INDUSTRY UNIVERSITY COOPERATIVE RESEARCH CENTERS (IUCRC) PROGRAM

National Science Foundation

NSF Solicitation 20-570

https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf20570

Nov 14, 2022

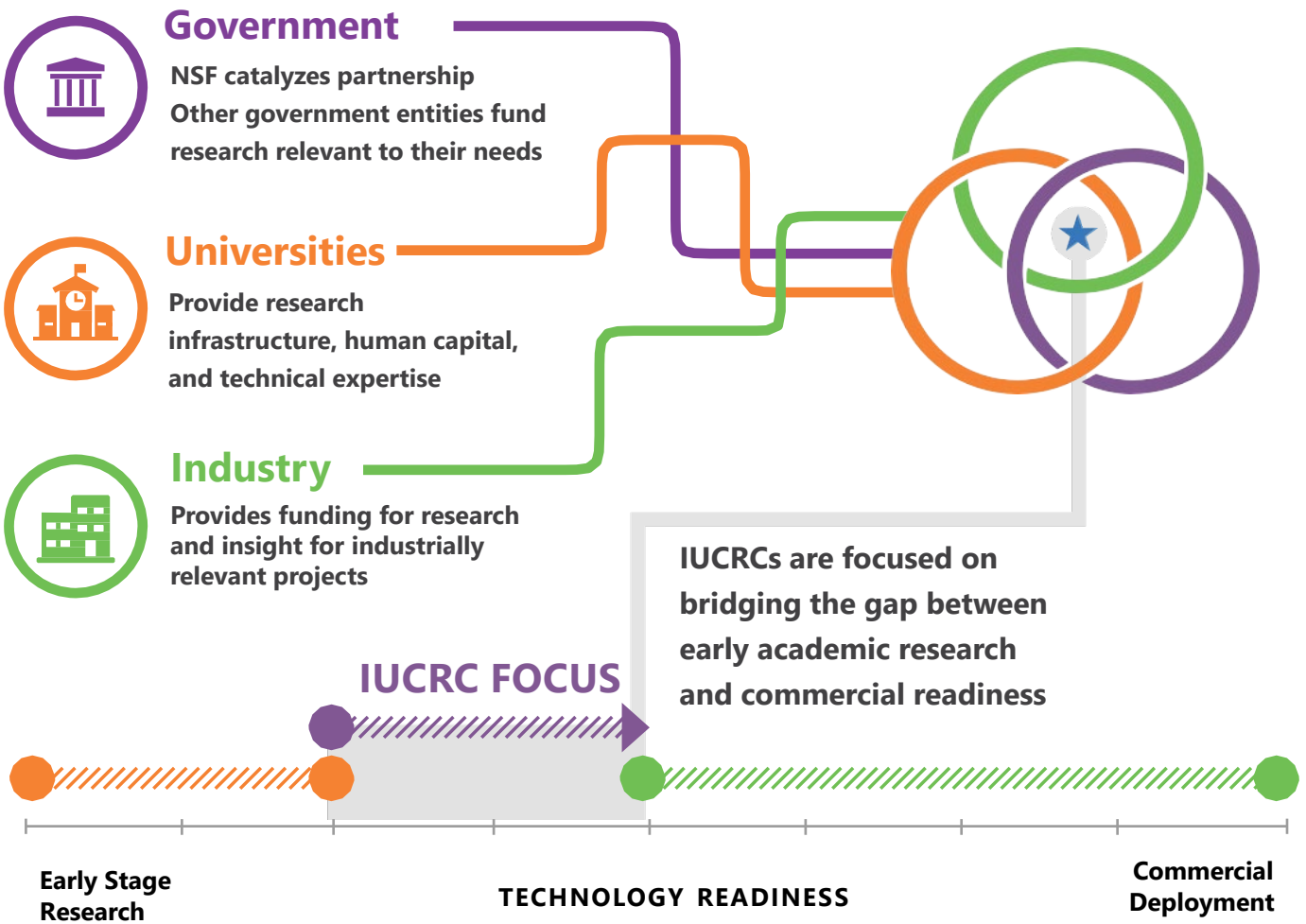
https://iucrc.nsf.gov

Program Overview

Prakash Balan

IUCRC – A Collaborative Partnership

Execute cutting-edge pre-competitive basic research in science & engineering to drive innovation and societal impact



