Social, Economic, and Workforce Implications of IT and IT Workforce Development (SEW)

NITRD Agencies: NSF, NIH, DOE/SC, DOE/NNSA
Other Participants: GSA

The activities funded under the SEW PCA focus on the co-evolution of IT and social and economic systems as well as the interactions between people and IT devices and capabilities; the workforce development needs arising from the growing demand for workers who are highly skilled in information technology; and the role of innovative IT applications in education and training. SEW also supports efforts to speed the transfer of networking and IT R&D results to the policymaking and IT user communities at all levels in government and the private sector. A key goal of SEW research and dissemination activities is to enable individuals and society to better understand and anticipate the uses and consequences of IT, so that this knowledge can inform policymaking, IT designs, the IT user community, and to broaden participation in IT education and careers.

President's 2008 Request

Strategic Priorities Underlying This Request

Human-centered computing: Develop new knowledge about and understanding of the design, use, and implications of new technologies in economic, social, and legal systems, and their dynamic interactions, with special emphasis on information privacy and human-robot interaction

Public policy: Sponsor activities that bring SEW researchers and research findings together with policymakers and practitioners to foster informed decision-making

Federal information sharing: Develop interoperability models and best practices for information sharing as part of the Federal Enterprise Architecture and E-government initiatives

Government IT practitioner communities: Build communities of practice across all levels of government and private-sector organizations in which practitioners, with support from researchers, can work collaboratively on implementing emerging technologies to improve government services

IT education and training: Support innovative educational approaches to broadening participation in IT careers, and doctoral and post-graduate programs to expand the highly skilled IT workforce in such fields as bio-informatics and computational science

Highlights of Request

Cyber-enabled Discovery and Innovation (CDI): New focus area to address the challenges of distributed knowledge environments that enhance discovery, learning, and innovation across boundaries; better understanding of the design, implementation, and sustenance of large-scale socio-technical systems that integrate humans and cyberinfrastructure to revolutionize the conduct of science and enable innovation in a strong digitally enabled economy; utilization of knowledge environments at all levels of education and integration of computational discovery techniques in the education of scientists – NSF

Creativity and IT: New program emphases on understanding the ecology of IT, creativity, and innovation; information privacy and other human-centered computing priorities; continue broadening participation in IT activities by underserved communities; transform IT education in U.S. universities and colleges; develop a globally aware workforce – NSF

Computational Science Graduate Fellowship Program: Support for advanced computational science training activity at national laboratories – DOE/NNSA, DOE/SC

Collaborative Expedition Workshops: Sixth year of monthly open workshops exploring cost-effective implementations of emerging technologies for the delivery of services at all levels of government, establishing "communities of practice" among IT implementers across government and the private sector, and developing reference standards for interoperable Federal information sharing – CIO Council, GSA, NSF, with SEW agencies

Bioinformatics fellowships and training: Graduate and post-doctoral programs to expand the ranks of professionals trained in both IT and applications of IT in biomedical research and health care systems – NIH

Planning and Coordination Supporting Request

SEW activities provide a bridge between the networking and IT R&D community and the larger arena of government policymakers and IT implementers. SEW's partnership with GSA and the Federal Chief Information Officers (CIO) Council supports the Collaborative Expedition Workshops to encourage collaboration among government and community implementers of IT and to demonstrate promising IT capabilities emerging from Federal research. NSF often co-sponsors these events and invites researchers to give talks on SEW-related topics in order to bridge gaps between research and policy. The workshops draw participants from Federal, state, and local government, academia, industry, and other communities. The focus is on emerging technologies for applications in such areas as emergency preparedness and response, environmental protection, public health and health care systems, government information services for citizens, and agency projects under the Administration's Federal Enterprise Architecture and E-government initiatives. Impacts of the workshops include:

Spread of Wiki technology: Growing use of cost-effective, efficient tool for collaborative work across the Federal government; has fostered:

- **Communities of Practice (CoPs):** More than a dozen groups totaling more than 1,000 participants (e.g., Grants.gov CoPs, IT Performance Management Community, Enterprise Process Improvement, Knowledge Management Working Group, Semantic Interoperability, Spatial Ontology, XML, Federal XBRL, GeoSpatial, Service-Oriented Architecture, Agile Financial Data Services, Health Information Technology Ontology Project). CoPs use the workshops to leverage learning and collaborative prototyping around data and information sharing.
- **Information standards:** Development and implementation of reference models
- **Interoperability:** Increasing Federal emphasis on enterprise-level system interoperability (e.g., incorporation of interoperability models and standards into OMB activities; National Information Exchange model developed by DOJ and DHS; Public Forum for the Federal Enterprise Architecture Model Maintenance Process supported by OMB and the CIO Council)

Additional 2007 and 2008 Activities by Agency

NSF: Continue investments in core research and education programs in human-centered computing; expand opportunities for innovative education and curriculum-development projects; broaden participation in computing by underrepresented minorities; advance human and social dynamics program

GSA: Explore emerging standards and technologies that improve interoperability, ease of use, and cost-effectiveness of Federal IT implementations; foster open CoPs around applications of emerging technologies to improve government services