

# U.S. Treasury Federal Insurance Office and National Science Foundation



Industry-University Cooperative Research Center for  
Terrorism and Catastrophic Cyber Insurance  
Modeling and Underwriting

# Introductions

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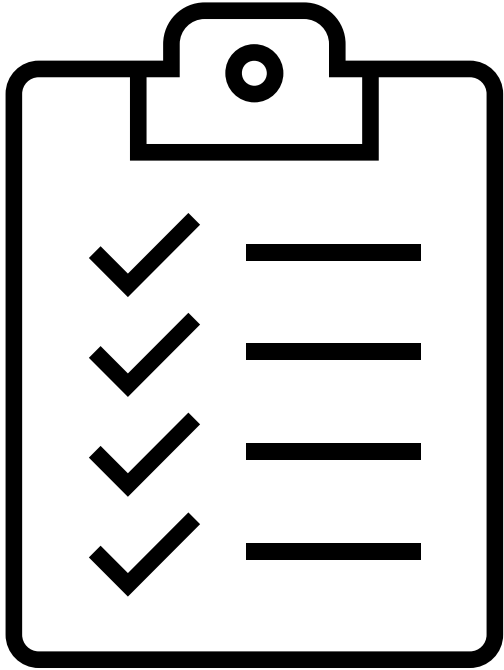


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# Agenda



1. Overview of the FIO-NSF IUCRC
2. Benefits of an IUCRC for Terrorism and Catastrophic Cyber Risk
3. Background on NSF
4. IUCRC Program Information
5. Current Status of the FIO-NSF IUCRC
6. Get Involved
7. Conclusion

# IUCRC for Terrorism and Catastrophic Cyber Modeling and Underwriting



**FIO is partnering with NSF and private sector stakeholders as part of a new Industry-University Cooperative Research Center (IUCRC).**

- This new Center will stimulate research and develop solutions to provide insurers, government, and other stakeholders with additional data and improved modeling and underwriting tools, methodologies, and practices for insuring terrorism and catastrophic cyber risks.
- The Center's objectives include:
  - (1) helping insurers to estimate risk with greater certainty, thereby improving insurance pricing, coverage, and policyholder uptake;
  - (2) contributing to the potential expansion of reinsurance and capital markets to help support these risks; and
  - (3) informing the treatment of terrorism and catastrophic cyber risks in government programs.



# Federal Insurance Office

## Terrorism Risk

FIO assists the Secretary of the Treasury in the administration of the Terrorism Risk Insurance Program (TRIP).

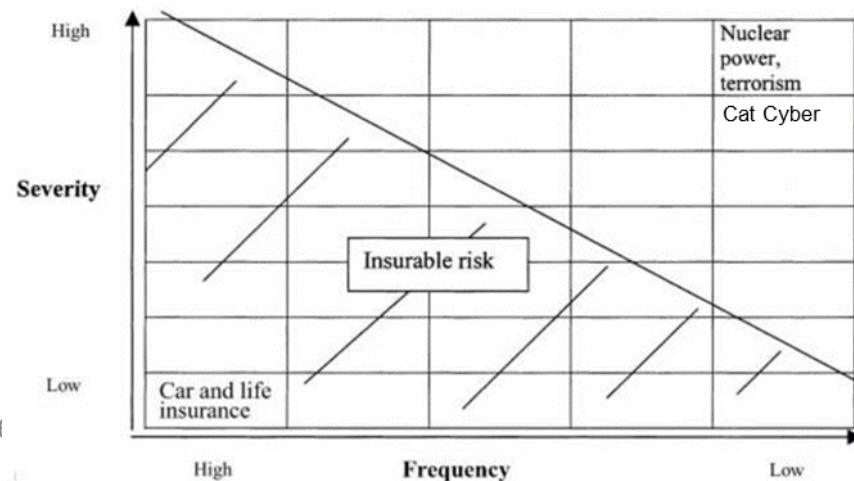
## Catastrophic Cyber Risk

On the recommendation of the Government Accountability Office, FIO and the Cybersecurity and Infrastructure Security Agency (CISA), in partnership with the Office of the National Cyber Director (ONCD), are conducting an assessment into whether a federal insurance response to catastrophic cyber events is warranted.

