

Building Sustainable Foundations for Open Software and Tools in Biomedical and Behavioral Science

August 6, 2023
JSM Funder's Forum

Susan K. Gregurick, Ph.D.
Associate Director for Data Science
National Institutes of Health

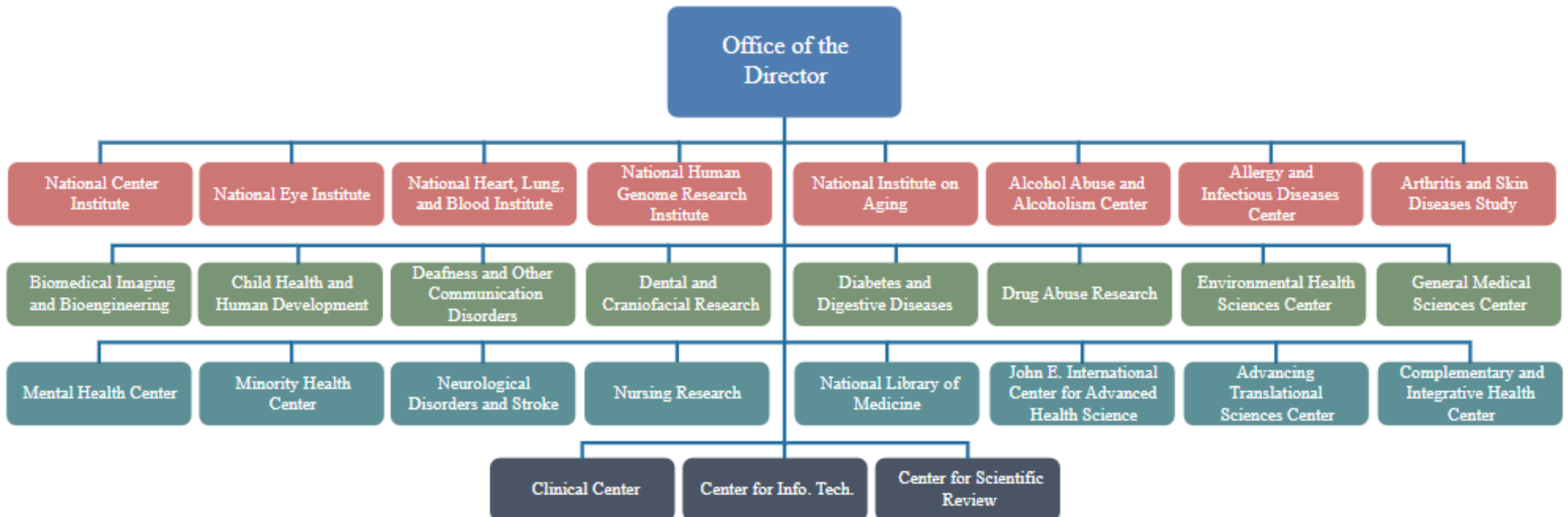
National Institutes of Health Institutes, Centers, and Offices

