

# Vision for the Workshop on Network Science and Network Design

July 29-30, 2008, Marina del Rey, Southern California

This workshop is intended to bring together researchers from the spectrum of communities that have an interest in network science, network design, and the relationship between them.

The ultimate goal of the workshop is to (help) lay out a compelling and forward-looking research vision and agenda at the intersection of network science and design. Some more specific themes and topics we hope to explore:

\* The state of Network Science. Network Science as an intellectual discipline is new and developing quickly, across many communities - social science, organization and operations research, economics, computer networking, etc. - that have historically seen little interaction. We're interested in identifying points of commonality, network science research directions that are particularly promising inputs for the computer networking research community, and areas where the network science and 'classical' computer networking communities would benefit from greater interaction with each other.

\* The relationship between Network Science and Network Design. Network science today is essentially analytic in nature, while network design is a synthesis activity. How can network science inform and guide network design? Can we identify and describe research leading to promising new design methodologies that draw on and are informed by network science? Can we identify research leading to stronger metrics for evaluating 'good' network architectures and designs in different situations?

\* Identifying and enabling new research methodologies and tools for the field. Today, systems and networking researchers have a well known toolkit of research methodologies ranging from theoretical analysis to empirical "build and observe" implementation. The development of a discipline of network science opens the possibility that new methodologies will emerge. Examples might range from controlled large-scale experimentation to multi-disciplinary

simulation to analytic evaluation of design properties not well quantified today, such as potential to evolve over time.