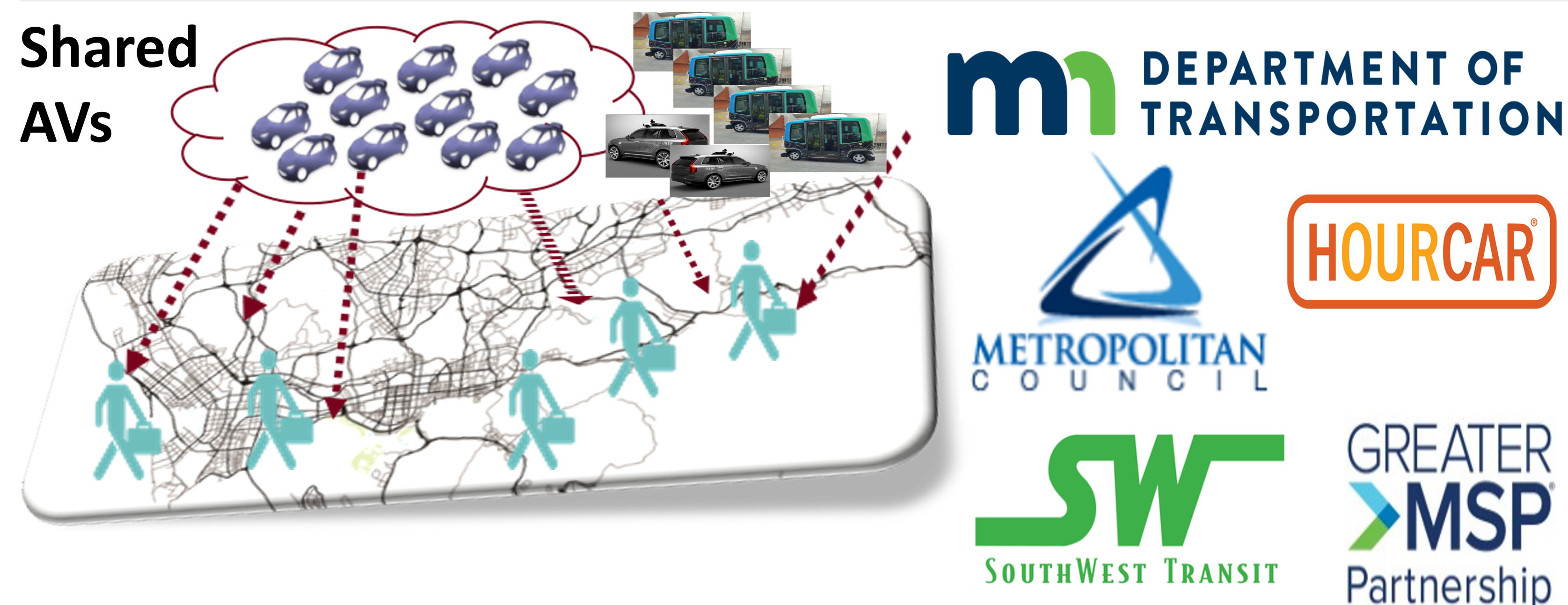


SCC: Leveraging Autonomous Shared Vehicles for Greater Community Health, Equity, Livability, and Prosperity (HELP)

Zhi-Li Zhang, Saif Benjaafar, Yingling Fan, Tom Fisher, Alireza Khani, Frank Douma (University of Minnesota, Twin Cities), Yanhua Li, (WPI) IRG, FY2018, CMMI-1831140

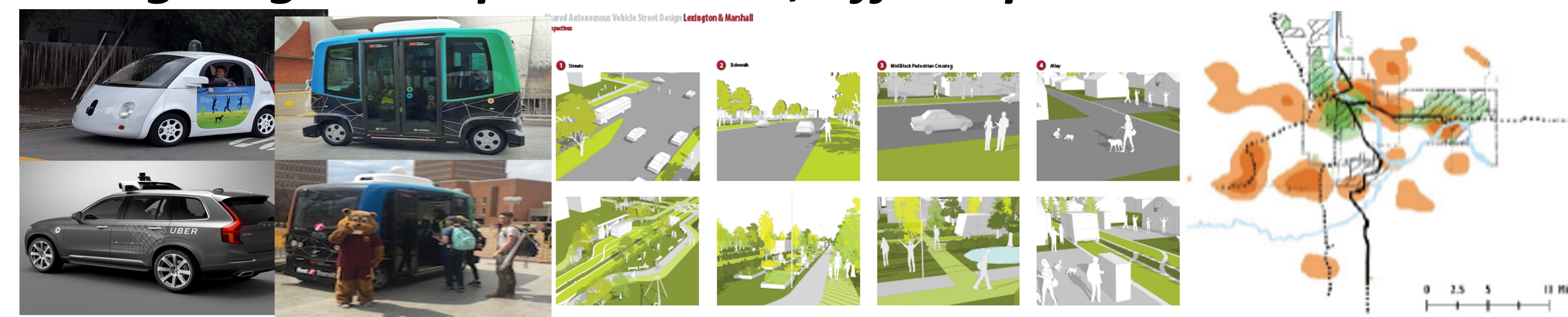
Smart Cloud Commuting Service



Project Vision: Smart Cloud Commuting System (SCCS)

via giant pools of shared AVs of various types

- as convenient (but cheaper & less hassle) as owning a car
- as affordable, but more flexible as public transit services
- **bridge digital & spatial divide; offer equitable MOD services**



Project activities/outcomes & community-identified problems:

- Feasibility study of SCCS with shared AVs
- Optimal fleet sizing, AV depot design & AV operations
- AV ownership & sharing business models
- Public perceptions on shared AV services
- Impacts of AVs on street re-designs & physical infrastructure

Broader Impact, Social Science & Technological Advances:

- Providing inexpensive mobility services to all people (including people with disabilities and the elderly)
- Helping build stronger family and community ties
- Boosting economic productivity and equity by removing mobility as a constraint
- Promoting greater community health, equity, livability, & prosperity (HELP)

Intellectual Merit:

- **Quantifying system efficiency gains** of cloud commuting via shared AVs, & analyzing the levels of QoS delivered to users
- **Quantifying architectural design choices & operational challenges:** Designing SCCS with the coverage, convenience and QoS to meet user expectations.
- **Economic Viability:** Studying the cost-effectiveness, economic viability & efficiency-equity tradeoffs of SCCS through modeling and analysis of AV ownership options and market structures.
- **Social Impacts of SCCS:** Studying the social impacts of AVs on diverse communities, urban re-design and land use issues.

Next Step and Expect Outcomes of the next year:

- Public release of findings on public perceptions of shared AVs
- AI-based activity-based models for demand prediction
- Enhancing Equity in Transportation
- *Shared AV Shuttle Trial Service in White Bear Lake, MN*