Report of the Subcommittee on Socioeconomic, Education, Workforce Issues (SEW)

PITAC Meeting

September 25, 2001

Subcommittee Members

- John Miller, Chair
- Ching-Chih Chen
- Sherrilynne Fuller
- Joe Thompson
- Raj Reddy (ex officio)
- Irving Wladawsky-Berger (ex-officio)

Socioeconomic Research and Policy Priorities

The use of information technology – in particular, the growing popularity of the Internet and the emergence of global commerce – has introduced a series of important and complex policy issues

Policy decisions and IT investments are being made on the basis of incomplete research and data concerning the effects of IT on our society

Equity and Access

All our citizens must have access to information technology.

Full participation in information technology research requires access to high-bandwidth connectivity

Workforce

The supply of information technology workers does not meet the current demand. *** Still valid?*

A diverse workforce literate in information technology is critical for ensuring that our Nation is prepared to meet the challenges and opportunities of the Information Age.

Both K-12 and post-secondary education are inadequate to meet the challenges of the Information Age.

Socioeconomic, Education, Workforce Issues (SEW) – PITAC 1999 Recommendations

Overarching recommendation

- Expand Federal initiatives and government-university-industry partnerships to increase IT literacy, education, and access

Specific recommendations

- Expand Federal research into policy issues arising from IT
- Fund IT research on socioeconomic issues
- Expand participation of underrepresented minorities and women in computer and IT careers

Socioeconomic, Education, Workforce Issues (SEW) – PITAC 1999 Recommendations (continued)

- Create programs to remove barriers to high-bandwidth connectivity posed by geographic location, size, and ethnic history of research, educational institutions, and communities
- Accelerate and expand education in IT at all levels – K-12, higher education, and lifelong learning
- Strengthen the use of IT in education
- Increase funding for SEW R&D

SEW Subcommittee Discussion Topics

- Research in technology for education
- Stimulating interactions between researchers and IT users
- Using IT tools to extend the reach of government services
- Metrics and implications of the dot.com collapse
- Status of the emerging SEW research field

"Digital Promise Project"

Presentation by Lawrence Grossman, former president, NBC News and PBS

- Lawrence Grossman and Newton Minow have written a report, based on a study funded by the Carnegie Corporation of New York, Century Foundation, Knight Foundation, MacArthur Foundation.
- Propose creation of a Federally chartered ***"Digital Opportunity Trust Fund"*** to support educational and civic uses of digital technology, including R&D.
- Fund would be endowed with proceeds from Federal auctions of spectrum bandwidth – up to $18 billion is proposed in report.
- The fund would be administered by NSF or an NSF-type agency.
- Goal is to provide for education-related R&D a level of investment commensurate with the size and national importance of the sector.
- URL for project is www.digitalpromise.org

SEW Coordinating Group

SEW Coordinating Group Co-Chairs:

C. Suzanne Iacono, Program Director, Digital Society & Technology, Information and Intelligent Systems Division, Computer and Information Science and Engineering Directorate, NSF

William S. Bainbridge, Director, Innovation and Organizational Change Program, Social, Behavioral, and Economic Sciences Directorate, NSF

Participating IT R&D Agencies: NSF, DOE, NASA, NIH

Other Active SEW CG Participants: GSA, NSA; occasional participation from other agencies

SEW CG: State of the Field

SEW Research:

Good news: many grant applications of extremely high quality.

Bad news: only a patchy monolayer of grants could be funded.

Major obstacles to progress:

- SEW researchers are scattered thinly across many disciplines, with no common scholarly forum, outlet, or mode of communication.

- Funding levels are still too low to foster the development of the field

SEW Coordinating Group Goals

• Institutionalize and “grow” this highly interdisciplinary research field at the nexus of IT, the social sciences, and social decision making.

• Foster a nationwide research infrastructure that increases the visibility of SEW research and provides an intellectual home to sustain the emergence of a critical mass of researchers in this field.

Example of action: Sponsor workshops and an annual conference that bring together all stakeholders in SEW implications: IT and social science researchers, government and industry technology users, technology designers, and policymakers.

SEW CG Ideas for PITAC

- Encourage the research community and members of other Federal agencies to become more involved with SEW-related PITAC meetings, events, reports, etc.
- Charge the SEW advisory committee with taking the first steps in "Building the National Infrastructure for SEW Research"
- Help increase the visibility of this area by having PITAC members give and/or introduce talks, testify before Congress, and do PR for this area of research
- Keep this process of cross-fertilization alive, through continuous collaborations and consultations between PITAC and the SEW CG
- Increase the number of experts in SEW research on the PITAC committee

Next Steps

Letter re. Digital Promise Initiative?

Several subcommittee meetings to revisit findings and assess progress toward goals as stated in Recommendations.

Facilitate integration of SEW research results into policy decision process.

NSF research on socioeconomic implications of IT

- ITR's "People and Social Groups Interacting with Computers and Infrastructure" area funds projects in:
  - IT and education (research to create new knowledge on IT uses)
  - Social and economic implications of IT (such as the global digital economy; IT and work life; value systems in IT design, deployment, and consequences; cyber-citizenship; information privacy and intellectual property)
  - Infrastructure extensions to expand access to IT in communities and at smaller colleges and universities
  - IT workforce – issues related to attracting and retaining a strong workforce
  - Universal access (enabling people to use IT regardless of age or physical limitation)
  - Universal participation (motivations and barriers in the use of IT)
  - IT in the social and behavioral sciences

Socioeconomic, Education, Workforce Issues (SEW) – Agency-Specific Activities (continued)

Education & workforce-related R&D

- **NSF**:
  - Barriers to participation of minorities and women in IT careers
  - Methods to increase IT literacy and skills
  - Learning theory and practice with individuals and groups
  - Integration of innovative IT tools and methods in learning environments
  - Use of digital libraries in education
  - IT applications in workforce training
  - Increased financial support for graduate students
- **NIH:** Programs and fellowships in advanced IT training in bioinformatics for health professionals
- **NASA**: Technologies and methods for applying scientific data in science education, and innovative IT strategies for advanced collaboration and training in technical work settings
- **DOE:** Graduate computer science fellowships at DOE laboratories

Socioeconomic, Education, Workforce Issues (SEW) – Federal Responses (continued)

- The SEW PCA is developing a research needs white paper and is planning the first in a series of annual national workshops on SEW research issues, to be held later this year
- Budget increments provided by Congress in FY 2000-FY 2001 enabled IT R&D agencies to support more graduate students in computer science and related disciplines
  - PITAC calculated that its recommended five-year funding increases for IT R&D would produce 2,500 new Ph.D. academic researchers
  - Based on IT R&D funding to date, it can be estimated that the IT R&D Program has produced about 600 of these new researchers
- NSF is emphasizing innovative IT in K-12 education in its new FY 2002 “Learning in the 21st Century” program