MMC SPLT Rides – Lessons Learned
May 8, 2020

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Executive Summary

This documents shares learnings from SPLT_Bosch's engagement with the State of Michigan through the Michigan Mobility Challenge, and is told exclusively from the perspective of the SPLT_Bosch team that worked on the program from June 2018 when the Michigan Department of Transportation, through the Office of Passenger Transportation, first announced the program, to December 2019 when we mutually agreed with MDOT leadership to conclude the effort.

The document tries to genuinely reflect on the engagement as a whole, with a goal of documenting our learnings so that they can be socialized and applied to future programs of similar nature. We remain available to discuss these findings with MDOT upon request.

One thing is clear: the MDOT team and the key partners (Allegan, Benzie, BATA) worked in good faith and were genuinely interested in the success of the project, and remained flexible and supportive throughout.

Key Lessons Learned – Macro View

1 Create opportunity for more due diligence in the proposal phase

2 Ensure the project scope to considers all variables, especially those that are most difficult to influence

3 Ensure team expertise extends fully into the domain of application

4 Ensure all project stakeholders are aligned to the mission from the beginning, and remain aligned throughout

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1. General Lessons Learned

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General Lessons Learned (1 of 4)

1. **Improve requirements gathering prior to project kick-off**
    a) More business discussions required (needed more information in order to better understand the user experience and expectations)
        I. Job mirroring would have allowed us to have greater depth of the tasks and complexities
        II. Examples: handling transfers, multiple destination trips, different rider needs
    b) Gain familiarity with current product offerings, how they capture data, and how they schedule
    c) Ensure all external vendors have technical capability to support project (i.e., copy and paste not allowed in PC Trans configuration - these technical implications impacted us down the road)
    d) Each county had different verbiage that conflicted - large amounts of time spent deciphering among different terms (i..e, ride types) to understand what each county actually required (should have been outlined at the start)

2. **Start with one county or select multiple counties only if they have overlapping characteristics**
    a) Difficulty and complexity trying to build one pilot solution that is harmonized across three very different counties all using different service providers and different ways for uniquely identifying riders
    b) We were focused on customizing for counties versus creating a re-usable solution (80% customization and only 20% reusable solution)

3. **Competing expectations amongst counties and external providers wasn't harmonized**
    a) i.e., Routematch had Boston Project; we learned in May that Routematch was also involved on another project within MMC and did not have the capacity to support our project
    b) Scope creep - critical miss in understanding what a pilot would deliver vs. a full-scale solution

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General Lessons Learned (2 of 4)

4. **More detailed check-ins with all stakeholders**

    a) Check ins should have been with all three counties to ensure scope was limited to pilot launch

    b) Scheduling vendors should have been a part of the planning process from the beginning

    c) Use lessons learned to create a template for status reports/check-in

5. **Template for invoicing provided by the State**

    a) Turnover within our organization made invoicing difficult because the process was not transitioned well as it relates to the requirements that needed to be met

    b) More clarity surrounding what information was needed to process invoice

    c) Examples: description of tasks performed, delivery of solution by phase, hours, employee, etc.

6. **Understanding HIPAA complexities - an expert was needed**

    a) Time was consumed in ensuring compliance and information was secure

    b) The views of other agencies within the MMC project were all different

7. **Priority of third-party providers was not aligned with the project prior to being kicked off**

    a) Limited bandwidth by the third-party providers to provide proper support (i.e., PC Trans limited organization to provide resources that aligned with SPLT development work)

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General Lessons Learned (3 of 4)

8. **Who is the rider?**
   a) Clear orientation as to who the application would be servicing
   b) How did riders use the pre-existing service?

9. **What defines a ride?**
   a) Different than originally expected - Point A to point B vs. start to finish (including multiple destinations/transfers)
   b) Realized that a ride was point A to B back to A all in one sequence

10. **Clear defined requirements for the county and for the riders**
    a) With exception to the ride integration of PC Trans, most of our requirements were achieved, however all counties chose to opt out of the pilot - integration with a third party provider was the underlying objective of the counties, this was not well known or understood by the project team as make or break
    b) Support in managing growing ridership at same capacity level, requiring a solution that would allow for greater efficiencies
    c) Clear message regarding pilot deployment vs. iterative releases. Misalignment in expectations as to what would have been provided differed county to county
       i. What is value proposition for the county? Riders? The solution did not provide the needed capacity to value it in the near term

11. **The Minimal Viable Product (MVP) was not accepted by the counties**
    a) Initial limitations would not have fulfilled near-term capacity constraints
    b) Limited scope to accept a new solution by the counties due to limited resources at counties

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General Lessons Learned (4 of 4)

12. **"Change management" objectives and expectations**
    a) Focus more on change management as part of the project from near to long-term deployments
    b) Develop a plan near to long term as to the change management items, providing to the counties as clear representation as to the impacts to their daily routine.

13. **Understanding the volunteer portal requirements**
    a) Vehicle type determined the level of service and vehicle
    b) Each volunteer driver had different availability - difficulty to track and communicate with each individual volunteer

14. **Understanding the needs of the rider vs. adding complexity/features that were not warranted**
    a) Type of disability, i.e., wheelchair type required
    b) Caregiver or family member going along with the ride
    c) Number of stops - was not understood that trips would need to have multiple destinations
    d) Understanding service area for each county and how they overlap

15. **Priorities misaligned between counties and state**
    a) What changes are counties making that impact how they operate today? (i.e., Benzie was going to sunset PC Trans in a year or two)

16. **Greater visibility into county service road maps with their software partners, including contractual and tech relationships**

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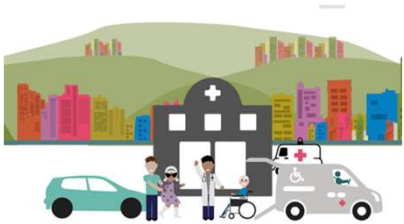
2. Lessons Learned Related to Demand Response Transportation

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MMC challenge (Summary)
Demand Response Transportation

Challenge:

To creatively solve gaps in Demand Response Transportation as part of the MMC. We have identified a single topic that is of the greatest concern: **Coordination.** The gaps can be broken down into three main areas.

- Ride Cancellation and No Shows

According to the transit agencies we interviewed, the rate of ride cancellations for paratransit riders ranges from 6% to 60%. Each cancelled ride can represent up to hundreds of dollars in direct costs and hours wasted, as well as allocation of finite transportation resources that could be used to deliver rides to others.

- Ease of Access

To schedule a paratransit ride, the law states that the rider must place a phone call to the agency with a minimum of 1 day but up to 14 days in advance.

- Interoperability

Due to the fragmentation of the market, each transit agency, through its own procurement process, operates a different paratransit software program.

