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FUTURE MOBILITY | SMARTER COMMUNITIES

# The Grand Iron Range CAV Initiative

Project Overview for Serge Phillips, MnDOT

March 25, 2021

# Project Partners

## AGENCY PARTNERS



## PRIVATE SECTOR PARTNERS



## NON-PROFIT PARTNERS



## ACADEMIC AND RESEARCH PARTNERS



# Project Summary



An autonomous vehicle pilot project to develop the future of public *accessibility- focused* transportation for rural communities and winter climate settings, incorporating aspects of:



Autonomous  
shuttle pilot  
operations



Accessibility &  
Community Engagement



Industry leading  
Research



Workforce  
Development



Regional Economic  
Development

# Proposed project will...



## **Address a Community Transportation Need**

Together with May Mobility, Via and the City of Grand Rapids, this deployment will complement connections to important destinations, including local businesses, housing, and amenities



Provide Benefactors **accessibility-focused** services through Wheelchair Accessible May Mobility Shuttles



## **And Bring Exceptional Regional and Industry Value Potential!**

Because the Grand Iron Range CAV Initiative will also...

- increase access for advancing technology in rural Minnesota
- build workforce and a foundation for regional economic development
- serve as a framework for other rural projects in the future
- advance the State's CAV goals

# Project Goals



Advance and inform AV tech in rural and winter conditions through P3's



Engage with the local community and build trust in autonomous shuttles -->informing future projects



More accessible mobility for those with transportation challenges



Economic development and attracting future technology to the Iron Range/Arrowhead region

# The Grand Iron Range CAV Initiative



An autonomous vehicle pilot project to develop the future of public accessibility- focused transportation for rural communities and winter climate settings



\*possible extensions (duration and locations, additional research) through additional funding sources



