



PERSPECTIVES ON OPEN SCIENCE AND OPEN DATA FROM THE US NATIONAL SCIENCE FOUNDATION

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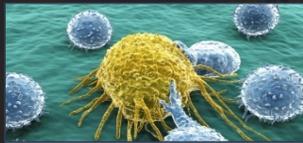
Director, Office of Advanced Cyberinfrastructure
Directorate for Computer and Information Science
and Engineering

NSF Mission

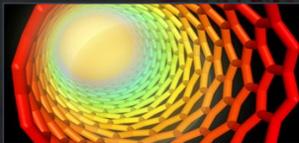
*“To promote the progress of
science; to advance the national
health, prosperity, and welfare; to
secure the national defense...”*



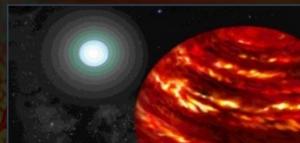
NSF CHAMPIONS RESEARCH AND EDUCATION ACROSS ALL FIELDS OF SCIENCE AND ENGINEERING



Biological Sciences



Engineering



Mathematical & Physical Sciences



Computer and Information Science and Engineering



Geosciences



Integrative Activities



Education & Human Resources



Social, Behavioral & Economic Sciences



International Science and Engineering

By supporting...

- ✓ Fundamental Research
- ✓ Education and Training
- ✓ Research Resources
 - Instrumentation
 - Methods
 - Infrastructure

↪ *Cyberinfrastructure*

Essential to tailor our efforts to the specific needs of each discipline, while promoting transdisciplinary practices



NSF AND OPEN SCIENCE

“Open science fuels scientific discovery and economic gain by making the products of Federally funded research more easily accessible and usable. Open science can also improve scientific rigor by directly linking the products of research (data and software) to their associated publications, making it easier for others to confirm the validity of a scientific result reported in a journal or juried conference proceeding.” ~ NSF 20-068

NSF Public Access aims to accelerate dissemination of fundamental research results to advance the frontiers of knowledge.

- **NSF Data Sharing Policy.** *“Investigators are expected to share with other researchers at no more than incremental cost and within a reasonable time...”*
- **NSF Data Management Plan.** *Every proposal required to describe conformance to NSF Data Sharing Policy.*
- **NSF Public Access Repository.** URL: par.nsf.gov





RECENT HIGHLIGHTS

COVID-19 High Performance Computing (HPC) Consortium

- NSF and the US Government quickly drew together a grass-roots ensemble of academic, industry, government and international partners to accelerate COVID-19 computational research.
- Pandemic highlights the importance of Open Science principles: shared frameworks, open protocols and interfaces, and reciprocal trust.

Data-intensive discovery pathways: The “missing middle”

- Foster new end-to-end workflows and resources for researchers to integrate and analyze diverse data.
- Opportunities: Enable new data-driven science investigations, new scientific usage modes, and expand users.
- Challenges: **data access** (real time, streaming, on-demand), **data discovery** (knowledge networks, intelligent data delivery), and **data fusion** (data integration and interoperability).

Engagements to build community

- Fostering research community efforts on data practices and infrastructure (e.g. Research Data Alliance, CODATA).
- Working with other US agencies to align policies and practices, acknowledging differences in mission.