Today's Presentations - #2

Next Steps and iCity 2.0

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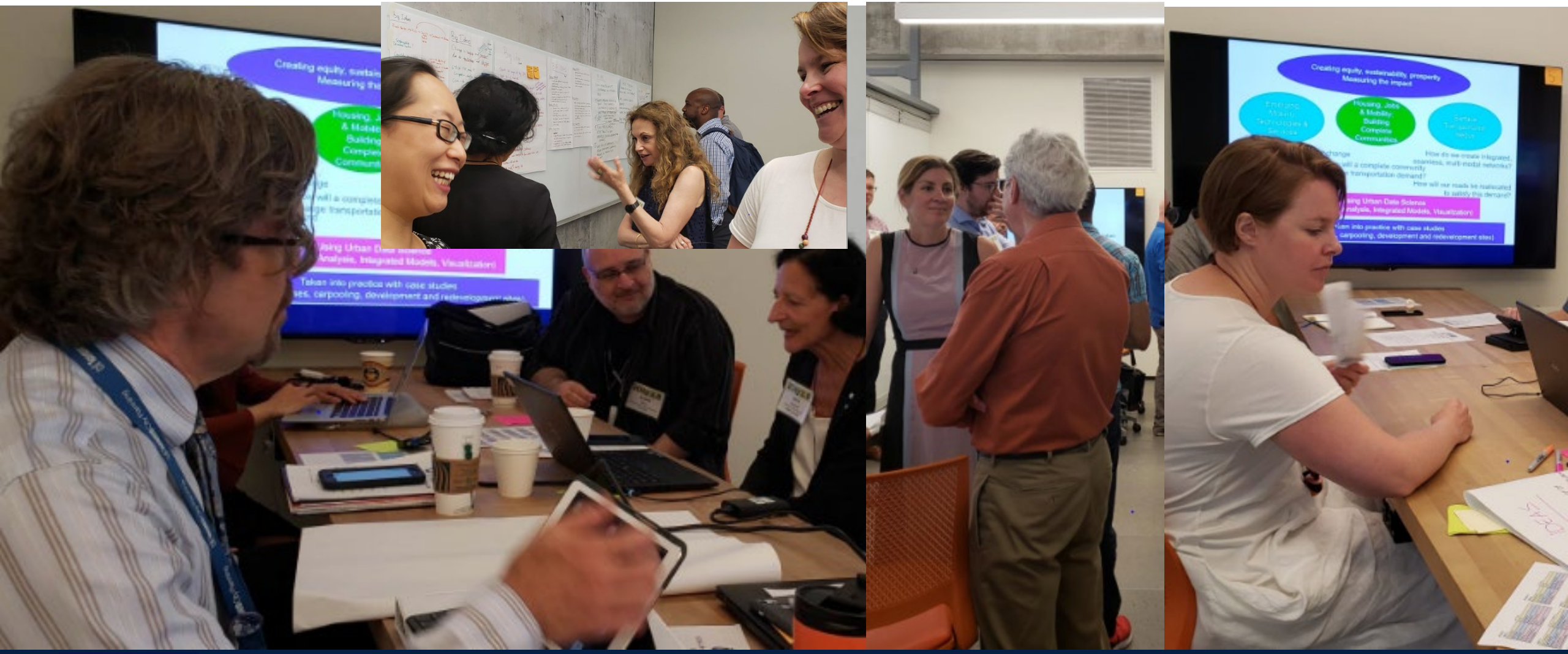
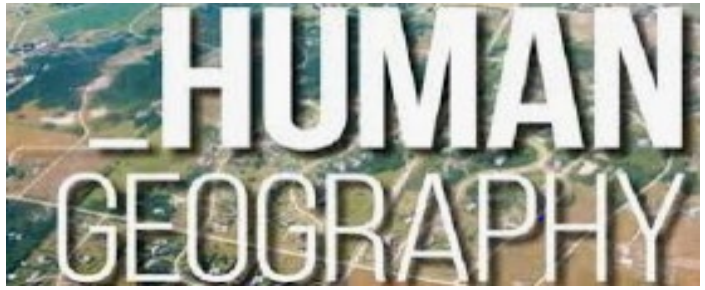
Key stakeholder engagement, June 2019



Our multidisciplinary research team

is drawn from two universities, across many faculties and divisions and includes architects, engineers, planners and designers.



