PROMISING PRACTICES

TRANSIT TECHNOLOGY ADOPTION

ABOUT N-CATT

The National Center for Applied Transit Technology – known as N-CATT – is a technical assistance center funded through a cooperative agreement with the Federal Transit Administration (FTA).

“N-CATT’s mission is to provide small-urban, rural, and tribal transit agencies with practical, replicable resources that help them apply technological solutions and innovations”.

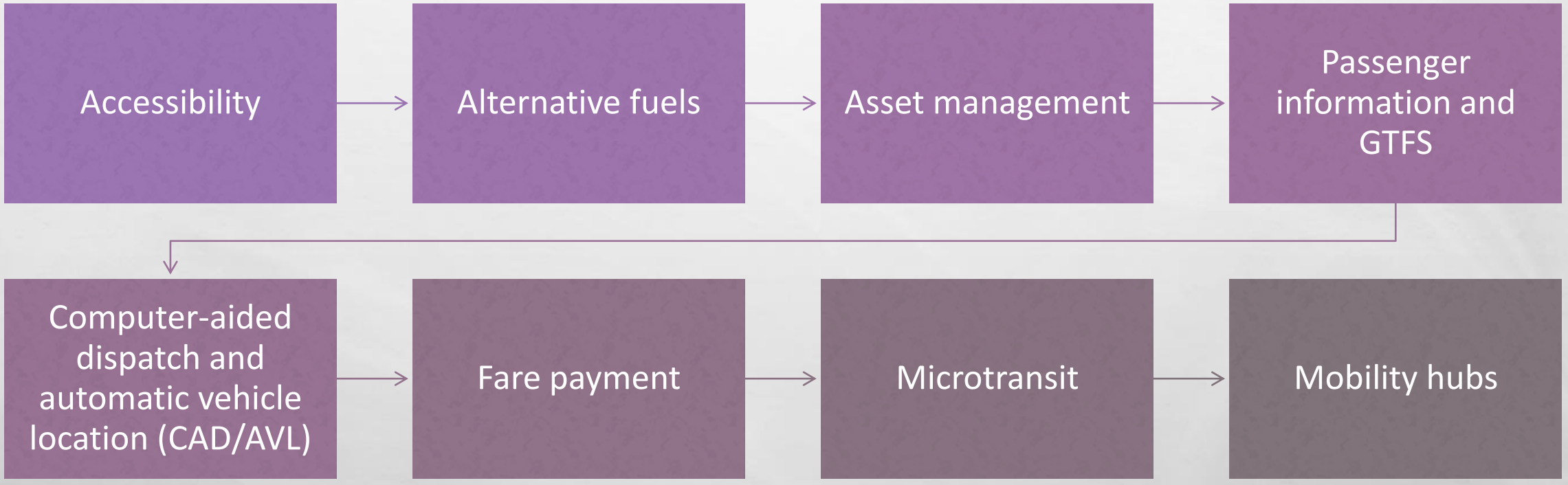
ABOUT PROMISING PRACTICES

- A “promising practice” has worked within at least one organization and shows promise during its early stages for becoming a recommended practice with long-term sustainable impact.

COMMON THEMES

- Partnerships
- Vendor research and engagement
- Stakeholder involvement
- Planning

