

Planning Meeting
for the
**I/UCRC for Rational Catalyst Synthesis
(CeRCaS)**

June 16-17, 2014

Larry Hornak, Raffaella Montelli and Shashank Priya
Engineering Directorate, IIP Division
Donald Davis, NSF Evaluator

*Welcome to the Industry / University
Cooperative Research Center (I/UCRC)
Program*

Planning Meeting Purpose, Outcomes

- Align the proposed center and its research portfolio with the needs of prospective members
- Provide information necessary for prospective members to assess the value of a Center membership commitment

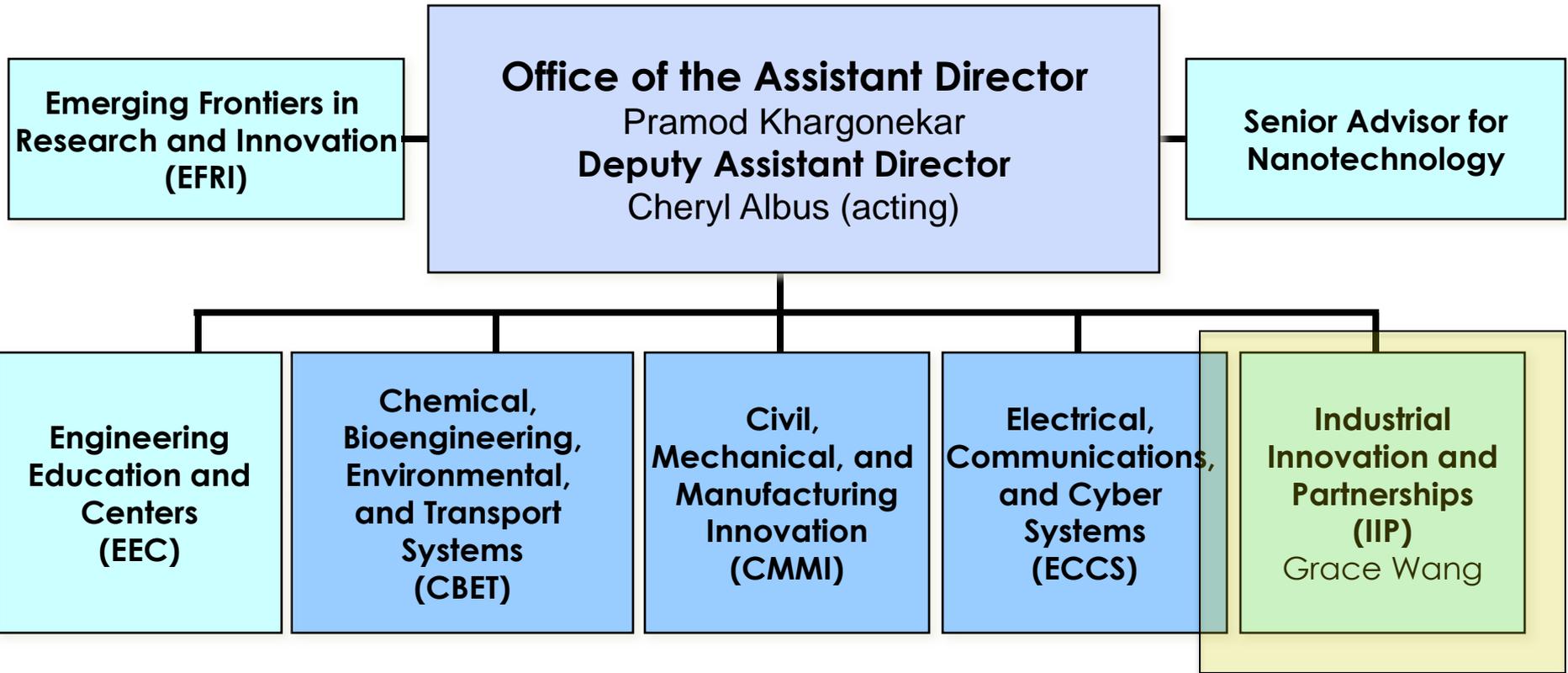
NSF Presentation Outline

- **I/UCRC Program**
 - NSF Organization
 - I/UCRC Mission & Vision
 - Why an I/UCRC? - Program Outcomes
 - I/UCRC Operational Model
 - Maximizing Center value
- **Planning Process, Next Steps**





ENG Organization





Industrial Innovation and Partnerships(IIP)

Division Director
Grace Wang

Academic Partnerships
Grace Wang

Small Business Partnerships (SBIR/STTR)
Joe Hennessey

Staff Associate
Gracie Narcho

Operations Specialist
Greg Misiorek

Science Assistant
Lindsay D'Ambrosio

Nanotechnology, Advanced Material & Manufacturing (NM)
Steve Konsek, Rajesh Mehta, Ben Schrag

Biological and Chemical Technology (BC)
Prakash Balan, Rajesh Mehta, Ruth Shuman, Jesus Soriano,

Electronics, Information & Communication Technology (EI)
Peter Atherton, Steve Konsek, Glenn Larsen, Murali Nair

Education Applications (EA)
Glenn Larsen

Experts/Special Topics
George Vermont

Grant Opportunities for Academic Liaison with Industry (GOALI)
Donald Senich

Industry/University Cooperative Research Centers (I/UCRC)
Larry Hornak
Raffaella Montelli, Shashank Priya

Partnerships for Innovation: Building Innovation Capacity (PFI-BIC) Sara Nerlove

Partnerships for Innovation: Accelerating Innovation Research (PFI-AIR)
Barbara Kenny



The Industry/University Cooperative Research Centers (I/UCRC) Program

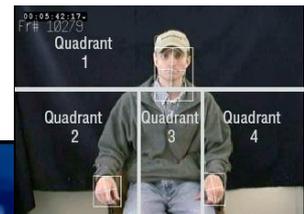
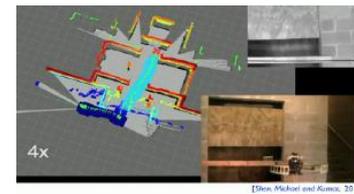
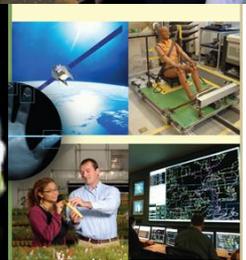
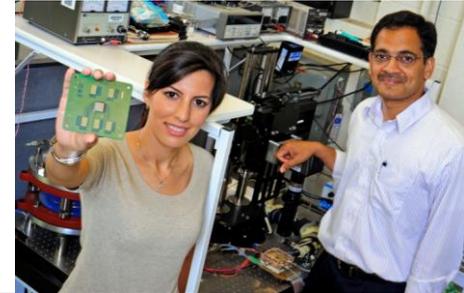
Mission:

- 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

Over 40 years of fostering and growing long-term trusted relationships between Industry and academe based on shared value



I/UCRC Fast Facts – FY13 Snapshot



National Scope of I/UCRCs

- 42 of 50 States
- 5 International Sites: Belgium, China, Germany, India, Russia

ENG – Engineering

CISE – Computer and Info. Sci and Eng.

Program Funding

- \$17.8M in Program Funding (ENG, CISE)
- Nearly \$130M in Total Center Funding
- 8:1 Leveraging of NSF funds.