Proposed Solution:

- A Mobile App and website branded under SPLT Rides for ease of access to:
    - Register
    - Login
    - Book a trip
    - View/ Get updates on trip status
    - View a trip detail
    - View past trips booked via app
    - Receive trip reminders (via text, phone call, email and mobile push)
    - Cancel a trip
    - Pick trip reminder preferences
    - Care Giver and Rider profiles

- SPLT Rides backend
- Build a "router" for all trip requests coming from the app and route them to the appropriate transit agency's dispatcher software and receive updates from transit agencies on trips and route it back to the user via app to target seamless interoperability.

- Send trip update reminders to users via text, email, phone call, and mobile push to tackle ride cancellations/ no shows.

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Lessons learned
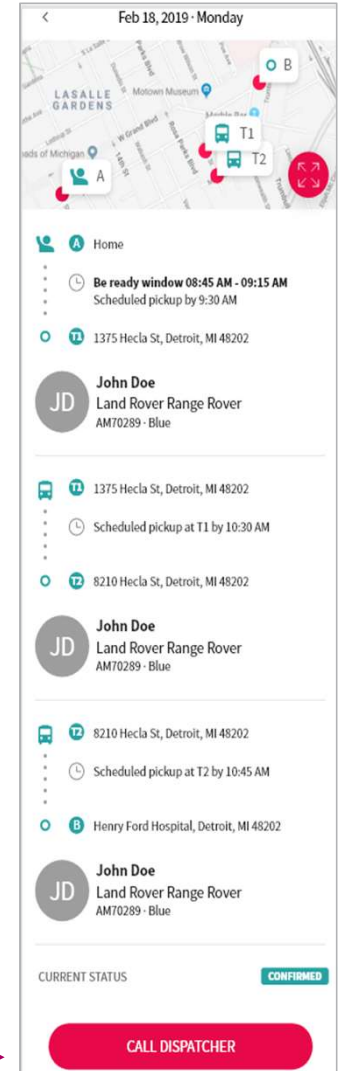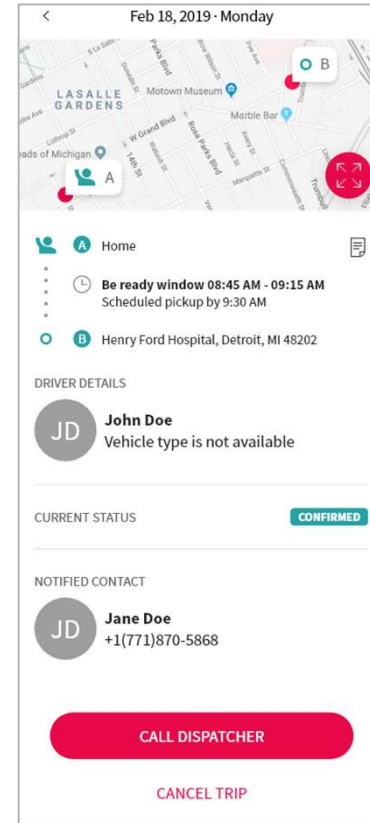## Demand Response transportation

1. Increased **complexity** in **handling** ride requests coming back with **transfers**. Ride Request from user from "Home" to "Munson Hospital" might come back from dispatcher systems as "Home" to "Hall Station B" – leg 1 ; "Hall Station B" to "Munson Hospital" – Leg 2.

   a. This specific scenario is only true for Benzie county – but accommodations need to be made to harmonize across all dispatch systems
   b. The API interface for how the data will be returned from PC Trans and in the future other dispatch providers needs to accommodate a trip coming back as requested (A to B) or with multiple stops/transfers in between (A to C to C to B).
   c. The User interface in the App also needed to accommodate multiple transfer.
   d. Assumption was maximum number of transfers between would be < 5
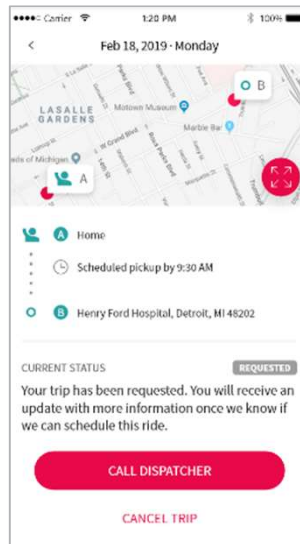
Requested Trip

Confirmed trip variations

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Lessons learned
Demand Response transportation

2. **There are different rider groups, each set of rider groups varied by county.**

Additionally, there were more rider groups than originally expressed from the counties (i.e., more than just seniors, also includes children riding to school).

Request from counties to **accommodate** both NEMT and **other types of ride requests** requires asking more questions to the rider in app to understand both reason for the ride request as well as asking the right question to get the pickup/drop off time accurately from the user (arrive by vs. depart by).

As each transit authority has different lists for trip purposes and priorities based on those purposes. In order to get this information from the rider without having to provide an exhaustive list of options, the decision to pick top 2 most frequently used/ most important purposes followed by Other was shown in the app.

ACT

Trip Priorities

Number	Trip type	Trip category	Priority
1	Dialysis	Medical	Priority 1
2	Hospital - Ride Home	Medical	Priority 1
3	Physical Therapy *1	Medical	Priority 1
4	Dental	Medical	Priority 1
5	Home Visits	Medical	Priority 1
7	Doctor Appointments	Medical	Priority 1
8	Medical Out of County *2	Medical	Priority 1
10	Work - Short Term	Employment	Priority 2
11	Volunteer Work	Employment	Priority 2
9	Work - Long Term *1	Employment	Priority 3
13	Bank	Essential Services	Priority 3
14	Grocery Shopping	Essential Services	Priority 3
15	Post Office	Essential Services	Priority 3
16	Funeral (immediate family)	Essential Services	Priority 3
17	Meal Sites	Essential Services	Priority 3
18	Adult Daycare	Essential Services	Priority 3
12	Food pantry	Essential Services	Priority 3
19	Visit Nursing Homes	Medical	Priority 3
21	Movie Theater	All Other	Priority 4
22	Courthouse - Probation	All Other	Priority 4
23	Jail - probation	All Other	Priority 4
26	Restaurants	All Other	Priority 4
20	Getting to Holland	All Other	Priority 4
24	Bible Study	All Other	Priority 4
25	Hair appointments	All Other	Priority 4
27	School - band practice	All Other	Priority 4
28	Recreation	All Other	Priority 4

Benzie Bus

Airport
Business
Church
Court-Lgl
Delivery
Home
Medical
Recreation
School
Shopping
Transfer
Work
Social Services

BATA

Medical is priority # 1

and everything else
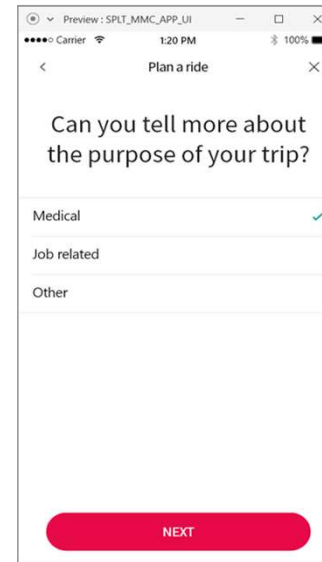
Note: ACT lists out 28 different trip types each with corresponding and sometimes overlapping priorities. In direct conflict is both Benzie and BATA. Benzie lists out 13 different trip types while BATA has only medical as the number one priority.