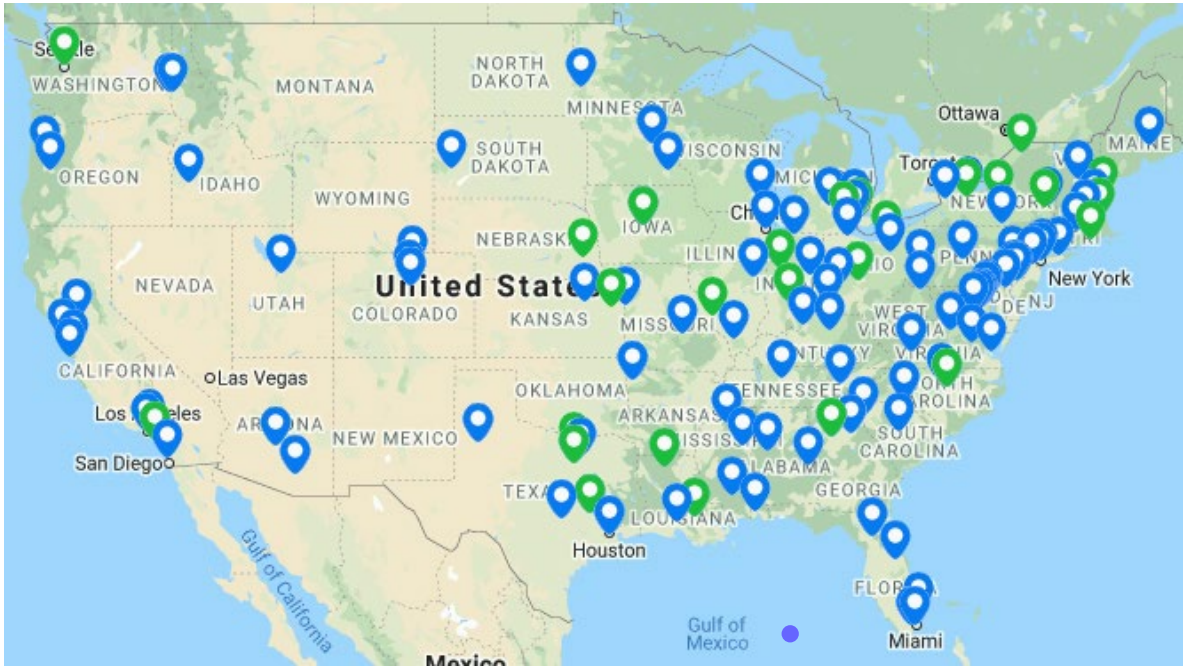
IUCRC – Nationwide Portfolio

~ 7,200*

Center-trained students graduated (2010-2020)

80+ Active Centers

120+ U.S. Universities



Planned IUCRC

Awarded IUCRC Site

700+ Member Organizations

340+ Large Firms

270+ Small Firms

20+ Federal Agencies

*Source: NSF award 1732084 survey data

IUCRC – Broad Areas and Research Themes

- Advanced Electronics and Photonics
- Advanced Manufacturing
- Advanced Materials
- Biotechnology
- Civil Infrastructure Systems
- Energy and Environment
- Forensic science
- Geosciences
- Health and Safety
- IT, Communication, and Computing
- System Design and Simulation

An IUCRC Example: ambic.org
Advanced Mammalian Biomanufacturing Center

The mission of AMBIC is to develop enabling technologies, knowledge, design tools and methods that apply and integrate genome-based and systems technologies to fast-track upstream biomanufacturing processes and advances

NSF: $750K
Members: ~ $1.4 M
2021

University Partners

Johns Hopkins University
University of Delaware
Clemson University
UMass Lowell
University of Maryland

Center Members

908devices
abbvie
Agilent
AMGEN
apc
Biogen
Boehringer Ingelheim
Bristol Myers Squibb
AstraZeneca
KBI Biopharma
Lonza
ucb
MERCK
Genentech
ThermoFisher Scientific
REGENERON
Janssen
Takeda
SANOFI
Lilly
gsk
EVONIK
Pfizer
NIST
FUJIFILM
Diosynth biotechnologies
MilliporeSigma
SARTORIUS
Incyte
cytiva
Daiichi-Sankyo
METTLER TOLEDO

A sampling of organizations that have participated in IUCRCs

IUCRC – Value Proposition for Universities

Student Training / Workforce Dev.