# Grand Iron Range CAV Initiative

May Mobility and City of Grand Rapids, Minnesota

## Operations and technology overview

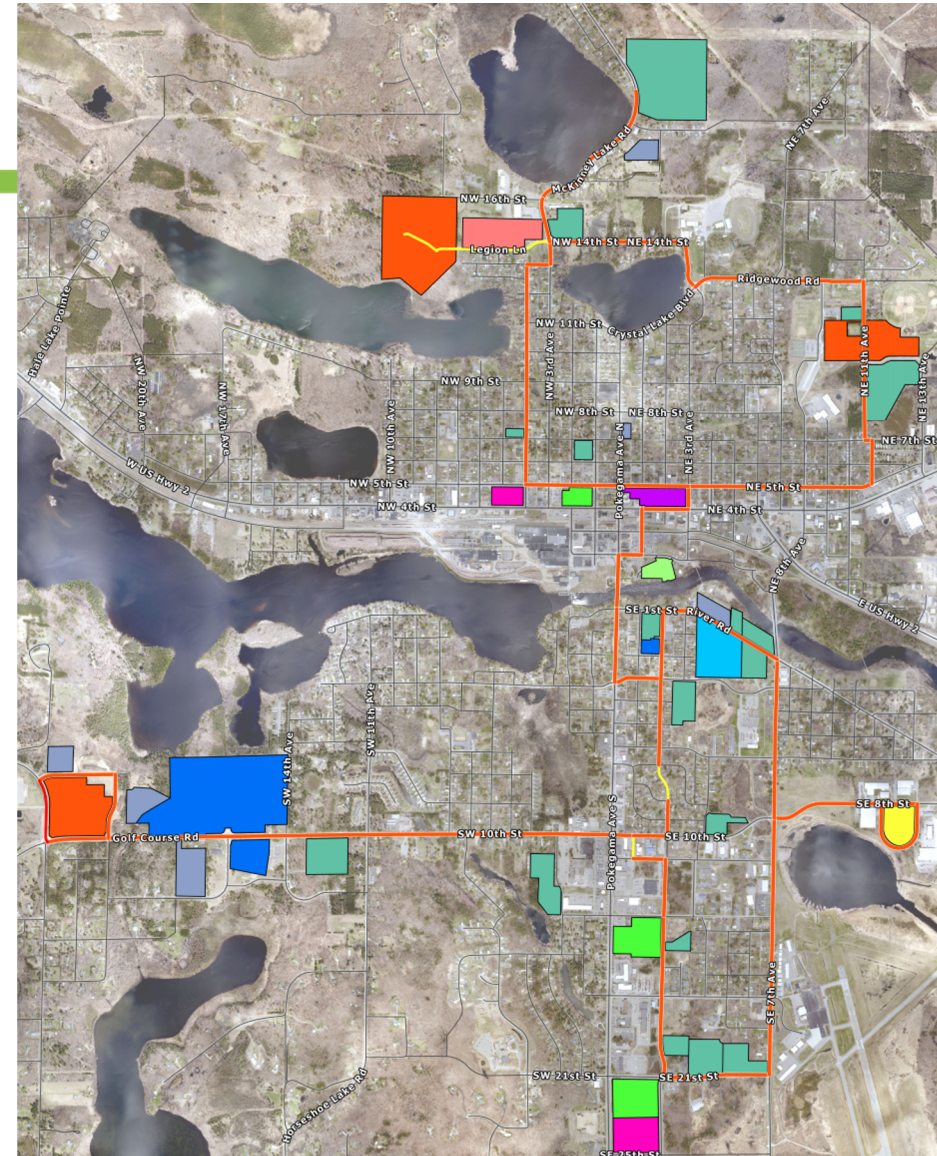
March 25, 2021

# Route Overview

The partners have had several discussions to begin designing a route that fits the community needs.

At a high-level, the Grand Rapids route will:

- Provide a connection between the north and south sides of the city
- Stop at points of interest and destinations that are important to local residents, including:
  - Grocery stores, dining & shopping
  - Leisure and Recreation activities
  - Housing, lodging and hotel areas
  - Hospital and assisted living facilities
- Ensure hours of operation and availability complement existing transit options and community needs



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# Service Proposal Overview

- May will map and develop a custom on demand route in Grand Rapids, MN
- Shuttles will be outfitted, maintained and serviced by May with the ability to flex how many are on route depending on demand
- May will hire a full-time local staff including May-employed Fleet Attendants who provide education and an outstanding rider experiences
- Throughout the deployment we share data and insights to measure success and help cities plan for the future.
- The rider application powered by Via allows riders to request a shared ride and select their pick up and drop off stops



# CAV technology overview: May Mobility & Via

May Mobility is **transforming cities through self-driving technology** to create a safer, greener, more accessible world.





We operate **fleets of autonomous shuttles** running our own self-driving software for central business districts, enterprise campuses, and residential communities.

# Service Objectives

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## Safety

We're focused on safety, with low-speed vehicles and a dedicated Fleet Attendant in each shuttle.



## Rider Experience

With short wait times, a friendly Fleet Attendant, and cool technology, we provide a fun way to get riders to their destination.



## Autonomy

We're using our autonomous vehicle service to drive impact, gauge public perception, and reimagine cities, today.

# The May Difference

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## Unique Approach to Autonomy

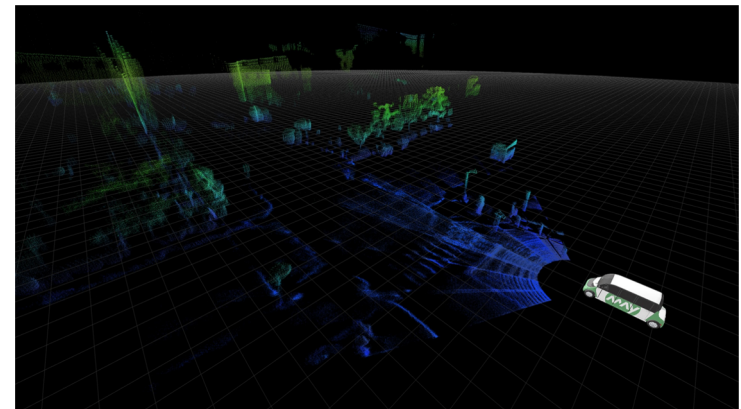
May Mobility's unique Multi-Policy Decision Making behavior framework allows our vehicles to treat driving as a social activity, simulating how all agents in the environment would react to different actions.

## Seamless Platform Integration

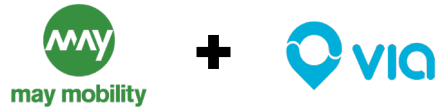
Our ADK stack is built to integrate into a variety of platforms, allowing for a customized shuttle fleet based on the needs of our customers.

