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

### The Grand Iron Range CAV Initiative

#### Autonomous Shuttle Pilot Operations

- **May Mobility Autonomous Shuttle Pilot**
- **12 miles of point-to-point mapping and on demand pilot service area in Grand Rapids, Minnesota**
- **18 months operations**

#### Community Engagement & Accessibility

- **May Mobility Shuttle enhancements - ie AV tie downs**
- **Local Call Center partner for requesting rides**
- **Community demonstrations**
- **Local artwork designs for shuttle localization**

#### Research

- **AV Winter weather safety**
- **Infrastructure/accessibility for AV’s**
- **AV deployment Institutional issues & public trust tracking**
- **AV Transit user happiness and trip chaining**
- **+ addl Energy related research**

#### Workforce Development

- **K-12 curriculum development (IASC programming)**
- **College customized NCAT and AV programming (ICC/Hibbing)**
- **Apprenticeships/private sector partnerships**

#### Economic Development

- **Future Mobility industry innovation & ecosystem mapping (current) and building (future) Arrowhead regional ecosystem**
- **Strength/Weakness Analysis**
- **Smart Rural seminar planning**
- **Visitor and Tourism planning – tied to shuttle operations**

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*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
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

**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

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 Ride
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
Accessibility & Community Engagement
Mobility & Accessibility Interests

**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

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
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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 Development Efforts

**PROJECT GOAL**

Economic development and attracting future tech to Iron Range

**LOCAL PARTNERS**

- IEDC (Itasca Economic Development Corporation)
- Department of Iron Range Resources & Rehabilitation
- Blandin Foundation

**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

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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

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)
Next steps and discussion

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