

Connection Science and Engineering: What problems does network research need to solve?

Industry Panel at Workshop on Information and Decision Science

The world is moving to distributed, network systems for health, finance, work, government, and community. But there are big questions about how well these systems really work...do they make the right decisions...and we know little about their stability, optimality or how they will change society. We have four leading thinkers from the communication, mobile, banking, and information industries who will help us understand where the research community needs to go.

Participants:

Steve Whittaker, BT

Ken Gabriel, Motorola Mobility

David Zafrilla-Gonzalez, BBVA

Martin Wattenberg, Google

Moderator: Alex Pentland

During presentations by the participants and questions from the audience five major opportunities were uncovered:

- 1) Managing organizations by means of incentives on networks rather than static organizational charts. The DARPA Red Balloon challenge was cited as an example of a dynamic 'pop-up' organization of more than 1,000,000 people that was governed by network incentives.
- 2) The need to capture face-to-face interactions and not just electronic interactions. Most high complexity, high sensitivity interaction will always be face-to-face, and somehow we must also capture this information if we are to really understand organizations and the flow of information. This points to the importance of sensor networks.
- 3) Local control and informed, aware users. Much network technology can be dangerous or dehumanizing for average users. We need to provide tools to make average users aware of information about them and their situation, and to allow them to be able to control this information.
- 4) The trade off between privacy and services must be managed. Most new services imagined require personal information, this exposes users to risk. Questions of data ownership, control of information spread, and optimality vs information surfaces.
- 5) Security and stability. Today we are seeing millions of cyberattacks threatening our networks. We must design future networks to be secure and stable, and note especially that we must design the incentives for network participation to align the interests of those who operate the network with those who use the network.

Biographies:

Martin Wattenberg leads Google's data visualization research team, together with Fernanda Viégas. He's known for his work on making complex data broadly understandable and accessible. While at IBM, he founded the Visual Communication Lab, which created the ground-breaking public visualization platform Many Eyes.

Steve Whittaker is a Chief Research Professional with British Telecom and a visiting scientist at the MIT Media Lab. He is currently responsible for BT's research engagements with US universities and business schools

David Zafrilla González joined BBVA in 2007. It was in 2010 when he was appointed BBVA's Innovation Executive in Residence at MIT, empowering BBVA's Innovation Network (Global Portfolio & Ideation) and innovating in new technologies to improve relationships between humans and corporations.

Ken Gabriel founder of Microelectromechanical Systems (MEMS), former faculty at CMU, long-time DARPA program manager and Acting Director of DARAP, and now leading Motorola Mobility Advanced Technology with Regina Dugan.

Prof. Alex Pentland is a co-founder of the MIT Connection Science and Engineering Center, was named by Forbes as one of the seven most-powerful data scientists in the world along with founders of Google and the CTO of the United States. He is among the most-cited computational scientists in the world and a serial entrepreneur.