Centers Nationally:

- 67 Centers with 192 Sites
- Over 1100 Members representing over 500 distinct organizations

- 58% Large Business, 22% SB, 13% Federal Members

Students

- Over 2000 students engaged
- 825 graduated in 2012, nearly 30% hired by members
- 285 PhDs, 322 MS & 218 UGs graduated in 2012, trained in Center research

Sustainability

- Over 40 Graduated I/UCRCs remain in operation true to model



Center Focus Areas

1. *Advanced Electronics, Photonics Fabrication and Processing*
2. *Advanced Manufacturing*
3. *Biotechnology, Health & Safety*
4. *Advanced Materials*
5. *Civil Infrastructure Systems*
6. *Energy & Environment*
7. *System Design & Simulation*
8. *Information Communication & Computing*

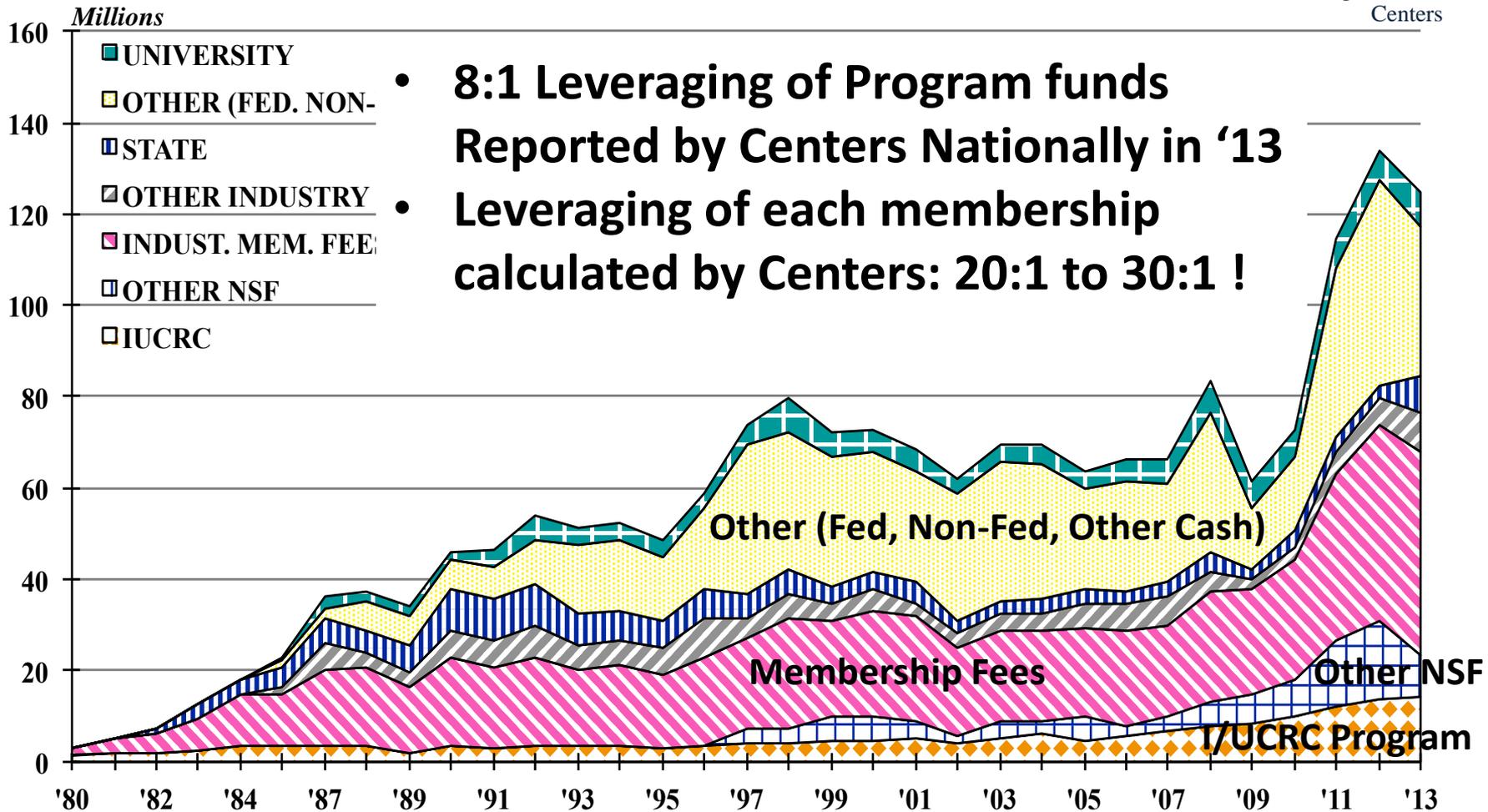
45 ENG Funded Centers
22 CISE Funded Centers



Total Funding by Source in Dollars



Industry/University
Cooperative Research
Centers



Base Funding

Collaborative Research Between I/UCRCs (CORBI)

Fundamental Research Program (FRP)

Accelerating Innovation Research (AIR)

Innovation Managing Director (IMD)

I/UCRC Innovation Fellows (IIF)

Research Experience for Undergraduates (REU)

Research Experience for Teachers (RET)

Veterans Research Supplement (VRS)

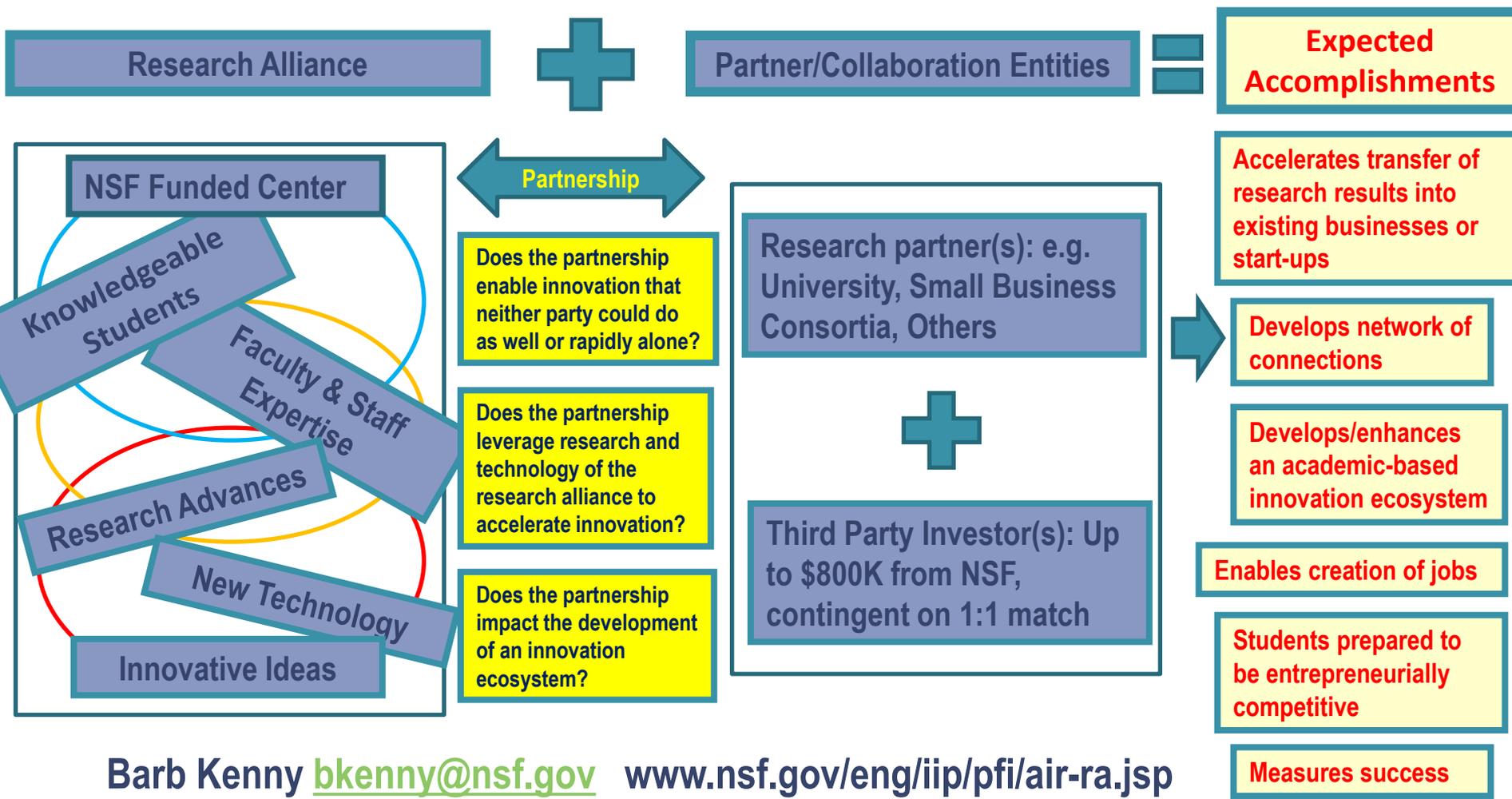
SBIR / STTR Phase II





AIR- Research Alliance(RA): Leveraging Center-level NSF Investments

Develop/enhance collaborations and partnerships to accelerate technology transfer