# Types of Risk

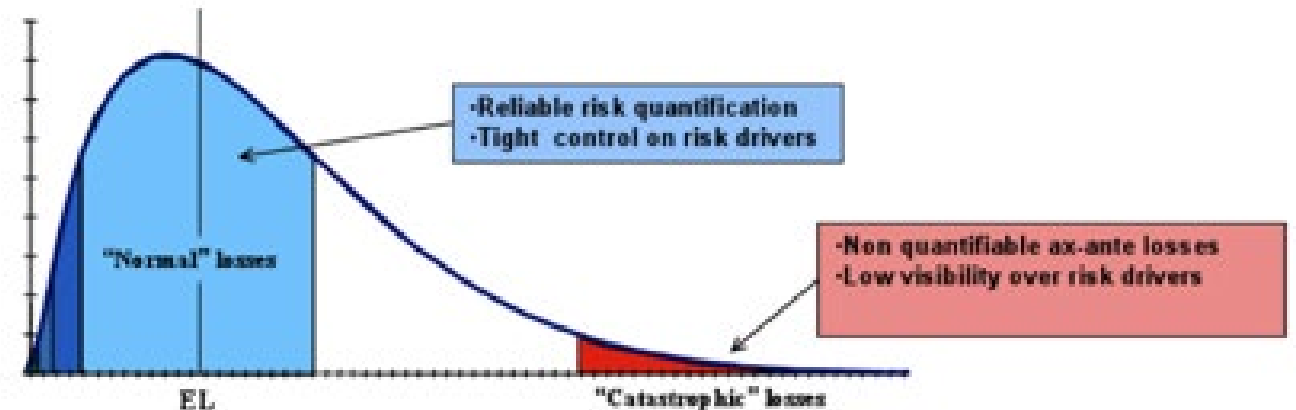
## Specified Risk

- **Characteristics**
  - Frequent occurrences (lots of data)
  - Low impact (normal losses)
  - Predictable (quantifiable)
- **Methods of Assessing Risk**
  - Actuarial science
- **Methods of Managing Risk**
  - Risk-based premiums
  - Policy mechanisms (e.g., limits, exclusions)
  - Cancel or refuse coverage
  - Spreading risk (e.g., reinsurance)
- **Examples – automobile, home, life**



## Catastrophic Tail Risk

- **Characteristics**
  - Infrequent occurrences (lack of data)
  - Potentially high impact (catastrophic)
  - Unpredictable (non-quantifiable)
- **Methods of Assessing Risk**
  - Expert Opinion & Modeling
- **Methods of Managing Risk**
  - Spreading risk (e.g., reinsurance)
  - Market-based premiums
  - Policy mechanisms (e.g., limits, exclusions)
  - Cancel or refuse coverage
  - Alternative capital (e.g., catastrophe bonds)
- **Examples – Cat Cyber, Terrorism, Nuclear**



# NSF – Vision and Mission

**“Advancing the frontiers of research, ensuring accessibility and inclusivity, and securing global leadership”**

- Promote the progress of *science*
- Advance *national health, prosperity and welfare*
- Secure *national defense*
- *STEM* for all
- Spur *technological developments*

- Supported **250+** Nobel Laureates
- **350,000** researchers, postdoctoral fellows, trainees, teachers and students (Annually)
- **~400** Startups/small businesses funded (Annually)



Alexandria, VA

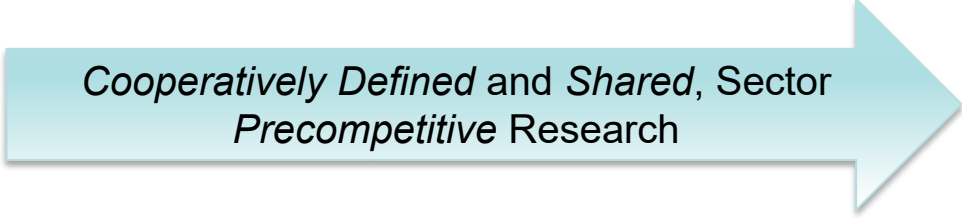
~ \$11 Billion Budget

# IUCRC

## The Industry University Cooperative Research Program : IUCRC

### 50 Years of Building Research and Innovation Capacity

- First Center Proposals Received in 1972
- First “Experimental” Awards Made in 1973



