

Biophotonics Sensors & Systems
Planning Grant Workshop
August 12, 2010

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*Welcome to the Industry / University
Cooperative Research Centers*

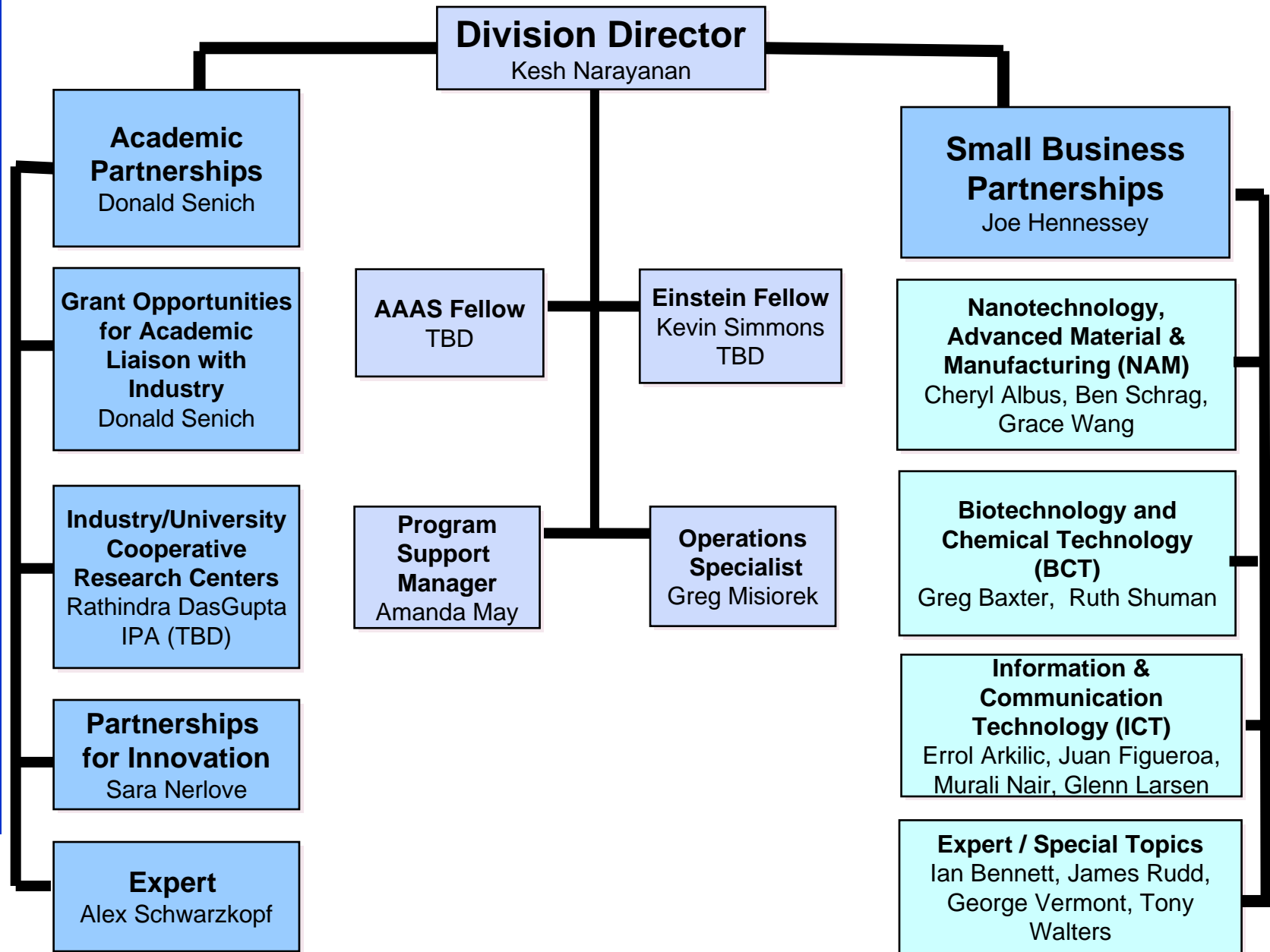
Presentation Outline

- IIP Organization Chart
- I/UCRC program
 - Mission & Vision
 - Benefits to sponsors
 - Center status & a few success stories
 - Typical organization for a Center
- Membership agreement
- NSF funding
- I/UCRC tools & LIFE forms
- Next steps



Industrial Innovation and Partnerships

National Science Foundation
WHERE DISCOVERIES BEGIN



I/UCRC: Mission and Vision

Mission:

- To contribute to the nation's research infrastructure base by **developing long-term partnerships** among industry, academe and government
- To **leverage NSF funds with industry** to support graduate students performing industrially relevant research

