

Computer and Networked Systems (Thursday morning breakout)

Transportation

- Vehicle-to-vehicle ad hoc networking for collision avoidance, route planning, etc.
- Reliable, distributed, real-time control – transportation represents an enormous real-time distributed control system
- Understanding multi-modal systems
- Re-examining telepresence and teleworking as approaches to decrease the use of transportation infrastructure

The Grid

- Architecture and standards for the Grid
- Data networking for control and sensing with arduous real-time requirements
- Configuration, operation, and management of “smart” homes and offices with 1,000 interconnected digital devices constituting an energy sensing and control network

Infrastructure monitoring

- Sensor networks for the built and natural environment: specific issues related to scalability, energy efficiency, cognition, decision-making (rather than just sensing)

High performance computing

- The three pressing issues in HPC are power, power, and power
- We have no idea how to achieve the stated Exascale program goal of 1 ExaFLOP for 30 Megawatts in 2021

Low power computing

- Modular design to extend the usable lifetime of digital systems, increasing the amortization of the energy required to design and manufacture the system
- Fault tolerance, reliability, and dependability, at all system levels, and at all scales

Energy complexity system design

- Algorithm, system, datacenter, and distributed design to maximize computing per unit of energy