

National Nanotechnology Infrastructure Network

***Washington DC
October, 2009***

Society and Ethics

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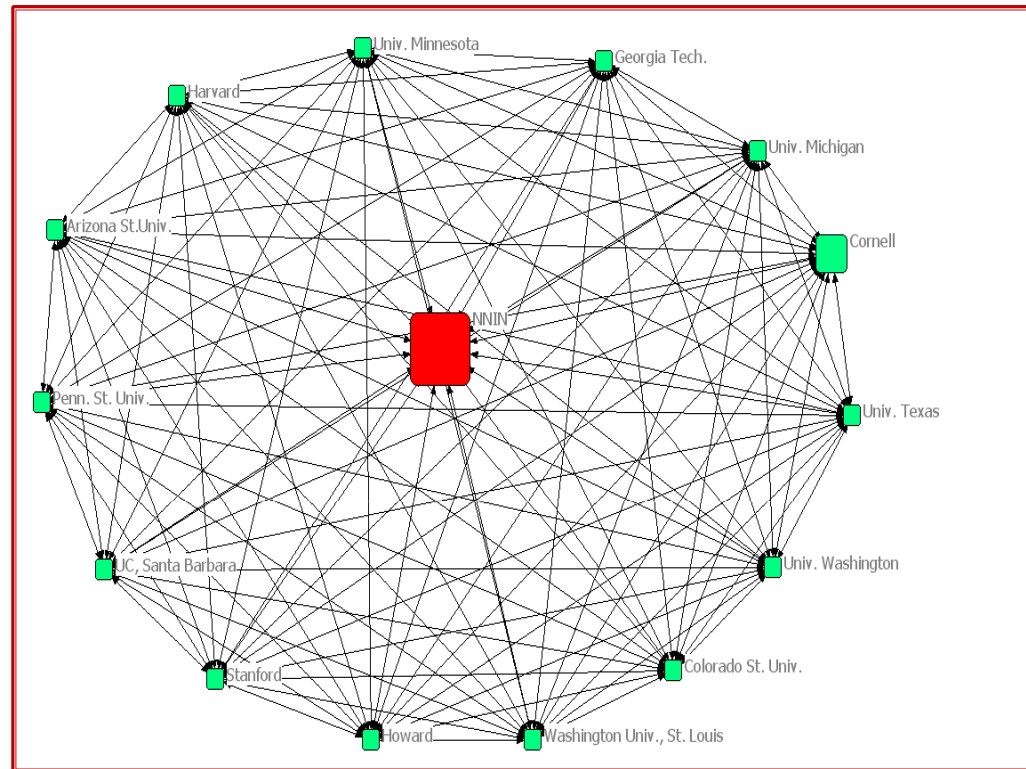


NNIN-NSF SemiAnnual Meeting, Oct 9, 2009



SEI Vision

- NNIN seeks the integration and development of a social and ethical consciousness throughout the breadth of network activities while becoming the nation's leading open-access research facility for the study of science.



Goals of SEI at NNIN

- To develop social and ethical consciousness within the NNIN user community and the broader nanotechnology community, and
- To broaden the exploration of the ethical and social implications of nanotechnology at NNIN and in the broader nanotechnology community.

Strategies [1]

- Provide educational opportunities in SEI for NNIN users.
 - ◆ SEI Orientation for NNIN users

Activities

- SEI Orientation at NNIN

- ◆ All NNIN users must view SEI video
- ◆ Fall 2008 evaluation of SEI orientation coordinators at NNIN sites (11 sites responded)
 - 7 out of 11 sites have formal SEI orientation; 4 sites have individuals view video on web
 - 9 out of 11 sites use SEI video: Evaluations are mixed
 - Few coordinators felt well-prepared to answer SEI-related questions
 - Though coordinators agreed that SEI training was important, only 2 sites would support increasing SEI training portion of orientation, largely due to logistics



Sample Quotes from Evaluation

“I would support enhancing the amount of time and/or focus on SEI training if it was either not too time consuming, or something that was not tied to enrollment. Maybe like a bi-weekly reserved time in a conf. room for an open or moderated SEI debate of various issues. You would need to add an incentive like a free hour of cleanroom time etc. but it would help to jumpstart discussion of SEI issues.”

Sample Quotes from Evaluation

“I think that SEI training needs to be incorporated, but with regard to social responsibility at the personal level, the lab level, the level of the broader research community, as well as societal level...Needless to say, the issues tend to become more abstract the larger the community. Making it relevant to what we do every day is important and difficult.”

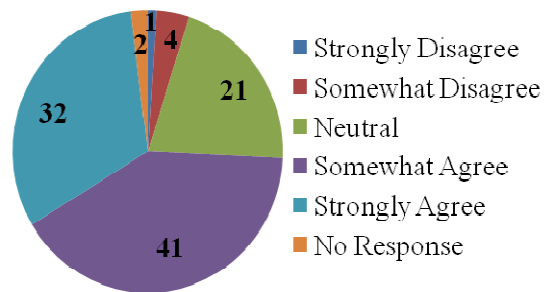
Sample Quotes from Evaluation

“I believe [SEI] is an important topic, but I am not convinced that simply introducing the topic during a user orientation is an effective means of getting the message across...Some form of follow-up and feedback [needs] to be planned and implemented...”