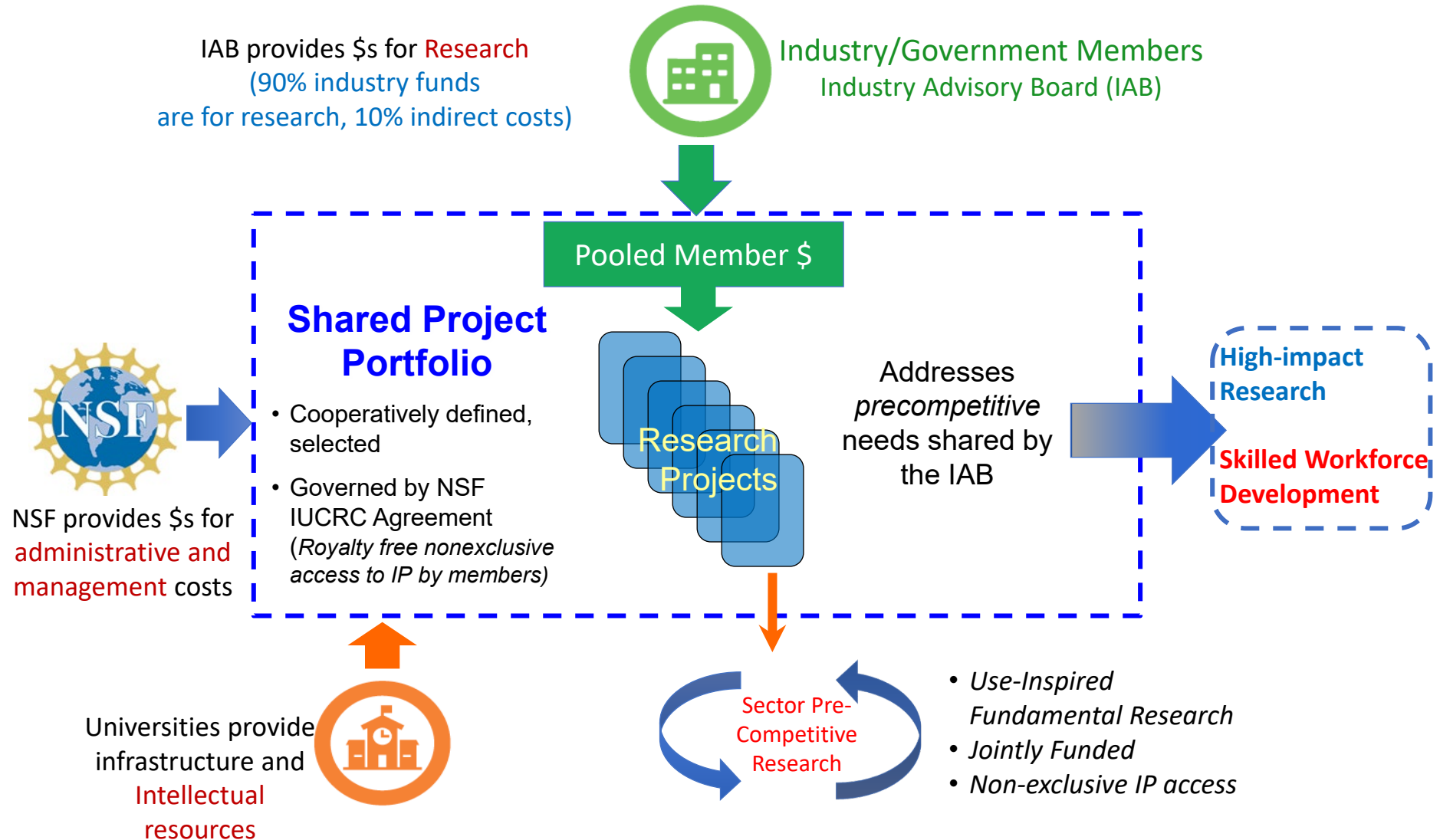
*Cooperatively Defined and Shared, Sector  
Precompetitive Research*

