

Transforming and Repositioning the American Science Museum: New Tools for Engaging the Public





Presentation Overview

- CNS & NISE Network Overview
- Public Engagement with Science
- Nano & Society Workshops
- Nano & Society Conversations
- Three Big Ideas in Nano and Society
- Conclusions

CNS-ASU Introduction

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- **Hi, I'm Ira**
 - I work at ASU
 - I teach scientists how the government works

CNS-ASU Introduction

Anticipatory Governance

Provides strategic vision

1. Foresight

All governance requires a disposition toward future

2. Engagement

Crucial normatively, strategically, pragmatically

3. Integration

Scientists know things we don't, and vice versa

4. Ensemble-ization

Because none of these works in isolation

Real-Time Technology Assessment

Provides methodological orientation

1. Research and Innovation Systems Analysis

2. Public Opinion and Values

3. Anticipation and Deliberation

4. Reflexivity and Integration

Thematic Research Clusters

Provides thematic focus

1. Equity, Equality and Responsibility

2. Urban Design, Materials & the Built Environment (Nano & the City)





NISE Network

Nanoscale Informal Science Education Network

The NISE Network is a national community of researchers and informal science educators dedicated to fostering public awareness, engagement, and understanding of nanoscale science, engineering, and technology.

10-Year NSF Funded Network



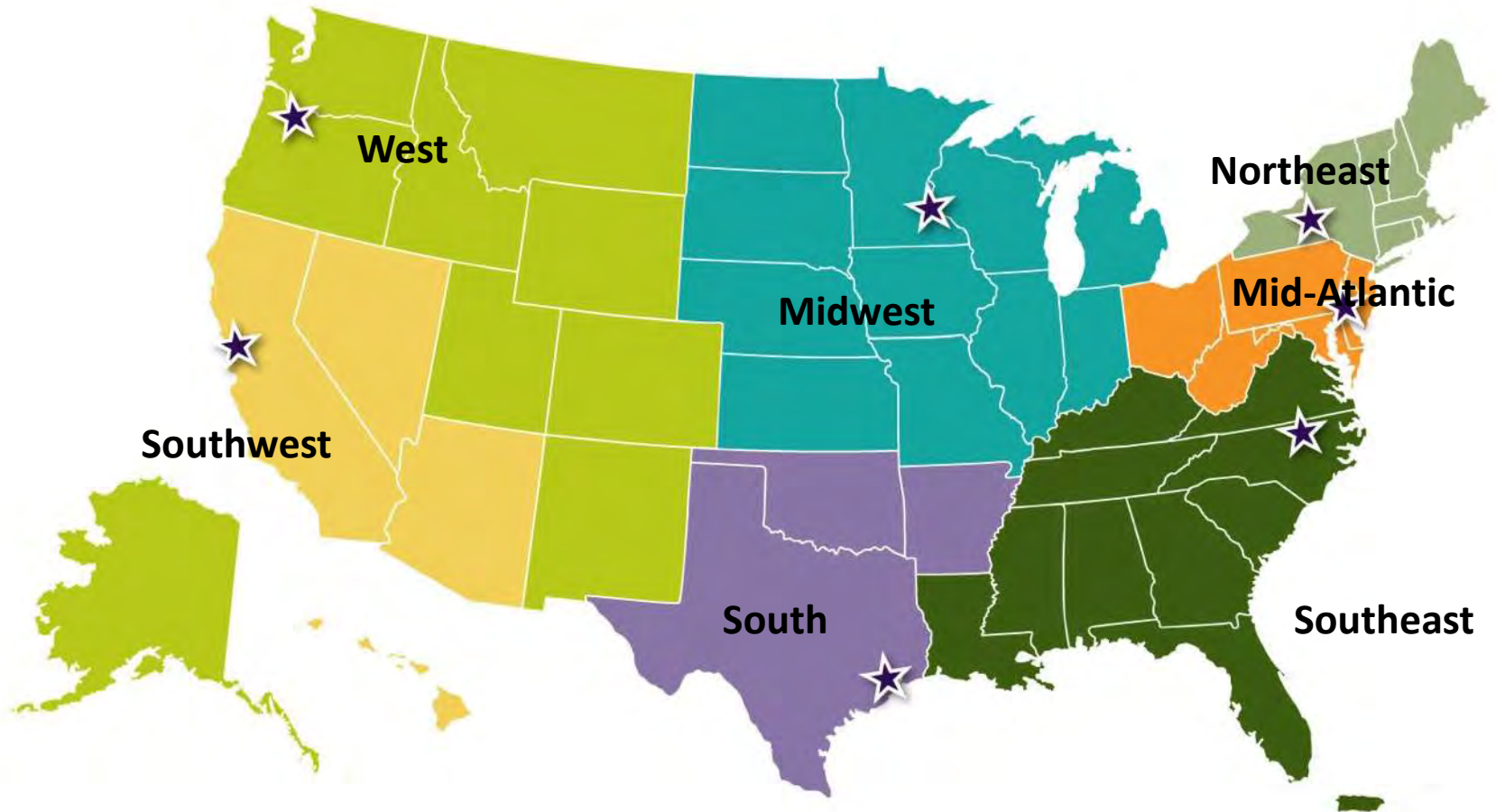
Years 1-5: (2005-2010)