Center for Child Injury Prevention Studies (CChIPS)

To advance the safety of children, adolescents and young adults through research

RESEARCH



ACTION



IMPACT

Injury risk in seat belt restrained occupants

Knee Air Bag Injury Risk Assessment for Children

Design of an emotionally realistic driving simulator

Development of premature infant Anthropomorphic Test Device (ATD)

Factors Associated with Driving in Teens with Autism Spectrum Disorders

Over 50 projects since 2005



AIR Award: Innovation Ecosystem for Online Health & Wellness

- **Partners:** University City Science Center (UCSC) in Phil., industry, investors
- **I/UCRC Team:** CChIPS & Univ of Florida Center for Autonomic Computing (CAC)

Advances in Child Injury Prevention Conference

12th Annual Conf. Hosted by CChIPS

Goal: Latest research in safety for children and adolescents to stakeholders who can effect change

- **Participants:** ~100 attendees from industry, government and research orgs
- **Results:** Research influences product design & test, new members, research.



Center Impact: HHS Efforts/Impact on Traumatic Brain Injury

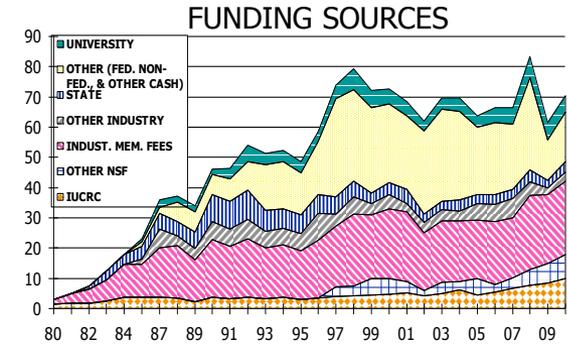
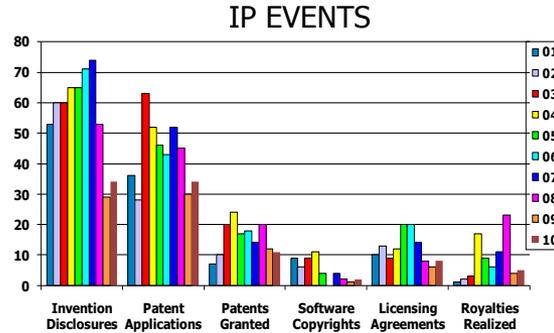
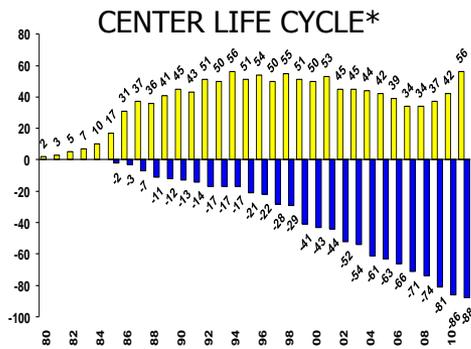
Testimony before the **Subcommittee on Health Energy and Commerce Committee** entitled “A Review of Efforts to Prevent and Treat Traumatic Brain Injury (TBI)”



I/UCRC Evaluation & Assessment

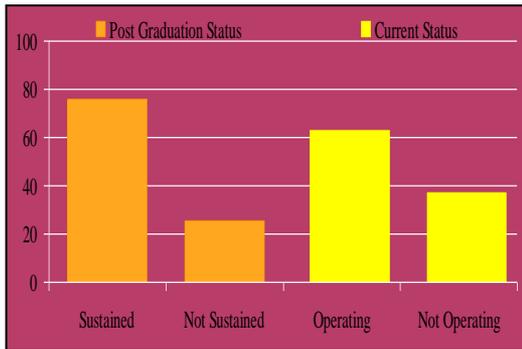
35 + year commitment to integrating evaluation with program planning, implementation and operation . *Local Evaluation – Global Assessment*

CENTER INPUTS AND OUTPUTS ASSESSMENTS

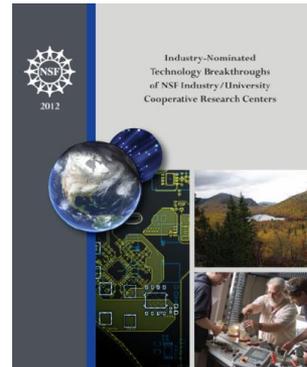


TARGETED ASSESSMENTS AND RELATED WORK PRODUCTS

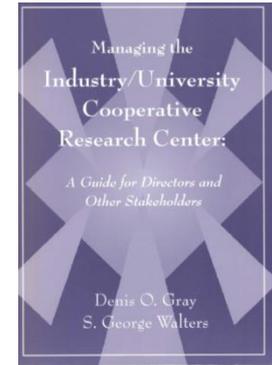
IUCRC GRADUATION STATUS



Breakthrough Compendium



Gray & Walters Director's Guide

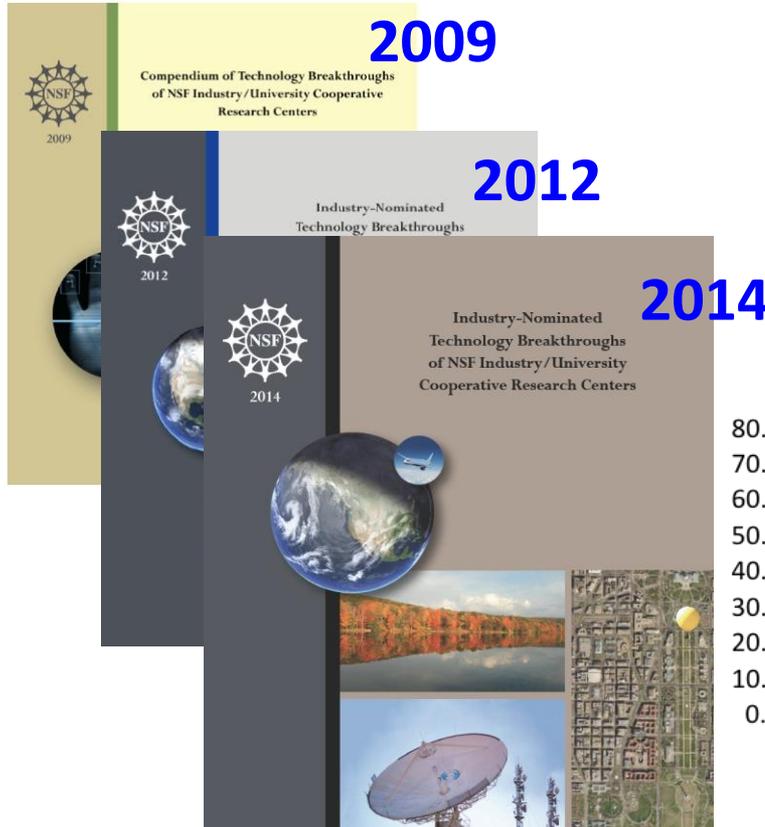


Plus publication in open literature: > 80 publications in journals, national & international conferences: *Research Policy*; *AAAS*; *Journal of Technology Transfer*; *Sc. Public Policy*; *New Directions in Evaluation*



