U.S. National Science Foundation
Directorate for Technology, Innovation and Partnerships

Pure Platform User Guide

Share your feedback with TIP via email: tip@nsf.gov.

Why Pure?

The U.S. National Science Foundation's (NSF) Directorate for Technology, Innovation and Partnerships (TIP) is piloting the use of Elsevier's Pure platform to showcase the scale and impact of TIP's portfolio across key technologies and national, societal and geostrategic challenges. This platform shows the institutions, small businesses and principal investigators with TIP awards. The primary objective is to illustrate the impact of NSF's investments across all 10 key technology areas as outlined in the "CHIPS and Science Act of 2022." Through this pilot, NSF invites users to access a comprehensive one-stop hub, showcasing the outcomes and impacts generated by NSF's investments over time and evolving into a dynamic platform that fosters partnerships and helps create technologies, solutions, products and services rooted in the latest scientific and technological breakthroughs. Over time, TIP will add more features and data to the platform.
Data Source & Data Update Cadence

This platform only shows awards managed by TIP programs since enactment of the "CHIPS and Science Act of 2022" in August 2022. This does not include other NSF awards or supplemental funding from TIP to other NSF directorates or programs.

What is included:

- Data on awards are from NSF's public award search and are updated daily, with a two-day delay from the award publication date.
- Researcher profile information is provided by Elsevier and new profiles are updated weekly.

Map

- Please note that awards may be tagged with multiple key technology areas and the number displayed includes duplicates.
- The investment/funding amount is "Total Intended Award Amount."
- The dollar amount should not be used to calculate the budget. Some awards are continuing grants and it may appear as though NSF is investing more or less in a given year. Please contact tip@nsf.gov for more information about the budget.
- Switching between viewing the map by Key Technology Area to TIP Program, or vice versa, requires that any filters that were applied before changing the view must be re-applied.
- Each point on the map represents one organization receiving an award.
- Clusters with numbers represent the number of awards/grants at an organization.

Search Help

The Pure platform for TIP allows users to search for awards by several filters, including date, state, Congressional district, TIP program, and "CHIPS and Science Act of 2022" key technology area. Additionally, users can also view awards by state and lead principal investigator (PI).

Awards vs. Awards by Organization

The count for "Awards" includes all TIP awards currently included in Pure. The count for "TIP Awards by Organization" also includes all TIP awards (or persons/organizations) and should match the count displayed for "Awards." This filter counts all awards for all awardee organizations, not the organizations themselves.

The count for "Awards by Organizations" is the sum of all state, territory, and congressional district entities plus awardee organizations. The list of "TIP Awards by State" includes all awardee institutions by Congressional districts assigned to a state.

Quick Glossary

Fiscal Year (FY)

The Federal government's fiscal year runs from Oct. 1 to Sept. 30. For example, FY 2023 is Oct. 1, 2022, to Sept. 30, 2023.

CHIPS Year

The years before and after the "CHIPS and Science Act of 2022."

- **Year 1** – Aug. 9, 2022, through Aug. 8, 2023.
- **Year 2** – Aug. 9, 2023, through Aug. 8, 2024, etc.

EPSCoR

The NSF Established Program to Stimulate Competitive Research (EPSCoR) program pursues a mission to enhance the research competitiveness of targeted jurisdictions (state, territory or commonwealth) by strengthening science, technology, engineering and mathematics (STEM) capacity and capability through a diverse portfolio of investments from talent development to local infrastructure. For more information about EPSCoR,

visit https://new.nsf.gov/funding/initiatives/epscor.

Status

Indicates whether the organization has received NSF funding.

- **Active** – the organization is receiving NSF funds or is operating under a "no-cost extension" to complete the project.
- **Finished** – the organization is no longer receiving NSF funding and the award has been officially closed out or "closed" in NSF systems.
- **Not started** – the award has been made, but the organization cannot collect NSF funding until a set start date is shown for each award.

Key Technology Areas

The "CHIPS and Science Act of 2022" identifies 10 key technology areas (KTAs) crucial for the nation's economic and national security. TIP utilizes state-of-the-art machine learning to label awards with the corresponding KTAs, ensuring a clear association between TIP awards and respective key technology areas. TIP has further broken down the KTAs into "Technology Foci" areas to better sort and filter awards. To see the full list, visit Appendix A.

Fingerprint

A distinguishing feature of the Pure platform is the Elsevier Fingerprint Engine, which mines the text of public scientific documents, such as publication abstracts, funding announcements, patents, and awards, to create an index of weighted terms that defines the text fingerprint visualization.

Indexing

By compiling and comparing Fingerprint indexes, the engine enables institutions to look beyond metadata and find valuable connections among people, publications, funding opportunities and ideas. The engine powers many Elsevier solutions, including Pure and Expert Lookup, an Elsevier tool for finding reviewers, to inform decision-making.

Thesauri

Using a wide collection of thesauri, the engine can support applications pertaining to multiple subject areas. This allows Elsevier to develop solutions for researchers in the life sciences, engineering, Earth and environmental sciences, arts and humanities, social sciences, mathematics, agriculture and more.

