

MUVE & UMLAUT

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MDOT Final Report

October 27th, 2020

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Overview

We are pleased to present a final report of our findings related to the project conducted by MUVE and UMLAUT in the UP of Michigan, aimed at helping people of all abilities access a better suite of solutions for mobility, accessibility & para-transit. This outline serves as a general overview of the activities, key learning points being part of the Michigan Mobility Challenge initiative.

This overview serves as a final report summarizing activities conducted by MUVE, Umlaut and partner agencies throughout the project, as it pertains to the Michigan Mobility Challenge. The ultimate aim was to have participating agencies embrace new technology solutions, targeted at accessibility & universal design, with a goal of creating a fully integrated technology solution where dispatch can work alongside MUVE's ride hailing solution. MUVE's goal was to provide partners with a fully inclusive mobility ecosystem which would have replaced the transit agencies current systems, while integrating the subsidized rides into the ride hailing suite of products developed by MUVE, to ensure more efficient, yet affordable ridership for the disabled, veteran and senior community in the UP of Michigan. As a part of this effort, this document outlines the top actions taken by the teams involved to achieve that goal.

Michigan Mobility Challenge

Deliverables Summary

This section summarizes and includes further information pertaining to each deliverable as part of Milestone 1, 2, with Milestone 3 being this final report.

MUVE Summary Of Completed Activities

These are the deliverables MUVE has completed and worked on throughout the life of the project.

- **Software Support & Customization:** MUVE has continuously improved its suite of products through new features, modules and technologies to solve the transit agencies most imminent requests and problems, while always looking ahead towards innovation. MUVE also supported each transit agency with support access and staff to ensure they have the ability to use the system.
- **On-site support:** MUVE and UMLAUT have conducted numerous visits to the UP with staff, to train, support and work with the transit agencies throughout the life of the project.
- **Virtual support:** Additionally, MUVE has worked regularly with the transit agencies in a virtual fashion via phone, and video call to ensure support, proper bug reporting and fixing, with a focus on continuous innovation throughout the life of the project.
- **Change Management:** MUVE and partners have worked together through a full on dispatch change management/software integration work stream, which had as an aim to ultimately shift drivers and dispatchers exclusive usage of the MUVE platform going forward for their transit operational needs. Unfortunately, this phase was never completed, due to the project cancellation.
- **Ride Hailing Integration, Setup & Driver Acquisition:** MUVE and Umlaut have worked together to test the ride hailing suite of products internally, and have conducted hundreds of test trips successfully. Unfortunately, the launch of this phase was never activated in the UP, due to the inability to integrate with dispatch resulting from the project cancellation.
- **Marketing & Advertising:** MUVE has worked on marketing programs and materials to promote the project and the ecosystem of technology solutions, including videos, social media campaigns, email campaigns, and more. The ultimate goal was to have a sustainable program which thrives on activating local and national partners alike who wish to see more awareness in the mobility market in Michigan.
- **Payment, Digital Ticketing:** MUVE and partners have worked together on a digital ticketing, payments & fare collection solution which will have the potential to drive new revenues and provide ease of use for veterans, people with accessibility needs as well as seniors.
- **Reducing No-Shows:** MUVE developed an SMS notifications system for users who book through dispatch or ride-hailing, with messages such as “your driver is arriving in

15minutes”, “your driver is arriving now”, as well as an easy way to cancel or reschedule rides, we are able to reduce no shows, saving considerable costs to transit agencies and providing timing efficiencies for on/off-bus pickups & drop-offs.

- **Community engagement:** MUVE’s focus on community is what sets it apart from most technology companies working in this space. We have made a conscious effort to hire local, to engage with local businesses and non-profit initiatives which will integrate with the ecosystem we are developing. MUVE and partners have worked through identifying strategic partners with whom we can create sustainable partnerships and drive creative collaborations, including non-profits, health organizations, as well as hospitals.
- **Grants/Corporate/Co-Funding Application:** MUVE and partners have worked on identifying, and applying to joint-opportunities including grants, corporate programs, and co-funding opportunities with NEMT opportunities throughout the life of the project.
- **Extension/Scope of Work:** MUVE submitted an extension proposal to MDOT, including a “final” [scope of work](#) agreed upon by DATA / Schoolcraft regarding the remaining features to be developed to launch the dispatch platform. Ultimately, MUVE successfully developed & launched a new version of the dispatch platform including the agreed upon scope of work completed, as well as further requests outside of this scope of work afterwards, however the full scale implementation and launch of the system never occurred, due to project cancellation.
- **Launch Planning:** MUVE and its team worked on planning the ultimate full scale launch of dispatch, and planned for an integration between Ride-Hailing and Dispatch.