~7,200*
Center-trained students nationwide

~ 25%*
Center-trained students hired by member organizations

*(10-year data)

Student Support

Enhance resources available for student training, skills development, and job placement

Broader Impact

Work with industry to address societal challenges

Funding

Increase and diversify research funding through industry-driven research

Feedback

Receive industry guidance on research projects

Collaboration

Build relationships and develop industry partnerships for technology transfer

Access

Access to industry information to spur innovation

IUCRC – Value Proposition for Members

IUCRC Program Funding Benefit

Every $1 in member contributions leverages multiple of additional dollars in research funding

Access to Talent

Opportunity to mentor and train students to attain desired skills for work in your industry

Leverage Research Dollars

Earn higher return on investment when research is jointly funded

De-Risk R&D

Share risks of early stage research leading to disruptive business opportunities

Access to Network

Learn from interacting with center participants within your technology sector

Research Cost Avoidance

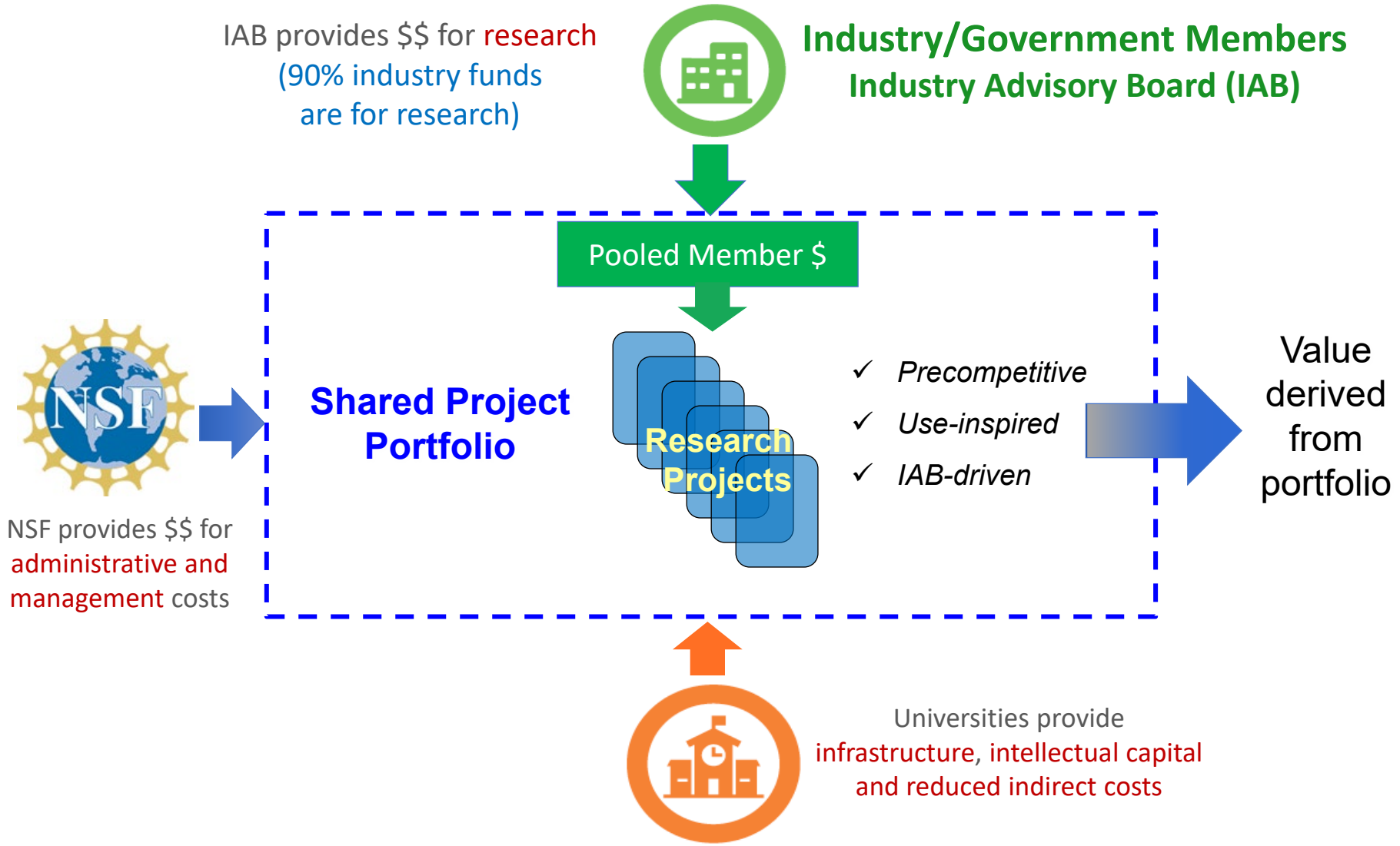
Save internal research dollars through access to facilities, infrastructure, and lower human capital costs