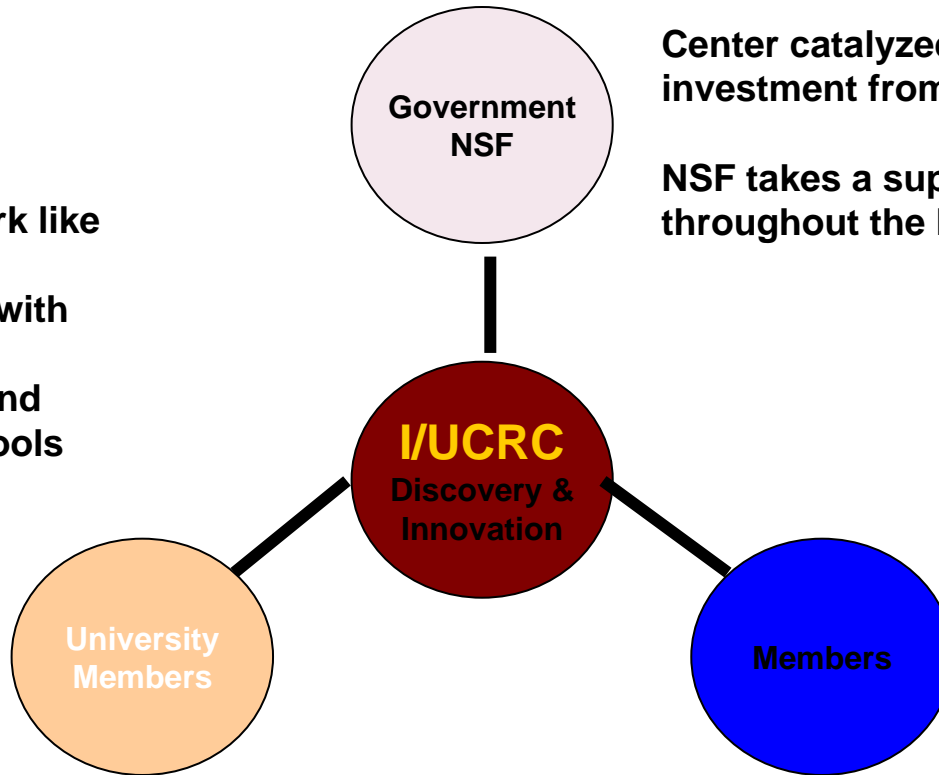
Vision:

- To **expand the innovation capacity** of our nation's competitive workforce through **partnerships** between industries and universities



I/UCRCs enable discovery and innovation through collaboration

I/UCRCs work like a research “franchise” with operational guidelines and evaluation tools



Center catalyzed by a small investment from NSF.

NSF takes a supportive role throughout the life of the center.

