THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

Board on Research Data and Information
Policy and Global Affairs Division
The National Academies

Making the Best Use of Our Nation's Research Data and Information

The Challenge

The President's agenda calls for "maximizing the power of technology" for our economy and society. The federal government alone invests over $140 billion dollars per year in the nation's research base, which is coupled with an enormous research effort by the private sector. These investments also produce our digital research data and information resources, which constitute many of the inputs and outputs of the scientific enterprise. Now more than ever we need to preserve and exploit them as fully as possible to solve hard problems and create new opportunities.

Our National Data and Information Resources

With these digital resources, we can understand and address important challenges in medicine, climate change, energy use, national security, and many other areas. For example, re-analysis of medical data has both highlighted the dangers of certain classes of drugs and demonstrated the safety of childhood vaccines. Understanding and predicting climate changes and their impact requires data from studies of chemistry, botany, glaciers, and a host of other subjects. Data from physical chemistry and thermodynamics are needed to improve energy efficiency.

More broadly, research data support fact-based policy making and help solve our most difficult problems. Modern research and education require the ability to integrate and create new knowledge using data sets from national collaborators and partners around the world. The accuracy and utility of complex simulation and prediction models is highly dependent on the quality of the data input to the models. Digital data and information, and the cyber-infrastructure that supports them, are essential to accelerating innovation and our knowledge economy.

Better Management of the National Digital Research Resources

Although we now devote large amounts of funding to producing research data and information, we have not yet developed the best systems for keeping, managing, and reusing these digital resources. Critical data are at risk of loss from lack of planning and realization of their value to business and government. Data are collected faster than they can be processed and understood while policymakers, research managers, and repositories struggle to keep pace. A lack of data sharing leads to the duplication of research efforts. The data and information that we do have are too often in silos, bounded by disciplines, organizations, policies, and technologies that interfere with our ability to exploit them fully. Obstacles to data sharing and interoperability undermine the value of our investments in research.

Difficulties in sharing and using data and information occur especially at the boundaries of disciplines, sectors, and nations, as well as between levels of government or public and private entities. These problems in managing and using digital knowledge resources cause structural inefficiencies and lost opportunity costs for our national research and innovation systems, our economic competitiveness, and the greater social welfare.

Facilitating a Solution

The National Research Council's Board on Research Data and Information was formed in response to a recognized need for addressing such challenges. The new Board brings greater understanding and visibility to these issues, and focuses on improving the management, policy,

and use of digital data and information for science and the broader society. The Board interacts broadly with the various stakeholders in the research community to make progress on the research data and information priorities that are essential for our nation's future. More specifically, the Board engages in planning, program development, and administrative oversight of projects launched under its auspices, and undertakes the following tasks within its primary mission areas:

1. Addresses emerging issues in the management, policy, and use of research data and information at the national and international levels.
2. Through studies and reports of the National Research Council, provides independent and objective advice, reviews of programs, and assessment of priorities concerning research data and information activities and interests of its sponsors.
3. Encourages and facilitates collaboration across disciplines, sectors, and nations with regard to common interests in research data and information activities.
4. Monitors, assesses, and contributes to the development of U.S. government and research community positions on research data and information programs and policies.
5. Initiates or responds to requests for consensus studies, workshops, conferences, and other activities within the Board's mission, and provides oversight for the activities performed under the Board's auspices.
6. Broadly disseminates and communicates the results of the Board's activities to its stakeholders and to the general public.

The Board also serves as the U.S. National Committee for CODATA.[1] For additional information about the Board and its activities see http://sites.nationalacademies.org/pga/brdi/index.htm.

[1] CODATA is the interdisciplinary Committee on Data for Science and Technology, organized under the International Council for Science in Paris (see www.codata.org). The U.S. National Committee for CODATA has been representing the nation's interests in the international CODATA for over three decades.