Access to Intellectual Property

Gain royalty-free, non-exclusive licenses on intellectual property produced in the center

University indirect costs are capped at 10% on Member funds

IUCRC – Program Framework



Members get significant leverage on their investment: 4 Site, Phase I example

NSF requires a **4 Site Phase I Center** to have at least 12 Full members

- Assume a Membership level of $50K per member annually

- Members total annual investment ≥ **$600K**
- Universities' subsidy on indirect costs capped at 10%: **~$150K**
- NSF invests **$600K**

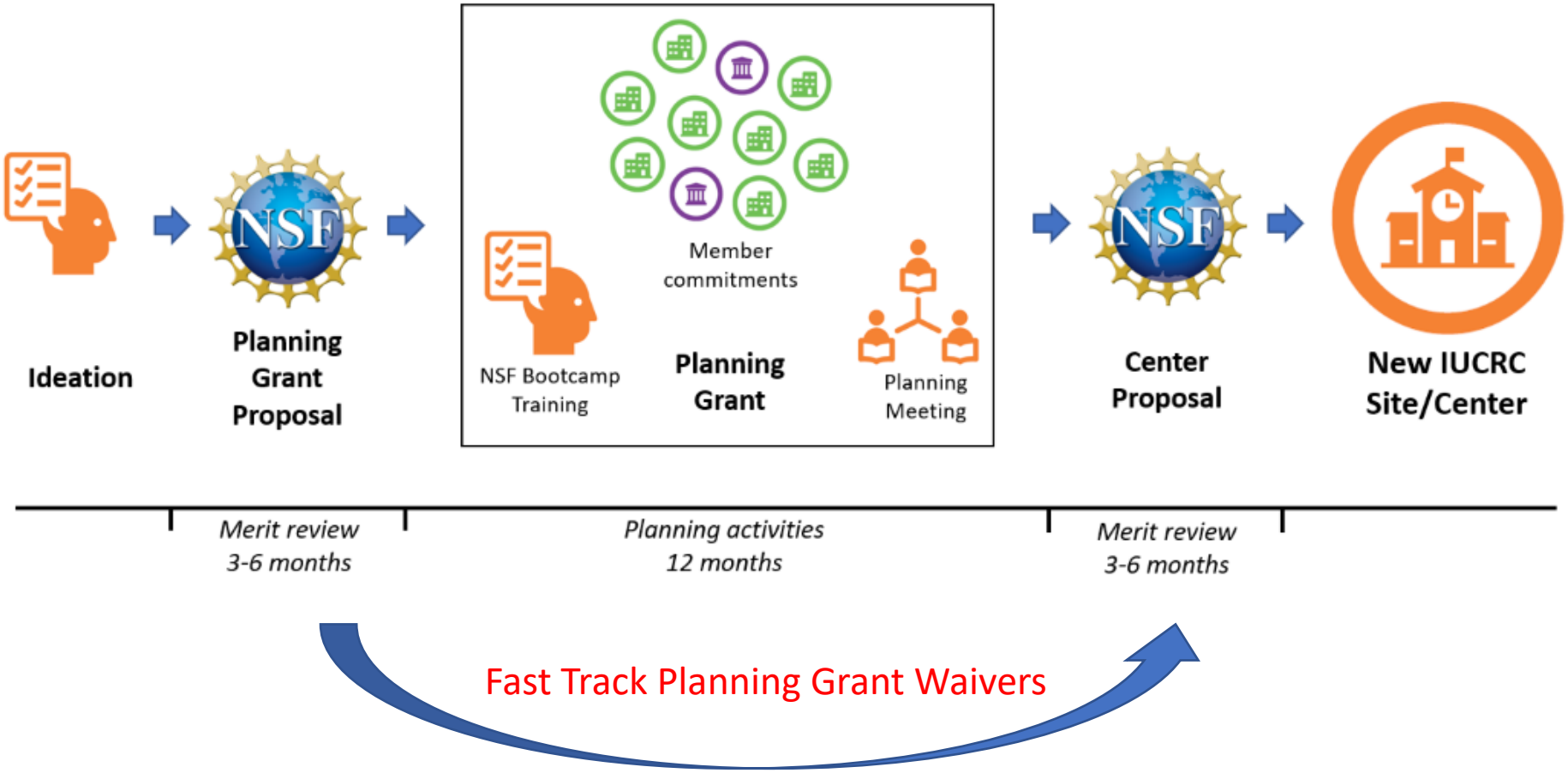
Total Financial support : $1.35M annually