## Bridging First & Last Mile Gaps

Unlike traditional ridesharing, our service is designed to work alongside and integrate into existing urban transportation systems, helping to bridge first and last mile gaps to bring additional needed mobility and accessibility.

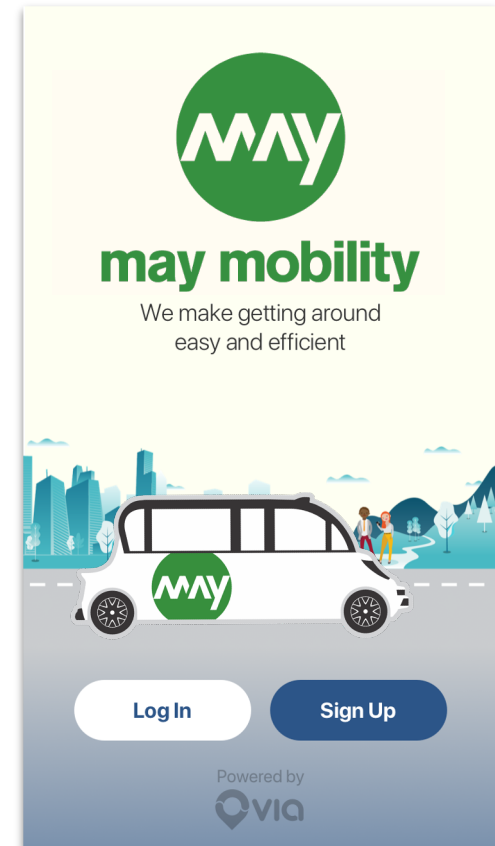
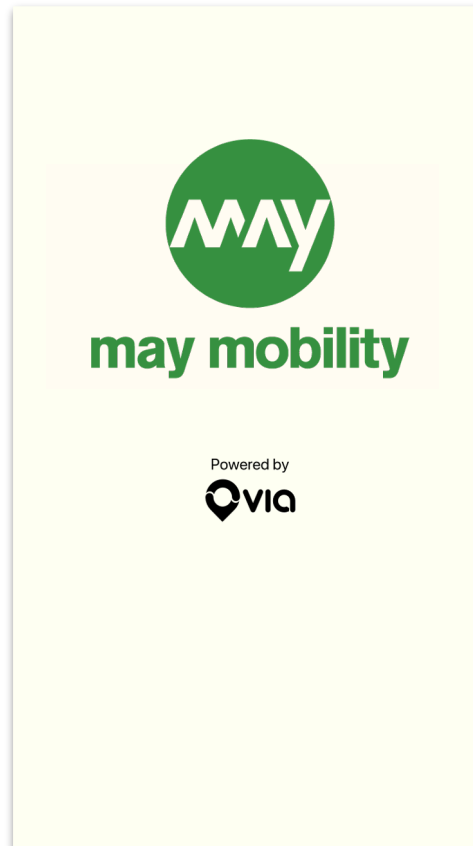


