

# Societal and Ethical Implications Associate Director Report

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What is SEI in the NNCI?

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- Using social science expertise to make our facilities better fulfill their mission.

# Assessment Yields Success

**Social science research (IRB-approved)** on the facility staff, leadership, and user base provides insights into best practices, critical challenges, and opportunities, informing the future of work at the human-technology frontier

**For example, by Year 8:**

> 980 survey responses

Some respondents accessed multiple facilities

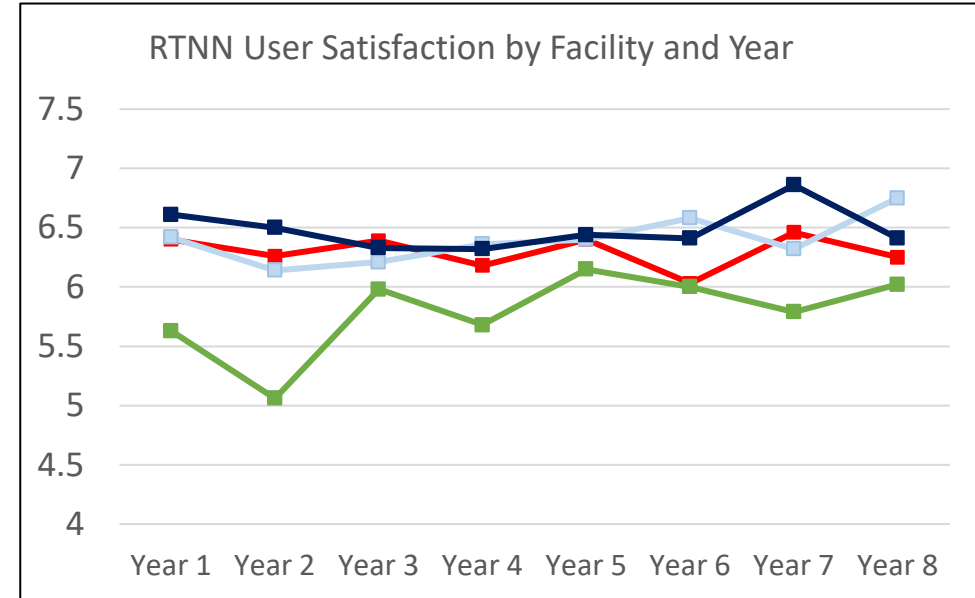
Measured on Likert scale (7 = very satisfied)

**Overall satisfaction in all facilities is high:  $6.31 \pm 1.13$**

**100% of users indicated that they would return to the facility if more work is needed**

**Assessment also reveals new instrumentations desired by users:**

When asked what extra tools the users need at the labs, many of the survey participants said that the labs met their needs.

