Systems Engineering

Rouse, Iftode, Kamboj, Kimbrel, Meyer, Schrader, Shmoys, Work
Framing Discussion

• Types of Systems
  – Engineered Physical Systems
  – Cyber-Physical Systems
  – Socio-Technical Systems

• Engineering Decisions
  – Design Decisions
  – Policies, Regulations, Incentives
Design Issues

• Conceptual Modeling of Systems
• Multi-Scale Modeling of Systems
• Robust Systems
  – Flexible, Adaptive Design (Modularity & Sensing)
  – Versus Time to Market/Deployment
• Failure Strategies
  – Redundancy, Distributed Control, Fail Safe Modes
• Security From Attacks
Data Issues

• Mining Data from Large-Scale Repositories
• Sharing Data and Repositories
• Leveraging Social Networks
• Utilizing Online Environments
Sustainability

• Sustainability of Interconnected Systems
  – Framing “the system”
• Leveraging Large Peer-to-Peer Networks
  – Direct vs. GPS enabled
• Success Depends on Usability of Solutions
• Sustainability of Researchers
  – Funding (ICES) and publication outlets