27 Institutes and Centers (ICs)

Software support exceeds \$180M from over 400 projects

Each IC supports Software aligned to their mission

National Institutes of Health (NIH) Org Chart



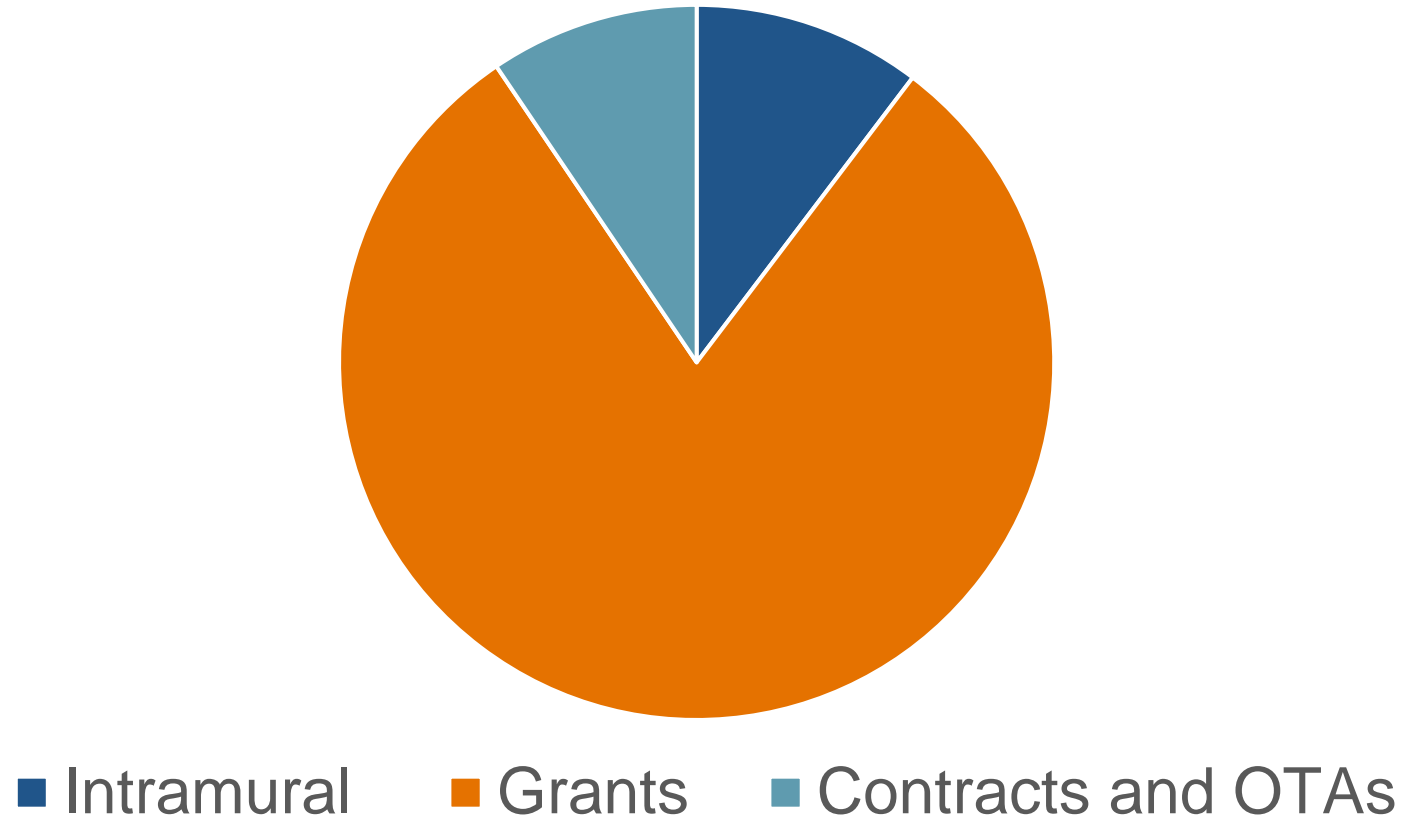
Topics for Today

- Current funding landscape
- Partnerships with agencies
- Data Management and Sharing
- Building Sustainable Foundations for Open Software and Tools in Biomedical and Behavioral Science