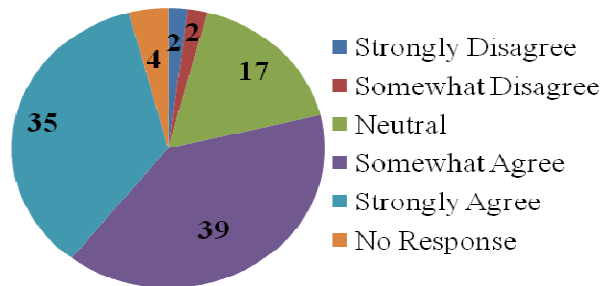
Activities

- Plans for revising SEI Orientation at NNIN
 - ◆ Based on feedback, efforts underway to develop new SEI training module currently being piloted at Cornell's CNF
 - Below are some analyses of evaluations of ~100 users between May and August 2009.
 - ◆ Wider dissemination of training module intended for 2010, including potential for web version

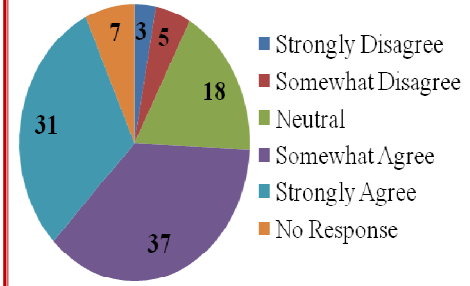
The SEI orientation helped me to think through some of the issues related to social and ethical issues of nanotechnology:



After attending the SEI orientation, I am more likely to think about social and ethical implications of my own research:



I learned to value new viewpoints in the SEI orientation:



Strategies [2]

- Provide educational opportunities in SEI for NNIN users.
 - ◆ SEI Orientation for NNIN users
- Stimulate and facilitate SEI research on NNIN users and technologies.
 - ◆ Research at the four SEI sites at NNIN
 - ◆ Promoting SEI research beyond these four sites
 - Travel grants
 - Seed grants
 - Research guidelines
 - User database
 - SEI Advisory Board

Activities

- Research Programs at Four SEI Sites at NNIN
 - ◆ University of Washington
 - Interdisciplinary collaborations within NNIN
 - ◆ Cornell University
 - Funding and Nanoscience Research
 - Nanoscience, nanotechnology, or nanotechnoscience
 - Social network analysis of NNIN users
 - ◆ Georgia Tech
 - Industrial innovations at NNIN
 - Federal funding and technology transfer at NNIN
 - ◆ Stanford
 - Update of ethics and nanotechnology survey at NNIN

Activities

- Travel Grants
 - ◆ Up to \$15,000 to reimburse expenses incurred by travelling to NNIN site to conduct SEI research
 - ◆ Applications accepted on ongoing basis
 - ◆ Two awardees in 2009
 - Nanoscale Research Communities and Interdisciplinarity
 - PI: Mody (Rice U.), McCray (UCSB), and Gray (UCSB) \$14,997
 - Documenting the Integration of Social and Ethical Considerations into Nanoscale Research
 - PI: Valenzuela (ASU) and Fisher (ASU) \$5,323
- Seed Grants (Proposed)
 - ◆ Available to SEI investigators located at NNIN sites

Activities

- Guidelines for Conducting SEI Research at NNIN on SEI portal

Conducting SEI Research at NNIN

Investigators wishing to initiate SEI research at one of NNIN's sites should follow the following set of guidelines. These guidelines are intended both to facilitate access and provide a record of research conducted on the NNIN.

- Prior to starting research, investigator contacts NNIN SEI Coordinator (Katherine McComas, kam19@cornell.edu)
- Investigator presents SEI Coordinator with brief written summary of proposed research, specifying:
 - Goals
 - Methods
 - Location(s) of contact
 - Number of NNIN users expected to participate
 - Evidence of Institutional Review Board approval from appropriate university if research involves human participants
 - Commitment to provide follow up summary once study is complete
- Investigator will receive an approval document from NNIN in electronic form.
- Having received approval, investigator forwards electronic document to SEI Coordinator at specific site(s) and arranges specifics (see About Us section).
- Site SEI Coordinators and investigators are encouraged to follow up with NNIN SEI Coordinator with any questions, comments, or concerns.

