

THE GRAND IRON RANGE CAV INITIATIVE: ENVISIONING MOBILITY HUBS FOR RURAL CITY AV SHUTTLES

OVERVIEW

The **mobility hub** is an emerging trend in planning focused on collecting a variety of mobility options—buses, trains, shared vehicles, bikes, scooters—at points where people can easily move from one mode to another in a safe, comfortable, and accessible environment. Beyond improving transportation mobility and accessibility, mobility hubs can provide numerous other benefits such as connecting regions, increasing travel safety, expanding and integrating multimodal travel options, enhancing neighborhoods, and advancing equity.

WHAT WAS THE NEED?

The growing prevalence of mobility hubs has made design guidelines and case studies more widely available, yet most existing mobility hub projects are designed for larger urban or suburban environments. In late 2022, the rural Minnesota city of **Grand Rapids** began an 18-month AV pilot project called **goMARTI**. With goMARTI's launch, a need for mobility hubs designed for this rural city setting emerged—one that researchers at the U of M's **Minnesota Design Center** set out to meet in a year-long research project funded by the Minnesota Department of Transportation as part of the goMARTI pilot.

“We believe the mobility hub concept works very well in smaller cities and towns, which may have limited bus systems...With mobility hubs, we can turn bus stops into places where you are not just dropped off at the edge of the road but have options to get to and from your final destination.”

—Thomas Fisher, Director, Minnesota Design Center

WHAT WERE THE GOALS?

Through research and design, the **project goals** were to:

- Serve the needs of transit-dependent people and expand their access to the goMARTI shuttle.
- Gather the best ideas from mobility hubs globally for an appropriately scaled design.
- Integrate the needs identified by the community and shuttle operator into a modular design with parts that could meet diverse requirements.
- Create a design that could be easily and affordably replicated at various shuttle stops in Grand Rapids as well as in other similar cities and towns.
- Reposition mobility hubs as not just facilitating multiple modes of transportation but also serving as places where people can gather and become better informed.

WHAT WAS DONE?

This goMARTI mobility hub project was completed in two phases. In the first, researchers identified possible sites for the

View the StoryMap



Findings from this project are illustrated in an interactive **StoryMap** created by the Minnesota Design Center research team. The StoryMap summarizes the team's work in designing a mobility hub as a multi-modal transportation and information center for people who are transit dependent and who use the CAV shuttle in Grand Rapids, Minnesota.

“The variety and detail of the designs provide transportation providers an excellent resource when considering any future mobility hub implementation.”

—Thomas Johnson-Kaiser, CAV-X Engagement and Project Manager, MnDOT

“The mobility hub concepts will be an important starting point for our future plans.”

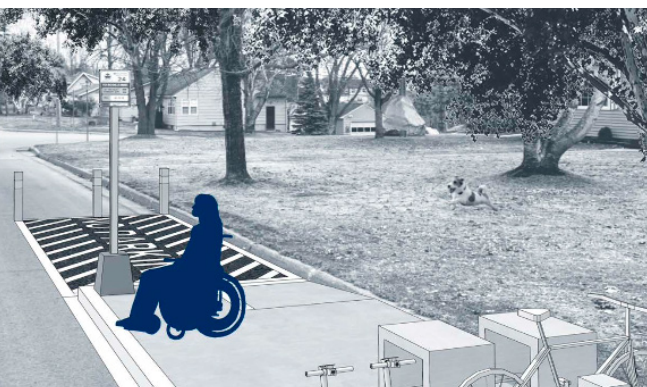
—Matt Wegwerth, City Engineer, City of Grand Rapids



goMARTI

The goMARTI self-driving shuttle pilot is the result of a unique partnership of multiple groups with a shared goal of increasing accessibility and transportation options in Grand Rapids, MN. The deployment covers nearly 17 square miles and includes approximately 70 pickup and dropoff points with a fleet of five autonomous vehicles, including three that are wheelchair-accessible.

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The designers created mobility hubs scaled to their environment; each fits within just two street parking spaces.

hubs along the shuttle’s route based on demographic analysis, GIS mapping, ridership surveys, goMARTI route maps, and community engagement. Instead of picking exact locations for the hubs, **target zones** were selected to give the city flexibility to choose exact locations. Next, the researchers assessed the ideas in various proposed and completed **mobility hub projects around the world**, including ones in Minneapolis, Minnesota; Portland, Oregon; and California’s Bay Area along with planned future mobility hubs in the United Kingdom and Sweden. Following this review, the researchers **engaged community members** at local events to learn what they would like to see in such hubs. Keywords that emerged frequently included accessibility, experience, value, wayfinding, independence, and navigating.

Based on the community feedback gathered through outreach efforts, the second phase of work was to simplify and downsize the hub to be more in keeping with the scale of use in Grand Rapids and to produce a mobility hub design. To create a framework for their design, researchers set parameters: the hubs would be designed within the right-of-way and occupy just two street parking stalls, would incorporate a closed-loop design (no additional connection to utilities needed), and serve goMARTI’s frequent rider groups, including riders older than 65, riders using a wheelchair, and riders under age 18.

Because many of the pick-up and drop-off spots would not be riders’ final destinations, researchers would incorporate shared micro-mobility options into the hubs when possible. Finally, each hub would be customized to reflect its surrounding context—no hub would be the same and each would be more than a transit destination.

WHAT DID WE LEARN?

The design team discovered that while the mobility hub concept was originally developed for urban settings, it could be successfully scaled down to suit rural cities such as Grand Rapids. Through innovative thinking, the designers were able to conceptualize **hubs with flexible, movable components** that fit within one or two parking spaces and are no wider than a sidewalk. **Design concepts** ranged from very simple to more complex based on the street type. The hubs’ design also focused on accessibility, with accommodations for individuals with motor, visual, auditory, and cognitive impairments. **Optional hub elements** included solar panels for renewable energy, smart-lights, touchscreens, wi-fi and charging stations, heated ramps, smart bollards, and community gathering spots such as gardens, cafes, libraries, shelters and healthcare services.

NEXT STEPS

In May 2023, the U.S. Department of Transportation’s Federal Highway Administration awarded the **Minnesota Department of Iron Range Resources and Rehabilitation** a \$9.3 million Advanced Transportation Technology and Innovation (**ATTAIN**) grant to continue the goMARTI demonstration. The grant will allow goMARTI to continue service and expand its fleet and the area it serves in the Grand Rapids community. The design team expects their work will be an important starting point for Grand Rapids and other small cities and towns wanting to implement the mobility hub concept in more rural environments.



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