Software Support at NIH

Breakdown in Funding

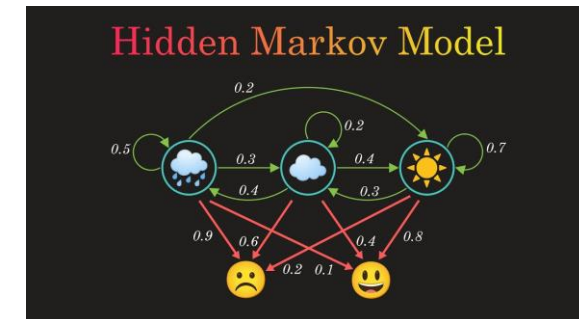


A few examples

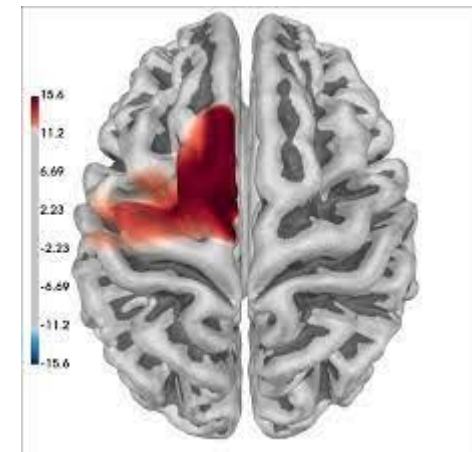
Software development for STAN to improve survey statistics for non-probability samples (A. Gelman, Columbia)



Hidden Markov methodology for machine learning applied to identifying physiological states of shock in the intensive care unit via biomedical and unstructured text data (J. Williams, North Carolina State University)



Brain AnalyzIR: A software platform for improving scientific rigor in functional NIRS statistical analysis (T. Huppert, University of Pittsburgh)



Smart and Connected Health (SCH)



Accelerate innovations
in computer and
information science
and engineering to
support the
transformation of
health and medicine



Smart and Connected Health (SCH)

Areas of Interest

- Fundamental research in data management, focus on interoperable & distributed/federated digital infrastructure
- Novel computational approaches for fusion and analysis of multi-level & multi-scale data
- New multimodal sensing systems/platforms and analytics for personalized models of health
- Enables interoperable, temporally synchronized, devices and systems to connect data and devices
- Medical image interpretation
- Develop holistic, data-driven or mathematical models to address the structural and/or social determinants of health



NIH Data Management and Sharing Policy

Final NIH Data Management and Sharing (DMS) Policy

As of January 25, 2023, researchers must submit a Data Management and Sharing Plan detailing how data and metadata will be preserved, managed, and shared, including restrictions or limitations.

The DMS Policy (NOT-OD-21-013) applies to **all research, funded or conducted in whole or in part by NIH**, that results in the generation of scientific data. This includes research funded or conducted by extramural grants, contracts, Intramural Research Projects, or other funding agreements regardless of NIH funding level or funding mechanism.

The DMS Policy does not apply to research and other activities that do not generate scientific data, including training, infrastructure development, and non-research activities.



'Which brings us to my next point.'