**“Determine effective ways of stimulating non-Federal Investment  
in R&D and of Improving the application of R&D results.”\***

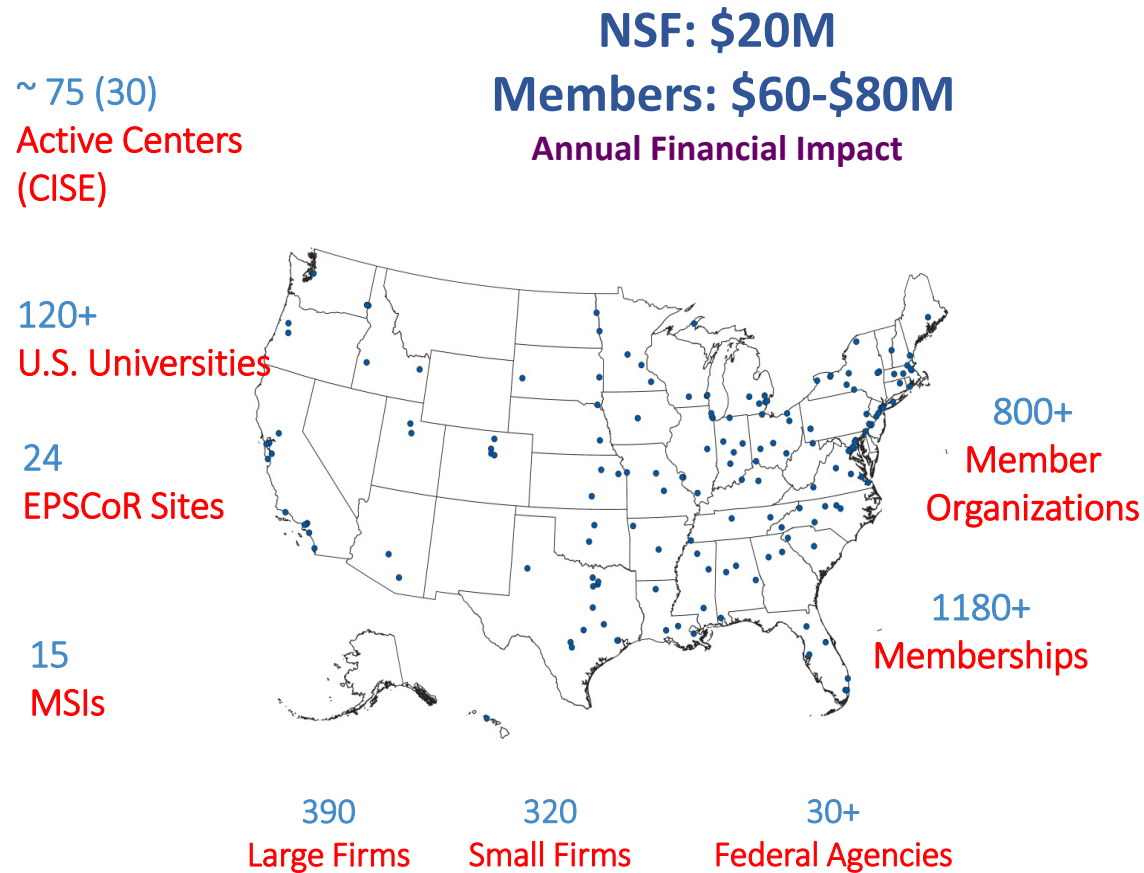
**\*President’s message to the Congress on S&T, March 16, 1972**



