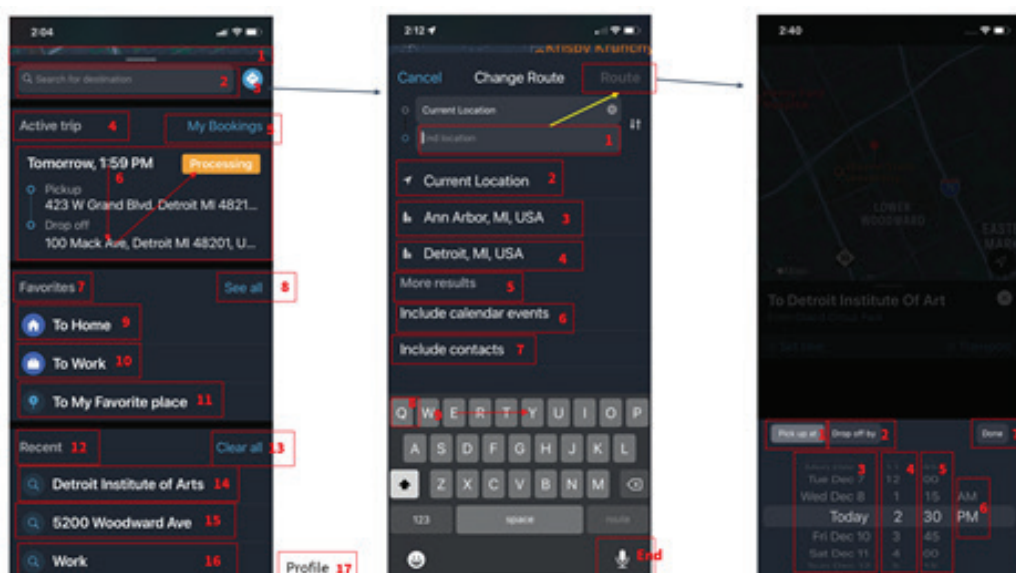
Tracking changes needed, resolution, and version control should be fairly straightforward, but over the course of working with two different technology partners, this process seemed like a moving target of documenting partial fixes, total fixes, status, and priority. We witnessed a combination of Google Slides with an index at the beginning of the Google slide deck and an IT ticketing system called Redmine. If you are using Google Slides or PowerPoint, we found it very helpful to put on the first slide of the deck the latest version that has been pushed to the app stores, so that if the tester needs to update their app, they can easily see which one is the latest version and if they have it installed. Whether you use Google Slides, Redmine, Excel, Monday.com, Smartsheet, Jira, or whatever the tracking system should include somewhere what version was tested via iOS/Android/Browser. This is especially important because you might fix one issue, but it then creates three more. Ensuring that you have an easy and clear way to track issues and navigate the cascading pain points is critical.

Seven Recommended Steps

Below is a screenshot of the index slide in the deck of “fixes” where our team could document our findings. Then, in a weekly meeting Kyyti or SkedGo, Menlo, and Feonix, would talk together about the issues, set priorities, and get feedback to keep moving forward.

Questions / Requests Summary – SkedGo			
Issue	Status	Comments	Red Mine Ticket ID
Update Map Color Marker from Blue to Orange - too hard to see the blue marker within the map (slide 11)	resolved	Dispatch Platform Menlo confirms done	https://redmine.buzzhive.s.com/issues/15498
Can you confirm if the booking windows of time for each agency and the service area maps are implemented within the app for users from Kyyti? iOS (slide 1) (Slide 2) Android (Slide 1)	resolved	Dispatch Platform Not Complete - See notes	No ticket
What is the ETA for pre-populating the service phone numbers for each agency when scheduling a ride? See question on Outstanding Questions slide	resolved	Dispatch Platform Menlo confirms done	https://redmine.buzzhive.s.com/issues/15492
For the email confirmation can we shorten the confirmation number that appears in the header and in the email? For screen readers that is brutal to listen to that long id to be read out. (slide 22)	resolved	Email confirmation We are not receiving emails	https://redmine.buzzhive.s.com/issues/15497
For the ride booking flow in the app - can we change the terms Leave At and Arrive By to “Pick up at” and “Drop off by”?	new	App	https://redmine.buzzhive.s.com/issues/15499
For the ride booking flow in the app - can we move the date/time selector higher in the app as it is very hard to navigate at the bottom of the screen?	new	App	https://redmine.buzzhive.s.com/issues/15500