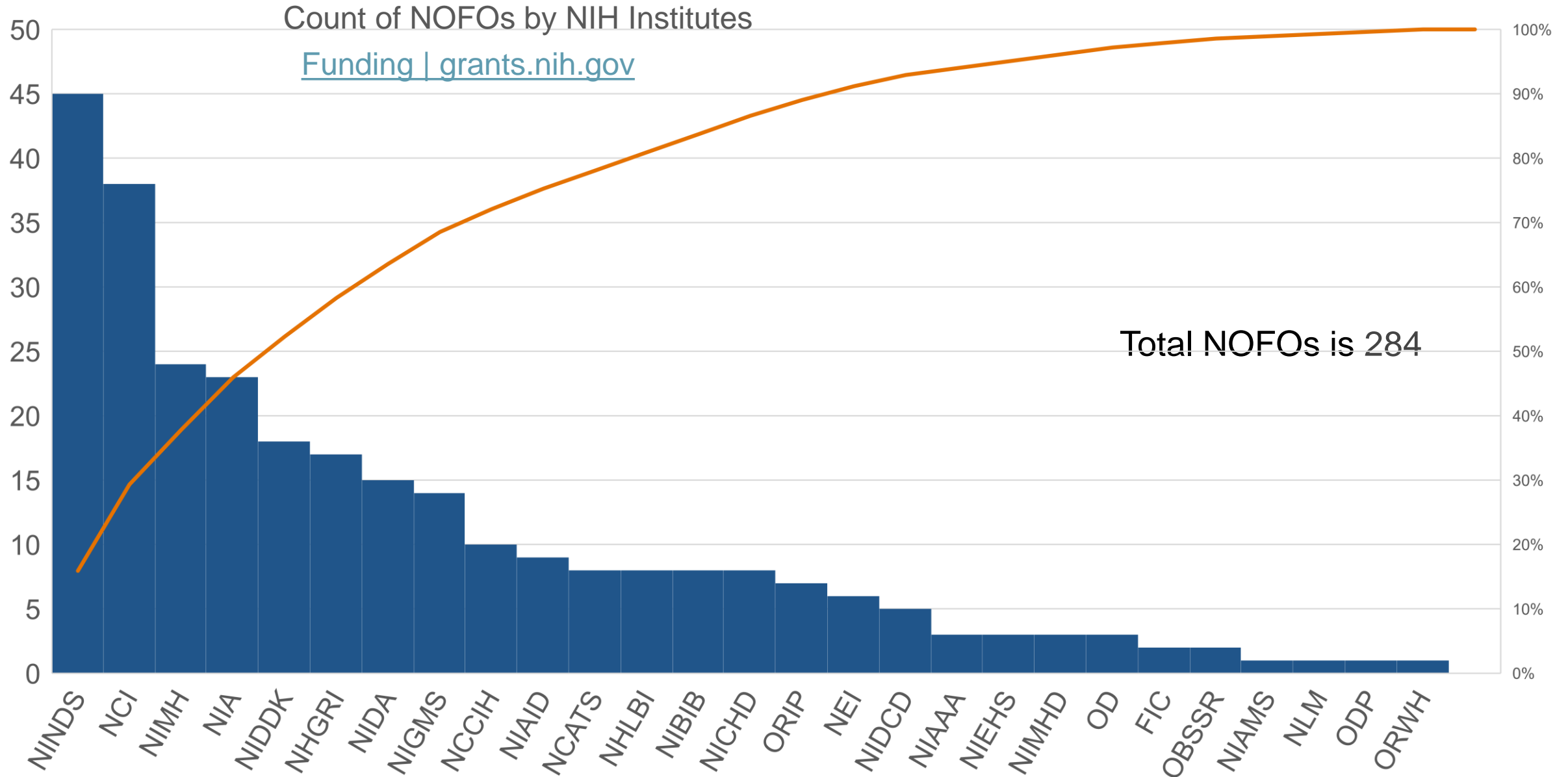
Data Management and Sharing Plan: Software Guidance

Related Tools, Software and/or Code: An indication of whether specialized tools are needed to access or manipulate shared scientific data to support replication or reuse, and name(s) of the needed tool(s) and software. If applicable, specify how needed tools can be accessed, (e.g., open source and freely available, generally available for a fee in the marketplace, available only from the research team) and, if known, whether such tools are likely to remain available for as long as the scientific data remain available.



**Building
Sustainable
Foundations for
Open Software and
Tools in Biomedical
and Behavioral
Science**

Open Software Funding Opportunities (NOFOs)



Two Funding Opportunities (NOFOs)

Data Integration and *Statistical* Analysis Methods
(DISAM) (U01 Clinical Trial Not Allowed)

RFA-HG-23-005

Exp 11-21-2023

NIDCR Small Research Grants for Oral Health Data
Analysis and *Statistical* Methodology Development (R03
Clinical Trial Not Allowed)

PAR-22-160

Exp 5-8-2025

Need for Building Sustainable Software and Tools

Robust software foundations and support for the engineers who can build them are critical gaps in the biomedical & behavioral sciences ecosystem



Concept for Building Sustainable Software and Tools

To support the building of sustainable foundations for open software and tools in biomedical and behavioral science, we are developing two related funding opportunities announcements (FOAs) to:



Pilot a new model to support research software engineers in biomedical and behavioral research

