LEWIS–BURKE ASSOCIATES LLC

Funding Opportunity: NSF Releases Solicitation for Resilient and Intelligent NextG Systems (RINGS)

Lewis-Burke Associates LLC – April 28, 2021

The National Science Foundation (NSF) announced a new program in partnership with other federal agencies and industry partners titled, the ***Resilient and Intelligent Next-Generation Systems (RINGS*)** program. The RINGS program seeks to accelerate research in areas that will have significant impact on Next Generation (NextG) wireless and mobile communication, networking, sensing, and computing systems, along with global-scale services, with a focus on greatly improving the resiliency of such networked systems among other performance metrics. In this program, the NSF Directorates for Computer and Information Science and Engineering (CISE) and Engineering (ENG) are partnering with the Office of the Under Secretary of Defense for Research and Engineering (OUSD R&D) in the Department of Defense (DOD), the National Institute of Standards and Technology (NIST), as well as industry partners including Apple, Ericsson, Google, IBM, Intel, Microsoft, Nokia, Qualcomm Technologies, and VMware.

The **goal of the RINGS program** is to "approach the design of NextG network systems from a different perspective by considering resilience as the primary consideration while aiming for superior performance." NSF highlights that future networks and systems "will provide key support to societal priorities such as education, transportation, public health and safety, defense and associated critical infrastructure." The RINGS program complements the current NSF research portfolio that supports basic research of individual emerging topics, including artificial intelligence (AI)/ machine learning (ML), edge computing, radio communications, innovative transmit/receive technologies, and effective spectrum utilization.

Proposals submitted to this program must address one or more "**research vectors** (RV)" from each of the two groups listed below. Each proposal should clearly identify the RVs chosen and proposals are strongly encouraged to include cross-layer collaboration to meet the stated goals. The program consists of two groups which include, Resilient Network Systems (Group A) and Enabling Technologies (Group B) and proposals must clearly describe the synergy between RVs chosen in Group A and Group B. The RINGS program will support collaborative proposal teams.

Group A: Resilient Network Systems

- A1: Full Stack Security
- A2: Network Intelligence/Adaptability
- A3: Autonomy
- A4: Exploratory Resiliency Components

Group B: Enabling Technologies

- B1: Radio Frequency (RF) and Mixed Signal Circuits, Antennas and Components
- B2: Novel spectrum management technologies
- B3: Scalable device-to-edge-to-cloud continuum
- B4: Merging digital/physical/virtual worlds

The RINGS program is NSF's largest **public-private partnership solicitation**. The companies listed in the solicitation will provide annual contributions to NSF to support proposals awarded through this program and will not be involved in the review process. All questions regarding industry involvement should be directed to NSF staff and not the company. Proposals may include **cloud computing resources**, which can be obtained through an external cloud access entity (CloudBank) supported by NSF's Enabling Access to Cloud Computing Resources for CISE Research and Education (Cloud Access) program. Proposals may also use publicly available wireless- and cloud-related resources, such as wireless testbeds, to evaluate or demonstrate their research.

In addition to the standard NSF merit review criteria: Intellectual Merit and Broader Impacts, this solicitation will include the following additional review criteria:

1. "What is the potential for the project to advance impactful research in resilient NextG networks?
2. How effectively does the proposed research ensure synergy between the Resiliency RVs (Group A) and Enabling Technology RVs (Group B)
3. Does the proposed research contain the required collaborative teaming to address resiliency challenges across the chosen enabling technologies?"

Due Dates: Full proposals are due by **July 29, 2021**.

Webinar: NSF will hold a webinar on this solicitation in May – date is yet to be announced.

Award Information: The anticipated total funding amount is $37.5 million to $40 million. NSF anticipates making 36-48 awards, each up to $1 million total and up to three years in duration.

Eligibility: Institutions of higher education are eligible to submit proposals under this solicitation. While there is no institutional limit, individuals may only serve as PI, co-PI, and/or senior personnel on no more than two proposals.

Sources and Additional Information:

- The NSF announcement of the new program is available at https://www.nsf.gov/news/special_reports/announcements/042721.jsp.
- The full solicitation is available at https://www.nsf.gov/pubs/2021/nsf21581/nsf21581.htm?WT.mc_id=USNSF_25&WT.mc_ev=click#elig
- Additional information on Advanced Wireless Research at NSF is available at https://www.nsf.gov/cise/advancedwireless/.