- **Member $50K leverages $1.30M annually**

Member leverage ≥26:1

IUCRC – Establishing a Center

Path and Timeline to IUCRC Creation



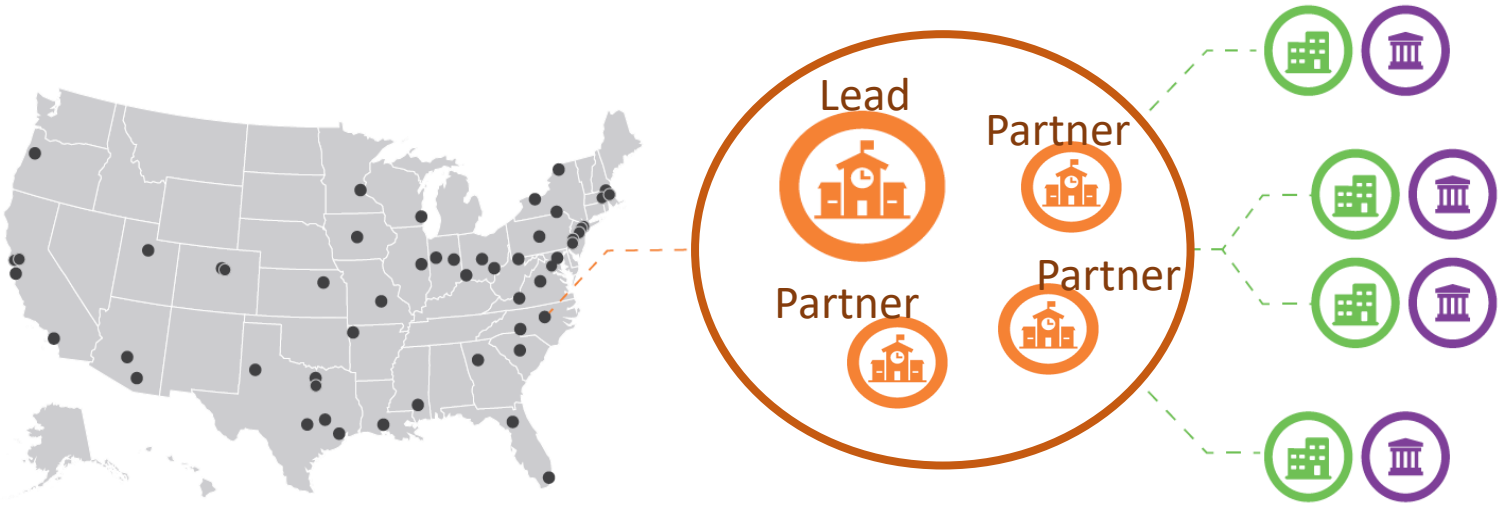
Building and Launching a Successful IUCRC….