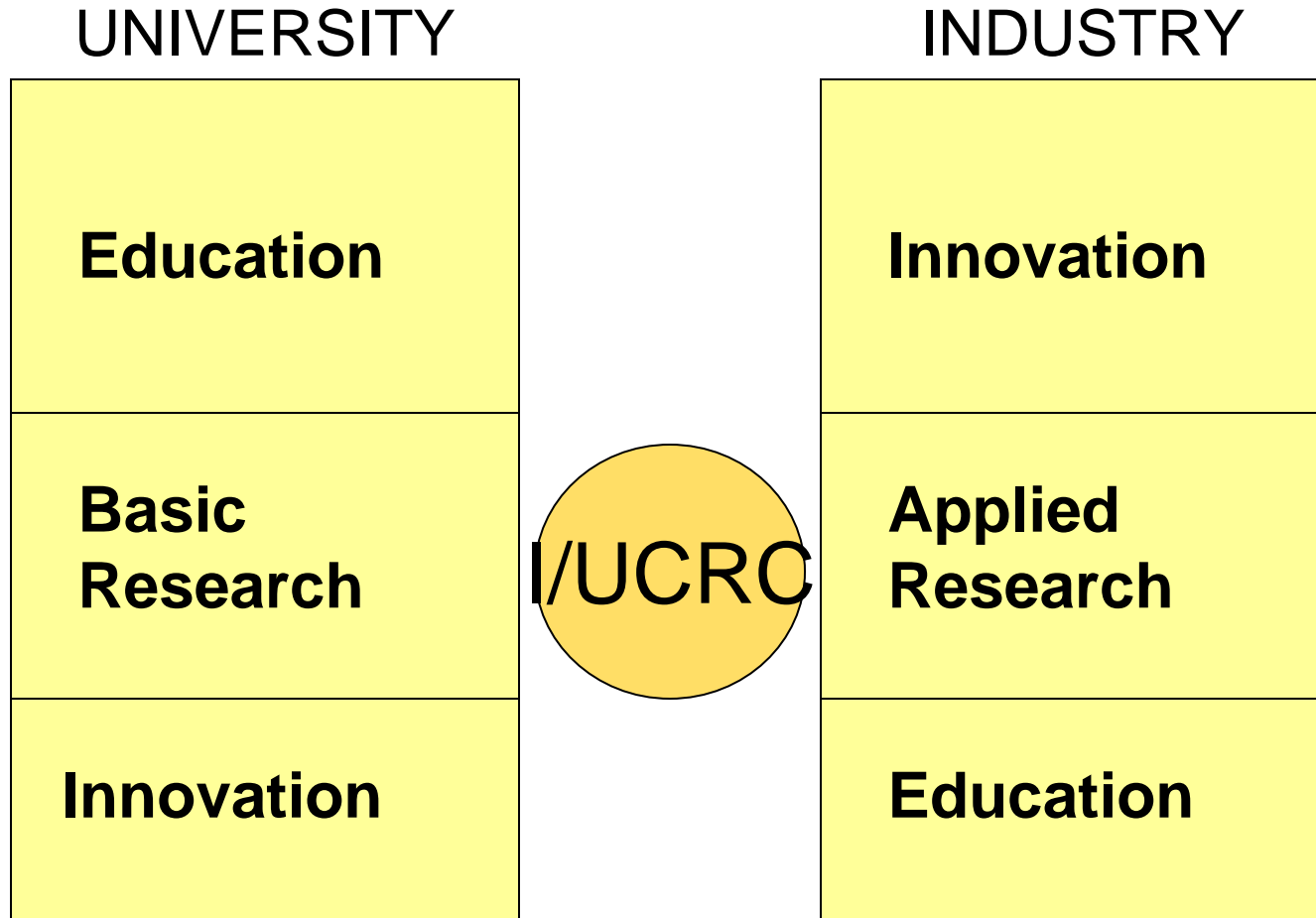
Single or multi-university

An I/UCRC is primarily funded by industry members & others (non-NSF federal agencies & other organizations)

•Multi-university increases the research base



University Industry Priorities



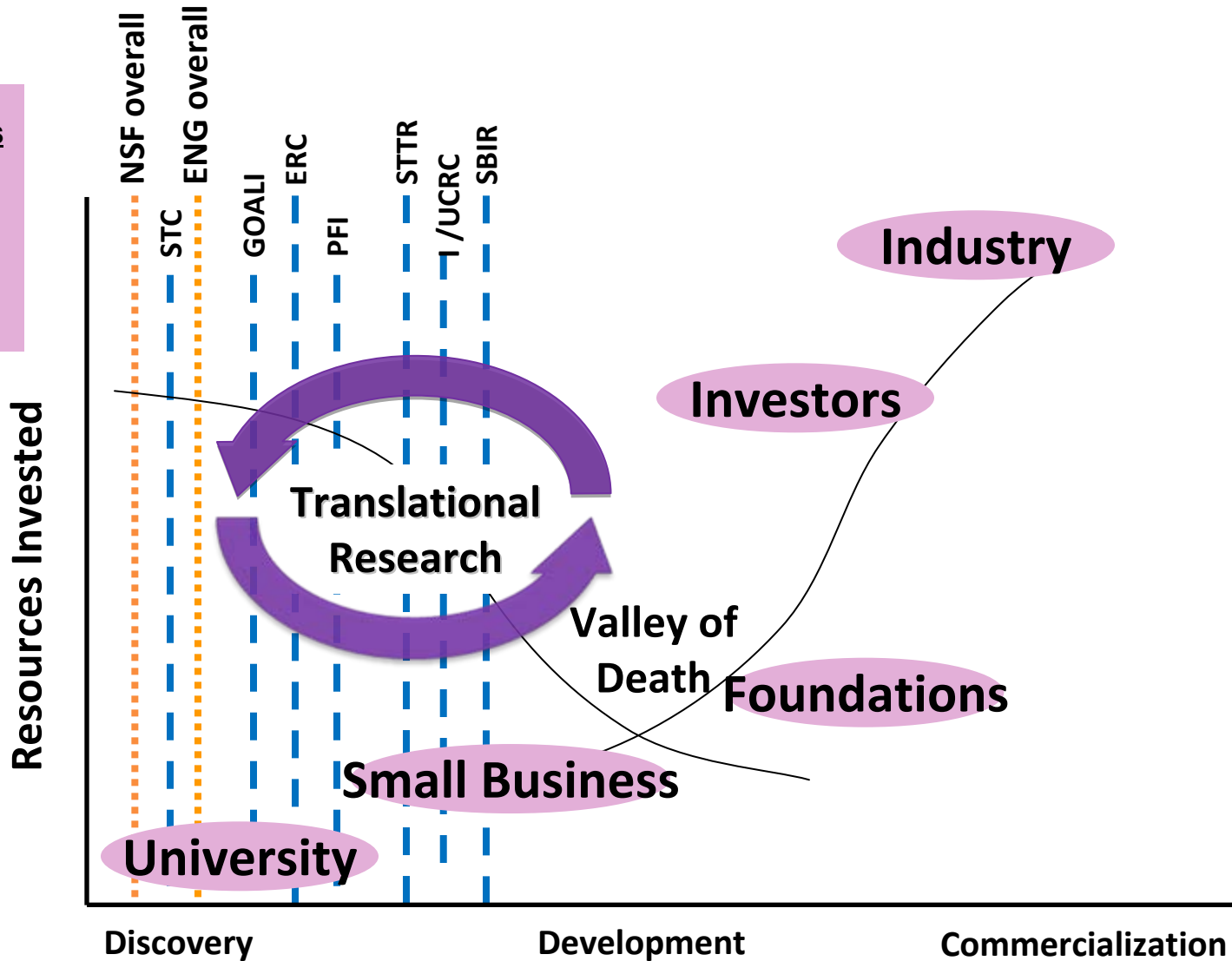
- Mutually beneficial research projects
- Give and take/back and forth
- Long term partnerships!!!