# IUCRC – Program Framework



# IUCRC – Facts



**1:22**

median leverage

	Annual average
Publications	1200
Invention Disclosures	75
Patent applications (Granted)	57 (23)
Software copyrights	9
Startups	8
PhD	Graduates (Hired by Members)
MS	
BS	
	214 (60)
	239 (51)
	170 (28)

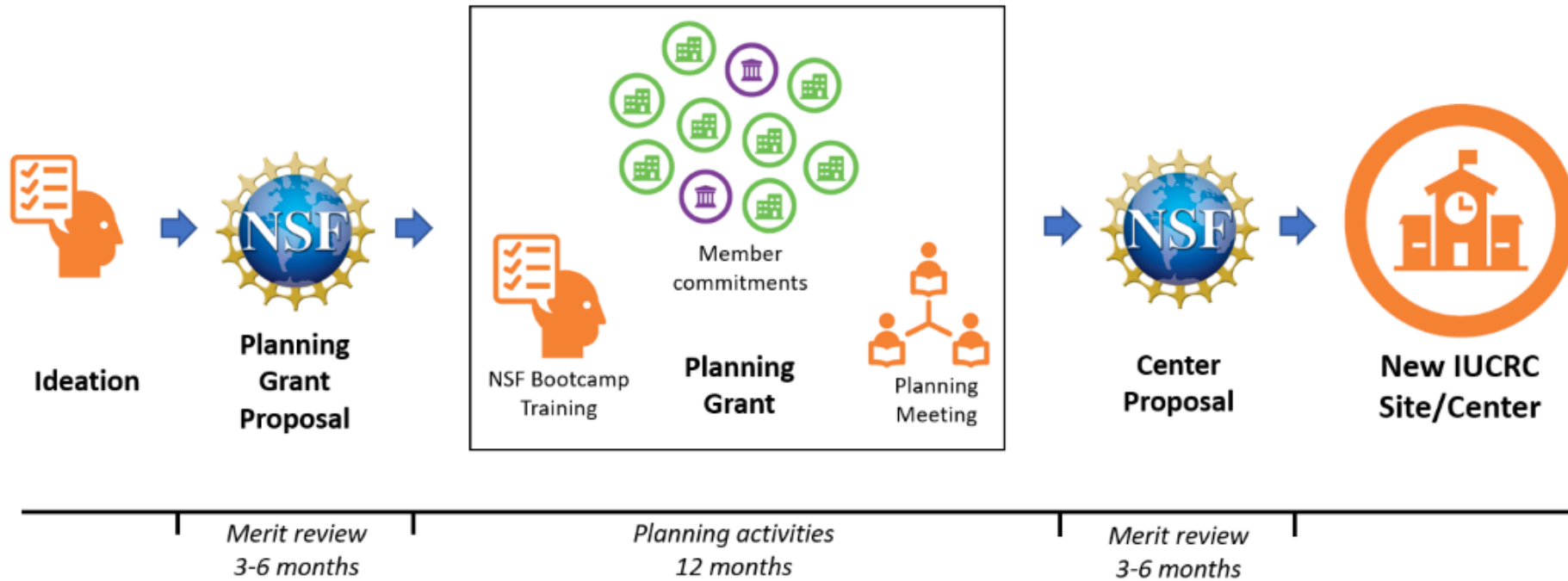
CISE, ENG, SBE, TIP, MPS Directorates

New DCL with Federal Insurance Office

<https://www.nsf.gov/pubs/2024/nsf24082/nsf24082.jsp>

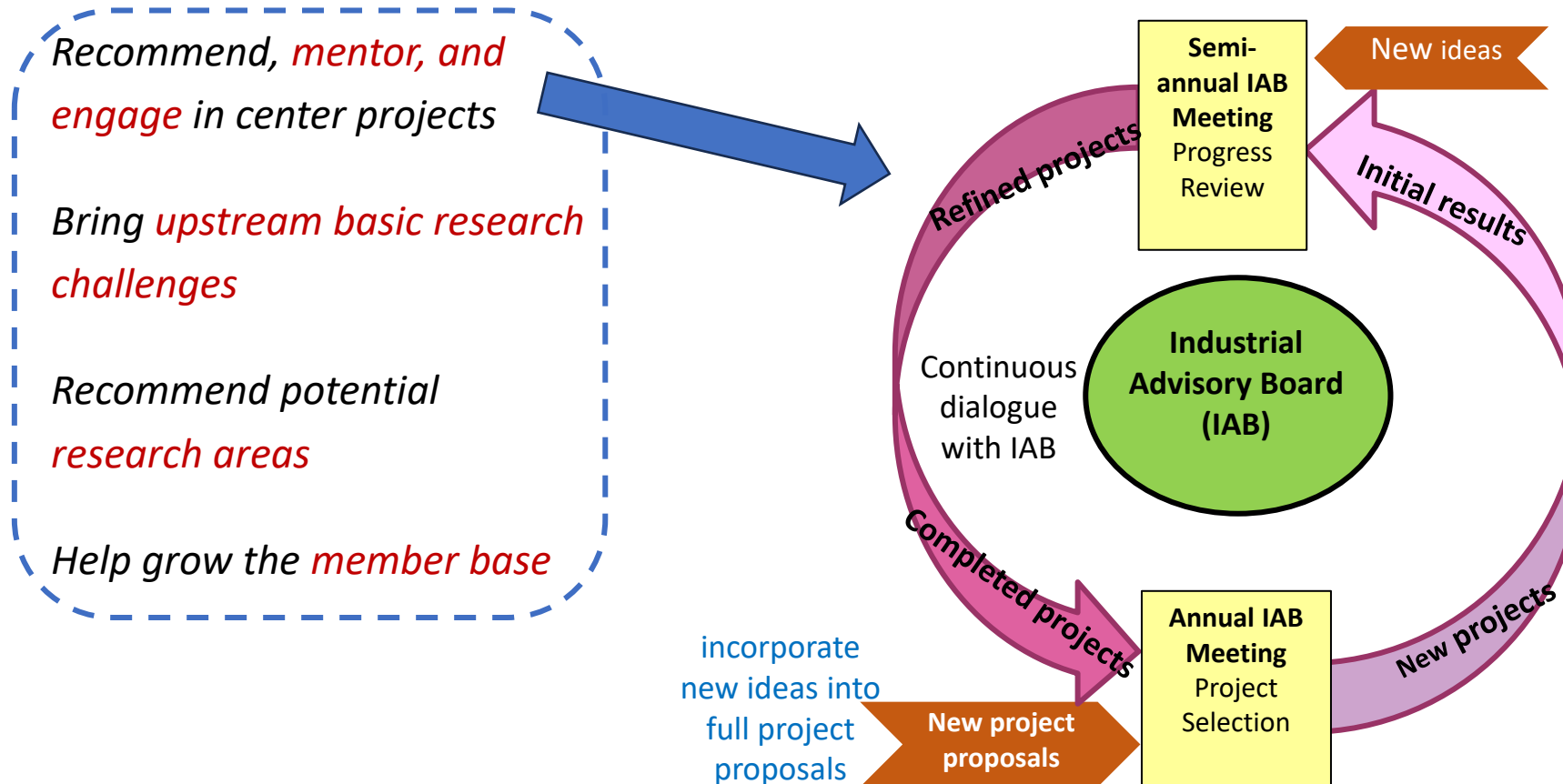
# IUCRC – Establishing a Center

## Path and Timeline to IUCRC Creation



# The Role of the IAB in the Center

*Vital role in center's vision, mission, and research roadmap*



# IUCRC 20-570 – Funding Model

	Planning	Phase I	Phase II	Phase II+
<b>Multi-Site Center (Number of Sites = N)</b>				
Annual NSF Site Funding	\$20,000	\$150,000	\$100,000	\$150,000
Annual Minimum Membership (Full memberships or equivalent)	n/a	3 x N	4 x N	6 x N
Minimum membership fee total <sup>2</sup>	n/a	\$150,000 x N	\$200,000 x N	\$300,000 x N
<b>Single-Site Center</b>				
Annual NSF Site Funding	\$20,000	\$150,000	\$100,000	\$150,000
Annual Minimum Membership (Full memberships or equivalent)	n/a	8	8	12
Minimum membership fee total <sup>2</sup>	n/a	\$400,000	\$400,000	\$600,000
<sup>1</sup> Phase III funding is an available option only for active Phase II Sites funded under prior solicitations.				
<sup>2</sup> Does not include in-kind contributions				