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Lessons learned
Demand Response transportation

3. Service areas and county borders are not cut and dry – some areas overlap across counties. This adds unanticipated complexity to ensure ride requests are routed correctly, even if ride requests take the rider "out of county borders."

a. Sometimes a rider from Benzie gets dropped off at a destination served by BATA (i.e. Leelanau or Traverse City limits)
b. For Minimal Viable Product (MVP) rather than routing the trip request from the app to the transit authority based on current location of the rider, all trips would be routed to their "HOME" transit authority which is based on their home address, as the complexity of handling the same user in two transit authority systems needs to be well thought through in terms of all the edge scenarios and all the complexities in handling duplicate ride requests.
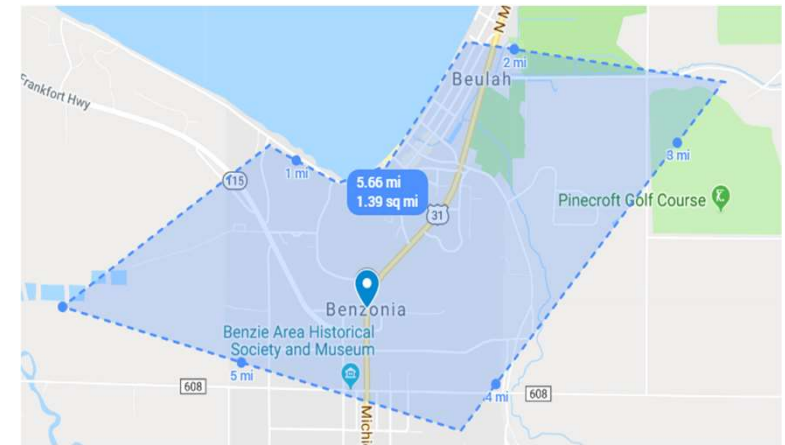
While not complex, required additional time previously not planned for.
● Not identified as part of the scope during the initial requirements
● Not well defined that this was common practice between BATA and Benzie

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Lessons learned
Demand Response transportation

4. Threshold handling for booking and cancellation is different by county – This added complexity to handle within the app to appropriately message rider, based on the Transit Authority they are linked to.

A lot of computation would be required in the app to show appropriate message based on transit authority and their days and booking thresholds (as each transit authority has different rules – see image)

We also learned that some of the rides BATA schedules are delivered through COAST, which only serves seniors, and has a different window of cancellation, but it will be acceptable to BATA to harmonize the cancellation window from the app, across counties.

It was decided for Minimal Viable Product (MVP) that we would allow same day trips for BATA and Benzie and let the transit agency make the decision of denying the trips if they absolutely can't accommodate it and address the rider with a message in the app- that their booking request has been sent, but the transit agency will need to check if this late request can be accommodated based on availability.

Advance booking upto 14 days ahead is allowed in the app- aligns with current rules if rider calls in.

Transit Authority Name	Booking window Threshold (same day request)	Booking window Threshold for next day request	Booking window Threshold (advance booking)
BATA (Bay Area Transportation Authority)	Deny	12:00 noon day before travel	upto 14 days in advance of travel date
BENZIE BUS	same day booking up to 8:00 am to 3:00 pm ; at least 4 hours prior to the time requested	TBD	TBD
	Deny	upto 12:00 noon the day before travel	TBD

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Lessons learned
Demand Response transportation

5. Difficulty in understanding what pickup and drop off terms really mean to each county and how that data is actually stored in their systems.

The ability to capture the pick up or drop off time based on Arrive By or Depart at login took several iterations to get right by gathering user feedback i.e. by interviewing riders on the best way to capture their situation via the app.

a. Being able to correctly capture whether the rider has an appointment where he/she needs to get a destination at a specific time or the rider has a more flexible schedule and needs to leave the source by a specific point and doesn't have a set time he/she needs to get to the destination, took several iterations of in nailing the user experience right, by going through several rounds of UI designs and user interviews to be able to accurately get all time information correctly sent to the underlying dispatch systems.

b. Each underlying dispatch system stores this information in a different way.

```
[
  {
    "companion": "Personal Care Attendant",
    "requested_ride": {
      "style": "off_time_style",
      "requested_time": "2019-08-30T17:10:48.726Z",
      "address": [
        {
          "type": "Pickup",
          "text": "string",
          "placeId": "string",
          "state": "string",
          "county": "string",
          "coordinate": {
            "latitude": 0,
            "longitude": 0
          }
        }
      ]
```

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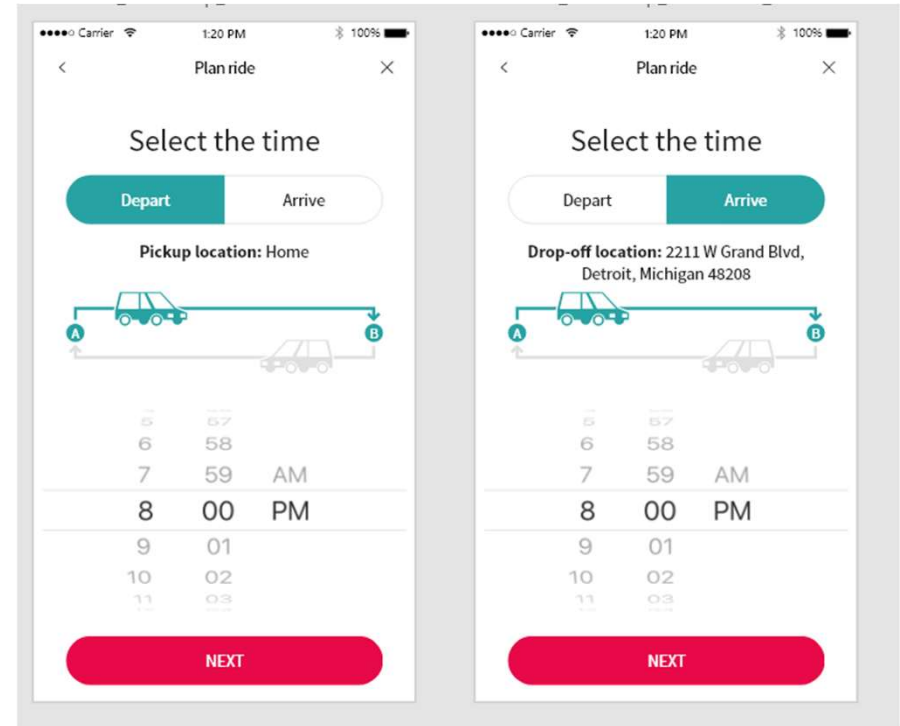
Lessons learned
Demand Response transportation

6. Keep subscription & group rides process as it is today i.e. via dial-a-ride

Based on feedback from counties those ride types require more planning and input from the dispatchers, and sometimes additional qualifications

a. Recurring trips also known as subscription trips are generally booked in the system for months on end. Sending this information to the underlying dispatch software system via API would require special handling, specifically around trip category: one-time or recurring and recurring trips would then need to parameters like from , to , days, pick up/drop off times etc.
b. Questions around : can recurring trips be multi-destination or round trips adds more complexity to book via an app.
b. Displaying recurring trips within the app would require special handling for rider to easily identify a one –time booking from recurring trips.
c. There is added complexity if one of the recurring rides is cancelled by the rider and sending that to the underlying system.