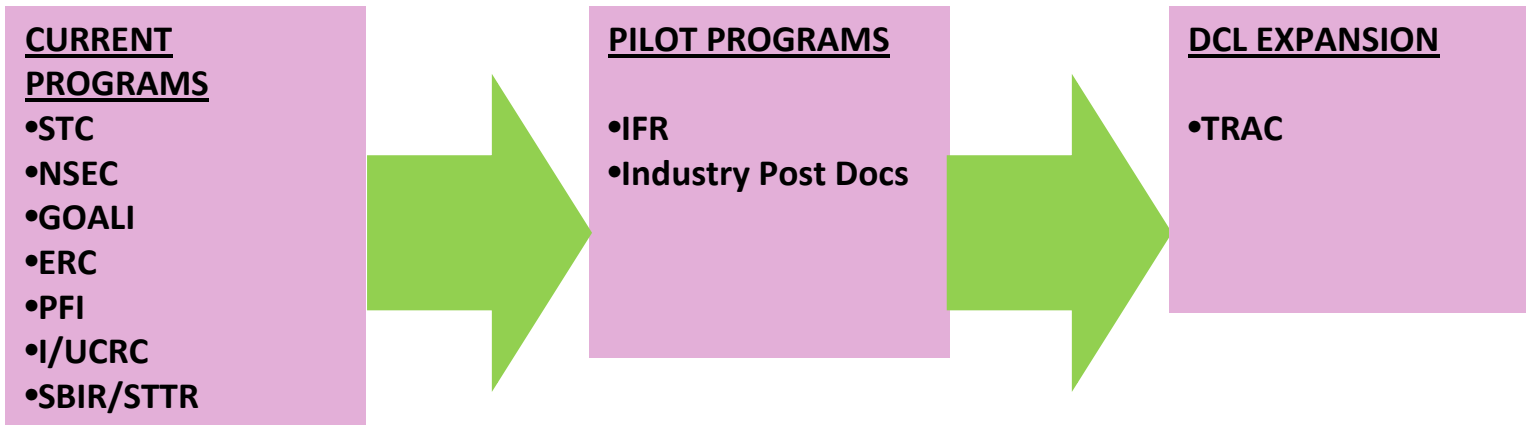
CURRENT PROGRAMS

- STC
- NSEC
- GOALI
- ERC
- PFI
- I/UCRC
- SBIR/STTR

Current Programs



Innovation Ecosystem



Industry Inspired Fundamental Research (IFR)

- Small groups of industry identify innovation opportunity and fundamental research questions / needs
- Competitively selected Universities focus on exploratory research with significant collaboration with industry

Industry Post Docs

- Corporate Research Postdoctoral Fellowship Program provides recent engineering PhD recipients the opportunity to conduct postdoctoral research in a corporate setting

Translational Research for the Academic Community (TRAC):

- TRAC supplements provide targeted resources to academic researchers to begin the translation of results from NSF GOALI fundamental research into potential commercial applications (~12 awards; ~2.4M).



Technology Investments to Spur Economic Growth*

Technology Highlights in the 2011 Budget

Promote the Commercialization of promising technologies: The Budget proposes \$12 million in the National Science Foundation (NSF) for a new Innovation Ecosystem in which universities partner with other institutions to increase the impact of the most promising innovations through commercialization, industry alliances, and start-up formation.

*Office of Science and Technology Policy
(OSTP)

February 1, 2010

universities partner with other institutions

increase the impact of the most promising innovation



What does an I/UCRC offer?