Mechanical & Industrial Engineering
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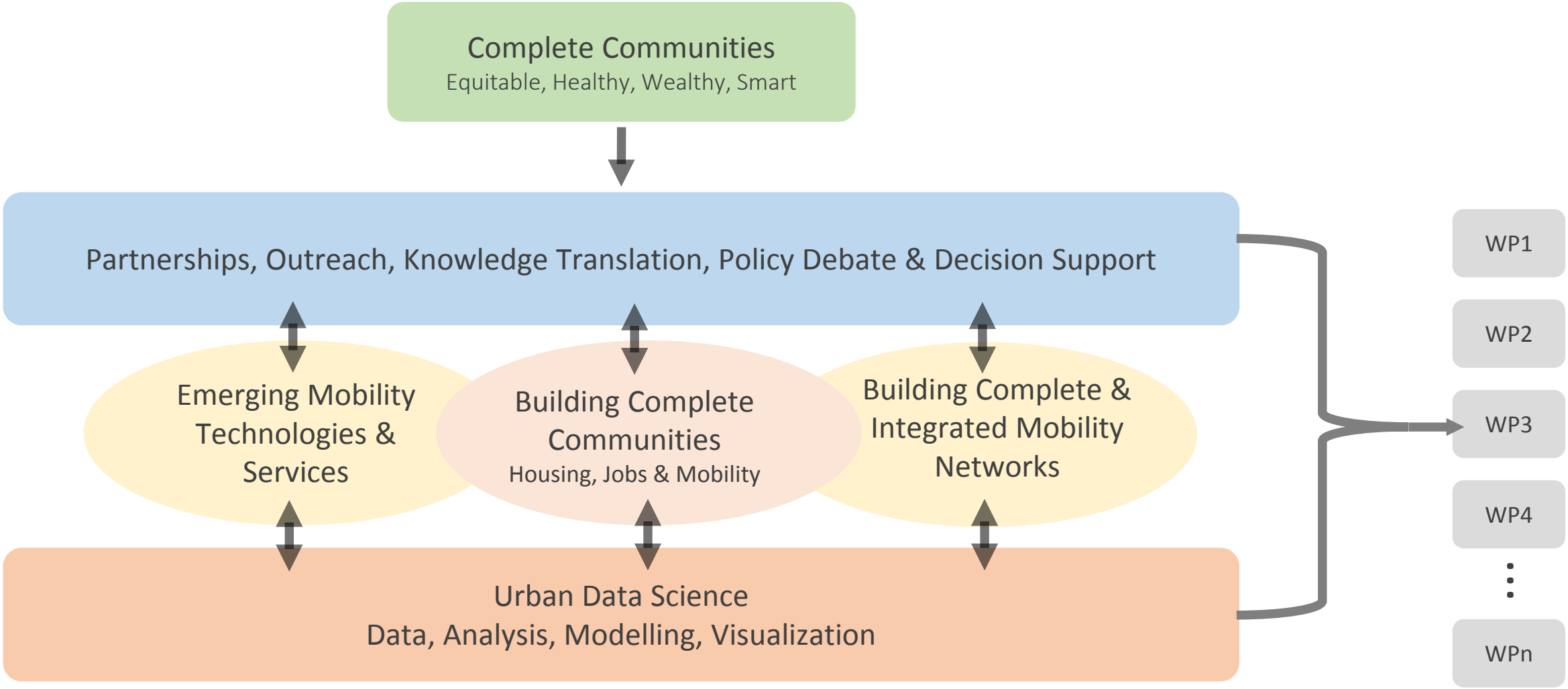
Our unique coalition of partners

iCity2.0: Urban Data Science and the Future of Urban Mobility, September 2019

…explore how the nexus of emerging transportation technologies and services combined with new urban and suburban forms can be used to improve mobility, accessibility to employment and home affordability.

…propose changes to existing rights-of-way and urban form to create a seamless, safe and integrated transportation network that provides mobility to all travellers equitably, sustainably and economically.



Overview of the iCity 2.0 Research Program

For each of 10 work packages

Research Questions

- A number of research questions to focus the research of each work package.

Research Approach

- Data, models, analytics, survey methods to be applied.

Research Outcomes

- Storytelling, engagement and evidence in support of decision making to improve mobility and access to affordable housing, jobs and other opportunities.

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45 Research Questions

Emerging Mobility Technologies & Services

- Review & Assessment of Current & Emerging Mobility Services & MaaS
- Integrated, Activity-Based Modelling of Mobility Services
- Mobility Service Field Tests

Integrated, Activity-Based Modelling of Mobility Services

- Ridehailing
  - O-to-D vs. integrated
  - Ride-alone vs. pooled
  - Demand vs. supply (deadheading etc.)

- On-demand Transit
  - Optimal resource delivery
  - Integrated with fixed routes

Mobility Services Field Tests

- Controlled experimentation of mobility technology delivery… Technology for Good?
  - Disadvantaged communities
  - On-demand transit (Pantonium)
  - Carpool App (Swiftride)
  - Ridehail (Uber)

Building Complete Communities: Housing, Jobs & Mobility

- Housing and Transportation Affordability Analysis & Modelling
- Complete Community Scorecards
- Generative Design of Complete Communities
- Complete Community Design: Case Studies

Complete Communities

- Places where homes, jobs, schools, community services, parks, and recreation are accessible.

  - Complete community scorecard: What is the comparative advantage of a complete community model against existing planning models for infrastructure investments?
  - How can we use integrated urban models to generate and evaluate alternate transportation scenarios that contribute to complete communities?
  - Co-design: How can we integrate survey results and preferences into options for transit and development decision-making?

Complete Communities: Generative Design

- Generative design allows design professionals, building and infrastructure engineers to “frontload” ideas and then test these against a series of constraints provided by data, such as density provisions, energy consumption and outputs, solar gain, access to hubs, transportation, cost analyses. Opportunities are the inclusion of large-scale community data & consultations.

  – How can generative design be used to offer varying typologies of complete communities?
  – How can generative design and related visualization tools support measurement of complete communities through the scorecard (s) and offer scenarios for future planning?

Building Complete & Integrated Mobility Networks

- Analysis & Modelling of GTHA Travel Markets and Needs
- Generative Design of Integrated Transportation Networks
- Tactical Transit Improvement Strategies

The big picture

- What are the causal factors influencing traveller choices of conventional modes and new mobility options?
- What role does modal level of service play in shaping demand across the surface transport network?
- Where do service gaps and inefficiencies exist and what transit improvements can have significant impacts on network outcomes?

Surface Network Solutions

- Integrated network designs
  - Generative design methods
  - Transit-centric strategies and designs in an integrative complete street design framework

- Tactical transit improvements
  - Development and testing of improvement scenarios and strategies
  - Policy recommendations for surface transit improvements
  - Data-driven tools for evaluating transit improvement strategies and policies

Our timeline