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

Goals: The Mobility for All project seeks to identify and overcome cognitive barriers in modern mass transportation systems. Our approach is to create collaborative partnerships with assistive technology specialists, urban transportation planners, cognitive neuro-scientists and information technologists to better understand the subtle complexities of this problem.

Status: Our team has surveyed transportation systems in four major US cities. We have studied how patrons plan, navigate, move – and learn to use these complex systems. We have identified essential navigation artifacts including maps, schedules, signs, labels, landmarks, and clocks. We have also analyzed cognitive challenges encountered while planning, waiting, and moving on public transit systems. These challenges are daunting for unfamiliar users as well as those with cognitive disabilities – and illustrate opportunities for designing new assistive technologies and that will benefit both the cognitively disabled and general public.

Design concept: a Location-Aware, User-Supportive Bus System

We envision several technologies could provide mobile, intelligent, and personalized information in multiple modes (visual, auditory, tactile). These technologies would simplify route planning, display boarding cues, and provide other personally contextualized information about buses as they arrive. The technologies could also communicate special user needs (e.g. a destination or needed connections; physical access needs; etc.) using wireless or smart tag technologies so bus system operators can assist the rider in boarding the correct bus and making connections. Location-aware wireless technologies could also be used to monitor trip progress – while maintaining privacy – or notify a caregiver if there are problems. We are collaborating with caregiver communities who teach the cognitively disabled to use public transportation systems, urban designers, and city transportation system experts to design enabling technologies and implement an initial design prototype.