- Industry driven R&D projects
- Leveraging relatively small investment to reap far greater return via consortium-style research center
- Interaction with other key players in industry, peers and customers
- Access to intellectual property
- Access to pre-publication technical papers
- Access to world class facilities and researchers
- Access to students
- Transfer of research results to serve industry projects and products

“Finger on the Pulse”



I/UCRC: A Few Success Stories

- **Edison Welding Institute:**
 - Years funded: 1979-1990
 - Now an independent research entity; self-sustaining for 19 years
- **Center for Electromagnetics Research (now called CenSSIS)**
 - Primary site at Northeastern University
 - Years funded: 1985-1998
 - Received an ERC award in year 2000 and became Center for Subsurface Sensing and Imaging Systems
- **Air Conditioning Research Center**
 - Primary site at the University of Illinois, Urbana-Champaign
 - Years funded: 1989-2001
 - Still uses the I/UCRC model
 - Has a spin-off company



Industry/University Cooperative Research Centers

ENG Multi-University Centers

1. Advanced Forestry
2. Advanced Packaging and Processing (III)
3. Advanced Sustainable Iron & Steel
4. Bio Energy R & D
5. Composites Infrastructure
6. Ceramics Composites Optical Materials Center
7. Computational Materials Design
8. Design of Analog Digital Integrated Circuits (III)
9. Dielectrics
10. Electromagnetic Compatibility
11. Energy Harvesting
12. Friction Stir Processing
13. Fuel Cells
14. Grid-Connected Adv Power Elec Health Org. & Transformation
15. Integrative Joining of Materials for Energy Applications
16. Laser and Plasma for Adv. Mfg.
17. Logistics and Distribution
18. Membrane Science, Engineering & Technology
19. Minimally Invasive Diagnostics (III)

ENG Multi-University Centers

21. Next Generation Photovoltaics
22. Particulate and Surfactants
23. Pharmaceutical Development
24. Plug-In Hybrid Electric Vehicles
25. Precision Forming
26. Power Systems Engineering Research Center (III)
27. Resource Recovery & Recycling
28. Smart Vehicles Concepts
29. Silicon Solar
30. Small Satellite Technology
31. Connection One
32. Water and Environmental Technology
33. Water and Equipment Policy
34. Wood Based Composites

ENG Single-University Centers

35. Advanced Cutting Tools
36. Advanced Vehicle Electronics (III)
37. Biocatalysis and Bioprocessing of Macromolecules
38. Biomolecular Interaction
39. Child Injury Studies
40. Electronic Micro-Cooling
41. Non-Destructive Evaluation (III)