# On Demand Application

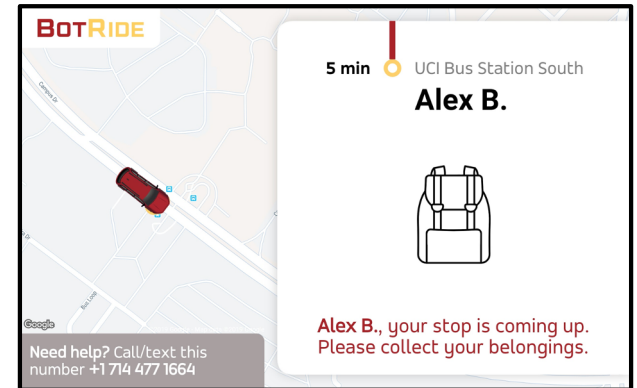
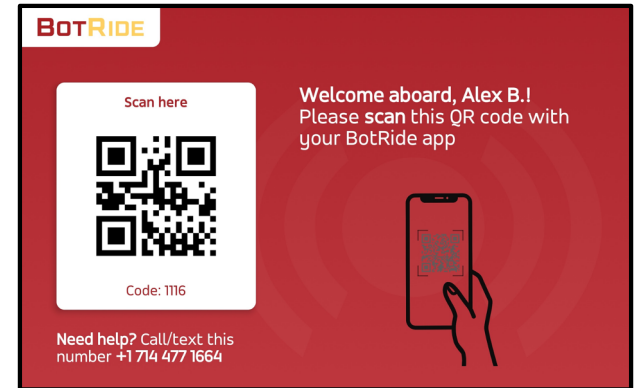
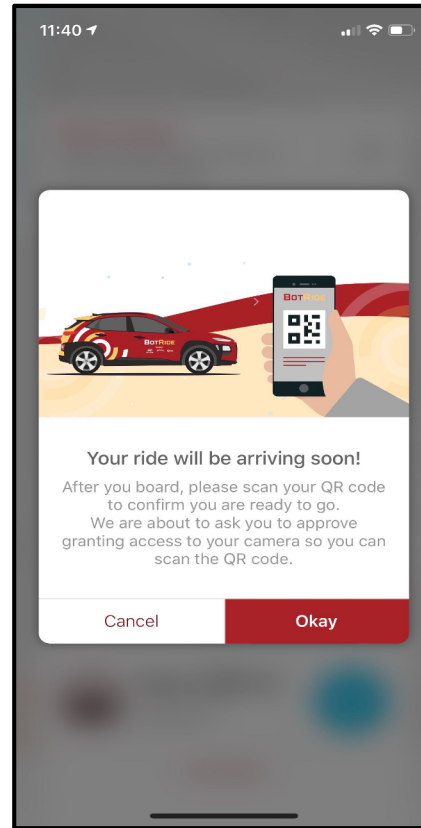
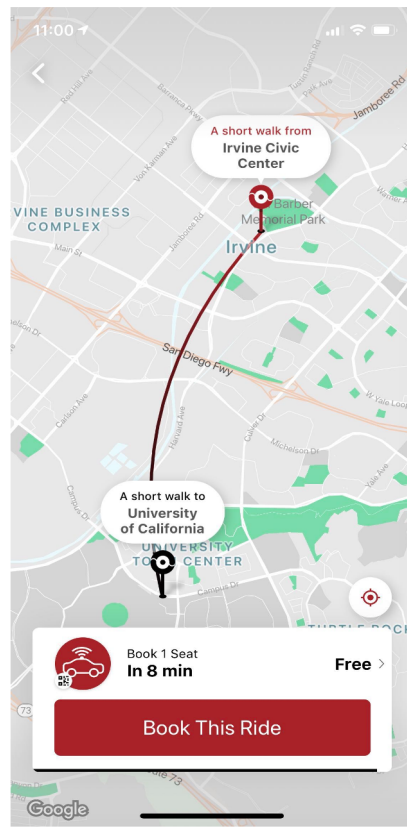
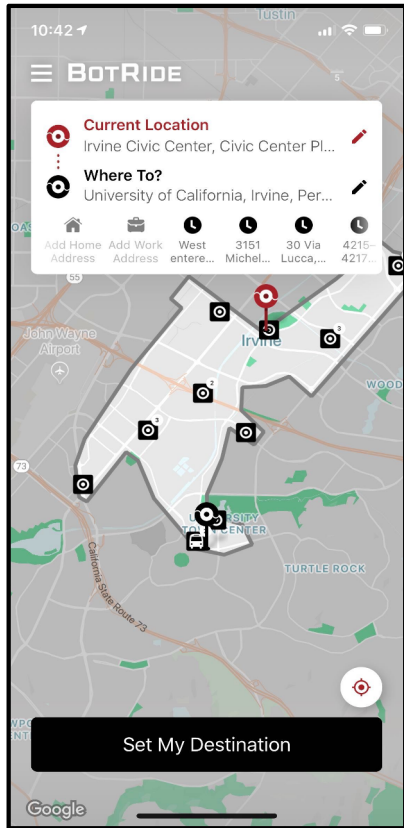


May Mobility will partner with Via to offer a point-to-point on-demand service for our riders.

Pre-programmed stops are correlated to points of interest and community need, and rides are still shared.