TYPES OF PROMISING PRACTICES



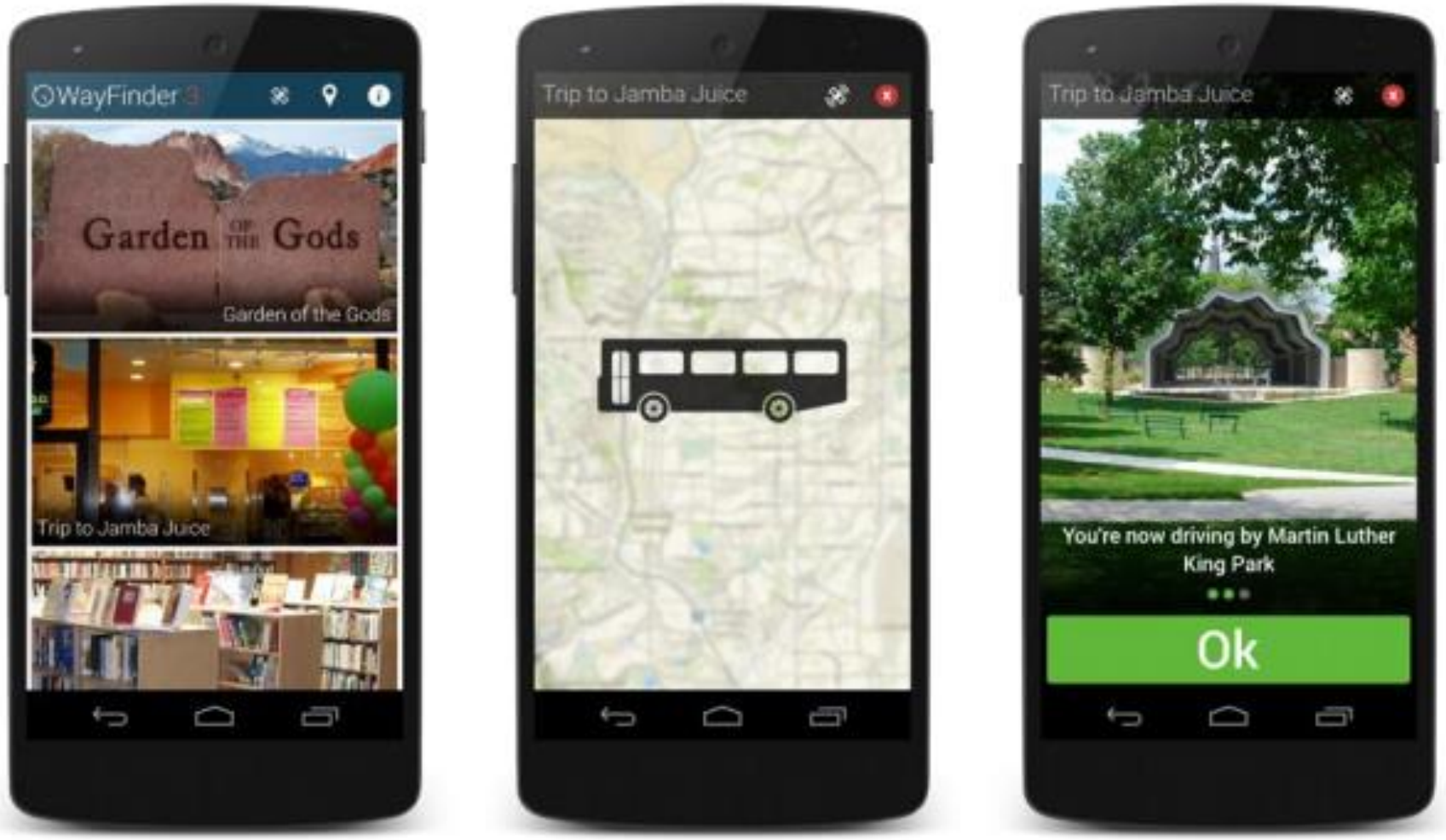
ACCESSIBILITY - WAYFINDER

- CARTA's Wayfinder SMART Travel System
  - A customizable App with visual cues and recorded audio directions to help individuals with intellectual disabilities travel
  - Uses a tablet and guides riders from their origin to their destination
  - Focuses on independent travel:
    - Independence for the individual
    - Decreased responsibility on behalf of family members to meet transportation needs
    - Shifting the agency's riders from paratransit services to more cost-effective fixed-route service

ACCESSIBILITY - WAYFINDER

- The travel trainer did the following:
  - rode the bus just like a WayFinder user would
  - created GPS waypoints along the route
  - took photos to make visual cues
  - recorded verbal cues that were synced with visual cues and GPS location data
  - and conducted quality control of the routes

Figure 2: AbleLink WayFinder interface



Source: https://www.ablelinktech.com/

ACCESSIBILITY – KEY TAKEAWAYS

Partnerships were critical to the development and implementation of WayFinder

Long-term, widespread WayFinder use could move riders from Paratransit to Fixed-Route service