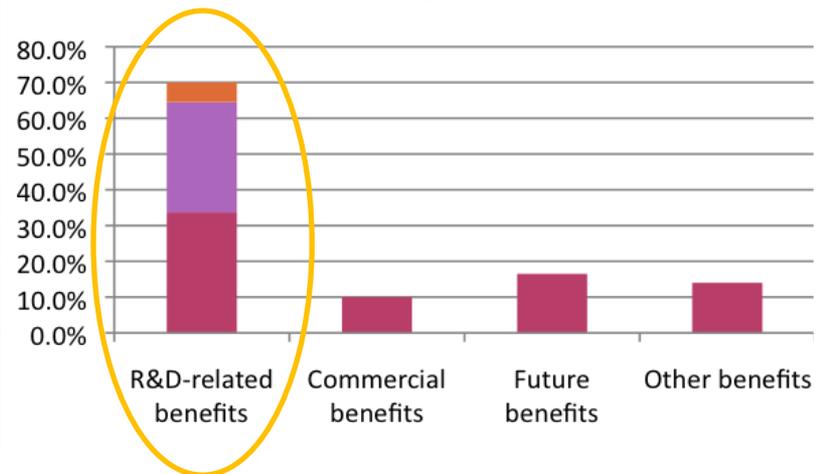
I/UCRC Outcomes

From Trusted, Long-Term Center Relationships built on Industry-University Research



**Over 1400 Publications in '13,
248 co-authored w/Members**

**Percentage reporting different benefits from
IUCRC participation**
Process/Outcome, open comments (2008-2009, n=91)



**See the IUCRC Compendia at
www.nsf.gov/eng/iip/iucrc/tech_breakthroughs.jsp**



Impact vs. Investment: 3 Centers

Industry Sector Impacts, NSF IUCRC Investments since center inception

IMS: Intelligent Maintenance Systems (2001)

CPaSS: Center for Particulates & Surfactants (1998)

BSAC: Berkeley Sensors and Actuators Center (1986)

IUCRC investments & Impacts	TOTAL	IMS	BSAC	CPaSS
Estimated impacts (present value)	\$1267.1M	\$846,738,946	\$410,727,849	\$9,638,633
Total investments (present value)	\$19.6M	\$3,133,857	\$13,250,712	\$3,203,057
Benefit:Cost Ratio	64.7:1	270.2:1	31.2:1	3.0:1
Net Present Value	\$1247.5M	\$843,605,090	\$397,477,137	\$6,435,577

- Realized impacts with a net present value of \$1.25B.
- Each dollar invested by NSF-I/UCRC generated an estimated 64.7 dollars in impacts.



I/UCRCs: The NSF's Role

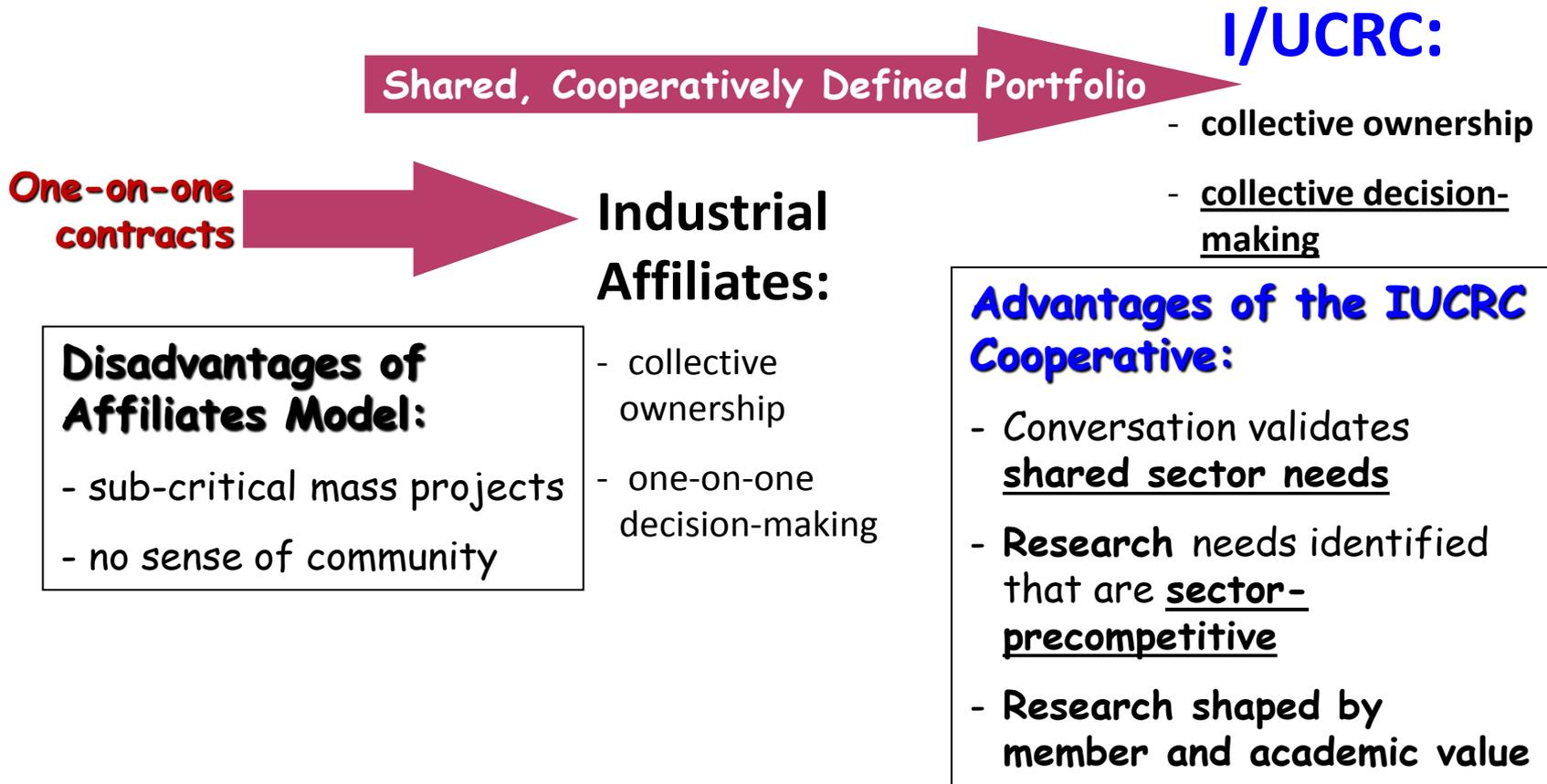
Facilitate a Center environment in which long-term relationships between industry and academia can thrive.

- **Cooperative Operational Framework, Agreement**
- **Franchise of centers for collaboration**
- **Best practices based on decades of evaluation**
- **NSF Award – Funding Opportunities**



The I/UCRC Model

- Builds trusted long-term relationships for effective industry linkage to university fundamental research