- Takes an entrepreneurial and collaborative mindset. Challenges are similar to launching a startup.
- Build a strong leadership team. Pull together a dedicated group of core dedicated faculty researchers.
- Develop strong cross-institutional support. Get your administration engaged early.
- Engage in extensive customer discovery (talk to potential Center members as well as faculty and administration within your university).
- Bring on a key team member with strong and deep industrial experience to guide the academic team.
- Network, Network and then some more…..

NSF 20-570
Solicitation Details

Crystal Leach

IUCRC Structure



Centers

Research collaborations focused on a topical area that are catalyzed by NSF and funded by industrial and government members

Sites

Geographically distinct research labs that are located at universities and participate in the IUCRC

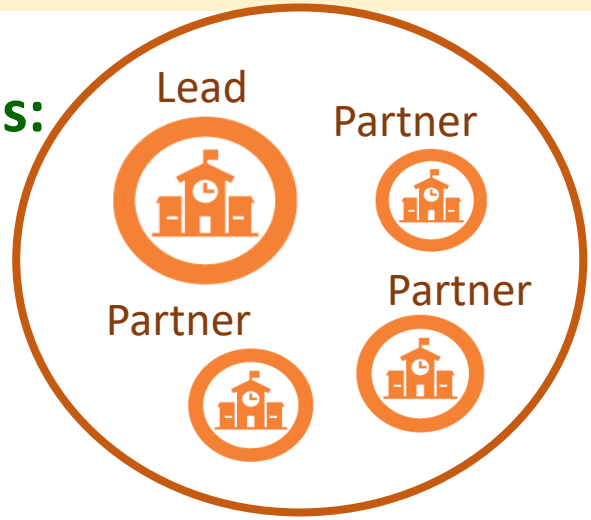
Members

Companies and government agencies provide funding and expertise for needed innovation in their sector or industry

- Centralized operations and financial management by Lead Site
- Memberships associated with the Center not with the Sites

IUCRC 20-570 - Lead and Partner Sites

- **The Centralized model – Lead and Partner Sites:**
  - ✓ ***Lead Site*** is responsible for the Center ***operations and financial management*** with assistance from Partner Sites
  - ✓ ***All Sites*** collaborate in achieving the Center's ***technical mission and vision and broader impacts***



- **The Center has flexibility to self-define their roles, responsibilities, and performance criteria:**
  - ✓ Defined in the MoU and Bylaws documents
  - ✓ Should cover all aspects of the Center functions: technical, operational, or membership contributions (or any combination thereof)
- **Site budgets must allocate NSF funds to the Lead Site for Center operations** (through subawards or unequal budgets among Lead and Partner Sites)
  - Example: Partner Sites can allocate funds to the Lead Site for an Industry Liaison Officer

IUCRC 20-570 – Leadership Team

Center Director:

- The PI of the Center Lead Site proposal
- Oversees Center operations and management, Center research programs

Site Director:

- The PI for a Partner Site
- Manages the Site's research program

Industry Liaison Officer:

- Typically associated with the Lead Site
- Primary responsibilities for:
  - Identifying and recruiting new Members,
  - Building and maintaining existing industry relationships
- This position is highly recommended but is not required

Careful selection of IUCRC leadership team is critical to center success – cohesive, collaborative, entrepreneurial, aligned goals

IUCRC 20-570 – Governance

Three Required Documents

1

IUCRC Membership Agreement:
- All Center Members sign one common agreement
- Template agreement is on IUCRC website – no changes allowed

2

Memorandum of Understanding (MOU):
- MOU is between Sites in the Center / All Sites execute the same MOU
- Identifies Lead Site's administrative role and associated expenses in managing the Center
- Required at time of proposal submission

3

Center Bylaws:
- Bylaws define the operating procedures applied to govern Center operations
- Approved by the IAB and the Academic Leadership Team, and reviewed by NSF

Evaluation: **Each center assigned an independent Evaluator for monitoring and assessment activities**

