































Example: Synthesis and control of nanomachines (examples NSE in 2004, www.nseresearch.org - 250 projects) Self-assembly processing of nanoscale bio-materials and devices for micromachines components (UCSB) Chemistry to synthesize components of nano machines to work on surfaces and be activated by external electromagnetic fields (UCB) Light driven molecular motors (U. Nevada) Combinatorial engineering of nanomachines, with application to membranes and filters (U. Penn.)

MC. Roco. 12/12/04

Nanoengineering surfaces for probing viral adhesion (UC Davis)





















MC. Roco, 12/12/05



MC. Roco, 12/12/05

















Nanotechnology Informal Science Education Network

Center for NISE Research Exploratorium San Francisco



Visualization Lab

- Resource Center
- Research and Evaluation
- Professional Development
- Public Website

Center for Public Engagement <u>Museum of Science</u> Boston



Network Media

- Forums
- Network Administration

Center for Exhibits & Programs <u>Science Museum of</u> <u>Minnesota</u>



 Exhibit and Program Packages







200	Reque by I each	ested Progr with	IFY 2 am C spec	2006 I Comp cific 1	NNI oner cesea	Inves nt Are rch ta	stme: eas - arget	nt s	
	Fundamental Nanoscale Phenomena and Processes	Nano-materials	Nanoscale Devices and Systems	Instrumentation Research, Metrology, and Standards for Nanotechnology	Nano-manufacturing	Major Research Facilities and Instrumentation Acquisition	Societal Dimensions	NNI Total**	
NSF	95	75	54	12	24	24	60	344	1
DOD	35	83	99	3	2	6	2	230	
DOE	48	33	5	11	0	109	1	207	
HHS (NIH)	46	17	67	6	0	1	8	144	
DOC (NIST)	5	1	2	39	19	8	1	75]
NASA	4	17	10	0	1	0	0	32]
USDA	1	2	3	0	1	0	1	11	
EPA	> 0.5	0	> 0.5	0	0	0	4	5	
HHS (NIOSH)	0	0	0	0	0	0	3	3]
DOJ	0	0	0	0	0	0	2	2	
DHS	0	0	1	0	0	0	0	1	
TOTAL	234	228	241	71	47	148	82	1054	1



Project	Agency, Institution		
Nanotechnology and its Publics	NSF, Pennsylvania St. U.		
Public Information, and Deliberation in Nanoscience and Nanotechnology Policy (SGER)	Interagency, North Carolina St. U.		
Social and Ethical Research and Education in Agrifood Nanotechnology (NIRT)	NSF, Michigan St. U.		
From Laboratory to Society: Developing an Informed Approach to NSE (NIRT)	NSF, U. of South Carolina		
Social and ethical dimensions of nanotechnology	NSF, U. Of Virginia		
Ethics and belief inside the development of nanotechnology (CAREER)	NSF, U. Of Virginia		
All centers, NNIN and NCN have a societal implications components	NSF, DOE, DOD and NIH All nano centers and networ		

Project	Agency, Institution		
Citizen Learning, Deliberation, and Reasoning	NSF,		
in Internet-Mediated Technology Policy	North Carolina State		
Forums	University		
Public Information, and Deliberation in	Interagency,		
Nanoscience and Nanotechnology Policy	North Carolina State		
(SGER)	University		
An Integrated Approach to Teaching Nanotechnology and Society (NUE)	University of Wisconsin		
Nanotechnology: Content and Context (NUE)	Rice University		
Undergraduate Exploration of Nanoscience,	NSF,		
Applications and Societal Implications (NUE)	Michigan Technological U.		
Assessing the Implications of Emerging	NSF,		
Technologies (IGERT)	MIT		
Nanoparticle Science and Engineering	NSF,		
(IGERT)	University of Minnesota		

Evaluations

• <u>NRC Review, 2002</u>

- "The committee was impressed with the leadership and level of multiagency involvement in the NNI. Specifically, the committee commends the leadership of NSF . ."

COV, NSF, 2004:

- "Two significant and enduring results have emerged from this investment: .. the creation of a nanoscale science and engineering community, and the fostering of a strong culture of interdisciplinary research"

- <u>Chuck Vest, at PCAST meeting March 2005 (NNI review):</u>
 "NNI is a new way to run a national initiative"
- <u>Matt Tirrell, at NRC Review on August 26, 2005:</u>
 "NNI developed systematic control of matter at the nanoscale"