- Building the network

Years 6-10: (2010-2015)

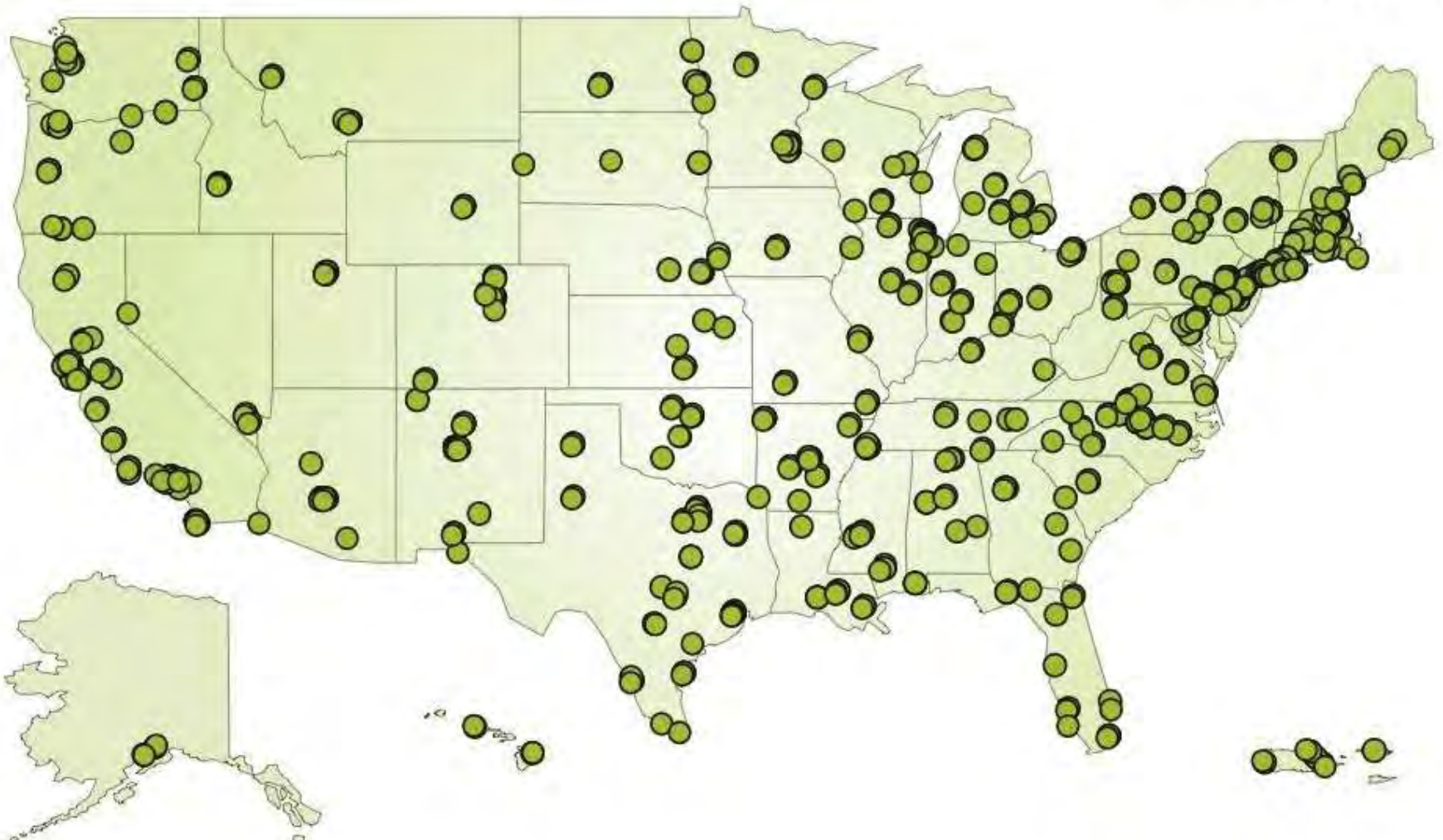
- Engaging the public through the network

NISE Net Regional Hub Structure



NanoDays Participants

NanoDays Kits
2008-2012



Mini-Grant Awards Map



Dissemination: Mini-Exhibition




Nano Mini-Exhibition Map



NISE Network



- NISE Net Products
 - Peer reviewed
 - Scientists reviewed
 - Visitor evaluation
 - Modifications strongly encouraged
 - Creative Commons 
- Face to face networking opportunities
- Brand loyalty
- Engaged community of professionals

The SEI Conundrum

How to present content addressing Social and Ethical Implications of nanotechnology to public audiences?