IUCRC 20-570 – Center Membership

There are two membership levels – full and associate

- ✓ Voting rights are proportional to membership level and fee (full and half)
- ✓ All members sign the same membership agreement
- ✓ All members have the same rights to center intellectual property

Participation by companies without a US business presence (EIN) requires NSF approval

A center may have Affiliates, but their role is limited

- ✓ Affiliates can contribute either in-kind or $
- ✓ Do not count toward membership requirements
- ✓ Have neither voting nor intellectual property rights

Full Member

pays the full membership fee and has one full voting right

Associate Member

pays one-half of the full membership fee and has one-half of a voting right

IUCRC Membership levels and Voting Rights

Industry Advisory Board (IAB)

The IAB serves as an Advisory board for the Center

The IAB plays key roles in

- Guiding the Center's vision and mission
- Shaping the Center Research roadmap
- Bringing broad industry research needs to the Center
- Recommending potential research areas and the ultimate project portfolio for the Center

IUCRC 20-570 – Award Information

Multi-Site IUCRCs - Individual award sizes (Per University/Site):

- Planning Grants (12-month award)
  - $20,000
- Center awards (5-yr awards)
  - $150,000 per year for Phase I
  - $100,000 per year for Phase II
  - $150,000 per year for Phase II+
  - $50,000 per year for Phase III

Single-Site IUCRCs

- Planning and Center award amounts and duration the same as above
- Industry membership requirements higher

Site Addition to Existing Center

- Award amounts same as above, duration adjusted based on timeline of existing Center
- Expanded Center needs to meet NSF membership requirements

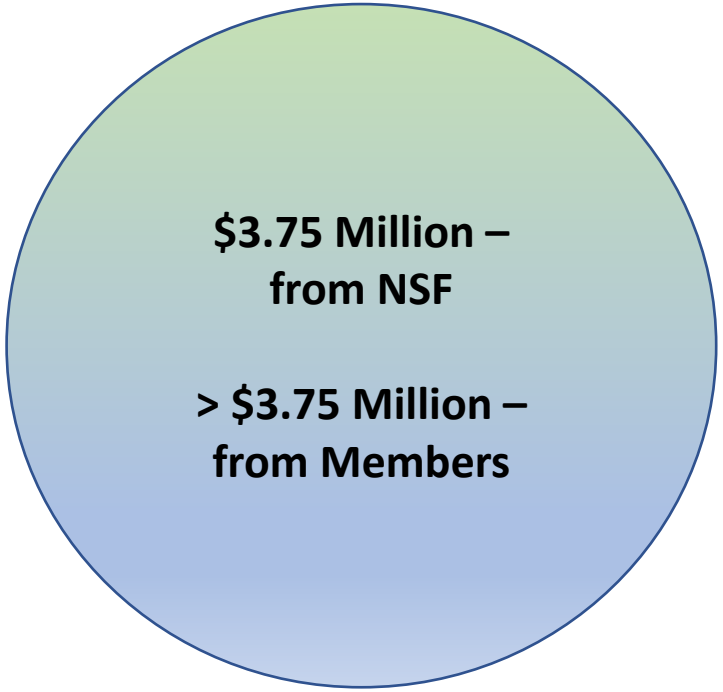
IUCRC 20-570 – Opportunity Size (Phase I)

Typical Examples

3-Site IUCRC Total Funding:

≥ $4.5 Million

5-Site IUCRC Total Funding:



≥ $7.5 Million

Structure of Full Proposals (Planning, Addition, Phase I, II, II+, or III)

Each University Site submits a separate proposal

- The naming convention links them in NSF

Max Project Description is 20 pages - mix of "center/shared" and "site-specific" content

- ✓ 5-10 pages of "Center-focused content" - the **same/shared** for all proposed sites in an IUCRC
- ✓ 10-15 pages of "site-specific" content – **unique** for each proposed site in an IUCRC

Supplementary Documents contain some VERY important information - e.g., LOI and LOC

- ✓ these requirements vary depending on Phase and role (lead vs partner site)
- ✓ carefully review Table 2