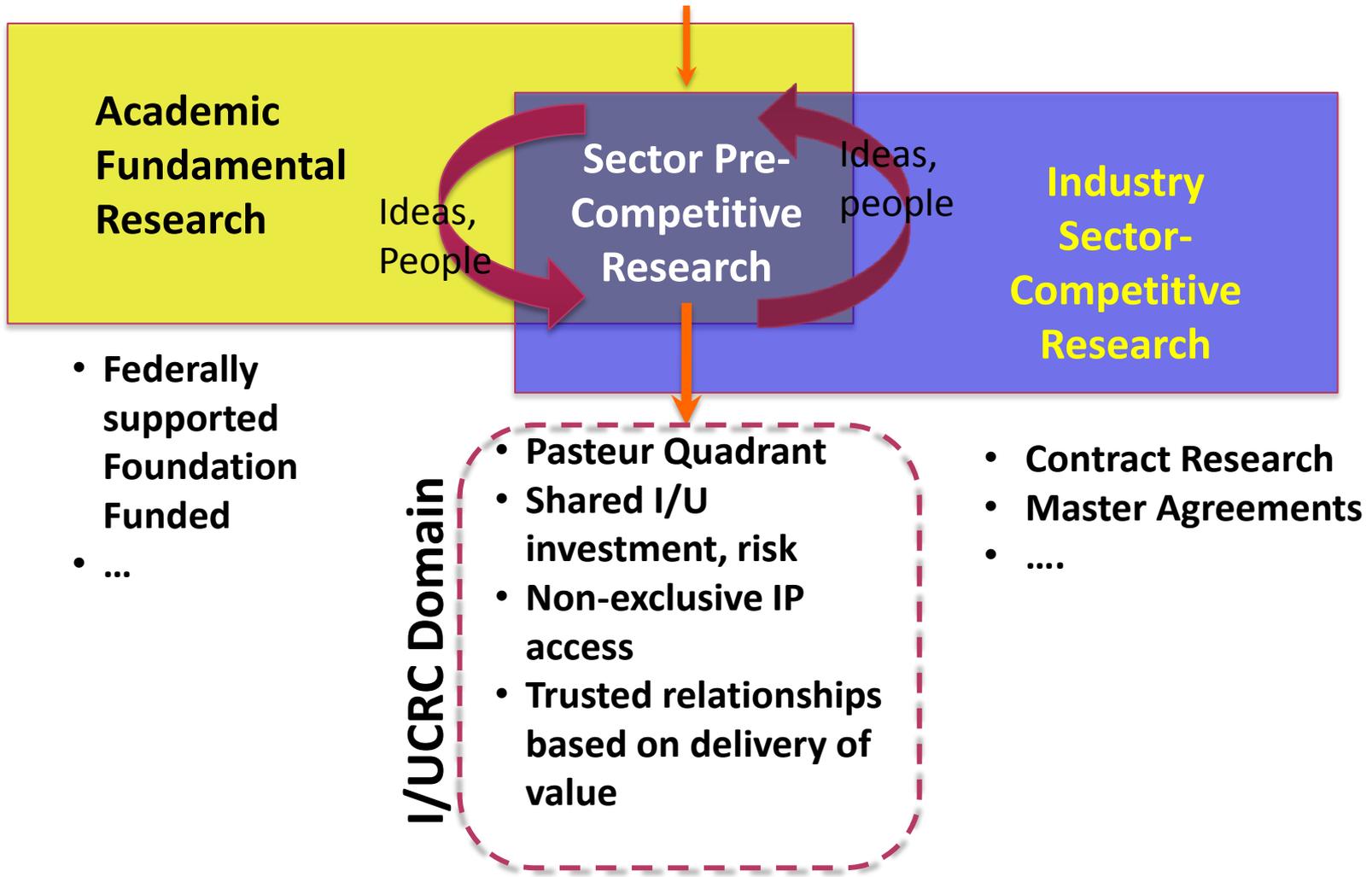


Much more than collective ownership: Collective Value



The I/UCRC Model: Linking Industry to Fundamental Research

I/U Cooperative Research Domain



- Federally supported Foundation Funded
- ...

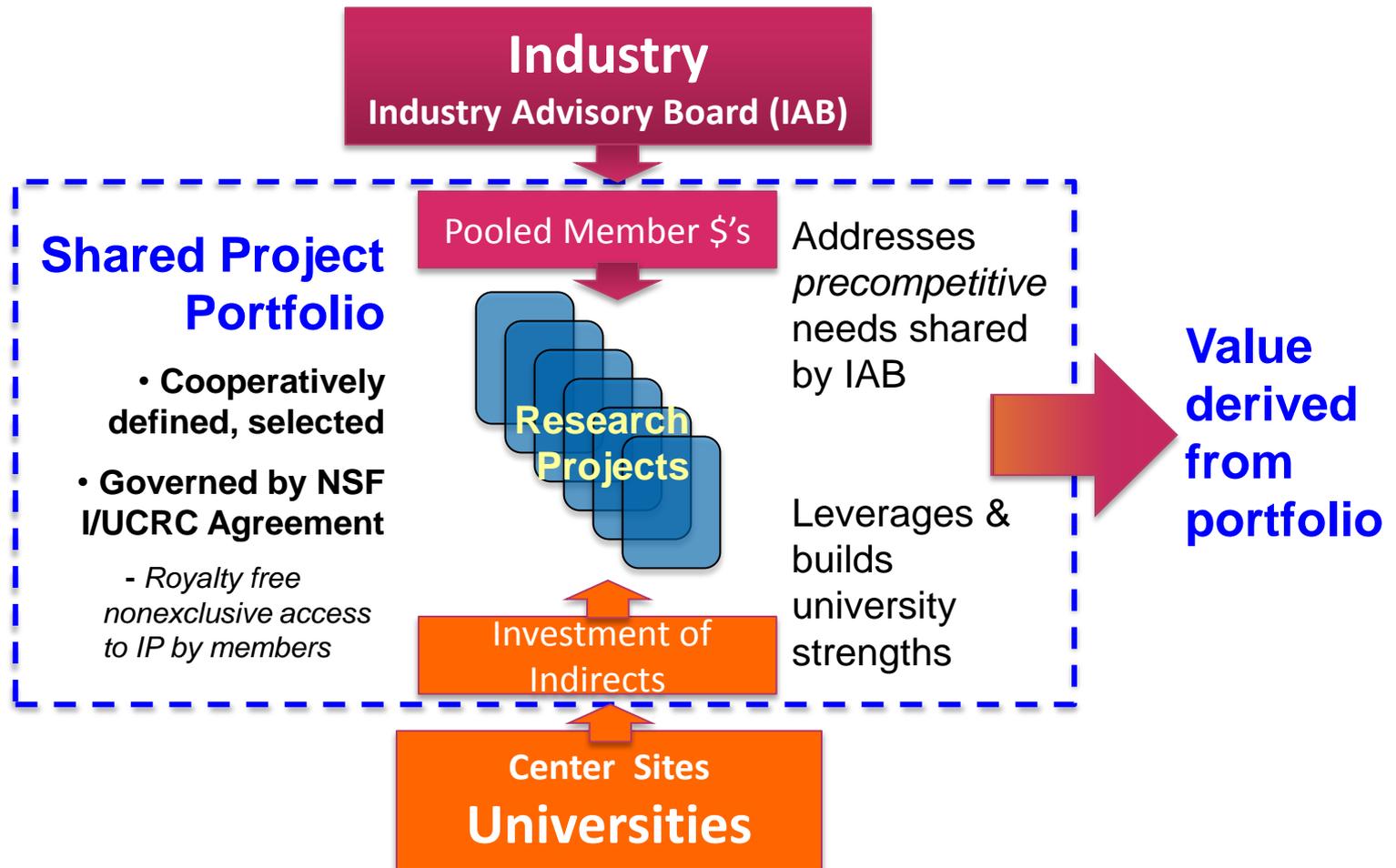
- Contract Research
- Master Agreements
-

I/UCRC Domain

- Pasteur Quadrant
- Shared I/U investment, risk
- Non-exclusive IP access
- Trusted relationships based on delivery of value



I/UCRC Nucleus: A Cooperatively Defined, Funded & Shared Research Portfolio



Requires trust be built in the model, and between all partners in the center.