**\*FIO and NSF will split the annual site funding for the IUCRC for terrorism and catastrophic cyber risks insurance modeling and underwriting.**

# IUCRC – Membership Agreement

- **Framework defining major parameters of the Partnership**
- **Parties to Agreement: Center (Universities) and Industry Members**
- Annual membership fee structure
- Industrial Advisory Board – one representative from each company per membership
- Procedures for project funding recommendations
- IP rights: royalty-free, non-exclusive rights to center members
- Publication delay policy – typical 30-90 days



Widely  
accepted by  
1,000's of firms  
across the  
entire IUCRC  
Program

All Members sign the same NSF membership agreement

<https://iucrc.nsf.gov/industry/joining-a-center/membership-agreement/>

Federal organizations may set up an IAA

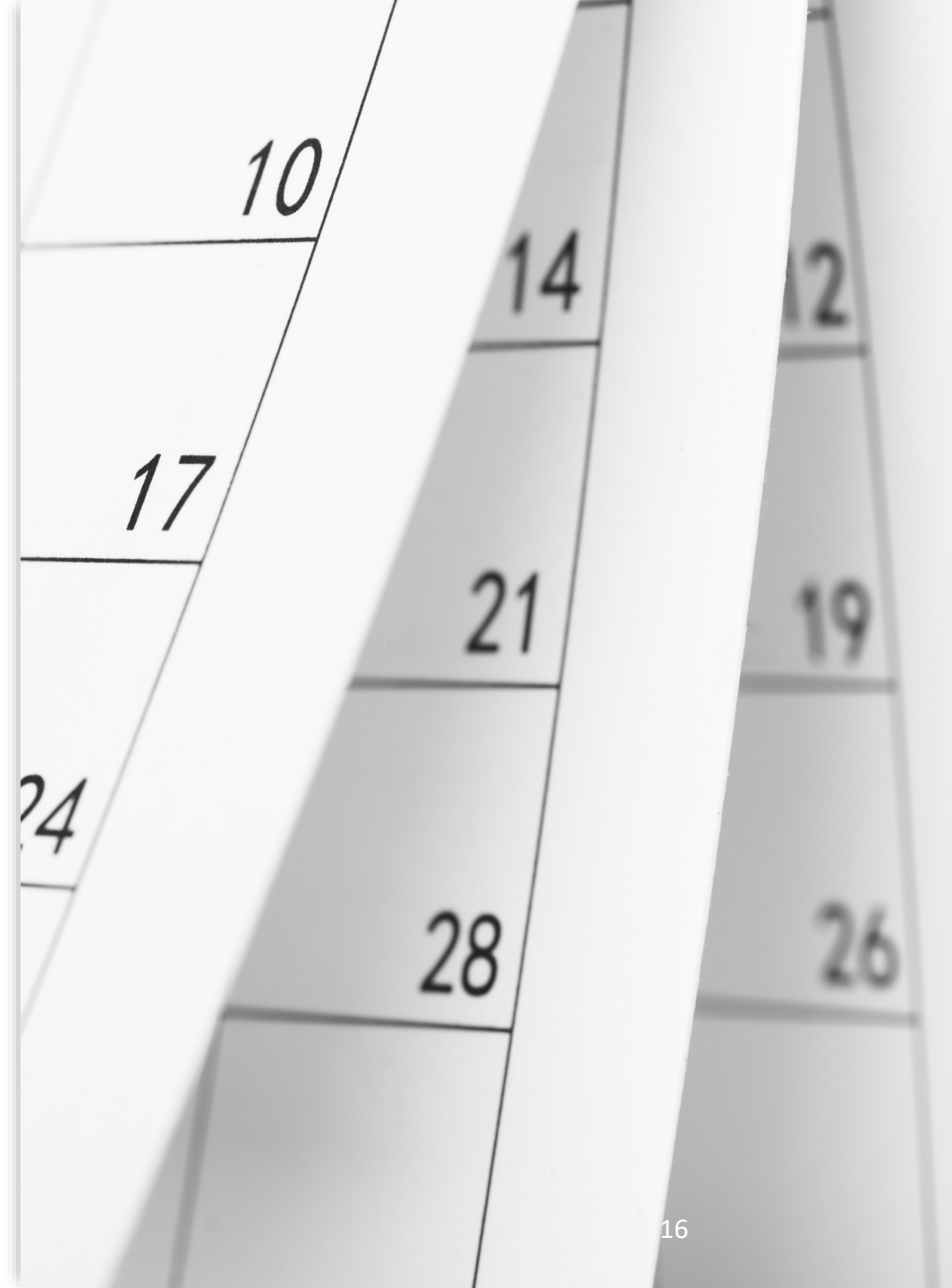
<https://iucrc.nsf.gov/government/#membership-steps>