In many cases, the feedback-gathering process will be very tedious. Below is a series of iOS screenshots identifying the order of the wording that is read by the screen reader. This was important for documenting the order in its current state and why it was creating confusion.



Seven Recommended Steps



5

Engage in Detailed Testing for Resolution with Experts and Users at Designated Milestones

The good news is that there are experts in this space, in your community, and nationally that you can engage to help you test the app along with local users. There are also consultants who specialize in this, like Menlo Innovations or Bureau of Internet Accessibility, and we also recommend contacting your closest Center for Independent Living, as many of them will have resources they can refer you to.

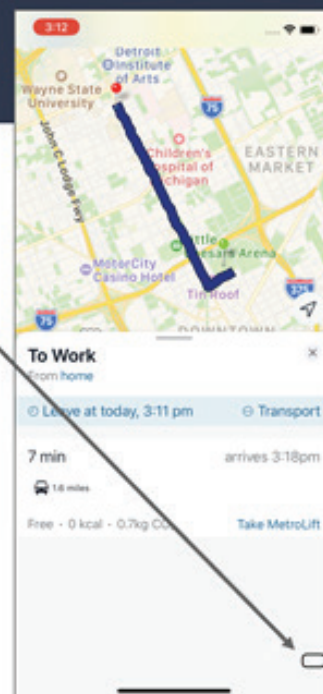
Seven Recommended Steps

Set a schedule for what updates/changes need to be made and dates you're going to do testing—similar to how sprints are scheduled in project management. There will be several phases of this process. Embrace it. It's not an exact science. There might be five ways to fix an issue, and you might fix it one way and the users don't respond or it breaks something else. It's a balance between product development and user preferences, and in some cases, there isn't necessarily a right or wrong answer.

When you get something fixed and crossed off the list, clearly designate it. Below is a screenshot of what the slide looked like when Menlo Innovations had tested something that needed to be fixed, and they verified it was addressed by putting a green dot on the slide.

Screen Reader Notes

- On the route selection page there is a button that doesn't exist but is read by the screen reader. It reads "legal, button".



 Menlo Confirmed DONE

Seven Recommended Steps


 6

Release to Alpha and Beta Group of Users with Tech Support and Scheduled Check-ins

Once you get a good swath of the major issues addressed with the accessibility testing, you will want to deploy it with a small handful of riders—four to five maximum (alpha users). Give those riders at least two to three weeks to test the new and improved technology to see if the changes are clear and addressed. If the alpha users have significant issues, continue to work on the app until it works well for them. If they express positive feedback and there are not any major challenges (old or new), we recommend deploying it to 20-30 users (beta users), providing them at least a month to test it out and report any issues before rolling it out to the public or a broader audience.

With the MI Ride Paratransit Project, we took this approach, and it was very helpful for managing expectations. When deploying in the alpha and beta stages, we recommend giving users strong direction on how you want them to report errors, as well as a lifeline to call if something goes significantly wrong and they need help. This is essential for building trust and being responsive to their needs.

Seven Recommended Steps



7

Monitor for Continuous Improvement and Possible Regressions After Updates

When it comes to the final recommended step, we want it to be extremely clear that the work of creating an app that continues to serve rider needs is never done. Apps will push updates, operating systems on phones and computers will push updates, random bugs will show up, and other technology-based challenges will pop up. There are also service changes that can cause challenges. Transportation providers change service times, service areas, eligibility, rates, etc. Each technology change or service change can create new barriers or challenges with regard to how the technology works for users. At times, it may feel like a dance where you take two steps forward, one step back. Understanding and appreciating that these issues will always occur helps set realistic expectations. Organizations in the transportation space should create standard operating procedures for ensuring the accessibility of their websites and apps, and review those policies regularly. Making that process an intentional part of how agencies conduct business is a major step forward.