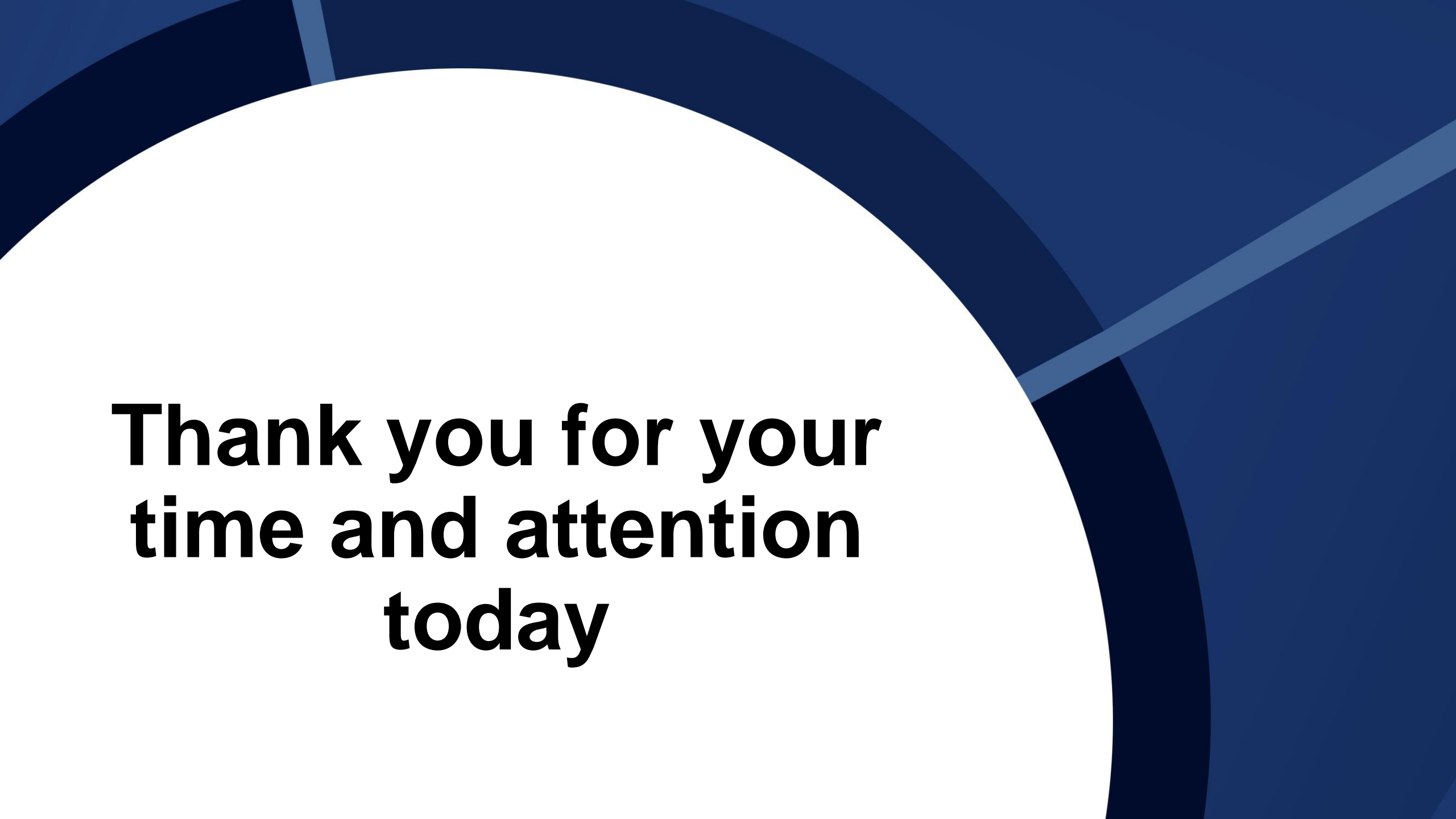


Fund projects to foster software foundations that will increase the robustness, reproducibility, and reusability of NIH supported open software tools.

ReSA welcomes SAGE Publishing and National Institutes of Health

- ReSA is delighted to welcome our first two [Organisational Members](#) - [SAGE Publishing](#) and the [National Institutes of Health](#). Organisational Members support ReSA financially in bringing research software communities together to collaborate on the advancement of the research software ecosystem.
- ReSa organisational membership demonstrates commitment to International collaboration and innovation for research, by supporting the ReSA vision that research software and those who develop and maintain it are recognised and valued as fundamental and vital to research worldwide.
- [ReSA Newsletter: March 2023](#)





**Thank you for your
time and attention
today**