UMLAUT Completed Activities & Deliverables

- **Phase 1 & 2:**
 - **Requirements:** with the aid of MUVE and the agencies, we put together a document listing everything that the apps should be able to do. Categorizing them for each type of user (Driver, Rider, & Dispatch/Paratransit) and prioritizing each requirement based on input from every agency ranging from “Nice to have at some point” to “Must be capable of doing at launch”. Link to [excel](#) and [Jira](#) requirements.

- **User stories:** based on the list of requirements, user stories were established. This document is a living document and continued to change throughout the project as we got feedback from MUVE and the transit agencies. Each user story is linked to a requirement or set of requirements. Link to [Rider](#), [Driver](#), and [Dispatch](#) user stories.
- **Test case creation:** Once we had generated enough user stories our testing team went to work on producing test cases for each of the three user types in JIRA. These test cases were used for smoke testing and happy path testing as well as field testing. The JIRA tool allowed us to include everything into one place with requirements being linked to specific test cases that were then compiled into an entire execution plan for each app. If there were any test cases that failed, JIRA has excellent issue reporting as tickets are linked to specific test cases and could notify MUVE's testing team. Link to [test cases](#) and [preconditions](#).
- **Rideshare testing:** We successfully completed an internal testing event in the Upper Peninsula. We conducted this event with seniors, users with accessibility needs as well as involvement from the transit agencies, to introduce the rideshare app suite and educate users on the product. During that time, users gave us valuable feedback for the platform. With the help of UPCAP, we recruited ~15 drivers to volunteer for our initial phase to compliment transit agencies off-hours/off-days to produce another alternative transportation method for people in the UP.
- **Dispatch/Paratransit lab testing:** For the dispatch web app we wanted to simulate real world scenarios without being in the field. In order to achieve this, scripts were created to automate rider/driver profile creation and booking rides. We would have two or three of our team members using the Dispatch app simultaneously as well as multiple phones to represent individual users requesting rides. For testing paratransit features we used the same Samsung Galaxy Tab A that would be used at the agencies.
- **Dispatch/Paratransit field testing:** During the summer of 2019 umlaut conducted two field testing trials. The first trial was in the Detroit area with ~8 umlaut employees to test how well the Dispatch web-app and Paratransit function of the

Driver app worked together. This would serve as a barometer for our readiness to test these apps in the UP later. Fortunately, the first field test run was successful and so a couple weeks later we were testing the app in the UP. There were some hiccups for the first few hours of testing but MUVE's development team was able to patch things very quickly and that would mark another successful test run.

- **Smoke testing and issue reporting:** Throughout the project we reported a sizable amount of issues across all platforms including mobile and web for Dispatch, Rider, and Driver. Many of these issues were found by simply using the app as if a customer were to use it. While not as thorough as testing with test cases, it does lend useful insight on customer experience. Link to jira issues [here](#).
- **Analytics Data:** Our analytics team compiled a report based on the data from Umlaut's JIRA and MUVE's technical project management tools for reporting.
- **Phase 3:**
 - **Pilot preparation:** As the 2020 year began, umlaut and MUVE were gearing up for the pilot that would take place in March/April of 2020. We had already set up plans to order "Point-of-Sales" devices from Paysafe that would allow for credit card transactions on rides. We planned on updating user stories and requirements in addition to updating test cases in JIRA to reflect the many changes that MUVE had done with their platform.

Key Learning Points & Proposed Solutions

MUVE and Umlaut have learned a lot about the landscape in the UP of Michigan throughout the project. A summary of key points can be found below:

- **Difficult Transit Integration:** we have found that it was not feasible or beneficial to integrate with the current software transit agencies were using for the following reasons (A) using an old technology stack that did not have an API, and that did not have the ability to put a timetable towards having one (B) transit agencies being dissatisfied with the limitations and lack of innovation in current dispatch system (C) no ability for MUVE to offer subsidized rides, without such an integration, and the resources needed to develop an API on behalf of that company would likely be less than having to build a comparable solution from the ground up.