Public Understanding vs. Engagement

Understanding

- Characterized by one-way transmission of scientific knowledge and process
- Focuses on understanding the natural and human-made world
- Based on the belief that as people become more scientifically literate, they will accept, support, and use science

Engagement

- Characterized by mutual learning or informing among people of varied backgrounds
- Focuses on current and/or controversial science-related issues
- Based on the belief that both scientists and non-scientists bring valuable perspectives to guide the application of science in society

Our Big Challenge

Could we build content and training so that the museum could be a place where the role of science and technology in our lives is actively discussed, where the values of visitors are acknowledged and where tools to be a participant in our increasingly technological democracy can be shared?

And So.....

With the blessings (and budgets) of our respective Institutions we set out to try.



Nano & Society Workshops



Workshops

Meeting locations and dates

- Arizona Science Center, March 19
- Science Museum of Minnesota, September 5-6
- Lawrence Hall of Science, September 12-13
- Children's Museum of Houston, September 19-20
- Oregon Museum of Science and Industry, October 3-4

Participants

- Tier 2 partners, around ~20 per workshop
- Educators who facilitate visitor experiences (programs and exhibits)
- Two per institution, museums and research centers
- Prioritize partners receiving the mini-exhibition

Follow up

- Virtual check-ins and conversations, October-November, 2012
- Network-wide meeting, December, 2012

Nano & Society Workshops



5 Workshops, 54 Museums, 100+ Educators



Nano & Society Conversations

Engaging Visitors in Nano & Society

Overarching goal

To empower educators and visitors to reflect on the relevance of nanotechnology to their lives.



Traditional Museum Goals

- Demonstrate scientific facts
- Inspire future scientists
- Museums are a trusted authority
- Entertainment



Why The Museum?

We're positioned to do it...

- Museums can bring together public audiences, educators, and scientists.
- NISE Net is working to raise the field's capacity to engage the public in the relevancy of emerging science and technologies to their everyday lives.

The field is moving in this direction...

“Address key issues of significance to society locally and globally for which science understanding and public engagement are essential”

– *ASTC Strategic Plan, October 2008*

“Children's museums will be essential community resources where play inspires creativity and lifelong learning”

– *ACM Strategic Framework, 2011-2015*

Goals for Nano & Society Workshop

Public engagement

NISE Net is working to create a variety of educational experiences that engage a broad range of public audiences in conversations about the relevance of nanotechnology in their lives.

Professional development

We seek to increase our capacity as a field to effectively engage public audiences in conversations about nanotechnology and society.

Goals for Conversations

1. Educators and visitors participate in open-ended, engaging conversations.
2. Educators and visitors have distinct, equally important roles in the conversation.
3. Participating in a conversation is a meaningful learning experience for visitors.
4. Facilitating a conversation is a valuable interpretive method for facilitators.



How is this Different?

Demonstration

- Scientist/educator has knowledge and expertise to share
- Visitors discover phenomena and laws of nature
- The facilitator communicates facts
- Visitors ask questions and receive answers
- Public understanding

Use this approach to explain the Bernoulli Principle to visitors

Conversation

- Everyone has their own values and perspective to share
- Visitors form opinions and explore ideas
- The group considers facts and values
- Facilitators and visitors ask questions and receive responses
- Public engagement

Try this approach to engage visitors in nano and society



Nano & Society Big Ideas

Values

Values shape how technologies are developed and adopted.