For the above reasons – it was agreed that subscription trips should be left out from the Minimal Viable Product (MVP).

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Lessons learned
Demand Response transportation

7. Booking Multi-segment / multi-destination trips via the app

Often times riders call in and book multi-destination one time trips. So they want to go from A to B, B to C and C to A or C to D. We went through several UI design iterations to get the right user experience where riders are able to book

➢ One way trips A -> B
➢ Round trips A -> B -> A
➢ Multi-destination trips A -> B -> C -> A or A -> B -> C -> D

The complexity comes when each of these trip segments has transfers in between. This seems like a common scenario at Benzie.

Needed clear definition of a "ride" and what it meant to each county expanded upon in more detail prior to development.

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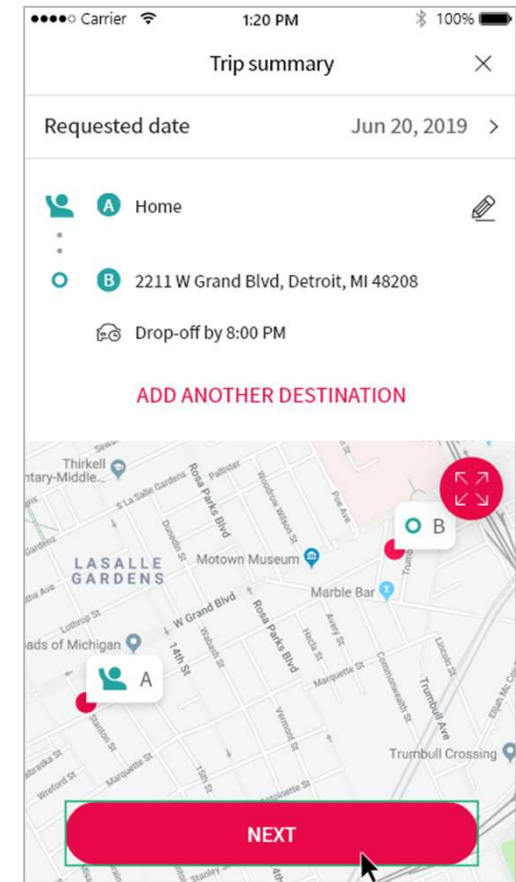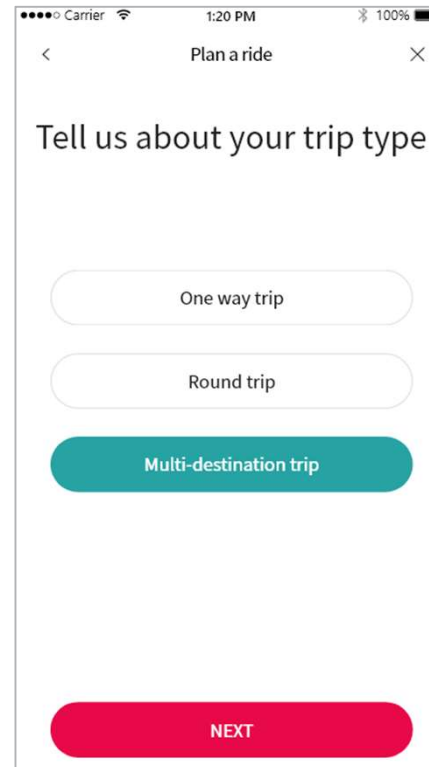
Lessons learned
Demand Response transportation

8. Special Needs – being able to capture all the needs required and mapping them to the correct values in the 3 underlying dispatch systems was tricky as each dispatcher system has a different way nomenclature for the types of wheelchairs and list of needs. As you can see below, we tried to harmonize the lists presented in the app across all 3 transit authority systems to deliver the key information the dispatchers need to provide the right vehicle to the right passenger.

Wheelchair types specifically was difficult to harmonize as not all dispatch systems have all these options. It was also important to know if a rider has wheelchair needs if they are ambulatory or required a lift/assistance to determine if they can be put on a transfer bus. **The vehicle type had a direct impact to the type of rider (specific disability req'd a specific vehicle). Certain counties relied on volunteer drivers who could not transport patients with wheelchairs in their vehicles.**

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Lessons learned
Demand Response transportation

9. **Understanding the rider demographic and how to group them (Caregiver? Child? Spouse? Friend?)**
Complexity in **handling companion on trip** – as a companion could be a Caregiver, PCA, service animal, spouse, friend, or multiple children.

Each county's underlying dispatch system accepts & treats companion travelers in a unique fashion. We need further investigation to **harmonize** this user **experience** across counties post Minimal Viable Product (MVP).

- Benzie allows children (multiple) as co-passengers and required their names and ages to be sent via the app to accurately know charging as well as no. of seats to reserve.
- With the app since ever rider is required to have a profile to tie the rider in the underlying dispatch system this posed a lot of challenges and added a lot of complexity in handling from the app.
- ACT – wanted to know if the co-passenger travelling with the rider have special needs such as needed wheelchair accommodations etc. and type of wheelchair.

In order to harmonize this for all 3 transit authorities and be able to send data via an API to the underlying systems we decided to restrict the Rider + 1 options to-
- Personal Care Attendant (travels for free)
- Riding alone

Additional information to the dispatcher could be provided in a text field called "Additional information" – this would be free text format that would allow rider to type in specific messages they want to deliver to the dispatcher. We would really need to think about how to capture these additional cases beyond MVP and also understand how other transit authorities across the US manage these or there are additional nuances with co-passenger data collection .

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Lessons learned
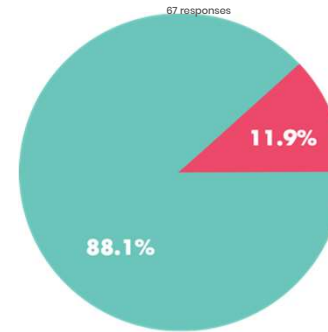## Demand Response transportation

This experience of understanding how the user functions would have been key to building this solution. Assumptions made that scheduling would be done through web-based portal and that multiple profiles would be needed.