You need to "make your case" at BOTH the center-level and site-level

Center Membership Requirements

- ✓ **Center Proposals (Phase I, II, II+, III) require demonstrated membership commitment to joining the Center through Letters of Commitment**
- ✓ **To qualify for NSF support, a Center must meet specific membership requirements (# members and member $ fees) at each Phase:**
  - Multi-site IUCRC requirements depend on number of sites (N) and Phase
  - Single-site IUCRCs have unique requirements
  - These are MINIMUM requirements
- ✓ **Phase 1 Center Example:**
  - Two-site Center (N=2): 6 full members ≥ $300K in Membership funds
  - Single Site Center: 8 full members ≥ $400K in Membership funds
- ✓ **There is required language that must be included in Letters of Commitment**
  - These letters also provide potential members an opportunity to share specifics about their interest in the Proposed Center
- ✓ **CAREFULLY review the solicitation – details in Table 1**

Letters of Interest – Planning Grants

- ✓ **Planning Grant Proposals must include demonstrated industry interest – this is done through Letters of Interest**
- ✓ **Planning Grant proposals require Letters of Interest:**
  - Multi-site Center: 9xN letters, where N=# sites
  - Single-site Center: 24 letters
- ✓ **There is no required language that must be included in Letters of Interest:**
  - These letters provide potential members an opportunity to express their interest in attending the proposed Planning Workshop and share specifics about their interest in the Proposed Center

NSF Merit Review Criteria

Intellectual Merit

- **The potential to advance knowledge**

Broader Impacts

- **The potential to benefit society and contribute to the achievement of specific, desired societal outcomes**

And other Solicitation Criteria specific to Planning, Phase I, Phase II/II+, and Phase III

Program Specific Review Considerations

- Center Uniqueness (why should NSF invest in **this** center?)
- Research innovation, novelty, advancing state-of-the-art, transformative knowledge creation (balanced with industry needs)
- Broader Impacts – societal impact, broadening participation, commercial impact
- Synergistic and collaborative work
  - Why is a "Center" needed?
  - "Whole" greater than "sum of its parts"?
- Appropriate balance of Center and Site-specific content
- Center management and organizational plans
- Degree of industry commitment to and support of the Center
- Accomplishments during prior Phase (for transitions)

Considerations for Centers applying for Phase transition under NSF 20-570

- ***While there were some changes to new solicitation (NSF 20-570), the overall IUCRC philosophy, framework and working model remain essentially the same***
- ***Carefully review the solicitation to determine if adjustments/changes are needed PRIOR to submitting phase transition proposal:***
  - ✓ *Will you need to transition to a centralized model – if so, lay the groundwork for this*
  - ✓ *Will you need to adjust your current membership structure?*
  - ✓ *Work with your academic institutions to develop a new/revised MOU*
  - ✓ *Prepare your current members for the required membership agreement*
  - ✓ *Determine if all current/proposed members have an EIN – if not, prepare to apply for an NSF approved exception*
- ***Demonstrating success in an earlier phase is necessary but not sufficient for renewal***
- ***READ THE SOLICITATION, attend the webinars, reach out to your cognizant PO***
- ***Start working early with 1) your academic institution and 2) your current/prospective members to get all necessary documentation in place***

IUCRC 20-570 – Full Proposal Review Timeline

NSF Application to Award Timeline (~6 Months)

Second Wednesday in June and December annually

Applicants receive detailed feedback.
Reviewer and panel comments to NSF are shared with applicants verbatim.

A cross-NSF Team supports IUCRCs

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IUCRC NSF 20-570

Upcoming Important Dates:

- December 14, 2022 – Full Proposal Due Date
- March 8, 2023 – Preliminary Proposal Due Date
- June 14, 2023 – Full Proposal Due Date

Resources for Applicants:

- Read the solicitation NSF 20-570: https://www.nsf.gov/pubs/2020/nsf20570/nsf20570.htm
- Visit our IUCRC website: https://iucrc.nsf.gov/
- Read the IUCRC FAQs (NSF 20-080) at: https://www.nsf.gov/pubs/2020/nsf20080/nsf20080.jsp
- Contact Program Directors at: iucrc@nsf.gov

Thank you!
Questions?

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https://iucrc.nsf.gov