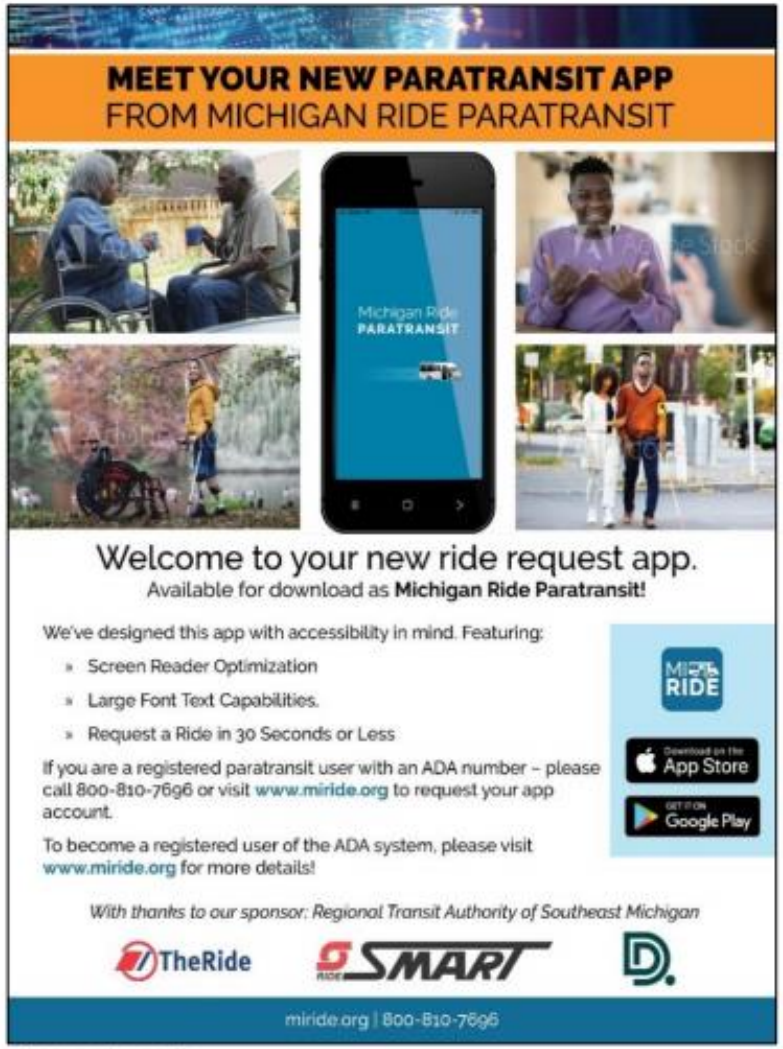
ACCESSIBILITY – MICHIGAN RIDE

- Southeast Michigan – Michigan Ride Paratransit App
  - Web-Based booking and trip management platform to create a “one-click” experience for users of the three public transportation systems, that incorporates technology to make it easy for the visually- and hearing-impaired people to access services
  - Uses What3Words technology

ACCESSIBILITY – MICHIGAN RIDE

- The App will address problems:
  - Arduous trip booking experiences
  - Location confusion between pickups and drop-offs
- Feonix (software developer) helps to oversee dispatch and assist agencies training staff on the new technology

Figure 3: Marketing Materials



Source: Feonix

Figure 4: Location in What3Words

Source: What3Words

ACCESSIBILITY – KEY TAKEAWAYS

The Michigan Mobility Challenge Summit provided the forum for the identification of needs from a variety of agencies serving persons with disabilities and Veterans, that led to the scoping of the Michigan Ride Paratransit App.

Frequent and clear communication between the three participating agencies and vendors enabled issues associated with creating a solution that works across three systems and service areas.

ALTERNATIVE FUELS – WASTE COOKING OIL

- Blue Lake Rancheria Tribe in California constructed a biodiesel conversion apparatus that takes waste cooking oil from the Tribe's hotel and casino kitchens and converts it to biodiesel
- They also use a solar-powered microgrid and elective vehicles to reduce their carbon and overall environmental footprint
- They partnered with a local university and research center to reduce costs

ALTERNATIVE FUELS – WASTE COOKING OIL

- Challenges
  - It's an 80/20 blend
  - Buses must continue to use that blend
  - The fuel can only be stored for a few months
  - Does not work well in cold climates
- They have reduced their energy costs by $200,000 per year and are working towards carbon net neutrality

Figure 5: On-site biodiesel conversion apparatus

Source: Blue Lake Rancheria

Figure 6: Driver fueling a BLRTS bus

Source: Blue Lake Rancheria

ALTERNATIVE FUELS – KEY TAKEAWAYS

External assistance was critical to the development of the practice with student engineers researching.