41 ACTIVE ENG CENTERS



Industry/University Cooperative Research Centers

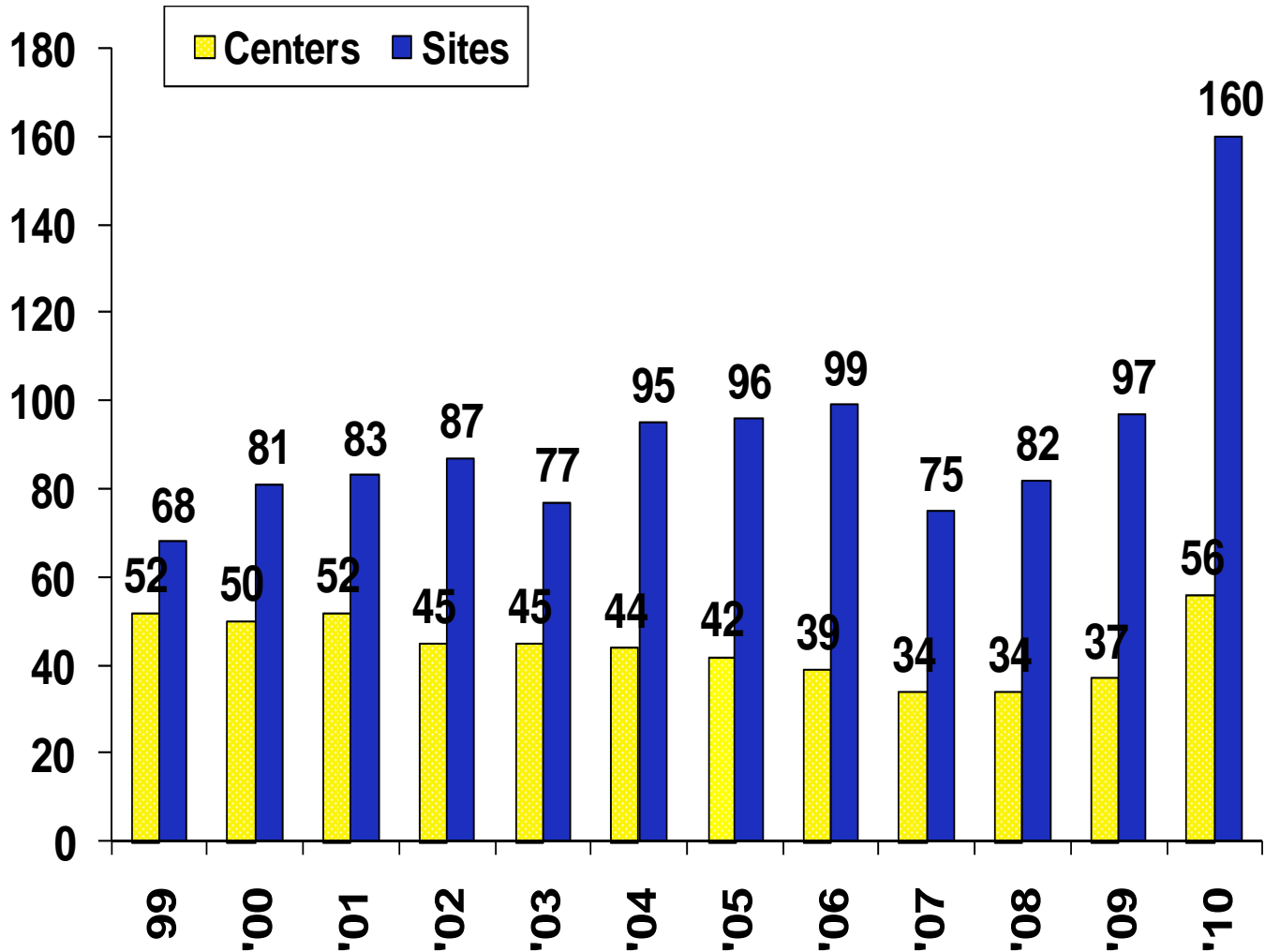
CISE Multi-University Centers

1. **Advanced Knowledge Enablement**
2. **Autonomic Computing**
3. **e-Design**
4. **Embedded Systems**
5. **Experimental Computer Systems**
6. **Hybrid Multicore Productivity**
7. **Identification**
8. **Intelligent Maintenance**
9. **Intelligent Storage**
10. **Net-Centrics Systems**
11. **Reconfigurable Computers**
12. **Search & Rescue Robots**
13. **Security and Software Engineering Research Center**
14. **Surveillance Theory**
15. **Wireless Internet**

15 ACTIVE CISE CENTERS



Active Centers and Sites By Year



INCREASE IN CENTERS & SITES



Industry/University Cooperative Research Center Sites (Sept 2009)

