Institute for Civil Infrastructure Systems

At the Robert F. Wagner Graduate School of Public Service at New York University

partnering institutions

Cornell University
Polytechnic University
New York University
University of Southern California

Bringing Information Technology to Infrastructure: A workshop to develop a research agenda

The Institute for Civil Infrastructure Systems (ICIS)
Robert F. Wagner Graduate School of Public Service, New York University

Roads and bridges, pipes and pumps, and other components of our civil infrastructure systems have traditionally relied upon mechanical systems to support them. A dramatic shift is now underway, as advances in the use of information and communications technologies are changing the way infrastructure is developed, deployed and managed. Opportunities for the use of information technology (IT) in infrastructure planning, construction, operation, management and maintenance are emerging at a rapid rate, and are transforming both the way infrastructure services are provided and how they impact users and communities:

- *Transportation* infrastructure has been a leader in the use of IT for roadway design, traffic management, customer services, and improved rail safety and capacity.
- *Water supply and wastewater treatment systems* use advanced information technologies for detection, data management, system control, and to track compliance with water quality standards, and maintain the reliability of distribution systems.
- *Electric power* infrastructure relies heavily on information technology to track system performance and energy use, improve efficiency and reliability of fieldwork, improve customer service, and manage energy markets.

Efforts to wire our roads, transit, water, and energy systems are mainstreaming "smart" infrastructure that promises to change the way we manage and use our natural and built resources. Although IT is critical to the performance of civil infrastructure systems throughout their entire life cycle, little is known about the research needs to support IT use in infrastructure. As the IT sector continues to develop rapidly and change the pace and nature of our infrastructure systems, research must be targeted to address the broad range of opportunities and implications of these systems for infrastructure and the communities they affect.

The Institute for Civil Infrastructure Systems (ICIS) will conduct a workshop in Washington DC June 25-27, 2001 with primary funding from the National Science Foundation (NSF) to provide the basis for a research agenda connecting IT and infrastructure for the NSF and other potential funders. Final results will be disseminated as a report to shape research agendas for the NSF and other institutions that engage in issues about infrastructure and information technology.

The workshop will convene professionals in infrastructure, IT, and social science disciplines from academia, industry, government and the not-for-profit sectors. The group will explore IT/infrastructure connections from system- and user-specific issues to more global perspectives on the role of IT-enabled infrastructure and urban development. New materials for IT systems, construction management, workforce adaptation to new IT skills, IT-enabled infrastructure for hazard prevention and response, integration and interaction of rapidly changing IT systems with older, more slowly changing infrastructure, and changes in urban development as a result of IT-enabled infrastructure are among the research areas the workshop will address.

The Institute for Civil Infrastructure Systems (ICIS) is a multidisciplinary partnership of four universities – NYU, Cornell, Polytechnic U. of NY, and the U. of Southern California – located at NYU that focuses on infrastructure services for communities, users, and infrastructure managers. http://www.nyu.edu/icis.