NATIONAL SCIENCE FOUNDATION
2415 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22314

NSF 23-050

Dear Colleague Letter: Announcing Creation of Manufacturing Systems Integration (MSI) Program

February 1, 2023

Dear Colleagues:

The National Science Foundation announces the creation of the Manufacturing Systems Integration (MSI) program as a program managed by the Division of Civil, Mechanical and Manufacturing Innovation (CMMI).

The MSI program supports research that focuses on fundamental research addressing the opportunities and challenges digital technologies present for the next industrial revolution, with particular emphasis on the digital integration of design and manufacturing within the larger life cycle ecosystem. Manufacturing Systems Integration proposals should address underlying principles and advances that are generalizable for globally competitive and world leading industries. Connectivity, automation, and secure collaboration are examples of areas that are integral to digital environments capable of supporting the innovation, realization and sustainment of manufactured products and systems in the value creation process.

Fundamental generalizable research for manufacturing systems integration might include, for example:

- Digital representation, protocols, and/or processes for integration and collaboration in manufacturing systems (machines and/or humans)
- Intelligent self-organizing production systems
- Ease of use, interoperability and seamless integration of technologies, machines, and humans
- Service-oriented architectures and systems
- Data sets that are compatible and usable across platforms
- Reliable and secure communications within and across the manufacturing value chain
- Integration of distributed manufacturing systems across time and space, including incorporating both legacy and leading-edge equipment and technologies
- Methods for assessing the impact and value of externalities throughout the life cycle

within the digital environment

Proposed research projects may be based on close collaboration between experiment and theory, and/or to novel, unconventional, and high-risk/high-reward ideas or strategies to address key scientific challenges in manufacturing systems integration. Interdisciplinary, convergent proposals that bring diverse perspectives, populations, disciplines, and capabilities together are welcome.

The MSI program will accept unsolicited proposals at any time. Full program details are available on the MSI program page. The MSI program also will accept CAREER proposals, subject to the CAREER solicitation deadlines and other requirements (www.nsf.gov/career), starting in July 2023. It is strongly encouraged and expected that investigators discuss their ideas with a MSI program director well in advance of proposal submission.

An informational webinar will be held on **February 7, 2023** at 10 a.m. Eastern Time. Register for the webinar at this website. After registering, you will receive a confirmation email containing information about joining the webinar.

Sincerely,

Susan Margulies
Assistant Director
Directorate for Engineering