Group 3

(Jim Spohrer, Jimmy Xu, Bill Clancey, Burford Furman, Anuj Sharma; with Jack Park, Matthias Herterich, Gerhard Gundergan, Heidi K. (VTT), Steve Kwan, Kartik Gada)

- People+Technology
  (augment/enhance cognitive capabilities, semantic models, etc.)
- Smart vs Wise
  (task automation to value creation)
- DIY Services
  (microservices, maker movement)
- Technology-enabled Trust
  (e.g., blockchain, etc.)

Group 3 Discussion

- People-technology research requires 4+ types of data
  - 1.Hidden internal (Jimmy Xu − saliva, melatonin)
  - 2.Observable external (Anuj Sharma − videos of traffic)
  - 3.Hidden perception (Bill Clancey − conception of social, person's life narrative)
  - 4.Public debate - Redesign imagination - Testbeds (Buff Furman − don't bandaid bad designs, new testbests needed; Gerhard Gudergan, Bill Clancey; Kartik Gada − ATOM; technology progress dividend that goes to all adult citizens)
- How to engage everyone to gather data?
  - Citizen Science (Jim Spohrer, Jack Park)
  - Companies open it (Anuj Sharma − Uber, Google, etc.)
  - Simulations − generated content (Jim Spohrer)
- What to do with data − scientific, societal, commercial impact?
  - Improve existing service systems by patching (smarter service systems)
  - Design new service systems from scratch (wiser service systems)

Topics

- **What we know now?** *Importance of data for people-tech research*
- **What is possible/needed/hoped for/critical success factors in the future?** *Gather more of all the types of data needed*
- **What is the gap?** *Testbed*
- **How to fill the gap?** *Rebuild from Scratch: University Testbeds? Paul Romer Chartered Cities?*
- **Opportunity for academe/industry research partnership:** *Open Technology Testbeds with People Living In Them*
- **Challenges, risks, mitigation:** *Privacy*
- **What is possible role for NSF in this?** *Citizen Science to collect data*

Jimmy XU (Brown University)

- Utility: Energy, Waste Management
- Circadian Rhythm − light that is best for people
- Sleep disorders
- Human Subject Review Board Issues
- Melatonin collection from saliva (11:30pm samples)
- Blue light to set biological clock − what wavelength? Intensity?
- Changes in environment and lighting − natural to artificial
- Use technology go bring people and environment in tune
- Cultural issues: Brazil − wake up 2 hours before sunrise (blue component)
- Driverless car − may shift primary function; like smart phone − intergrate new functions (camera)

Bill Clancey

- What is the relationship of cognitive to social?
- Alan Newell: Time Scales (wrong)
- What does social mean? Being with someone. Collaborating. Your thinking is social? Conceptually social. What counts as information. Orientation who is this for. How will it be evaluated.
- When you prepare a talk. That is a type of social cognition. At the conceptual level and all your judgments.
- Activity perspective brings you into a social view.
- How to get to the next level? Teamwork − why be part of team? Sense of motivation, meaning, in their life. Life narrative. Coal miner, may be more limited by where I live, money in bank, who I know.
- Diversity of people. Relate to people in many circumstances.
- Methodology - future work. ”Human Factors” − is a person with a life. Meaning of work.
- Demilo: People and activities in driverless world; travel planner not just A to B, and avoid crashes, provides a service.
- Citizen Science: beyond data collection to perception − broader conception of service
- Better than emjoicon -

Burford Furman

- Mobility − how do people think about mobility, and choices they have? What are factors in that decision. What could contribute to alternative ways we do things? Thinking and interacting about technology.
- Size of vehicle − 1-2 people, Mexico thinks elitist; busses of 15 people.
- Clancey: Travel as activity
- Anuj: Cultural dimension.
- System fights against me; get in something that does it right for me.
- Legacy problem.

Anuj Sharman

- Mass information to personal information
- Know more about the person, and the decisions they make
- Physiological states − diabetes − microsleep; sleepy divers
- Before complete automation, more and more augmentation
- Gap − old age drivers, coming back from stroke, mistakes they make more of. And human factors.
- Clancey: Visual enhancement.
- Augmented Reality − lane marking; color blind drivers
- Crash − stressed out people; anxiety − making riskier choices
- Case specific − simpler models
- Automation vs people − give back control; Telsa − driver engagement
- Clancey: Maps and routes
- Clancey: Things not being study by industry, but in great demand − working with people in everyday situations. Use of maps for example. Incomplete in terms of what people need.
- Anuj: miss an exit, and make a risky choice.
- Uber and Google know a lot about us − can they make it easier for people to be citizen scientists − data sharing

Jim Spohrer

- Citizen Science data collection

Jack Park

- Citizen Science (Tanaka - 5th generation science advisor)