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Activities

- NNIN user database
 - ◆ Creation of NNIN user and PI database representing all 14 sites to facilitate systematic and random sampling for user surveys
 - ◆ Dataset kept secure and used only for approved SEI research projects and other NNIN requirements
 - ◆ Current projects
 - Nanoscience, Nanotechnology, or Nanotechnoscience, Fall 2009, PI: Patra (Cornell)
 - Funding Sources and NSE Research, Fall 2009, PI: McComas (Cornell)
 - ◆ Previous project
 - Ethics in Science and Engineering: Pilot Study with NNIN sample, Summer 2009, PI: Herkert (Arizona State)
 - Study designed to test three outcomes of ethics education: knowledge of relevant standards, sensitivity to ethical issues, ability to reason through situations ethically
 - N=45 NNIN graduate students users (25% response rate)

Activities

- SEI Advisory Board (July 1, 2009-June 30, 2011)
 1. Jennifer Kuzma, PhD, University of Minnesota
 2. Vivian Weil, PhD, Illinois Institute of Technology
 3. Susanna Priest, PhD, University of Nevada, Las Vegas
 4. John Besley, PhD, University of South Carolina
 5. Suzanne G. Brainard, PhD, University of Washington
 6. Marie Thursby, PhD, Georgia Tech
 7. Robert McGinn, PhD, Stanford University
- Board will assist with the review and selection of proposed research projects that come either
 - ◆ following open solicitations for SEI research at NNIN, or
 - ◆ in response to specific SEI grant announcements at NNIN.
- Board will also provide input on developing a brief guidance document for SEI research at NNIN.

Strategies [3]

- Provide training opportunities in SEI for NNIN users.
 - ◆ SEI Training for NNIN users
- Stimulate and facilitate SEI research on NNIN users and technologies.
 - ◆ Research at the four SEI sites at NNIN
 - ◆ Promoting SEI research beyond these four sites
 - Travel grants
 - Seed grants
 - Research guidelines
 - User database
 - SEI Advisory Board
- Disseminate the outcomes of SEI research at NNIN and in the broader nanotechnology and scientific community.
 - ◆ SEI Web Portal
 - ◆ International Winter School
 - ◆ Conferences and Publications

Activities

- SEI Web Portal
 - ◆ The SEI Portal provides relevant information on SEI related to nanoscience and nanotechnology.
 - ◆ In Spring 2009, the SEI portal underwent major upgrade
 - new resources and events (423 resources and information on 32 events, approximately 4x the number in 2008)
 - new categories, types of resources, and explanations
 - new pages, such as spotlight and events

www.sei.nnin.org

SEI SOCIETAL AND ETHICAL ISSUES
IN NANOTECHNOLOGY

National Nanotechnology Infrastructure Network

Home About Us Intro to SEI NNIN-SEI Research Sites Resources Issues Spotlight Events Contact Us

Welcome to the Social and Ethical Issues (SEI) Portal

SEI at NNIN

The National Nanotechnology Infrastructure Network (NNIN) is a collection of university-based open facilities that support the pursuit of research and development in all areas that can benefit from the rapid developments in science, engineering and technology of the nanoscale. The facilities that support nearly 4,700 users from academia, industry and federal laboratories, such, NNIN offers unique strengths and opportunities for research in social and ethical issues (SEI) through the presence of its large academic and industrial community, the breadth of scientific directions being pursued, and the connections of the research and development being undertaken to issues of societal impact of technology and of human resources.

With a goal of becoming the nation's first open-access research facility for the social scientific study of science, the NNIN maintains a commitment to facilitating SEI research on NNIN users and technologies. The network will open itself to outside SEI researchers for data collection, ethnographic study, experimentation, and other research. A fundamental objective of the federal SEI initiative is to develop national self-awareness and self-reflection regarding the impact of nanotechnology research.

Conducting SEI Research at NNIN

- Resources
- Articles
- Books
- Links
- Multimedia
- Presentation
- Reports
- Workshops
- Search Resources

- Issues
- Spotlight
- Environmental
- Ethics
- Green Nano
- Interdisciplinary
- Nanotoxicology
- NBIC
- Regulation
- Risk
- Technoscience
- Search Resource

[Science and Emerging](#)
8-11, 2009
Washington

[Studies of Science \(SSSS\)](#)
7, 2009
ton D.C.

[History of Technology \(SHOT\)](#)
er, 2009
RGH

[History of Environment, Technology & Science](#)
2009
Search Resource Dapi State University Starkville, Mississippi

[Emerging Technologies/Emerging Economies: \[Nano\]technology for Equitable Development Conference](#)
Date: Nov 4-6, 2009
Location: Washington D.C.

[Managing Knowledge in the Techno-sciences,](#)

Activities

- International Winter School for Graduate Students
 - ◆ Society and Ethics
 - December 2008
 - Robert McGinn (Stanford)
 - Jamey Whetmore (Arizona State)
 - December 2009
 - Ira Bennett (Arizona State)



Looking Ahead

- Research
 - ◆ Guidelines for fair and appropriate use of NNIN database
 - ◆ Role of SEI contact person at each NNIN site
 - ◆ Building network of SEI researchers at each NNIN site
 - ◆ Incentives for NNIN users to participate in SEI research
- Outreach
 - ◆ Revised SEI orientation for users at each NNIN site
 - Training for orientation leader
 - Web module option
 - ◆ Increase visibility of SEI at each NNIN site
 - Web link on lab site
 - Posters in lab to reinforce SEI key messages