



U.S. NATIONAL SCIENCE FOUNDATION
2415 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22314

NSF 24-082

Dear Colleague Letter: IUCRC Proposals for Research and Thought Leadership on Insurance Risk Modeling and Underwriting Related to Terrorism and Catastrophic Cyber Risks: A Joint NSF and U.S. Department of the Treasury Federal Insurance Office Call

April 24, 2024

Dear Colleagues:

This Dear Colleague Letter (DCL) invites submission of proposals to the U.S. National Science Foundation's (NSF) Industry-University Cooperative Research Center (IUCRC) program to provide use-inspired research analysis and thought leadership on issues affecting the insurance sector's modeling and underwriting of terrorism and catastrophic cyber risks. The goal of this DCL is to stimulate research in areas that support the effective provision of insurance against terrorism and catastrophic cyber risks. Such research will, in turn, develop best practices and tools; assess policy reforms or solutions that could provide insurers, governments, and other stakeholders with new data; and develop improved modeling and underwriting tools, methodologies, and practices. The DCL is jointly sponsored by the U.S. Department of Treasury Federal Insurance Office (FIO) and the NSF's Directorates for Technology, Innovation and Partnerships (TIP), Computer and Information Science and Engineering (CISE), and Social, Behavioral and Economic Sciences (SBE).

In this partnership, NSF and FIO support their respective missions. NSF has a mission to promote the progress of science; advance the national health, prosperity, and welfare; and secure the national defense. FIO has the authority to monitor all aspects of the insurance sector and administers the Terrorism Risk Insurance Program which provides a system of shared public and private compensation for insured losses resulting from acts of terrorism and ensures continued widespread availability and affordability of terrorism risk insurance. Further, as directed by the [2023 National Cybersecurity Strategy Implementation Plan](#) and at the recommendation of the Government Accountability Office, FIO assesses the need for and

possible structures of a federal insurance response to catastrophic cyber incidents. In support of these missions, this NSF/FIO partnership fosters collaboration between industry, academic teams, and the United States government to better predict and insure against the impacts of terrorism and catastrophic cyber risks. Achieving success will depend on cutting-edge scientific research, innovations in financial resilience, and the development of related tools, analytics, and other technologies.

RATIONALE

Both terrorism events and catastrophic cyber incidents (whether terrorism related or not) present serious risks that share many common modeling and underwriting challenges. Challenges include the paucity of data for such events due to their historically low frequency of occurrence. The lack of historic event data limits the ability of insurers to predict future risk based upon past loss experience. In addition, both terrorism and catastrophic cyber risk present the potential for high losses because such events are commonly intentional and designed to maximize damage, resulting in significant potential insurer liability with impacts that can spread far beyond the initial target including cascading losses across broad geographic areas and business sectors.

These challenges hinder insurers' capabilities to adequately estimate financial exposure to terrorism and catastrophic cyber risk. The lack of accurate estimates, in turn, impedes insurers from fully underwriting these risks on a commercial basis (i.e., without a government backstop or other support).

NSF and FIO have an interest in supporting an IUCRC project that will focus on developing and refining terrorism and catastrophic cyber insurance modeling and underwriting with a view to strengthening the resilience of the United States' financial system. The objectives of the new IUCRC 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.

PROJECT INFORMATION

IUCRC proposals in response to this DCL should be designed to bring together the insurance sector, academic teams, government, and other stakeholders to innovate and advance current terrorism and catastrophic cyber risk modeling and underwriting in support of the goals stated above. Teams responding to this call should conduct research on practice and policy reforms and/or solutions that provide insurers and other insurance industry stakeholders with improved or additional tools, data, and methodologies to increase their assumption of terrorism and cyber risk. Proposals should include plans to bolster the insurance sector's understanding of terrorism and catastrophic cyber risks by evaluating

current modeling and underwriting practices and identifying data and issues that affect terrorism and catastrophic cyber risk perception and risk exposure within the United States.

IUCRC PROGRAM OVERVIEW

IUCRCs are powerful vehicles, developed by NSF, through which university faculty and students work with an industry consortium to carry out cutting-edge, use-inspired research focused on the collective needs of a sector of the U.S. economy. Information on IUCRCs, how they work, and other relevant information about them can be found on the IUCRC website: <https://iucrc.nsf.gov/about/> and the IUCRC program solicitation: <https://iucrc.nsf.gov/universities/solicitation/>.

To initiate an IUCRC, interested faculty teams at one or more universities should interview members of a targeted sector to: (1) identify the most important and high priority challenges facing the sector; (2) converge on a theme of high sector and university faculty interest; and (3) identify companies and other entities willing to participate in a center on the proposed topic.

The first formal step to forming an IUCRC is submitting an IUCRC Planning Grant proposal that demonstrates the interest of the private sector and other stakeholders in the proposed center. Planning Grant proposals or waivers of the planning grant process require submission of a preliminary proposal. If awarded, the proposal team receives funding to carry out industry sector discovery to refine their center research agenda and identifies potential center members willing to pay membership fees and join an industry advisory board for the center.

Investigators responding to this DCL with a Planning Grant proposal should use the following title format: "IUCRC: NSF/FIO: (title)."

A successful planning phase is followed by submission of a proposal for a Phase I IUCRC that has the potential to run for five years. After successful completion of Phase I, the center can compete for another 5 years (Phase II). During this time, center leadership and faculty continue to recruit dues paying members for their advisory board with the goal that, by the end of Phase II, the center is self-supporting without further federal investment.

SUBMISSION AND AWARD INFORMATION

Planning Grant proposals or waivers of the planning grant process require submission of a preliminary proposal. Target dates for Planning Grant preliminary proposals are the second Wednesdays in September and March. Full proposal target dates are the second Wednesdays of December and June. See the [NSF IUCRC solicitation](#) for more details.

The review of submitted proposals to this DCL and any subsequent awards will be managed by NSF. NSF may share the identities of the Principal Investigator(s) (PI and Co-PI(s)) and

the universities and industrial partners as well as the Project Summary of the proposed project and the unattributed reviews with FIO in order for the agencies to discuss and coordinate award funding. No other proposal documentation will be shared. As a funding partner of the IUCRC, FIO may also request access to data, software artifacts, and information provided by the PI if their proposal is awarded. Providing such access is at the sole discretion of the PI and is not a condition of an award.

FIO will be invited to post award meetings and discussions with recipients, as appropriate. FIO understands and acknowledges that the information about PIs, their proposal, and reviewers of such proposals is protected by the Privacy Act of 1974, and **is to be treated as confidential**.

POINTS OF CONTACT

Jeffrey Stanton - NSF/Directorate for Technology, Innovation and Partnerships (TIP),
(jstanton@nsf.gov)

Mohan Kumar - NSF/Directorate for Computer and Information Science and Engineering
(mokumar@nsf.gov)

Andy DeSoto - NSF/Directorate for Social, Behavioral, and Economic Sciences
(kadesoto@nsf.gov)

Sincerely,

Dr. Erwin Gianchandani
Assistant Director for Technology, Innovation and Partnerships (TIP)
NSF

Dr. Dilma Da Silva
Acting Assistant Director for Computer Information Science and Engineering (CISE)
NSF

Dr. Kaye Husbands Fealing
Assistant Director for Social, Behavioral and Economic Sciences (SBE)
NSF

Steven Seitz
Director
FIO