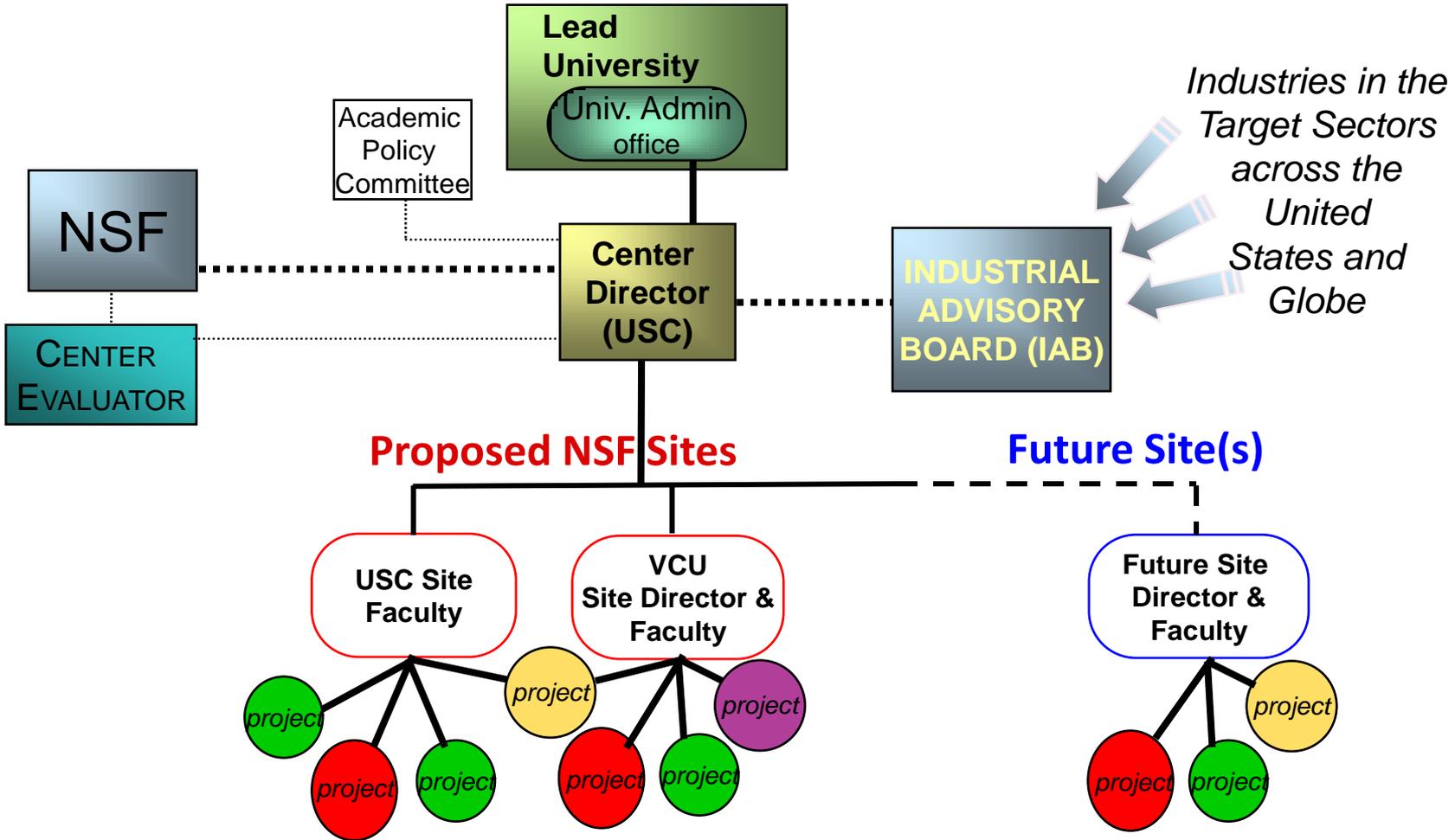
I/UCRC Membership Agreement

- **Parties to Agreement, University and Center**
- **Annual 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 patent costs
- 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 clause(s)**

- All Members sign the agreement upon Center Award
- ONE center, and ONE membership agreement form



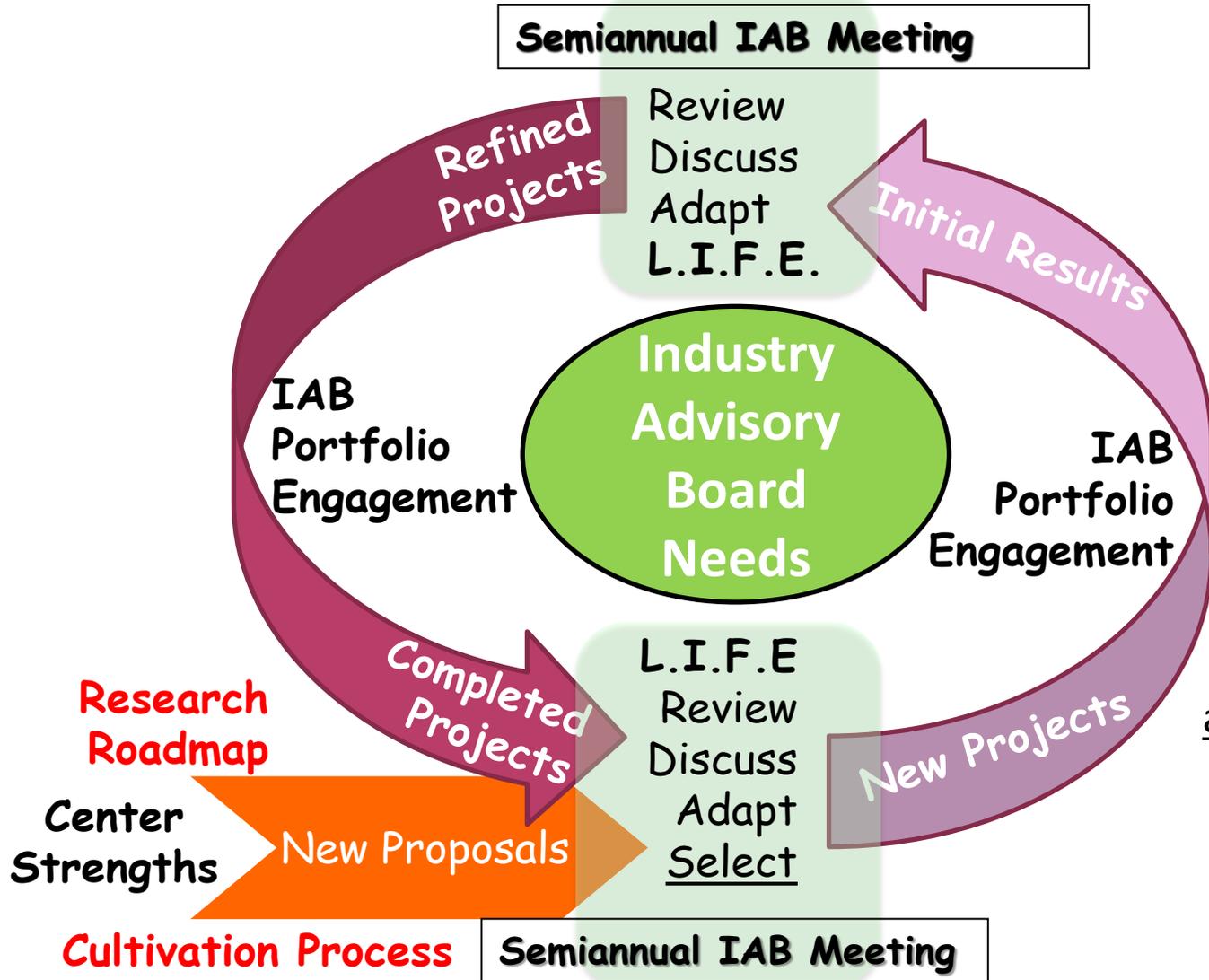
Typical I/UCRC Organization Chart



- Center provides a seamless interface to all its talent, outcomes
- Center has ONE IAB which recommends, monitors portfolio
- Each NSF Site carries its own weight (min \$150K, 3 orgs members)