National Science Foundation
WHERE DISCOVERIES BEGIN

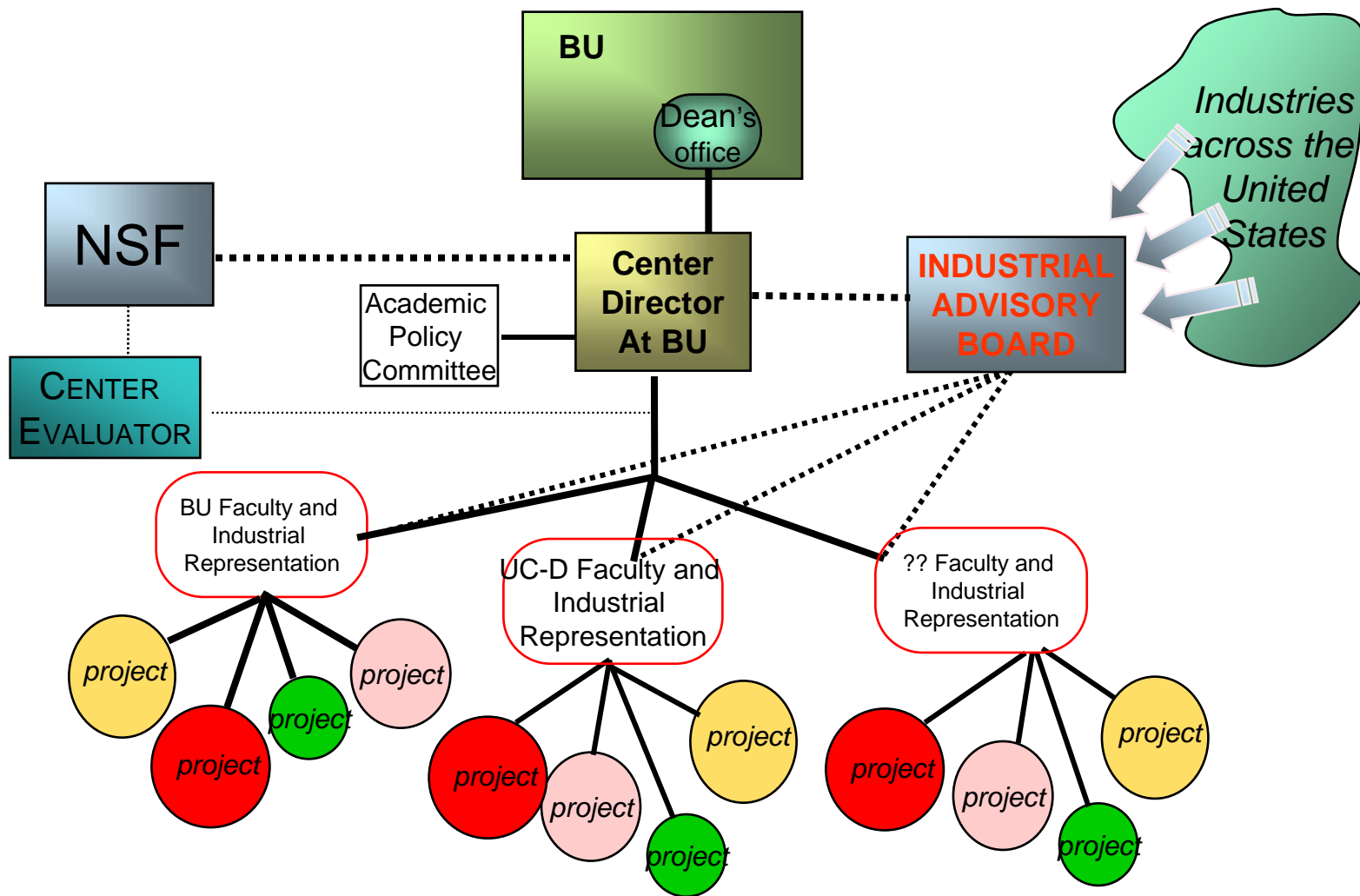


Each red circle indicates where one or more research sites are located. For example, A "4" in a red circle indicates that four sites are at that location. Includes planned and actual.

PLANNED & ACTUAL RESEARCH SITES



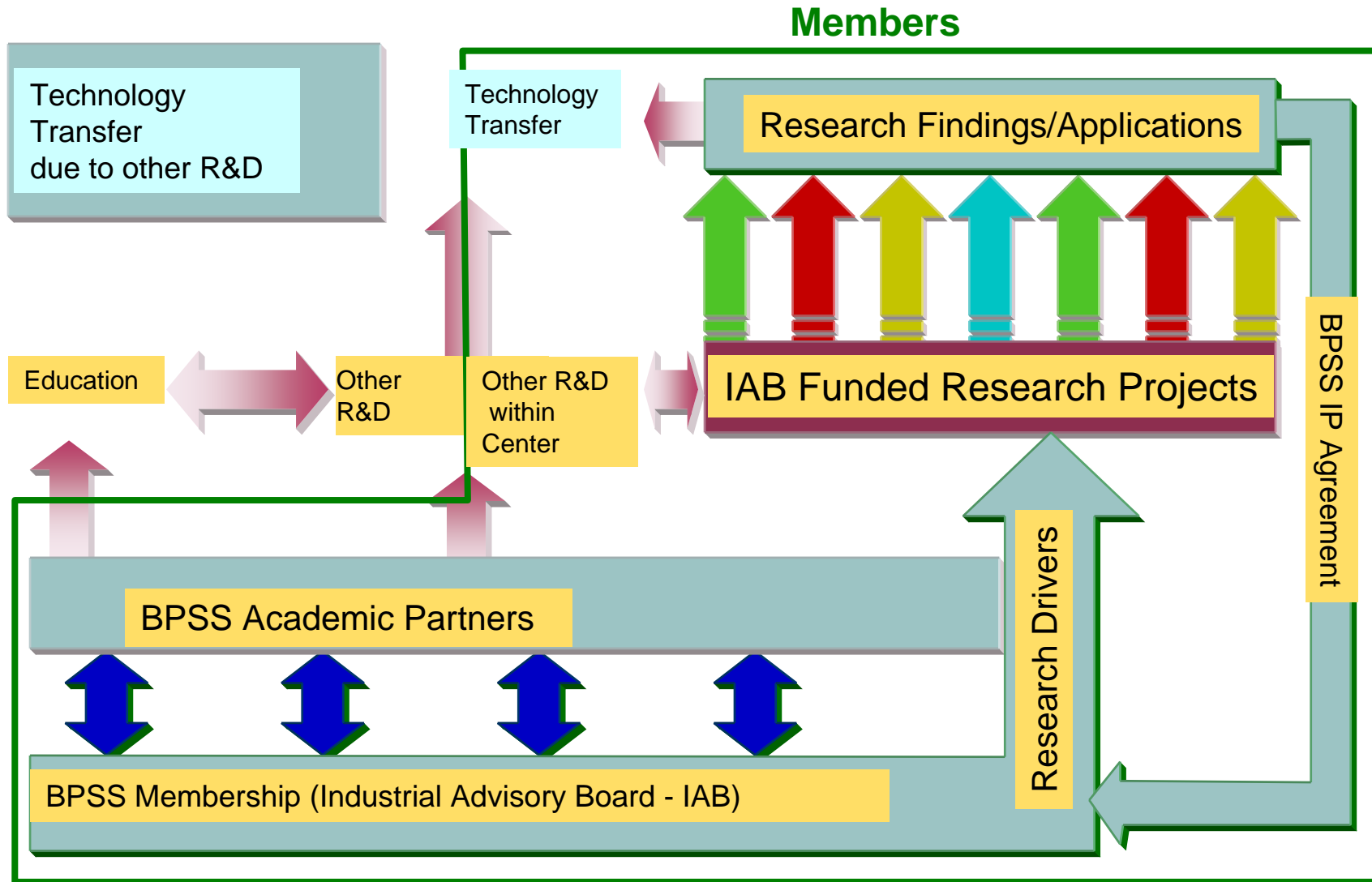
Typical Management Organization Chart



- Each cluster carries its own weight
- Multiple companies provide interaction capabilities