# Via Rider flow Autonomous Rid



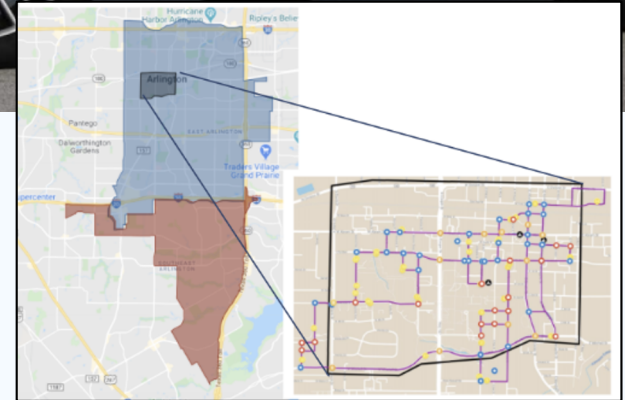


## Arlington AV Public Transportation (Arlington, TX)

- Shared AV service integrated with existing on-demand Arlington operations, in partnership with May Mobility
- 5 AVs with safety drivers (4 robotaxis, 1 shuttle), including an autonomous wheelchair-accessible vehicle



5  
AUTONOMOUS  
VEHICLES



# Accessibility & Community Engagement

# Mobility & Accessibility Interests

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**Target populations:** Elderly, accessible, tourism

- Evening / weekend transportation
- After hours transportation from hospital
- Transportation to social events (*concerts, sporting events, high school events, worship services*)
- Not competing against the current transportation system
- Complement or supplement Arrowhead's existing transit



# May Mobility & Accessibility

## Wheelchair Accessible Shuttles

Our routes incorporate a dedicated wheelchair accessible vehicle, available on demand.

## Disability Advocacy Engagement

We work closely with local and national organizations to iterate on our product and ensure it is accessible and inclusive.

## Local Integration

We engage as early as possible with local access boards and disability advocacy organizations with each new deployment.



# Economic & Workforce Development

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Embracing the local traditional manufacturing & engineering expertise and the natural resource industries to launch into creating entrepreneurial, creative environments aligned to the trends of these new business technologies

# Economic & Workforce Development



Embracing the local traditional manufacturing/engineering expertise and the natural resource industries to launch into creating entrepreneurial, creative environments aligned to the trends of these new business technologies



Artificial Intelligence



Robotics & Industrial Automation



Internet of Things



Micromobility



Virtual Reality



Autonomous Driving

# Economic Development Efforts

## PROJECT GOAL



Economic development and attracting future tech to Iron Range

## LOCAL PARTNERS



Blandin Foundation™  
STRENGTHENING RURAL MINNESOTA

## STRATEGIES

- Understand **strengths & weaknesses** of the region in the future transportation industry (mobility research and manufacturing opps)
- Build an ***Arrowhead Mobility Innovation Ecosystem*** program website targeting industry and entrepreneurs to come/stay in region
- Set-up **Smart Rural Seminars** attracting other Rural leaders to visit the region
- **Innovate218** and local Innovation Center

# Workforce Development Efforts

## PROJECT GOAL



Economic development and attracting future tech to Iron Range

## LOCAL PARTNERS



## STRATEGIES

- Share business technology **industry workforce gaps** and opportunities with academic partners
- Build IASC Pathways: **Computer Science Technology Career Pathway** including CAV STEM Camp (9-12th grades)
- Set-up **Autonomous Technologies Customized Training** including **Job Skills Partnership** programs
- **Innovate 218** and local **Innovation Center**

# Research

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Research projects to help learn, measure and replicate for future through Public Private Partnerships (P3s)

# Research Projects proposed and scoped thus far...

## Equity, Perception and Trust:

- Public perception & trust tracking engagement (UMN Humphrey - Frank Douma)
- Transit User happiness and enthusiasm (UMN - Yingling Fan)
- Institutional issues and costs tracking (UMN Humphrey - Frank Douma)

## Connected Environment and Vulnerable Road User:

- Rural Highway AV usage and associated infrastructure investments (UMN - Tom Fisher)
- Using innovative localization techniques along rural roadways (May Mobility and Grand Rapids HS Artwork)

## Cold Weather Conditions:

- Cold weather impacts on safety and sensing (UMN - Raj Rajamani)



UNIVERSITY OF MINNESOTA



# Next steps and discussion

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Federal funding opportunities for Phase 2 (years 3-4) of initiative

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Thank you!