10. Mobile First approach (web-based scheduling platform not necessary)
   A Mobile App (only) is a better approach for **Interactivity, Complex Calculations**, Native Functionality or Processing Required – **GPS, Call dispatcher, Push Notifications, offline behavior** etc.

11. Simplify Rider/Caretaker Profile into one and still support Care-taker / Rider to receive updates about a ride via SMS and IVR.
   - o The person booking the ride via the app can always provide the phone number of an additional contact during a new ride request. This person will also receive updates about the ride.
   - o Conflicting priorities relating to the ability of a caregiver to book a ride on behalf of another person

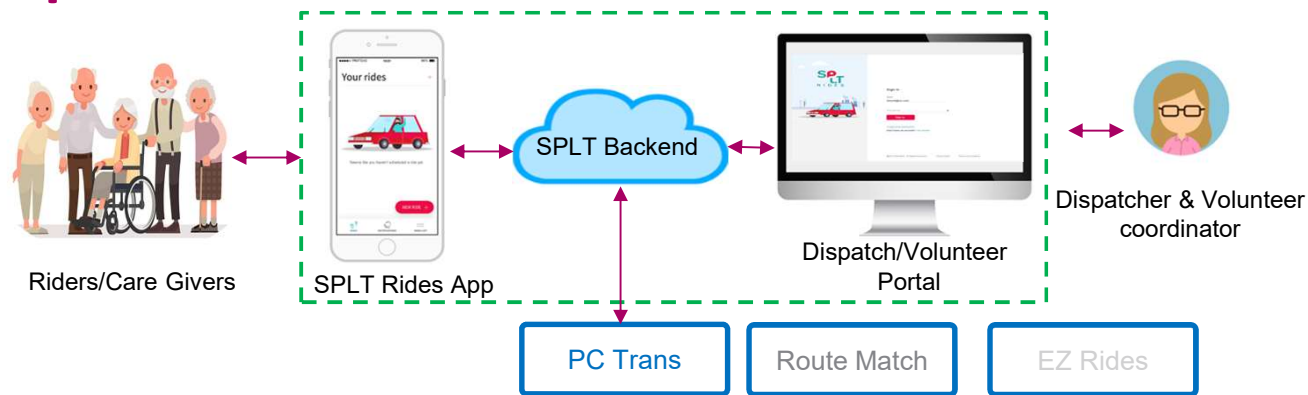**Mobile Usage Data from BATA & Benzie**

Do you have a smartphone?

67 responses

11.9%

88.1%

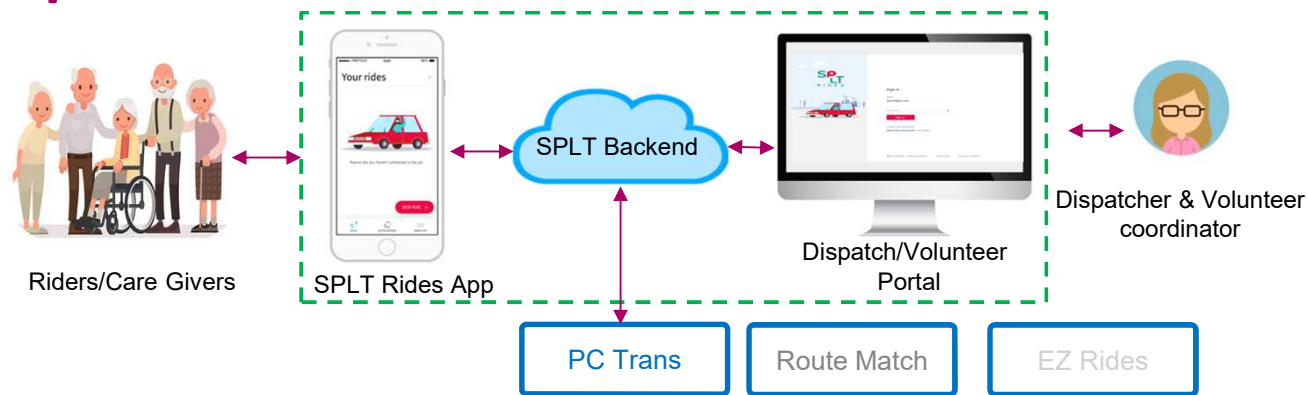~88% of user's access information about rides via their smartphone.

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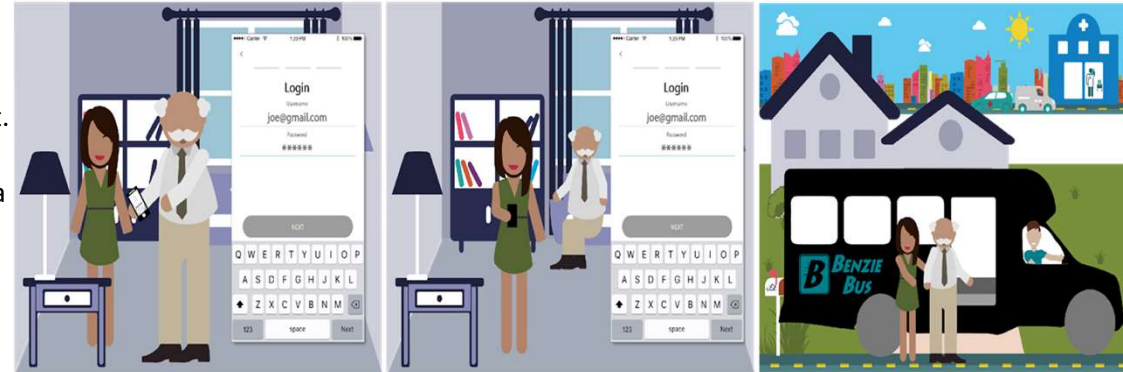
3. Lessons Learned during attempted integrations with dispatch systems

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Demand Response transportation – Integrations with dispatcher software companies

Riders/Care Givers   SPLT Rides App   SPLT Backend   Dispatch/Volunteer Portal   Dispatcher & Volunteer coordinator

PC Trans   Route Match   EZ Rides

1. Valuing the third-party ride platform should have been a requirement from the start
   a. Needed to involve the scheduling vendors more, just like we did with the counties
   b. Understanding how information was architected and used in a legacy system and how it would be used in a new application system is critical
2. Each dispatch software provider and their system has nuances handling rider & trip information. For e.g. fields for personal data about the "rider" are not the same across the board and also there isn't a unique identifier (e.g. email/username) for a rider. Associating a rider in the app with an existing rider in PcTrans/RouteMatch is not straight forward. A decision was made to make "email" be the unique ID , which would require the dispatch team to collect emails of all riders prior to the pilot and update this in PCTrans/RouteMatch for the integration to work seamlessly.
3. Each dispatch software provider system has different fields for "trip/ride information", making it a very challenging to harmonize across all 3 counties and providers - yet making it provider agnostic for the rider.
4. **Rather than try to harmonize data sets across 3 providers - integration with one provider – one transit authority followed by a limited pilot in one county would have been a better approach.**

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Demand Response transportation – Integrations with dispatcher software companies

Riders/Care Givers SPLT Rides App SPLT Backend Dispatch/Volunteer Portal Dispatcher & Volunteer coordinator

PC Trans Route Match EZ Rides

4. All the underlying dispatch software systems are windows desktop client software and not modern cloud based software. The dispatch software providers would have had to invest in creating a modern cloud based solution for integrations with 3rd parties like us. This would have been especially difficult with low IT budgets and funding cuts.