The I/UCRC Portfolio Cycle: Maximizing Value while Building Trust



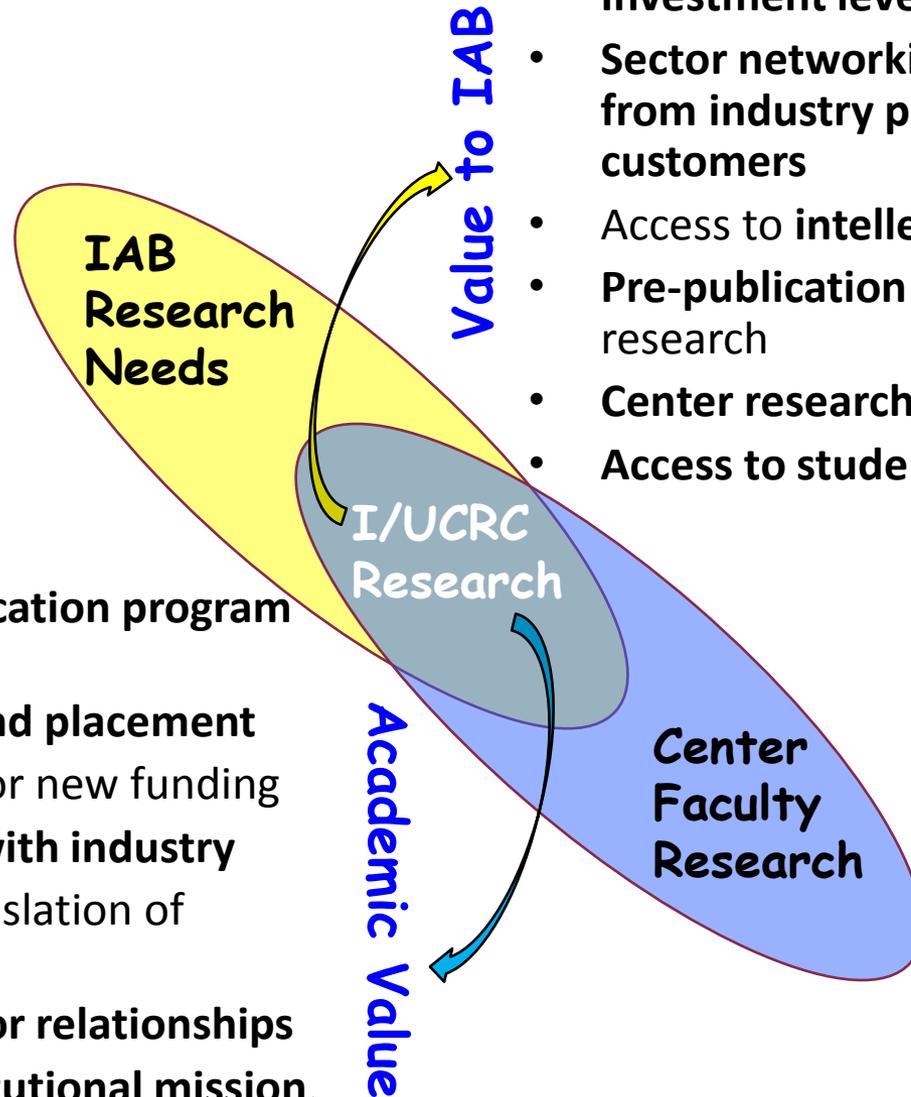
The co-operative tools & process aligns the Center Portfolio with **Member Needs** and **University strengths**



What *value* does an I/UCRC offer?

Outcomes from a cooperatively defined and managed, portfolio of industry-precompetitive research.

- New research and education program dimensions
- Student recruitment and placement
- Leverage POC results for new funding
- Trusted relationships with industry
- Ready partners for translation of discoveries
- Organize industry sector relationships
- Means to achieve institutional mission.



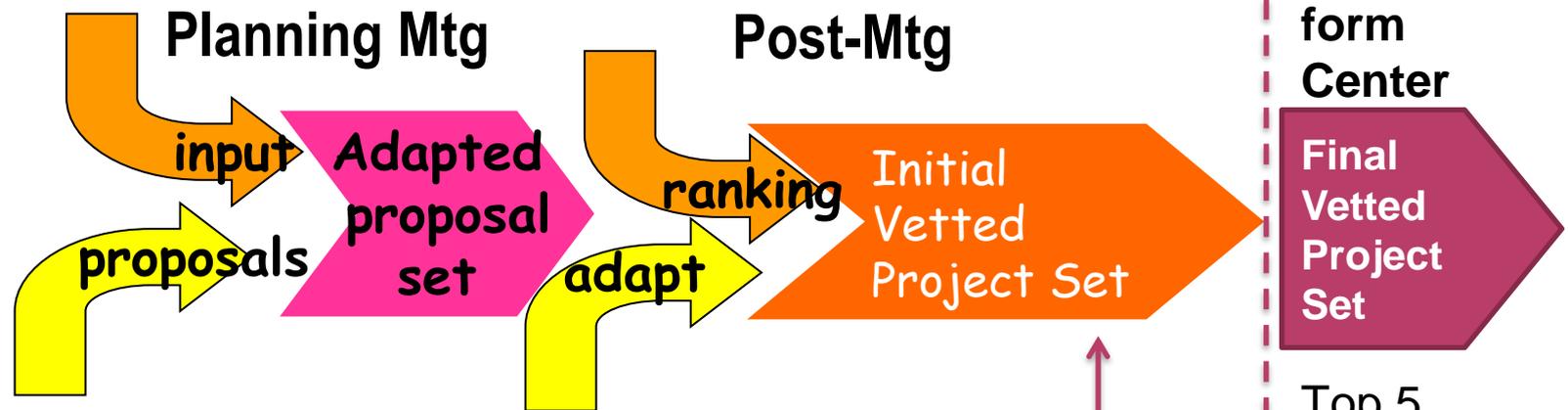
- High value research projects
- Investment leveraging
- Sector networking, learning from industry peers and customers
- Access to intellectual property
- Pre-publication access to research
- Center researchers & facilities
- Access to students



Planning Process, Proposal Submission

- The Planning Meeting uses I/UCRC processes to hone Center focus, enable member commitments & vet research projects for an NSF Center proposal.

Prospective CeRCaS IAB Members



Proposed CeRCaS Center

Secure membership commitments

Each Site: Min. \$150K in memberships from at least three members!