MUVE proposed a workaround: MUVE and its team of innovative software engineers, designers and program integration & training specialist have worked tirelessly in collaboration with each transit agency to develop a “made in the UP” dispatch system to replace current systems, addressing rural concerns taking into account factors such as weather, patchy networks, lack of technology or smart phones available, as well as working toward overall innovation based on dispatch, driver and operator requests. MDOT can find an extensive list of all completed features to that extent [on this link](#).

- Difficulty with network connectivity: we have found that in the UP, Verizon and other carriers have a hard time supporting the entire area. What this brought as a technology concern is the impossibility for drivers to track the rides, interact with the dispatch/driver app, or get new rides, while they are in such an area.

MUVE developed a workaround: MUVE has developed its entire suite of driver products, which work with off-line capability being able to offer a comprehensive workflow.

- Change Management/Implementation issues: we have found that the change management that goes into switching over a dispatch system is a big undertaking, which takes time and a strong collaboration between transit & technology teams. We also found that implementing a dispatch solution, and training a team that has never used technology tools as such is also a challenge.

MUVE workaround: MUVE has developed a support plan, in which a team member gets in contact with dispatchers & executive directors on a regular basis, to assist in showing how to input the rides, confirm schedules and assist in any driver check-ins necessary for a productive operation. Further calls were made to review schedules, making sure the drivers ended their shift accordingly, and to work towards inputting recurring rides so that the next day is well set up. The staff is also there to listen to feedback and communicate directly with the technology team if any issues or bugs arise so they are resolved in a timely fashion. While all that communication somewhat helped operations, when major updates had been taken into production, MUVE scheduled in-person meetings in the UP to train (or re-train) dispatchers and drivers alike.

- Long term “buy-in” from community organizations: we have found that it is difficult for us to secure long term commitments from partners we’ve engaged with, since they do not want to engage only for a period of a few months and waste resources if they believe MUVE will leave shortly thereafter.

MUVE workaround: We have kept great relationships with organizations throughout the UP, and have kept them abreast of our efforts and plan towards extension, to be able to have them commit to longer term partnerships with us once we will have clarity on our resource allocation & future plans.

- Covid-19: With the hit of a global pandemic, the operations of each partner agency were significantly affected and made this project impossible to advance on their end, thus the board of each agency voted to cancel their participation.

Partner Agency Workaround: N/A

MDOT can find a comprehensive list of fully completed features during the life of this project at this link:

https://docs.google.com/spreadsheets/d/1jE_KDGnX_nzvO4gJkFR-g9SvYX-_6VPZ6DnwCUrqPL/edit?usp=sharing

Suggestions For Future Mobility Innovation Projects:

- Allow for more time for technical & operational fit at the onset, to avoid surprises and allow for better project planning. With the short turnaround on identifying areas, and rushing into establishing a plan - it proved to be difficult for those involved, as better planning would have enhanced chances of success. This could be done in a 60-90 day period, with a small budget to cover travel & staff. A sample deliverable could include a feasibility report with each partner identification, signing off on a clear scope of work.
- Make learnings from point above a key part of the proposal and mandate **both** the participating transit agencies as well as the private participants to a clear scope of work and agreeable integration / launch plans, where funded projects can show a clear path to successful production deployment and launch at scale.

- Exclude or limit feature change orders from innovation projects, unless it is planned for and approved by all parties under the scope of one or many of the deliverables.
- Create a framework for success, where public/private projects which hit their milestones on time and budget (or overachieve), have a clear pathway for multi-year extensions, making it easier for private companies to close long-term commitments in the selected area with for profits, nonprofits and community organizations helping find true sustainability and scalability potential.