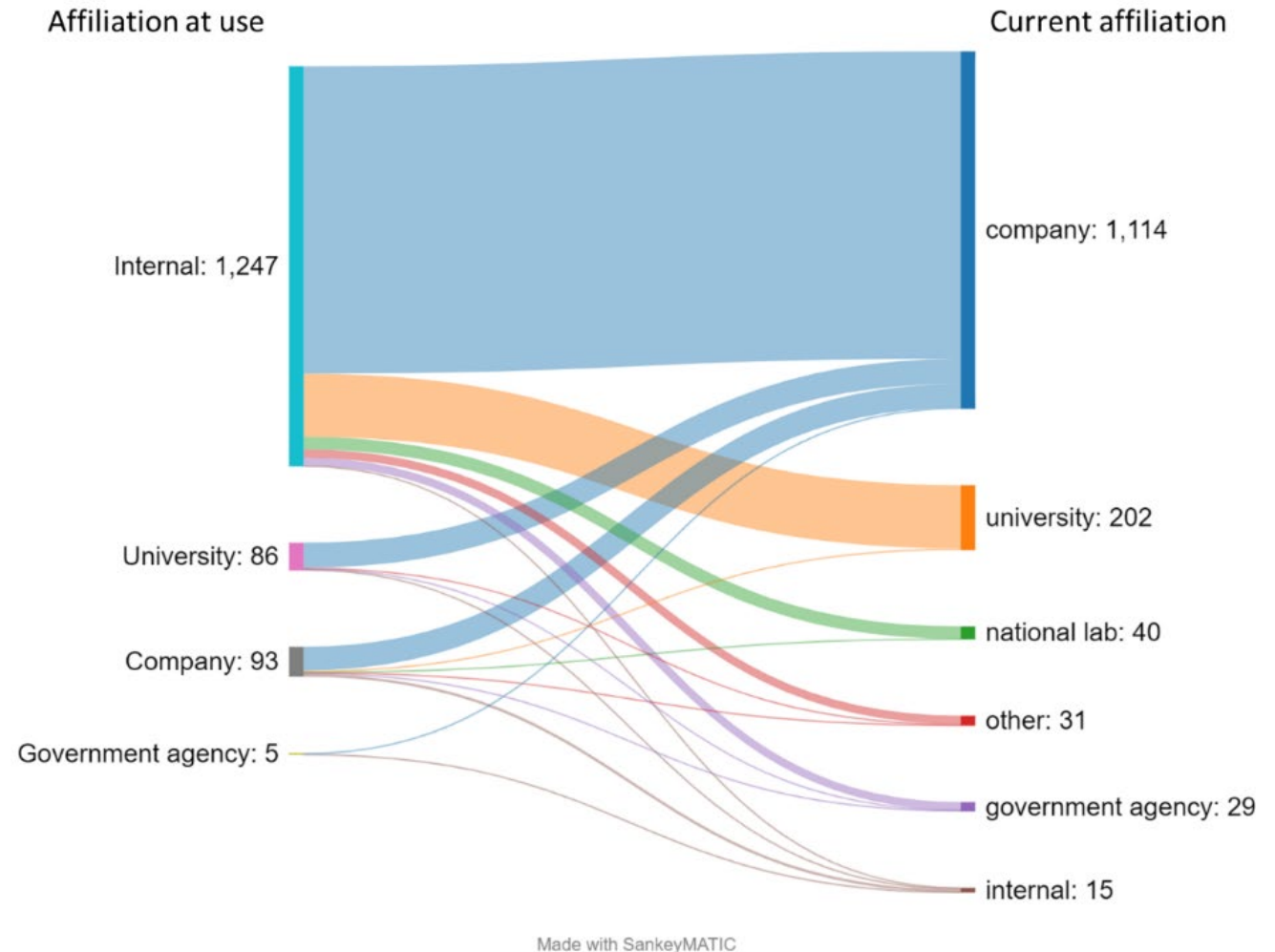


# What is SEI in the NNCI?

- Using social science expertise to make our facilities better fulfill their mission.
- Using social science tools to analyze potential impacts of the NNCI on workforce development

# SENIC: Diana Hicks & Sergio Pelaez

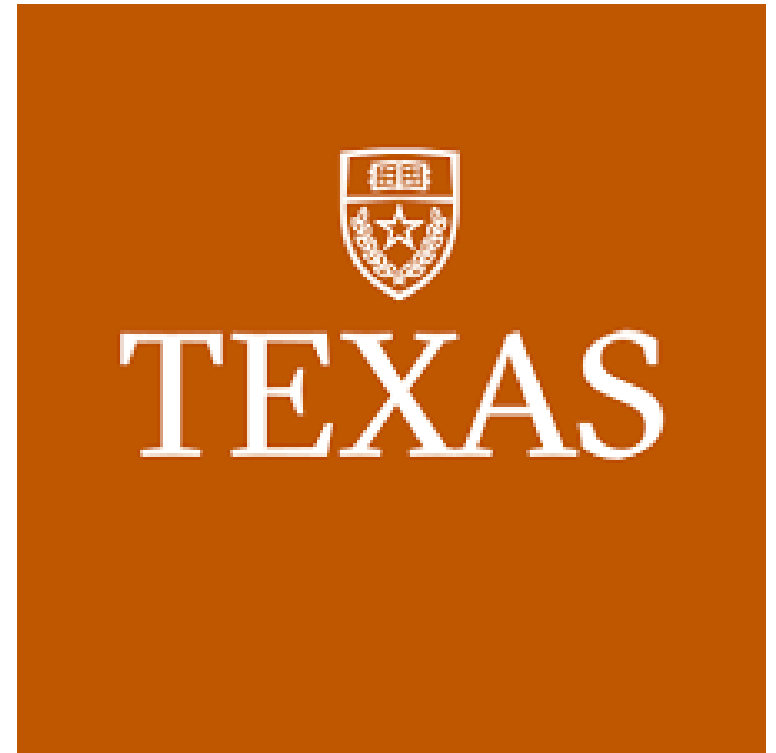
- “Examining Career Paths of Former Nanotechnology Research Facility Users: A Case Study and Toolkit”
  - Tracking of 1,431 SENIC users who moved since using the facility and who are no longer students
- Forthcoming work:
  - Analysis of nanotechnology inventors’ awareness of broader societal impact as expressed in their patents
  - Analysis of ways to reduce the environmental footprint of the IEN cleanroom



# What is SEI in the NNCI?

- Using social science expertise to make our facilities better fulfill their mission.
- Using social science tools to analyze potential impacts of the NNCI on workforce development
- Spreading a broader understanding of ethics through education programs.

LeeAnn Kahlor's team has been working on a survey/interviews with folks at NNCI sites and other universities to discover all the ways (big and small, concrete and abstract) that SEI makes its way into classrooms or presentations.