The primary goal was reaching carbon net neutrality by 2030, but the switch also helped reduce costs.

ALTERNATIVE FUELS – ELECTRIC BUSES

- Clemson Area Transit is the largest fare-free bus service in the Carolinas, serving around 2 million passengers per year
- They wanted electric buses to reduce energy consumption and increase energy efficiency and to cut operational costs
- They are not plugged in, but they drive underneath a suspended charger

ALTERNATIVE FUELS – ELECTRIC BUSES

- The buses were purchased with funding from the FTA
- Fuel costs were cut in half
- Maintenance costs have reduced by two thirds
- They plan to go fully electric by 2025

Figure 7: CATbus at Charging Station

Source: http://www.transitmos.com/

ALTERNATIVE FUELS – KEY TAKEAWAYS

Electric buses were used to reduce energy consumption and to cut costs at a fare-free system.

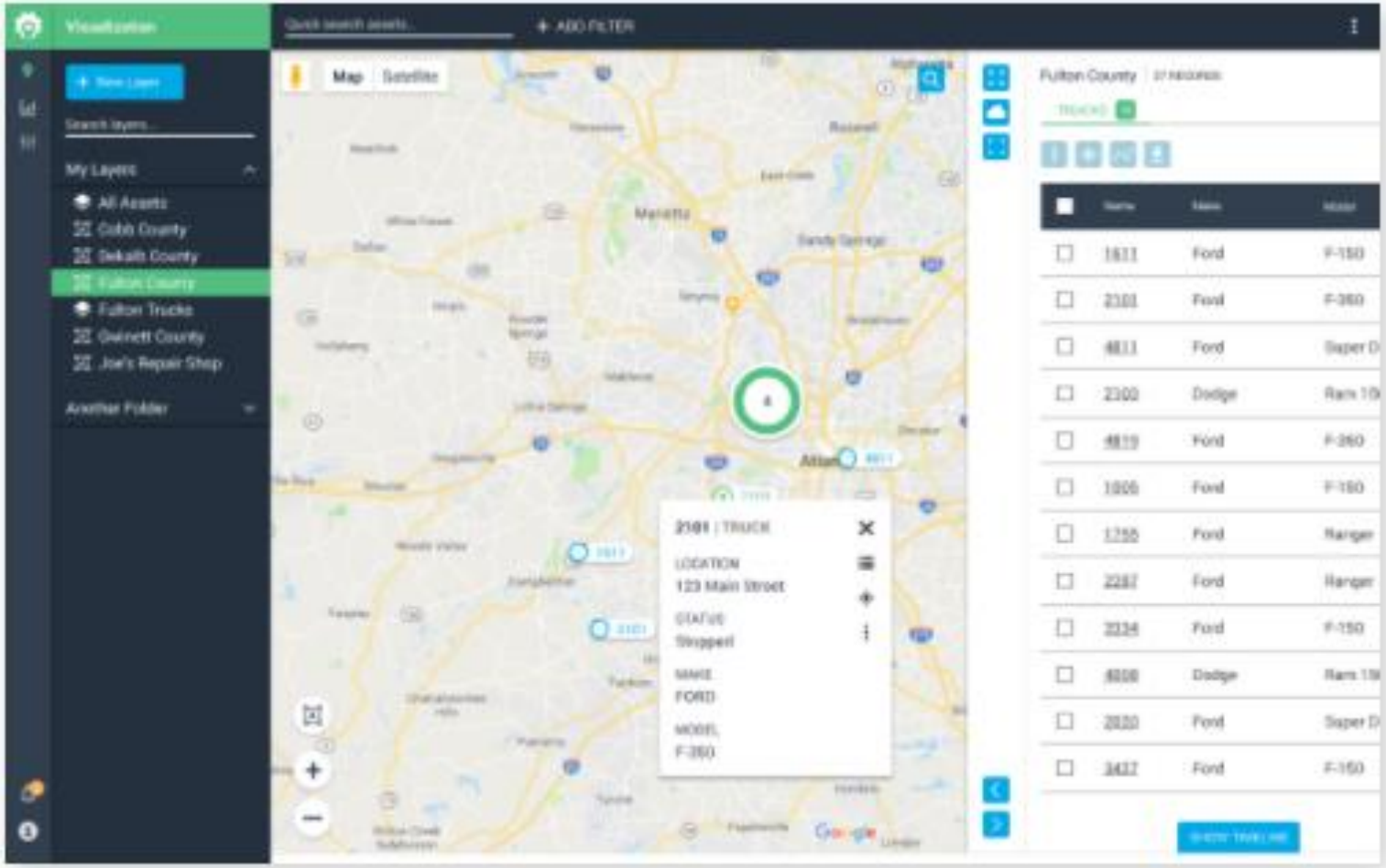
Relationships were key to the successful implementation.