Highlights of Michigan Mobility Challenge:

- The group's efforts created a blueprint for what we collectively wish to see MUVING' forward in society in terms of a fully integrated mobility & community building solution.
- Showcased a successful public & private international government collaborative effort.
- Developed custom mobility solutions for rural communities.
- Engage stakeholders in the community to create a more inclusive transit/ride-hailing system leveraging cutting edge technology.
- MUVE IN' Michigan Videos: [Video 1](#), [Video 2](#), [Video 3](#), [Video 4](#), [Video 5](#)

Conclusion

We wish to thank MDOT for their support and help in getting a first of its kind program off the ground. We are proud to be united under a common want and need for creating a better ecosystem for the large population living with accessibility needs, including veterans and seniors who need it most. This collaboration has forged a greater understanding for all involved as to what being a mobility leader in this space entails. This has exposed each participant to a very diverse group of partners, which are very reflective of rural communities & needs across the entire state of Michigan as well as the US as a whole. Each key learning point taken into consideration as part of this project will serve in the broader objective of bringing top tier innovation to the field of accessibility, mobility & social inclusion.

Thank you!

MUVE, represented by [Anthony W. Shannon](#) and [Peter Grande](#).

UMLAUT, represented by [Andrew Rosenberg](#)

MUVE Project Final Summary

Schoolcraft County Transit Authority

Delta Area Transit Authority

Dickinson Iron Community Services Agency

10/28/2020

All three agencies in the U.P. that participated in the MUVE project came to the same conclusion. The software is not developed enough to step in and do the job. It was not a plug and play it was being developed as we went along. Duplication of work, double entry into 2 systems, while dealing with daily bugs was the downfall. With all of us being small agencies, there is no time for the additional work of trying to build a dispatch system from scratch. To many issues, and not enough time to get them all corrected.

In theory, the system showed a lot of promise, and had a lot of potential. We expected a program that would meet or exceed our expectations. We believe MUVE thought dispatching was much simpler than it turned out to be. Could it reach that potential? Possibly, but it is still in development, for which we didn't have the time for. Not to mention parts of the program that aren't developed yet that are needed daily. Frustrations from the staff in testing and double entry of information led to losing interest, especially when the issues weren't resolved in a timely manner. MUVE also changed personnel on the project many times, which led to more duplication of work and information.

The hours each agency have invested in this project are numerous, and we are still not any closer to a final product than we were 6 months to a year prior. Had MUVE spent the time at each agency to fully understand the desired effects, put it together and then presented it, or each agency had the staff and time to dedicate to developing the project, we might be talking a different story now.

The following pages are reports and thoughts from the three participating agencies in the MUVE project.



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www.sctransit.org

Date: October 28, 2020

Re: Final Assessment
MUVE project

Schoolcraft County Transit Authority in partnership with MUVE, began what was to be a pilot ride share application that would allow clients to book, pay, manage and choose their own mode of transportation, not just thru transit but any mode of transportation available. This project was funded by the Michigan Mobility Challenge.

The app. would allow clients more freedom and choices in booking their rides as well as managing their accounts. The app would also allow clients to book thru any source available or capable of providing needed or desired transportation. In theory this pilot would offer tremendous opportunities for clients at any time of the day or night, not limited to transits hours for transportation.

Challenges:

- Integrate with existing dispatch software
- Change in scope of project

From the onset, MUVE quickly realized that the ride share application that they had developed would not be able to communicate with Schoolcraft County Transit Authority (SCTA) dispatch software. For their ride share app to work properly, they would need to develop a dispatch software for communication. SCTA's current dispatch software provider had no incentive to work with MUVE to communicate with their ride share app.

MUVE's partner P3, continually requested information from the Transit agencies, and sent different personnel to study current dispatch in operations. The constant change in personnel with P3, affected the communications, and their understanding of what was needed for a dispatch software to meet SCTA's needs.

Their testing consisted of our dispatcher, and drivers using both systems at the same time. Neither ideally had the time to enter data into both systems simultaneously. Especially with the constant changes, upgrades, and problems in the MUVE development, causing repeated work many times. Because of these issues, the buy-in from our staff became low due to the issues, and the length of time required to fix them.



Conclusion:

In theory, MUVE had a great idea to developing dispatch software, that would have exceeded our current software. SCTA is stretched thin like all agencies and did not (doesn't) have the time to test and retest a software that wasn't fully developed, while maintaining our daily duties. I (we) don't believe MUVE fully understood what was needed to become a better program than our existing one. They didn't take the time to fully learn what we currently have and currently need. I personally wish they had of spent days and weeks at any transit facility to fully understand the complexities of dispatching. To many smaller important details still have bugs or were not fully developed.