How it Works

The Elsevier Fingerprint Engine creates indexes in the following steps:

- The Engine applies a variety of natural language processing techniques to mine the text of scientific documents, including publication abstracts, funding announcements, awards, project summaries, patents, proposals, applications and other sources.
- The Engine identifies key concepts that define the text using thesauri spanning major disciplines.
- The Engine creates an index of weighted terms that defines the text, known as a Fingerprint index.

Limitations

The Pure platform is not custom-built and is created and maintained by Elsevier for other clients. Many of Elsevier's features used in this platform have some limitations and cannot be modified. The list below briefly outlines some of the limitations and constraints:

Search and Display

- This platform has only R&D awards and contracts active starting in Fiscal Year 2023 and onward. Therefore, users may not see all Convergence Accelerator track awards since they predated this timeframe.

- Categories and filters cannot be adjusted or hidden in the left-hand filter pane. (Note that TIP has added custom filters to help present data.)
- The affiliated organization displayed in a PI's Pure platform profile is based on the lead institution associated with the award and may differ from the affiliated organization shown in a PI's Scopus profile.

Export

- The "export search" results feature is limited to 50 items and the fields included in the search results export are rank, award name and the URL to the corresponding award (in Pure platform). Fields included in the export cannot be modified or expanded.

Error Messages

- The results for some PIs return a "Scopus error message."

Appendix A. Key Technology Areas (KTAs) Technology Foci.

KTA1 - Artificial intelligence, machine learning, autonomy, and related advances

- **KTA1.1** Artificial Intelligence (excluding ML)
- **KTA1.2** Machine Learning (ML)
- **KTA1.3** Machine Learning Training Data
- **KTA1.4** Autonomy

KTA2 - High-performance computing; semiconductors, and advanced computer hardware and software

- **KTA2.1** High-Performance Computing (HPC)
- **KTA2.2** Advanced Computer Hardware
- **KTA2.3** Advanced Computer Software
- **KTA2.4** Semiconductors

KTA3 - Quantum information science and technology •

- **KTA3.1** Quantum Computing Algorithms & Software
- **KTA3.2** Quantum Computing Hardware
- **KTA3.3** Quantum Communications and Networking
- **KTA3.4** Quantum Sensing
- **KTA3.5** Quantum Device Components and Manufacturing Methods

KTA4 - Robotics, automation, and advanced manufacturing

- **KTA4.1** Robotics
- **KTA4.2** Automation
- **KTA4.3** Advanced Manufacturing (excluding biomanufacturing and semiconductor manufacturing)

KTA5 - Natural and anthropogenic disaster prevention or mitigation •

- **KTA5.1** Natural Disaster Prevention and Mitigation (excluding climate change adaptation & mitigation)
- **KTA5.2** Climate Change Adaptation and Mitigation
- **KTA5.3** Anthropogenic Disaster Prevention and Mitigation (excluding pandemics)
- **KTA5.4** Pandemic Prevention and Response

KTA6 - Advanced communications technology and immersive technology

- **KTA6.1** Wireless Communication — terrestrial and space
- **KTA6.2** Wired and Fiber Communication
- **KTA6.3** Spectrum Management
- **KTA6.4** Communications and Network Security
- **KTA6.5** Internetworking
- **KTA6.6** Immersive Technology and edge devices

KTA7 - Biotechnology, medical technology, genomics, and synthetic biology

- **KTA7.1** Biotechnology - Other than SynBio
- **KTA7.2** Medical Technology
- **KTA7.3** Genomics and Bioinformatics
- **KTA7.4** Synthetic Biology
- **KTA7.5** Biomanufacturing

KTA8 - Data storage, data management, distributed ledger technologies, and cybersecurity, including bio-metrics

- **KTA8.1** Data Storage
- **KTA8.2** Data Management and Databases
- **KTA8.3** Data Privacy
- **KTA8.4** Distributed Ledger Technologies
- **KTA8.5** Cybersecurity
- **KTA8.6** Bio-metrics

KTA9 - Advanced energy and industrial efficiency technologies, such as batteries and advanced nuclear technologies, including but not limited to for the purposes of electric generation (consistent with section 15 of the National Science Foundation Act of 1950 (42 U.S.C. 1874) •

- **KTA9.1** Advanced Batteries and Energy Storage Technologies
- **KTA9.2** Advanced Energy Generation Technologies
- **KTA9.3** Advanced Transmission and Distribution Systems
- **KTA9.4** Carbon Management Technologies
- **KTA9.5** Advanced Nuclear Technologies
- **KTA9.6** Industrial Efficiency Technologies

KTA10 - Advanced materials science, including composites 2D materials, other next-generation materials, and related manufacturing technologies

- **KTA10.1** Composites (excluding 2D materials)
- **KTA10.2** 2D materials
- **KTA10.3** Other next-generation materials
- **KTA10.4** Related manufacturing technologies