ASSET MANAGEMENT – WORK ORDERS

- Mountain Line implemented an IoT-enabled Transit Asset Management System, ThingTech, to improve the maintenance work order process by reducing manual data entry
- Everything was tracked manually and entered on spreadsheets
- 10,000 work orders annually, parts inventory, fleet management, etc.

ASSET MANAGEMENT – WORK ORDERS

- Lessons Learned:
  - Management has the same learning curve
  - There's an administrative side to new software
  - They developed Standard Operating Procedures for data governance
  - They also needed to learn best practices for adding new routes and their accompanying assets
  - Strong project management skills were required for implementation


Visualization
Quick search assets
ADD FILTER
New Layer
Search layers
My Layers
All Assets
Cobb County
DeKalb County
Fulton County
Fulton Trucks
Gwinett County
Joe's Repair Shop
Another Folder
Map
Satellite
Marietta
Sandy Springs
Atlanta
2101 | TRUCK
LOCATION
123 Main Street
STATUS
Stopped
MAKE
FORD
MODEL
F-350
Fulton County
Ford
Dodge
Ranger

ASSET MANAGEMENT – WORK ORDERS

Continuous Stakeholder engagement and support from senior leadership were essential.

Tracking work orders helps to understand how staff spends their time and they can strategically allocate resources accordingly.

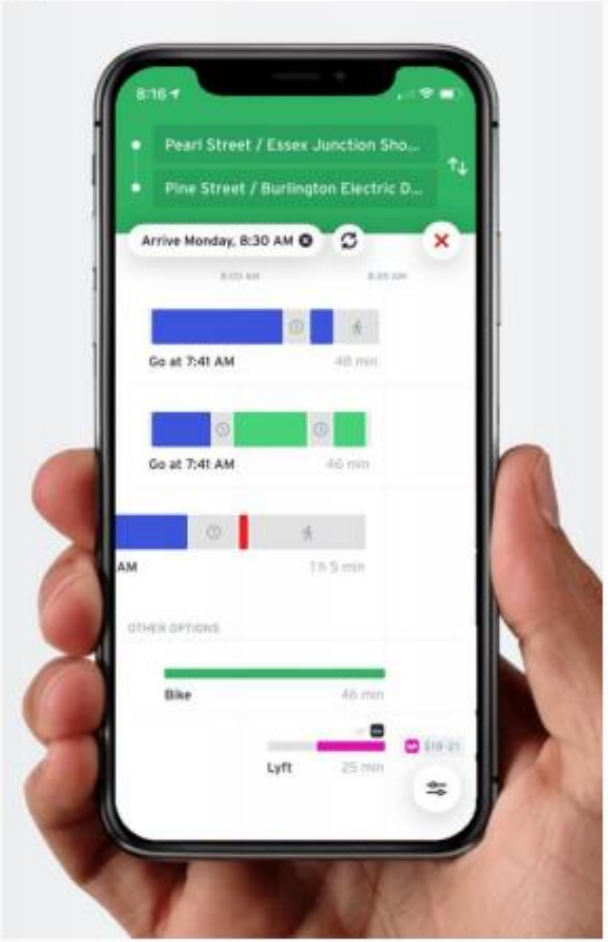
PASSENGER INFORMATION & GTFS FLEX

- Go! Vermont is a program to promote alternatives to drive-alone trips, including a carpool ride-matching service, info about transit options, and the state's volunteer driver program
- Now includes a trip planner that incorporates GTFS and GTFS Flex
- And now includes Demand Response as a new feature