5. None of the providers were API ready right from the get go. Establishing the API interfaces between Bosch/SPLT and the dispatch software providers should have been a project in itself as it was a key dependency and the highest risk.

6. For a successful integration, the interface readiness from the dispatcher ought to have been a high priority project. SPLT team should have started the SPLT backend and app development only after the interfaces with at least one provider were concretely defined and agreed.

7. Development of Dispatch portal (stop gap solution) in lieu of integration with EZ Rides (end of life product) : The SPLT Rides dispatcher portal will lead to double work for the dispatcher team as they would need to enter data coming from the app into the EZ Rides system as well as update the SPLT Rides dispatcher portal once a ride is either confirmed or denied. The dispatch team didn't seem to mind that as it would probably reduce the incoming calls considerably as well as save time when it comes to listening to voicemails and enter them into the system. However, BATA decided against the solution for this reason - again, emphasis on importance of setting Minimal Viable Product (MVP) & change management expectations upfront

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4. Lessons Learned In the Volunteer Transportation Space

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MMC challenge (Submitted in Work Plan)
Volunteer Solution

Challenge:

Proposed Solution:

- Certain counties have volunteer driver pools that help take patients to and from appointments.

- This pool is currently coordinated through 3rd-party software, 3rd party providers in certain counties, or excel spreadsheets.

- It will be a huge value add to have a clearly defined volunteer process to add volunteer drivers, assign volunteer drivers to ride requests on demand and give the dispatch teams the ability to manage the volunteer driver fleet.

Enhance web portal whereby the volunteer coordinator can log in and see the ride requests that qualify for volunteer rides, assign a volunteer driver and confirm rides.

This is an enhancement beyond the scope of the original project but MDOT team supports additional due diligence

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New Challenges from Road Trip in May'19
Volunteer Solution

1. **Needed to better understand the volunteer fleets and their capabilities**

This issue is the most challenging to provide a solution for because we had solve for multiple providers with different vehicles, areas of service, costs, and systems of eligibility. Better requirements gathering needed upfront as the expectation was that the volunteer fleet was a single, unified fleet.

BATA has Several third-party providers service providers listed on http://www.networksnorthwest.org/rideshare that provide such a volunteer service (transportation options) on demand if there is no capacity on the BATA bus.

Dispatchers prioritize bus trips, and make suggestions for riders to reach out to providers of the other options if there is no capacity on the bus. Riders are required to book such rides by themselves.

Recommended Approach for BATA (Minimal Viable Product)
- Begin to implement new processes that support new solutions while laying groundwork for change management that is required for future iterations of the SPLT Rides solution
- Ensure that solution has geo-fencing capability to route ride requests to both BATA and Benzie based on location of service

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New Challenges from Road Trip in May'19
Volunteer Solution

- **Allegan County** is currently using a system called Ride Schedule for their volunteer management.
- It is web portal based software which allows the volunteer coordinator to:
- Create a list of drivers (volunteers) and riders (currently - seniors/ people with disabilities)
- Enter a ride request and assign a volunteer driver to the request – this is currently done based on best judgement, as certain riders don't want to be paired with certain drivers and vice-versa, as it may not be a good fit.
- The **biggest pain-points for the volunteer coordinator** were –
  - ✓ Not an easy way to quickly enter a new ride request in the system.
  - ✓ Not good way to see the **big picture** for a given day/week - **scheduled rides, and requested rides, cancelled rides – Volunteer coordinator manually** maintains this data today in excel.
  - ✓ A lot **of manual communication and coordination back and forth** between the driver and rider. If there was a way to automate this, it would be a win.

Recommended approach for Allegan
- Expand the dispatch portal (originally planned for BATA) to also support volunteer handling (similar to BATA's model)
- Give Volunteer coordinator the ability to add new riders, volunteer drivers
- Give Volunteer coordinator ability to clearly view upcoming ride requests and filter by their status.
- Ability to easily create a new ride request – one click button.
- Automatic assignment of driver to rider upon confirmation
- Automatic notification to rider upon ride confirmation.
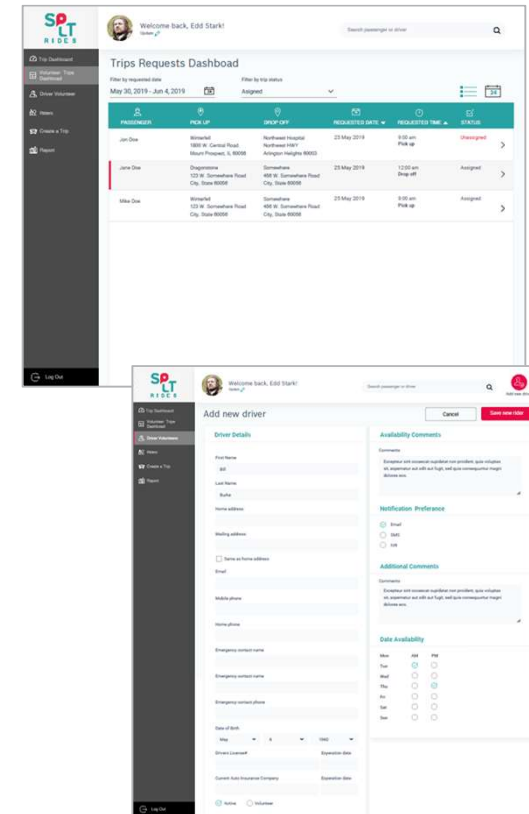
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5. Lessons Learned /Challenges Related to Creating a HIPAA Compliant Solution for Demand Ride Booking by Covered Entities

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Covered Entities

Lessons Learned

Bosch identified HIPAA compliance as an issue during application development due to the types of personal data being collected. Interpretation of HIPAA became challenging regarding certain types of personal / rider data to be stored. A benefit to future projects would be to secure HIPAA competency prior and during the project.

The challenges associated with creating a HIPAA-compliant solution for demand-ride services generally fall into one of 4 primary areas of interest:

1. Social
2. Architectural
3. Organizational
4. Technical

Of these four areas, the three topics which lend themselves most readily to further study will be Social, Architectural, and Organizational, as there are a multitude of approaches that can be taken to address many of these concerns.