Project Flow and Impact



NSF Funding Formula

First five years

- \$55 – \$80k each year based upon industrial membership level (\$150k - \$300k)
- Lead university receives \$10K for each additional research partner
- NSF provides funds for an evaluator

Second five years

- Universities receive \$40K-\$60K each year depending upon industrial support
- Lead university receives \$10K for each additional research partner
- NSF provides funds for an evaluator

Third Five Years

- \$15K each year based upon industrial membership level (\$175k minimum)
- Lead university receives \$25K
- NSF provides funds for an evaluator



Other Funding Opportunities for I/UCRCs

- CORBI Projects – Between I/UCRC Centers (NSF matching!)
- Fundamental Research (Industry Defined)
- Research Experience for Undergraduate Students (REU)
- Research Experience for Teachers (RET)
- Federal Government Interagency Exchange of Funds
- Other NSF Programs that Co-fund Centers
 - OISE; CBET; CMMI; ECCS; CISE; and GEO
- International Collaboration/Projects
- Supplemental Opportunity for SBIR/STTR Memberships



Membership Agreement

- Membership fee structure
- Patent rights held by university, with royalty free, non-exclusive rights to center members
- Companies wishing to exercise rights to a royalty-free license pay for the costs of patent application
- If only one company seeks a license, that COMPANY may obtain an exclusive fee-bearing license
- March-in Rights
- Publication delay policy
- Industrial Advisory Board – one representative from each company per membership
- Indemnification

- Must sign the membership agreement form
- ONE center, and ONE membership agreement form



I/UCRC tools help guide industrial relevant research

Centers provide industry with the right information to guide project selection including:

- Project description
- Research analysis
- Project duration
- Project cost
- Deliverables
- Milestones

EXECUTIVE SUMMARY PROJECT OVERVIEW

PROJECT NAME: _____ PROPOSAL: _____

PROJECT MANAGER: _____

PROGRAM NAME: _____ NEW _____

PROGRAM MANAGER _____ CONT. _____

DESCRIPTION:

EXPERIMENTAL PLAN:

RELATED WORK ELSEWHERE:

HOW OURS IS DIFFERENT:

RELATED WORK WITHIN THE CENTER:

MILESTONES:

DELIVERABLES:

BUDGET:

POTENTIAL MEMBER COMPANY BENEFITS:



LIFE Form for Project Feedback

The LIFE process ensures quality and stimulates continued interest in the program.

Comments should include:

- Precompetitive suggestions
- Applications & Industry Benefits
- Suggested changes
- Innovativeness of Research
- Industrial relevance
- Similar work done elsewhere
- Offers of help (mentoring?)

Level Of Interest Feedback Evaluation (LIFE)

To facilitate scientific and technical interaction between Center Faculty and Industrial Member Representative, each company represented is requested to rank their company's level of interest and the research relevancy of each presentation. Please mark an X below to reflect the opinion of your company.

Level of Interest:

_____	Very Interested
_____	Interested
_____	Interested with Change
_____	Not Interested
_____	Abstain

Comments: _____

Comments, questions, and concerns from the transcribed LIFE forms are discussed during the IAB meeting prior to making project funding recommendations.

Bottom Line:

- What makes the project so “hot” or “transformational”?
- How can we improve this project?
- Real-time project revisions are encouraged if needed.



Planning Grant Workshop Deliverables

- **Planning grant workshop deliverables:**
 - **List of ALL POTENTIAL RELEVANT RESEARCH PROJECTS sent to ALL POTENTIAL SPONSORS**
 - **Must include EXECUTIVE SUMMARIES & BACK-UP MATERIAL (if needed)**
 - **Must include VISION and MISSION Statement of the proposed Center**
 - **Sponsors prioritize and send back list to PIs (5+ top research projects)****
 - **PIs sort through and identify the top 5+ research projects**
 - **PIs report back RESULTS to NSF & ALL POTENTIAL SPONSORS**
 - **PIs list these TOP 5+ projects in the FULL PROPOSAL**
 - **If awarded, these VETTED research projects now effectively start the first IAB meeting**



Next Steps

- Compile a **list of projects** attractive to all potential members/sponsors
- **Recruit sponsors** to meet the solicitation requirement (**\$150k/site, and a minimum of 3 members per site**)
- Get **commitment letters** per site (key words!!!)
- Refine **membership agreement** (blessed by the SRO)
- Prepare **collaborative** proposal
- Beware of **deadline** (5pm submitter's local time)



National Science Foundation I/UCRC Contacts

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for more information: <http://www.nsf.gov>

and: <http://www.nsf.gov/eng//iip/iucrc>

Program phone: (703) 292-8383

Note: The best way to contact us is via e-mail. Many are on the road frequently