Proposal to NSF to form Center

Final Vetted Project Set

Top 5 projects based on committed members



National Science Foundation I/UCRC Contacts

Rathindra (Babu) DasGupta, I/UCRC Program Director - rdasgupt@nsf.gov

Larry Hornak, Program Director, lhornak@nsf.gov

Shashank Priya, Program Director, spriya@nsf.gov

Rita Rodriguez, CISE Program Director – rrodrigu@nsf.gov

Alex Schwarzkopf, Consultant – aschwarz@nsf.gov

Hale, Program Assistant, mkonjevoda@nsf.gov

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



Closed Industry Session



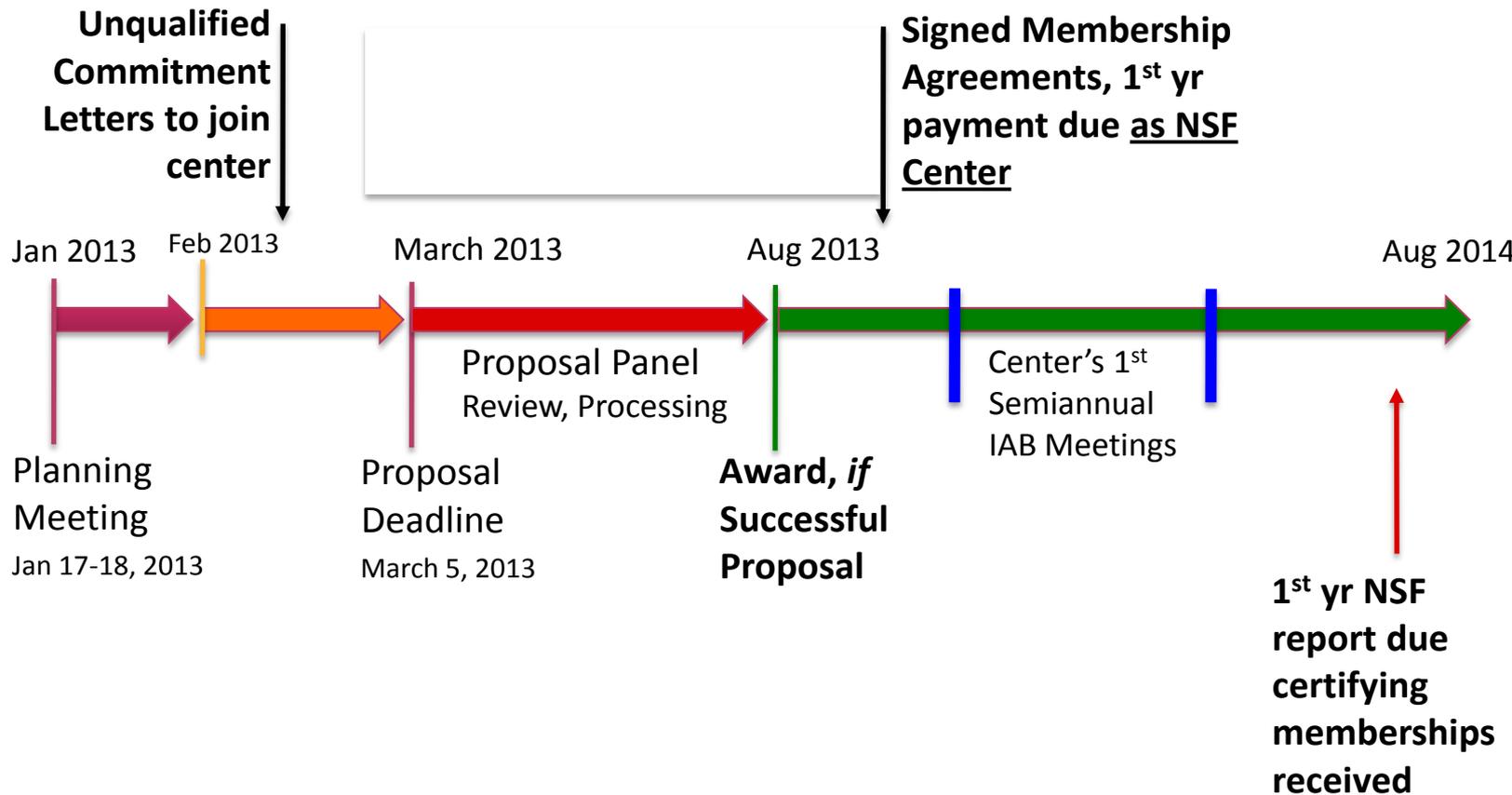
What Else Do You as Prospective Center IAB Members Need To Know?

- This is going to be your center.
- An engaged, proactive IAB is essential to center success.
- This planning meeting will result in
 - a representative, industry vetted project set for the center and
 - a refined vision of the center itself.
- The top 5 vetted projects plus unqualified letters of membership commitment will be the nucleus of the Center's I/UCRC proposal.
 - Letters must state your organization "Will become a member of CeRCaS"
 - Projects included in the proposal will reflect commitments received



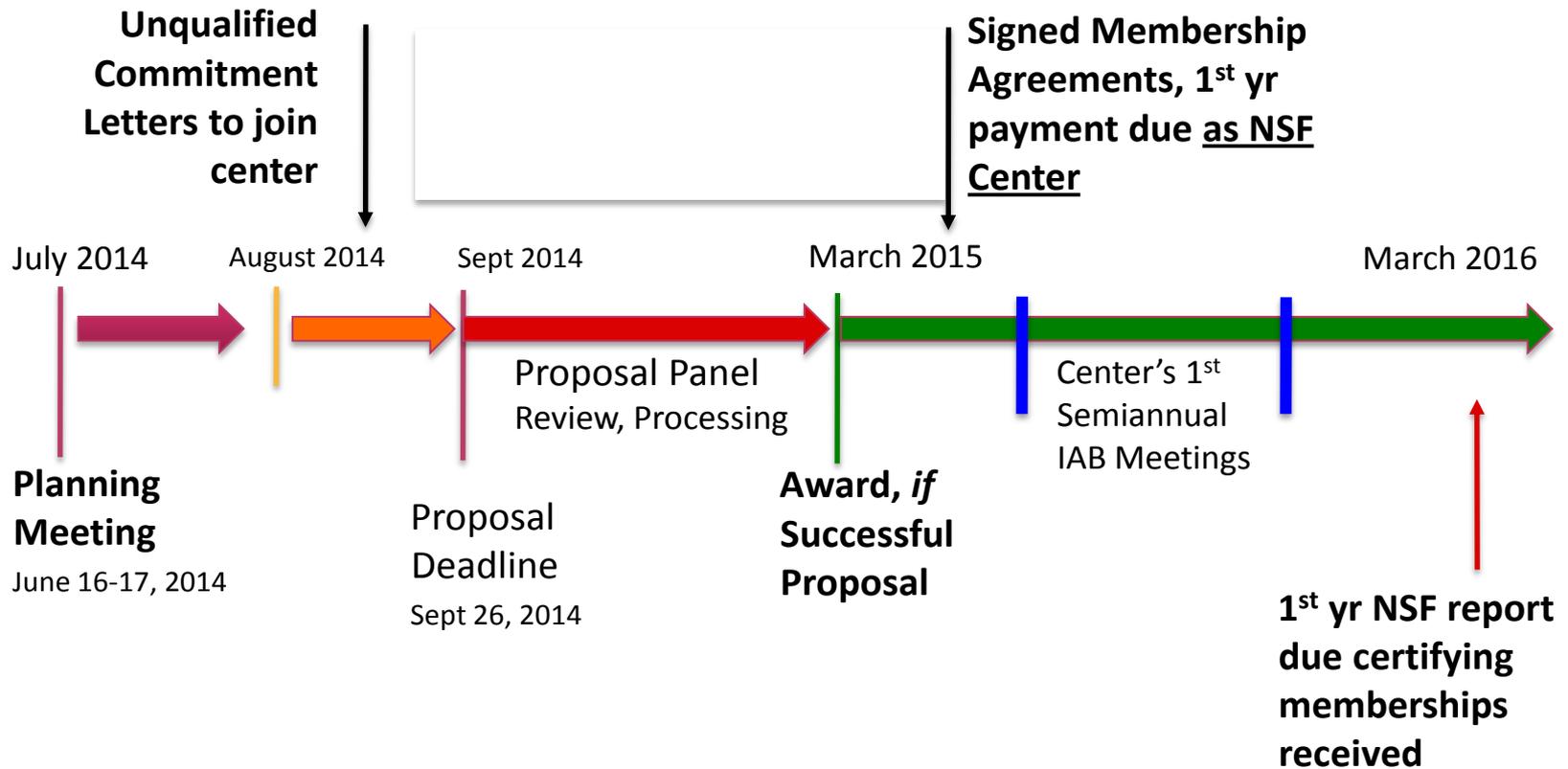
Possible Timeline and Key Events

Prospective Member Actions, Time frame (for March submission)



Possible Timeline and Key Events

Prospective Member Actions, Time frame (for September submission)



What do you need to make a compelling case to your organization for Center membership?

- Suggested Key Items - *all electronic*
 - Clear and compelling Center marketing materials
 - Clear succinct statement of
 - Center goals, objective
 - Definition and importance of areas addressed with Relevant Application Examples
 - ROI Model(s) for members,
 - Executive summaries (emphasis on member benefit)
 - Electronic versions of revised project ppts, FIRST YEAR DELIVERABLES, NO open ended projects (NSF)
 - Final Attendee List of Prospective members, contact info,
 - List other prospects not here that are being recruited
 - Final Membership agreement (not necessary to execute at this point)
 - NSF I/UCRC Program presentation
 - Impact study, ROI from other center studies
- Additional Items from this meeting
 - Sublicense clause clarification
 - Background IP in proposed projects
 - Budget detail, staffing plan



Post-Meeting Timeline

- Center will generate executive summaries for the project set (+ other materials) and distribute them to prospective members with a ranking rubric by July 1.
- Prospective members will provide their ranking of the project set by July 22.
- Center will compile input and inform all of the project ranking by July 28.
- Receipt of Commitment letters by Sept 1.

July						
Su	Mo	Tu	We	Th	Fr	Sa
	2 weeks 1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

August						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

September						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Next proposal due date
Sept 26, 2014