What is the real impact for service providers as it relates to HIPAA? What is an entity really allowed to understand about a user?

- There was a debate among other county providers that made it very clear that HIPAA is not well understood as it relates to impacts and liabilities
- **We did not understand the direct impact of HIPAA long-term**
  - If a patient books a ride to a dialysis clinic and that information is collected by the service provider and it is exposed to a potential employer, how does this affect the service provider under HIPAA?

Summary of Challenges Related to Creating a HIPAA Compliant Solution for Demand Ride Booking by Covered Entities

The challenges associated with creating a HIPAA-compliant solution for demand-ride services generally fall into one of 4 primary areas of interest – loosely defined as Social, Architectural, Organizational, and Technical. Of these four areas, the three topics which lend themselves most readily to further study will be Social, Architectural, and Organizational, as there are a multitude of approaches that can be taken to address many of these concerns. Technical issues will be discussed in brief, as these issues are generally a cost-calculation, based on best-practices.

Social Challenges

While the obligations under HIPAA are matters of legality, it is important to remember that the spirit of the law is to allow individuals the ability to control their personal information. Some Protected Health Information (PHI) is highly sensitive, especially as it pertains to someone's ability to perform their job functions, protected statuses, mental health, pregnancy, or serious illnesses. In some cases, the accidental disclosure of PHI could jeopardize someone's employment or personal safety.

As such, it is important to extensively vet any technology that has the potential to reduce a user's ability to control where such data is sent or stored. When the movement of this data is not automated, users who have privacy or safety concerns surrounding their mobile phone (e.g. access is possible for parents, partners, employers, etc) may choose to not store such data on such devices. Additionally, for riders in more rural areas who depend heavily on demand-ride services, there is often an existing social relationship between rider, driver, and dispatcher. Users who want to maintain privacy may choose to book public transit or shared rides to nearby locations, rather than directly to healthcare providers – for example, someone who is not ready to disclose a cancer diagnosis may ride to a nearby coffee shop, rather than to an oncology center.

As an area of study, it is important to understand what non-technical measures users currently employ in order to feel in-control of their private information, so as not to inadvertently undermine these behaviors. It is also important to identify non-technical analogs for many features of the application, to better understand how to address them in the context of a mobile app, i.e. providers are required to send appointment reminders in sealed envelopes when requested by a patient – what is the "sealed envelope" equivalent for an automatically triggered SMS? It is also important to discuss with potential users where the line is drawn between the technology being seen as helpful, vs. being characterized as intrusive, "creepy," or potentially dangerous.

It would also be beneficial to understand whether or not it is possible to anonymize data related to pick-up and drop-off locations, especially in rural areas. For example, with proper legal consultation, it might be possible under HIPAA to deliver a ride to a large hospital without handling any PHI, as a large provider may encompass everything from a general check-up to surgical procedures. However, this approach will not likely provide solutions for small, specialized providers (e.g. an Oncology Center, a Family Planning Clinic, a Dialysis Center), as these destinations draw a clear line between a patient and a provider. The determination of whether or not this approach is feasible would require consultation with legal experts familiar with HIPAA. It would also require a deeper analysis of whether or not a significant

BOSCH

6. About SPLT

BOSCH

Lessons Learned
About SPLT

SPLT (Splitting Fares, Inc.) was an enterprise-first carpooling and car sharing platform that connects employees within organizations to share their commute, saving time and money while reducing traffic congestion and lowering CO_2 emissions. SPLT would have two market offerings, corporate ride share (carpooling) and non-emergency medical transportation (NEMT). Each market offering would have the objective to change how people travel, meet, and to improve access to mobility for disabled, elderly or those requiring assistance.

The core business, corporate ride share platform was a start up that eventually went through Techstars (incubator / accelerator program) based in Detroit. Initial investments were provided through grants and angel funding, eventually acquired by Bosch. Initial NEMT platforms were developed along with the car pooling application; however for the Michigan Mobility Challenge (MMC) the focused efforts were to build a specific and new solution for the NEMT market. Work began on the NEMT solution in May 2019 with development efforts completed by December 2020.

Despite aggressive measures to support and scale the business, the sales outlook for SPLT had not developed as expected and the future growth was not viable. As a result, SPLT ceased operations.

Key Dates:
○ Splitting Fares, Inc. founded July 2014
○ Acquired by Bosch on October 27, 2017
○ Robert Bosch announces decision to wind down business on November 22, 2019
○ Operations ceased by December 31, 2019

Project Impact:

SPLT leadership, and the SPLT solution were a driving force in the conception of this project from the beginning, and the SPLT team largely drove partner engagement, requirements gathering, and user experience activities. However, the core technology development was assigned to Bosch development resources. While the pilot was completed, additional development would require a third party to take over to further develop and collaborate with stakeholders to support commercialization of the software and services. Bosch's development resources, while dispersed, can be leveraged with any questions or comments relating to the solution including transitioning to a new provider.

BOSCH

Michigan Mobility Challenge

Bosch/SPLT Mobility Project

Bay Area Transportation Authority Summary

The original intent of this project for the Bay Area Transportation Authority (BATA) was to create a new and improved way for passengers to book, receive and get reminder notifications for demand-response rides. In BATA's case, there was a special emphasis on providing non-emergency medical transportation for health and wellness appointments. Successful goals of the project were to increase operating efficiencies for BATA and for partnering medical facilities. Specifics included reducing no-shows and cancellations for both BATA ride reservations and for medical appointments by improving passenger access to transportation. Unfortunately, the vision for this project never came to fruition due to several factors.

Experiences/Lessons Learned:

Software and Technology Integration: One lesson BATA learned early on was the challenge of incompatible technology. BATA's current dispatch and ride scheduling software (Easy Rides by GMV Syncromatics) is functional but slightly antiquated and would not integrate with SPLT's open source API. This meant that riders would not be able to see and actually book rides in real time and resulted in a manual scheduling process for BATA's Customer Service team. BATA staff would have to take ride request information out of the SPLT program and reschedule it in BATA's current scheduling program. Basically, rides were requested through the app but not actually scheduled. This created a redundant process and did not make ride scheduling any more efficient.

Regional Participation and Agency-Specific Needs: It was great to have two other regional transit partners (Benzie Bus and Allegan County Transportation) participate in this project. It helped to hear what they were experiencing and what their technology needs are. At the same time, although many of our challenges were similar, we each had different needs on how we wanted the technology to function and ideas for features that would benefit our specific agency. Balancing the needs of three separate agencies that have different service models can make it difficult to come up with a one-size-fits-all solution.

Creating Something from Scratch vs. an Off-the-Shelf Product: Creating a new application from the ground up is more complicated than purchasing a technology off the shelf. It was interesting to be part of the process to create a software solution to try to meet the specific needs but overall, due to technology compatibility challenges and limited functionally, the product that was ultimately created was similar to existing software already available commercially as an off-the-shelf product. Given the choice again, BATA would probably lean toward a pre-existing technology solution.