“After” User Feedback

What does the “after” look like when following these seven steps? Why are we going to all this work if “for the most part, the apps work”? Meet two beta users of the MI Ride Paratransit technology and learn about the major quality-of-life improvements, not just for the passenger but also for the caregiver. Accessible transit technology is about more than coding. It is about mobility justice, equity, prosperity, and quality of life.

“After” User Feedback



Brandii and Katherine

Brandii used the paratransit service multiple times a week to get to and from her job. Brandii's mom, Katherine, helped Brandii manage her schedule and ensure that the trips were set up appropriately each week to match Brandii's work schedule. Katherine had a secondary goal of supporting Brandii's independence whenever possible.

Before signing up for the beta program with the MI Ride Paratransit program, Brandii had to sit on the phone for long periods of time, waiting her turn and going through the process of setting up her rides for the coming week. This was frustrating and did not give Katherine the ability to see if the trips were scheduled correctly unless she was with Brandii during the call.

Brandii and Katherine felt that the new application allowed Brandii to take the lead in scheduling her rides for work and also allowed Katherine to keep an eye on things to make sure Brandii had everything set up correctly to get to and from work. This gave Katherine peace of mind that Brandii would make it to and from work, while allowing for Brandii's independence.

Brandii and Katherine graciously worked with the development team to make recommended improvements for the user experience, which so greatly improved the experience that Brandii could schedule her trips for the upcoming week in about 10 minutes without Katherine even being present! Both feel that this time savings is valuable. As Katherine expressed it, “We don't have to be on hold for a zillion minutes.”

“After” User Feedback



Elveretta and Nioka

Elveretta used paratransit to get to and from work and to doctor’s appointments, so it was vitally important that she had her rides ready to go each week. Her niece and part-time caregiver, Nioka, set up Elveretta’s schedule to help her get where she needed to go on time.

As a busy full-time nurse during the pandemic, Nioka didn’t have the spare time to sit on hold to schedule her aunt’s paratransit rides each week. Before starting with the MI Ride Paratransit app, she would always manage to squeeze out a few minutes here and there to get the rides scheduled, but it was a painful experience, and she declared it to be very stressful to worry about finding time to do it.

When Nioka used the MI Ride Paratransit application, she didn’t have to bother with calling to schedule Elveretta’s rides. She could quickly submit the ride requests and receive notifications when the rides were scheduled. As a caregiver, Nioka appreciated how the app made things easier for her. She no longer had to call into the services during operating hours or feel the stressful burden of having to find time to call during her workday; she could request rides at her own convenience, stating that “it makes things so much easier!”



Outcomes and Lessons Learned

While there were so many incredible learnings from the MI Ride Paratransit Project, one of the biggest takeaways is that the process of making a transit technology accessible is a marathon and not a sprint.

There is no “box to check” or “certification” that guarantees that the technology will always work. Phones are constantly pushing updates, the software itself is regularly pushing updates, and consumer expectations change. Addressing and navigating those three elements is no small feat and is certainly not a one-and-done process.

For organizations involved in the transportation industry, understanding that this will always be a part of operational integrity and equity is key. In addition, software companies in the transportation space need to budget resources and create internal focus groups for testing their technology for accessibility. While taking the time to do alpha and beta testing in the way we suggest adds a significant load on the front end of a project, it will save time and headaches on the back end. Plus, what is the purpose of creating something that no one likes or that cannot be used by everyone?

The Americans with Disabilities Act was passed over 30 years ago, and it’s time we hold true to the core tenets of that legislation with our technology as much as we do with our buses. Remember the “why.” This process is about people and consciously designing and supporting transit technology so that it works for all riders. When we do that, we will have achieved true transit equity.