# What is SEI in the NNCI?

- Using social science expertise to make our facilities better fulfill their mission.
- Using social science tools to analyze potential impacts of the NNCI on workforce development
- Spreading a broader understanding of ethics through education programs.
- Reconnecting discussions about science and technology with our personal and community values, goals, and dreams.



# Nanoday 2023

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STEM EDUCATION  
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STEM EDUCATION  
**NETWORK**

## Tea bag water filter

NanoDays



Portable nanofiber filters will purify water.

## Flexible solar panels

NanoDays



Thin, rollable solar panels are portable and inexpensive.

## Space elevator

NanoDays



An elevator could bring people and materials to outer space.

## Invisibility cloak

NanoDays



Nano-sized structures could make objects invisible.

## Mini drone robots

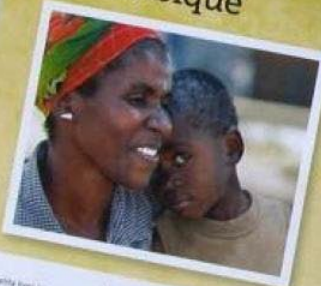
NanoDays



Small spy drones will be used in warfare.

## Mother in Mozambique

NanoDays



Betta lives in Mozambique with her family of four. They live in a rural village with no electricity. Betta is pregnant. Betta has no transportation to take her to a health clinic. She makes about \$2,000 a year farming and selling crafts to an online merchant.

NAME: Betta  
AGE: 33  
JOB: Farmer/craftswoman  
SALARY: \$2,000/year





Winter School on Emerging Technologies and Impact



## Funding is the Matter

Funding is the Matter is a podcast that talks about the surplus of issues caused by the racial wealth gap. I tackle different science and policy issues on the local, state, and federal levels. Within each section, I am going to have a policy memo episode. A policy memo is a document that provides an...

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- Sarah Bartley, NC A&T



Science Outside the Lab





We may think of the lab as the residence of science; the place where the thinking happens, and the discoveries are made. And for many graduate students, including myself, the scope of research tends to stay within this bubble. But there's a larger picture beyond the lab, whether it be current challenges related to science at a regulatory or policy level, or what the outcomes of research may have on the public. It is a vast space, and the Science Outside the Lab (SOtL) program has provided first-hand experience of this larger view of science.

My time with SOtL has helped me to see what I can do, as a scientist, to link my work to the larger conversation about science. I feel as though I've reinvented myself as a scientist as I move forward and apply this new multidisciplinary lens to my research.

Pat McGurrin, SOtL alum



*ask an* EARTH<sup>and</sup>SPACE SCIENTIST

*ask a* **BIOLOGIST**

●●● **Medium**



# First Science Outside the Lab for Faculty May 31-June 2, 2023

3 Days

12 faculty from 8 universities

19 speakers

10 different meeting rooms  
across the District



# SOTL faculty program

- How do policymakers integrate scientific knowledge and values to make decisions?
- How do policymakers direct S&T to further the country's goals?
- How does public interest in and understanding of science and technology drive the development of S&T?
- How do the courts weigh scientific evidence?
- How do regulators balance protecting health with enabling progress?
- How can university faculty get more involved in the policymaking process?

I've been around the science-policy area for the majority of my professional career. Going in, I was a little nervous that the faculty SOTL experience might be limited in terms of the new insights it could offer someone with my prior experience. I could not have been more wrong! Even meeting with DC-based colleagues and agencies I'd worked with for years offered new insights when experienced through the SOTL lens. The program was so incredibly well-done, insightful, and fun – I wouldn't change a thing. Arguably the best 3 days I've ever spent in DC!

Matthew Hull, Virginia Tech

- **Winter School** on Emerging Technologies and Impact – January 3-10, 2024 (already full)
- Science Outside the Lab for **Faculty** – May 29-31, 2024 (applications open in January)
- Science Outside the Lab for **Graduate Students** – June 2-8, 2024 (applications open in January)
- Engaging kids and families in discussions about science, technology, and values (drop me an e-mail)

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# Series of talks, webinars, presentations, papers

- “Policy and Science,” Seminar for NC A&T State Graduate Student Association – November 2022
- “Societal and Ethical Implications Training Programs in the NNCI,” NSF Nano Grantees meeting – December 2023 (thanks to David Berube for organizing)
- “Scientists and Engineers in State Governments” – NNCI webinar (available on NNCI youtube) – May 2023
- “Science Policy: Where Values Meet the Laboratory,” SEI presentations to NNCI REU/RET programs – June 2023
- Nanoday tabletop demonstrations at Arizona Science Center – October 2023
- White paper response to US Office Science and Technology Policy Request for Information on the National Nanotechnology Initiative Environmental, Health, and Safety Strategy FR Doc. 2023-07074