Eric Perrollaz

Deputy Director- Schoolcraft County Transit Authority



October 28, 2020

Dear Chuck,

In December of 2019 we were implementing the MUVE system with our dispatchers and drivers. There were a lot of glitches in the system, which is something to expect with a new program. The training went well, and my drivers caught on quickly to using the tablets for their daily schedules. It helped keep them on task and get to the clients a little faster. With the way we run it was a little harder as we do a door to door service and our area is not very big. We always did pick-ups in the order of where the drivers were at the time and if they were available to do it at that time. This made it a little harder for my dispatchers because they couldn't set up the trip until they knew who was picking up what clients.

On the side of the dispatchers, things were a lot different for them. Training was more difficult as Muve staff did a lot of changes as the days went on. We had to use both our system and the Muve system so that made for double-entry every day. There were a lot of days we would come in to start our day and the system was either down or changed and they had kicked out everything the dispatchers had entered the night before. In March of 2020 Covid-19 hit and it slowed our transportation down to a very minimal amount. Since we were only doing 5-10 clients per day and only 3 days a week, we stopped using the system.

What we were really looking to see is a system that would help with setting up transportation, tracking our daily fees, and be easy to use for billing. We serve primarily seniors, so I do not think that our clients would use an app on a phone or computer to set up their rides. Calling in is a much better way for them to handle setting up rides. We were also hoping that if there was a system that worked for us, that it would be used with all of the MDOT agencies and would be part of the transportation programs.

What was positive about the system:

1. It helped keep track of our drivers
2. Our drivers had an easy time knowing the system and how their day would go
3. The system was pretty user friendly for my dispatchers and drivers
4. Able to assign a driver to a certain pick up

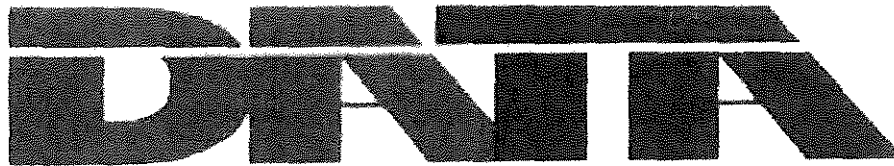
What was negative about the system:

1. The system had a lot of changes on a daily basis
2. Dispatchers had to double enter the trips and could only do it at the end of a day
3. The part that was supposed to keep track of the daily money did not work at all
4. Trouble tracking our waiver clients or specially billed clients

Overall, the system was nice to use, but in the end most of our clients would not be able to use it as an app and being a non-profit we would not be able to afford to buy the system itself.

Thank you for the opportunity to be a part of this trial.

RoxAnne Deneau



Delta Area Transit Authority

10/28/2020 Final assessment

The MUVE project I am certain would have finished within the time line set if it would have stayed with the original scope of the project. When the scope changed the project became much more complicated. The need for the ride share to communicate with our current dispatch software was important. After realizing that the current software and new ride share could not communicate. The scope of the project was changed to include designing a dispatch program that would communicate with the ride share project.

As small rural agencies trying to give this project the attention it deserved was difficult at best. Taking on this on top of all the other duties that agencies have was difficult at best. When the Pandemic entered the picture it made it even more difficult as staff was cut back so there was less time to devote to this project.

It was certainly a project worth doing and possibly revisiting at some point. I believe we were close but there were still some critical things that either were not completed or could not be tested to the extent that was needed.

Some of the failure in this was the lack of understanding what was needed by everyone that was involved. I do believe we could have made things more clearly from the beginning. I think personnel changes and frustration with having to share the same information ongoing with each change really made it difficult to stay motivated.

I believe we all learned a lot thru this project. I now have a better understanding how this process works as well as what time and energy is needed to see it thru. I also believe that buy in from the employees expected to help in this is important so you get the best they are capable of as well as a positive test environment. So giving the agencies a stake in this could have helped to keep the staff motivated.

Thank you for the opportunity to be part of this.

Penny Viau

Operations Manager

Delta Area Transit Authority