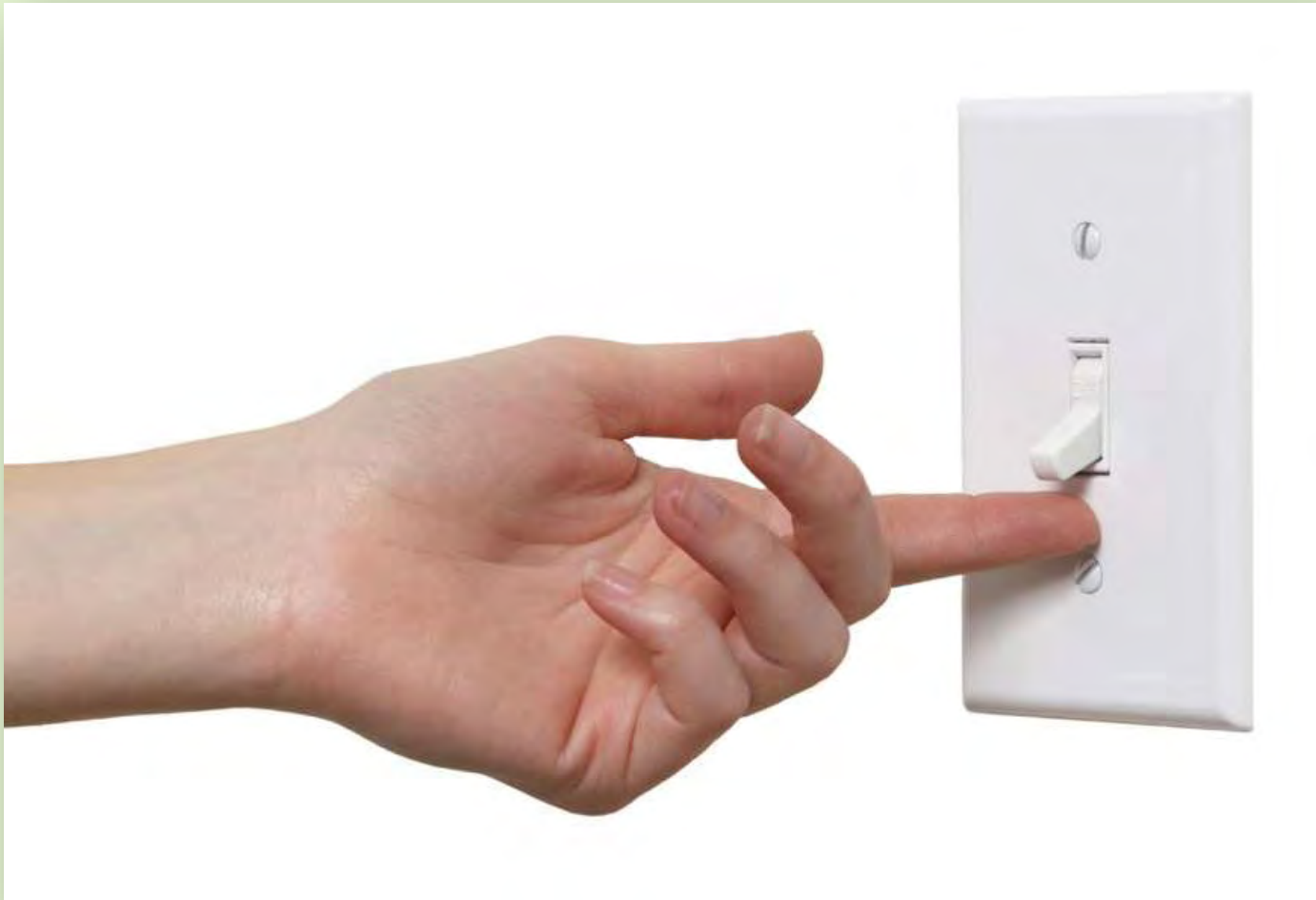
Relationships

Technologies affect social relationships.



Systems

Technologies work because they're part of systems.



The Punch Line

Understanding these three ideas empowers people to realize that we can (and already do) negotiate with technologies to promote our own values.



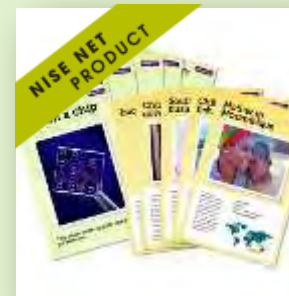
Workshop Kit Contents



**Nano Around
the World
card game**



**Exploring Nano &
Society –
Invisibility Cloak**



**Exploring Nano &
Society –
You Decide!**

More info: nisenet.org/catalog

Nano & Society Team

Content and programs

- Rae, Ali, and Kevin (Sciencenter)
- Ira and Jamey (Arizona State University)
- Brad (Museum of Life + Science)
- Shari & Steph (Science Museum of Minnesota)
- Anders (Oregon Museum of Science & Industry)
- Heather and Matt (Museum of Science & Industry)
- Tina (SRI)

Evaluation

- Sarah (Science Museum of Minnesota)
- Scott (Oregon Museum of Science & Industry)



Future Plans?!?!



Continue to disseminate this approach through publications (See Exhibitionist Spring 2013 and several forth coming) and presentations like this.

Begun a collaboration with Dear Valley Rock Art Museum focusing on this type of programming and interpreting.

New Nano and Society programming in the 2014 Nano Days Kits.

Nano and Society Guide to be published in late 2013

Online Workshops on Nano and Society in early 2014

Conclusions



Stay in Touch

- Sign up for the monthly *NanoBite* newsletter
nisenet.org/community/nanobite
- Join our social networking sites
nisenet.org/community
- Center for Nanotechnology in Society at Arizona State University
cns.asu.edu





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Questions and Discussion?