Budget and Scope: $900,000 seems like a lot of money to be able to develop, test, market, and train staff how to use a new ride-scheduling software. Unfortunately, due to technology compatibility constraints and other unforeseen issues, the budget was quickly exhausted. Budget constraints resulted in the loss or delay of some original features that were supposed to be included with the project at

launch, such as scheduling integration, back-end features, online website functionality, and application elements that fell out of scope.

Start-up vs. Corporate: SPLT was acquired by Bosch right before the Michigan Mobility Challenge was created. At first, it was exciting to work with the founders of SPLT to plan and create a new application but Bosch soon took over more of the day to day operations of the project and that's when the scope became more constrained. By the end of 2019, Bosch decided it was going to dissolve SPLT and the project lost support, was half-baked and abandoned by Bosch without future support or development available to launch the product. It would have been interesting to see where the project would have ended up if SPLT would have been able to keep more of its autonomy throughout the development of the project.

Customization and Flexibility: When it was determined that BATA wasn't able to integrate its current scheduling software with the SPLT platform, there was some flexibility to focus resources to create a custom volunteer driver/partner portal to support Allegan's volunteer resources and potentially expand it for BATA's use as well. It was nice to be able to pivot to still try to provide a valuable feature. But once it was determined by Bosch that there wouldn't be any future tech support for the product, the agencies were not comfortable sharing the volunteer feature with the public.

Ultimately, the project ended up producing a non-functional and non-supported ride request system that featured rider notifications, the ability to request rides through an app and a quasi-volunteer services interface.

Michigan Mobility Challenge
Bosch/SPLT Mobility Project
Allegan County Transportation

Allegan County Transportation's (ACT) intent was to improve transportation access to those in rural areas, specifically seniors, veterans, persons with disabilities and low-income residents of Allegan County. ACT also wanted to build a new volunteer coordination app for the volunteer drivers, giving them the ability to receive ride requests, automatically record mileage and enhance the reimbursement process.

The initiative was driven out of several months of community meetings with partner groups. This included the local Community Action Agency and the Commission on Aging. The goal was to assist our community partners with efficiencies in scheduling rides. The SPLT software would improve ways for passengers to book, receive, and get reminder notifications for demand-response rides. ACT was looking for ways to reduce no-shows and cancellations for medical appointments.

Experiences/Lessons Learned:

Software and Technology Integration: Early into the project, ACT learned the RouteMatch software being used by ACT for scheduling could have been compatible technology. However, RouteMatch was unwilling to share software codes with the third-party vendor open source API. This meant that riders would not be able to see and actually book rides in real time, which resulted in a manual scheduling process for ACT's Customer Service team. ACT staff would have to take ride request information out of the SPLT program and reschedule it in ACT's current scheduling program. Basically, rides were requested through the app but not actually scheduled. This created a redundant process and did not make ride scheduling any more efficient. The assumptions made by Bosch/SPLT set false expectations by all three transit agencies. More research by Bosch/SPLT in advance should have occurred. A lot of staff time and energy was spent on this project only to have it fail.

Regional Participation and Agency-Specific Needs: It was helpful to work with two other regional transit partners (Benzie Bus and Bay Area Transportation Authority (BATA)). We were able hear some of the same challenges and disappointments. It is believed the product did benefit from a multi-agency approach. Each agency had different needs, which helped develop a more flexible product.

Start-up vs. Corporate: SPLT was acquired by Bosch right before the Michigan Mobility Challenge was created. Bosch led much of the day to day operations of the project and limited the scope. ACT believes if SPLT leadership would have been allowed to continue without SPLT, the project could have moved forward.

Customization and Flexibility: When it was determined that RouteMatch would not integrate its current scheduling software with the SPLT platform it meant it was impossible to have an automated product. ACT was hopeful SPLT could create a custom volunteer driver/partner portal to support Allegan's volunteer resources and other transit agencies state-wide. Like BATA said, once it was determined by Bosch that there wouldn't be any future tech support for the product, the agencies were not comfortable sharing the volunteer feature with the public.

Final outcome: The project as developed would have been successful with the exception of integration. However, the decision by Bosch to break up the partnership with SPLT resulted in the inability to move forward. Without the ongoing software support, this prevented the ability to continue with this project. This left ACT with a non-functional and non-supported ride request system.

Project Phase	Description	Impact	Additional Comments
RFP	Compressed timing for proposals.	Vendor Bosch/SPLT made assumptions	Assumptions about the capability/willingness of dispatch software vendors to participate in the project ultimately scuttled the project.
Pre-Award	Bosch/SPLT didn't have discussions with BTA software provider, PC Trans, prior to grant application or award.	Since there wasn't collaboration, PC Trans didn't view Bosch/SPLT as an opportunity toward developing a better product for its customers but rather an impediment toward meeting its current customers' needs.	Unanticipated obstacles inhibited project implementation. Discussions with potential project partners are pivotal, especially when dealing with proprietary information.
Discovery	Communication/site visits.	The Bosch/SPLT team communicated well with the BTA project staff. There were weekly discussions and several site visits to learn more about BTA services/processes. However, SPLT quickly discovered not all transits are alike and integration wouldn't be a one-size-fits-all solution.	We were very happy with the communication between SPLT and BTA.
Project Start	The group spent a lot of time communicating complicated matters via e-mail instead of a conference call or in-person meeting. This was instigated by	Weeks were spent going back and forth between PC Trans and SPLT; re: how/what information would be shared. Once Aditi Khedkar (Senior	The delay caused by differences in communication preferences was, in our opinion, unavoidable.

	PC Trans, who perhaps distrusted the process due to the rocky start at the very beginning but also stated they preferred to communicate via e-mail so they had time to formulate their answers.	manager for Mobile and IoT for Bosch) joined the project, she was able to communicate successfully with PC Trans and great progress was made.	
	The scope of the project changed in July 2019, removing the web portal portion of the platform.	BTA was most interested in this project because we know the importance of aligning appointments with transit schedules. The rider app/trip reminders on their own weren't game changing. However, at the time BTA was unaware of any solution that allowed medical providers to help patients schedule rides that integrated directly with the transit system.	BTA emphasized the importance of third-party scheduling through a web portal for the overall project.
	It was determined in early October 2019 that SPLT would not be able to integrate with PC Trans.	Manual entry would have created double entry, thus more work for BTA staff. The goal was for a solution that would reduce call volume and integrate seamlessly with BTA software. Manual entry wasn't value-added for BTA and it was decided to abort the launch and app.	BTA wasn't privy to all of the discussions between PC Trans and SPLT, but hindsight suggests that reviewing feasibility of integration should have occurred during the pre-award phase. Our partnership with Bosch/SPLT was concluded amicably in mid-November 2019.