PASSENGER INFORMATION & GTFS FLEX

- Barriers:
  - A common mindset that everyone drives everywhere so people don't often consider alternatives to driving unless they have no other choice
  - They are struggling to get information out to the public with COVID restrictions in place
- One crucial element: strong commitment among state transportation officials and lawmakers

Figure 10: Transit App Screen



PASSENGER INFORMATION & GTFS FLEX

State officials and lawmakers support was built over a decade of engagement and was necessary

Organizations representing elderly and disabled were heavily involved in the process.

CAD/AVL

- Portneuf, Quebec, Canada, uses an off-the-shelf cell phone and tablet-based software to facilitate dispatching, vehicle location and real time information, as well as on-board fare payment with smartcards
- The search for an alternative to paper-based monthly passes was the impetus behind the solution
- This is Computer Aided Dispatching/Automatic Vehicle Locating

CAD/AVL

- The solution made operations easier and pleased the riders, especially among younger riders
- Also allows for information on underused stops where the bus is frequently late or ahead of schedule
- Staff can also track re-routes in real time due to roadwork or accidents

Figure 11: Vehicle Equipment

CAD/AVL

Took a year-long, international search for a vendor that was affordable for a smaller agency.

Engaging drivers in the early stages of practice adoption is crucial.

FARE PAYMENT

- Transit Agencies can choose from a wide variety of fare payment and validation methods, business models and companies to implement mobile fare payment systems.
- With mobile fares, riders download the app from a mobile app store, enter payment information or link the app with an existing transit account, board the vehicle and validate their fares.

FARE PAYMENT

- Mobile fare payments can improve the fare payment experience for the rider and fare management experience for the transit agency
- Mobile fare payments address operational concerns for transit agencies, as they can speed up the boarding process and reduce dwell times.
- Additionally, the COVID-19 pandemic has shown the importance of contactless payment.

Figure 12: RideKC Mobile App

Source: RideKC Facebook

FARE PAYMENT

Vendors tend to handle mobile fare app development, payment processing, and compliance requirements and are paid based on a percentage of sales.

The rise of models provide agencies of all sizes the opportunity to use a cloud-based subscription service to manage fare payment.

MICROTRANSIT

- Johnson County, Kansas, uses Microtransit service to make first and last mile connections to fixed route transit
- It also offers additional transit capacity to support the county's effort to create urban destinations that will attract young adults to move in

MICROTRANSIT

- They worked with RideKC, and microtransit vendor Transloc and a local taxi service
- Transloc provided the software that powers the service, including a mobile app for hailing rides as well as the dispatching software
- The taxi service provides additional vehicles to operate the service when the seven vans can’t meet demand

Figure 13: RideKC Microtransit Vehicles

Source: RideKC Twitter

MICROTRANSIT

They worked with RideKC and the software vendor and the local taxi company.

Agencies should be prepared for services to be more popular than they expect and have contingency plans.

MOBILITY HUBS

- The Minneapolis Mobility Hubs Pilot increases access to convenient, low or no carbon transportation options, including transit, shared scooters and the Nice Ride bikeshare system, by creating centers where riders can transfer between these modes easily
- Mobility hubs include seating, bikeshare docks, transit stops, and designated parking locations for dockless shared bikes and scooters

MOBILITY HUBS

- They wanted to address transportation sustainability goals, including reducing the carbon footprint of transportation in the region
- They also wanted to improve job access by transit – with easier transfers
- They focused on targeted communities with minorities and low-income households with stakeholder and public engagement

Figure 14: City of Minneapolis Mobility Hub micromobility parking areas, signage, and seating part of placemaking strategies.

Source: City of Minneapolis

MOBILITY HUBS

Extensive engagement helped deliver the project that met the needs of the community, including underserved populations.

Implementation was supported through funding from private foundations and the City of Minneapolis staff time and expertise.

ANY QUESTIONS?