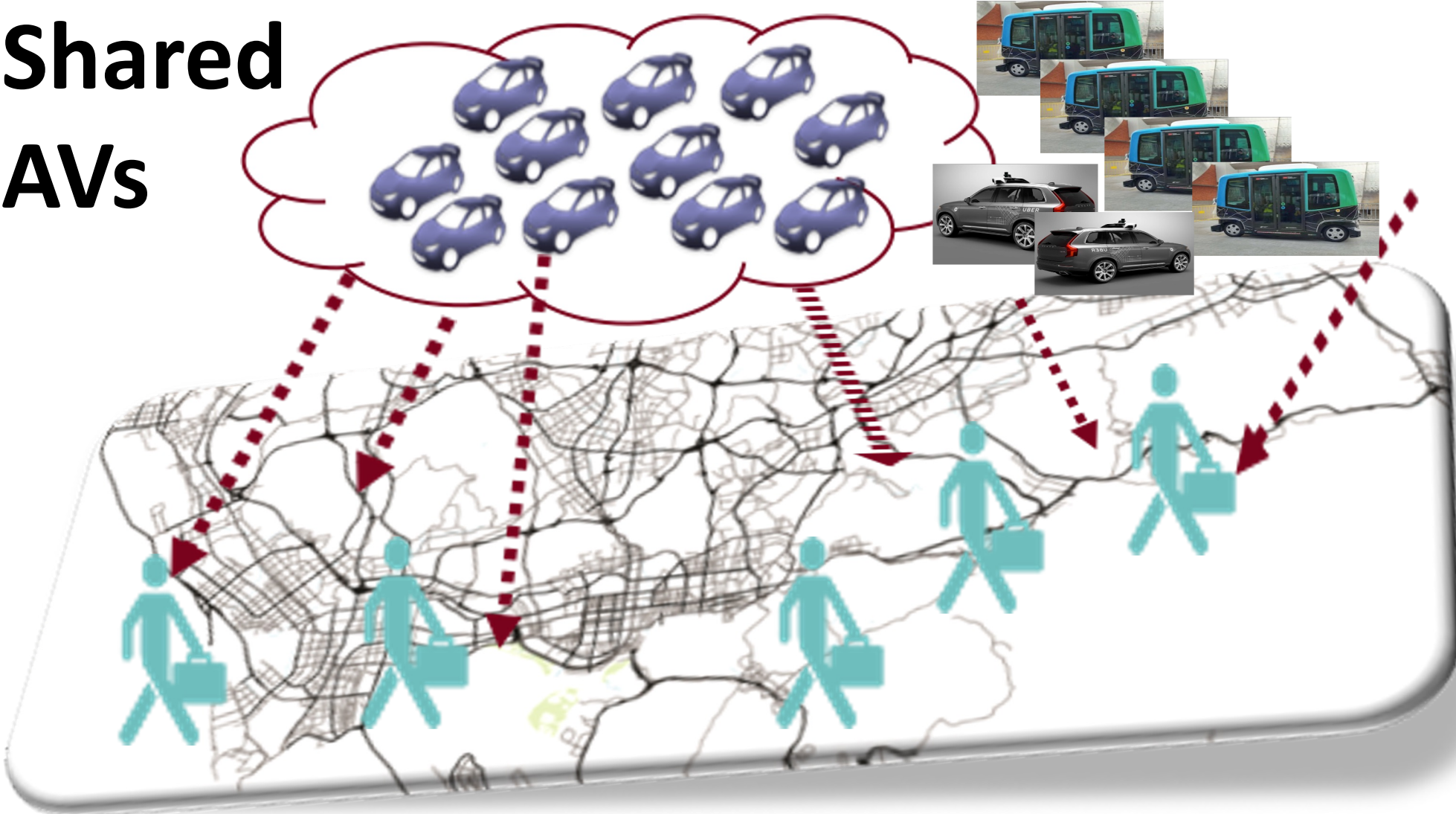



# SCC: Leveraging Autonomous Shared Vehicles for Greater Community Health, Equity, Livability, and Prosperity (HELP)

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**

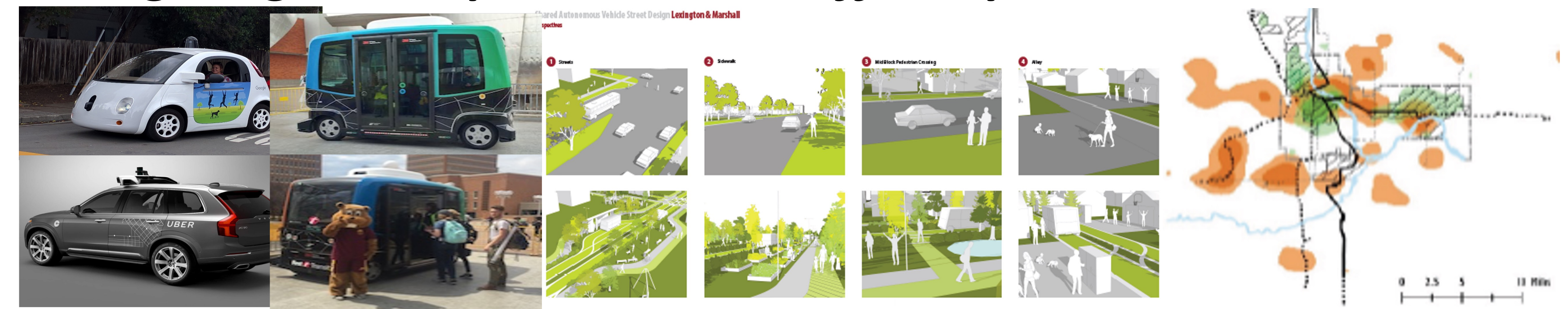
Shared AVs

## 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:

- Data-driven, AI/ML models for traffic demand prediction
- Transit mode choice analysis & planning tool development
- Improving ride-hailing service efficiency via tele-operated AVs
- 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); Bridging digital divide
- Boosting economic productivity and social equity; easing AV adoption & disruptions via policy recommendations
- Promoting greater community health, equity, livability, & prosperity (HELP) by leveraging AVs and (smart) land (re)use

### 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 (final year):

- Completing policy recommendation report & holding the final community engagement & outreach workshop
- Working with the community partners on pilot projects such as *Shared AV Shuttle Trial in White Bear Lake, MN*