# Current Status of the IUCRC for Terrorism and Cyber Risks

- In April 2024, FIO and NSF released a letter explaining the new IUCRC and inviting the academic community to review the opportunity to submit proposals to provide research, analysis, and thought leadership on these issues.
- FIO and the NSF's request for research proposals can be viewed here: [https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf24082](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf24082).
- NSF, with support from FIO, will market the project to encourage multiple, high-quality proposals.
  - April 23, 2024: IUCRC announced at the International Forum of Terrorism Risk (Re)Insurance Pools (IFTRIP) Annual Conference
  - April 25, 2024: [NSF Press Release](#)
  - April 26, 2023: [Treasury Press Release](#)
  - May 16, 2024: IUCRC discussed at Treasury's Catastrophic Cyber Risk Conference
  - May 22, 2024: FIO presentation to NSF
  - June 4, 2024: NSF-FIO presentation to Federal Advisory Committee on Insurance
  - June 6, 2024: NSF Information Webinar

# Timeline

1. **April 2024:** “Dear Colleague Letter” is released to request submissions.
2. **April – September 2024:** FIO and NSF market the new IUCRC to make academic teams and the industry aware of the submissions request.
3. **September 2024:** Preliminary proposals received.
4. **December 2024:** Planning or full IUCRC proposals received, depending on whether an academic team requires additional time to find companies and other interested parties committed to joining the IUCRC. (This is the first date proposals can be submitted in response to the DCL call.)
5. **June 2025:** Full proposals received. NSF conducts merit review.
6. **FY2026:** NSF and FIO will fund the winning proposal(s) during the first or second quarter of 2026.





# Get Involved

- Read the “Dear Colleague Letter”  
[https://www.nsf.gov/publications/pub\\_summ.jsp?ods\\_key=nsf24082](https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf24082)
- Share the registration link for the Thursday, June 6, 2024 Information Webinar: DCL - Addressing Insurance Risk Modeling for Terrorism and Cyber Risks Research
  - 12 pm ET
  - Registration link:  
[https://nsf.zoomgov.com/meeting/register/vJltde2upjlsEjWJ7VZ87Y\\_cmJUnr2uaBP8](https://nsf.zoomgov.com/meeting/register/vJltde2upjlsEjWJ7VZ87Y_cmJUnr2uaBP8)
- Contact Chanda Brady (FIO), Mohan Kumar (NSF), or Jeff Stanton (NSF) with information or questions
  - [chanda.brady@treasury.gov](mailto:chanda.brady@treasury.gov)
  - [mokumar@nsf.gov](mailto:mokumar@nsf.gov)
  - [jstanton@nsf.gov](mailto:jstanton@nsf.gov)



# Conclusion

In combining the investments, expertise, and creativity of academics, industry, and government, we hope to discover innovative approaches that will accelerate improvements to terrorism and catastrophic cyber risk modeling and underwriting and strengthen the resilience of the U.S. economy to the benefit of the American people.