

# Mobility for All: Community Access through Intelligent Mass Transportation Systems

**Overview:** The goal of the Mobility for All project is to lower barriers to community access and mobility for persons with cognitive disabilities. Since operating an automobile is not a viable transportation option, we are designing frameworks and technologies to make complex mass transportation systems more accessible for those with cognitive disabilities who are capable of working or living independently.

## Contact Information:

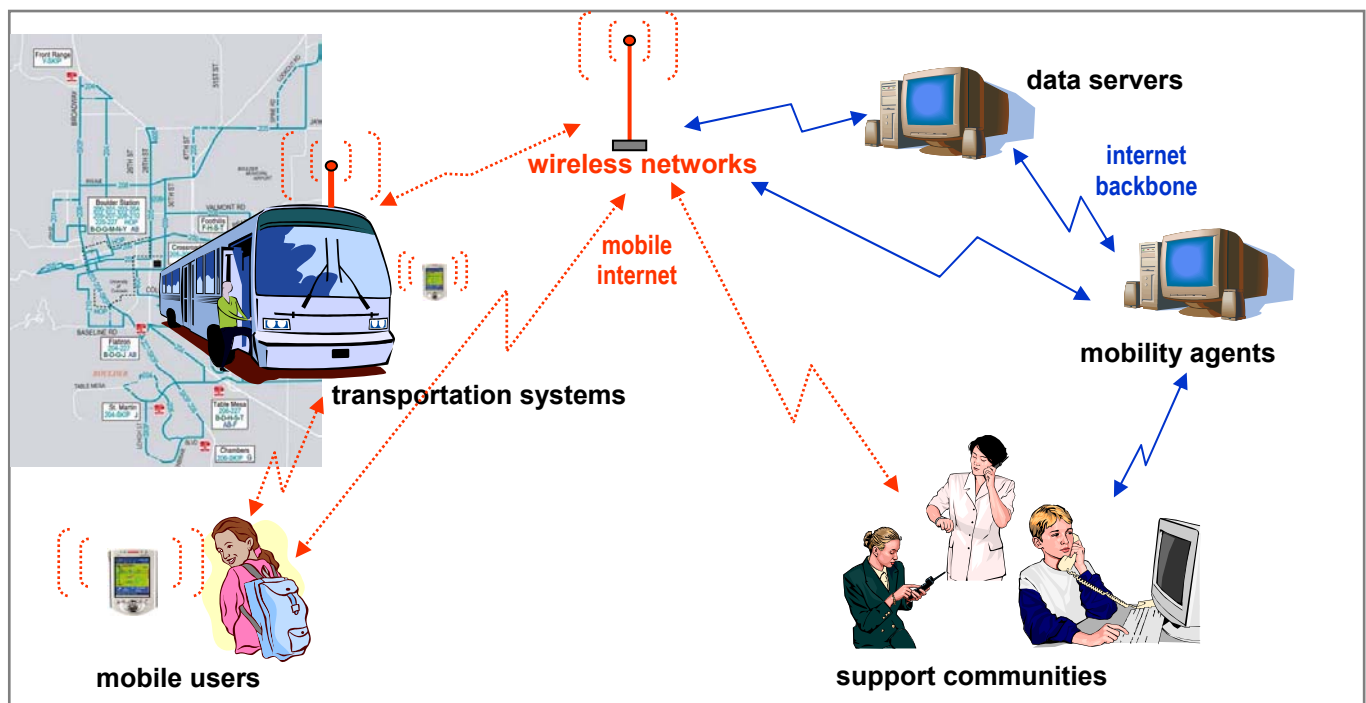
Gerhard Fischer..... [gerhard@cs.colorado.edu](mailto:gerhard@cs.colorado.edu)  
Jim Sullivan..... [sullivan@cs.colorado.edu](mailto:sullivan@cs.colorado.edu)  
Website: ..... [www.cs.colorado.edu/~l3d/clever/projects/mobility.htm](http://www.cs.colorado.edu/~l3d/clever/projects/mobility.htm)  
L3D Center..... [www.cs.colorado.edu/~l3d](http://www.cs.colorado.edu/~l3d)

*Mobility for All is a Cognitive Levers research project of the Center for LifeLong Learning and Design (L3D) supported by the Coleman Initiative.*

**Status:** Our team surveyed transportation systems in six major US cities. We have analyzed the *cognitive activities* patrons engage in as they *plan, navigate, move* and *learn* to use these complex systems and have identified *essential navigation artifacts* including *maps, schedules, signs, labels, landmarks, and clocks*. We have also studied young adults with cognitive disabilities learning to navigate with these artifacts on public transit systems. The challenges are significant for any new user, and are particularly daunting for users with cognitive disabilities. This presents tremendous opportunities for designing new assistive technologies and navigation approaches that will benefit *both* the cognitively disabled *and* general public.

We have designed a socio-technical architecture (see figure below) that leverages existing Global Positioning System technologies now appearing in major US cities to manage bus fleets. Our proposed architecture will:

- Provide mobile, contextualized, and personalized information in multiple modes (visual, auditory, or tactile).
- Reduce cognitive tasks by focusing memory and attention on critical tasks including which bus to board, when to get off, and where to go next, much like caregivers do as they train new users.
- When necessary, communicate special user needs (e.g. a destination or needed connections; physical access needs; etc.) to system operators using encrypted wireless or smart tag technologies so bus system operators can provide assistance.
- Allow caregivers or family members to monitor trip progress and offer assistance - while maintaining privacy.



Mobility for All design architecture

To gain pragmatic insights and ensure success, our research team has formed a unique consortium of university researchers, assistive care specialists and caregivers, urban designers, city transportation system experts, and commercial technology companies to design and evaluate technologies and system prototypes.

